TROPICAL AFRICAN FLOWERING PLANTS

Ecology and Distribution

Vol. 5 – Buxaceae – Simaroubaceae

• J.-P. LEBRUN
• A. L. STORK

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et Jardin botaniques
de la Ville de Genève
2010

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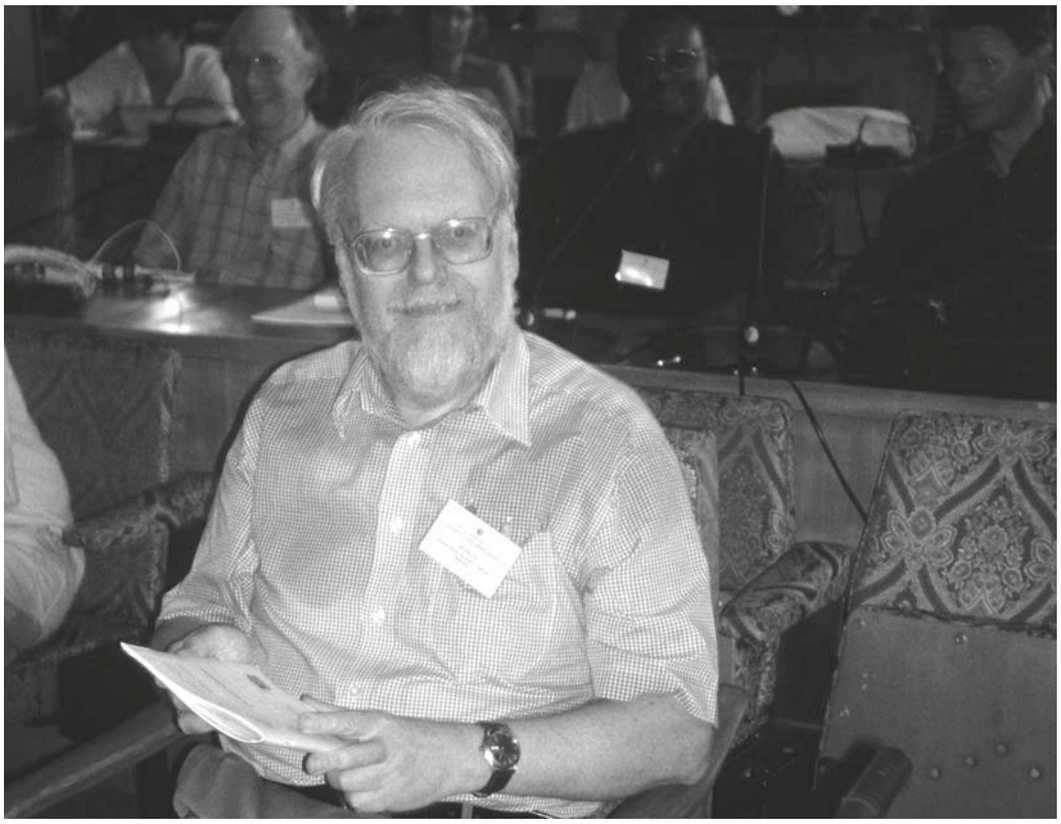

This volume is dedicated to our friend and colleague Ib Friis in recognition of his work on the flora of NE tropical Africa and, in particular, his contribution to the knowledge of certain families figuring in this part of our compilation.

Photograph taken at the 18th AETFAT Congress, Yaounde, Cameroon, 2 March 2007 (A.L. Stork).

Back cover illustration: *Sarcophyte sanguinea* Sparrman *(Balanophoraceae)*. Linnaea 2: pl. 8, 1827, published as *Ichthyosma wehdemannii* Steud. "Bergius erhielt von einem seiner Bekannten, Herrn Clem. Heinr. Wehdemann… einige Pflanzen und Zeichnungen…. Die… nur leicht ausgeführte Zeichnung eines sonderbaren blattlosen Gewächses, zog meine ganze Aufmerksamkeit auf sich. … ihr Geruch war stinkend, wie von faulen Fischen…. Genannt habe ich diese Gattung nach dem eigenthümlichen Geruch … die Art nach dem Entdecker …". – "Gefunden ward sie in Büschen bei Grahamstown unter einer Ekebergia …" (Linnaea 2: 671-673, 1827).

Cover page illustration: *Globimetula cupulata* (DC.) Danser *(Loranthaceae)* in the Sudanian savanna, Mali. Photograph courtesy Aline Raynal.

JEAN-PIERRE LEBRUN – ADÉLAÏDE L. STORK

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VOL. 5: BUXACEAE – SIMAROUBACEAE

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We express our gratitude to Mrs. José Kempenaers, Musée Royal de l'Afrique Centrale at Tervuren (Belgium) and Mrs. Sofie De Smedt, API project, National Botanic Garden of Belgium, Meise, who were helpful in checking M. Renier's Flore du Kwango and herbarium specimens deposited at Meise. Finally, we were able tho obtain a photographic copy of Renier's works present at the Library of the latter Institute. We thank Mrs. Régine Fabri (Meise) and Mr. P. Boillat (Genève) for their dedicated efforts. We also thank Professor Aline Raynal who offered us the cover page illustration.

Last but not least, we wish to thank Dr. R. Polhill, Mrs. Diana Polhill, Dr. M. Cheek and Dr. H. Beentje (Kew Gardens) for their support.

Erratum

Erratum to Volume 4: Leguminosae: Fabaceae (Desmodium-Zornia), 2008.

The same plant was erroneously placed in two different genera, viz.: (p. 281) **Vigna virescens** Thulin and (p. 284) **Wajira virescens** (Thulin) Thulin, based on the former name.

Thus, **Vigna virescens** Thulin should be deleted.

I. STATISTICAL SUMMARY

"… the description and mapping of the world biota is scientifically more important and far more urgent for human welfare than the current focus on phylogenetic reconstruction. It is an embarrassing reality that we still have no consensus on the number of species of angiosperms, the best-known group of plants… One of the main reasons for this deficiency is simply the time-consuming nature of monographs and revisions".

(J. Manning, *S. African J. Bot.* 67: 671, 2001)

The present volume covers 30 families, including 179 (+1) genera and 1415 (+1?) species. They are listed below (Table 1) in alphabetical order. To avoid confusion we use 6-letter acronyms (cf. Vol. 1: 15, 2003).

Table 1 summarizes our lack of information relating to plant habit, flowers, fruit, ecology, and herbarium material.

With a total of 1415 species, Table 1 shows the following results (figures within brackets indicate uncertain data):

- 7 (+7) species (= 0,5%) for which flowers are unknown;
- 13 (+1) species (= < 1%) for which male flowers are not known;
- 18 (+5) species (= 1,3%) without female flowers recorded;
- 138 (+7 +9?) species (= >9%) for which fruits have not been seen;
- 33 (+1) species (= >2%) without records on their ecology;
- 109 (+7) species (= c. 8%) which are only known from the type.

We are aware of the fact that our figures do not reflect the absolute truth. They are certainly too high and should be considered as an indication only.

Table 1. – Families included in Volume 5 (alphabetical order, 6-letter acronyms). Statistical summary: number of genera (Nr. gen.) and species (Nr. spp.); number of species for which habit (hab.), reproductive organs (flowers, male flowers, female flowers, fruits) or ecology (eco.) are not recorded; and number of species only known from the type collection. Figures within brackets indicate uncertain data.

Family	*Nr. gen.*	*Nr. spp.*	*No hab.*	*No fl.*	*No ♂ fl.*	*No ♀ fl.*	*No fr.*	*No eco.*	*Only type*
Aquifo	1	1							
Balano	5	6							
Barbey	1	1							
Brexia	1	1							
Buxace	1	7						1	
Celast	11	55		1					1
Hippoc	17	139					20	7	12
Hydnor	1	2					1		
Hydros	1	6			1				
Icacin	14	72			3(+1)	7(+1?)	4	2	5
Leeace	1	1							
Lorant	19	226		(1)			56 (+2?)	2	9
Medusa	2	8					1?		
Morace	15	162					5	1	4
Myrica	1	7							1?
Octokn	1	7			3	2			2
Olacac	12	35					1		1
Opilia	4	9					1		1
Pentad	1	1							
Raffle	1	2				1	1		1
Rhamna	12	39					2		2
Rutace	12	114		1	4	6 (+4?)	9 (+1?)		9
Salica	1	4 (1?)							
Salvad	3	5							
Santal	4	92					2(+3)	4	22 (+6?)
Simaro	8	21				1	1	1	1
Ulmace	4	11							
Urtica	17 (+1)	62 (+1)							
Viscac	3	32			2	1	(4)		2
Vitace	5	287		5 (+6)			35(+ 5?)	15 (+1?)	37
Total									
30	179 (+1)	1415 (+1?)		7 (+7) = 0,5%	13 (+1) = <1%	18 (+5?) = 1,3%	138 (+7 +9?) = >9%	33 (+1?) > 2%	109 (+7?) c. 8%

II. BIBLIOGRAPHY

In addition to the general Floras and catalogues in the list of abbreviations found at the beginning of each of the four volumes of our "Enumération" (1991-1997) and under "Bibliography" in volumes 1-4 of this new series (2003, 2006, 2008), the following recent works and articles have been consulted:

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* * *

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III. LIST OF FAMILIES INCLUDED IN VOLUME 5

Sequence of families :

Buxaceae ....p. 16
Hydrostachyaceae p.17
Salicaceae p.18
Myricaceae .... p. 20
Ulmaceae, incl. Celtidaceae .... p. 22
Barbeyaceae .... p. 26
Moraceae, incl. Cecropiaceae .... p. 28
Urticaceae .... p. 77
Aquifoliaceae .... p. 98
Celastraceae .... p. 99
Brexiaceae .... p. 116
Hippocrateaceae .... p. 118
Icacinaceae .... p. 148
Salvadoraceae .... p. 165
Olacaceae .... p. 168
Pentadiplandraceae .... p. 179
Opiliaceae .... p. 180
Medusandraceae, incl. Soyauxia (now Peridiscaceae) .... p. 182
Octoknemaceae .... p. 184
Loranthaceae .... p. 187
Viscaceae .... p. 237
Santalaceae .... p. 244
Hydnoraceae .... p. 268
Rafflesiaceae (Apodanthaceae) .... p. 270
Balanophoraceae, incl. Cynomoriaceae .... p. 270
Rhamnaceae .... p. 272
Vitaceae .... p. 284
Leeaceae .... p. 365
Rutaceae .... p. 365
Simaroubaceae, incl. Harrisonia, Kirkia (Kirkiaceae), Suriana (Surianaceae) .... p. 405
Irvingiaceae – See Vol. 1 : 766-770

IV. HOW TO USE THIS BOOK

For each species there is a description and a simplified map of distribution. In a few cases two species figure on the same map but with different symbols.

The **text** is conceived in the following manner, based upon our "Enumération", Vol. 1 (J.-P. Lebrun & A. L. Stork 1991).

- Bibliographical references are sometimes given at the beginning of families and genera, as appropriate. They mostly refer to monographs or articles published after the issuing in 1997 of Volume 4 of our "Enumération" (an updating of the bibliographies is found at the end of each volume in the chapter "Additions et corrections...").
- Basionym and synonym(s) are only cited if they do not figure in the "Enumération".
- A short description, mainly with regard to life form, is given, e.g. tree, shrub, subshrub, liane, (annual, perennial) herb, and to the height of the plant; for trees sometimes also other characters, such as diameter and/or girth of the bole or presence of buttresses, are mentioned. Presence of rhizomes, tubers or bulbs and of spectacular features, such as showy flowers, exceptionally small or large leaves, flattened or rounded shoots, etc., or particular uses, are often specified.
- Ecological data are recorded, sometimes in rather detailed form if known; range of altitude is generally given.
- If a species comprises two or more intraspecific taxa, this is mentioned, but their names are not always quoted, as most of them appear in our "Enumération". However, there may have been changes since the publication in 1991, and in this case the names figure in the text.
- Extraterritorial geographical distribution is given (i.e. not marked on the accompanying map of distribution which includes only the tropical part of Africa as defined in our "Enumération").

* * *

On the **maps** of distribution (Fig. 1) we indicate the northern and southern limits of our area, as well as the political frontiers of the countries within these borders. Arrows (at the margin of the continent, W Africa) indicate the situation of four particular countries, viz. Western Sahara, Guinea Bissau, Togo, and Benin.

The main phytochoria, based upon Frank White's classification and indicated on the maps that figure in Volume 1 of this Series (p. 19), have been slightly modified. In the following list Section B has been split into two areas. From North to South, and East to West the phytochoria are (Figs. 1 and 2):

- A. Southern Sahara-Sindian zone [corresponding to the southern part of White's phytochorion XVII (Sahara regional transition zone)].
- B. Sahelian-Sudano-Zambezian zone :
  - Ba. Sahel regional transition zone [corresponding to White's zone XVI];
  - Bb. Sudano-Zambezian zone [corresponding to the following phytochoria of White: III (Sudanian regional centre of endemism), XI (Guinea-Congolia/Sudania regional transition zone); X (Guinea-Congolia/Zambezia regional transition zone); II (Zambezian regional centre of endemism); XIII (Zanzibar-Inhambane regional mosaic); and the north-eastern tip of XV, i.e. the southernmost part of Mozambique]; the enclosed parts of the "Afromontane archipelago-like regional centre of endemism" (VIII) and of the "Afroalpine archipelago-like region of extreme floristic impoverishment" (IX) have not been taken into account here (precluded by the small scale of our map).
- C. Guineo-Congolian rain-forest zone [corresponding to phytochorion I of White (Guineo-Congolian regional centre of endemism)].
- D. Ethiopian Afromontane zone [the northern part of White's phytochorion VIII (see above under Bb)].

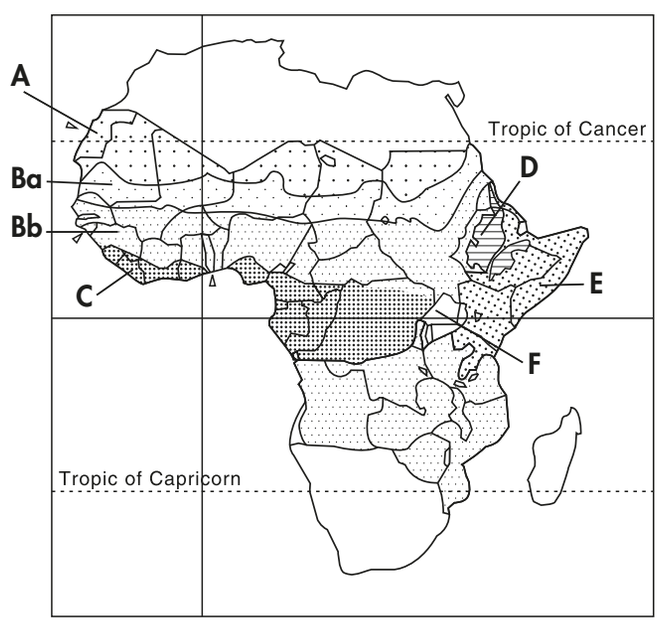

Fig. 1. – Main phytogeographical zones of tropical Africa used in the present work. For zones **A** through **F**, see explanations in the text.

- E. Somalia-Masai/Afroriental zone [phytochorion IV of White (Somalia-Masai regional centre of endemism) and the northernmost part of XIII (see above under Bb)]. The "Afromontane" (VIII) and "Afroalpine" (IX) archipelago-like regional centres are included (see above under Bb).

• F. Lake Victoria mosaic [White's phytochorion XII (Lake Victoria regional mosaic)]. As is the case in our zones Bb and E, the "Afromontane" (VIII) and "Afroalpine" (IX) archipelago-like regional centres are included here (see above under Bb).

Madagascar is not included in our compilation although present on the map (Fig. 1).The maps are based on literature records at our disposal; thus they are indicate, but not exhaustive. In certain cases it has even been impossible to find the exact locality. Although it will always be possible to add dots on the maps, we believe that in most cases such additions will not change fundamentally the general pattern of distribution for a particular species.

The distribution of the species is shown on the maps in the following way:

- For small countries only one dot is used. For larger countries, and in particular if the distribution falls into different phytochoria, two (or more) dots are present.
- Dots are also placed in particular "subdivisions" of large countries, according to those given in the following floras: Adumbratio Florae Aethiopicae, Flora of Ethiopia and Eritrea, Flora of Somalia, Flora of Tropical East Africa, Flora Zambesiaca, Flore du Congo Belge et du Ruanda-Urundi (succeeded by Flore du Congo Belge, du Rwanda et du Burundu, and ultimately by Flore d'Afrique centrale), and Conspectus Florae Angolensis.

Readers will notice that plants seem to be more common (as dots are more numerous) in the eastern part of tropical Africa. This is often an illusion due to thesubdivision of large countries mentioned above.

At more or less regular intervals, and at the end of a family, one or two maps areleft blank, in order to allow for mapping of newly described species (or species overlooked by the compilers).

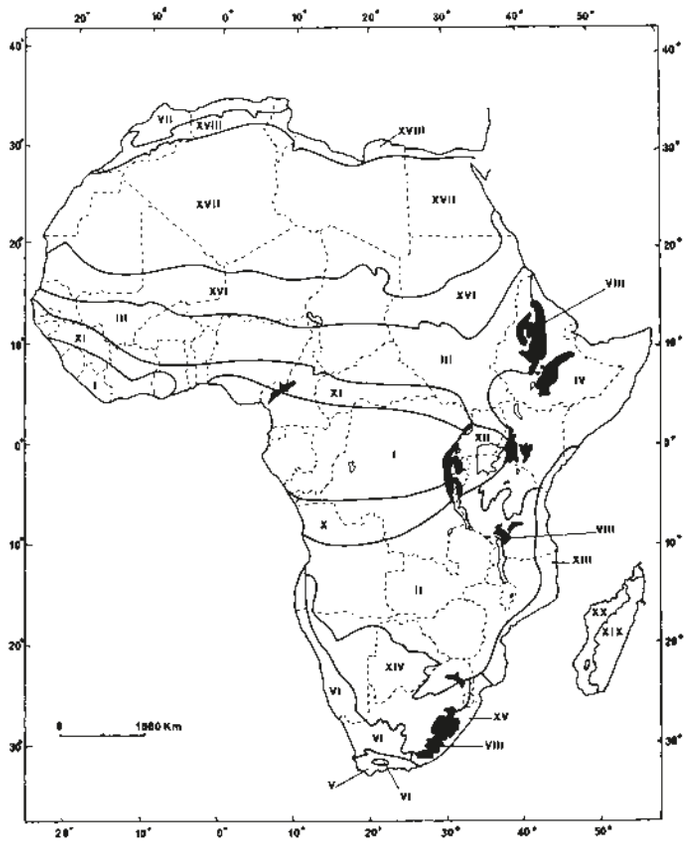

Fig. 2. – Main phytochoria of F. White (1983): p. 38 (cf. quotations in the text). See also "Enumération", vol. 1: pp. 24-25 (1991).

BASIC REFERENCE

WHITE, F. (1983). The vegetation of Africa: A descriptive memoir to accompany the Unesco/AETFAT/UNSO vegetation map of Africa. Unesco, Paris.

V. THE CHECKLIST: Buxaceae – Simaroubaceae

BUXACEAE / *1* g. / *7* spp.

Three species are rarely collected: *Buxus benguellensis, B. cordata, B. nyasica.*

No ecology recorded for *B. benguellensis.*

BALTHAZAR, M. von & P. K. ENDRESS (2002). Reproductive structures and systematics of Buxaceae. *Bot. J. Linn. Soc.* 140: 193-228.

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KÖHLER, E. (2007). Buxaceae. *In:* KUBITZKI, K., ed., *The families and genera of vascular plants* 9, *Flowering plants-Eudicots:* 40-47. Springer, Berlin & Heidelberg.

BUXUS / *7*

syn.: *Notobuxus* Oliv.; *Buxanthus* Tiegh.; *Buxella* Tiegh.; *Macropodandra* Gilg.

Köhler, l.c. keeps *Notobuxus* at generic level.

Buxus acutata Friis

syn.: *Macropodandra acuminata* Gilg – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 473, 2006.

Shrub or tree 0,6-4 m tall, evergreen, glabrous in all its parts; branches longitudinally sulcate or wrinkled, bright green.

Limestone plateau with slightly degraded rain-forest of *Cynometra alexandri;* soil with shallow discontinuous running horizon; limestone rocks break through in patches; in undergrowth with many shrubby trees, rocks covered with mosses. *Buxus acutata* is very common with a very high number of other species: *Staudtia gabonensis, Aphania senegalensis, Drypetes lisolinoli, Cnestis yangambiensis, Dracaena camerooniana, Alafia multiflora,* etc. (Zaire); half-deciduous rain-forest (Ivory Coast); forest on laterite; 120-1000 m alt. (Cameroon).

B. benguellensis Gilg

Shrub or tree, glabrous or shortly pubescent (var. **hirta** Hutch.); branches tetragonal, longitudinally sulcate.

Ecology unknown (10 miles N of the mouth of river).

Comprises 2 vars.

B. cordata (Radcl.-Sm.) Friis

Shrub, glabrous, 1 m tall; branches green, angular; leaves ovate-lanceolate or lanceolate, to 11,5 × 5 cm, *cordate, subamplexicaul* at the base, petiole 2 mm long.

Forest; 300 m alt.

Only known from 2 specimens collected in 1918 (Peter) and a gathering made in 1983, respectively. Plants collected by Peter were discovered in a set of duplicates received at Kew early in 1980 from Berlin, where they had reposed unharmed in a basement during the War 1939-1945.

B. hildebrandtii Baill. – Icon.: Thulin, Fl. Somalia 2: 85, 1999.

syn.: *Buxanthus hildebrandtii* (Baill.) Tiegh.; *Buxus calophylla* Pax

Shrub 1,8-9 m tall; stems to 15 cm Ø; bark grey with vertical stripes and fissures.

Buxus-Acokanthera scrub on non-calcareous rock (basaltic lava) with scattered trees, e.g. *Cussonia holstii, Ficus vasta, F. populifolia;* also *Dracaena schizantha* on rocks; large shrubs besides the dominants are: *Gymnosporia luteola, Teclea pilosa, Rhus natalensis, Tarenna graveolens, Pavetta gardeniifolia* etc. (vide Gillett, Bull. Misc. Inform. Kew 1941 [1942]: 61); *Buxus-Commiphora* scrub with *Mimusops kummel;* a much more open scrub and between the evergreen trees and bushes there are numerous deciduous ones, and a high proportion of succulents; on limestone; dominant are: *Buxus hildebrandtii* and *Commiphora lughensis;* other common trees and shrubs are: *Dracaena schizantha, Commiphora ogadensis, Lannea malifolia, Pappea radlkoferi, Olea chrysophylla,* etc. (vide Gillett, o.c.: 62); *Buxus-Juniperus* scrub is a succession from *Buxus* scrub to *Juniperus* forest (vide Gillett, o.c.: 62-63); *Acokanthera* scrub on non-calcareous rocks (*Buxus* is subordinate or absent; vide Gillett, o.c.: 62); in the highest zone on the Al Hills in Somalia *Buxus hildebrandtii* clothes this area in almost unbroken cover, and makes up perhaps 90% of the larger vegetation; the dominants at Sugli are: *Buxus, Acokanthera, Cadia purpurea,* etc.; on the Surud mountain, 120 miles to the west of the area just discussed, *Buxus* appears to be entirely absent (vide Collenette, Bull. Misc. Inform. Kew 1931: 408-409). There exists also the *Buxus hildebrandtii* association; this plant is often very social in its growth and may form a consocial community; more commonly, however, it grows, if dominant, in association with many other plants; for example in the mixed evergreen scrub association of mountains, best developed below the juniper belt with *Buxus, Acokanthera, Cadia,* etc. (vide Gilliland, J. Ecol. 40: 118, 1952); "forêt dense du Goda et du Mabla" (Djibouti) with *Juniperus procera* and *Buxus* sensu Chedeville, Webbia 26: 256-258, 1972; open grassy area on clay on limestone with evergreen bushland with *Buxus* and *Cadia, Fuirena boreocoerulescens. Juniperus procera* forests form a *Buxus-Juniperus* association with *Olea europaea* subsp. *cuspidata, Cordia purpurea, Dracaena ombet; Acacia-Commiphora* bushland, both on limestone and volcanic rocks; cf. also J. J. Lavranos. Phytogeography of… Djibouti… *In:* L. Russo, ed., The Succulent Plants of Eastern Africa…: 143-144, 2004; 300-2000 m alt.

Socotra.

B. lisowskii Bamps & Malaisse

Shrub 3 m tall, evergreen, glabrous; young branches angular, longitudinally sulcate.

Forest gallery at the foot a water-fall; 1250-1600 m alt.

Only known from two specimens collected in 1969 and 1986, respectively.

B. nyasica Hutch.; Dowsett-Lemaire & White, Bull. Jard. Bot. Natl. Belg. 60: 87, 1990. – Icon.: White & al., Evergreen forest fl. Malawi: 126, 2001; Fl. Zambes. 9/3: 253, 2005.

Shrub or tree 2-8 m tall; branches ± rounded, glabrous, slightly sulcate; young branches somewhat compressed; fruit and seed known!

In undergrowth of mid-altitude rain-forest; locally common or very common; 1200-1530 m alt.

Collected only in 1894, 1982 and 1987.

Resembling *B. madagascarica* Baill. restricted to Madagascar.

One of a very small number of evergreen-forest woody species only known from Malawi.

BUXUS

B. obtusifolia (Mildbr.) Hutch.

Shrub 1-1,2 m or tree 6 m tall; branches grooved, pubescent or glabrous; bark corky.

Evergreen *Euphorbia, Brachylaena* thicket; *Cynometra, Brachylaena* forest; dry scrubby forest on red soils; 280-450 m alt.

Herbarium specimens appear almost identical in facies with *B. natalensis*.

* * *

Buxus natalensis (Oliv.) Hutch., an erect shrub 1,5-3(-5) m tall, or small tree to 10 m, with light corky bark and horizontal grooved branches, occurring in coastal evergreen forest and bush of E S. Africa, just reaches the border to our area in S Mozambique (cf. V. Thomas et R. Grant, Sappi tree spotting, KwaZulu-Natal & E. Cape: 256-257, 2004).

SYNONYMS:

Buxus acuminata (Gilg) Hutch., non Müll. Arg. = **Buxus acutata**

calophylla Pax = **B. hildebrandtii**

hirta (Hutch.) Mathou = **B. benguellensis** var. **hirta**

macowanii Oliv. var. *benguellensis* (Gilg) Mathou = **B. benguellensis** var. **benguellensis**

HYDROSTACHYACEAE / *1* g. / *6* spp.

In one species the male inflorescence and flowers are unknown.

Two species are rarely collected.

JÄGER-ZÜRN, I. (1998). Anatomy of the Hydrostachyaceae. *In:* LANDOLT, E. & al., eds., *Extreme adaptations in Angiospermous hydrophytes:* 129-196. (K. Linsbauer & al., Handbuch der Pflanzenanatomie, Spezieller Teil, 13/4), Gebrüder Borntraeger, Berlin & Stuttgart.

HYDROSTACHYS / *6*

Hydrostachys angustisecta Engl.

Leaves trailing in water, bipinnate, broadly lanceolate to elliptic in outline, 40-50 cm long, in rosettes on the woody rhizome; petiole and rhachis densely covered with ± elliptic emergences 0,5-1 mm long, 0,2-0,8 mm wide, becoming progressively larger and more elongated towards the apex; primary pinnules 20-30 cm on each side of the primary axis, alternate, covered with emergences resembling those of the rhachis, becoming very narrow and often divided at the apex; secondary pinnules arranged partly unilaterally on the primary pinnules, missing from lower one third to two-thirds of basal margin, covered with narrow elongated emergences 1,5-2 mm long, 0,2-0,3 mm wide; inflorescences erect, grouped on the rhizome (♀ 20-30 cm long, ♂ 15-25 cm long).

On rocks in swiftly flowing water fringed with rain-forest; 300-600 m alt.

Not in the Flora Zambes. area, and the new specimen Vollesen MRC 2845 from Tanzania is problematic.

H. insignis Mildbr. & Reimers, incl. var. *congolana* Hauman; R. Scogin in Aliso 13: 471-474, 1992.

HYDROSTACHYS INSIGNIS

Base of plant ± woody, subglobose; roots short, stiff, dark brown; leaves trailing in the water, pinnate, 30-60 cm long; petiole pink at base, 10-20 cm long, verrucose for at least two-thirds of its length, with small emergences on the upper third, elliptic on the faces, filiform and branched on the margins; limb 20-40 cm long, narrowly elliptic-oblong or lanceolate in outline, the rhachis bearing emergences on its faces, the basal part elliptic, the upper part progressively narrower, the uppermost being subulate or filiform; and on its margins the emergences are elliptic, divided into narrowly triangular to filiform segments 3-4 mm long; pinnules in 50-70 pairs, subopposite, densely covered with emergences 3-5 mm long, several times divided into filiform segments; inflorescences grouped on the rhizome, narrowly cone-like when young (♀ 20-30 cm long, ♂ spikes pendulous in bud, pink, similar to ♀).

Rock slide at lip of water fall; steeply sloping rocks in swiftly flowing water; ?savanna (probably in river); 1450-2000 m alt.

H. lufirensis C. Cusset

Leaves 20-50 cm long, bipinnate, narrowly oval in outline; petiole covered with broadly obovate, ± densely imbricated emergences; rachis covered with broadly obovate (1-2 × 2-3 mm) emergences; pinnules I (40-50) with two oval stipules at the base (2 × 1 mm) and covered with emergences narrowly triangular at base, becoming narrower and filiforme at the apex; pinnules II unilaterally disposed at the base of pinnules I, short, covered with filiform simple or divided emergences; spikes grouped on the rhizome (♀ 15-40 cm long, ♂ 10-20 cm long).

Waterfalls.

Collected in 1954, 1957 and 1966.

H. lukungensis (Hauman) C. Cusset

Leaves oval, bipinnate, 12-20 cm long; petiole 3-7 cm long covered with small, oval emergences; limb 9-16 cm long with rachis covered with oval emergences, with 20-25 pairs of pinnules I; pinnules I 0,8-2 cm long with rachis covered with oval emergences, imbricated, becoming narrowly oval to linear at the top; pinnules II 3-4 mm long with linear to filiform simple or divided emergences; spikes grouped on the rhizome (♀ 5-10 cm long, ♂ unknown).

Rapids of water fall, on stones.

Only known from two gatherings made in 1923 and 1971, respectively.

H. polymorpha Klotzsch ex A. Br. – Icon.: Peters, Reise Mossambique 2: pl. 52-53, 1864; Fl. Trop. E. Afr., Hydrostachyaceae: 4, 1986; C. D. K. Cook, Aquat. wetland pl. S. Afr.: 148, 2004.

syn.: *H. cristulata* Wedd.; *H. natalensis* Wedd.; *H. multipinnata* Engl.

Leaves narrowly elliptic, linear-oblong or lanceolate in outline, 15-75(-90) cm long, 2-3- pinnate; petiole 5-25 cm long, verrucose at base, the emergences becoming largest at base of limb; rhachis bearing broadly elliptic emergences 2 × 2 mm, with much smaller ones between them; pinnules I 3-7 cm. long, 15-50 on each side of the primary rhachis, covered with elliptic emergences; pinnules II 0,4-2 cm long, entirely covered with simple linear to elliptic emergences; inflorescences pinkish, grouped on the rhizome, often numerous (up to 50), stiffly erect (♀ 10-20 cm long, ♂ 10-30 cm long).

On rocks in fast-flowing water; in and under waterfalls, etc.; often by gallery forest; 450-1900 m alt.

S. Africa, Namibia.

HYDROSTACHYS

H. triaxialis Engl. & Gilg (ex Hauman, Fl. Congo belge 1: 32, 1948, sphalm.).

Leaves oval 10-20 cm long, bipinnate; petiole 4-5 cm long covered with small, verrucose emergences; rachis covered with very short (0,1-0,2 mm long) emergences; pinnules I perpendicular to primary axis (12-15 on each side), alternate, 2-5 cm long with short (0,2-0,3 mm long), oval emergences; pinnules II, 5-10 mm long, inserted at 5-10 mm from the primary axis; emergences narrowly oval to linear, c. 1 mm long becoming narrower and longer at apex of pinnules; spikes grouped on the rhizome (♀ 8-15 cm long, ♂ 10-15 cm long).

Waterfalls, cascades; river; 1020-1400 m alt.

INSUFFICIENTLY KNOWN TAXA:

Hydrostachys bismarckii Engl. – Icon.: Adansonia, Sér. 2, 13: 101, 1973.

Female flowers and inflorescence unknown. In fast-flowing river at fall on rocks; Zaire (2 gatherings known: type Teuscz 506 collected in 1880, and Huet 1671).

H. myriophylla Hauman s. str. – Icon.: Adansonia, l.c.: 99.

Male and female flowers and inflorescences unknown.

Waterfall; Zaire, Katanga.

Known only from the sterile type collected in 1911 (Bequaert 176).

SYNONYMS:

Hydrostachys cristulata Wedd. = **Hydrostachys polymorpha**

inaequalis Reimers = **H. angustisecta**

multipinnata Engl. = **H. polymorpha**

myriophylla Hauman var. *lukungensis* Hauman = **H. lukungensis**

natalensis Wedd. = **H. polymorpha**

SALICACEAE / *1* g./ *4* (or *1*) spp.

Recently expanded to include certain genera of *Flacourtiaceae* (cf. Kew Scientist 21: 4, 2002, and Chase & al., o.c.: 165-166).

CHASE, M. W. & al.(2002). When in doubt, put it in Flacourtiaceae: a molecular phylogenetic analysis based on platid rbcL DNA sequences. *Kew Bull.* 57: 141-181.

HAWTHORNE, W. & C. JONGKIND (2006). *Woody plants of western African forests:* 154-157. Kew Publishing, Royal Botanic Gardens, Kew.

JORDAAN, M. (2005). FSA contributions 18: Salicaceae s. str. *Bothalia* 35: 7-20.

WILKINSON, H. P. (2007). Leaf teeth in certain Salicaceae and 'Flacourtiaceae'. *Bot. J. Linn. Soc.* 155: 241-256.

SALIX / *4* (or *1*)

A genus of c. 450 species most of which in the cold temperate Northern Hemisphere.

The taxa listed below have been put in synonymy under *S. mucronata* subsp. *mucronata* by Immelman (Bothalia 17: 171-177, 1987). The species present in Egypt is also treated in this way by L. Boulos, Fl. Egypt 1:13, 1999. We here keep a more conservative species concept, among others due to the geographical distribution pattern. We agree with Wilmot-Dear's remark that a "detailed study, including the mapping of variation, of this species complex *[Salix mucronata* Thunb., syn. *S. capensis* Thunb.] throughout its range of distribution is necessary to understand the relationship between the taxa" [in Fl. Zambes. 9/6: 124, 1991].

STEYN, E. M. A. & al. (2004). Functional and taxonomic significance of seed structure in Salix mucronata (Salicaceae). *Bothalia* 34: 53-59.

STEYN, E. M. A. & al. (2005). Ovule-to-seed development in Dovyalis caffra (Salicaceae: Flacourtieae) with notes on the taxonomic significance of the extranucellar embryosac. *Bothalia* 35: 101-108.

Salix chevalieri Seemen; Raynal, Adansonia, Sér. 2, 7: 348, 1967.

syn.: *S. sudanica* A. Chev., nom.; *S. mucronata* Thunb. subsp. *mucronata.*

Shrub growing as a very dense clump-forming rounded bush or shrub, 1-9 m tall; branchlets slender, dirty brown, the younger thin, pale grey with a fine whitish pubescence, almost villous; trunk as thick as the thigh.

Riversides; sand banks; after the leaf fall (May-June) the plant is submerged by the swelling water during several weeks (1-3 months ?).

S. coluteoides Mirbel – Icon.: Mém. Mus. Hist. Nat. Paris 14: pl. 20, 1827; N. J. Andersson, Monogr. Salicum (Kongl. Svenska Vetenskaps-Akad. Handl. 6/1: pl. 1 fig. 10, 1867 (sub nom. *S. senegalensis).*

syn.: *S. senegalensis* Mertens ex Andersson; *S. mucronata* Thunb. subsp. *mucronata*

Shrub growing in clumps forming very dense bushes 1,5-5 m tall; stem to ? 30 cm Ø; branches numerous, slender, very ramose, spreading at an angle of 45°-60°, reddish-brown to olive-hued, glabrous (the young ones slightly pilose at apex).

Riversides; same ecology as the preceding species.

S. ledermannii Seemen; Hepper, Kew Bull. 15: 63, 1961.

syn.: *S. nigerica* Skan; *S. mucronata* Thunb. subsp. *mucronata; S. kamerunensis* Seemen; *S. adamauensis* Seemen

Shrub, or tree (sometimes lacking trunk), c. 3-13 m tall, with numerous erect terete rebranched branches, the younger ones silky-hairy, the older reddish-brown, glabrous.

Sandy edge of river; in stream amongst rocks and sandbanks; stream bank on undulating plateau; streams in small deeply eroded beds crossing plateau with *Cyathea* sp., *Osmunda regalis, Mussaenda arcuata, Syzygium* sp., *Sium repandum;* lakesides; mountain forest; 1070-2200 m alt.

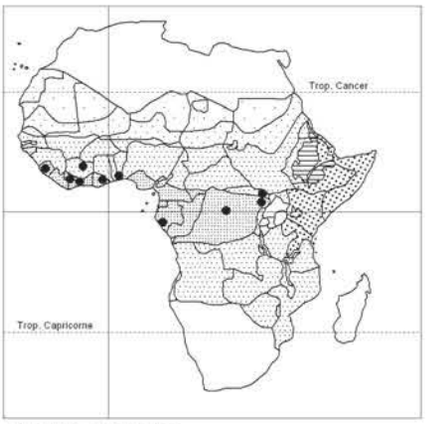
[**S. pedicellata** Desf.]

Shrub 2-4 m tall with subglabrous to densely grey-tomentose young branchlets, glabrescent; leaves ± oblong, 5-9 × 1,5-3 cm, greyish tomentose or glabrous and glaucous below; catkins erect.

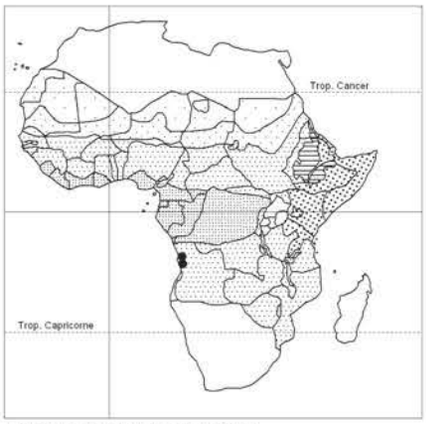
Wet hillsides, along streams and irrigation ditches; 1000-1900 m alt.

Recorded from E. Ethiopia (HA), only female specimens (fide Fl. Eth. 3: 260-261, 1989). Probably introduced recently. – Not mapped.

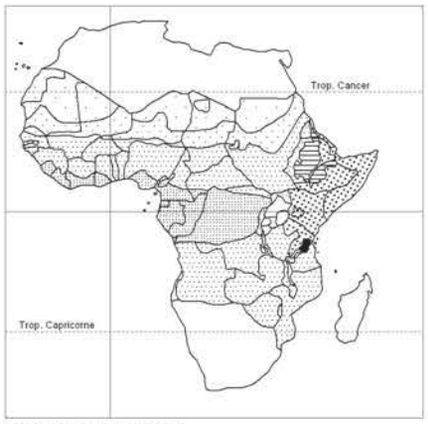
Mediterranean Region; Canary Islands [subsp. **canariensis** (Chr. Sm. ex Link) Maire & Weill.].



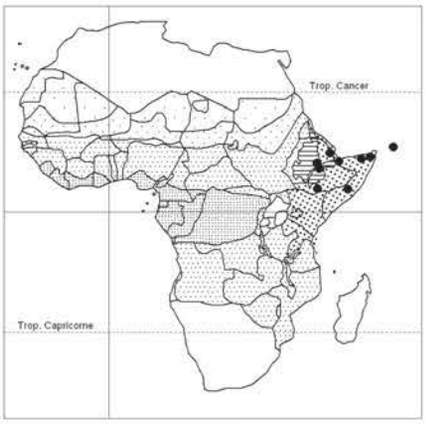
Buxus acutata



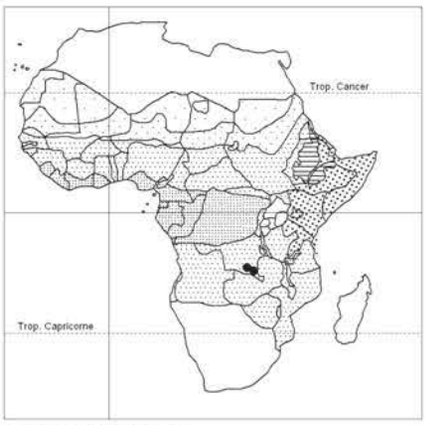
Buxus benguellensis



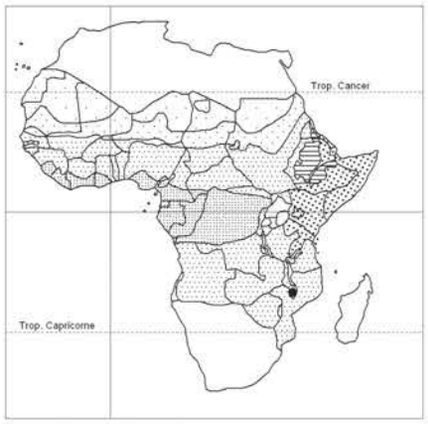
Buxus cordata



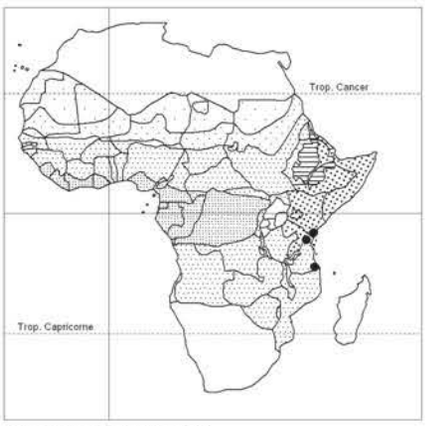
Buxus hildebrandtii



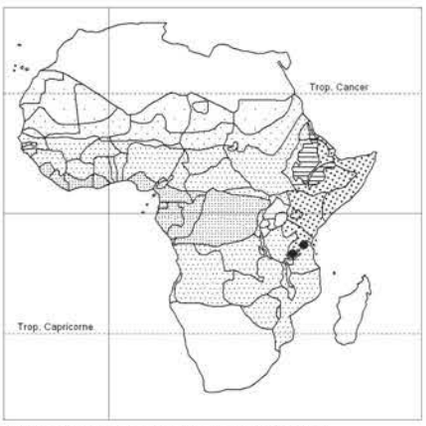
Buxus lisowskii



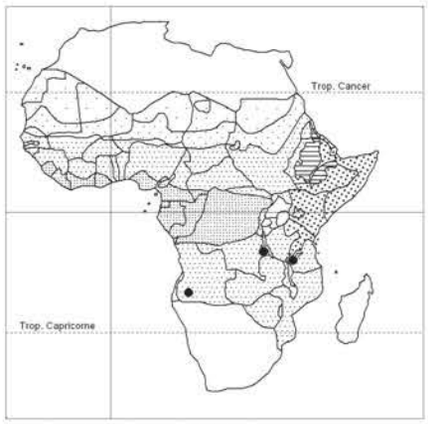
Buxus nyasica



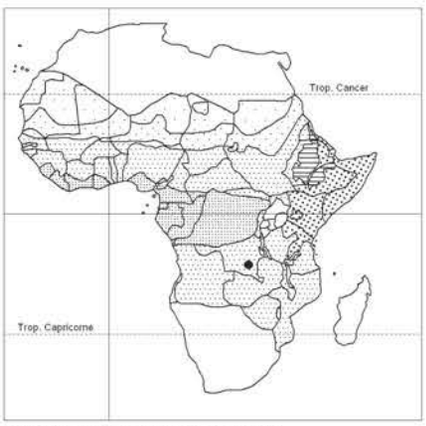
Buxus obtusifolia



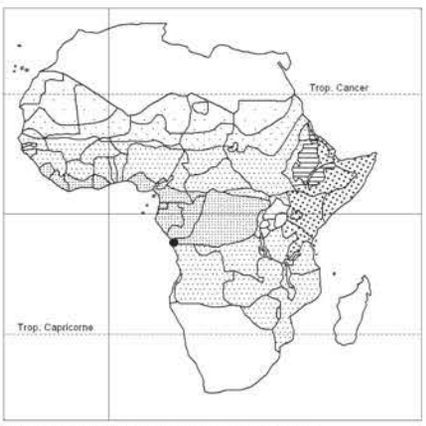
Hydrostachys angustisecta



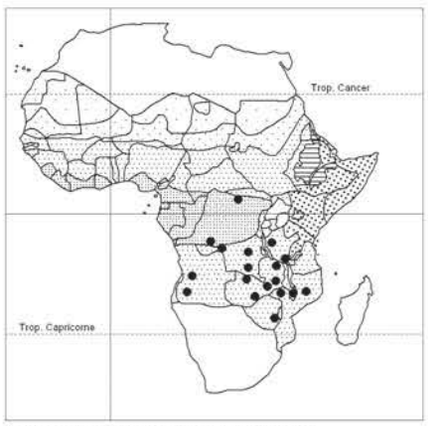
Hydrostachys insignis



Hydrostachys lufirensis



Hydrostachys lukungensis



Hydrostachys polymorpha

S. subserrata Willd., incl. var. *cyathipoda* (Andersson ex A. Rich.) Cufod.; Bothalia 17: 171-177, 1987; S. Afric. J. Bot. 68: 255, 2002; Bothalia 35: 7-20, 92, 2005; Beaux, Le cabinet de curiosités de Thoutmosis III, in Orientalia Lovaniensia Analecta 36, 1990 [X + 349 pp.; vide p. 161-162]. – Icon.: N. J. Andersson, o.c.: pl. 1 fig. 9 (sub nom. *S. safsaf);* Léonard & Geerinck, Fl. Congo, Rwanda…; Salicaceae: 3, 1967; Fl. Ethiop. 3: 259, 1989; Fl. Zambes. 9/6: 123, 1991; Beentje, Kenya trees, shrubs & lianas: 315, 1994; Boulos, Fl. Egypt 1: 15, 1999; Curtis & Mannheimer, Tree atlas Namibia: 48, 2005; Burrows & Willis, Pl. Nyika Plateau: 258, 2005 (sub nom. *S. mucronata* subsp. *mucronata).*

syn.: *S. mucronata* Thunb. subsp. *subserrata* (Willd.) R. H. Archer & Jordaan; *S. mucronata* Thunb. subsp. *mucronata* (sensu Immelman 1987); *S. safsaf* Forssk. ex Trautv., incl. var. *nilotica* Andersson and fa. *abyssinica* Andersson; *S. safsaf baelledi* Forssk., nom. nud.; *S. hutchinsii* Skan; *S. octandra* Sieb. ex A. Rich.; *S. huillensis* Seemen; *S. woodii* Seemen; *S. ramiflora* Seemen; *S. nigritina* Seemen; *S. wilmsii* Seemen; *S. woodii* Seemen var. *wilmsii* (Seemen) Skan; *S. crateradenia* Seemen; *S. axillaris* Andersson ex A. Rich.; *S. cyathipoda* A. Rich.; *S. blumhardtiana* Schimp. ex Hochst., nom. nud. – Cf. below under *S. mucronata.*

Bush or tree 2-10-12-15-20 m tall, with dense to sparse ascending or drooping, slender or stout branches; crown dense to sparse, drooping; stem 30-60 cm Ø; bark dark grey or brown, becoming deeply vertically fissured with age, rough; branches terete, glabrous or with dense grey pubescence becoming glabrous, often shining and reddish to dark brown; often rather brittle; leaves variable, oblong-elliptic to ovate or lanceolate, 11-16 × 2-4 cm, olive green, generally glaucous below; catkins narrow, spreading, terminal on short lateral leafy shoots.

Near and on the banks of streams and rivers; sometimes even partially submerged; bushland; grassland; sunny alluvium on riversides; widely distributed in the northern and central provinces of the Sudan, especially along the Nile and its tributaries; in company with *Vernonia podocoma;* or with cf. *Eugenia guineensis* var. *huillensis, Nesaea passerinoides, Faurea saligna;* wooded places by streams in company with *Faurea saligna;* 600 (? and less)-2850 m alt.

Variable species; leaves on the flowering growth can be ± linear particularly in the SE range of distribution, described as *S. woodii;* in Zimbabwe "they intergrade with those plants with the typical *S. subserrata* leaf form"… it is therefore best " … to consider these two species as merely different extremes of *S. subserrata"* (Wilmot-Dear, Fl. Zambes. 9/6: 124, 1991). – Also variable in pubescence and size of stipules.

N Namibia, Botswana, S. Africa; Egypt; Arabia.

* * *

[**S. mucronata** Thunb.]

syn.: *S. capensis* Thunb.; *S. capensis* Thunb. var. *mucronata* (Thunb.) Andersson; *S. gariepina* Burch.; *S. capensis* Thunb. var. *gariepina* (Burch.) Andersson; *S. mucronata* Thunb. var. *caffra* Burtt Davy

If treated as a separate entity its distribution ranges over S. Africa, S Namibia, Botswana (maps in Bothalia 35: 14-15, 2005).

Immelman (1987) considered *S. subserrata* Willd. as conspecific with *S. mucronata,* and divided the latter s. lat. into 5 subspecies, viz. subsp. *mucronata* (incl. *S. subserrata),* subsp. *hirsuta* (Thunb.) Immelman (Cape area), subsp. *capensis* (Thunb.) Immelman (N Cape), subsp. *woodii* (Seemen) Immelman (NE S. Africa), and subsp. *wilmsii* (Seemen) Immelman (Transvaal), respectively.

Jordaan (2002) proposed the placement of subsp. *wilmsii* in synonymy under subsp. *woodii,* thus reducing the number of subspecies to 4 entities, in order to arrive at a "more practical classification". It seems that all " taxa in southern Africa are geographically correlated to their own river groupes and drainage lines and are therefore separated on the basis of geographical distribution as well as leaf shape."

* * *

TAXA OF UNCERTAIN STATUS:

S. murielii Skan

syn.: *S. safsaf* Forssk. var. *hirta* Andersson

Shrub to 4 m tall; branchlets terete, densely grey tomentose, later glabrous and brown.

Riverine shrub often submerged at flood time in the Blue Nile; from Khartoum to Berber; Sometimes common.

Not mapped.

S. schweinfurthii Skan

Shrub; young branches at first densely grey-tomentose, finally brown and glabrous.

Riverine? – Not mapped.

In the Sudan these two species require further collecting and investigation (fide Wickens, 1976).

* * *

Salix babylonica L. is cultivated or naturalized in certain parts of tropical Africa, introduced from Europe. – Not mapped.

Also species of **Populus** can be found: See Enum. 2: 127, 1992.

MYRICACEAE / *1* g. / *7* spp.

FERGUSON, D. K. (1998). The contribution of micromorphology to the taxonomy and fossil record of the Myricaceae. *Taxon* 47: 333-335.

KILLICK, D. J. B. & al. (1998). New combinations in African Myricaceae. *Kew Bull.* 53: 993-995.

MORELLA / *7*

syn.: *Myrica* L. (vide Taxon 48: 367-368, 1999).

Morella chimanimaniana Verdc. & Polhill – Icon.: Fl. Zambes. 9/3: 260, 2006.

syn.: *Myrica* sp. aff. *brevifolia* E. Mey. ex C. DC. (Kirkia 1: 54, 1961).

Suffrutex 30-45 cm tall, dioecious or monoecious; stems several, sparingly branched at first, from a narrow rhizomatous root-stock, short branches proliferating with development of catkins; branchlets, when very young angular, with wispy spreading hairs over a cover of short hairs and glands; leaves subsessile *and* cordate at base.

Grassland, sometimes in rocky places, extending to upper edge of *Brachystegia-Erica* woodland; 1500-2150 m alt.

Probably related to *Morella humilis* (Cham. & Schltdl.) Killick occurring only along the coast of S. Africa (fide Fl. Zambes. l. c.)

M. kandtiana (Engl.) Verdc. & Polhill – Icon.: Bot. Jahrb. Syst. 45: 279, 1910.

bas.: *Myrica kandtiana* Engl.

syn.: *M. humilis* s. lat. F. White, Opera Bot. 121: 177, 1993, non Cham. & Schltdl.; *M. salicifolia* s. lat. Beentje, Kenya Trees, shrubs & lianas: 316, 1994, p.p., non A. Rich.

Much-branched almost invariably monoecious shrub or tree, 1,2-6 m tall; branchlets subglabrous (apart from the glands) to crisped pubescent or densely pilose.

Swamps including *Syzygium* swamp forest edges, generally associated with *Papyrus;* once only recorded from open grassland; peat-bog; forest gallery; 800-2000 m alt.

M. microbracteata (Weim.) Verdc. & Polhill

bas.: *Myrica microbracteata* Weim.

syn.: *M. serrata* sensu F. White, o.c.: 181, non Lam.

Shrub, monoecious, 0,3-2 m tall; branches and branchlets erect-spreading, at first minutely ash-grey pilose, becoming glabrescent, slightly lenticellate, finally ribbed when dry.

Rocky places, montane grassland, along streams; 1200-2530 m alt.

Near *M. serrata.*

M. pilulifera (Rendle) Killick, incl. var. *puberula* Rendle – Icon.: Bot. Jahrb. Syst. 45: 279, 1910; Bothalia 10: 12, 1969.

bas.: *Myrica pilulifera* Rendle

syn.: *M. rogersii* Burtt Davy; *M. humilis* sensu F. White, o.c.: 177 p.p., non Cham. & Schldtl.

Shrub 3-4 m tall or tree 10-12-30 m; trunk to 30 cm in girth; bark dark grey-brown to almost black, thin and rather smooth; shoots of previous years woody, often prominently lenticellate, glabrous or minutely tomentose, strongly marked with ridges decurrent from the prominent leaf-scars; young branchlets farinose, leafy towards the tips; dioecious.

Among rocks; along streams; grassy slopes; secondary growth; fringing forests; montane forest (edges), woodland and grassland in damp places, extending down along rivers; 720-2070 m alt. – Fire resistant.

S. Africa, Swaziland.

M. pilulifera and *M. salicifolia* meet in Malawi (see Fl. Zambes. 9/3: 262, 2006).

M. salicifolia (Hochst. ex A. Rich.) Verdc. & Polhill – Icon.: Fl. Eth. 3: 260, 1989; Fl. Trop. E. Afr., Myricaceae: 7, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 1:127, 2001; Puff & Sileshi Nemomissa, Pl. Simen: 103, 2005; Fischer & Killmanm, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 293, 2008 (subsp. **mildbraedii**).

bas.: *Myrica salicifolia* Hochst. ex A. Rich.

syn.: *M. humilis* s. lat. F. White, Opera Bot. 121: 177, 1993; A. G. Miller in Fl. Arabian Pen. 1: 81, fig. 11 A, 1996, non Cham. & Schltdl.

Habit varying from a much-branched shrub 0,3-2 m tall to a forest tree 15 m, almost invariably dioecious; branchlets subglabrous (apart from the glands) to densely hairy.

Rain-forest; bamboo forest; evergreen bushland; secondary thicket; wooded grassland; extending up to the ericaceous zone of moor; *Juniperus-Faurea* formation; also at edges, upper or lower limits, riparian or in glades of bamboo thicket; derived scrub forest; grassland; area of exposed lava fringing ravines and rocky grassland; *Agauria-Xymalos* formation; mist forest; secondary and relict stands; *Brachystegia* woodland; *Harungana* scrub woodland; rocky outcrops; very stony places in ericaceous zone with *Protea, Erica, Stoebe; Loudetia* grassland with scattered trees, mainly *Protea gaguedi;* 800-3700 m alt. – Important pioneer forest species in grassland, Zomba Plateau (Fl. Zambes.).

Bioko/Fernando Poo; Yemen, Saudi Arabia.

Very variable. Comprises 4 subspp.:

- subsp. **salicifolia** [syn.: *Myrica arborea* Hutch.; *Macaranga dawei* Prain *(Euphorbiaceae)];* see under the species above;
- subsp. **kilimandscharica** (Engl.) Verdc. & Polhill
  - var. **kilimandscharica** [bas.: *Myrica kilimandscharica* Engl..; syn.: *M. salicifolia* A. Rich. var.? sensu Oliver, Trans. Linn. Soc. Bot., Ser. 2, 2: 349, 1887; *M. usambarensis* Engl.; *M. kilimandscharica* Engl. var. *macrophylla* Engl.; *M. humilis* sens. lat. F. White in Op. Bot. 121: 177, 1993 p.p., non Cham. & Schltdl.];
  - var. **goetzei** (Engl.) Verdc. & Polhill [bas: *M. goetzei* Engl.];
- subsp. **meyeri-johannis** (Engl.) Verdc. & Polhill [bas.: *M. meyeri-johannis* Engl.; syn.: *M. oligadenia* Peter; *M. hanangensis* Bullock, nom. nud.; *M. humilis* sens. lat. F. White, l.c. ; *M. salicifolia* A. Rich. var. *sabalpina* sensu Beentje, Kenya trees, shrubs & lianas: 366, 1994, non Engl.];
- subsp. **mildbraedii** (Engl.) Verdc. & Polhill [bas.: *Myrica mildbraedii* Engl.; syn.: *M. salicifolia* A. Rich. var. *subalpina* Engl.; *M. humbertii* Staner & Lebrun; *M. kilimandscharica* sensu Boutique, Fl. Congo belge 1: 37, 1948 quoad specim cit., non Engl.; *L. meyeri-johannis* sensu Boutique, o.c. 137, 1948, non Engl.].

M. serrata (Lam.) Killick – Icon.: Opera Bot. 121: 183, 1993; Fl. Zambes. 9/3: 257, 2006; V. Roodt, Shell field guide 1, Trees & shrubs Okavango Delta: 84, 1998.

bas.: *Myrica serrata* Lam.

syn.: *M. conifera* sensu Boutique, Fl. Congo belge 1: 36, 1948, non Burm. f. ; see also Fl. Zambes.

Much branched shrub or tree 1-9 m tall, dioecious or less commonly monoecious; bark grey, fairly smooth to rough; branchlets subglabrous (apart from the glands) to tomentellous or occasionally densely pilose.

Swampy places along rivers; thickets in marshy grassland often with *Salix, Ficalhoa, Parinari, Syzygium, Maesa, Agauria, Dodonaea, Embelia, Elaeodendron,* etc.; sometimes a dominant; 0-2530 m alt.

S. Africa, Namibia, Caprivi Strip, Botswana.

MORELLA

M. spathulata (Mirb.) Verdc. & Polhill – Icon.: Fl. Madagascar 52 (Salicaceae!): 3, 1952.

bas.: *Myrica spathulata* Mirb.

Shrub or tree to 12 m tall, dioecious; shoots nodular; lenticels scattered but distinct; very young shoots with very dense ferruginous and yellow scales and a few white hairs; some black stiff hairs on older shoots; leaves oblanceolate to narrowly oblong-elliptic, narrowly obovate or obovate-*spathulate,* 2,5-9 × 1-2,3 cm, ± rounded or sometimes emarginate at apex, attenuate-decurrent at base.

Rain-forest with *Quassia, Antiaris;* or with *Erythrophleum,* with *Costus, Aframomum, Olyra* and *Erica* patches; grassland on peaty soil; 10-50 m alt.

Madagascar (E coast).

* * *

Note: We have followed the classification proposed by Polhill & Verdcourt in Fl. Trop. E. Afr., Myricaceae (2000). F. White had reduced the 26 species of *Myrica* formerly recognized from Africa to 6, but his delimitation of the species was different, and not followed by the former authors. So those who wish to follow F. White's classification have to call *Morella kandtiana* and *M. salicifolia* in the above account *Morella humilis* (Cham. & Schltdl.) Killick, bas.: *Myrica humilis* Cham. & Schltdl. (fide Verdcourt in Fl. Trop. E. Afr., Myricaceae: 11, 2000).

(MYRICA)

Myrica gale L., a palaearctic species which now has to be called *Gale belgica* Dumort., was recorded from S Malawi (Mt. Mulanje) by Hutchinson in Fl. Trop. Afr. 6/2: 308, 1917. Its presence there has never been proved (confusion of herbarium material?). – Cf. Fl. Zambes. 9/3: 264, 2006.

SYNONYMS:

Myrica aethiopica L., nom. superfl. = (**Myrica cerifera** L.) **Morella cerifera** (L.) Small (America; cultivated in Tanzania)

arborea Hutch. = **Morella salicifolia** subsp. **salicifolia**

conifera Burm. f. = (**Myrica cerifera** L.) **Morella cerifera** (L.) Small (America)

conifera sensu Boutique = **Morella serrata**

goetzei Engl. = **Morella salicifolia** subsp. **kilimandscharica** var. **goetzei**

hanangensis Bullock = **Morella salicifolia** subsp. **meyeri-johannis**

holtzii Engl. & Brehmer = **Spirostachys africana** Sond. *(Euphorbiaceae)*

humbertii Staner & Lebrun = **Morella salicifolia** subsp. **mildbraedii**

humilis s. lat. F. White, non Cham. & Schltdl. = **Morella kandtiana**, **M. salicifolia, M. pilulifera** subsp. **kilimandscharica** and subsp. **meyeri-johannis**

kandtiana Engl. = **Morella**

kilimandscharica Engl., incl. var. *macrophylla* Engl. = **Morella salicifolia** subsp. **kilimandscharica** var. **kilimandscharica**

(MORELLA) MYRICA

kilimandscharica sensu Boutique = **Morella salicifolia** subsp. **mildbraedii**

mexicana Willd = (**Myrica cerifera** L.) **Morella cerifera** (L.) Small (America)

meyeri-johannis Engl. = **Morella salicifolia** subsp.

meyeri-johannis sensu Boutique = **Morella salicifolia** subsp. **kilimandscharica**

microbracteata Weim. = **Morella**

mildbraedii Engl. = **Morella salicifolia** subsp.

oligadenia Peter = **Morella salicifolia** subsp. **meyeri-johannis**

pilulifera Rendle, incl. var. *puberula* Rendle = **Morella pilulifera**

rogersii Burtt Davy = **Morella pilulifera**

salicifolia Hochst. ex A. Rich. = **Morella salicifolia** subsp. **salicifolia**

var. *subalpina* Engl. = **Morella salicifolia** subsp. **mildbraedii**

var. *subalpina* sensu Beentje = **Morella salicifolia** subsp. **meyeri-johannis**

var.? sensu Oliv. = **Morella salicifolia** subsp. **kilimandscharica** var. **kilimandscharica**

salicifolia s. lat. Beentje p.p. = **Morella kandtiana**

serrata Lam. = **Morella**

serrata sensu F. White 1993 = **Morella microbracteata**

sp. aff. *brevifolia* E. Mey. ex C. DC. in Kirkia 1: 54, 1961 = **Morella chimanimaniana**

spathulata Mirb. = **Morella**

usambarensis Engl. = **Morella salicifolia** subsp. **kilimandscharica** var. **kilimandscharica**

ULMACEAE / *4* g. / *11* spp.

incl. *Celtidaceae* Link

HAUMAN, L. (1942). Note sur les Ulmacées du Congo belge. *Bull. Jard. Bot. Etat, Brux.* 16: 407-412.

SONG, B.-H. & al. (2001). Further evidence for paraphyly of the Celtidaceae from the chloroplast gene matK. *Pl. Syst. Evol.* 228: 107-115.

WILMOT-DEAR, C. M. (1999). FSA contributions 13: Ulmaceae. *Bothalia* 29: 239-247.

CELTIS / *8*

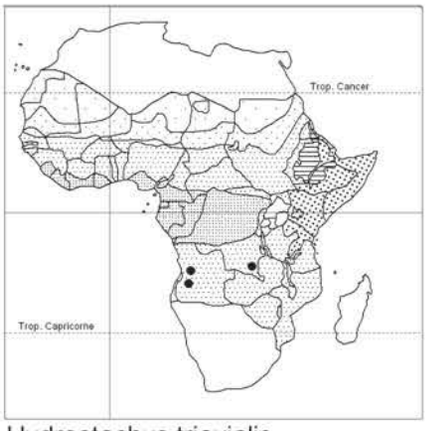
In recent works treated in *Celtidaceae* or *Cannabaceae.*

LISOWSKI, S. (2009). Flore (Angiospermes) de la République de Guinée 1 (texte). *Scripta Bot. Belg.* 41 [p. 359-360].

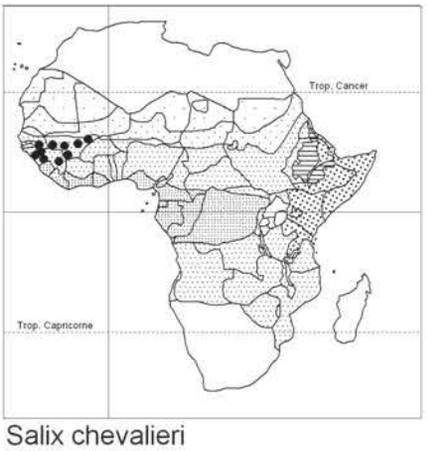
SATTARIAN, A. & L., J. G. VAN DER MAESEN (2006). Endocarp morphology of African Celtis (Celtidaceae/Ulmaceae). *Blumea* 51: 389-397 [with a key to African and some other species].

SATTARIAN, A. & al. (2006). Pollen morphology of African (Celtidaceae). *Feddes Repert.* 117: 34-40.

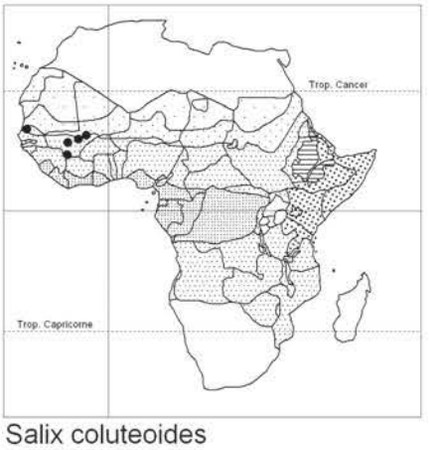
SATTARIAN, A. & al. (2007). Systematic of African Celtis (Celtidaceae). *In:* ACHOUNDONG, G., ed., *XVIIIth AETFAT Congress 26 February-2 March 2007, Yaoundé, Cameroon, Abstracts:* 47. L'Herbier National du Cameroun, Yaoundé.



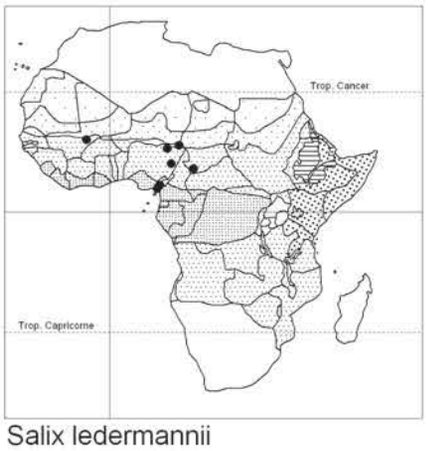
Hydrostachys triaxialis



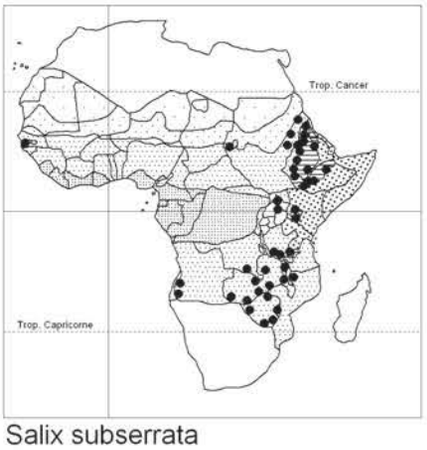
Salix chevalieri



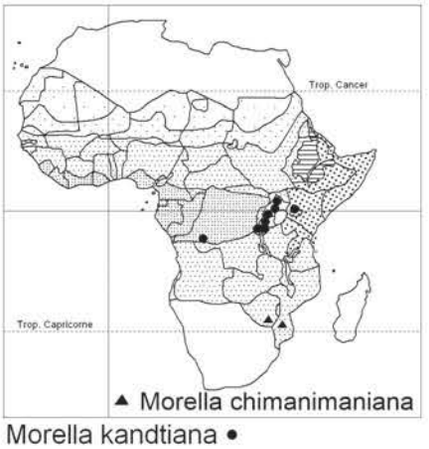
Salix coluteoides



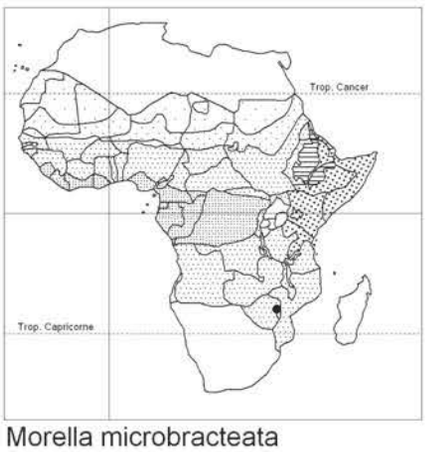
Salix ledermannii



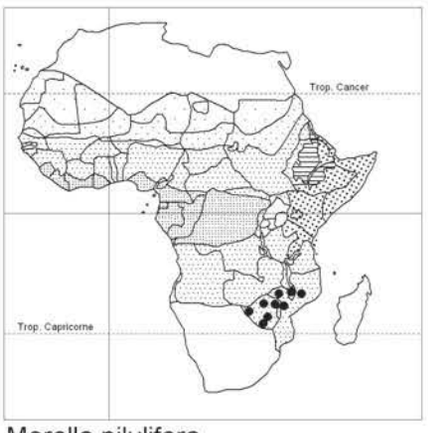
Salix subserrata



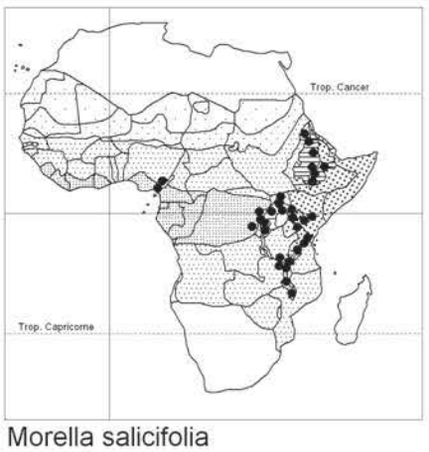
Morella kandtiana •



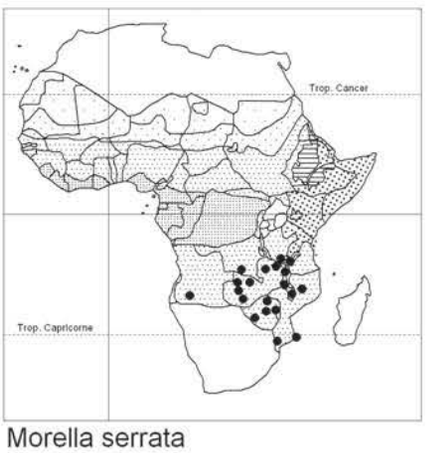
Morella microbracteata



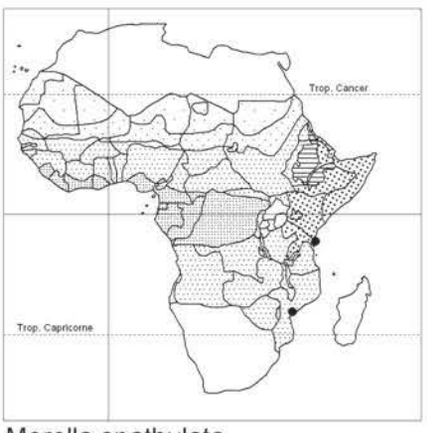
Morella pilulifera



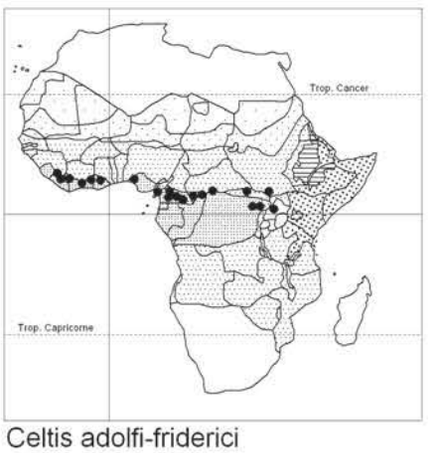
Morella salicifolia



Morella serrata



Morella spathulata



Celtis adolfi-friderici

CELTIS

Celtis adolfi-friderici Engl. – Icon.: Aubréville, Fl. forest. Côte Ivoire, ed. 2, 1: 41, 1959; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 258, 261, 2006.

syn.: *C. fragifera* A. Chev.; *C. ituriensis* De Wild.

Semi-deciduous monoecious tree 10-20-55 m, with 3-5 buttresses; buttresses thick, 10-30 cm, rounded at the edge, inclined at 45°, 2-5 m tall, 2-5 m broad at base; bole straight or slightly sinuous, 30-80-100 cm Ø above buttresses, 2,4 m in girth; branches ± erect, sinuous and tortuous; crown round or slightly flattened, sometimes well developed; branchlets drooping; twigs pubescent or almost glabrous.

Rain-forest, half-deciduous; sometimes in clearings of evergreen forests; 600-900-1200 m alt.

C. africana Burm. f. – Icon.: Beentje, Kenya trees, shrubs & lianas: 317, 1994; V. Thomas & R. Grant, Sappi tree spotting, highveld, rev. ed.: 167-169, 2002; Chaudhary, Fl. Kingd. Saudi Arabia ill. 1:102, 2001; Burrows & Willis, Pl. Nyika Plateau: 278, 2005; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 263, 2006. – White-Stinkwood.

syn.: *C. kraussiana* Bernh., incl. var. *flavescens* Engl. ex Almagia and var. *stolzii* Peter; *C. burmannii* Planch.; *C. eriantha* E. Mey. ex Planch.; *C. opegrapha* Planch.; *C. vesiculosa* Hochst. ex Planch.; *C. henriquesii* Engl.; *C. holtzii* Engl.; *C. rhamnifolia* C. Presl, nom. nud. and sensu Sillans, Mém. Soc. Bot. France 1952: 102.

Deciduous shrub or tree 2-40 m tall, branching close to the ground; mostly monoecious; bole slightly fluted; bark smooth, whitish-grey often pinkish-blotched, with slight horizontal annular ridges (ring marked); young stems and branches tawny pubescent-tomentose; branches curved, spreading, with branchlets pendulous, ± zigzag.

Closed forest on edge of very dry savanna forest; dry evergreen- and riverine forest; rain-forest with *Albizia, Macaranga, Croton, Ocotea; Podocarpus latifolius-Syzygium* forest; riverine forest; edge of forest gallery; rocky places; sclerophyllous deciduous mountain forest; termite mounds; secondary thickets on river banks; 0-2300(? 2500) m alt.

S. Africa, Botswana; Arabia, Hadramout (Kilian & al. in Willdenowia 32: 262, 2002).

C. gomphophylla Baker – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 261, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 309, 2008.

syn.: *Trema integrifolia* Baill.; *Celtis ugandensis* Rendle; *C. dioica* S. Moore

Much branched shrub or tree 3-60 m tall; stem to 40-80 cm Ø; sometimes with buttresses 1 m high, 2 m and more wide; bole irregular, knotty; bark smooth, light grey; young stems and branches lengthily sinuous, whitish-pubescent; ramifications slender forming a rather bulky crown; lenticels prominent on the older branchlets. Monoecious or dioecious.

Half-deciduous and mixed evergreen rain-forests; bushy regrowth, young forests; riverine forest; sometimes uncommon; *Albizia* forest; 229-2000 m alt.

São Tomé; S. Africa.

Used in traditional medicine (Dimo, T. & al., Effets hypotensifs… des feuilles de *Celtis durandii* Engler…, in Ethnopharmacol. 36: 84-90, 2005).

CELTIS

C. mildbraedii Engl. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 467, 2006 (Wageningen Univ. Pap.); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 263, 2006.

syn.: *C. usambarensis* Engl.; *C. compressa* A. Chev.; *C. bequaertii* De Wild.; *C. dubia* De Wild.; *C. soyauxii* Engl. p.p. (cf. *C. zenkeri).*

Evergreen or deciduous monoecious shrub or tree 3-55 m tall, trunk to 0,3-1 m Ø, with 4-5 sharp buttresses 5 m high and more, 2 m wide, 10 cm thick; bole slender, clean, slightly sinuous, cylindrical; bark smooth, pale, flaking in 5-10 cm large patches; young twigs tawny pubescent; crown round, small, with horizontal thin branches and twigs; foliage scanty, often erect in tufts at apex of twigs.

Half-deciduous rain-forest with *Sterculiaceae* and *Ulmaceae;* rain-forest with *Scorodophloeus zenkeri;* uncommon or abundant; 200-1600 m alt.

São Tomé; S. Africa; Madagascar.

C. philippensis Blanco – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 258, 263, 2006.

syn.: *C. mauritiana* Planch.; *C. pacifica* Planch.; *C. strychnoides* Planch.; *C. djungiel* Planch.; *C. hasseltii* Planch.; *C. latifolia* Planch.; *C. laurifolia* Planch.; *C. insularis* Rendle; *C. mindanaensis* Elmer; *C. collinsae* Craib; *C. prantlii* Priemer ex Engl. var. *parvifolia*! Hauman; *C. crenata* A. Chev., nom.

Shrub or tree, much branched, 3-30 m tall; trunk to 0,8-1 m Ø; buttresses 4-5, inclined at 45° or more, sharp, to 1 m high, simple or 2-3-ramose, 5-10 cm thick; bole cylindric, irregular, rather short (6 m under branches, 50 cm Ø for a tree 20 m tall); several tortuous erect branches form a rather spreading crown; bark smooth, grey; young twigs puberulous or subglabrous. Monoecious.

Half-deciduous rain-forests; regrowth; savanna near forest; often locally abundant; forest with *Cynometra;* gallery forest; swamp forest; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* 229-1320 m alt.

Bioko/Fernando Poo; Madagascar, Mascarene Islands; tropical Asia to Australia.

Note: J.-P. Essou & A. Sattarian in Fl. analyt. Bénin: 467, 2006 (eds. A. Akoegninou & al., Wageningen) treat *C. prantlii* Priemer ex Engl. (syn.: *C. philippensis* auct. non Blanco, e.g. in Fl. Madag., Ulmaceae and Fl. Camer. 8; *C. brownii* Rendle) as a separate entity. – Treated by Burkill in Useful pl. W. trop. Afr., ed. 2, 5: 221, 2000, as *C. wightii* Planch.

(C. prantlii Priemer ex Engl. – See note above).

C. tessmannii Rendle

Tree to 40 m; bole 0,7-1 m Ø, slightly winged at base to 50 cm height or with 4-6 buttresses to 3-5 m high; bole straight or slightly humped-sinuous; bark smooth, finely longitudinally fissured, grey; crown round, with rather ramose branches; foliage scanty; young twigs shortly pubescent, with dense, ferrugineous, persistent hairs.

Rain-forests; sometimes in half-deciduous forests; sometimes rather abundant.

CELTIS

C. toka (Forssk.) Hepper & J. R. I. Wood; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 260, 2006. – Icon.: J.-P. Essou & A. Sattarian in Fl. analyt. Bénin: 468, 2006.

syn.: *Mertensia integrifolia* (Lam.) Roem. & Schult. [*Mertensia* Kunth in Humboldt, Bonpland & Kunth, Nov. gen. & sp. 2: 30, 1817, non *Mertensia* Roth 1797 (Boraginaceae), nec *Mertensia* Willd. = *Dicranopteris, Gleicheniaceae,* ferns]; *Momisia lamarckii* Blume

Tree to 18-25 m and more; bole to 1,2-1,5 m Ø, clear to 6 m height, but commonly low-branched, slightly irregular; crown elongate, spreading or globular, often extending downwards; buttresses tall, narrow; bark light grey, smooth or scaly; young twigs pubescent. Monoecious.

Dry riverine forest; savannas; deciduous woodland; pool sides; dry sandy ground; rocky hills; along temporary streams with *Tamarindus indica, Lannea barteri, Crateva adansonii, Diospyros mespiliformis, Antiaris africana,* etc.; banks of dried up river with *Ficus thonningii, F. vallis-choudae, F. sycomorus, Trichilia emetica, Acacia albida, A. polyacantha* subsp. *campylacantha, Albizia zygia, A. amara, Cadaba farinosa, Capparis* sp.; open forest on sand; sandy-clayey hollows; gregarious in high rainfall savanna; 375-1220 m alt.

Arabia.

(C. wightii Planch. – See note under **C. philippensis).**

C. zenkeri Engl. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 258, 261, 2006.

syn.: *C. soyauxii* Engl. s. str.; *C. stuhlmannii* Engl.; *C. affinis* De Wild.

Shrub or tree, much branched, 10- near 50 m tall; buttresses 4-6, ± inequal, 2 m wide, several m high, 10 cm thick; bole slender, 50-120 cm Ø, very irregular, sinuous; young trees with smooth, grey-violaceous bark such as also found in the upper part of the bole in adult specimens; bark flaking in ± square scales, 5-10 cm wide; rhytidome yellowish-green or orange-green; crown rather flattened, or ovoid, 10-15 m Ø; young branchlets fulvous-orange pubescent. Resembling *Schrebera arborea (Oleaceae)* occurring in the same localities. Monoecious.

Half-deciduous rain-forests, specially on the edges; forest regrowth with *Terminalia glaucescens,* in savanna with *Celtis philippensis;* in clearings with *C. adolfi-friderici;* often abundant; forest gallery; dense forest with *Khaya grandifoliola, Schrebera;* rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* 200-1200 m alt.

Not recorded from Gabon.

SYNONYMS:

Celtis affinis De Wild. = **Celtis zenkeri**

bequaertii De Wild. = **C. mildbraedii**

brieyi De Wild. = **C. tessmannii**

brownii Rendle = **C. philippensis**

collinsae Craib = **C. philippensis**

compressa A. Chev. = **C. mildbraedii**

crenata A. Chev., nom. = **C. philippensis**

dioica S. Moore = **C. gomphophylla**

djungiel Planch. = **C. philippensis**

dubia De Wild. = **C. mildbraedii**

CELTIS

durandii Engl., incl. var. *ugandensis* (Rendle) Rendle = **C. gomphophylla**

eriantha E. Mey. ex Planch. = **C. africana**

fragifera A. Chev. = **C. adolfi-friderici**

franksiae N. E. Br. = **C. mildbraedii**

guineensis Schumach. & Thonn., incl. var. *parvifolia* Schumach. & Thonn. = **Trema orientalis**

hasseltii Planch. = **Celtis philippensis**

henriquesii Engl. = **C. africana**

holtzii Engl. = **C. africana**

ilicifolia Engl. = **Populus ilicifolia** *(Salicaceae,* introd.)

insularis Rendle = **Celtis philippensis**

integrifolia Lam. = **C. toka**

ituriensis De Wild. = **C. adolfi-friderici**

kraussiana Bernh., incl. var. *flavescens* Engl. ex Almagia and var. *stolzii* Peter = **C. africana**

lactea Sim = **Morus lactea** *(Moraceae)*

latifolia Planch. = **Celtis philippensis**

laurifolia Planch. = **C. philippensis**

mauritiana Planch. = **C. philippensis**

mindanaensis Elmer = **C. philippensis**

opegrapha Planch. = **C. africana**

orientalis L. = **Trema**

pacifica Planch. = **Celtis philippensis**

polyclada Peter = **Ziziphus pubescens** *(Rhamnaceae)*

prantlii Priemer ex Engl., incl. var. *parvifolia* Hauman = **Celtis philippensis**

prantlii sensu auct. mult. = **C. philippensis**

rendleana G. Taylor = **C. philippensis**

rhamnifolia C. Presl., nom. and sensu Sillans = **C. africana**

scottelioides A. Chev. = **C. philippensis**

soyauxii Engl. p.p. = **C. mildbraedii**, **C. zenkeri**

strychnoides Planch. = **C. philippensis**

stuhlmannii Engl. = **C. zenkeri**

ugandensis Rendle = **C. gomphophylla**

usambarensis Engl. = **C. mildbraedii**

vesiculosa Hochst. ex Planch. = **C. africana**

wightii Planch. = **C. philippensis**

CHAETACHME / *1*

In recent works placed in *Celtidaceae.*

Chaetachme aristata E. Mey. ex Planch., incl. var. *kamerunensis* Engl., var. *longifolia* Engl. ex De Wild. & Th. Durand, and var. *nitida* (Planch. & Harv.) Engl. – Icon.: Beentje, Kenya trees, shrubs & lianas: 319, 1994; V. Thomas & R. Grant, Sappi tree spotting, KwaZulu-Natal…: 291, 2004; J.-P. Essou & A. Sattarian in Akoegninou & al., Fl. analyt. Bénin: 469, 2006.

syn.: *C. meyeri* Harv.; *C. nitida* Planch. & Harv.; *C. serrata* Engl.; *C. madagascariensis* Baker; *C. microcarpa* Rendle, incl. var. *crenata* Hutch. & Dalziel; *Bosqueia spinosa* Engl.

CHAETACHME ARISTATA

Shrub tending to scramble or spreading much-branched tree 1-15 m tall, thorny, with several trunks 10-30 cm Ø; branches ± drooping, zigzag; bark smooth, grey, later fibrous and longitudinally striate; twigs shortly erect-pubescent to glabrous, often short and becoming spinose at apex; axillary spines single or paired 4-30 mm long.

Edge of rain-forest; savanna with *Terminalia glaucescens;* riverine forest; rain-forest with *Albizia, Macaranga, Croton, Ocotea;* riverine scrub; regrowth in savanna; secondary forests; coastal savanna; wooded rocky places; clearings; evergreen forest; 800-2100 m alt.

Annobon; S. Africa, Botswana; Madagascar.

HOLOPTELEA / *1*

Holoptelea grandis (Hutch.) Mildbr. – Icon.: Essou in Akoegninou & al., Fl. analyt. Bénin: 979, 2006.

bas.: *Hymenocardia grandis* Hutch. *(Euphorbiaceae).*

syn.: *Holoptelea integrifolia* Rendle 1916, non (Roxb.) Planch. 1848.

Deciduous tree 12-50 m; bole slender, slightly irregular-sinuous, somewhat crooked, sometimes grooved, to 80-100 cm Ø, 3 m in girth; with 5-6 buttresses 1,5-2 m high, 1-1,5 m wide; bark rough, ± orange; crown irregularly rounded, spreading, with ± drooping branches; twigs corky with many raised lenticels, glabrous to puberulous; samara with papery wings. Resembling *Hymenocardia ulmoides (Euphorbiaceae).*

Rain-forest; drier deciduous and riverine forests; *Terminalia*-forest; sometimes very common; patches of rain-forest in savanna zone; clearings near rain-forest; often on riversides; 229-1200 m alt.

TREMA / *1*

In recent works placed in *Celtidaceae.*

ST-LAURENT, L. & al. (2000). A numerical taxonomic study of Trema (Ulmaceae) from Togo, West Africa. *Syst. Bot.* 25: 399-413.

YESSON, C. & al. (2004). Phylogenetic framework for Trema (Celtidaceae). *Plant Syst. Evol.* 248: 85-109.

Polhill suggested that only one widespread but variable species is present south of the Sahara and that this is identical to the Asiatic *T. orientalis.* But Tchoumé thought that 3 species are present in Ivory Coast; St-Laurent & al. concluded that there are 3 species present in Togo *(T. orientalis, T. africana, T. nitens).* We here use the one-species concept.

Trema orientalis (L.) Blume – Icon.: Fl. Congo belge 1: 49, 1948; Beentje, Kenya trees, shrubs & lianas: 319, 1994; V. Thomas & R. Grant, Sappi tree spotting, KwaZulu-Natal…: 288-289, 2004; Essou & Sattarian in Fl. analyt. Bénin: 469, 2006; Chaudhary, Fl. Kingdom Saudi Arabia ill. 1: 102, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 258, 263, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 302, 2007.

bas.: *Celtis orientalis* L.

syn.: *C. guineensis* Schumach. & Thonn., incl. var. *parvifolia* Schumach. & Thonn.; *Trema guineensis* (Schumach. & Thonn.) Ficalho, incl. var. *asperata* (Solms) Cufod., var. *hochstetteri* (Planch.) Engl., var. *parvifolia* (Schumach. & Thonn.) Engl., var. *paucinervia* Hauman (= forme A sensu Letouzey in Fl. Cameroun), and fa. *strigosa* (Planch.) Büttn.; *Sponia (Urticaceae) bracteolata* Hochst.; *S. glomerata* Hochst.; *S. africana* Planch.; *S. strigosa* Planch.; *S. orientalis* (L.) Planch., incl. var. *asperata* Solms; *S. nitens* Planch.; *S. affinis* Planch.; *S. guineensis* (Schumach. & Thonn.) Planch.; *S. hochstetteri* Buch. ex Planch.; *Trema africana* (Planch.) Blume; *T. affinis* (Planch.) Blume; *T. bracteolata* (Hochst.) Blume; *T. glomerata* (Hochst.) Blume; *T. nitens* (Planch.) Blume; *T. strigosa* (Planch.) Blume; *T. hochstetteri* (Buch. ex Planch.) Engl.; *T. parvifolia* sensu Tchoumé in Compt.-Rend. VIe Colloque international sur l'Ecologie, la Biologie… Mauvaises Herbes 1, COLUMA-EWRS, Montpellier, 1980, nom. invalid.

Shrub or tree 4-8-26 m tall; bole cylindrical, slender, 20-40 cm Ø; bark smooth with brownish, regular, bilabiate lenticels far between; branches and twigs sub-horizontal, slightly ascending, brittle; crown conical or bowl-shaped; young twigs straight, ± reddish, ± pubescent, with *distichous* asymmetrical leaves.

Mainly in regrowth vegetation in the forest regions, where it is often abundant and grows rapidly. Also in moist situations in the savannas; valleys with forest; dry dense forests; rain-forest with *Albizia, Macaranga, Croton* and *Ocotea,* forest edges; woodland; riverine vegetation; dry sandy river beds; dry evergreen bushland; common in disturbed sites, roadsides, etc.; 0-2100 m alt. – Plant short-lived (10 years); soil improver.

Very variable.

Throughout Africa south of the Sahara but absent from west and south Cape; Madagascar, Mascarene Islands; Arabia; Tropical Asia.

SYNONYM (cf. also above under *Trema orientalis):*

Trema integrifolia Baill. = **Celtis gomphophylla**

BARBEYACEAE / *1* g./ *1* sp.

BARBEYA / *1*

Monotypic.

BOUMAN, F. & F. D. BOESEWINKEL (1997). Ovules and seeds of Barbeya with additional arguments for an urticalean affinity of the Barbeyaceae. *Acta Bot. Neerl.* 46: 255-261.

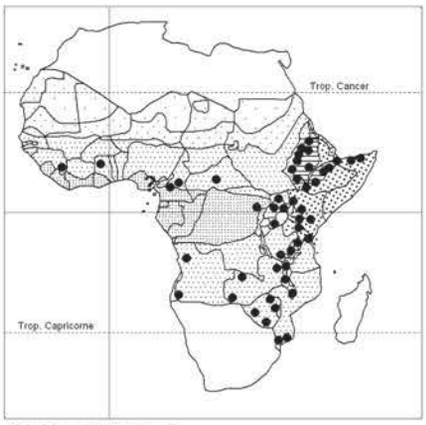
THULIN, M. & al. (1998). Family relationships of the enigmatic rosid genera Barbeya and Dirachma from the Horn of Africa region. *Pl. Syst. Evol.* 213: 103-119.

Barbeya oleoides Schweinf., incl. subsp. *arussorum* Chiov. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 1:99, 2001.

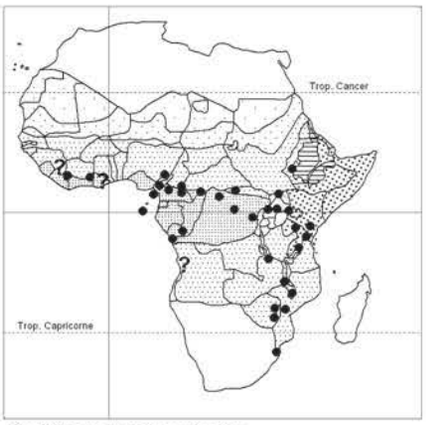
Shrub or tree 3-12 m tall, much-branched and rather resembling an *Olea;* branches ± drooping or arched; bark of young trees pale and smooth, on older trees grey, ± rough; young shoots with dense white pubescence.

Acacia- and *Commiphora* bushland; evergreen scrub with *Euclea schimperi;* grassland with scattered *Terminalia, Acacia,* etc.; open *Juniperus* forest with *Pistacia;* granite, sandstone, limestone, red clay; sometimes locally dominant in badly eroded bushland; 1200-2200 m alt.

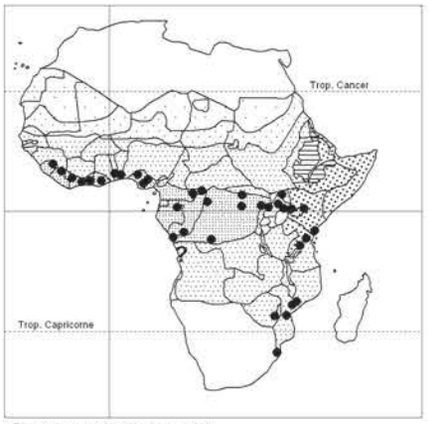
Saudi Arabia, Yemen.



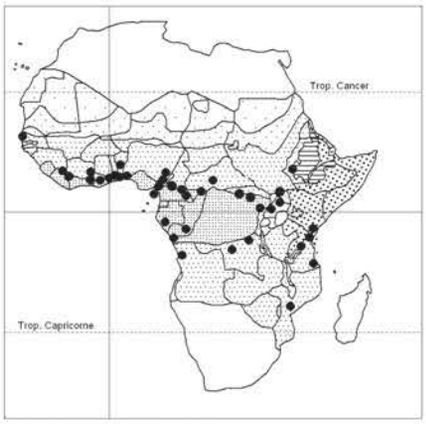
Celtis africana



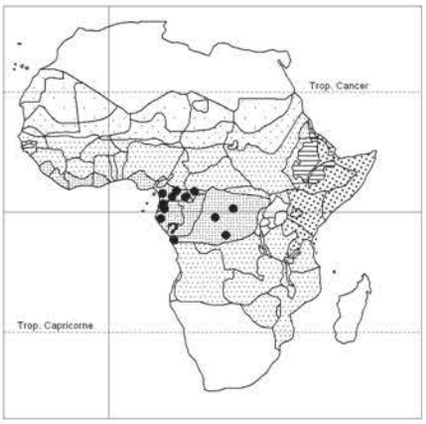
Celtis gomphophylla



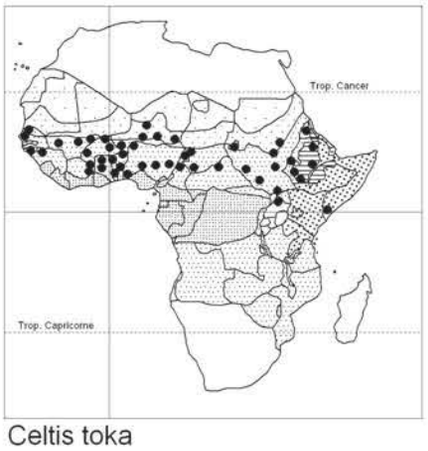
Celtis mildbraedii



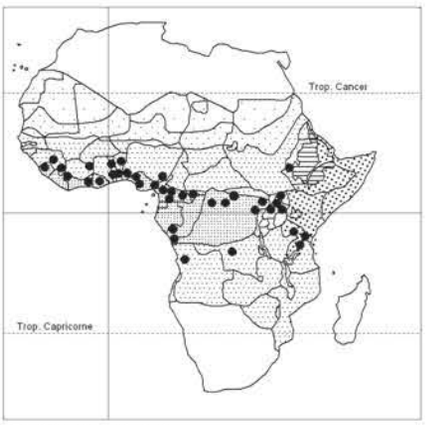
Celtis philippensis



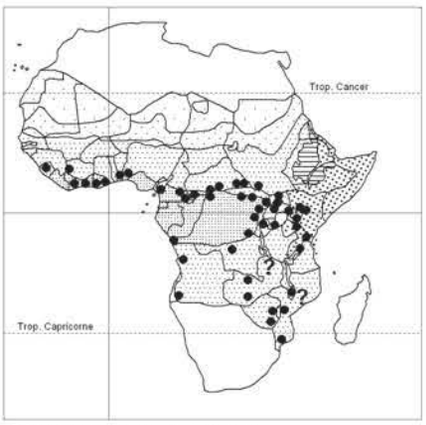
Celtis tessmannii



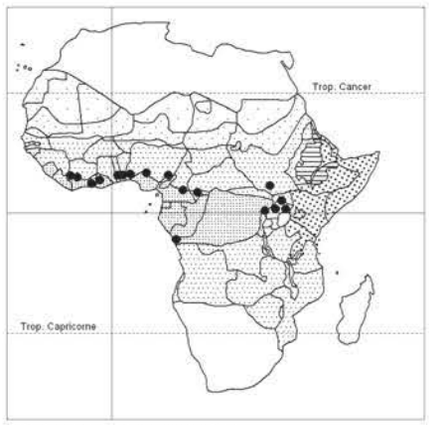
Celtis toka



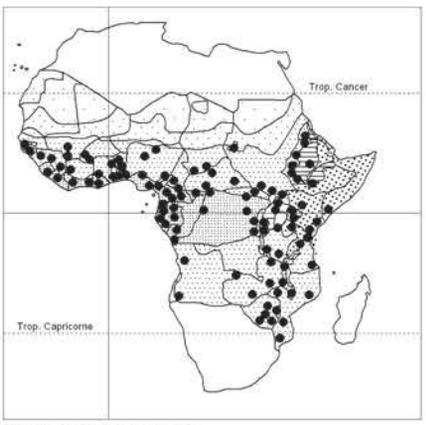
Celtis zenkeri



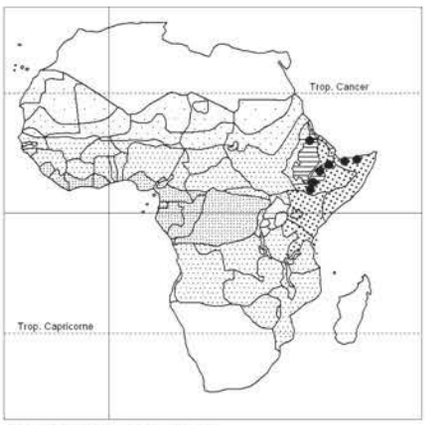
Chaetachme aristata



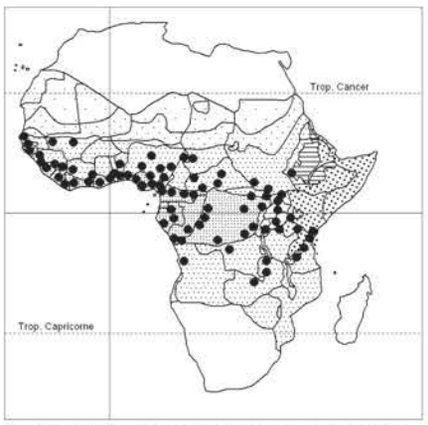
Holoptelea grandis



Trema orientalis



Barbeya oleoides



Antiaris toxicaria subsp. welwitchii

MORACEAE / *15* g./ *162* spp.

incl. *Cecropiaceae* C. C. Berg
(= Cecropia, Musanga, Myrianthus).

In one variety the female inflorescence is unknown *(Myrianthus serratus* var. *letestui),* and no infrutescence (or no ripe one) recorded for 5 species (all in *Dorstenia;* >3%). No ecology is reported for one species *(Myrianthus).* Four species *(Dorstenia, Ficus oresbia)* are known only from the type (= >2%), and one species *(Dorstenia subdentata)* from only 2 collections.

BERG, C. C. (1998). Phytogeography, systematics and diversification of African Moraceae compared with those of other tropical areas. *In:* HUXLEY, C. R. & al., eds., *Chorology, Taxonomy and Ecology of the Floras of Africa and Madagascar:* 131-148. Royal Botanic Gardens, Kew.

BERG, C. C. (2005). Moraceae diversity in a global perspective. *Biol. Skr.* 55: 423-440.

BURROWS, J. & S. BURROWS (2003). *Figs of Southern [and] & South-Central Africa.* Undaus Press, Hatfield, S. Africa. VIII + 379 pp.

HADIAH, J. T & al. (2008). See under *Urticaceae* p. 77.

ANTIARIS / *1*

Antiaris toxicaria Leschen. subsp. **welwitschii** (Engl.) C. C. Berg – Icon.: Fl. Trop. E. Afr., Morac.: 14, 1989; Beentje, Kenya trees, shrubs & lianas: 320, 1994; Burrows & Burrows, o.c.: 290-293; Berg in Fl. analyt. Bénin: 807, 2006 (Wageningen); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 266, 269, 273, 2006; Voorhoeve, Liber. high for. trees: 283, 1979.

Deciduous tree 15-30-60 m, dioecious; bole 0,8 m Ø and more, straight, cylindrical, with or without buttresses transversally striate, sharp, 2-8 m high, 1 m broad; bark rather smooth, pale-grey; slash brown to yellowish white, exuding a copious creamy latex; branchlets ± pendulous, longitudinally wrinkled, densely rusty-tomentose; stipules small, caducous; leaves distichous, often suborbicular, giving the fairly small dome-like crown a characteristic pattern, rough-hairy. – Commonly confused with a *Milicia,* but inflorescences small, rounded (not spike-like).

Drier types of forest; patches of forest in savanna, near rocks; frequent in forest bordering savanna; sometimes in humid forests (var. **welwitschii**); clearings in evergreen rain-forest; perhaps more common in the moist semi-deciduous forest; seems to be most common in old secondary formations; prefers well-drained sites; sometimes sporadic; riverine or semi-swamp-forest; wooded grassland; 10-1900 m alt.

Yemen; Madagascar [subsp. **humbertii** (Léandri) C. C. Berg, subsp. **madagascariensis** (H. Perrier) C. C. Berg]. Asia, Indonesia, Philippines, Tonga, Australia (subsp. **toxicaria**).

Comprises 3 vars.: – var. **welwitschii** [bas.: *A. welwitschii* Engl.; syn.: *A. toxicaria* var. *welwitschii* (Engl.) Corner; *A. toxicaria* Leschen. subsp. *africana* (Engl.) C. C. Berg var. *welwitschii* (Engl.) C. C. Berg];

– var. **africana** Scott-Elliot ex A. Chev. [bas.: *A. africana* Engl.; *A. toxicaria* subsp. *africana* (Engl.) C. C. Berg var. *africana],* in drier habitats than var. **welwitschii**, but intermediate forms occur where the varieties overlap ;

– var. **usambarensis** (Engl.) C. C. Berg [bas.: & syn.: Enum. 2: 130, 1992; *A. challa* sensu Engl. 1915, non (Schweinf.) Engl. s. str.], intermediate morphologically between the 2 others, occurs in E part of range.

Note: *A. challa* (Schweinf.) Engler is based on material from Yemen, but without fruits it is impossible to place it in a particular infraspecific entity.

BOSQUEIOPSIS / *1*

Bosqueiopsis gilletii De Wild. & Th. Durand – Icon.: De Wildeman, Pl. nov. herb. horti Then. 1: fig. 56, 1907; Burrows & Burrows, o.c.: 301-302.

syn.: *B. parvifolia* Engl.; *B. lujae* De Wild.; *B. carvalhoana* Engl.

Shrub, monoecious, to 6 m tall or tree 15-35 m; leafy branches slender, glabrous; leaves distichous, held stiffly in ± horizontal plane.

Very abundant in forest on sandy soil; deciduous coastal thickets; primary and old secondary forests; to 450 m alt.

DORSTENIA / *58*

syn.: *Craterogyne* Lanjouw; *Kosaria* Forssk.; *Ctenocladus* Engl.

A genus of 105 species in the world; in the Palaeotropis the majority of the species occur on the African continent.

The genus comprises many taxa showing variation patterns reminiscent of those found in apomictic or autogamous temperate species or species complexes. Their delimitation is there-fore not always satisfactory. In several species more or less distinct morphological entities are recognised as varieties (Hijman, Kew Bull. 45: 361, 1990).

In 5 species the infrutescence, the fruit or the endocarp body are unknown *(D. dionga, D. gypsophila, D. picta, D. subdentata, S. zambesiaca).* Tree species are known only from the type *(D. annua, D. vivipara, D. zambesiaca),* and *D. subdentata* is known from only 2 collections.

Epiphytic species are rare *(D. astyanactis, D. zanzibarica).* Few species grow at very high altitudes *(D. annua, D. soerensenii, D. afromontana).*

BERG, C. C. & M. E. E. HIJMAN (1999). The genus Dorstenia (Moraceae). *Ilicifolia* 2: 1-211.

Dorstenia africana (Baill.) C. C. Berg – Icon.: Recueil Trav. Bot. Néerl. 32: tab. 6, 1935; Berg & Hijman, o.c.: 124; Engler, Monogr. afrik. Pflanzenfam. 1, Moraceae: pl. 11A (sub nom. *Trymatococcus).*

Shrub 0,9-2,5-3 m tall, with spreading or arching branches; leafy twigs 0,5-3 mm thick, puberulous with very short patent hairs and long retrorse and usually appressed uncinate hairs; inflorescences mostly bright yellow; receptacle bracteate.

Rain-forest; sometimes in secondary forest; often along streams; locally frequant; 0-850 m alt.

D. afromontana R. E. Fries – Icon.: Norveg. J. Bot. 21: 105, 1974; Berg & Hijman, o.c.: 179.

Herb 10-50 cm tall, rhizomatous; stems erect, sometimes branched, 1-3 mm thick, with short dense hairs in 2 longitudinal lines; internodes 1,5-5,5 cm long; receptacle with 2 primary appendages.

Rain-forest; also in the bamboo zone; 2200-2600 m alt.

D. alta Engl. – Icon.: Berg & Hijman, o.c.: 130.

Shrub 1,5-2 m tall; stems branched; the lower part of the branches glabrous, to 5 mm thick, the leafy part 1-2,5 mm thick, puberulous with short white to brown curved hairs, intermixed with sparser to denser shorter whitish retrorse uncinate hairs; internodes 0,4-5 cm long; receptacle with 2 appendages and occasionally a third tooth-like appendage on the margin.

Primary- or secondary evergreen forests; riverine forest; often in limestone gorges; 0-1300 m alt.

D. angusticornis Engl. – Icon.: Berg & Hijman, o.c.: 129.

Shrub 0,5-1,5 m tall; stems branched; the lower part of the branches glabrous, the leafy part 1-3 mm thick, with dense short curved and retrorse uncinate hairs; internodes 2-4 cm long; receptacle with two arms passing into a linear appendage.

Primary- and old secondary forests.

D. annua Friis & Vollesen – Icon.: Berg & Hijman, o.c.: 191; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

Annual herb 10-20 cm tall; stem ascending to erect, unbranched or with arrested branches with minute leaves, succulent, 0,5-1 mm thick; stem slightly swollen at base and at nodes and to 3,5 mm thick, the upper part minutely puberulous, hairs mostly in longitudinal lines, internodes 0,5-1,5 cm long; leaves in spirals, crowded towards the apex of the stem; receptacle with 3-4 bract-arms and serrate margin.

Rain-forest with *Albizia, Macaranga, Croton, Ocotea,* on moist slope along trail, together with *Dorstenia brownii;* 1850 m alt. (one of the highest altitudes at which the genus has been recorded in Africa; with *D. soerensenii:* 1680-2200 m).

The only annual species in the genus; close to *D. goetzei* but lacking rhizomes.

D. astyanactis Aké Assi; Kew Bull. 58: 191, 2003; Berg & Hijman, o.c.: 202; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 270, 2006; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

Epiphytic herb with pendulous succulent unbranched grey subglabrous stems 0,5-2-3 m long, c. 1 cm Ø, ascending at apex; internodes 1-2,5 cm long; receptacle with only one appendage spatulate at apex; inflorescences appear on the naked stems soon after the leaf fall at the beginning of the dry season in November (without leaves to February). Very distinctive.

Evergreen submontane forest on tree trunks or branches 3-5 m from ground; with many other epiphytes *(Orchidaceae, Melastomataceae, Araceae, Piperaceae, Myristicaceae* e.g. *Pycnanthus angolensis,* ferns); 600-1100 m alt.

First collected in Ivory Coast (16.I.1965); discovered in Cameroon in 1998, 1999, 2000. Known from only 5 localities. On the verge of extinction.

Probably the most peculiar, and with *D. zanzibarica* certainly the only epiphytic *Dorstenia* in Africa.

Disjunction unusual but shared by a few other taxa, e.g. *Cussonia bancoensis (Araliaceae)* and *Neoschumannia kamerunensis (Asclepiadaceae)* (fide Kew Bull.: l.c.).

D. barnimiana Schweinf., incl. var. *angustior* Engl., var. *ophioglossoides* (Bureau) Engl. and var. *telekii* (Schweinf.) Engl., but excl. var. *tropaeolifolia* (Schweinf.) Rendle *(= D. tropaeolifolia).* – Icon.: Schweinfurth, Pl. quaed. nilot.: pl. 12, 1862; Engler, Monogr. afr. Pflanzenfam.1, Moraceae: pl. 9 D, 1898 *(D. palmata);* Fl. Ethiop. 3: 279, 1989; Kakteen & Succ. 53: 183, 187, 2002; Berg & Hijman, o.c.: 210; Eggli, o.c.; fig. 49f; Agnew & Agnew, Upl. Kenya wild fl.: pl. 53, 1994; Kaktusy 32/4: 103-104, 1996.

syn.: *Kosaria barnimiana* (Schweinf.) Schweinf.

Herb, subacaul, tuberous or rhizomatous; tuber subglobose to pear-shaped, 0,5-1,5 cm wide, 4 cm long, rhizome tuberous; stem to 1,5-2,5 cm long, ± 1 cm thick; leaves peltate; receptacle vertical, naviculate to almost ligulate with an apical appendage and 2-4 linear basal appendages; inflorescences appearing before leaves.

Wooded and open (often recently burnt or grazed) grassland; evergreen bushland; clearings in deciduous woodland or bushland on limestone; often on shallow soils overlying rock; 250-2450 m alt.

Young leaves are often shortly petiolate and lie flat on the ground (oligophyllous platyphyllous Dicotyledone sensu J. M. Lock in J. Timberlake & S. Kativu, eds, African plants: Biodiversity, …: 405-408, 1999).

Zaire?; possibly in Zambia. – Yemen (photo. in Cactus File 1/6: 12, 1992).

D. barteri Bureau – Icon.: Berg & Hijman, o.c.: 160; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 3 C, D, 1898 *(D. multiradiata),* pl. 5 A *(D. subtriangularis).*

Herb with creeping rhizome ± 5 mm thick; stem ascending, occasionally branched, woody towards the base, 2-5 mm thick, 20-90 cm tall, glabrous or sparsely to densely (yellowish to) white hirtellous, sometimes also with shorter uncinate hairs; receptacle discoid, subtriangular, multangular or suborbicular or irregularly stellate with 1-3-24 primary linear appendages, secondary appendages often several, tooth-like or linear.

Primary- and also secondary forests; in forest, along streams; herbaceous and shaded vegetation along streams; 0-2500 m alt.

Bioko/Fernando Poo (var. **barteri**).

Comprises 4 vars. (± distinct): – var. **barteri**; – var. **multiradiata** (Engl.) Hijman & C. C. Berg; – var. **paucinervis** Hijman & C. C. Berg; – var. **subtriangularis** (Engl.) Hijman & C. C. Berg.

D. benguellensis Welw., incl. var. *capillaris* Hauman – Icon.: Berg & Hijman, o.c.: 197; Burrows & Burrows, o.c.: 312-313; Eggli, Ill. handbook succ. pl.: Dicot.: fig. 50a, 2002; Burrows in Aloe 46: 7-9, 2009. – Vanilla Dorstenia.

syn.: Enum. 2: 130-131, 1992; *D. campanulata* Hauman; *D. sessilis* R. E. Fries ? var. *undulata* Engl.; *D. verdickii* De Wild. & Th. Durand, incl. var. *scaberrima* Hauman (cf. note below).

Herb 15-60 cm tall, with tubercles discoid to subglobose 1-4-(?12) cm Ø; steam seasonal, branched or not, at least with arrested branches with reduced leaves, 1,5-1,8 mm thick, minutely puberulous to hirtellous or hispidulous, ± scabrous; receptacle discoid to broadly turbinate, sometimes shallowly cup-shaped, suborbicular, with appendages in 2 rows, those of the inner (= marginal) row numerous, triangular to subulate or filiform, to 1-7 mm long, forming a fringed to dentate rim, triangular to ovate, subacute to obtuse, to 2 mm long, forming a (sub)crenate rim, or indistinct and the rim entire to faintly repand; appendages of the outer (= submarginal) row, usually ± 5-12 mm, less commonly more than 12, to 23, or less than 5, down to 2, or even 0, (broadly) ligulate to filiform or sometimes subspathulate or oblong 0,1-8 cm long, to 2,5 mm broad.

In a wide range of habitats. Woodland; wooded and open grassland; often local water catchments (near rivers) and dambos; often among rocks; very dry soils; miombo, mixed deciduous woodland; thickets; shallow and sandy soils; Kalahari sands; sometimes sparingly and sporadic; 1000 (? and less)-2450 m alt.

Extremely variable.

Distinguished from other tuberous species by the circular inflorescence receptacle with ± parallel-sided and more numerous appendages.

Note: Burrows (Aloe 46: 7-9, 2009) refers to his survey work on a proposed mining site W of Solwezi, NW Zambia. He there found a mixed population of 3 "morphologically distinct taxa of *Dorstenia* intermingled in a small area" (12 m^2, 12°13'58" S × 25°54'21" E). The plants grow on shallow soil over laterite

outcrops in mixed (wetter) miombo woodland. The least common taxon (however, the most widespread) was typical *D. benguellensis*, a polymorphic species with many synonyms, i. a. *D. campanulata* Hauman and *D. verdickii* De Wild. & T. Durand. The latter taxa seem to be distinctive in the field, although growing together. Thus Burrows suggests their reinstatement.

– **D. campanulata** Hauman

Scabrous herb c. 30 cm tall, with 8-10 distinctive short (5-7 mm long) recurved (= campanulate) receptacle appendages (photos. Aloe 46: 8, 2009), receptacle 6-9 mm Ø.

Reported from Zambia (Solwezi) and Zaire, S Haut-Katanga (Lubumbashi Valley, Elisabethville area).

– **D. verdickii** De Wild. & T. Durand

syn.: *D. achtenii* De Wild. var *laxiflora* Hauman

Shortly and densely pilose herb to 50 cm tall, with hirtellous leaves; receptacle (c. 1 cm Ø) appendages (6-)10, 8-20 mm long and rather narrow (photo. Aloe, l.c.), lined with marginal rows of setae.

Reported from Zambia (Solwezi) and Zaire, Haut-Katanga (Plateau des Biano, Lubumbashi, Lukafu, Keyberg).

– **D. benguellensis** typical in the Solwezi area has (sub-) glabrous leaves and 8-12 long slender receptacle (c. 1 cm Ø) appendages (7-20 mm long), narrowly clavate and slenderly terete towards the base.

D. bergiana Hijman – Icon.: Berg & Hijman, o.c.: 193; Eggli, o.c.

Herb to 35 cm tall; rhizomes tuberous, tuber subglobose, 2-2, 5 mm broad or irregularly shaped 1,5-3,5 cm broad, ± 1,5 cm high; stem erect, succulent, unbranched, 2-5 mm thick, sparsely puberulous with straight and uncinate hairs, with conspicuously swollen leaf scares; often also with arrested branches; receptacle discoid to slightly funnel-shaped, orbicular; appendages in 2 rows, those of the inner (= marginal) row linear and triangular, to 0,7 mm long, forming a crenate rim, those of the outer (= submarginal) row ± 12, 1-1,8 cm long.

Waterfalls; on and among rocks; ± 1000 m alt.

D. bicaudata Peter, incl. var. *quercifolia* Peter – Icon.: Peter, Fl. Deutsch-Ostafrika 2(1): tab. 7 (fig. 1), 1932 (Feddes Repert., Beih. 40/2, Lfg. 1); Berg & Hijman, o.c.:174.

Herb to 25 cm tall, rhizomatous; stems creeping or ascending, unbranched, 1-2 mm thick, puberulous with uncinate, curved and straight hairs.

Rain-forest; waterfalls; 800-900 m alt.

D. brownii Rendle – Icon.: Berg & Hijman, o.c.: 177; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 731, 2008.

Herb 15-50 cm tall, with horizontal subwoody rhizome 1,5 mm Ø; stems ascending, generally simple, densely puberulous with short hairs and to the apex with additional white long rigid hairs; young branches with a dense tomentum of dark hairs; receptacle funnel-shaped; appendages in 1 row, 12-18, triangular, 1-2,5 mm long.

Rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* also in rain-forest with *Albizia, Macaranga, Croton, Ocotea*, on moist slope along trail; forest with *Podocarpus latifolius, Olea capensis* subsp. *hochstetteri, Syzygium guineense* subsp. *afromontanum;* riverine forest; forest with *Aningeria altissima, Celtis* spp.; wet places, often among rocks; 900-2150 m alt.

D. buchananii Engl. – Icon.: Burrows & Burrows, o.c.: 314-315, 317; Berg & Hijman, o.c.: 198; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 8 B, 1898; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

Herb with discoid to subglobose tuber to 4,5 cm across, 0,5-2 cm high; stems seasonal, erect, ascending or creeping, to 50-90 cm long, 1-10 mm thick, puberulous, succulent, often branched (especially on creeping stems) or at least arrested branches transformed into subglobose tubers to 1 cm across; receptacle broadly turbinate and in outline elliptic or subnaviculate; appendages in 2 rows, the inner (marginal) semi-circular to 0,5-1 mm long, the outer (submarginal) terminal, band-shaped to filiform, 15-80 mm long.

Rocky outcrops; streamsides in *Brachystegia* woodland and riverine communities; in shade in evergreen gully forest; deciduous woodland; 200-1700 m alt.

Comprises 2 vars.

D. ciliata Engl. *(excl.* syn. *D. talbotii* Rendle = *D. lujae).* – Icon.: Berg & Hijman, o.c.: 154.

Herb with creeping rhizomes ± 6 mm thick; stems ascending, 30-100 cm tall, 2,5-6 mm thick, with uncinate, short, yellowish-white hairs, scattered but dense towards the apex intermixed with curved to uncinate hairs longer and stouter; receptacle discoid, suborbicular to multangular or sometimes subrhomboid; with very prominent ribs running into the longer appendages, intermixed with longer straight ones; appendages numerous, tooth-like to subulate to clavate filiform to subspathulate 0,1-3 cm long, 6-15 of them longer than the diameter of the receptacle and departing below the margin, these alternated by 2-5 much shorter and often inflexed ones, departing from the margin.

High- and riverine forests; to 1800 m alt.

D. convexa De Wild. – Icon.: Ann. Mus. Congo Belge, B, Bot., Sér. 5/3: tab. IV, 1909; Berg & Hijman, o.c.: 168.

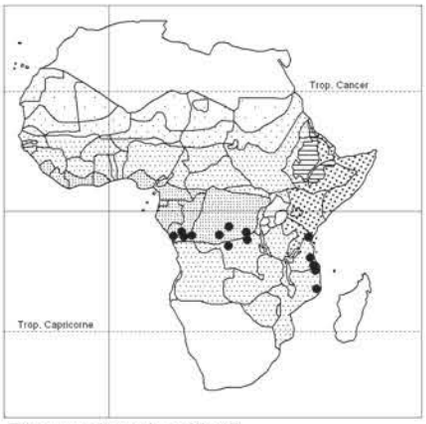
Herb to 30-100 cm tall, rhizomatous; stem ascending, ± woody towards the base, 1-6 mm thick, sparsely to densely minute puberulous with straight hairs; receptacle zygomorphous, discoid to slightly funnel-shaped; primary appendages terminal, 2, hardly distinct if the flowering face is suborbicular or angular, linear to spathulate, to 0,7 cm long, at the ± irregularly lobed apex; secondary appendages lateral, numerous, tongue-shaped to linear, to 5 mm long, varying in length 0,5-1 mm broad.

Primary-, swampy- and secondary forests; common; to ± 1700 m alt.

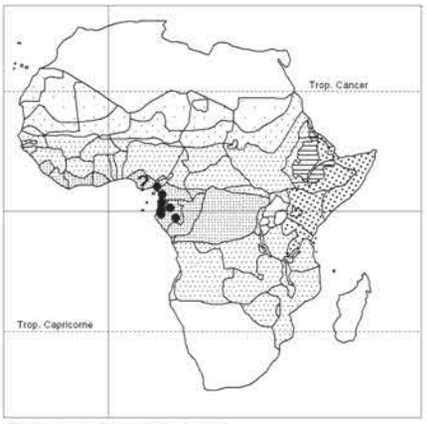
Comprises 2 vars. (intermediates exist).

D. cuspidata Hochst. ex A. Rich. – Icon.: Fl. Trop. E. Afr., Morac.: 39, 1989; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 5 C, 1898 *(D. caulescens);* Burrows & Burrows, o.c.: 310-311; C. C. Berg in Fl. analyt. Bénin: 808, 2006 (Wageningen). – All of var. **cuspidata**. – Berg & Hijman in Ilicifolia 2: 196-197, 1999; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

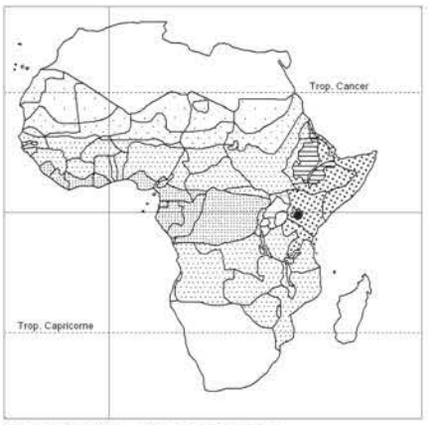
Herb 5-50 cm tall, tuberous or rhizomatous; tuber subglobose to discoid or pear-shaped to ± irregularly shaped, 1-7 cm broad, to ± 4 cm high; rhizome irregularly shaped, tuberous; stem annual, ± fleshy, erect to sometimes ascendant, mostly unbranched, 1-4 mm thick with short, stiff hairs; receptacle discoid to broadly turbinate, ± irregularly stellate to subquadrangular to triangular or to suborbicular or subnaviculate; appendages in 2 rows; those of the inner (= marginal) with numerous, to 1 mm long appendages, if triangular, then forming a dentate rim, if ovate



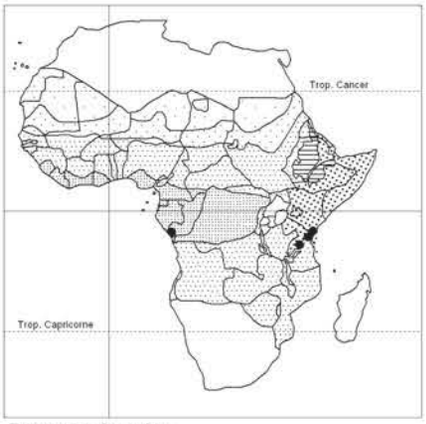
Bosqueiopsis gilletii



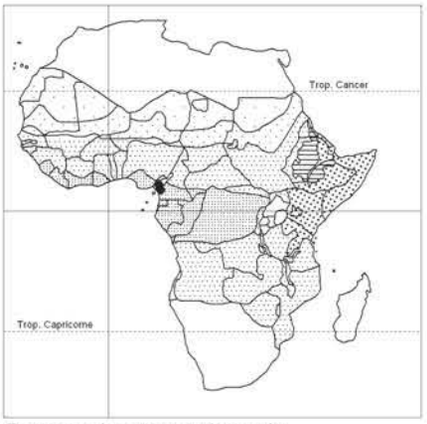
Dorstenia africana



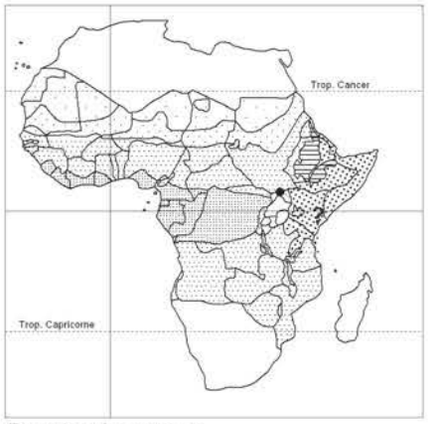
Dorstenia afromontana



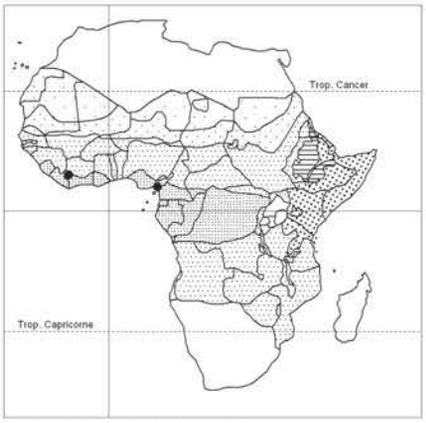
Dorstenia alta



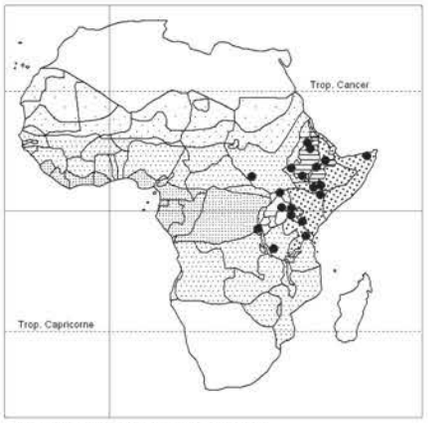
Dorstenia angusticornis



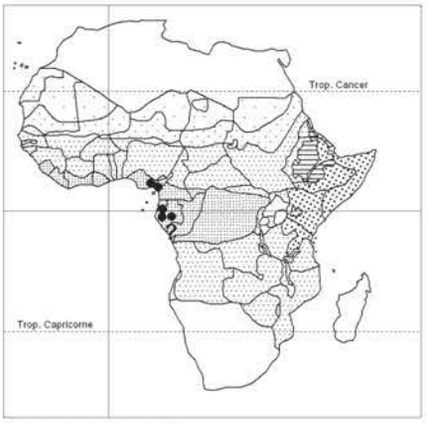
Dorstenia annua



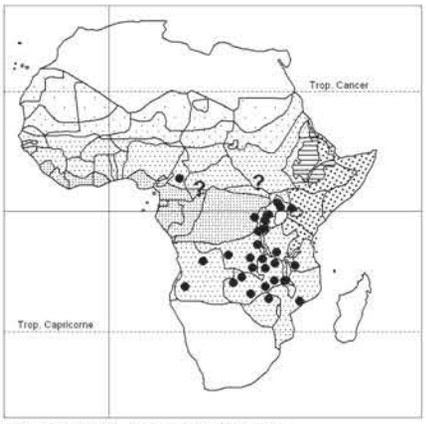
Dorstenia astyanactis



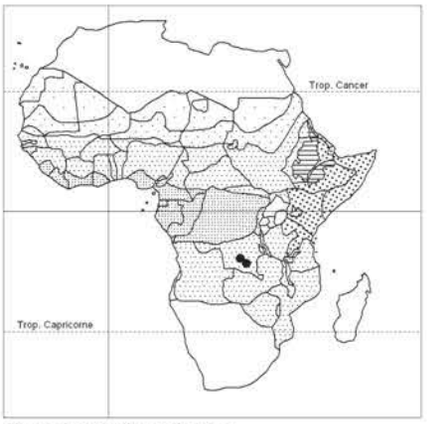
Dorstenia barnimiana



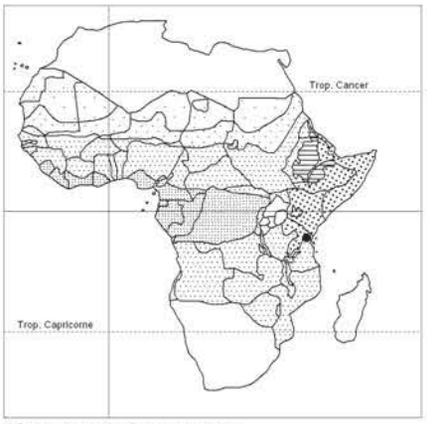
Dorstenia barteri



Dorstenia benguellensis



Dorstenia bergiana



Dorstenia bicaudata

and obtuse, then forming a distinctly crenate rim, or if semi-orbicular, then the rim faintly crenate, if obsolete, then a subentire rim, those of the outer (= submarginal) row in subnaviculate receptacles 2, in triangular receptacles 3, in sub-quadrangular to stellate receptacles mostly 4 or to 14, narrowly triangular to band-shaped or filiform, 0,2-8,5 cm long.

Deciduous woodland, *(Brachystegia-Julbernardia)* miombo; often among rocks or in damp shady places; ravine or disturbed forest gallery sides; bases of termite mounds, sandstone tables; coastal bushland, thickets; wooded grassland; along rivers, dambo margins; also as an epiphyte; near sea-level to 1800 m alt.

Polymorphic and divided into 4 vars., 3 of which in our area:

Madagascar: var **humblotiana** (Baill.) Léandri [bas.: *D. humblotiana* Baill.; syn.: *D. saxicola* Engl.; *D. debilis* Baill.; *D. cuspidata* var. *debilis* (Baill.) Léandri, var. *humbertii* Léandri, etc., vide Ilicifolia 2: 60, 1999].

- Var. **cuspidata** [syn.: *D. walleri* Hemsley, incl. var. *minor* Rendle; *D. caulescens* Schweinf. ex Engl. 1894, non L. 1753, nec Vellozo 1829; *D. unyikae* Engl. & Warb.; *D. gourmaensis* A. Chev., incl. var. *floribunda* A. Chev.; *D. quarrei* De Wild. & Staner; *D. tetractis* Peter], with rather large tuber (1-7 cm Ø), from W Africa through to E & SE Africa;
- var. **brinkmaniana** Hijman, with smaller tubers (1-3 cm Ø) and leaves with fewer lateral veins, from E part of range; also in Madagascar; also in Somalia?;
- var. **preussii** (Schweinf. ex Engl.) Hijman [bas.: *D. preussii* Schweinf. ex Engl.; syn.: *D. preussii* var. *latidentata* Engl.], smaller plants, often non-succulent, from a creeping rhizome (icon.: Berg & Hijman in Ilicifolia 2: 196, 1999), in W to C to NE parts of range.

In Zaire?

D. dinklagei Engler 1894 (cf. *D. turbinata).* – Icon.: Berg & Hijman in Ilicifolia 2: 164-165, 1999.

Herb with creeping rhizomes; stems creeping to ascending, or erect respectively, in tall plants woody towards the base and sometimes branched, 10-100 cm tall, 1-8 mm thick, with long, white hairs, scattered to dense intermixed with uncinate, shorter hairs; receptacle naviculate to almost funnel-shaped and laterally compressed; ribs running into the primary appendages; primary appendages terminal, 2, linear to filiform, 0,5-2,5 cm long, at the apex broadered or even lobed; secondary appendages lateral, at each side 3-18, often erect, triangular or linear, 0,5-5 mm long or none.

Wet or marshy places in forest; often along streams; semideciduous- or riverine forests; wooded grassland occasionally; 10-1800 m alt.

Comprises 5 vars. (See Enum. 2: 131, 1992 for synonyms). – *D. paucibracteata* De Wild.: the type specimen is intermediate between var. **brieyi** and var. **bequaertii** (fide Berg & Hijman o.c.: 55).

D. dionga Engl. – Icon.: Berg & Hijman, o.c.: 172, 1999.

Herb to 80 cm tall, rhizomatous; stems erect, ? succulent, unbranched, 3-5 mm thick, puberulous; receptacle funnel-shaped, laterally compressed, 0,6-1 cm long; appendages in 1 row, primary ones 2, terminal, obovate, 1-5 mm long, 1 mm wide, concave; secondary ones 10-16, lateral, obovate to ovate or sub-triangular, 0,3-1 mm long, concave; infrutescence unknown.

Moist and shady places in forest; 1200-1800 m alt.

Near *D. ulugurensis.*

D. djettii Guillaumet; Adansonia, Sér. 2, 7: 390, 1967. – Icon.: Berg & Hijman in Ilicifolia 2: 121, 1999; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 271, 2006.

Subshrub to 1 m tall; stem woody at base, unbranched, leafy part 2-5 mm thick, subglabrous, periderm flaking off in ribbon-shaped flakes; receptacle broadly turbinate to discoid, ± 1-1,5 cm Ø; bracts scattered from the base of the peduncle to the margin of the receptacle, there in ± 3 rows, ovate to reniform to suborbicular to oblong, to 3 mm long.

Rain-forests: at the periphery of a humid hollow with *Mascalocephalus dinklagei* and sometimes *Mapania* spp.; sometimes in important stands.

Nearer to *D. oligogyna* than to *D. elliptica.*

D. dorstenioides (Engl.) Hijman & C. C. Berg – Icon.: Berg & Hijman, o.c.: 126, 1999.

Shrub to 1,5 m tall, branched, the lower part of the branches woody, the leafy part of the branches 1-2,5 mm thick, rather densely puberulous with whitish appressed straight or curved hairs; or also with sparse retrorse uncinate hairs or sparse almost patent hairs; receptacle stellate, 8-10 mm Ø; appendages 8-11, to 3 mm long, almost triangular, obtuse, the longer ones usually alternating with short ones, and sometimes lobed at the lower end, puberulous.

Usually in the shrub layer of closed high forest; 60-200 m alt.

D. ellenbeckiana Engl. – Icon.: Cactus File 1(6): 14, 1992; Thulin, Fl. Somal. 2: 93, 1999; Berg & Hijman, Ilicifolia 2: 211, 1999; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

Perennial herb with depressed, ovoid underground tuber to 4,5 cm Ø, without aerial steams or to 1 cm long: leaves and receptacles arise from the tuber; leaves subrosulate; receptacle discoid, suborbicular 1,5-2,5 cm Ø; appendages in 2 rows; the inner triangular to band-shaped or subspathulate appendages are 0,5-3,5 mm long, shorter or longer ones ± alternating, the outer ones with ± 8-10 subulate to bandshaped appendages ± 3-12 mm long pointing backwards.

Acacia-Commiphora bushland, on sandy or stony soil (limestone mainly); 600-1250 m alt.

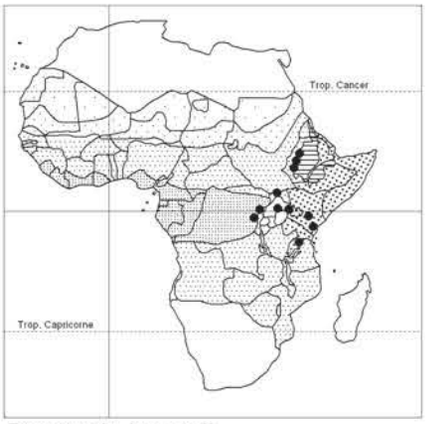
One of the rarest species of the genus in cultivation.

D. elliptica Bureau – Icon.: Berg & Hijman, o.c.: 123; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 2 B, 1898 *(D. frutescens).*

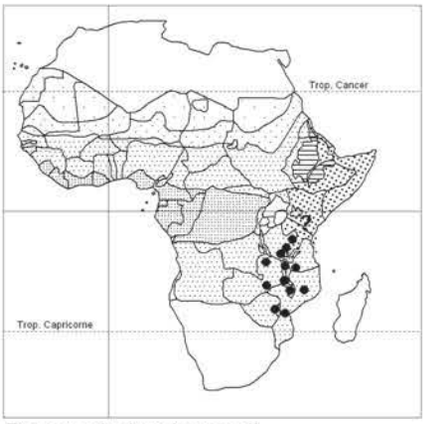
Subshrub to 1,5 m tall, rhizomatous; stem erect or ascending, woody at base, unbranched or (? sometimes) with spreading branches, leafy part 1,5-4 mm Ø, sparsely to rather densely puberulous, partly with uncinate hairs; receptacle broadly turbinate to discoid, 0,5-1,1 cm Ø; bracts scattered on the outer surface of the receptacle, crowded on the margin, in 2 rows, ovate to lanceolate, to 3,5 mm long.

Rain-forest, usually in moist places, often along streams; locally frequent and gregarious; 1-500 m alt.

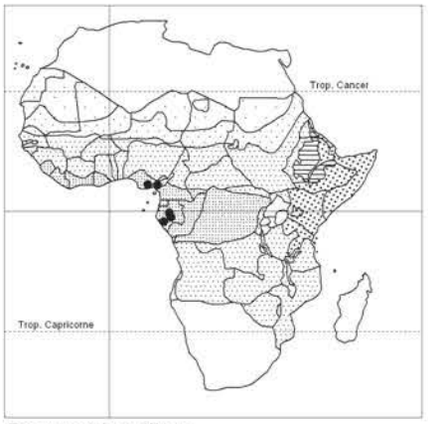
Bioko/Fernando Poo.



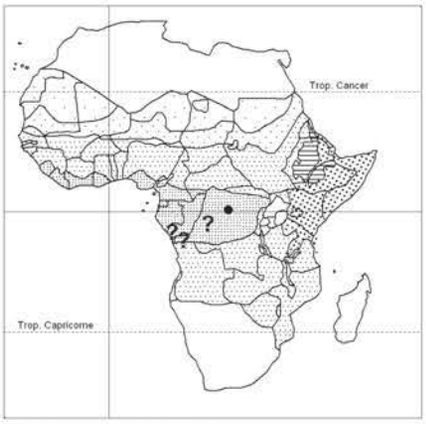
Dorstenia brownii



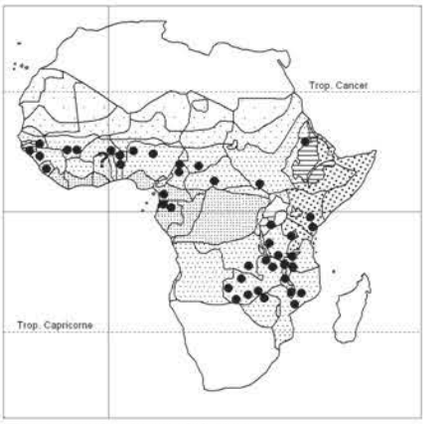
Dorstenia buchananii



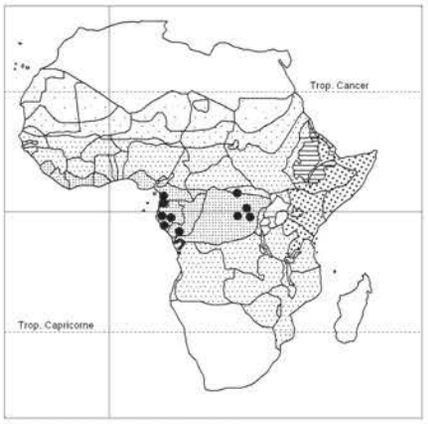
Dorstenia ciliata



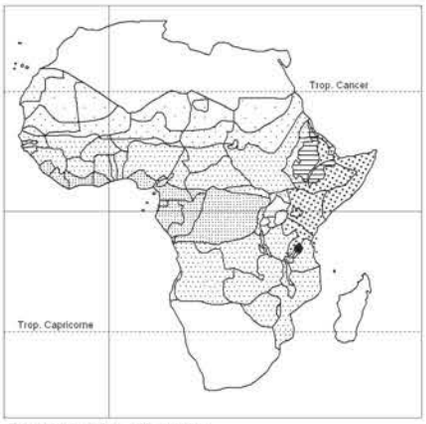
Dorstenia convexa



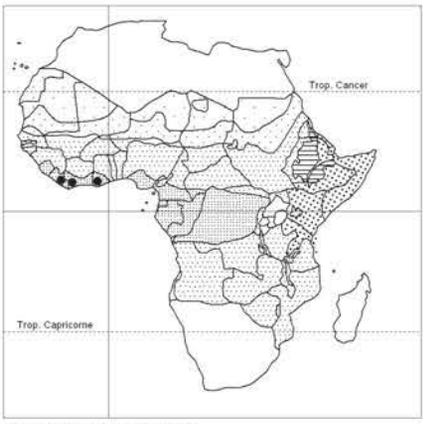
Dorstenia cuspidata



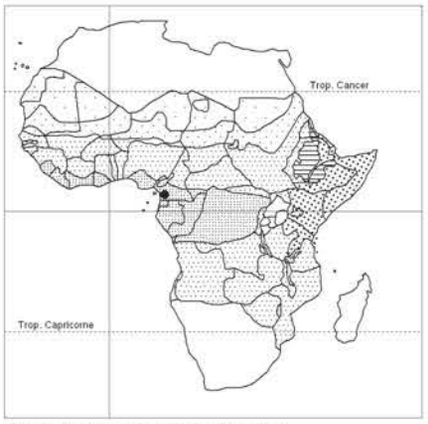
Dorstenia dinklagei



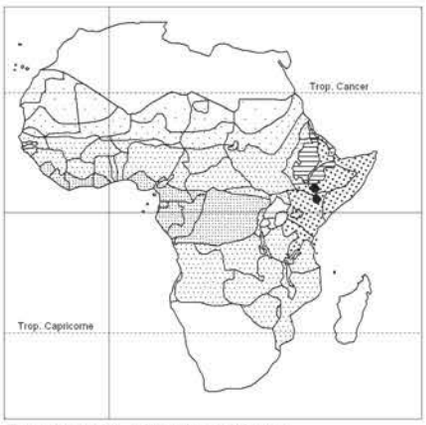
Dorstenia dionga



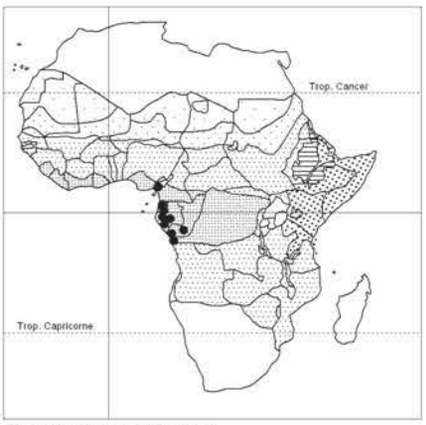
Dorstenia djettii



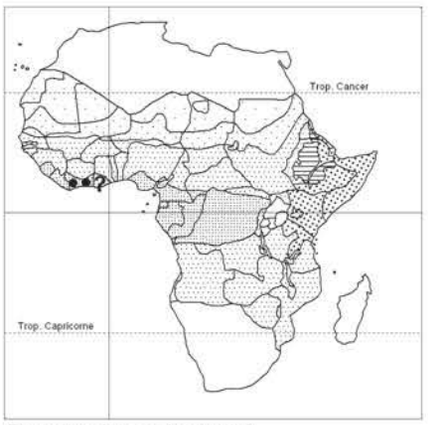
Dorstenia dorstenioides



Dorstenia ellenbeckiana



Dorstenia elliptica



Dorstenia embergeri

D. embergeri G. Mangenot – Icon.: Berg & Hijman, o.c.: 181, 1999; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 266, 2006.

Herb to 15 cm tall, rhizomatous; stem ascending, sometimes branched, 1-2 mm thick, densely puberulous with straight hairs; receptacle naviculate, 1-1,6 × 0,3-0,5 cm; appendages terminal, 2, subspathulate and canaliculate, to ± 1 cm long, with a ± thickened 2-lobed apex.

Rain-forest; evergreen forest; track sides, very shady, on ± 100 m², abundant, densely covering the soil; also on some hundred m², ± 10 specimens in undergrowth on well drained soil; very rare. Endangered.

Multiplication by seeds extremely easy in cultivation.

Only 6 collections known.

D. foetida (Forssk.) Schweinf. – Icon.: Cactus File 1(6): 13, 1992; Thulin, Fl.Somal. 2: 93, 1999; Ilicifolia 2: 200, 1999; Kakteen & Sukk. 52: 220, 2001; 53: 184-185, 2002; L. Newton, Check-list Kenyan Succ. Pl.: inside back cover; Cactus Succ. J. (U.S.) 76: 150-153, 2004; Cactus & Co. 1(10): 6-9, 2006; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 1 G, pl. 9 a-c, 1898 *(D. crispa);* Eggli, Ill. handbook succ. pl.: Dicot.: fig. 49g, 2002; Kaktusy 34/2: 43, 2003; Atlas Sukulentov 10: 375, 2008.

bas.: *Kosaria foetida* Forssk.

Subshrub 15-40 cm tall; stem succulent, unbranched or branched 0,5-4 cm thick, sparsely puberulous or glabrous, periderm of older parts flaking off; scars of leaves, stipules and inflorescence conspicuous and prominent; receptacle greyish to greenish or orange-pinkish, discoid, suborbicular to substellate 0,5-2 cm Ø; appendages in 2 rows, but sometimes 1 in which the short appendages probably represent the inner row, those of the inner (= marginal) row several to numerous, broadly triangular to 1-1,5 mm long, those of the outer (= submarginal) row 4-18, band-shaped or distally filiform, 0,2-3,5 cm long. – Malodorous.

Rocky outcrops; open places in deciduous and succulent bushland; on sand or, more rarely, on black cotton soil, often in shade of bushes; scree; limestone; 50-2100 m alt.

Saudi Arabia, Yemen, Oman (subsp. **foetida**).

Very variable in habit, shape and size of leaves, lenght of petioles and stipules. The infraspecific taxa retained by I. Friis (Nord. J. Bot. 3: 537-538, 1983) are based on leaf-shape. Here we retain 2 subspp.:

- subsp. **foetida**, incl. var. *obovata* (A. Rich.) Schweinf. & Engl. [syn.: *D. arabica* Hemsl.; *D. crispa* Engl. s. str.; *D. phillipsiae* Hook. f.; *D. obovata* A. Rich.; *Kosaria obovata* (A. Rich.) Schweinf. ex Solms] with ovate-obovate leaves, in N part of range;
- subsp. **lancifolia** (Rendle) Friis [bas.: *D. crispa* Engl. var. *lancifolia* Rendle; syn.: *D. crispa* var. *pachypoda* Chiov.] with lanceolate leaves, in S part of range.

STRLIČ, M. (2004). The Malodorous or the Curly? Unveiling the identity of Dorstenia foetida. *Cactus Succ. J. (U.S.)* 76: 150-155.

D. goetzei Engl., incl. var. *angustibracteata* Engl. – Icon.: Berg & Hijman in Ilicifolia 2: 191, 1999; Eggli, o.c.

Herb to 40 cm tall, rhizomatous; stem creeping, ascending or erect, unbranched or, especially creeping ones, branched, 1-5 mm thick, ± fleshy, sparsely puberulous with oblongoid hairs; receptacle greenish, slightly funnel-shaped to discoid 0,2-0,6 cm Ø; appendages in 1 row: primary appendages 1-4, linear to narrowly triangular, ± 1 cm long, usually 1 of them to ± 1 cm long and 1-3 shorter to ± 0,5 cm; secondary appendages 1-7, tooth-like, to ± 1 mm long.

Forest, in wet shaded places, often among rocks; 200-2000 m alt.

Confused with *D. zanzibarica.* – Also resembling *D. annua* but with rhizomes.

D. gypsophila Lavranos – Icon.: Kew Mag. 4(2): 100!, 1987; Cactus File 1(6): 13, 1992; Berg & Hijman, o.c.: 200; Eggli, o.c.

Perennial succulent shrub, knotty when dry, to 1,2 m tall, with a whitish latex having a characteristic smell reminiscent of that of a *Tropaeolum;* stem much thickened, columnar or globose, with a grey or whitish bark; branches numerous, erect or ascending, bearing tessellate leaf scars, 0,3-22 mm thick, glabrous to puberulous with minute globose, clavate or oblongoid hairs; periderm of older parts flaking off; receptacle discoid, orbicular, ± 0,4 cm Ø; flowering face orbicular, plane, fringe rather narrow, with minute teeth and 7-9 appendages, ± 0,8 cm long and ± 0,3 mm thick; mature fruit unknown. Latex with characteristic smell.

Gully on gypsum-anhydride hill; ± 950 m alt.

In the part of the southern slope of the large Nogal valley around Las Anod, the flora, especially on the gypsum hills, is of great botanical interest with, e.g. *Euphorbia columnaris.*

In Fl. Somalia 2: 93, 1999, the description seems to be partially inaccurate: "stem succulent up to 10(-15) cm tall, 2-4 cm thick" …; fig. 56 C is enigmatic.

Slow-growing, and very rare in collections. Leaves turning orange before falling at onset of the dry season.

In size this plant exceeds all known species in the genus except *D. gigas* Balf. f. from Socotra; like the latter and some of the larger forms of *D. foetida,* it is usually much branched. Discovered in 1970.

D. hildebrandtii Engl.; L. Newton, Check-list Kenyan Succ. Pl.: 32, 2003. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 6, 1898; Peter, Fl. Deutsch-Ostafr. 2(1): pl. 2(3) fig. 1 a-b and fig. 2 a-d, pl. 2(6): fig. 1 a-b; pl. 2(7): fig. 2 a-b; pl. 2(8): fig. 2 a-b; pl. 2(9) fig. 1 a-b and fig. 2, 1932; Ark. Bot. 13: pl. 1 fig. 1-3, 1913; Cactus Succ. J. Gr. Brit. 42: 88, 1980; Berg & Hijman, Ilicifolia 2: 194-195, 1999; Burrows & Burrows, Figs S. & S.-C. Afr.: 317, 2003 (partial); Eggli, o.c.: fig. 50b.

Herb 15-70 cm tall, rhizomatous or tuberous; rhizome very short, densely rooted; stems ascending to erect, branched, (thickly) succulent, often with arrested branches with minute or small leaves, or unbranched, 1-7 mm thick, towards the base often swollen, sometimes forming a globose to pear-shaped tuber ± 4 cm Ø, leafy part 1-7 mm Ø; scars of the leaves, stipules and inflorescences often conspicuous; receptacle discoid to broadly turbinate or funnel-shaped, sometimes subnaviculate 0,4-1,2 cm Ø; appendages in 2 rows, those of the inner (= marginal) row numerous, semi-orbicular or triangular, obtuse, to 2 mm long, mostly forming an erect subdenticulate or crenate rim, sometimes some of them band-shaped and to 5 mm long, or reduced and the rim subentire or obsolete; appendages of the outer (= submarginal) row 2-12, narrowly triangular to band-shaped or filiform 0,2-2,5 cm long, ± 1 mm broad.

Granitic, coral and limestone outcrops, from open forest to woodland, bushland and succulent thickets; often near streams or in local water catchment areas; sometimes in shaded forest sites; epiphyte on trees or with mosses and humus on wet ground in forests and along streams into woodland and thicket; sometimes abundant; sandy soil on granite outcrop; coastal forest; 0-2100 m alt.

Comprises 2 vars.: – var. **hildebrandtii** [syn.: *D. braunii* Engl.; *D. tanneriana* Peter; *D. rhomboidea* Peter; *D. marambensis* Peter; *D. brevifolia* Peter; *D. carnulosa* De Wild.; *D. maoungouensis* De Wild.; *D. renneyi* Airy Shaw & N. Taylor]; – var. **schlechteri** (Engl.) Hijman [bas.: *D. schlechteri* Engl.; syn.: *D. denticulata* Peter; *D. polyactis* Peter; *D. quercifolia* R. E. Fr.]; resembling *D. tenuiradiata.*

Var. **schlechteri** is known in *Mozambique* only from the type locality. Here it is the only *Dorstenia* combining an underground rhizome and smooth, hairless leaves (on upper surface).

D. holstii Engl. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 4 A, 1898; Berg & Hijman, Ilicifolia 2: 176, 1999.

Herb 20-120 cm tall, rhizomatous; stems ascending to erect, unbranched, woody towards the base, 2-7 mm thick, sparsely to densely puberulous, partly with uncinate hairs; receptacle orbicular, slightly funnel-shaped 0,7-2,5 cm Ø, with conspicuous or prominent radiating ribs running into the 1-row appendages; these to ± 40, tooth-like, linear, spathulate or clavate 0,1-4 cm long; also with 8-14 unequal triangular lobes, 0,5-1,5 mm long.

Rain-forest; wet shady places; often among rocks; near sea-level to 1500 m alt.

Comprises 2 vars.: – var. **holstii** [syn.: *D. holstii* Engl. var. *grandifolia* Engl. and var. *lanceolata* Peter; *D. usambarensis* Engl.] in the Usambara Mts.; – var. **longestipulata** Hijman in E Tanzania and Pemba Isl.

The distinction between the varieties not always very marked.

D. involuta Hijman & C. C. Berg – Icon.: idem in Ilicifolia 2: 127, 1999.

Shrub 0,5-2 m tall, with branched or unbranched stems woody at the lower part, glabrous; the leafy parts of the branches puberulous with dense short white almost straight and stiff appressed hairs, usually intermixed with retrorse uncinate hairs; branches woody at the lower part 1,5-5 mm Ø; receptacle subturbinate 0,5-1 cm Ø, stellary 6-8-lobed, with conspicuous ribs passing into the primary appendages; these departing from the lobes of the receptacle, 6-8, linear to spathulate, 0,3-0,6 cm long, reflexed, marginally and terminally involute, with occasionally smaller secondary appendages in between the primary ones.

High forests in dry or humid places.

D. kameruniana Engl. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 11 fig. B, 1898 (sub nom. *Trymatococcus);* De Wildeman, Pl. nov. herb. horti then. 1: fig. 50, 1907; Beentje, Kenya trees, shrubs & lianas: 321, 1994; Berg & Hijman, o.c.: 125, 1999; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 271, 2006.

syn.: Enum. 2: 132, 1992; *D. amoena* A. Chev., incl. var. *truncata* A. Chev.

Shrub or subshrub, usually 0,5-3 m tall, sometimes to 4-6 m, with few or many stiff or weak branches; leafy twigs 0,5-3 mm Ø, rather densely white or sometimes brownish puberulous to hirtellous or hispidulous, often a mixture of minute patent hairs and longer uncinate, or on the nodes straight hairs; receptacle broadly turbinate to discoid 0,3-0,8 cm Ø; margin mostly ± lobed, with reniform to ovate bracts to 1 mm long.

Humid forests; gallery forest; sometimes on savanna edges; secondary forests; often near streams; on limestone; sometimes very common; near sea-level to 1300 m alt.

D. lavrani Mc Coy & Massara, Cactus Succ. J. (U.S.) 80/2: 78-82, 2008. – Icon.: ibid.

syn.: *D.* sp. "Taba'a Gorge".

Perennial herb, dioecious, to 15 cm tall, with whitish latex; stems 1-15, simple, erect or ascending, succulent, 1-2,5 cm Ø, gray to green, with prominent whitish leaf- and stipular scars in spirals; leaves in apical rosettes, elliptic-obovate, 1,5- 4,5 cm long, glabrous-glossy above, ± puberulous beneath; receptacle axillary, round, central part 0,5- 1,5 cm Ø, peduncles 0,5-1,5 cm long; appendages 6-12, linear, unequal, to 1,6 cm long, green at base, apex purple; mature achenes explosively ejected from elastic exocarp.

Juniperus forest, in deep shade, in moss-filled cracks of steep limestone walls in gorge, with *Aloe albovestita;* 1750 m alt.

Saudi Arabia.

Related to *D. foetida,* but dioecious. First collected in 1973. Two specimens (♂ + ♀) cultivated in USA; later (s.d.) recollected in Saudi Arabia. Plants (many beautiful specimens) in cultivation raised from seed.

D. letestui Pellegr. – Icon.: Mém. Soc. Linn. Normandie, N. S., Bot. 1(3): pl. 5, 1928; Berg & Hijman in Ilicifolia 2: 166, 1999.

Herb 5-11 cm tall, with long, slender rhizomes; stems ascending 0,25-1,5 mm thick, puberulous with uncinate and longer curved hairs; receptacle broadly funnel-shaped to naviculate, laterally compressed; flowering face narrowly elliptic to linear 0,5-1 × 0,1 cm, fringe almost absent 0,5-1 cm long; secondary appendages 5-7 on each side, linear 0,25-3,5 mm long; inflorescences deep purple.

Forest; to 900 m alt.

Very near *D. dinklagei* but with pinnatipartite leaves.

Only known from 4 collections, 2 dated 1916 and the other two 1925.

D. lujae De Wild. – Icon.: De Wildeman, Pl. nov. herb. horti Then. 1: fig. 50, 1907; Berg & Hijman, o.c.:155-156.

Herb with rhizomes ± 5 mm thick; stems ± ascending 0,4-1,2 m tall, 2-2,5 mm thick, with woody base, glabrous or sparsely to densely puberulous with curved to uncinate hairs, sometimes intermixed with yellowish-white coarser, curved to straight ones; nodes sometimes swollen; receptacle discoid to turbinate; with conspicuous ribs running into the primary appendages; flowering face suborbicular to multangular 0,7-2,5 cm Ø; appendages numerous, tooth-like to linear 0,1-4,5 cm long, 0,25-1 mm broad, at the apex slightly broadened, thickened and sometimes almost 2-lobed; primary appendages ± 10-15, longer than or almost as long as the Ø of the receptacle, sometimes with 1-2 small teeth and occasionally also with 1-2 small lateral appendages at the base or in the lower part; primary appendages alternating with 2-6 secondary appendages, varying in length.

Comprises 2 vars. (with intermediates).

Rain-forests; high and humid river-banks; 1-1000 m alt.

D. mannii Hook. f. – Icon.: Hooker f., Bot. Mag. 3: pl. 5908, 1871; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 4 B-D, 1898 *(D. mungensis, D. intermedia);* Berg & Hijmann, o.c.: 152-153.

syn.: Enum. 2: 132, 1992 (also varieties).

Herb with creeping rhizomes; stems procumbent to ascending, 5-100 cm tall, towards the base sometimes woody and 1,5-7 mm thick, subglabrous or puberulous with uncinate hairs, often intermixed with longer curved ones; receptacle discoid or broadly

funnel-shaped with 2-18 triangular to 1,5 mm long lobes, 0,3-1,4 cm Ø, outside with conspicuous ribs passing into appendages; primary appendages departing from the receptacle lobes, linear 0,5-10 cm long, at the apex blunt or faintly lobed; secondary appendages between lobes of the receptacle 1-6, shorter than the primary ones.

High- and riverine forests in moist places; coastal high forest in wet places; on or among rocks; seasonally inundated riverine forest; *Aframomum* thickets; near sea-level to 1200 m alt.

Comprises 6 vars. not very distinct, based on various characters, e.g. number of receptacle lobes, size of plant, shape of leaves.

(*D. mogandjensis* De Wild. = **D. zenkeri**)

D. nyungwensis Troupin – Icon.: Berg & Hijman, o.c.: 169.

Herb, rhizomatous; stem 30-80 cm tall, ± woody towards the base, 1-3 mm thick, rather densely puberulous with straight or curved hairs of different length; receptacle discoid (young ones naviculate); flowering face elliptic 1,5-2,2 × 0,3-0,7 cm, fringe ± 1 mm broad; primary appendages terminal, 2, spathulate 1,2-2,1 cm long; secondary appendages lateral 10-17 at each side, narrowly triangular and subacuminate, up to 4 mm long; appendages minutely puberulous with globose hairs above.

Shaded slopes; forests; 1900-2000 m above.

Discovered in 1971.

D. oligogyna (Pellegr.) C. C. Berg – Icon.: Berg & Hijman, o.c.: 122.

Treelet to 2,5 m tall, with erect stems often unbranched, woody at the base, leafy part 3-10 mm thick, sparsely puberulous with stiff hairs to subglabrous; receptacle narrowly to broadly turbinate to almost discoid 0,4-0,8 cm Ø; bracts scattered from the base of the peduncle to the margin of the receptacle, there in ± 2 rows, ovate to reniform ± 1-2 mm long, nearly glabrous but always ciliolate.

Rain-forest; 100-400 m alt.

(*D. paucibracteata* De Wild.)

The type collection belongs to **D. dinklagei**: an intermediate between var. **bequaertii** and var. **brieyi**.

D. picta Bureau – Icon.: Engler, Monogr. afr. Pfanzenfam. 1, Moraceae: pl. 6 A, 1898 (sub nom. *D. variegata)*; Berg & Hijman in Ilicifolia 2: 151, 1999.

Herb with creeping to ascending, partly subterraneous rhizome, rooting specially at the nodes, to 1 m long, 2,5-5 mm Ø; receptacle discoid, orbicular, 0,7-2 cm Ø, outside with some radiating ribs running into the bracts; bracts in ± 2 rows on or just below the margin, inflexed, triangular, ± 1,2 mm long; infrutescence unknown.

Forest along rivers; periodically flooded places; among and between rocks; 1-1000 m alt.

D. poinsettiifolia Engl. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 2 A, 1898; Bull. Jard. Bot. Etat, Brux. 19: 227, 1949; Berg & Hijman, o.c.: 162-163.

Herb with creeping rhizomes 2-5 mm Ø; stems ascending or erect, 0,3-1,5 m tall, with woody base 2-5 mm Ø, glabrous or sparsely to densely puberulous with uncinate or dome-shaped hairs, often intermixed with longer yellowish-white curved ones;

nodes sometimes swollen; receptacle usually ± distinctly zygomorphous, discoid or broadly funnel-shaped and then often laterally compressed, concave; with conspicuous ribs running into the primary appendages; flowering face elliptic, suborbicular or tri- to quadrangular or sometimes 5-6-angular, 0,6-2,5 × 0,2-1,8 cm, ± plane or convex, fringe 0,1-6 mm broad, entire or weakly to strongly lobed; primary appendages linear to filiform, 2, sometimes 3-5(-6), 0,5-18 cm long, the lateral appendages often shorter than the terminal ones, often broadened or even lobed at the apex; secondary (= lateral) appendages 8-30, linear to filiform 2-40 mm long, 0,5-2 mm broad.

Rain-forest; herb layer in deep shade; coastal forests; edges of secondary- or primary forests; along rivers, swampy places in undergrowth; 5-1400 m alt.

Bioko/Fernando Poo.

Comprises 9 vars., several of which seem to be local endemics (cf. maps in Berg & Hijman in Adansonia, Sér. 2, 16: 441, 1977; key to the vars. in Kew Bull. 58: 190-191, 2003; for synonyms, see also Enum. 2: 132, 1992):

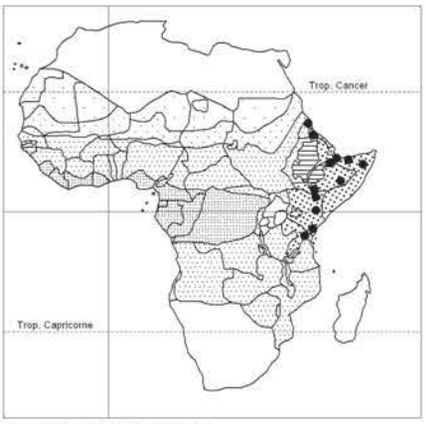
- var. **achoundongiana** Cheek & Bygrave, Kew Bull. 58: 186, 2003 – icon.: ibid: 187 [syn.: *D. poinsettiifolia* Engl. var. nov. sensu Cheek in Pl. Mt. Cameroon: 87, 1998, etc. (Etinde: 48, 1996; Mabeta-Moliwe Forest: 55, 1992)]; related to var. **angularis** but differs in the receptacle being navicular in profile, primary appendages 2, subcylindrical, 5 mm long; flowering area of receptacle subangular-oblong; lower surface of receptacle sparsely puberulous, only hairy on the edges; in Cameroon;
- var. **angularis** Hijman & C. C. Berg;
- var. **angusta** (Engl.) Hijman & C. C. Berg [syn.: *D. lotziana* Engl.];
- var. **etugeana** B. J. Pollard, Kew Bull. 58: 188, 200, 2003 – icon.: ibid.: 189; closely related to var. **librevillensis** but differs in having only 1 basal primary appendage, flowering face narrowly ovate, stipules 1,2-2 mm long; in Cameroon;
- var. **glabrescens** Hijman & C. C. Berg;
- var. **librevillensis** (De Wild.) Hijman & C. C. Berg;
- var. **longicauda** (Engl.) Hijman & C. C. Berg;
- var. **poinsettiifolia** [syn.: *D. gabunensis* Engl.; *D. yangambiensis* J. Léonard; *D. poinsettiifolia* Engl. var. *grossedentata* Engl., var. *subdentata* Engl. and var. *undulata* Engl.; *D. tessmannii* Engl.];
- var. **staudtii** (Engl.) Hijman & C. C. Berg [syn.: *D. subrhombiformis* Engl.].

D. prorepens Engl., incl. var. *robustior* Rendle – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 1 A, pl. 3 A; Berg & Hijman in Ilicifolia 2: 167, 1999.

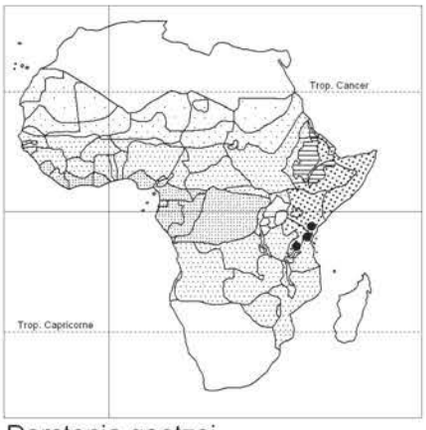
Herb with creeping rhizome and creeping to ascending stem ± 2 mm thick, 20-40 cm tall; rhizomes and stems brownish to whitish puberulous with curved short uncinate hairs, intermixed with longer straight ones; receptacle naviculate 1,2-2 × 0,2-0,5 cm, flowering face elliptic, plane to slightly concave, fringe 0,5 mm broad; appendages numerous black-purple, triangular 1-2 mm long, the terminal ones slightly longer and denticulate at apex.

Forests; 400-1550 m alt.

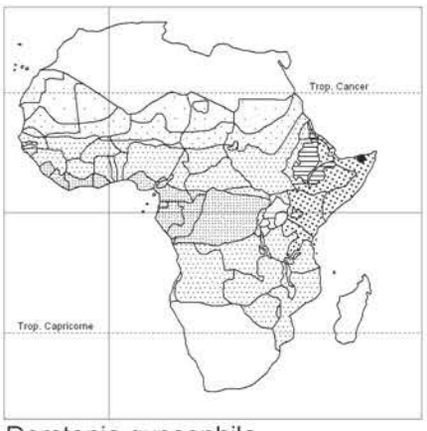
Bioko/Fernando Poo.



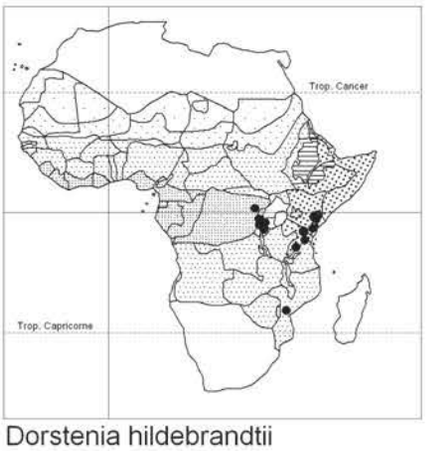
Dorstenia foetida



Dorstenia goetzei

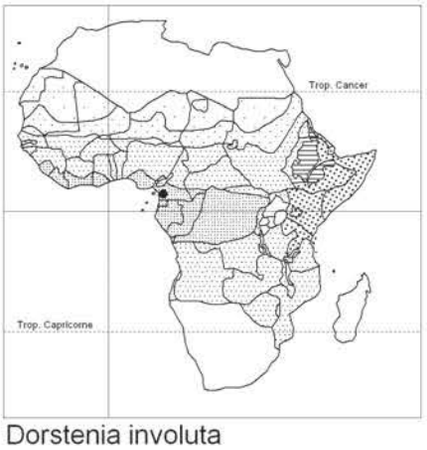


Dorstenia gypsophila

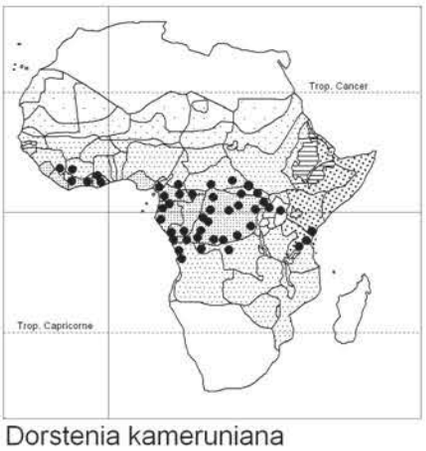


Dorstenia hildebrandtii

Dorstenia holstii

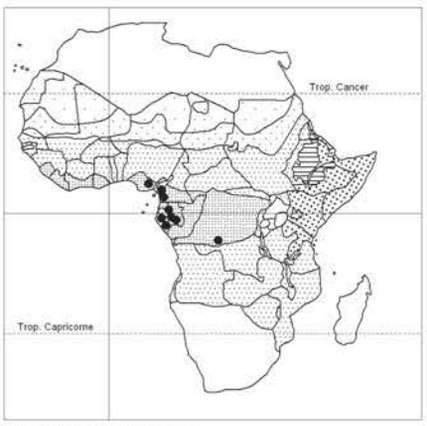


Dorstenia involuta

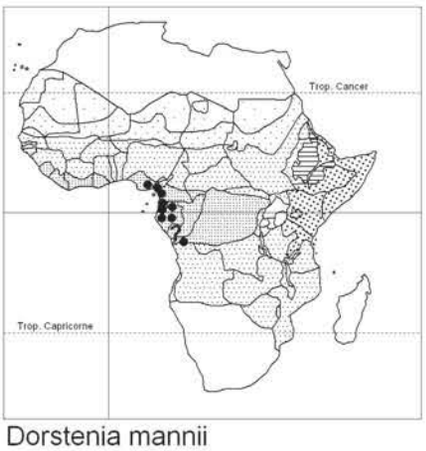


Dorstenia kameruniana

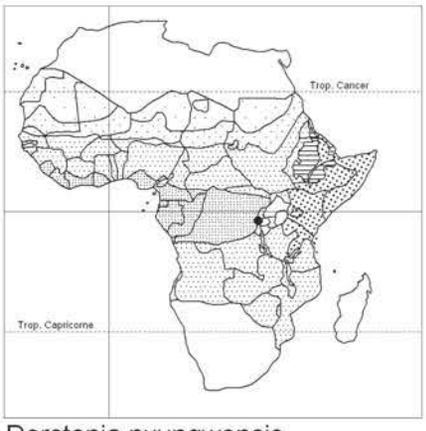
Dorstenia letestui ●



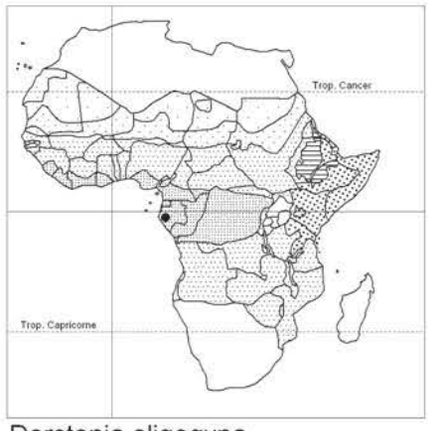
Dorstenia lujae



Dorstenia mannii



Dorstenia nyungwensis



Dorstenia oligogyna

D. psilurus Welwitsch; Nord. J. Bot. 22: 106, 1974. – Icon.: De Wildeman, Pl. nov. herb. horti Then. 1: figs. 53, 54, 1907; Berg & Hijman in Ilicifolia 2: 180, 1999; Burrows & Burrows o.c.: 308-310; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 8 A, 1898 *(D. bicornis).*

Herb 0,15-3 m tall; rhizomes creeping, cylindrical, sometimes tuberous, 5-7 cm Ø; stems ascending to erect, sometimes branched, woody towards the base, 1-7 mm thick; leafy part rather densely puberulous with uncinate and straight hairs; receptacle vertical, naviculate; flowering face narrowly ovate to linear 1,2-5,5 × 0,15-0,5 cm, fringe almost lacking, entire; appendages terminal, 2, filiforme, the upper one 2-10 cm long, the lower one 0,1-3 cm long; secondary (= lateral) appendages occasionally present 1,5-7 mm long.

Evergreen forest, particularly along rivers; as ground cover in rain-forest; streamsides in woodland; sometimes forming clumps *(D. scabra);* miombo woodland; in shady or very shady parts of primitive forest; sometimes very sporadic; also not uncommon; narrow moist deep very shady valleys at the fissures of rocks; 200-1500 m alt.

Comprises 2 vars.:

– var. **psilurus** [syn.: *D. bicornis* Schweinf. *("bicuspis"* in Bureau 1895, sphalm.); *D. lukafuensis* De Wild.; *D. psiluroides* Engl., incl. fa. *subintegra* Engl.; *D. stolzii* Engl.; *D. psilurus* Welw. var. *brevicaudata* Rendle and var. *compacta* De Wild.], in C, E & SW parts of range;
– var. **scabra** Bureau [syn.: *Ctenocladium mildbraedii* (Engl.) Airy Shaw; *Ctenocladus mildbraedii* Engl.; *Dorstenia scabra* (Bureau) Engl., incl. var. *denticulata* Engl., var. *longicaudata* Engl. and var. *subintegrifolia* (De Wild.) Rendle; *D. klainei* Pierre ex Heckel; *D. gilletii* De Wild.; *D. massonii* Bureau; *D. tenuifolia* Engl.; *D. psilurus* Welw. var. (or fa.) *subintegrifolia* De Wild.], in W & C parts of range, at low altitudes.

D. scaphigera Bureau – Icon.: De Wildeman, Pl. nov. herb. horti Then. 1: fig. 52, 1907; Berg & Hijman, o.c.: 131.

Shrub 0,3-1,5 m tall, with ascending or erect, branched or unbranched woody stems, the lower part of the branches almost glabrous, 4-8 mm thick, the leafy part rather densely puberulous with brownish to white curved and uncinate hairs; receptacle naviculate with an erect fringe, 2,5-6 cm long; flowering face linear 2,5-3,5 cm long, plane, fringe 5-10 mm broad, entire to repand; primary appendages 2, terminal, to 0,2 cm long.

Secondary or primary forests in dry or wet and even periodically flooded places; to 650 m alt.

Not in Gabon.

Put in synonymy under **D. alta** by Beentje, Kenya trees, shrubs & lianas: 321, 1994.

D. schliebenii Mildbr. – Icon.: Berg & Hijman, o.c.: 175; Burrows & Burrows, Figs S. & S.-C. Afr.: 317, 2003 (partial).

syn.: *D. hispida* Peter 1932, non Hooker 1840; *D. kyimbilaensis* De Wild.

Herb to 1,2 m tall, rhizomatous; stems erect or ascending, unbranched, to ± 5 mm thick, rather densely yellowish puberulous, partly with uncinate hairs, ± concentrated in 2 longitudinal rows; lower part of the stem woody.

Riverine- and evergreen forests; often in rocky places; 300-2000 m alt.

D. soerensenii Friis – Icon.: Berg & Hijman in Ilicifolia 2: 178, 1999.

Herb to 1,5-2,5 m tall, with creeping rhizome; stem ascending, woody towards the base, to 5 mm thick, puberulous with curved and straight hairs in 2 longitudinal rows; receptacle ± vertical, naviculate, excentrally attached, the upper part 1-1,5 cm long, the lower part 0,3-0,7 cm long; with conspicuous radiating ribs running into the appendages; flowering face linear to narrowly triangular 0,7-2 × 0,2-0,4 cm, fringe 0,5 mm broad; appendages often purplish or greenish with a purple apex, primary ones terminal, 2, linear, the upper one 3-7 cm long, the lower one 0,7-1,8 cm long, secondary appendages lateral, 10-25, thooth-like to linear 0,5-13 mm long.

Broadleaved rain-forest with *Olea welwitschii, Aningeria adolfi-friederici, Ocotea kenyensis,* abundant growth of *Dracaena afromontana;* on banks of small streams in deeply shaded areas; *Dorstenia* was growing together with *Pilea rivularis, Elatostema* sp.; ± 1950- ± 2200 m alt.

With *D. afromontana* reaching the upper altitudinal limit in Africa.

One of the rather few endemics from the forest of SW Ethiopia with *Amorphophallus gambozianus, Baphia abyssinica, Haemanthus nutans, Streptocarpus phaeotrichus.*

D. subdentata Hijman & C. C. Berg – Icon.: Adansonia, Sér. 2: 419, 1977; Berg & Hijman in Ilicifolia 2: 147, 1999.

Herb with a creeping rhizome ± 5 mm thick, and ascending stems ± 25 cm tall, with dense, short and long, white straight to curved or uncinate hairs; receptacle centrally attached, discoid (or initially faintly funnel-shaped), sub-orbicular 0,8-1,5 cm Ø; margin crenate, fringe almost absent; bracts in ± 2-3 unclear rows on and below the margin, appressed, variable in shape and dimensions, to 1 mm long, obtuse; endocarp body unknown.

Gallery forest.

Known from only 2 collections (one in Gabon, one in Congo).

D. tayloriana Rendle – Icon.: Berg & Hijman, o.c.: 170-171. Burrows & Burrows, Figs S. & S.-C. Afr.: 317, 2003 [var. **laikipiensis** (Rendle) Hijman, partial]; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 731, 2008.

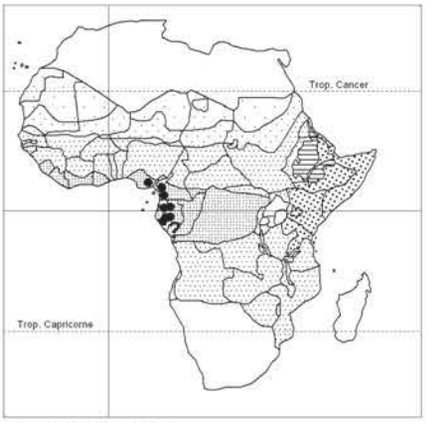
Herb to 50 cm tall, rhizomatous; stems ascending, unbranched 1,5-4 mm thick, whitish to sometimes yellowish puberulous or hirtellous, the lower part woody; receptacle zygomorphous or tending to actinomorphous, naviculate to broadly funnel-shaped; flowering face often dark purple, elliptic or irregularly rhomboid to suborbicular, sometimes linear 0,5-2,2 × 0,4-1 cm, plane, fringe 0,1-1,5 mm broad, often with an erect ridge bordering the flowering face; primary appendages terminal, 2, linear 0,7-4,5 cm long; secondary appendages lateral, 11-30, triangular to linear 0,2-17 mm long.

Evergreen forest, often on limestone; rain-forest with *Strombosia, Uapaca, Allanblackia, Cephalosphaera, Erythrophleum suaveolens,* locally common on forest floor; also coastal forest; to 600-1950 m alt.

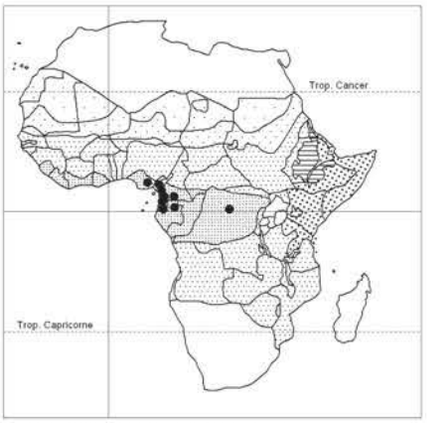
Comprises 2 vars.

D. tenera Bureau – Icon.: Berg & Hijman, o.c.: 157-158.

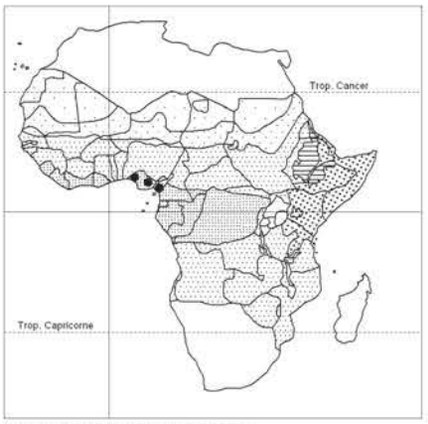
Herb with creeping rhizomes; stems ascending, 0,4-1 m tall, 2-5 mm thick, glabrous or sparsely puberulous with small, dome-shaped hairs or uncinate or densely puberulous with long white fat recurved hairs, intermixed with short uncinate, sparse white



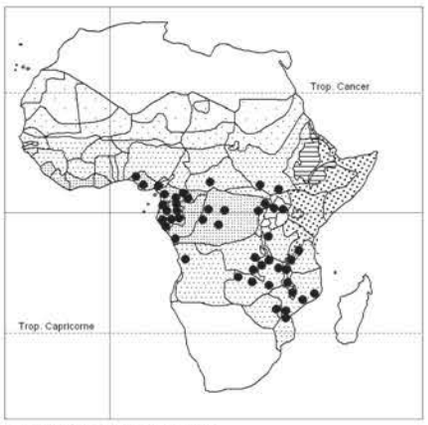
Dorstenia picta



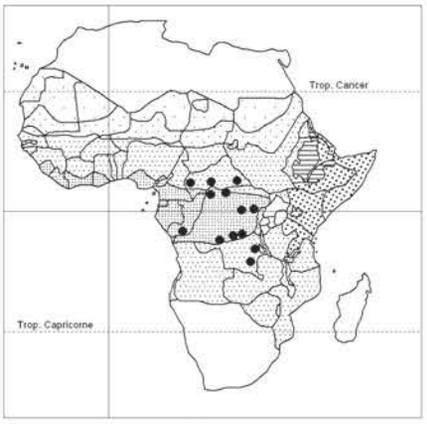
Dorstenia poinsettiifolia



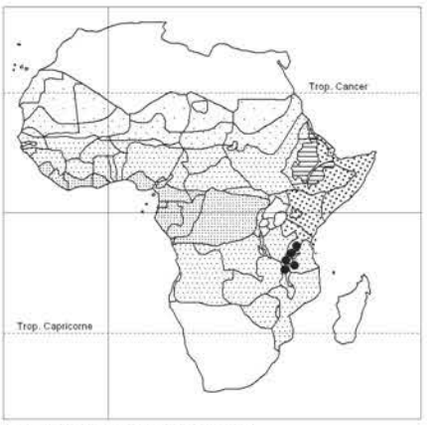
Dorstenia prorepens



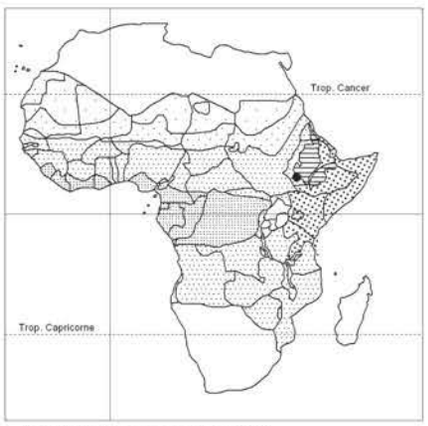
Dorstenia psilurus



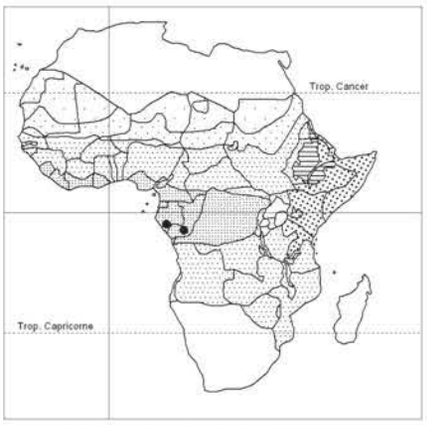
Dorstenia scaphigera



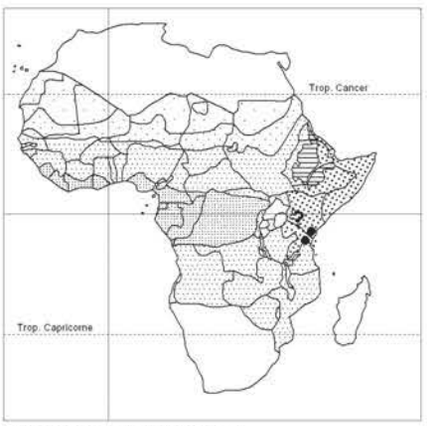
Dorstenia schliebenii



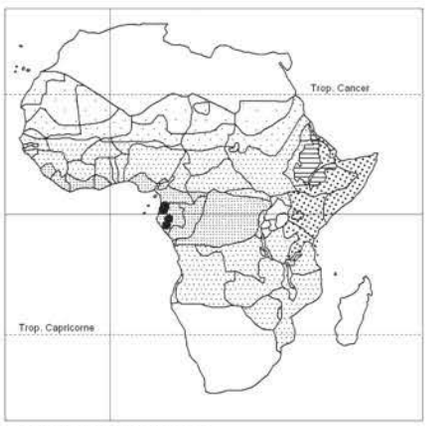
Dorstenia soerensenii



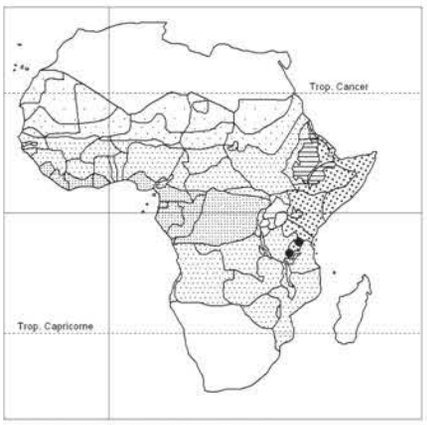
Dorstenia subdentata



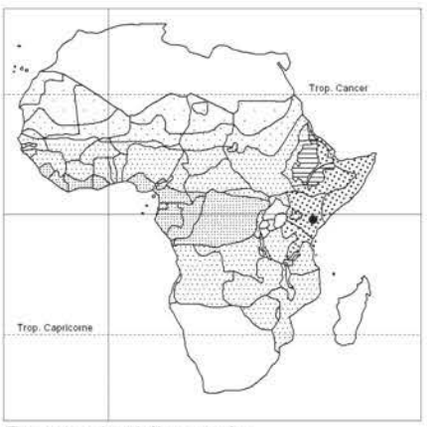
Dorstenia tayloriana



Dorstenia tenera



Dorstenia tenuiradiata



Dorstenia thikaensis

hairs; receptacle discoid, suborbicular or multangular and sometimes irregularly stellate 0,6-2 cm Ø; with conspicuous ribs running into the appendages; flowering face plane to strongly convex, fringe absent or sometimes present and then 0,5-1 mm broad; primary appendages 3-12, linear, rather different in length, 0,3-2,2 cm long, often reflexed, broadened at the apex, these often alternating with 1-5 tooth-like to 1 mm long secondary appendages.

Old secondary forests; riverine forest, in moist places; 1-875 m alt.

Comprises 2 vars. (± distinct, and some collections impossible to place in a particular var.).

D. tenuiradiata Mildbr. – Icon.: Eggli, Ill. handbook succ. pl.: Dicot.: fig. 50g, 2002.

Herb to 1 m tall (? occasionally 3 m); rhizome succulent; stem ascending to erect, unbranched or branched, 1-10 mm thick, densely puberulous with hairs mostly in longitudinal lines; scars of leaves, inflorescences and stipules conspicuous; receptacle discoid to slightly funnel-shaped, suborbicular 0,5-1,1 cm Ø; flowering face orbicular, fringe to ± 0,5 mm broad; appendages ± clearly in 2 rows, those of the inner (= marginal) 20-30, triangular to linear, to ± 0,8 mm long, those of the outer (= submarginal) 8-12, slender, filiform, to 5,5-7 cm long, ± 0,5 mm, at the base to 1 mm broad. – Resembling *D. hildebrandtii* var. *schlechteri.*

On rocks in woodland or forest; often in wet places; 700-1625 m alt.

D. thikaensis Hijman – Icon.: Berg & Hijman in Ilicifolia 2: 174, 1999.

Herb to 50 cm tall, rhizomatous; rhizome 2-3 mm thick, with brownish filiform branched roots to 0,5 mm thick, as well as with yellowish *fleshy swollen* unbranched *roots* to 2,5 mm thick; stems procumbent or ascending, unbranched, ± 2,5 mm thick, puberulous to hirtellous; receptacle naviculate, 1-2,1 × 0,3-0,4 cm; flowering face linear, concave to plane, 0,8-1,5 × ± 0,25 cm, margin ± 0,5 mm wide, entire; appendages 2, terminal, inserted below the face on a downwardly bent margin, linear, 1,5-8 mm long. *Swollen roots unique in the genus.*

Riverine forest; 1200-1450 m alt.

D. tropaeolifolia (Schweinf.) Bureau; L. Newton, Check-list Kenyan Succ. Pl.: 32, 2003. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 9 B, 1898; Berg & Hijman, o.c.: 197; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

bas.: *Kosaria tropaeolifolia* Schweinf.

syn.: *D. barnimiana* Schweinf. var. *tropaeolifolia* (Schweinf.) Rendle, and subsp. *tropaeolifolia* (Schweinf.) Lye; *D. peltata* Engl. 1911, non Sprengel 1822, nec Fischer & Meyer 1846.

Perennial herb with depressed to subglobose tuber 2-5 cm Ø, without aerial stems; leaf lamina peltate, orbicular 3-7 cm Ø, with a stout petiole; receptacle tinged white, narrowly elliptic to elongate, 1-2,5 × 0,3-0,8 cm, attached to the peduncle near the base; appendages few (1 apical and 3-7 basal ones) or several (± evenly distributed along the margin, with longer apical and basal ones) 0,4-2 × 0,05-0,1 cm, pale or whitish.

In the same type of habitats as *D. barnimiana* (there is an extraordinary high number of collections of *D. tropaeolifolia* from around Mt. Elgon, Kenya and Uganda); 1000-2200 m alt.

We have followed Friis (1983), maintaining this plant as a distinct species. Berg in Fl. Trop. E. Afr., Morac.: 42, 1989, reports of collections with both peltate and basally attached leaves; and he places the taxon as a variety under *D. barnimiana.*

D. turbinata Engl. – Icon.: Bull. Jard. Bot. Natl. Belg. 50: 343 and figs. 4-5, 1980, Berg & Hijman, o.c.: 128; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 266, 267, 271, 2006.

syn.: Enum. 2: 133, 1992; *D. smythei* Sprague, incl. var. *deltoidea* Hutch. & Dalziel; *D. aspera* A. Chev., incl. var. *deltoidea* A. Chev. (the same type for the two varieties: Chevalier 21288 bis); *D. dinklagei* Engl. 1911, non Engl. 1908, nec 1894 (= *D. dinklagei).*

Shrub 0,5-5 m tall, with ramose woody glabrous stems; leafy twigs 1-2 mm thick, sparsely to densely white to brownish puberulous with appressed or patent straight and retrorse uncinate hairs; receptacle turbinate to naviculate 0,4-1,5 cm Ø, with conspicuous ribs passing into the primary appendages; flowering face 2-9-lobed or oblong, concave or convex, fringe absent or 0,2-1 mm broad; primary appendages 2-9, mostly 4, in lobed receptacles extending from the lobes, linear to oblanceolate or narrowly spathulate, to 3 cm long and pointing upwards or 0,4-1 cm long and patent to reflexed, ± 1 mm broad or, if spathulate, then to 3 mm broad, sometimes with 1-4 and to 0,7 cm long secondary appendages between the primary ones.

Gallery forest; rain-forest with *Heritiera utilis;* forests on slopes with *Mussaenda afzelii, Milletia warneckei, Dalbergia bignonae;* old secondary forests; evergreen and half-deciduous forests; often near rivers; 20-1000 m alt.

D. ulugurensis Engl. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 5 B, 1898; Berg & Hijman in Ilicifolia 2: 173, 1999.

Herb 15-30 cm tall, rhizomatous; stems ascending to creeping, 1-3 mm thick, unbranched, sparsely to densely puberulous with retrorse uncinate hairs, intermixed with longer straight ones; receptacle funnel-shaped and laterally compressed to naviculate 0,2-1 cm long; ribs running into the primary appendages; flowering face oblong to elliptic to rhomboid to suborbicular 0,2-0,8 × 0,2-0,4 cm, fringe to ± 0,5 mm broad, often with a knobby ridge bordering the flowering face; primary appendages terminal, 2, triangular to band-shaped 0,1-0,5 cm long, obtuse and concave, sometimes with involute margin; secondary appendages lateral, to ± 20, tooth-shaped 0,2-0,5 mm long, obtuse and often concave, sometimes in the middle of the receptacle 1 or 2 of them to 1,5 mm long.

Montane forest (Uluguru Mts.); 1600-2000 m alt.

Very close to *D. dionga.*

D. variifolia Engl. – Icon.: Berg & Hijman, o.c.: 171, 173, 1999.

Herb 10-50 cm tall; rhizome ± woody; stem ascending, woody towards the base, 1-3 mm thick, sometimes branched, densely puberulous with curved and straight white or yellowish hairs of different lengths; receptacle slightly funnel-shaped, 0,3-1 cm Ø; flowering face suborbicular 0,25-0,7 cm Ø, plane, fringe 0,3-2 mm broad; appendages 15-28, linear to triangular 0,2-4 mm long 0,1-1 mm broad, 2 or 3 of them slightly distinct in length and by a ± distinct midrib beneath.

Forest, in moist shady places; 900-1850 m alt.

D. verdickii De Wild. & Th. Durand; J. E. Burrows in Aloe 46: 7-9, 2009.

syn.: *D. achtenii* var. *laxiflora* Hauman

See note under **D. benguellensis**.

D. vivipara Welw. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 3 B, 1898; Berg & Hijman, o.c.: 199; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

Perennial herb 15-22,5 cm tall, bulbiferous in the axils of the lower leaves; bulbils lactescent, viviparous; stems ascending, weak, very brittle, cylindrical, thinly puberulous, lactescent; receptacles on long stalks, subturbinate, orbicular 0,8-1 cm Ø; flowering face ? orbicular, fringe very narrow; appendages in 2 rows, those of the inner (= marginal) row 0-2, ovate, to 1,5 mm long, those of the outer (= submarginal) row 4-7, narrowly triangular 0,3-0,8 cm long, sometimes one of them departing near the base of the receptacle.

In remarkably shady places at the sides of a rivulet; plentiful but only in a few spots; 976-1067 m alt.

Only known from the type collected in 1856-1857.

D. warneckei Engl. – Icon.: Eggli, o.c.: fig. 50h.

Herb 30-100 cm tall, with short, sometimes ± tuberous rhizome; stem erect or ascending, branched (at least with arrested branches with minute leaves), 2-10 mm thick, succulent, sparsely minutely puberulous, hairs mostly in longitudinal lines; scars of leaves and inflorescences rather conspicuous; receptacle greenish, discoid, suborbicular, 0,8-1,5 cm Ø; flowering face orbicular or slightly lobed, ± 0,8-1,4 cm Ø; fringe distinct, to 1 mm broad; appendages basically in 2 rows, those of the inner (= marginal) few and short, those of the outer (= submarginal) longer, ± 10-15, broadly to narrowly triangular to band-shaped or to subspathulate 0,1-1 cm long, sometimes dentate.

Forest, in shady and sometimes wet places; often among rocks; 130 (Cha Simba) -1300 m alt.

D. yambuyaensis De Wild. – Icon.: De Wildeman in Ann. Mus. Congo Belge, B, Bot., Sér. 5, 3: pl. 5, 3: pl. 5, 1909; Bot. Mag. 141: pl. 8616, 1915; Berg & Hijman, in Ilicifolia 2: 161, 1999.

Herb with creeping and descending rhizome; stems 15-40 cm tall, woody towards the base, 2-4 mm thick, sparsely puberulous to hirtellous with straight hairs, rather long, white, spreading; receptacle discoid and plane to slightly convex, suborbicular to multangular; with conspicuous ribs running into the long appendages; flowering face multangular or stellately lobed, 1,3-2 cm Ø, plane to slightly convex; fringe papyraceous, 2-8 mm broad; appendages numerous, terminally linear to filiform, varying in length, ± 6 of them to 12 cm long, in the lower 1/3 or 1/2 part broadened and pectinate, these alternated by numerous shorter appendages, in the lower 1/5-1/4 part broadened and pectinate.

On forest ground in shaded places; rather common in swampy forests; low altitudes.

D. zambesiaca Hijman – Icon.: Berg & Hijman, o.c.: 203; Burrows & Burrows, Figs S. & S.-C. Afr.: 317, 2003 (partial).

Herb with a creeping fleshy rhizome ± 0,5 cm thick, gradually passing into the leaf-bearing almost glabrous stem 0-1,5 cm long, 0,5 cm thick, with short internodes; habit exceptional for African species, but resembling that of several Neotropical ones, e.g. *D. cayapia* Vellozo and *D. brasiliensis* Lam.; receptacle broadly

funnel-shaped, orbicular to substellate 0,2-0,5 cm Ø; fringe almost absent; primary appendages 3-5, spathulate, 0,7-1 cm long; secondary ones 3-6, linear to subspathulate, 1-3 mm long; fruit unknown.

Leaf litter in mixed evergreen forest; c. 200 m alt.

Only known from the type collected in 1971.

Perhaps related to *D. barnimiana.*

D. zanzibarica Oliv.; L. Newton, Check-list Kenyan Succ. Pl.: 32, 2003. – Icon.: Hook. Ic. Pl. 16: pl. 1581, 1886; Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 7 A, 1898 (sub nom. *D. volkensii);* Berg & Hijman, in Ilicifolia 2: 192, 1999 ; Eggli, Ill. handbook succ. pl.: Dicot., 2002.

Herb to 50-75 cm tall, rhizomatous or sometimes tuberous; stems erect or ascending to 1-3 m long, the base sometimes forming a tuber to 10 cm across, branched (at least with arrested branchlets with minute leaves) or unbranched 2-10 mm thick when dry, sparsely minutely puberulous, hairs mostly in longitudinal lines; receptacle broadly turbinate to discoid, triangular to subquadrangular (or ± irregularly substellate or elliptic), 0,5-2 cm Ø; flowering face triangular to subquadrangular to irregularly substellate; fringe narrow, to 1 mm broad, partly (near the peripheral flowers) covered with minute, scale-like protuberances; appendages in 2 rows, those of the inner (= marginal) sometimes indistinct or to 1-2 mm long, broadly semi-orbicular, forming a crenate rim; those of the outer (= submarginal) 2-7, usually only 3-4 of them band-shaped to triangular 0,4-0,8 cm long, sometimes narrowed at the base, with a prominent midrib beneath, the other 1-4 ones triangular to ovate, distinctly shorter, to 0,3 cm long.

Rocks, cliffs; epiphytic or in ground humus; in various habitats from forest to succulent and deciduous bushland or thickets; 800-2400 m alt.

Zanzibar?

D. zenkeri Engl. – Icon.: Engler, Monogr. afr. Pflanzenfam. 1, Moraceae: pl. 7 C, 1898; De Wildeman, Miss. Em. Laurent 2: pl. 32, 1905 (sub nom. *D. laurentii);* Berg & Hijman, o.c.: 159, 1999.

syn.: *D. laurentii* De Wild., incl. var. *brevipedicellata* De Wild.; *D. mogandjensis* De Wild.; *D. solheidii* De Wild.

Herb with creeping rhizome and erect stems 10-50 cm tall, 2-4 mm thick; base woody, glabrous or densely puberulous with uncinate hairs, intermixed with longer curved ones; receptacle discoid or shightly funnel-shaped, 3-5-angled or 3-5-lobed, 0,6-1,6 cm Ø; flowering face slightly concave to convex, fringe 0,5-2,5 mm broad; primary appendages at the angles of the receptacle 3-5, narrow to filiform, 2,5-12 cm long, at the base sometimes with 1 or 2 small teeth, at the apex often 2-lobed; secondary appendages 0-4, tooth-like or linear, 1-10 mm long.

Humid primary forests; low altitudes.

SYNONYMS:

Ctenocladium mildbraedii (Engl.) Airy Shaw = **Dorstenia psilurus** var. **scabra**

Ctenocladus mildbraedii Engl. = **Dorstenia psilurus** var. **scabra**

Dorstenia achtenii De Wild., incl. var. *laxiflora* Hauman = **D. benguellensis** (See note)

alternans Engl. = **D. mannii** var.

amboniensis De Wild. = **D. tayloriana** var. **tayloriana**

amoena A. Chev., incl. var. *truncata* A. Chev. = **D. kameruniana**

angusta Engl. = **D. poinsettiifolia** var.

arabica Hemsl. = **D. foetida** subsp. **foetida**

aspera A. Chev., incl. var. *deltoidea* A. Chev. = **D. turbinata**

asteriscus Engl. = **D. ciliata**

barnimiana subsp. *tropaeolifolia* (Schweinf.) Lye = **D. tropaeolifolia**

var. *tropaeolifolia* (Schweinf.) Rendle = **D. tropaeolifolia**

batesii Rendle = **D. lujae** var.

bequaertii De Wild. = **D. dinklagei** var.

bicornis Schweinf. ("bicuspis") = **D. psilurus** var. **psilurus**

binzaensis De Wild. = **D. dinklagei** var.

braunii Engl. = **D. hildebrandtii** var. **hildebrandtii**

brevifolia Peter = **D. hildebrandtii** var. **hildebrandtii**

brieyi De Wild. = **D. dinklagei** var.

buesgenii Engl. = **D. turbinata**

campanulata Hauman – See note under **D. benguellensis**

carnulosa De Wild. = **D. hildebrandtii** var. **hildebrandtii**

caudata Engl. = **D. buchananii** var. **buchananii**

caulescens Schweinf. ex Engl. = **D. cuspidata** var. **cuspidata**

crispa Engl. = **D. foetida** subsp. **foetida**

var. *lancifolia* Rendle = **D. foetida** subsp. **lancifolia**

var. *pachypoda* Chiov. = **D. foetida** subsp. **lancifolia**

cuspidata Hochst. ex A. Rich. var. *debilis* (Baill.) Léandri = **C. cuspidata** var. **humblotiana**

var. *humbertii* Léandri = **C. cuspidata** var. **humblotiana**

debeerstii De Wild., incl. var. *multibracteata* (R. E. Fr.) Rendle = **D. benguellensis**

debilis Baill. = **D. cuspidata** var.**humblotiana**

denticulata Peter = **D. hildebrandtii** var. **schlechteri**

dinklagei Engl. (1911) = **D. turbinata**

dinklagei Engl. (1894) = **D. dinklagei**

edeensis Engl. = **D. turbinata**

equatorialis Rendle = **D. dinklagei** var. **brieyi**

frutescens Engl. = **D. elliptica**

gabunensis Engl. = **D. poinsettiifolia** var. **poinsettiifolia**

gaussenii Trochain & Koechlin = **D. dinklagei** var. **binzaensis**

gilletii De Wild. = **D. psilurus** var. **scabra**

goossensi De Wild. = **D. yambuyaensis**

gourmaensis A. Chev., incl. var. *floribunda* A. Chev. = **D. cuspidata** var. **cuspidata**

harmsiana Engl. = **D. ciliata**

var. *batesii* (Rendle) Hijman & C. C. Berg = **D. lujae** var. **batesii**

hispida Peter = **D. schliebenii**

hockii De Wild. & Th. Dur., incl. var. *multibracteata* (R. E. Fr.) Rendle = **D. benguellensis**

holtziana Engl. = **D. zanzibarica**

homblei De Wild. = **D. benguellensis**

humblotiana Baill. = **D. cuspidata** var.

DORSTENIA

intermedia Engl. = **D. mannii** var. **mannii**

jabassensis Engl., incl. var. *cuneata* Engl. = **D. ciliata**

katangensis De Wild. = **D. benguellensis**

katubensis De Wild. = **D. benguellensis**

klainei Pierre ex Heckel = **D. psilurus** var. **scabra**

kribensis Engl. = **D. mannii** var. **alternans**

kyimbilaensis De Wild. = **D. schliebenii**

lactifera De Wild. = **D. benguellensis**

laikipiensis Rendle = **D. tayloriana** var.

latibracteata Engl. = **D. warneckei**

laurentii De Wild., incl. var. *brevipedicellata* De Wild. = **D. zenkeri**

ledermannii Engl. = **D. turbinata**

librevillensis De Wild. = **D. poinsettiifolia** var.

liebuschiana Engl. = **D. goetzei**

longicauda Engl. = **D. poinsettiifolia** var.

longipedunculata De Wild. = **D. buchananii** var.

lotziana Engl. = **D. poinsettiifolia** var. **angusta**

lukafuensis De Wild. = **D. psilurus** var. **psilurus**

maoungouensis De Wild. = **D. hildebrandtii** var. **hildebrandtii**

marambensis Peter = **D. hildebrandtii** var. **hildebrandtii**

massonii Bureau = **D. psilurus** var. **staudtii**

mildbraediana Peter = **D. benguellensis**

mirabilis R. E. Fries, incl. var. *multibracteata* R. E. Fries = **D. benguellensis**

mogandjensis De Wild. = **D. zenkeri**

multiradiata Engl. = **D. barteri** var.

mundamensis Engl. = **D. mannii** var. **mungensis**

mungensis Engl., incl. var. *bipindensis* Engl. = **D. mannii** var. **mungensis**

nyangensis Pellegr. = **D. dinklagei** var. **brieyi**

obanensis Hutch. & Dalz. = **D. turbinata**

oblonga Compère = **D. convexa** var.

obovata A. Rich. = **D. foetida** subsp. **foetida**

obtusibracteata Engl. = **D. tenera** var.

ophiocoma K. Schumann & Engl. = **D. mannii** var. **mannii**

var. *alternans* (Engl.) Hijman & C. C. Berg = **D. mannii** var. **alternans**

var. *longipes* Engl. = **D. mannii** var. **mannii**

var. *minor* Rendle = **D. mannii** var. **mannii**

var. *mungensis* (Engl.) Hijman & C. C. Berg = **D. mannii** var. **mungensis**

var. *stipulata* (Rendle) Hijman & C. C. Berg = **D. mannii** var. **stipulata** fa. *humilis* Hijman & C. C. Berg = **D. mannii** var. **humilis**

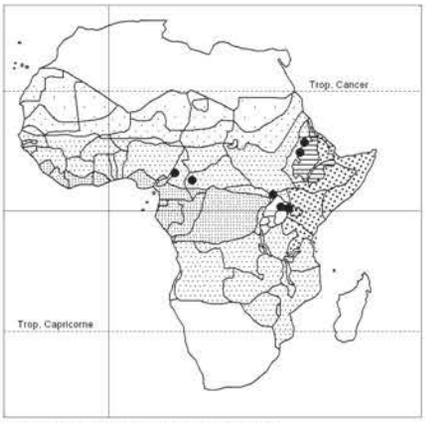
ophiocomoides Engl. = **D. mannii** var. **mungensis**

ophioglossoides Bureau = **D. barnimiana**

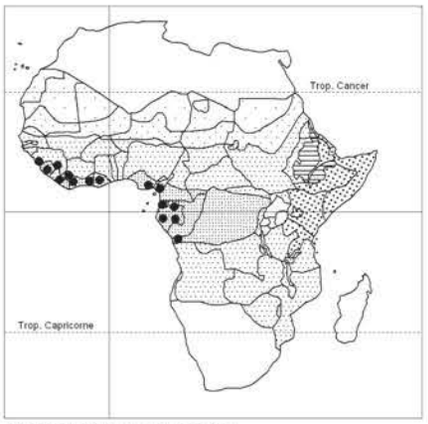
orientalis De Wild. = **D. alta**

palmata Engl., incl. var. *integrifolia* Chiov. = **D. barnimiana**

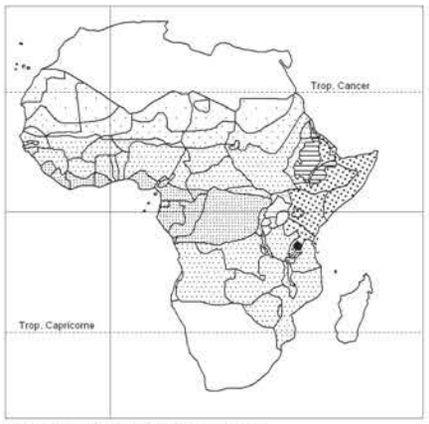
papillosa Hauman, incl. var. *plethorica* Hauman = **D. benguellensis**



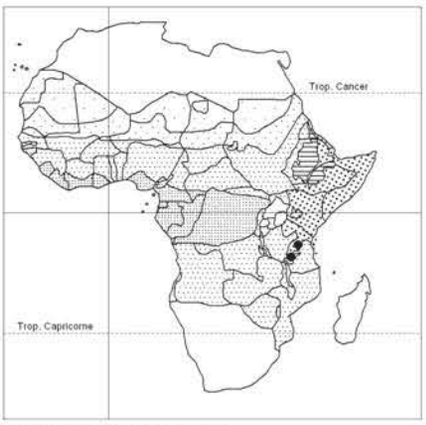
Dorstenia tropaeolifolia



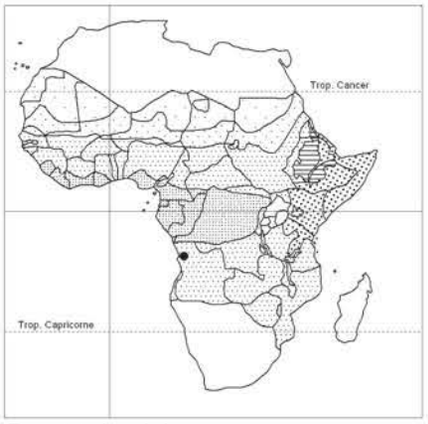
Dorstenia turbinata



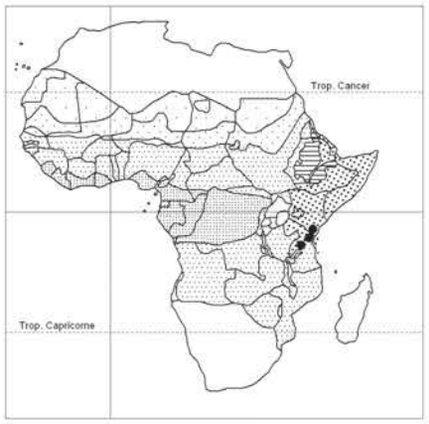
Dorstenia ulugurensis



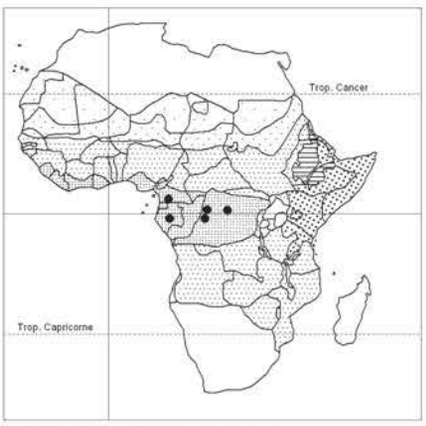
Dorstenia variifolia



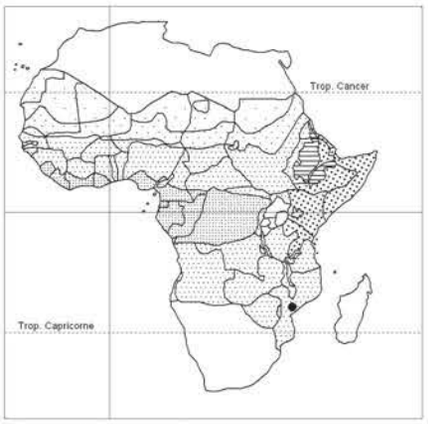
Dorstenia vivipara



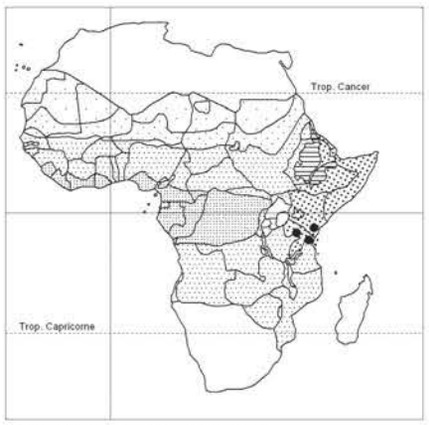
Dorstenia warneckei



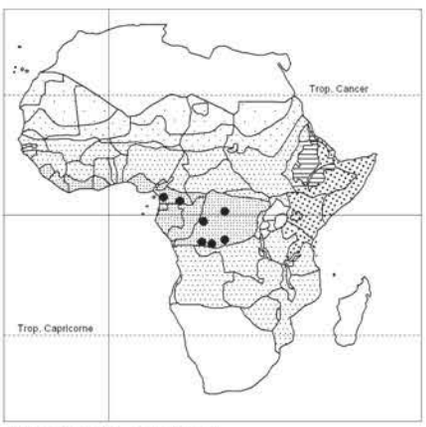
Dorstenia yambuyaensis



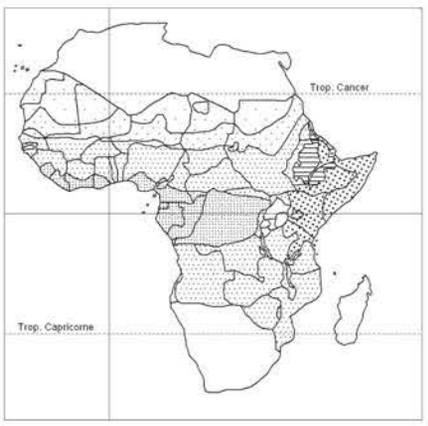
Dorstenia zambesiaca

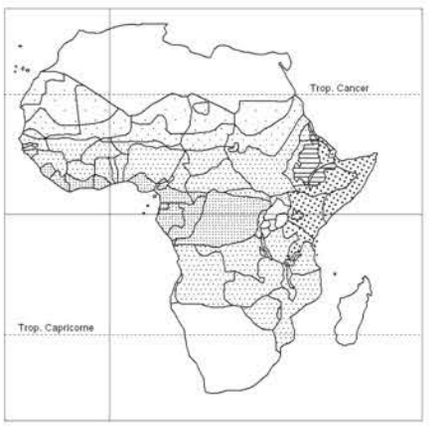


Dorstenia zanzibarica



Dorstenia zenkeri





paucibracteata De Wild. = **D. dinklagei**, intermediate var. **brieyi** / var. **bequaertii**

paucidentata Rendle = **D. tenera** var. **tenera**

pectinata Peter = **D. tayloriana** var. **laikipiensis**

peltata Engl. = **D. tropaeolifolia**

penduliflora Peter = **D. brownii**

phillipsiae Hook. f. = **D. foetida** subsp. **foetida**

pierrei De Wild. = **D. poinsettiifolia** var. **librevillensis**

piscaria Hutch. & Dalziel = **D. barteri** var. **subtriangularis**

piscicelliana Busc. & Muschl. = **D. benguellensis**

poggei Engl., incl. var. *meyeri-johannis* Engl. = **D. benguellensis**

poinsettiifolia Engl. var. nov. sensu Cheek = **D. poinsettiifolia** var. **achoundongiana**

poinsettiifolia var. *grossedentata* Engl., var. *subdentata* Engl., var. *undulata* Engl. = **D. poinsettiifolia** var. **poinsettiifolia**

polyactis Peter = **D. hildebrandtii** var. **schlechteri**

preussii Schweinf. ex Engl., incl. var. *latidentata* Engl. = **D. cuspidata** var. **preussii**

psiluroides Engl., incl. var. *subintegra* Engl. = **D. psilurus** var. **psilurus**

psilurus Welw. var. *brevicaudata* Rendle = **D. psilurus** var. **psilurus**

var. *compacta* De Wild. = **D. psilurus** var. **psilurus**

var. (or fa.) *subintegrifolia* De Wild. = **D. psilurus** var. **scabra**

quarrei De Wild. & Staner = **D. cuspidata** var. **cuspidata**

quercifolia R. E. Fries = **D. hildebrandtii** var. **schlechteri**

radiata Lam. = **D. foetida**

reducta De Wild. = **D. dinklagei** var.

renneyi Airy Shaw & N.Taylor = **D. hildebrandtii** var. **hildebrandtii**

rhodesiana R. E. Fries = **D. benguellensis**

rhomboidea Peter = **D. hildebrandtii** var. **hildebrandtii**

rosenii R. E. Fries, incl. var. *multibracteata* R. E. Fries = **D. benguellensis**

ruahensis Engl., incl. var. *appendiculosa* Peter = **D. buchananii** var. **longepedunculata**

rugosa Peter = **D. tayloriana** var. **laikipiensis**

ruwenzoriensis De Wild. = **D. brownii**

sacleuxii De Wild. = **D. warneckei**

saxicola Engl. = **D. cuspidata** var **humblotiana**

scabra (Bureau) Engl., incl. var. *denticulata* Engl., var. *longicaudata* Engl., var. *subintegrifolia* (De Wild.) Rendle = **D. psilurus** var. **scabra**

schlechteri Engl. = **D. hildebrandtii** var.

seretii De Wild. = **D. dinklagei** var. **brieyi**

sessilis R. E. Fries, ? incl. var. *undulata* Engl. = **D. benguellensis**

smythei Sprague, incl. var. *deltoidea* Hutch. & Dalziel = **D. turbinata**

solheidii De Wild. = **D. zenkeri**

sp. A in FWTA, 1958 = **D. djettii**

sp. "Taba'a Gorge" = **D. lavrani**

spathulibracteata Engl. = **D. turbinata**

staudtii Engl. = **D. poinsettiifolia** var.

stenophylla R. E. Fries = **D. benguellensis**

stipitata De Wild. = **D. benguellensis**

stipulata Rendle = **D. mannii** var.

stolzii Engl. = **D. psilurus** var. **psilurus**

subrhombiformis Engl. = **D. poinsettiifolia** var. **staudtii**

subtriangularis Engl. = **D. barteri** var.

talbotii Rendle = **D. lujae** var. **lujae**

tanneriana Peter = **D. hildebrandtii** var. **hildebrandtii**

telekii Schweinf. = **D. barnimiana**

tenuifolia Engl. = **D. psilurus** var. **scabra**

tessmannii Engl. = **D. poinsettiifolia** var. **poinsettiifolia**

tetractis Peter = **D. cuspidata** var. **cuspidata**

triternata Chiov. = **D. barnimiana**

unicaudata Engl. = **D. buchananii** var. **buchananii**

unyikae Engl. & Warb. = **D. cuspidata** var. **cuspidata**

usambarensis Engl. = **D. holstii** var. **holstii**

variegata Engl. = **D. picta**

verdickii De Wild. & Th. Durand, incl. var. *scaberrima* Hauman – See note under **D. benguellensis**

vermoesenii De Wild. = **D. mannii** var. **mannii**

volkensii Engl. = **D. zanzibarica**

walleri Hemsley, incl. var. *minor* Rendle = **C. cuspidata** var. **cuspidata**

wellmannii Engl. = **D. benguellensis**

yangambiensis J. Léonard = **D. poinsettiifolia** var. **poinsettiifolia**

Kosaria (Cosaria) **barnimiana** (Schweinf.) Schweinf. = **Dorstenia**

foetida Forssk. = **D. foetida**

forskalii J. F. Gmel. = **D. foetida** subsp. **foetida**

obovata (A. Rich.) Schweinf. ex Solms = **D. foetida** subsp. **foetida**

tropaeoliifolia Schweinf. = **D. tropaeoliifolia**

Trymatococcus africanus Baill. = **Dorstenia**

conrauanus Engl. = **D. africana**

dorstenioides Engl. = **D. dorstenioides**

oligogyna Pellegr. = **D. oligogyna**

FICUS / *80*

syn.: *Sycomorus* Gasp.; *Pharmacosycea* Miq.; *Urostigma* Gasp.; *Galoglychia* Gasp.

Pantropical genus of ± 735 species.

"Figs *(Ficus)* and fig wasps *(Agaoninae)* are obligate mutualists: all figs are pollinated by agaonines that feed exclusively on figs. This extraordinary symbiosis is the most extreme example of specialization in a plant-pollinator interaction and has fuelled much speculation about co-divergence." [Anonymous (V. Savolainen) in Kew Sci. 29: 3, 2006.]

"Very few people can accurately identify figs, it's difficult and time-consuming and so there is an increasing amount of unidentified material. – People don't realise how much taxonomic work still needs to be done" (K. Berg, Botanics 23: 9, 2005.)

One species, *Ficus orestia,* is known only from the type.

BEENTJE, H. J. & F. M. MBAGO (2007). A guide to the fig trees of western Tanzania with special emphasis on Gombe and Mahale National Parks. *J. E. Afr Nat. Hist.* 96: 1-26.

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Ficus abscondita C. C. Berg

Shrub sometimes lianescent, to 3 m tall; leaves in spirals with petiole 2-8 cm long, 3-4 mm thick; lamina obovate to oblanceolate, 28-40 × 8-15 cm, (sub-)coriaceous to coriaceous, apex abruptly and ± sharply acuminate, base acute to subobtuse to truncate or to cordate; margins entire; both surfaces glabrous; figs in the leaf axils or just below the leaves, *often* (entirely) *hidden* by the persistent stipules, sessile, 2,5-6,5 cm long. Leafy twigs *hollow.*

Epiphytic or epilithic; rain-forest; along river.

F. abutilifolia (Miq.) Miq.; Berg in Fl. analyt. Bénin: 810, 2006 (Wageningen). – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 129-132, 2003; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 283, 2006.

bas.: *Urostigma abutilifolium* Miq.

syn.: Enum. 2: 135, 1992; *Urostigma catalpaefolium* Miq.; *Ficus picta* Sim

Bushy shrub 3-4 m tall, to tree 10-15 m, deciduous or semi-deciduous; stems whitish; crown spreading, ± dense; leaves in spirals with petiole 2-18 cm long, 2-4 mm thick; lamina ± coriaceous, cordiform to broadly ovate or subreniform, 6-19 × 5-20 cm, apex shortly acuminate to subacute, obtuse or rounded, base cordate, margins entire; upper surface glabrous or with sparse hairs on the main veins, lower surface puberulous to subtomentellous, sometimes only in the axils of the lateral veins (or occasionally glabrous); figs in pairs in the leaf-axils or just below the leaves (sometimes fig solitary), reddish to yellowish.

Terrestrial, often epilithic (granite, banded ironstone, basalt, sandstone, laterite), a rock-splitter; in savanna; rocky shorelines and islands in lakes and rivers; 0-1100 m alt.

S. Africa, Swaziland, Botswana.

Habitat similar to that of *F. glumosa* but occurs in hotter and drier places and at lower altitude than the latter.

Perhaps conspecific with *F. populifolia* (see this species).

F. adolfi-friderici Mildbr.

Tree to 15 m tall; leaves in spirals with petiole 0,5-3,5 cm long, 1,5-2,5 mm thick; lamina oblong to elliptic, 4-8-20 × 2-4-9,5 cm, coriaceous, apex shortly and abruptly acuminate, base sharp to rounded to subcordate, margins entire; both surfaces glabrous; figs 2-6 together in the leaf axils or on short twigs below the leaves.

Rain-forest; 0- ± 1100 m alt.

F. amadiensis De Wild. – Icon.: Beentje & Mbago (2007): 12.

Bushy erect tree to ± 15 m tall; leaves in spirals; lamina glossy, oblong to elliptic, ovate or lanceolate, sometimes ± obovate 4-20 × 2-8,5 cm, apex obtuse to rounded, base obtuse to ± cordate, margins entire; both surfaces glabrous; petiole 1-7 cm long, 1,5-2,5 mm thick; figs in pairs in the leaf-axils, red, initially in *calyptrate buds* to ± 1 cm long; basal bracts persistent.

Wooded grassland; sometimes on hill tops or on ant-hills; lakeside forest and thicket; epilithic in rock cracks in savanna; 950-2140 m alt. – Secondarily terrestrial?

F. ardisioides Warb. – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 138, 2003 [subsp. **camptoneura** (Mildbr.) C. C. Berg]; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 289, 2006.

Shrub or tree to 5-10 m tall, sometimes a liane; leaves spirally arranged with petiole 5-20 mm long, 1-2 mm thick; lamina oblong to elliptic, lanceolate or oblanceolate 1,5-26 × 1-9,5 cm, ± coriaceous, apex acuminate to subcaudate (acumen ± 0,6-2 cm long), base obtuse, margins entire, both surfaces glabrous; figs in pairs in the leaf-axils, subglabrous to densely tomentellous, yellow-green spotted red, turning purple red; basal bracts small, persistent.

Riverine- or swamp forest, or periodically flooded, in understorey; on water's edge in deep shade of fringing forest; 0-1800 m alt. – An epiphyte or semi-scandent or a tree.

Bioko/Fernando Poo.

Easily confused with *F. natalensis* subsp. *leprieurii* but habit lax and fruit sessile in *F. ardisioides*.

Comprises 2 subspp.

F. artocarpoides Warb.; Berg in Fl. analyt. Bénin: 810, 2006 (Wageningen). – Icon.: Aubréville, Fl. forest. Côte d'Iv. ed. 2, 1: 97, pl. 23 A, 1959 *(F. elegans*, partial); Beentje & Mbago (2007): 12; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 287, 2006.

syn.: *Urostigma elegans* Miq.; Enum. 2: 135, 1992.

Shrub or tree to 10(-15) m tall; leaves in spirals with petiole 1-3,5 cm long, 1-2 mm thick; lamina coriaceous, oblong to subovate or oblanceolate, 6-21 × 2-6 cm, apex subacute to obtuse or sometimes rounded, base obtuse to acute, margins entire, upper surface glabrous, lower surface minutely puberulous on the main veins; figs to 5 together, greenish to purple, on ± curved spurs to 4 cm long, ± 1 cm thick, on the main and lesser branches (or just below the leaves).

Semi-epiphytic and strangling; rain- and riverine forests; also drier types of evergreen forest; also in secondary associations; palm-grove; humus rich stations; coastal plains; on 1922 lava flow (Cameroon); 300 (? and less)-1750 m alt.

F. asperifolia Miq.; Berg in Fl. analyt. Bénin: 810, 2006 (Wageningen). – Icon.: Burrows & Burrows, o.c.: 50-51; Beentje & Mbago (2007): 12; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 267, 275, 2006.

Shrub 1,2-5 m tall, often with whippy, straggling or subscandent branches (liane to 8 m long); leaves distichous, alternate, petiole 0,5-2 cm long; lamina chartaceous to subcoriaceous, elliptic to oblong, ovate, subobovate, lanceolate or sometimes linear, 3-12 × 1,5-12 cm, usually ± asymmetrical, apex acuminate to caudate, acute or sometimes obtuse, base acute to obtuse or rounded, margins dentate to irregularly pinnately lobed or divided or sometimes subentire, upper surface scabrous, hispidulous or strigillose, lower surface hispid to hirtellous, sometimes almost glabrous; figs 1-5 together in the leaf-axils or just below the leaves, sometimes on the older wood, bright red or orange, ostiole often prominent.

Forest, often on riverbanks, swamp or riverine forest, often flooded; wooded grassland; secondary forests, thickets; on sand; in understorey below *Khaya grandifoliola, Cola gigantea;* rain-forest with *Albizia, Macaranga, Croton, Ocotea* in moist places near river; rather dry shady places in primitive forest; gallery with *Uapaca heudelotii, Hexalobus crispiflorus, Dorstenia smythei, Tylophora sylvatica, Alafia scandens, Ipomoea alba;* 0-2000 m alt.

Very variable, with perhaps 2 tenable subspecies: a forest form with strongly asymmetrical leaves and a woodland form with ± equal leaves; also petiole lenghts in both forms different.

Confused with other "sand-paper-leaved" species: *F. capreifolia, F. exasperata, F. pygmaea.* Can also be confused with juvenile specimens of *F. dicranostyla* with irregularly lobed leaves.

Bioko/Fernando Poo.

F. barteri Sprague; Berg in Fl. analyt. Bénin: 810, 2006 (Wageningen). – Icon.: Burrows & Burrows, o.c.: 145-147; Hawthorne & Jongkind, o.c.: 281.

Evergreen shrub or tree to 10-35 m tall, bearing some aerial roots; bole deeply fluted in large specimens; leaves spirally arranged with petiole 1-4,5 cm long, ± 2 mm thick; lamina lanceolate to linear, or less often oblong to elliptic 5,5-30 × 1,5-7 cm, coriaceous, glossy, apex acuminate to subacute, base acute to rounded, margins entire, both surfaces glabrous; figs 1-2 in the leaf-axils, yellowish (orange).

Riverine and swamp forests; on rocks in waterfalls; rain-forest and drier types of evergreen forest; hemi-epiphytic; 5-1200 m alt.

Leaves very variable in shape.

F. bubu Warb. – Icon.: Burrows & Burrows, o.c.: 241-244; White & al., Evergreen for. fl. Malawi: 390, 2001; Hawthorne & Jongkind, o.c.: 283.

Semi-deciduous tree, or shrub, 10-30 cm tall and to 30 m wide; often with a clear stem to several m in height, large specimens slightly buttressed; bark pale green or white, smooth; leaves in spirals with petiole 3,5-16 cm long, 2,5 mm thick; lamina coriaceous, elliptic or sometimes oblong to subcircular, 12-30 × 6-23 cm, apex shortly acuminate to almost rounded, base obtuse to rounded or to cordate, margins entire, both surfaces glabrous; figs on short (often almost spine-like) spurs on the main branches or the trunk, brownish, globose, c. 2,5 cm Ø.

Hemi-epiphytic, usually starting life as an epiphyte, the roots later strangling the host tree, becoming terrestrial, free-standing; also lithophyte. – Forest; riverine and lakesides, other groundwater forests; sometimes persisting in disturbed places; secondary forests; 0-1300 m alt.

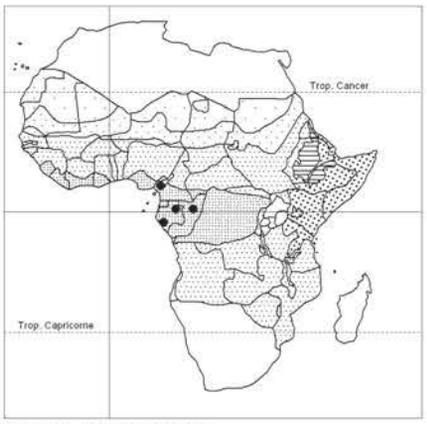
NW Namibia (Van Jaarsveld & Voigt, Veld & Flora 89: 154, 2003; Aloe 45:58, 2008); S. Africa, Swaziland. – Planted as an avenue tree in Togo.

Resembling *F. glumosa* but with fruits on stems and leaves glabrous. Taxonomic status uncertain.

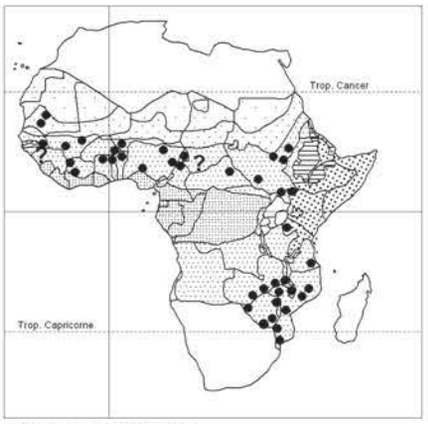
F. burretiana Mildbr. & Hutch.

Shrub, liane or tree; leaves in spirals with petiole 0,6-4 cm long; lamina oblong to elliptic, coriaceous, 5-9 × 2,5-4,5 cm, apex shortly and slightly acuminate, margins entire, base acute to subobtuse; figs 1-3 in the leaf-axils or on twigs.

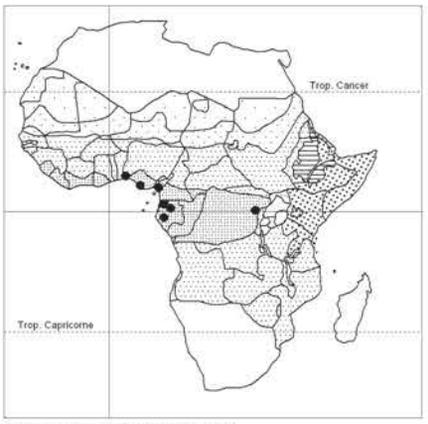
Rain-forest on firm ground; c. 300 m alt.



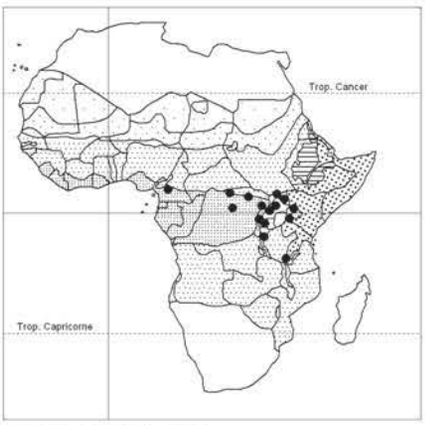
Ficus abscondita



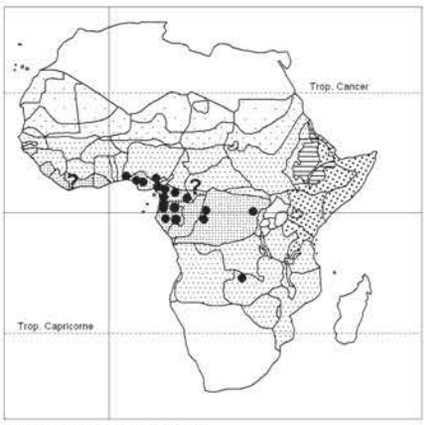
Ficus abutilifolia



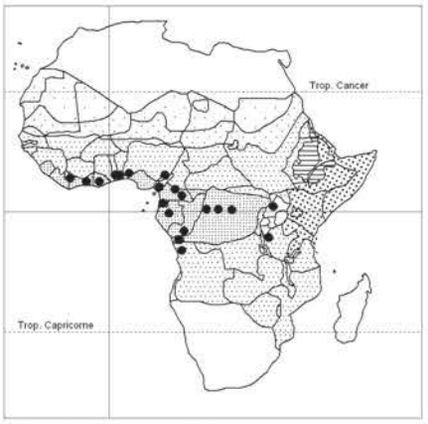
Ficus adolfi-friderici



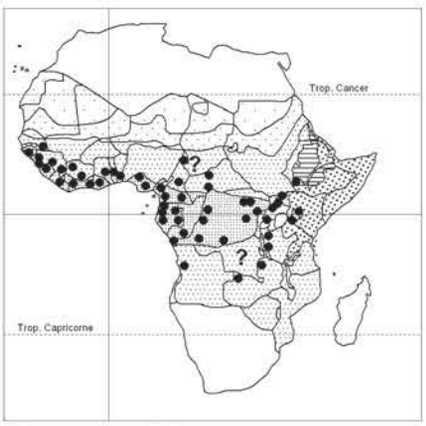
Ficus amadiensis



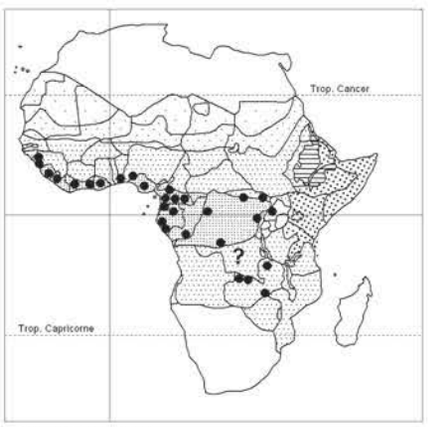
Ficus ardisioides



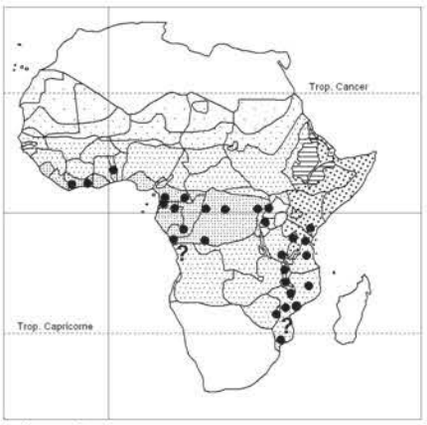
Ficus artocarpoides



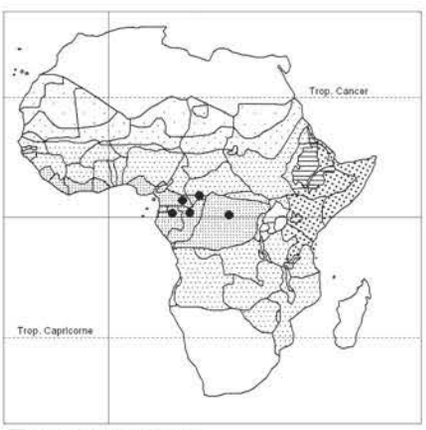
Ficus asperifolia



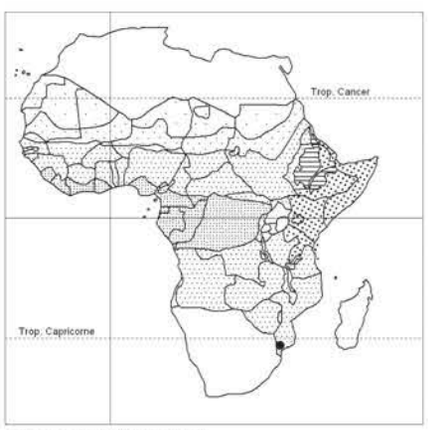
Ficus barteri



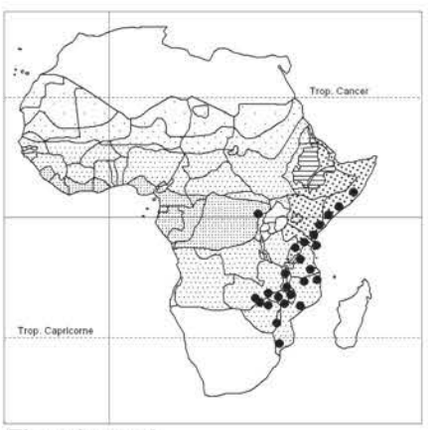
Ficus bubu



Ficus burretiana



Ficus burtt-davyi



Ficus bussei

F. burtt-davyi Hutch. – Icon.: Burrows & Burrows, o.c.: 192-196.

syn.: *F. natalensis* Hochst. var. *minor* (Sond.) Warb.; *Urostigma natalense* (Hochst.) Miq. var. *minor* Sond.

Scrambling or ± lianescent shrub or tree to 8 m tall, briefly deciduous; sometimes hemi-epiphyte, rarely a strangler; sometimes with numerous small aerial roots; leaves spirally arranged or ± distichous with petiole 4-27 mm long, ± 1 mm thick; lamina elliptic to obovate, sometimes oblong, ovate or subcircular 0,5-10 × 0,3-5,5 cm, coriaceous; apex shortly acuminate to subacute or obtuse; base obtuse to rounded or emarginate; margins entire, revolute towards the base, both surfaces glabrous, or the inferior sparsely minutely puberulous on the midrib; figs in pairs or solitary in the leaf-axils.

Coastal and dune forest or scrub; sometimes in coastal swamp forest; terrestrial or epilithic.

S. Africa, S Swaziland.

F. bussei Warb. ex Mildbr. & Burret, excl. var. *longepetiolata* Mildbr. *(= F. recurvata).* – Icon.: Burrows & Burrows, o.c.: 104-108.

syn.: *F. magenjensis* Sim; Enum. 2: 135, 1992.

Tree to 20-25 m, evergreen or briefly deciduous, with spreading dense crown, with a spread of up to 42 m; hemi-epiphytic becoming terrestrial, with buttresses in very large specimens; bark grey to brown, finely longitudinally fissured and flaking into small scales on lower part of trunk; leaves in spirals, with petiole 2-8 cm long, 2-5 mm thick; lamina subovate to oblong, margins entire to repand, 5-25 × 3-13 cm, coriaceous, often brittle when dry; apex subacute to obtuse, base cordate, upper surface glabrous or puberulous on the midrib, lower surface ± glabrous or sparsely hirtellous to puberulous, midrib subhirsute; figs in pairs or solitary in the leaf-axils, yellowish green with whitish warts, puberulous.

Rain-forest; *Sorghum* fields; riverine and coastal; swamp forest and flood plains; humid black soil; loamy soils; woodland; alluvial soils; 0-600 m alt.

Variable in hairiness of leaves and fruits, and in waviness of leaf margins.

Confused with *F. recurvata, F. platyphylla, F. vasta.*

Note: Burrows & Burrows in Figs S. & S.-C. Afr.: 108, 2003, discuss the relationships between *F. bussei* and *F. platyphylla;* "the differences are based primarily upon the degree of pubescence" (of leaves and stipules). They argue that *F. bussei* (1911) is synonymous with *F. platyphylla* (1826), and that the correct name for this plant is thus **F. platyphylla** Delile.

F. calyptrata Thonn. ex Vahl; neotype: Berg & Wiebes 1497. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 283, 2006.

syn.: *F. mallotoides* Mildbr. & Hutch.

Shrub or tree, 6-25 m tall (with bole 15 m, to 40 cm Ø); crown little developed but stout; with well-developed *calyptrate bud covers,* to 1,5 cm long on the leafy branches; leaves in spirals; lamina broadly ovate to elliptic, cordate or suborbicular, 6-22 cm × 5,5-17,5 cm, rounded or obtuse at apex, deeply cordate to subcordate or truncate at base, margins entire, glabrous on both surfaces; petiole 1,5-10 cm long, 1,5-3,5 mm thick, glabrous or sparsely pubescent; figs in pairs in the leaf-axils.

Epiphytic, epilithic. Granitic rock with *Usnea pulvinata, Afrotrilepis pilosa, Bulbophyllum bifarium;* to 700 m alt.

Probably in Ghana; Zaire?

F. capreifolia Delile, incl. var. *ovalifolia* Hutch. – Icon.: B. Curtis & C. Mannheimer, Tree Atlas Namibia: 54, 2005; Berg in Fl. analyt. Bénin: 811, 2006 (Wageningen); Burrows & Burrows, Figs S. & S.-C. Afr.: 55-57, 2003.

Shrub (sometimes scrambling) or tree 5-7-10 m tall, often with root suckers (producing extensive colonies); trunk to 80 cm Ø; bark greenish grey, branchlets green, hairy and limp when young; stems slender, usually with stiff branches; leaves ± distinctly distichous and alternate or subopposite to subverticillate; lamina subovate to oblong or lanceolate, sometimes elliptic 2-16,5 × 1-6 cm, symmetrical, apex acute, obtuse or rounded, 3-lobed or 3-dentate, base rounded to obtuse or cuneate, margin subentire or ± faintly crenate; both surfaces scabrous, sandpapery; petiole 2-25 mm long, 0,5-1,5 mm thick, with stiff hairs variable in length; figs solitary or in pairs in the leaf-axils, green or pale yellow. Free-standing.

River banks in savanna regions; gallery; cascade; scrub; locally common; floodplains; sand banks, swampy places; usually forming dense thickets or stands; often associated with *Salix subserrata;* 0-2600 m alt.

S. Africa, Namibia, Botswana, Swaziland.

Confused with other "sand paper-leaved" species: *F. asperifolia, F. exasperata, F. pygmaea.*

Cultivated by collectors; easily propagated by seed or cuttings.

(**F. chirindensis** C. C. Berg – See below at the end of the species list, p. 66).

F. chlamydocarpa Mildbr. & Burret subsp. **chlamydocarpa** – Icon.: Bot. Jahrb. Syst. 46: 245, 1911; Berg in Kew Bull. 43: 80-81, 1988.

Tree 10-35 m, with very wide crown and huge aerial roots; leaves spirally arranged; lamina oblong to elliptic 12-30 × 4-10,5 cm, apex slightly acuminate, base cordate to rounded or sometimes obtuse, margins entire; upper surface glabrous, lower surface densely very shortly puberulous on main veins; petiole 1-8 cm long, ± 3 mm thick; figs solitary in the leaf-axils.

Forest; open bush; epiphytic at first; 1300-2000 m alt. – Recorded as an epiphyte on quickset hedges in the Mt. Bambouto area, W Cameroon (Sonké & al. in Syst. Geogr. Pl. 71: 214, 2002).

Bioko/Fernando Poo, Principe, São Tomé [subsp. **fernandesiana** (Hutch.) C. C. Berg, introduced into Gabon], Annobon [subsp. **latifolia** (Hutch.) C. C. Berg].

F. conraui Warb. – Icon.: Warburg in Ann. Mus. Congo Belge, B, Bot., Sér. 6, 1: pl. 11, 1904; Fl. Gabon 26: 223, 1984; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 79, 1959 *(F. praticola);* Bull. Misc. Inform. Kew 1915: 325, 1915 *(F. stipulifera);* Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 289, 2006.

syn.: *F. praticola* Mildbr. & Hutch.

Shrub or tree, scrambling or strangler, glabrous, to 10 m tall; leaves spirally arranged; lamina oblong to elliptic or lanceolate or subovate, 6-28 × 2-7 cm, apex slightly to abrubtly acuminate, base acute to rounded, margins entire, both surfaces glabrous; petiole 0,8-4,5 cm long, 1-2 mm thick, glabrous or very shortly pubescent; figs solitary or paired in the leaf-axils.

Drier types of evergreen- or half-deciduous forests; epiphytic; rain-forest; to 1200-1600 m alt.

Bioko/Fernando Poo.

F. cordata Thunb. – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 87-90 and 82-86 (sub nom. *F. salicifolia),* 2003; B. Curtis & C. Mannheimer, Tree atlas Namibia: 56, 2005.

Sarmentous shrub 2-5 m tall or graceful, sometimes drooping tree with often tortuous bole, to 8-15-35(-39) m tall; trunk to 1 m Ø; crown spreading, dense; leaves spirally arranged; lamina lanceolate, ovate, oblong, elliptic or cordiform, rarely ± obovate, 2-17 × 1-8 cm, apex acuminate, acute, obtuse or occasionally rounded, base cordate to rounded, obtuse or occasionally subacute, margins entire; both surfaces glabrous, superior glossy; petiole 0,5-6,5 cm long, 1-2 mm thick; figs mostly in the leaf-axils or just below the leaves, or sometimes on older parts 1-3 together on 2-3 mm long spurs, sessile or on peduncles to 0,3 cm long, 0,5-1 cm Ø, whitish to dark purple or dark red.

Rocky hills and hill sides; lateritic pans; sandstone, granite, limestone, gneiss; riparian (rocky wadi sides, choked with sand, and wadi beds); wooded- and tall grass savanna; often growing directly from crevices of bare rock; lava flows; sometimes sporadic; locally common and gregarious; to 2500 m alt.

Algeria, Libya, Egypt, S Arabia, Socotra (subsp. **salicifolia**); Namibia, S. Africa, Botswana, Swaziland (subsp. **cordata**, subsp. **salicifolia**).

Comprises 3 subspp.:

- subsp. **cordata**, incl. var. *tristis* (Kunth & Bouché) Warb., var. *marlothii* Warb. and var *fleckii* Warb. [syn.: *Urostigma cordatum* (Thunb.) Gasparrini; *U. thunbergii* Miq.; *Ficus tristis* Kunth & Bouché; *F. welwitschii* Warb., incl. var. *beroensis* Hiern], with sessile figs and hairier branchlets, in S part of range;
- subsp. **lecardii** (Warb.) C. C. Berg [bas.: *F. lecardii* Warb.; syn.: *F. lecardii* var. *leccardioides* [sic] (Warb.) Aubrév. based on *F. leccardioides* Warb., nom. in sched., comb. inval.; *F. salicifolia* Vahl var. *latifolia* Hutch.], with broader leaves and dark-drying petiole, in W part of range through to Centr. Afr. Rep.;
- subsp. **salicifolia** (Vahl) C. C. Berg, incl. var. *teloukat* (Batt. & Trab.) Maire, and fa. *eucalyptoides* (Batt. & Trab.) Maire, and var. *australis* Warb.; [bas. & syn. in Enum. 2: 135, 1992; *Urostigma salicifolium* (Vahl) Miq.; *Ficus ambigua* Forssk.; *F. indica* Forssk., non L.; *F. taab* Forssk.]. – Icon.: see above, and Boulos, Fl. Egypt 1: 15, 1999; – Burrows & Burrows, l.c., treat this taxon as a full species, based on different morphological characters, on the distinct ecological and geographical separation, and different pollination wasps. – Nursery material (the Netherlands, Hawaii) named *F. salicifolia,* perhaps an introduced plant from Guyana, S. America, was described as **Ficus salicaria** C. C. Berg, type from Florida, USA, but of uncertain provenance (in Brittonia 56: 54-57, 2004, with a figure).

Note: I. FRIIS (1883) Proposal to reject the name Ficus taab Forssk. (Moraceae). *Taxon* 58: 309-310, 2009.

Friis here recalls the use of the names *Ficus indica* L. 1753, *F. indica* Forssk. 1775, *F. salicifolia* Vahl and *F. taab* Forssk. He concludes that Forsskål probably described the same species twice, "the most obscure *F. taab* was validly published, while the better documented *F. indica* was a later homonym or a misidentification." In this case *F. taab* has priority, "but neither used, nor was any original material available." – The name *Ficus salicifolia* has been used by a large number of classical African floras, and the combination *F. cordata* subsp. *salicifolia* consistently used for the same taxon.

"If accepted that *F. taab* and *F. cordata* are conspecific, then *F. cordata* will have to be replaced by *F. taab,* which would undoubtedly be undesirable. It is therefore proposed that the nearly unknown *F. taab* be rejected and included on the list of "nomina utique rejicienda" according to Art. 56 of the ICBN. In this case the name does not have to be typifield. Adoption of this proposal will remove the threat to the well-known and widely used names *F. cordata* and *F. salicifolia,* and a rejection will finally remove an uncertainty in the nomenclature of African species of *Ficus* that has persisted since Schweinfurth first called attention to it."

"The other option, to typify and revive the long ignored name *F. taab* as a replacement for *F. cordata,* is in accord with the rule of priority in Principle III of the ICBN, but otherwise supporting arguments are difficult to find."

"The diagnosis consists of seven words, and together with the information about the Arabic name and the collecting locality, it seems at least as informative as a significant proportion of other diagnoses from the 18th century, allowing us to identify *F. taab* with reasonable confidence."

From the Arabic name (Ithāb, Thāb), "it seems probable that *F. taab* and *F. cordata* subsp. *salicifolia* represent the same species."

F. crassicosta Warb. – Icon.: Ann. Mus. Congo Belge, B, Bot., Sér. 6, 1 (Ficus fl. Congo): pl. 16 figs. 5-7, 1904.

Tree, 40 m, with a straight bole; leaf lamina oblong-oblanceolate or narrowly panduriform, margins entire, shortly acuminate or obtuse at the apex, truncate or subcordate at the base, 5,5-17 × 2,3-5 cm, petiole 0,7-1,5 cm long; figs solitary in the leaf-axils.

Riparian; epiphytic.

F. craterostoma Mildbr. & Burret – Icon.: Bull. Miscel. Inf. Kew 1915: 331, 1915 (sub nom. *F. mutantifolia);* Burrows & Burrows, Figs S. & S.-C. Afr.: 187-191, 2003; Beentje & Mbago (2007): 12; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 281, 2006.

syn.: Enum. 2: 135, 1992; *F. mutantifolia* Hutch.

Evergreen shrub or tree 5-20 m tall and 22 m wide (as a mature strangler); leaves spirally arranged, tending to be distichous, often subopposite; lamina narrowly obtriangular to subobovate, or oblong to elliptic 3-8 × 2-4,5 cm, apex truncate to bilobed or obtuse, base acute to obtuse, margins entire, both surfaces glabrous; petiole 5-20 mm long, 1-2 mm thick; figs in pairs in the leaf-axils, reddish, sessile, initially enclosed in a calyptrate bud to 1 cm long.

(Hemi-)epiphytic or lithophytic; swamp forest (mushitu); evergreen forest margins; riverine and lake shore vegetation; often on deep sand; edge of swampy gallery with *Mitragyna stipulosa, Raphia* sp., *Cyrtosperma senegalense;* 0-2100 m alt.

S. Africa, Swaziland.

Can be confused with *F. natalensis.*

F. cyathistipula Warb. (excl. syn. *F. densistipulata* De Wild.) – Icon.: Burrows & Burrows, o.c.: 139-141 (subsp. **cyathistipula**); Beentje & Mbago (2007): 12; Van Noort & al. (2007): 647; Hawthorne & Jongkind, o.c.: 289.

Tree, terrestrial or lithophytic, evergreen, to 8-15 m tall, much branching, branches spreading, or a large strangler often with numerous aerial roots, crown rounded; leaves spirally arranged; leaves shiny, lamina oblanceolate to obovate, 6-20 × 3-7 cm, apex acuminate, base cuneate to attenuate, margins entire, both surfaces glabrous; figs 1(3) in the leaf-axils, yellowish, not fleshy.

Rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* lakesides; riverine; forest edges; ground-water forest (mushitu); sometimes on rocks; by springs in very dense thickets; 70-1800 m alt.

Comprises 2 subspp. (syn. in Enum. 2: 135, 1992): – Subsp. **cyathistipula;** – subsp. **pringsheimiana** (Braun & K. Schum.) C. C. Berg, with sessile figs, in Cameroon, Gabon; – material from Ivory Coast with relatively slender twigs, smaller leaves and short stipules might represent another subsp.

Subsp. **pringsheimiana** is easily confused with *F. tesselata.*

F. cyathistipuloides De Wild. – Icon.: Hawthorne & Jongkind, o.c.: 289.

Tree; leaves spirally arranged; lamina oblong to elliptic or lanceolate, 4,5-15,5 × 1,2-6 cm, apex shortly and abruptly acuminate to subacute, base acute to obtuse or sometimes rounded, margins entire, both surfaces glabrous; petiole 0,5-2 cm long, 1-2 mm thick, glabrous; figs solitary in the leaf-axils.

Rain-forest (also coastal); epiphyte; rare; 0-± 1100 m alt.

F. densistipulata De Wild. – Icon.: Bull. Miscel. Inform. Kew 1915: 328, 1915 (sub nom. *F. namalalensis).*

Shrub or tree to 10 m tall; leaves in spirals; lamina oblong to lanceolate or subobovate, 12-25 × 4-11 cm, apex acuminate, base acute or rounded, margins entire, both surfaces glabrous; figs 1-2 in the leaf-axils, subsessile or on peduncles to 0,4 cm long.

Hemi-epiphytic; rain-forest and semi-swamp forest; 1100 (? and less)-1260 m alt.

F. dicranostyla Mildbr.

? Evergreen or deciduous (shrub or) tree 5-6-20-35 m tall and 25 m wide, commonly free-standing, sometimes a strangler; bole cylindrical to 15-25 m high, to 1 m Ø, with or without plank roots; crown narrow, rather open; leaves spirally arranged on white-pubescent twigs; lamina elliptic to oblong or ovate 2-5-20 × 1-2,9 cm, apex acuminate, sometimes subacute, base obtuse to acute or ± cordate, margins entire or almost so; upper surface scabrous, hispidulous, on the main veins puberulous to hirtellous or pubescent, lower surface puberulous to hirtellous or pubescent; petiole 1-5,5 cm long, 1-2 mm thick; figs solitary or in pairs in the leaf-axils, orange.

Wooded grassland; often in rocky places; savanna; forest, gallery; lateritic pans; termite mounds; rain-forest patches; miombo woodland; sometimes not common, sporadic; semi-deciduous forests; also planted; 0-1300 m alt.

Comprises 2 vars.:

– var. **dicranostyla** – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 79 pl. 14 A, 1959; Kew Bull. 23: 502, 1969; Fl. Trop. E. Afr., Moraceae: 61, 1989; Berg & Wiebes, Afric. fig trees & wasps: 86, 1992; Burrows & Burrows, Figs S. & S.-C. Afr.: 75-78, 2003.

syn.: *F. dicranostyla* var. *nitida* Hutch., var. *latifolia* A. Chev., nom. nud.; *F. bongouanensis* A. Chev., January 1917, non 1920 *(= F. variifolia)* nec *F. bongoensis* Warb. *(= F. thonningii); F. lynesii* Lebrun;

– var. **aubrevillei** De Wolf in Kew Bull. 23: 503, 1969, is a local variant with more numerous lateral veins in the leaves (10-17 pairs, not 5-9).

Juvenile specimens with irregularly lobed leaves can be confused with *F. asperifolia.* The taxon may be only a subspecies of the latter (fide Berg & Hijman in Fl. trop. E. Afr., Moraceae: 60, 1989).

Disjunction N Zaire – S Zaire/Zambia.

F. dryepondtiana Gentil (not ex De Wild., fide Verdcourt in Kew Bull. 53: 235, 1998). – Type: See Kew Bull. l.c.

Shrub, tree to 30 m tall or scrambling plant with hollow young branches; leaves spirally arranged; lamina oblong to ovate or subovate 6-16 × 2,5-7 cm, apex acuminate to subacute, base acute to rounded truncate or subcordate or cordate, margins entire, both surfaces glabrous or very shortly pubescent on the main nerves below; petiole 1-4,5 cm long, ± 1,5 mm thick; figs fasciculate on spurs to 3 cm long on basal branches (and on the trunk?).

Humid forests; forest gallery; swampy forests; 1922 lava flow, Cameroon. Epiphytic (strangler); 60 m alt.

F. elasticoides De Wild. – Icon.: Berg & Wiebes, o.c.: 134; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 281, 2006.

Tree to 40 m; leaves spirally arranged; lamina oblong to elliptic, 6,5-18 × 2,5-10 cm, apex shortly and ± clearly acuminate to subacute, base acute to subobtuse, margins entire, both surfaces glabrous; petiole 1,5-6 cm long, ± 2-3 mm thick, glabrous; figs usually paired in the leaf-axils. Hemi-epiphytic or (secondarily) terrestrial.

Rain-forest; moist forest; rare; c. 30 m alt.

In Guinea?

One of the few *forest Ficus* in Africa that is first a strangler and then after the death of the host, can become a self-supporting tree.

F. exasperata Vahl; Fl. analyt. Bénin: 812, 2006 (Wageningen); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 260, 274, 276, 2006. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 74 pl. 12 A, 1959; Burrows & Burrows, Figs S. & S.-C. Afr.: 47-49, 2003; Hawthorne & Jongkind, o.c.: 275; Beentje & Mbago (2007): 14; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 277, 2008.

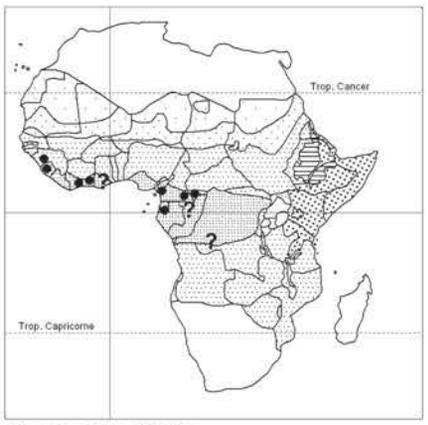
Shrub 2-5 m tall, or tree to 30 m, evergreen or deciduous, patently branched, loosely frondose; bole >50 cm Ø; bark whitish; leaves almost distichous and alternate, sometimes subopposite; lamina ovate to elliptic or obovate, sometimes oblong to subcircular 2,5-22 × 1-12 cm, somewhat asymmetrical, apex shortly acuminate, sometimes acute, obtuse or rounded, base acute to obtuse or occasionally subcordate, margins dentate to subentire; upper surface scabrous, hispidulous (sandpaper), lower surface scabrous, hispidulous or partly hirtellous to subtomentose; petiole 0,5-4 cm long, 1-2 mm thick, scabrous; figs in pairs or solitary in the leaf-axils, just below the leaves or sometimes on the older wood, orange to brick-red. Coppice shoots with lobed leaves.

Edge of closed forest, being colonised by *Khaya grandifoliola;* rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa* at forest edge; rocky places; limestone outcrops; along rivers; sometimes persisting in cleared places; on drained soils; not common in dry areas; farmbush; secondary forests and scrub; often as a strangler; 0-2000 m alt.

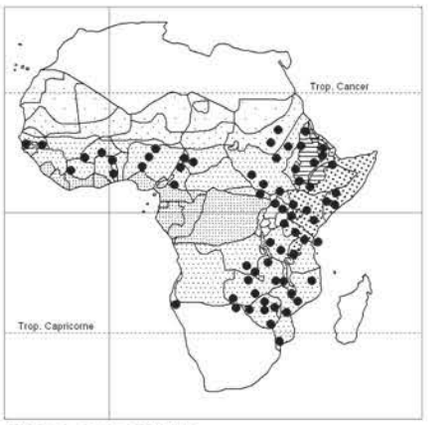
São Tomé, Bioko/Fernando Poo; Yemen; S India, Sri Lanka.

Often confused with the other sandpaper-leaved species, i.e. *F. asperifolia, F. capreifolia, F. pygmaea.*

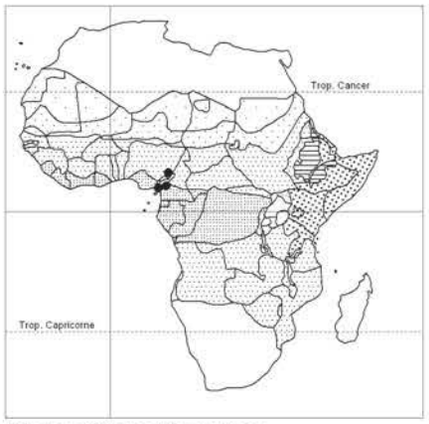
Can be distinguished by the combination of characters: non-amplexicaul stipules, indumentum of leaves, position of figs.



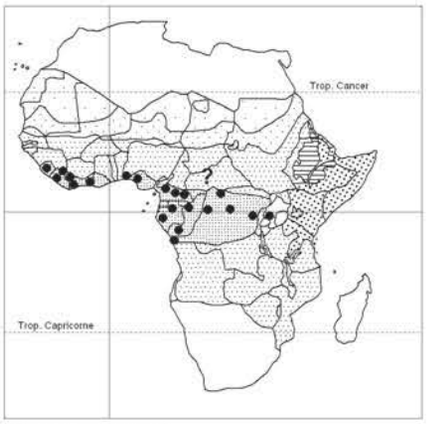
Ficus calyptrata



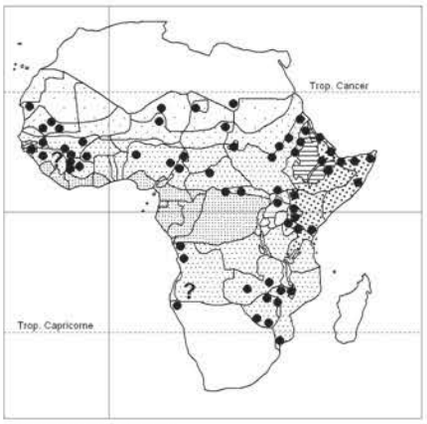
Ficus capreifolia



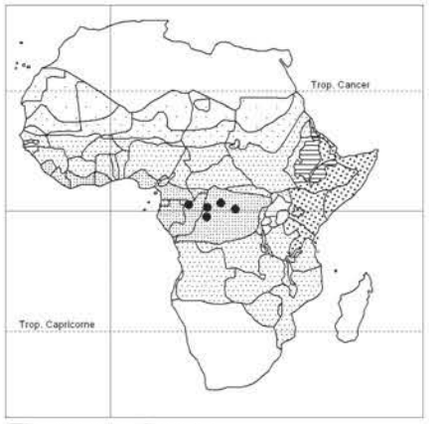
Ficus chlamydocarpa



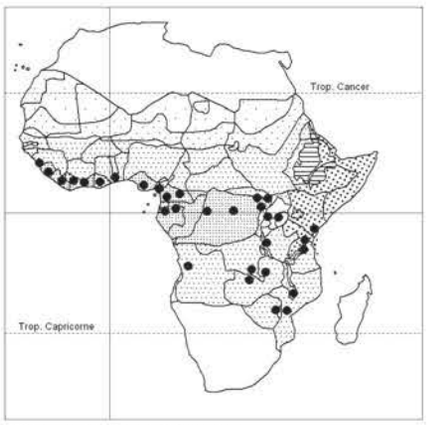
Ficus conraui



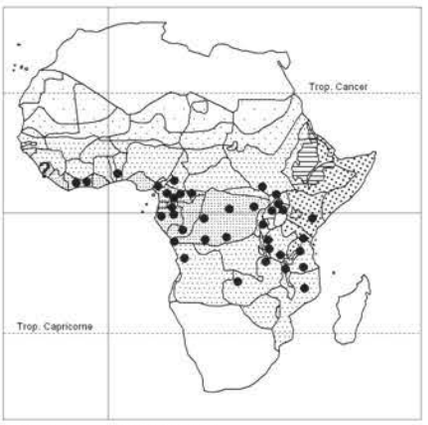
Ficus cordata



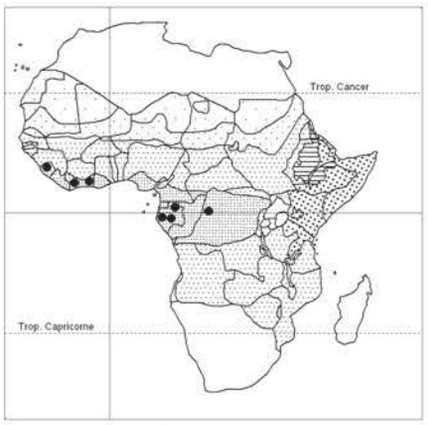
Ficus crassicosta



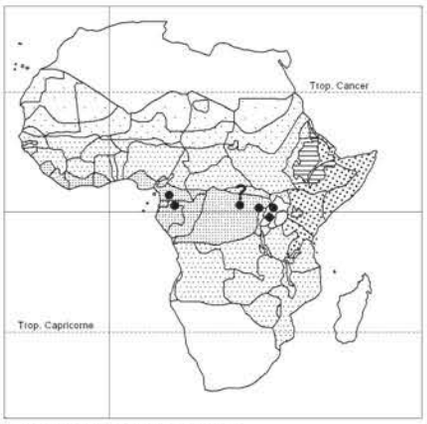
Ficus craterostoma



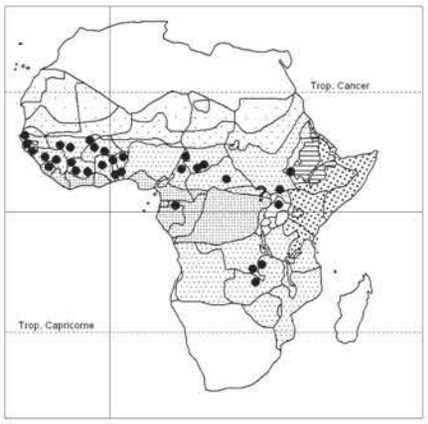
Ficus cyathistipula



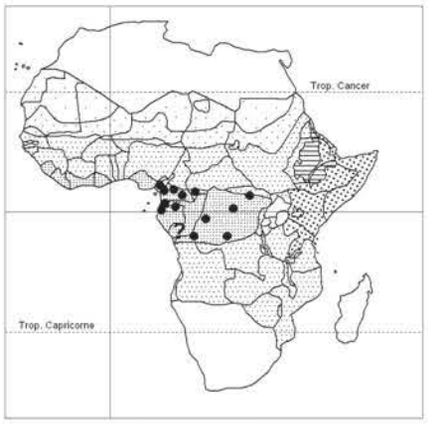
Ficus cyathistipuloides



Ficus densistipulata



Ficus dicranostyla



Ficus dryepondtiana

F. faulkneriana C. C. Berg

Tree to 30 m tall (? secondarily terrestrial); leaves in spirals, sometimes tending to subopposite; lamina obovate to elliptic, or sometimes oblong, 1,5-7 × 0,8-4,5 cm, apex rounded to obtuse, sometimes very shortly and bluntly acuminate or emarginate, base rounded to cordulate or obtuse, margins entire, both surfaces glabrous; petiole 0,2-1,5 cm long, 1-1,5 mm thick, glabrous; figs in pairs in the leaf-axils or just below the leaves.

Coastal bushland; wooded grassland; forest edge; 0-450 m alt.

F. fischeri Mildbr. & Burret – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 204-207, 2003; Beentje & Mbago (2007): 14.

Evergreen tree to 15-25 m tall and 25 m wide; bole tall, clear; bark grey, finely fissured vertically, flaking into small squares; crown flat-topped; leaves in spirals; lamina ovate to elliptic, 4-17 × 3-11 cm, apex acuminate, sometimes subacute or rounded, base cordate to truncate, sometimes rounded, margins entire, both surfaces glabrous; petiole 2,5-10 cm long, 1-3 mm thick; figs solitary or in pairs in the leaf-axils, yellowish-green, ± covered with minute red hairs.

Hemi-epiphytic often soon terrestrial and free-standing; deciduous woodland; wooded grassland; riverine vegetation; miombo woodland; *Baikiaea* woodland; often on termitaria; sometimes planted; 900-1500 m alt.

Namibia (Caprivi Strip), Botswana (extreme N border).

F. glumosa Delile, incl. var. *glaberrima* Martelli, var. *intermedia* Martelli and var. *lanuginosa* Martelli; P. C. M. Jansen in Jansen & Cardon, eds., Pl. Resources Trop. Afr. 3, Dyes & tannins: 79-81, 2005. – Icon.: Berg & Wiebes, Afr. fig trees & wasps: 107, 1992; Burrows & Burrows, o.c.: 112-115; B. Curtis & C. Mannheimer, Tree atlas Namibia: 58, 2005; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 97, 1959.

syn.: Enum. 2: 136, 1992; *F. rehmannii* Warb., incl. var. *ovatifolia* (!) Warb. and var. *villosa* Warb.; *Sycomorus hirsuta* Sonder, non *Ficus hirsuta* Vell.; *Urostigma glumosum* (Delile) Miq.; *U. fazokelense* Miq.; *U. rubicundum* Miq.

Shrub or tree 4-20 m tall with bole 2-3 m tall, to 2 m Ø; crown spreading and rather dense; leaves in spirals; lamina oblong to elliptic or broadly ovate, sometimes obovate or subcircular 2-14 × 1,2-9,5 cm, apex shortly acuminate to subacute or subobtuse, base cordate, sometimes rounded, margins entire, upper surface puberulous to hirtellous to subtomentose, or almost glabrous, lower surface subtomentose on the main veins, often partly yellow hirsute or entirely glabrous; petiole 0,5-8 cm long, 1-2,5 mm thick; figs in pairs in the leaf-axils or down to ± 1 mm below the leaves. Terrestrial.

Rocky outcrops; scarps; lava flows; wooded grassland; deciduous bushland; savanna; forest gallery; all types of soils; open miombo woodland; occasionally on termite mounds; lateritic pans; common; near sea-level to 2050 m alt.

Very variable.

N Namibia, S. Africa; W Saudi Arabia, Yemen.

F. ilicina (Sonder) Miq. – Icon.: Burrows & Burrows, o.c.: 196-199.

bas.: *Urostigma ilicinum* Sonder

syn.: *Ficus guerichiana* Engl.

Evergreen tree, up to 6 m tall, "growing appressed to rock surfaces, covering an area of up to 700 m and extending outwards up to 4 m"; stems and branches usually flattened; leaves held erect, narrowly elliptic to lanceolate or slightly oblanceolate, 4,3-8,5 × 1,3-2,8 cm, upper surface dull, light to dark olive green, only slightly paler below, glabrous on both surfaces, apex acute, rarely rounded-acute, base tapering or minutely lobed, margins entire, flat; petiole 5-10 mm long; figs 2-3-4 together in the leaf-axils, occasionally on the bare branchlets of the previous year's growth.

On rock surfaces (lithophytic); posseses a peculiar growth form whereby it grows espalier-like against near-vertical rocky faces, either extending up broken cliff-faces to a height of 35 m, or climbing to, and often enveloping, small granite boulders. On less steep slopes, may become slightly shrubby, putting out numerous branches which stand out from the rock face (fide Burrows & Burrows, l.c.).

Arid (semi-)desert (<400 mm p.a.); c. 1300 m alt.

W S. Africa, Namibia.

F. ingens (Miq.) Miq., incl. var. *tomentosa* Hutch. and var. *tristis* Warb. – Icon.: Bull. Misc. Inform. Kew 1915: 318, 1915 (sub nom. *F. katagumica);* Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 97, 1959; Berg & Wiebes, African fig trees & wasps: 91, 1992; Burrows & Burrows, o.c.: 92-96; Berg in Fl. analyt. Bénin: 812, 2006 (Wageningen); Fl. Trop. E. Afr., Moraceae: 62, 1989.

bas.: *Urostigma ingens* Miq.

syn.: *U. xanthophyllum* Miq., incl. var. *ovato-cordatum* Sonder; *U. caffrum* Miq.; *Ficus xanthophylla* (Miq.) Martelli; *F. baguirmensis* Warb. in sched.; Enum. 2: 136, 1992.

Tree 10-18 m tall and to 30 m wide with ordinarily short bole to 40 cm Ø and more, with a rounded or spreading, dense crown; aerial roots few, root suckers evident in rock-splitter specimens; bole faintly buttressed or strongly fluted in very old trees; leaves in spirals; lamina ovate to elliptic or oblong 2,5-5-18 × 2-9 cm, apex acuminate to acute, sometimes obtuse, base cordate, occasionally truncate to obtuse, margins entire, both surfaces glabrous, upper surface brilliant; petiole 0,5-5 cm long, 1-3 mm thick, glabrous or densely yellowish pubescent to subvelutinous; figs in pairs in the leaf-axils or just below the leaves, pink, red or purple.

Free-standing or rock-splitter growing flat against rocks.

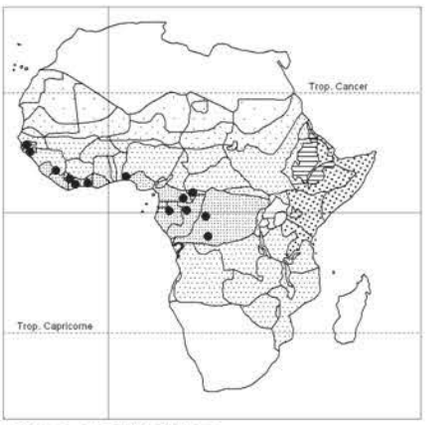
Loudetia arundinacea grassland with scattered trees, e.g. *Terminalia laxiflora, T. brownei, Pterocarpus lucens, Combretum collinum, Vitex doniana* on rocky outcrop; wooded savannas; most often on lava flows, coral and limestone in drier or exposed areas; streamsides; sometimes forming more extensive stands in disturbed forest, coastal bushland; on all types of soils but prefers sands and gravels; near springs; gorges; gallery forest; association with *Acacia stenocarpa, Abutilon bidentatum* under-association with *Ficus* (1800-2000 m alt.), near guelta (Tibesti: Emi Koussi); 0-2600 m alt.

Variable in size, shape and indumentum of leaves, in indumentum of fruit.

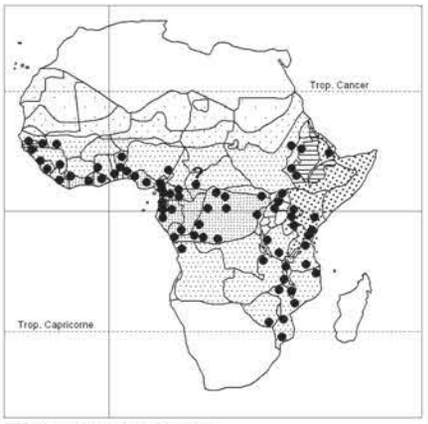
Algeria, Hoggar, Tefedest: oued Ahor, 3 specimens (Bull. Soc. Hist. Nat. Afr. Nord 47: 133, 1956 sub nom. *F.* sp.; oued In Delai = In Deleï, Fl. Afr. Nord 7: 190, 1961, single specimen); Yemen, Saudi Arabia, Oman; Botswana, Namibia, S. Africa, Swaziland.

Can be confused with broadleaved forms of *F. cordata* subsp. *salicifolia.*

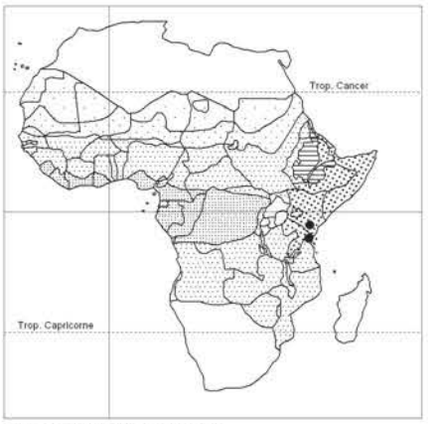
The name *F. lutea* is often used for *F. ingens.*



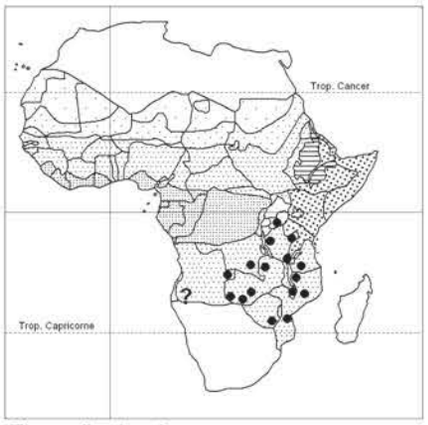
Ficus elasticoides



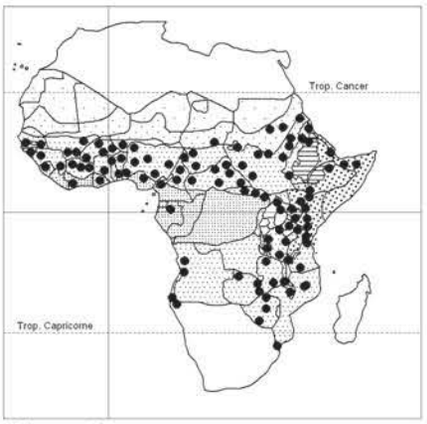
Ficus exasperata



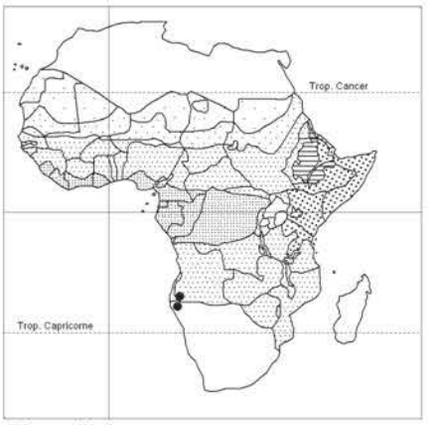
Ficus faulkneriana



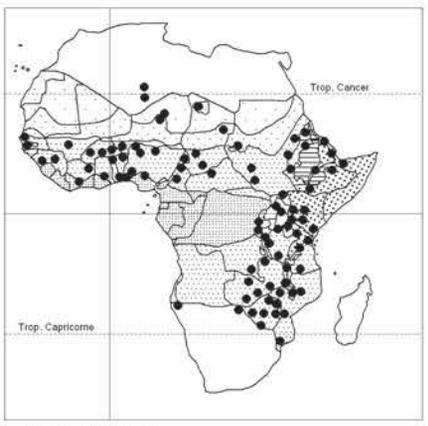
Ficus fischeri



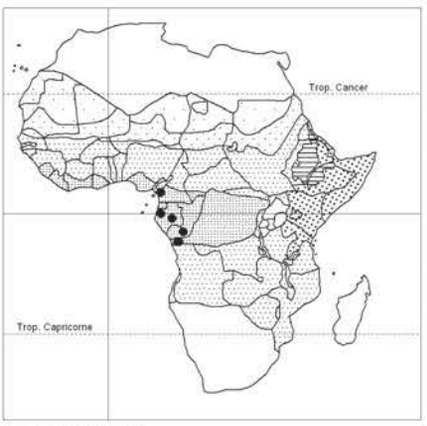
Ficus glumosa



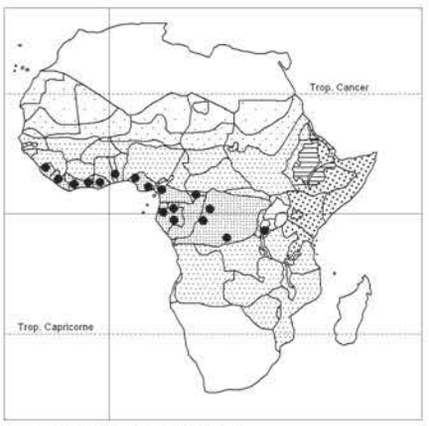
Ficus ilicina



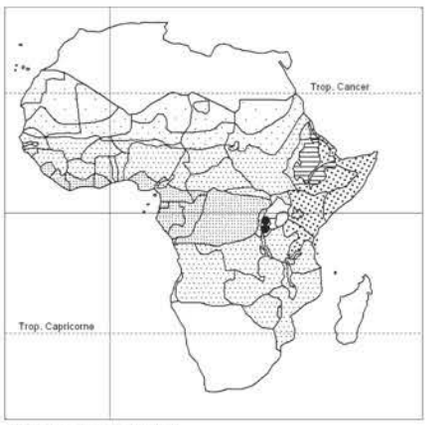
Ficus ingens



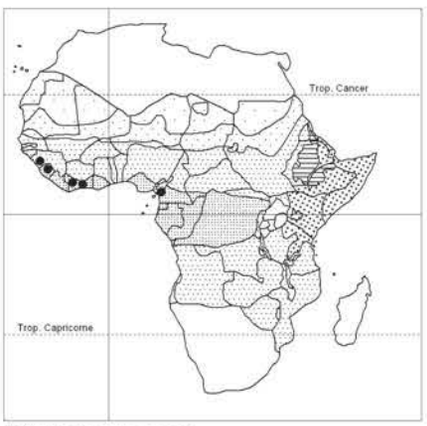
Ficus jansii



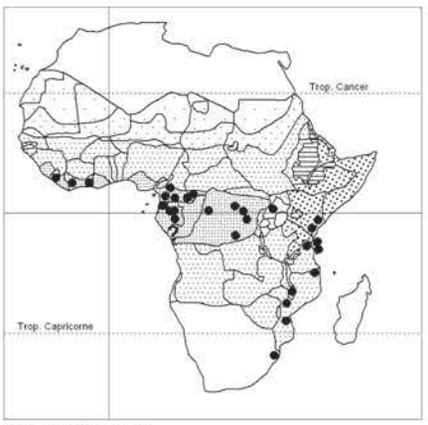
Ficus kamerunensis



Ficus katendei



Ficus leonensis



Ficus lingua

F. jansii Boutique – Icon.: Bull. Jard. Bot. Etat, Brux. 19: 211, 1949.

Tree to 7 m; leaves in spirals; lamina oblong to elliptic 16-30 × 9-17,5 cm, apex rounded to slightly acute, base subacuminate, margins entire? to undulate, both surfaces glabrous; petiole 3-7 cm long, 3-4 mm thick, glabrous; figs to 5 together on short spurs in the leaf-axils or just below.

Shaded streamsides; rain-forest; to 1500 m alt.

F. kamerunensis Mildbr. & Burret – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 287, 2006.

Shrub or tree sometimes sarmentous, 18-30 m tall; leaves in spirals or nearly distichous to opposite; lamina elliptic to lanceolate or subovate 1,5-11(-14) × 0,5-6 cm, apex acuminate to pointed, base pointed to obtuse, margins entire, ± strongly involute when dry, both surfaces glabrous; petiole 0,5-3 cm long, 1-2 mm thick; figs paired in leaf-axils or on defoliate twigs, pink, red or reddish-brown.

Epiphytic, strangler. Evergreen- or half-deciduous forests; sometimes on rocky soil; 486-730 m alt. (Gabon).

São Tomé.

Closely related to *F. thonningii;* difference: in *F. kamerunensis* the leaves are drying brown and folded and margins involute, and stipules subpersistent.

F. katendei Verdc. – Icon.: Kew Bull. 53: 234-235, 1998.

Tree 18-25 m; lamina oblong-elliptic to elliptic or slightly obovate, 12-29 × 7-13 cm, shortly narrowly acuminate, slightly subcordate at the base, upper surface glabrous, lower surface minutely pubescent on the veins; petiole 2-7 cm long; figs in polycarpic fascicles of ± 20 figs, each fig 7 × 3,8-4 cm.

Epiphytic or secondarily terrestrial.

Riverine forest; slopes of montane rain-forest; 1300-1400 m alt.

Discovered in 1991.

Close to *F. dryepondtiana.*

F. leonensis Hutch. Burret – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 283, 2006.

Tree or climber; leaves in spirals; lamina elliptic to oblong, 3-16 × 2-9,5 cm, apex ± acuminate, base cordate, subcordate or truncate, margins entire, both surfaces glabrous; petiole 0,5-5,5 mm long, 1-2 mm thick; fig solitary or 2-4 in leaf-axils or sometimes below the leaves.

Stream banks; 160 m alt. – Epiphytic or sarmentous. Rare.

F. lingua Warb. ex De Wild. & T. Durand – Icon.: Sim, Forest fl. portug. E. Afr.: pl. 40, 1909 (sub nom. *F. depauperata);* Burrows & Burrows, Figs S. & S.-C. Afr.: 200-203, 2003 [subsp. **depauperata** (Sim) C. C. Berg]; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 281, 2006 (subsp. **lingua**).

Shrub, sometimes liane or tree to 30 m tall, much branched and spreading; leaves in spirals, tending to be distichous; lamina oblanceolate to subobovate or narrowly obtriangular, 0,5-5 × 0,3-3 cm, apex obtuse to truncate, emarginate or subacute, base cuneate to obtuse, margins entire, both surfaces glabrous; petiole 0,2-0,8 cm long, 0,5-1 mm thick; figs in pairs in the leaf-axils or just below the leaves, yellow or red, small (4-6 mm Ø).

Evergreen forest; coastal bushland; coral outcrops; 0-1200 m alt. – Hemi-epiphytic, strangler or secondarily terrestrial; sometimes epilithic.

S. Africa.

Comprises 2 subspp.

The tree known in 1960 to occur in southern Malawi, from Nsanje near the Shire River, no longer exists (fide J. and S. Burrows).

F. louisii Lebrun & Boutique ex Boutique & J. Léonard

Tree to 40 m, sometimes sarmentous; trunk 1,5-3,5 m in girth; crown flat; leaves in spirals; lamina oblong to elliptic, 4-12 × 2-8 cm, apex clearly to abruptly acuminate, base acute to obtuse or rounded, margins entire, both surfaces glabrous; petiole 0,7-5,5 cm long, 1,5 mm thick; figs 1-4 in the leaf-axils or on short twigs below the leaves, long-pedunculate. – Strangler.

Rain-forest on firm ground; rare; low alt.

F. lutea Vahl – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 89 pl. 19 A, 1959 *(F. vogelii);* Berg & Wiebes, Afric. fig trees & wasps: 100, 1992; Burrows & Burrows, Figs S. & S.-C. Afr.: 97-100, 2003; V. Thomas & R. Grant, Sappi tree spotting, KwaZulu-Natal…: 82, 106-107, 2004; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 285, 2006; Fischer & Killmann, Ill. field guide Nyungwe Natl. Park Rwanda: 275, 2008.

syn.: *Urostigma luteum* (Vahl) Miq.; *U. vogelii* Miq.; *Ficus vogelii* (Miq.) Miq.; *F. cabrae* Warb.; *F. pseudo-vogelii* A. Chev.; *F. quibeba* Welw. ex Ficalho; *Urostigma neumannii* (Kunth & Bouché) Miq.; Enum. 2: 136, 1992; *F. subcalcarata* Warb. & Schweinf. incl. var. *vestito-bracteata* (Warb.) Mildbr. & Burret

Shrub or tree 10-30 m tall and 30-45 m wide, usually deciduous, with a dense, spreading crown; branches often with fine aerial roots not reaching the ground, without root suckers but producing buttresses and long, snaking plankroots in some old forest specimens; leaves spirally arranged; lamina elliptic to oblong or subobovate 7-45 × 3-20 cm, apex acuminate, base obtuse, cuneate or subcordate, margins entire, upper surface glabrous, puberulous on the midrib, lower surface puberulous to hirtellous or glabrous, the main veins ± tomentose-hirsute below; petiole 1,5-17 cm long, 2-8 mm thick; figs 1-4 together in the leaf-axils or just below the leaves, yellow, orange or brownish. – Hemi-epiphytic strangler becoming free-standing.

Evergreen- and riverine forests; persisting in cleared areas; planted around settlements; by lakes, swamps; wooded savannas; secondary vegetation; on 1992 lava flow (Cameroon); evergreen bushland; near shaded spring; 0-2000 m alt.

Variable especially in E Africa: in leaf shape and size, degree of pubescence of shoots and figs.

Cape Verde Isl.; São Tomé, Bioko/Fernando Poo; E S. Africa; Madagascar, Aldabra, Comores, Seychelles.

The name *F. lutea* is often used for *F. ingens,* a different species (vide Kew Bull. 36: 597, 1981). In E Zaire and Uganda, *F. lutea* and *F. saussureana* are not clear-cut species.

The holotype of *F. utilis* Sim (Sim 6125) is from M'chopes (GI), not from Maputo (M), Mozambique (fide Burrows & Burrows, o.c.: 97). In the M'chopes area the bark was used as a source of bark-cloth.

The natural distribution of *F. lutea* is blurred due to its frequent use as an ornamental. In W Africa planted as a shade tree or for fencing.

F. lyrata Warb. (*F. pandurata* in the horticultural trade not Hence 1862). – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 81 pl. 15 A, 1959 (partial); Burrows & Burrows, o.c.: 275-277; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 281, 2006.

Evergreen shrub or tree to 10-16 m tall; leaves spirally arranged; lamina fiddle-shaped, ± 20-45 × 12-28 cm, apex shortly and abruptly acuminate, base ± deeply cordate, margins entire, both surfaces glabrous; petiole 1,5-5,5 cm long, 4-8 mm thick; figs in pairs or solitary in the leaf-axils, green. Epiphytic or terrestrial, or a strangler.

Rain-forest with *Ficus pseudomangifera, Discoglypremna caloneura, Antidesma laciniatum, Parinari glabra, Pauridiantha* sp., *Leptaspis cochleata;* on 1922 lava flow in Cameroon; 1- ± 400 m alt.

Beginning as hemi-epiphytic or strangler, becoming free-standing.

Planted for shade, sacred tree, or for its ornamental foliage (street- or pot-plant).

Not wild in Gabon.

(*F. modesta* F. White – See **F. ottoniifolia** subsp. **ulugurensis**)

F. mucuso Welw. ex Ficalho – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 77 pl. 13 B, 1959; Beentje & Mbago (2007): 16; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 277, 2006.

Tree 3-40 m; trunk tall, 3,6 m in girth, often with buttresses; main branches ascending; crown open; leaves in tufts at the apex of the branches; lamina subcircular to subcordiform, elliptic or sometimes obovate 6-19 × 4-16 cm, apex shortly acuminate to acute, base cordate, sometimes truncate, margins entire or crenate, upper surface scabridulous to scabrous, sparsely brownish hirtellous to hirsute on the main veins, lower surface puberulous to hirtellous to hirsute on the main veins, often densely puberulous and with long white to dark brown hairs with an echinate base; petiole 1-11 cm long, 1-2 mm thick, densely minutely white puberulous and with much longer white to dark brown hairs with an echinate base; figs on branched leafless branchlets to 30 cm long, on the main and lesser branches, or also on the trunk, dark orange to red.

Rain-forest (evergreen and half-deciduous); sometimes persisting in cleared areas; on 1922 lava flow (Cameroon); old secondary formations; sometimes rather common; forest gallery; *Aframomum* thicket; wooded slopes at river banks; forest with *Triplochiton scleroxylon, Terminalia superba, Dichapetalum toxicarium, Landolphia hirsuta;* bushy margins of forests; occasionally planted; 300-1200 m alt.

São Tomé, Bioko/Fernando Poo.

In morphology similar to *F. sycomorus* but forming tall trunks; ecology also different.

F. muelleriana C. C. Berg – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.:123-125, 2003.

Scandent climber, slender, ? evergreen, adhering to rocks by numerous thin roots; leaves spirally arranged; lamina ovate, 4,5-9,5 × 3-5 cm, apex acute to ± faintly acuminate, base cordate, margins entire, upper surface sparsely puberulous, the midrib more densely so, lower surface puberulous on the midrib, hirtellous on the lateral veins, tomentose on the smaller veins; petiole 1,2-5,5 cm long; figs in pairs in the leaf-axils.

Brachystegia microphylla-Uapaca kirkiana woodland; quartzite rocks frequently weathered to form surfaces composed of numerous hollows or pockets; the plant grows in these vertical pocked surfaces of humic soil with *Selaginella dregei, Cyanotis* sp., *Pellaea calomelanos, Dalbergia nitidula, Ficus craterostoma.*

Collected twice, in 1945 and 1971 respectively, in a limited area.

Very distinctive species in growth form, with small heart-shaped leaves velvety beneath.

F. natalensis Hochst., excl. var. *minor* (Sonder) Warb. *(= F. burttdavyi).* – Icon.: Burrows & Burrows, o.c.: 176-179 (subsp. **natalensis**), 182-184 (subsp. **graniticola**), 185-186 (subsp. **leprieurii**); Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 83 pl. 16 B *(F. leprieurii);* Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 281, 2006 (subsp. **leprieurii**); Fischer & Killmann, Ill. field guide Nyungwe Natl. Park Rwanda: 275, 2008.

syn.: *Urostigma natalensis* (Hochst.) Miq.

Shrub or tree 10-30 m tall and 30 m wide, evergreen or deciduous, with few to abundant aerial roots, rarely taking root to form pillar roots; crown ± sarmentous, spreading; leaves spirally arranged or distichous, alternate or sub-opposite; lamina commonly obovate but sometimes elliptic to oblong-elliptic, 2,5-11 × 1-8 cm, apex rounded to broadly acute or very shallowly acuminate, rarely subtruncate, base tapering, margins entire, both surfaces glabrous; petiole 0,5-3 cm long, 1-2,5 mm thick, glabrous; figs in pairs in the leaf-axils or sometimes also just below the leaves, red, orange or yellow, initially enclosed by a *calyptrate bud-cover* to 1,5 cm long. Hemi- epiphytic or rock splitter, eventually free-standing.

Rocks with *Afrotrilepis jaegeri;* niayes; edges of forest with *Erythrophleum guineense, Uvaria chamae;* riverine and coastal forests; swamp forest; *Brachystegia-Uapaca* and miombo woodland; grassland often in rocky places; groundwater forest, also dry types of forest; planted; moist situations in savannas; clearings; on 1922 lava flow in Cameroon; 0-2200 m alt.

Bioko/Fernando Poo; S. Africa.

Comprises 3 subspp.:

- subsp. **natalensis**, incl. var. *latifolia* Warb. and var. *pedunculata* Sim [syn.: Enum. 2: 136, 1992; *F. variabilis* fa. *obtusifolia* De Wild. and fa. *subacuminata* De Wild.; *F. subacuminata* (De Wild.) Lebrun];
- subsp. **graniticola** J. E. Burrows (2003) – Icon: l.c. – Differs from subsp. **natalensis** by its leathery, often grey-green leaves which frequently have truncate apices, and its larger fig which ripens yellow.) – Granite-dweller, woodland species largely confined to granite outcrops where it grows among boulders or, most rarely as a strangler. – Zimbabwe, S. Africa. – Described in 2003 but collected before in 1922, 1951, 1952, 1980, 1992, 1996 and sometimes cited as subsp. *natalensis* [e.g. in Fl. Zambesiaca 9(6): 67, 1991, specim. Plowes 1332, Dehn s.n.];
- subsp. **leprieurii** (Miq.) C. C. Berg (bas. & syn.: Enum. 2: l.c.) – Differs from subsp. **natalensis** by the presence of white-yellowish hairs on the stipules, and broader leaves (can be confused with *F. thonningii).* – G. MICHALOUD (2003). In Ficus natalensis leprieurii Miq., the unexpected behaviour of the parasite Phagoblastus liodontus may explain more about fig pollination. *In:* SEBSEBE DEMISSEW & al., eds., *XVII th Aetfat Congress 21-26 September 2003, Abstracts:* 77-78. Addis Ababa University Press.

F. nigro-punctata Mildbr. & Burret – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 120-122, 2003.

Shrub or tree to 7 m tall with few aerial roots; leaves in spirals; lamina oblong to elliptic, ± obovate or sometimes ovate 1-18 × 0,6-7 cm, apex shortly acuminate to subacute, base rounded to cordate, margins crenulate, upper surface puberulous to hirtellous or hispidulous, lower surface puberulous to hirtellous on

the veins; petiole 0,3-2,5 cm long, 0,5-1 mm thick; figs in pairs in the leaf-axils or also on the older wood, green to reddish. – Semi-epiphytic and strangling or terrestrial.

Woodland, bushland, thickets; often riparian or on rock outcrops and cliff-faces; *Julbernardia-Brachystegia* woodland (miombo); 0-1300 m alt.

Botswana, S. Africa?

Resembling a small specimen of *F. stuhlmannii* but leaves smaller and thinner and figs smaller. Distinguished by its blackish dried older wood with conspicuous lenticels.

F. oreodryadum Mildbr.

Shrub or tree to 30 m tall with a large crown; leaves in spirals; lamina oblong to elliptic or subovate 9-18 × 3,5-6 cm, drying dark brown below, apex acuminate, base acute to obtuse, sometimes subcordate, margins entire, both surfaces glabrous; petiole 2-5 cm long, 1,5-2 mm thick; figs in pairs in the leaf-axils, sometimes also just below the leaves, ± warty, orange to yellow. – Hemi-epiphytic and strangling.

Swamp edge; rain-forest; 1300-2500 m alt.

Bioko/Fernando Poo. – Disjunct area.

F. oresbia C. C. Berg – Icon.: Adansonia, Sér. 2, 20: 267, 1980.

Tree; leaves in spirals; lamina subobovate to oblanceolate, 15-25 × 5-9 cm, apex shortly acuminate, base subacute to obtuse, margins entire, both surfaces glabrous; petiole 1,5-5 cm long, 2-3 mm thick, glabrous; figs in pairs or solitary in the leaf-axils, purplish. – Interfloral bracts lacking?

Forest; 1980 m alt.

Only known from the type collected ante 1980.

F. ottoniifolia (Miq.) Miq. – Icon.: Bull. Miscel. Inform. Kew 1915: 324, 1915 (sub nom. *F. fasciculiflora);* Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 95 pl. 22 D, 1959; Burrows & Burrows, Figs S. & S.-C. Afr.: 234-236 [(subspp. **macrosyce** C. C. Berg, **ulugurensis** (Warb. ex Mildbraed & Burret) C. C. Berg], 219-221 (sub nom. *F. modesta* F. White = syn. of subsp. **ulugurensis**), 2003; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 285, 287, 2006.

bas.: *Urostigma ottoniifolium* Miq.

syn.: Enum. 2: 136-137, 1992; and to add *Ficus modesta* F. White under subsp. **ulugurensis**; also *F. chirindensis* auct., non C. C. Berg, p.p. quoad specim. Chapman 567, Meredith s.n.

Evergreen (always?) tree or liane or shrub, slender, the long stems putting out adventitious roots as they climb and make contact with a host tree; 9->15 m tall; leaves in spirals; lamina elliptic to oblong, ovate or obovate, 3-22 × 1,5-9 cm, apex acuminate to subcaudate, base acute to rounded or subcordate, margins entire; petiole 1-9 cm long, 0,5-2 mm thick; figs to 4-10 together on spurs to 1,5-4 cm long on the older wood, dark green or dark reddish-brown with sunken yellowish spots ("spotted-egg fig"). – Hemi-epiphytic, partially strangling or terrestrial.

Edges of and in rain-forests; waterside; swamp forest (mushitu); secondary forests; different types of ± open forests; coastal bushland, seaside on coral, or on limestone outcrops inland (Kenya); rocky gorges; on rocks in rapids; transition woodland below evergreen forest; forest gallery with *Rinorea* sp., *Baissea zygodioides, Lygodium microphyllum;* 0-1650 m alt.

Bioko/Fernando Poo (subsp. **ottoniifolia**); N Namibia?

Comprises 5 subspp. (new synonym, see above).

Note: Burrows & Burrows, l.c., and also White & al., Evergreen for. fl. Malawi (388, 2001), maintain *F. modesta* as a good species, closely related to *F. chirindensis* (see note below under this species at the end of the species list); the material from E Zimbabwe is treated by C. C. Berg under *F. polita*. *"F. modesta"* seems to have a distinct species of pollinating wasp. See also Van Noort & al. (2007): 646-648 (fig. + map).

F. ovata Vahl, incl. var. *octomelifolia* (Warb.) Mildbr. & Burret – Icon.: Bull. Miscel. Inf. Kew 1915: 337, 1915 (sub nom. *F. asymmetrica);* Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 85 pl. 17 B, 1959; Berg & Wiebes, African fig trees & wasps: 166, 1992; Burrows & Burrows, o.c.: 208-211; Hawthorne & Jongkind, o.c.: 285.

syn.: Enum. 2: 137, 1992; *Urostigma ovatum* (Vahl) Miq.; *Ficus baoulensis* A. Chev., nom.; *F. brachypoda* Hutch., incl. var. *scoana* Chiov.

Sarmentous shrub or tree 10-25 m tall, evergreen; bole straight; crown spreading, to 15 m of spread; leaves in spirals; lamina ovate to elliptic, subovate or oblong, 5-31 × 3,5-20 cm, apex acuminate, base cordate to truncate, obtuse or subacute, margins entire, upper surface glabrous or sparsely puberulous in the lower part of the lamina, lower surface sparsely to densely white or brownish puberulous to hirtellous or glabrous; petiole 3-13 cm long, 2-5 mm thick; figs solitary or in pairs in the leaf-axils, just below the leaves, or sometimes also on the older wood, initially enveloped by an ovoid *calyptrate* coriaceous *bud-cover* to 2,5 cm long, figs greenish. – Occasionally starting as a hemi-epiphyte and strangling or terrestrial.

Wooded savannas; at edge of forest gallery; on many types of soils; river sides; secondary forests; rain-forest; evergreen bushland; sometimes left in cultivations following forest clearing; farmbush; lakesides; swamp forest (mushitu) margins, dambos, miombo escarpment woodlands; *Acacia-Terminalia* wooded grassland; laterite cliff overhanging lake; 1922 lava flow (Cameroon); 0-2100 m alt.

Often planted.

Bioko/Fernando Poo.

F. pachyneura C. C. Berg – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 289, 2006.

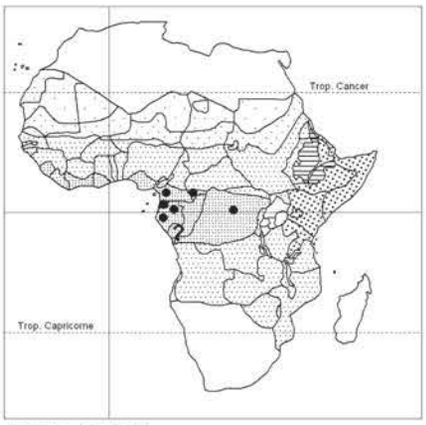
syn.: *F.* aff. *camptoneuroides* Hutch. sensu Aubréville in Fl. forest. Côte d'Iv., ed. 2, 1: 82 and pl. 15 C (p. 81), 1959; *F.* (subgen. *Bibracteateae)* sp. sensu Hutchinson & Dalziel, Fl. W. Trop. Afr., ed. 2, 2: 611, 1958, p.p. quoad specim. Baldwin 11479.

Tree; leaves in spirals; lamina subobovate to oblanceolate 9,5-27 × 3,5-8 cm, apex acuminate, base acute, margins entire, both surfaces glabrous; petiole 1-2,5 cm long, 2-3,5 mm thick, glabrous; figs solitary to 4 together in the leaf-axils.

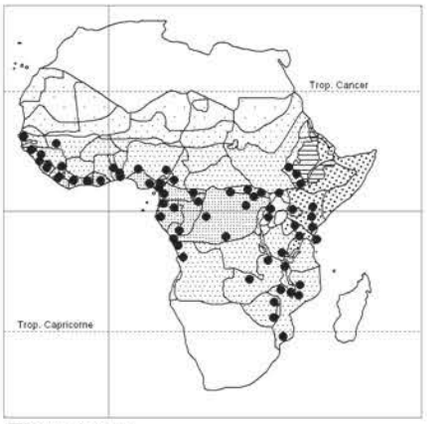
Rain-forest; low alt.

Known only from few collections.

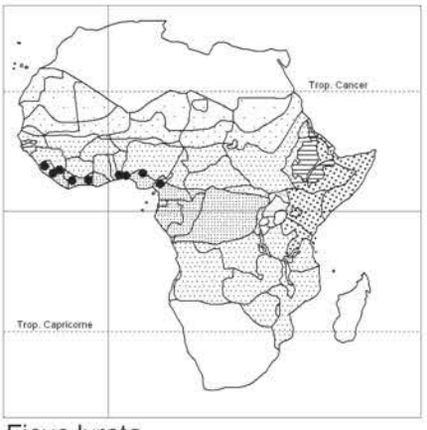
F. palmata Forssk., incl. var. *morifolia* (Forssk.) Warb., var. *petitiana* (A. Rich.) Fiori, var. *pseudocarica* (Miq.) Warb. (1904), var. *somalensis* Warb., var. *stipitata* Warb., var. *pseudocarica* (Miq.) Fiori (1910), and subsp. *virgata* (Roxb.) Browicz – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 1: 113, 2001; Puff & Sileshi Nemomissa, Pl. Simen: 105, 2005.



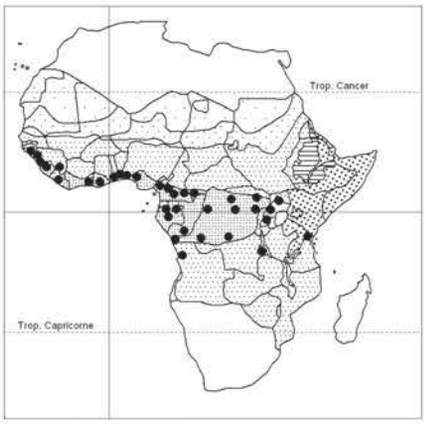
Ficus louisii



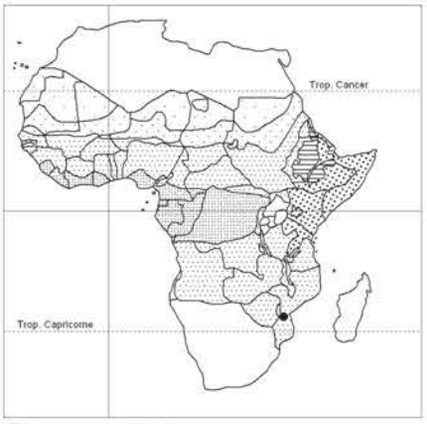
Ficus lutea



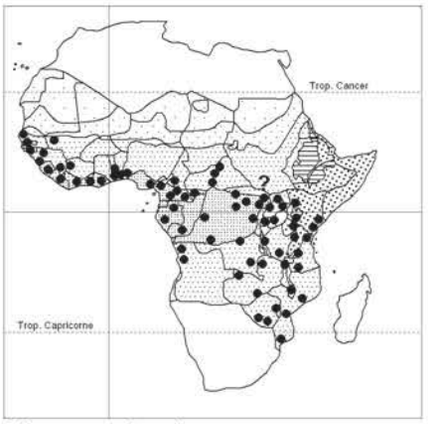
Ficus lyrata



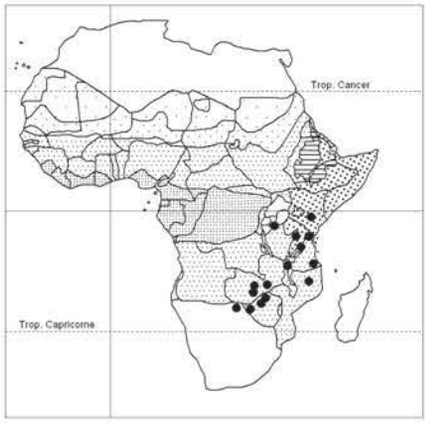
Ficus mucuso



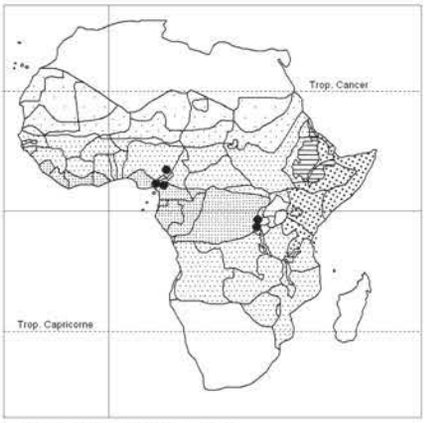
Ficus muelleriana



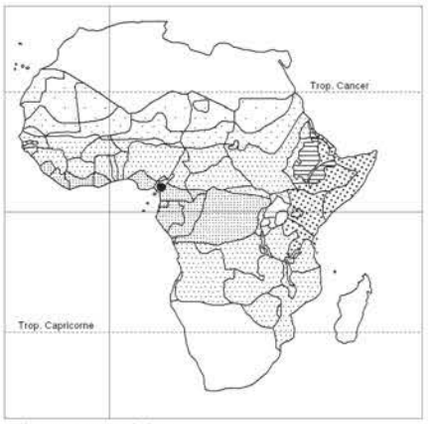
Ficus natalensis



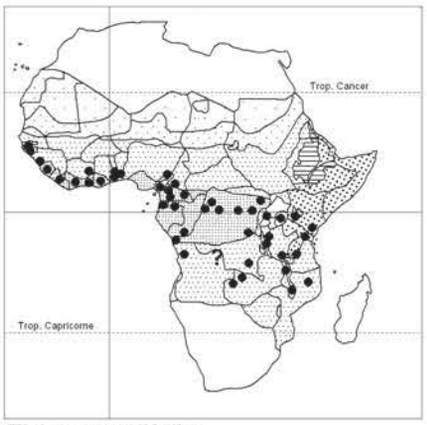
Ficus nigro-punctata



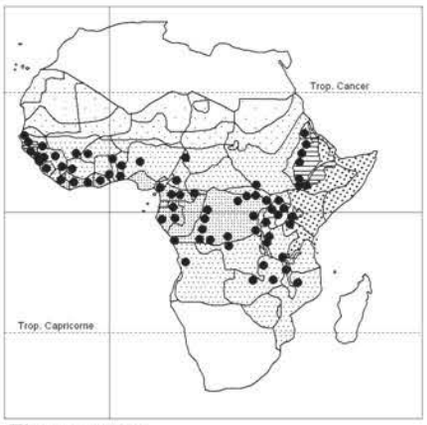
Ficus oreodryadum



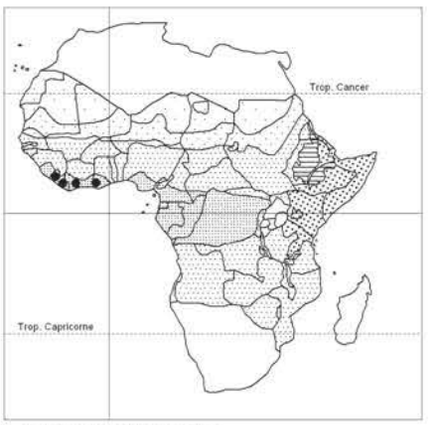
Ficus oresbia



Ficus ottoniifolia



Ficus ovata



Ficus pachyneura

syn.: *F. caricoides* Roxb.; *F. morifolia* Forssk. (1775), non Lam. (1788); *F. forsskalii* Vahl; *F. pseudocarica* Miq., incl. var. *tomentosa* A. Rich.; *F. petitiana* A. Rich.; *F. pseudo-sycomorus* Decne.

Shrub (or tree) to 4-6 m tall; stems many with ascending branches; branchlets densely tomentose; young branches with purplish brown bark; leaves alternate, broadly ovate, undivided or variously lobed, 2-12 × 1,5-12 cm, apex acute to rounded, base truncate or cordate, mostly scabrid above, almost glabrous, scabric to densely pubescent below; petiole to 4,5 cm long, pubescent; margins serrate; figs 1-2 on peduncle to 1,5 cm long, yellowish to greenish, tinged pink or purple. – Very rarely epiphytic.

Hedgerows; secondary scrub; forest edges; sometimes common in riverine forest and scrub; grassland; 1000-2600 m alt.

Egypt, Sinai, Jordan, Palestine, Saudi Arabia, Yemen, Oman; Iran, Afghansitan, Pakistan, NW India.

F. palmata, F. johannis, F. carica are a difficult complex of polymorphic species; there are a number of problematic specimens. – Berg & Wiebes in African figs & wasps: 63, 1992, mention that *F. palmata* and *F. carica* may be conspecific.

In Fl. Egypt 1: 16, 1999, Boulos discusses the geographical distribution of the 2 subspecies recognized by Miller in Arabia, viz. subsp. *palmata* and subsp. *virgata.*

F. platyphylla Delile, incl. var. *pubescens* Aubrév., nom.

syn.: *Urostigma kotschyanum* Miq.

Tree 10-25 m tall and more with straight bole to 1-2 m Ø, stout at the base; deciduous; crown spreading, rather dense; leaves in spirals, alternate; lamina ovate to elliptic or subovate to oblong, 8-26 × 5-20 cm, apex rounded to acute, base cordate, margins entire to repand, upper surface glabrous or puberulous on the lower part of the midrib, lower surface white puberulous to pubescent or only puberulous on the main veins; petiole 4-10 cm long, 2-5 mm thick; figs to 5 together in the leaf-axils or just below the leaves. – Often epiphytic at first, becoming terrestrial. Foliage often tinged pink. Roots sometimes running above ground for some distance.

Wooded grassland; deciduous woodland with *Terminalia mollis, Combretum fragrans, Lonchocarpus laxiflorus, Pterocarpus lucens, Entada africana* etc. (Ethiopia); hollows sometimes near waterholes; rocky places; fringing forests; bushland; coastal savanna; soils deep and humid; sands; termite mounds; near sea-level to 1170 m alt.

Sometimes grown in villages and towns. In N Nigeria used in traditional medicine (Chindo & al. in J. Ethnopharmacol. 85: 131-137, 2003).

Not in Zimbabwe.

Resembling *F. bussei* (cf. p. 48).

F. polita Vahl, excl. var. *percisicarpa* Hutch. *(= F. umbellata)* – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 95 pl. 22 C, 1959; Berg & Wiebes, Afric. fig trees & wasps: 160, 1992; Burrows & Burrows, Figs S. & S.-C. Afr.: 211-215, 2003 (subsp. **polita**); White & al., Evergreen for. fl. Malawi: 388, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 283, 2006.

syn.: Enum. 2: 137, 1992; *Urostigma politum* (Vahl) Miq.; *Ficus syringoides* Warb. in sched.

(Shrub or) tree, evergreen, 10-40 m tall with generally short and stout trunk; crown flat or rounded, dense, with a spread to 40 m; slender aerial roots descend to the ground and fuse to form an irregularly fluted cylinder surrounding the bole of the host tree

which eventually is killed; more rarely it becomes etablished without support; leaves in spirals; lamina ovate to oblong or almost elliptic, 5-24 × 3,5-15 cm, apex acuminate, base cordate to truncate or rounded, sometimes subacute, margins entire, both surfaces glabrous; petiole 2-12 cm long, 1-2 mm thick; figs 1-4 together on spurs to 3 cm long on the older wood, green with yellow specks to purplish. – Hemi-epiphytic becoming free-standing.

Wooded savanna; forest gallery; evergreen forests; bushland; half-deciduous forest with *Diospyros piscatoria, Schrebera arborea, Ongokea gore;* coastal "rain-forest" fide Aubréville; on all types of soils, also lava flow; 0-2150 m alt.

E S. Africa, Swaziland; Madagascar. – Not in Mali.

Comprises 2 subspp.: – subsp. **polita**, incl. var. *persicicarpa* Hutch.?; – subsp. **brevipedunculata** C. C. Berg has leaves with greater number of lateral veins (10-12 pairs, not 5-8) and smaller short-pedunculate figs; in submontane forests above 1500 m alt; known only from a few collections (in W Zambia, N Malawi, Tanzania).

Variable in size and shape of leaves (see Dowsett-Lemaire & White in Bull. Jard. Bot. Belg. 60: 99, 1990).

Often (subsp. **polita**) confused with *"F. modesta" (= F. ottonifolia* subsp. *ulugurensis)* in Zimbabwe (such material has formerly been determined as *"F. modesta"* – a comparative table with similar species is present in Burrows & Burrows, o.c.: 232). – In W & C. Africa confusion possible with *F. umbellata.*

Often planted (shade tree, living fence), especially in W Africa.

F. populifolia Vahl, incl. var. *somalensis* Warb., var. *taitensis* Warb. and var. *major* Warb. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 283, 2006.

syn.: *Urostigma populifolium* (Vahl) Miq.; *Ficus intermedia* Delile; *D. religiosa* Forssk. 1775, non L. 1753, nom. illegit.

Shrub or tree 10-30 m; leaves in spirals; lamina cordiform to broadly ovate or ± reniform, 3-8 × 3-14,5 cm, apex ± acuminate to sometimes caudate, base cordate or truncate, margins entire to repand, both surfaces *glabrous;* petiole 2,5-12 cm long, 1-2 mm thick; figs in pairs in the leaf-axils, green with red spots or yellowish. – Terrestrial.

Riparian; rock outcrops; lava cliffs, boulders, scarps in deciduous bushland and wooded grassland; rocky ground on mountain sides in tall grass savanna; 450-(? and less)-1600 m alt.

Yemen, Saudi Arabia.

Beentje (Kenya trees, shrubs & lianas: 327-328, 1994) mentions that *F. abutilifolia* (hairy leaves) and *F. populifolia* (glabrous leaves) may be conspecific.

F. preussii Warb.

Shrub or tree to 10 m tall; leaves in spirals; lamina oblong to subovate, sometimes subpandurate, 15-45 × 6-17 cm, apex acuminate, base obtuse to subcordate, sometimes cordate, margins entire, upper surface glabrous, lower surface glabrous or white to brownish hirtellous on the lower part of the midrib; petiole 2,5-8,5 cm long, ± 4 mm thick; figs 1-2 in the leaf-axils, greenish with yellow spots. – Hemi-epiphytic, strangler.

Forest often near water or on moist ground (riparian); secondary forest; 1150 (? and less)-1200 m alt.

F. pseudomangifera Hutch. – Icon.: Berg & Wiebes, African fig trees & wasps: 136, 1992; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 287, 2006.

Tree to 10 m; leaves in spirals or tending to distichous; lamina oblong to lanceolate, sometimes elliptic, 8-32 × 2-9 cm, apex acuminate, sometimes sharply so, base rounded to ± cordate or acute, margins entire, both surfaces glabrous; petiole 1-3 cm long, ± 3 mm thick, figs to 6 together on short spurs in the leaf-axils or just below the leaves, orange to red. – Epiphytic at first, strangler.

Rain-forest; near sea-level to 1200 m alt.

F. pygmaea Welw. ex Hiern – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 52-55, 2003; Curtis & Mannheimer, Tree atlas Namibia: 59, 2005.

syn.: *F. brevicula* Hiern

Shrub, multistemmed, 0,3-1,5-4 m tall; rhizome creeping; stems ascending or suberect, pilose or somewhat hispid, branched below; leaves alternate, extremely variable, ovate to oblong-lanceolate, 1-13,5 × 0,5-6 cm, dull and scabrid on both surfaces (sandpaper-leaved), also set with very small white hairs, apex acute to sharply obtuse, base rounded to truncate, sometimes slightly asymmetrical, margins very variable, from almost entire to serrate or deeply lobed and irregular; petiole 1-12 mm long, thinly hairy, 0,5-2 mm thick; figs solitary, axillary, red or dark purple. – Semi-deciduous or briefly deciduous.

Flood plains; moist sandy soil near rivers and streams, often forming thickets; bushy pastures; to 1100 m alt. – Essentially on Kalahari Sands.

Namibia, Caprivi Strip, Botswana. – Zimbabwe?

One of the "sandpaper-leaved" figs *(F. asperifolia, F. capreifolia, F. exasperata).*

F. recurvata De Wild. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 285, 2006.

syn.: *F. bussei* Mildbr. & Burret var. *longepetiolata* Mildbr.; Enum. 2: 137, 1992.

Tree 4-35 m, with cylindrical bole and strong dense crown; leaves in spirals; lamina elliptic to oblong 10-44 × 7-22 cm, apex slightly acuminate to subacute or nearly rounded, base cordate, margins subentire to coarsely crenulate-dentate specially towards the base, upper surface sparsely hirsute, lower surface hirsute on the nerves, sparsely hirsute to pubescent or glabrous elsewhere or entirely glabrous; petiole 2-11 cm long, ± 3 mm thick, hirsute; figs in pairs in the leaf-axils, green with cream spots. – Epiphytic, strangler.

Half-deciduous rain-forests (sometimes in deep valleys close to rivulets, "parasitical" on *Pseudospondias microcarpa);* lagoon sides; sometimes abundant, or sporadic; near sea-level to?

Tanzania? and Guinea?

F. sagittifolia Warb. ex Mildbr. & Burret – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 81 pl. 15 B (partial); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 281, 2006.

Shrub or tree to 10 m tall; leaves in spirals; lamina long, rather narrow, fiddle-shaped, 15-40 × 4-9,5 cm, apex ± narrowly acuminate to subacute, base ± deeply cordate (lobes >1 cm long), sometimes rounded, margins ± coarsely crenate under the basal strangling of the lamina, both surfaces glabrous; petiole 1,5-5 cm long, 3-6 mm thick, glabrous; figs 1-2 in the leaf-axils, greenish or partly purplish red with pale spots. – Epiphytic, bole strangling, branches short.

Rain-forest; fallow land; forest with *Triplochiton scleroxylon, Ficus umbellata, Celtis brownei;* 470-650 m alt.

F. sansibarica Warb.; Kew Bull. 43: 93-94, 1988. – Icon.: Bull. Miscel. Inf. Kew 1915: 320, 322 (sub nom. *F. buntingii* and *F. gossweileri,* respectively); Rev. Int. Bot. Appl. Agric. Trop. 29: 247, 1949 (sub nom. *F. mangenotii);* Burrows & Burrows, Figs S. & S.-C. Afr.: 222-225 (subsp. **sansibarica**), 225-228 (subsp. **macrosperma**), 2003; Beentje & Mbago (2007): 16; White & al., Evergreen for. fl. Malawi: 391, 2001; Hawthorne & Jongkind, o.c.: 287.

syn.: Enum. 2: 137, 1992.

Tree to 9-16-40 m tall, 30 m wide, but occasionally larger; bole to ± 1,5 m Ø, commonly unbuttressed and with a few small aerial roots, but usually without; leaves in spirals, semi-pendulous, mostly boat-shaped in section; lamina lanceolate to oblong-elliptic or narrowly elliptic 4,5-24 × 2-11,5 cm, glabrous on both surfaces, apex broadly acute to shortly acuminate, base broadly tapering, rounded or very shallowly cordate, sometimes slightly asymmetrical, margins entire; petiole 0,8-8 cm long, glabrous, 1-3 mm thick; figs 2-4 together on to 2-5 cm long branched and finally ± cushion-shaped spurs, or on to 15 cm long straight, or peg-like, or sometimes curved spurs on the main or also the lesser branches and on the bole; green or purplish, 1,5-3 cm Ø. – Semi-epiphytic strangler or secondary terrestrial.

Evergreen forest and edges, including dryer types; coastal bushland; lakesides; riverine; miombo; *Parinari excelsa* forest on river-bank sand; muteshi forest; often on Kalahari Sand; open forest with *Canarium schweinfurthii, Cola maclaudii, Xylopia quintasii, Funtumia elastica, Dracaena arborea, Dicranolepis laciniata, Marantochloa purpurea;* 1922 lava flow (Cameroon); near sea-level to 1200 m alt.

S. Africa, Swaziland.

Comprises 2 subspp.: – subsp. **sansibarica** with ciliolate stipules and short fruit spurs (<5 cm), in E part of range; – subsp. **macrosperma** (Mildbr. & Burret) C. C. Berg with glabrous stipules and longer fruit spurs (10-15 cm), mainly in W part of range.

The recognition of 2 subspecies is questioned by Dowsett-Lemaire & White in Bull. Jard. Bot. Natl. Belg. 60: 103-104, 1990. They also discuss the relationships with *F. chirindensis,* partly put in synonymy under *F. sansibarica* by them. – A comparative table showing the main differences between closely related species is given by Burrows & Burrows, o.c.: 232.

F. saussureana DC. – Icon.: Mém. Soc. Phys. Genève 9(1): 73 with plate, 1841; Bull. Miscel. Inf. Kew 1915: 332, 1915 *(F. dawei);* Hawthorne & Jongkind, Woody pl. west. Afr. forests: 285, 2006.

syn.: Enum. 2: 137; 1992; *F. rubroreceptaculata* De Wild. *("rubroreceptacula",* err. cal.); *F. zobiaensis* De Wild.; *F. afzelii* G. Don ex Loudon, nom. inval.; *Galoglychia! saussureana* (DC.) Gasparrini; *Galochlychia! tenoreana* Gasparrini, nom.; *Urostigma eriobotryoides* (Kunth & Bouché) Miq.

Shrub or tree 6-15-30 m tall with wide spreading crown; young branchlets densely yellow-brown pubescent; leaves in spirals; lamina lanceolate to oblanceolate or subovate, sometimes oblong, 10-50 × 3-25 cm; apex acuminate, base acute, obtuse, truncate or subcordate, margins entire, upper surface glabrous, lower one pilose; petiole 1-16 cm long, 4-7 mm thick, ± densely pilose; figs 1-3 in the leaf-axils or just below the leaves, yellow or orange, densely long-hairy. – Hemi-epiphytic shrub becoming a true terrestrial.

Half-deciduous rain-forest, secondary forests (often at edges); 1922 lava flow (Cameroon); lakesides; coastal rain-forests; sunny and open forests; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* often planted; single in meadow or in savanna with *Kotschya lutea,* backed to granitic rocks or in rock cracks; gallery with *Parinari excelsa;* riversides with *Gardenia imperialis, Afzelia africana, Dalzielia oblanceolata;* 2-1600 m alt.

Bioko/Fernando Poo.

In E Zaire and Uganda the differences between this species and *F. lutea* are faint; due to interbreeding?

F. scassellatii Pamp. – Icon.: Bull. Jard. Bot. Etat, Brux. 19: 217, 1949; Burrows & Burrows, Figs S. & S.-C. Afr.: 142-144, 2003; Beentje & Mbago (2007): 20.

Tree to 20-50 m tall; buttresses in old specimens; aerial roots few; leaves in spirals; lamina oblong to oblanceolate, obovate or elliptic, 6-28 × 3-8 cm, apex shortly and bluntly acuminate to rounded, base ± acute, margins entire, both surfaces glabrous; petiole 0,5-3,5 cm long, 2-3 mm thick; figs 1-2 in the leaf-axils, pale green. – Hemi-epiphytic, secondarily terrestrial.

Rain-forest; lakesides; riverine; ground-water forest; sometimes open places along the coast; evergreen bushland with scattered trees; also as isolated trees left from cleared vegetation; mixed evergreen forest; disturbed forest; near sea-level to 2200 m alt.

Comprises 2 subspp. Subsp. **thikaensis** C. C. Berg only around Thika (Kenya, K4), with long narrow leaves and sessile larger figs, from a gorge at 1350-1450 m alt.

F. scott-elliotii Mildbr. & Burret – Icon.: Berhaut, Fl. illustr. Sénégal 6: 478, 1979; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 289, 2006.

syn.: *F. chevalieri* Warb. in sched. ex Mildbr. & Burret, nom.

Tree 6-15 m; leaves oblong-elliptic to obovate-oblong, rounded or obtuse at base, very shortly and obtusely acuminate, 9-16 × 3,3-7 cm; petiole 0,5-3,5 mm long, stout; figs solitary in the leaf-axils. – Usually hemi-epiphytic.

By rivers; humid places in "niayes"; rain-forest with *Piptadeniastrum africanum, Cola maclaudi, Santiria trimera;* low alt.

F. stuhlmannii Warb., excl. var. *glabrifolia* Warb. *(= F. ingens).* – Icon.: Sim, Forest fl. port. E. Afr.: pl. 92 A, 1909 *(F. howardiana);* Burrows & Burrows, Figs S. & S.-C. Afr.: 116-119, 2003; Beentje & Mbago (2007): 20.

syn.: Enum. 2: 137, 1992; *F. howardiana* Sim (non *F. howardii* sensu Berg & Wiebes, Afr. fig trees & wasps: 108, 1992), with 2 vars. *(normalis* Sim and *glabra* Sim).

Tree sometimes multi-stemmed, usually with a rounded or slithtly spreading crown, to 15 m tall, 20 m wide, with or without a few slender aerial roots; leaves in spirals, obovate, oblong-ovate or oblong-elliptic, often with the sides almost straight, 2,5-20 × 1-12 cm, finely hairy above, particularly along the veins, somewhate hairier below, apex rounded to broadly acute or slightly acuminate, base tapering and shallowly cordate or truncate, margins entire to faintly irregular, flat to markedly wavy; petiole 0,5-5,5 cm long, densely hairy; figs 2 in the leaf-axils or on bare branchlets below the leaves, pink or purplish, ± (white) pubescent. – Epiphytic and strangling or terrestrial.

Wooded grassland and bushland, often along lakesides, watercourses; on rocks or coral outcrops, hardpans; miombo; mixed deciduous woodland; often on termitaria; 0-2000 m alt.

S. Africa, Swaziland.

Resembling *F. nigropunctata* but leaves larger and thicker, and figs larger (c. 2 cm Ø, not ± 1 cm). Easily confused with *F. glumosa* (with yellowish hairs on the twigs).

F. subcostata De Wild.

Shrub or tree; leaves in spirals; lamina ovate to subovate or oblong-elliptic, 4,5-25 × 2-9 cm, apex acuminate to subacute, base cordate to truncate or obtuse, margins entire, both surfaces glabrous; petiole 0,5-3,5 cm long, 1,2-2,5 mm thick, puberulous to nearly bristly; figs in pairs or solitary in the leaf-axils, with white rigid hairs. – Hemi-epiphytic or terrestrial.

Rain-forest; low alt.

F. subsagittifolia Mildbr. ex C. C. Berg – Icon.: Berg & Wiebes, Afr. fig trees & wasps: 153, 1992.

Shrub or tree to 5 m tall; leaves in spirals; lamina subpandurate or lanceolate to oblong, 16-40 × 3-15 cm, apex ± sharply acuminate, base ± deeply cordate (the lobe often longer than 1 cm) to truncate, margin sometimes faintly repand below the constriction of the lamina, both surfaces glabrous or sparsely puberulous on the basal part of the midrib beneath; petiole 1-5,5 cm long, 3-6 mm thick, glabrous or rather sparsely hirtellous; figs 1-2 in the leaf-axils, green with white spots to dark brown with paler spots. – Epiphytic or terrestrial.

Evergreen rain-forest; 250-540 m alt. (Gabon).

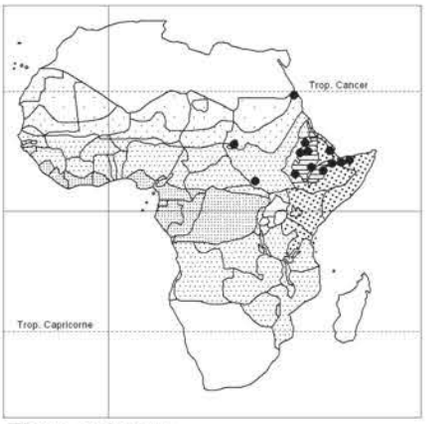
F. sur Forssk., incl. var. *erythreae* Fiori – Icon.: Fl. Trop. E. Afr., Moraceae: 57, 1989; V. Thomas & R. Grant, Sappi tree spotting: KwaZulu-Natal..: 264-265, 2004; Burrows & Burrows, Figs S. & S.-C. Afr.: 67-71, 2003; Berg in Fl. analyt. Bénin: 814, 2006 (Wageningen); Hawthorne & Jongkind, Woody pl. west. Afr. forests: 277, 279, 2006.

syn.: Enum. 2: 137, 1992; and *F. capensis* Thunb. var. *mallotocarpa* (Warb.) Mildbr. & Burret fa. *pubifolia* Mildbr. & Burret; *F. capensis* var. *ituriensis* (De Wild.) Lebrun; *F. mallotocarpa* Warb., incl. var. *trichoneura* (Warb.) A. Peter; *F. plateiocarpa* ! Warb.; *F. stellulata* Warb. var. *glabrescens* Warb.; *Sycomorus capensis* (Thunb.) Miq., incl. fa. *guineensis* (Miq.) Miq.; *S. sur* (Forssk.) Miq.; ? *S. riparia* Miq.; *S. guineensis* Miq.; *S. panifica* Miq.; *S. thonningiana* Miq.

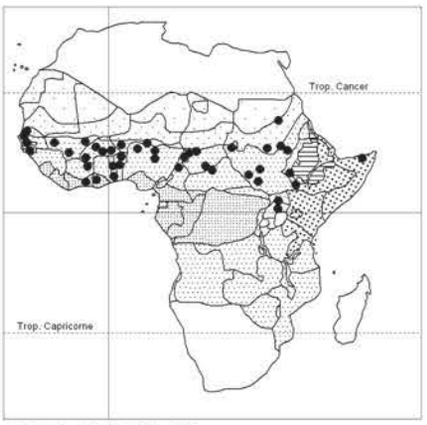
Tree 5-12 m tall in open woodland, or 25-40 m, with trunk to 1 m Ø and more in semi-deciduous forest; trunk bare of branches below, buttressed in large specimens and often producing suckers from the roots or the base of the trunk; branches patent; leaves alternate, oblong-lanceolate (rarely) to elliptic or ovate to broadly ovate, 4-32 × 2-16 cm, both surfaces glabrous but occasionally with fine hairs, particularly below, apex acute to acuminate, base cuneate, rounded or shallowly cordate, margins widely and irregularly dentate to irregular; petiole 1-9,2 cm long, rather slender, glabrous or sparsely hairy; figs on much-branched leafless branches to 30 cm long ("trusses") which, in turn, are borne on the main branches, trunk or roots, red to dark orange, sparsely white to yellowish puberulous to ± glabrous, 2-4 cm Ø.

Niayes; wooded savanna; forest gallery; secondary forests; 1922 lava flow (Cameroon); forest with *Adina microcephala;* hardpan; rain-forest; close to rivulet banks with *Raphia textilis, Elaeis guineensis;* near hollows; gravelly places; termite mounds; grassland; secondary scrub; 0-2500 m alt.

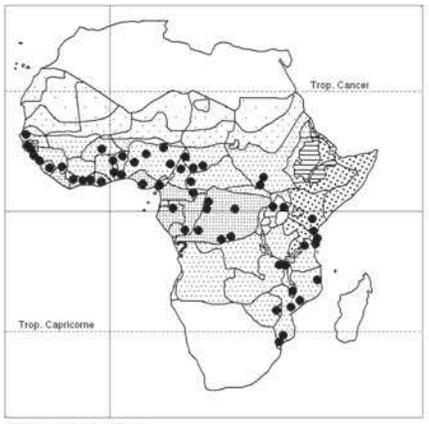
Very variable; in NE Africa with deviating forms (in leaf shape and indumentum, in indumentum of figs).



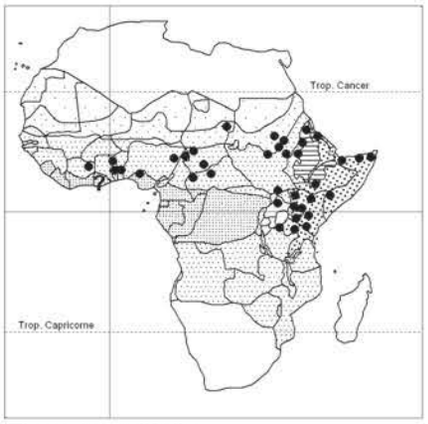
Ficus palmata



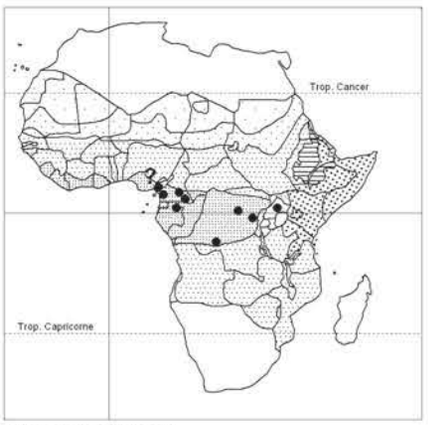
Ficus platyphylla



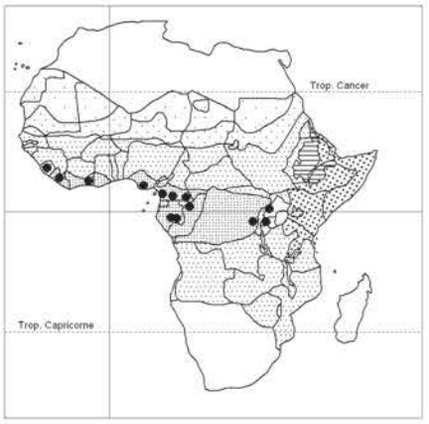
Ficus polita



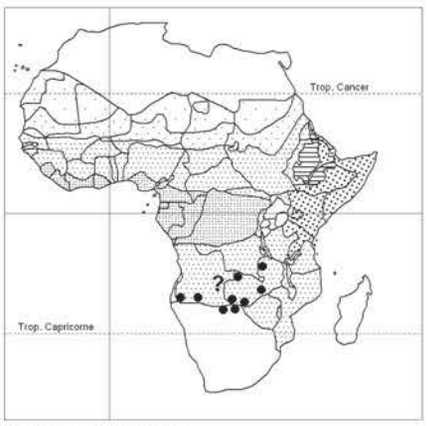
Ficus populifolia



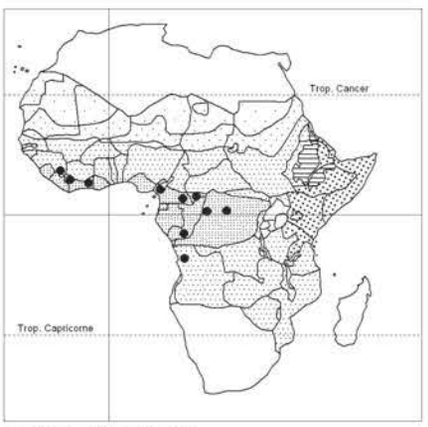
Ficus preussii



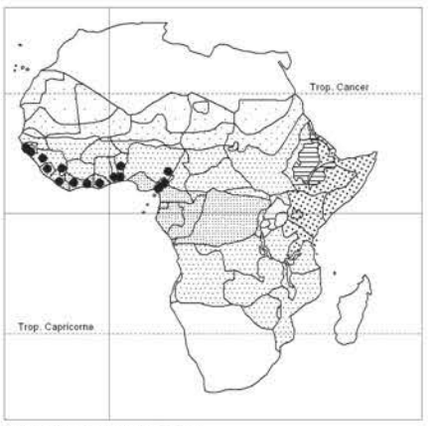
Ficus pseudomangifera



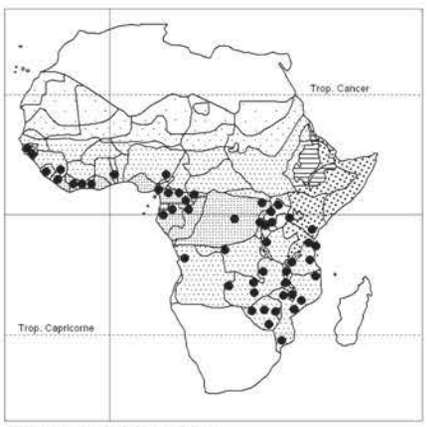
Ficus pygmaea



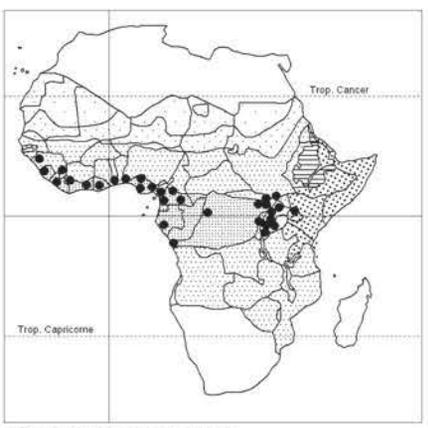
Ficus recurvata



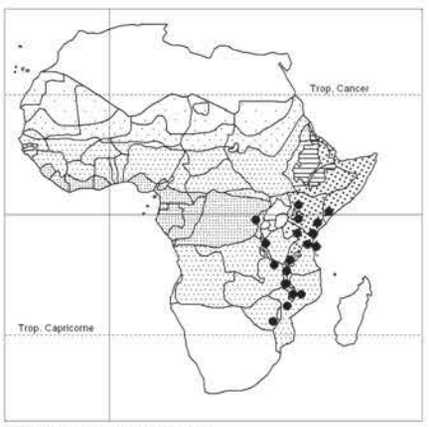
Ficus sagittifolia



Ficus sansibarica



Ficus saussureana



Ficus scassellatii

Occasionally planted. Figs sought after. Bark, leaves, young aerial roots eaten (vegetable). Medicinally used. – Easily propagated from seed or truncheons.

Cape Verde Isl.; São Tomé, Principe, Bioko/Fernando Poo; S. Africa, Swaziland, E Botswana; Yemen.

F. sycomorus L., excl. var. *alnea* Hiern, var. *polybotrya* Hiern and var. *prodigiosa* Hiern (all = *F. sur).* – Icon.: Sim, Forest fl. Port. E. Afr.: pl. 89 fig. 1-2, 1909 *(F. integrifolia);* Berg & Wiebes, Afr. fig trees & wasps: 75, 1992; Burrows & Burrows, Figs S. & S.-C. Afr.: 59-63 (subs. **sycomorus**), 63-65 (subsp. **gnaphalocarpa**), 2003; B. Curtis & C. Mannheimer, Tree atlas Namibia: 62-63, 2005; Mendes Ferrão, Fruticult. trop. 2: 110-111, 2001.

Tree to 20-30 m tall, 30 m wide, deciduous or evergreen; trunk short, thick to 3,5 m Ø, old trees with buttresses; branches widespreading; leafy twigs densely minutely puberulous and with much longer white-yellowish hairs especially on the nodes; lamina ovate to elliptic, obovate or subcircular, 1-21 × 0,5-16 cm, apex rounded to obtuse, base cordate to sometimes obtuse, margins subentire, slightly repand or denticulate; upper surface scabrous to scabridulous, sometimes almost smooth, hispidulous to strigillose, lower surface puberulous to hispidulous; petiole 0,5-6 cm long, 1-3 mm thick, densely minutely white puberulous and with much longer white to yellowish hairs; figs solitary or sometimes in pairs in the leaf-axils or just below the leaves, on to 10 cm long unbranched leafless branchlets or on to 20-35 cm long branched leafless branchlets on the older branches down to the trunk, yellow or reddish, 1,5-3,7 cm Ø. – The form with figs only on the leafy branchlets, often found in the periphery of the distribution range, is often recognized as a distinct subspecies, viz. subsp. **gnaphalocarpa**.

Forest edges; lakesides; riverine; into drier country where seasonal water collects; sandy, deep soils; termite mounds; wooded savanna on alluvium; wooded thickets; evergreen bushland; clearings; "coffee forest"; 0-2200 m alt.

Cape Verde Isl.; Namibia, Caprivi Strip, S. Africa, Botswana; Madagascar, Comoro Isl.; Yemen.

Comprises 2 subspp. (cf. also above):

- subsp. **sycomorus** [syn.: *F. scabra* Sim 1909, non Forster f. 1786, nec Willd. 1801; *F. integrifolia* Sim; *F. chanas* Forssk.; *F. cocculifolia* Bak., incl. subsp. *sakalavarum* (Baker) Perrier, and var. *sakalavarum* (Baker) Perrier; *F. sakalavarum* Baker; *F. comorensis* Warb.; *F. trachyphylla* (Miq.) Miq.; *Sycomorus antiquorum* Gasp.; *S. rigida* Miq.; *S. trachyphylla* Miq.];
- subsp. **gnaphalocarpa** (Miq.) C. C. Berg [syn.: Enum. 2: 137, 1992, but not *F. integrifolia* Sim (see above)].

The two subspecies overlap in Ethiopia; and more field work is needed to elucidate the subspecific separation. Recent floras do not uphold this division.

Sometimes cultivated in Egypt, Middle East, and elsewhere. Nearly every part of the tree finds economic uses.

Can be confused with *F. sur* (with hairless leaves and larger hairless figs). Morphologically close to *F. mucuso* (with tall trunks) but ecology different.

F. tesselata Warb. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 83 pl. 16 A, 1959; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 289, 2006.

Bushy tree to 10 m tall or shrub; branchlets puberulous, sharply angular when dry; lamina oblong-elliptic, shortly and rather gradually acuminate, obtuse at both ends, 10-22 × 3,8-7,5 cm, both

surfaces glabrous, margins entire; petiole 2-3,5 cm long; figs 1 or 2 together in the leaf-axils, *contracted* at the apex *into a beak* ± 5 mm long, pale green with yellow spots. – Epiphytic, strangler or terrestrial.

Rain-forest with *Aningueria altissima, Chlorophora regia, Xylopia parviflora, Sorindeia collina;* forest gallery; stream bed; on 1922 lava flow (Cameroon); 800-1000 m alt.

Easily confused with *F. cyathistipula* subsp. *pringsheimiana* but the receptacle of this plant is smooth, subglabrous and often stipitate and the walls of the figs are spongy; on the twigs the lenticels are inconspicuous and dispersed.

Planted in Togo.

F. tettensis Hutch. – Icon.: Burrows & Burrows, o.c.: 126-128.

Tree 6-12 m tall and c. 10 m wide, deciduous, sometimes with small buttresses, or shrub; leaves spirally arranged; lamina subreniform to cordate, 1,5-11,5 × 2-12 cm; apex short to acuminate or subacute to rounded, base cordate, margins subentire or irregularly crenate, upper surface ± densely hirtellous to pubescent, often somewhat scabrous, lower surface hirtellous, subtomentose on the veins; petiole 0,5-5,5 cm long, 1-2 mm thick; figs in pairs or solitary in the leaf-axils, green to reddish, densely white-pubescent.

Rocky outcrops; in clefts in rocks (epilithic); 0-1000 m alt.

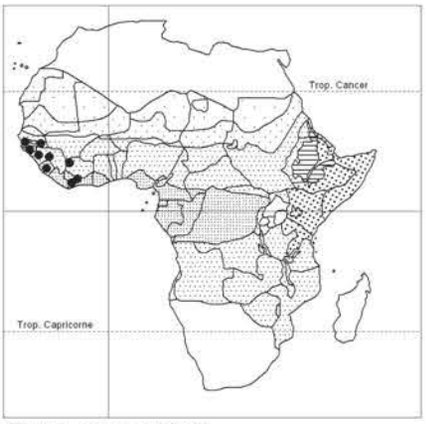
Botswana, S. Africa. – Socotra?

Easily recognised by the hairy reniform-cordiform leaves; rather rare in hot dry areas.

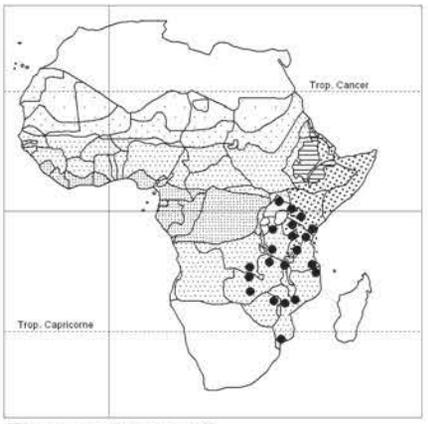
F. thonningii Blume, incl. var. *heterophylla* A. Peter – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 85 pl. 17 C, 89 pl. 19 B, 1959; Fl. Trop. E. Afr., Moraceae: 74, 1989; Berg & Wiebes, Afr. fig trees & wasps: 127, 1992; Beentje, Kenya trees, shrubs & lianas: 329, 1994; Burrows & Burrows, Figs S. & S.-C. Afr.: 148 & 150-152 *(F. rokko),* 153-156 *(F. psilopoga),* 156-159 *(F. persicifolia),* 160-164 *(F. petersii),* 165-172 (forms of *F. burkei)* and 173-175 *(F.* sp. 1), 2003; Latham, Pl. visited by bees… Umalila, S. Tanz., ed. 3: 85, 2007; Roodt, Shell field guide 1, trees & shrubs, Okavango D.: 24, 1998; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 287, 2006.; Latham & Konda, Pl. utiles Bas-Congo, ed.2: 142, 2007; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 277, 2008.

syn.: Enum. 2: 138, 1992; *F. microcarpa* Vahl 1805, non L. f. 1781; *F. dekdekena* (Miq.) A. Rich., incl. var. *angustifolia* A. Peter and var. *pubiceps* Mildbr. & Burret; *F. neriifolia* A. Rich. 1851, non J. E. Sm. 1810; *F. spragueana* Mildbr. & Burret; *F. butaguensis* De Wild.; *F. rupicola* Lebrun & Toussaint; *F. annobonensis* Mildbr. & Hutch.; *F. brevipedicellata* De Wild. var. *cuneata* De Wild.; *F. kagerensis* Lebrun & Toussaint; *F. phillipsii* Burtt Davy & Hutch.; *F. tropophyton* Lebrun & Toussaint; *Urostigma acrocarpum* Miq.; *U. burkei* Miq.; *U. dekdekena* Miq.; *U. hochstetteri* Miq.; *U. schimperi* Miq.; *U. thonningii* (Blume) Miq.

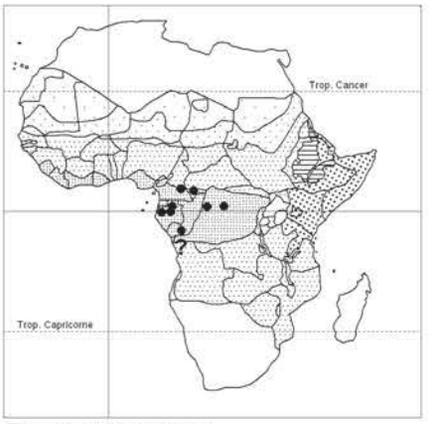
In 1990 Berg wrote: "In its present concept, *F. thonningii* is an extremely variable species or complex of taxa which cannot be separated satisfactorily on morphological criteria;… Recognition of infra-specific taxa might prove to be possible after further study" (Kirkia 13: 269); See also J. & S. Burrows, Figs S. & S.-C. Africa, 2003: 148-175 "The Ficus thonningii complex". "The group, which includes taxa which have been widely cultivated and selected for the production of bark cloth, needs a total revision before the taxonomy can be settled" (Friis in Hedberg & Edwards, Flora Ethiopia 3: 298, 1989).



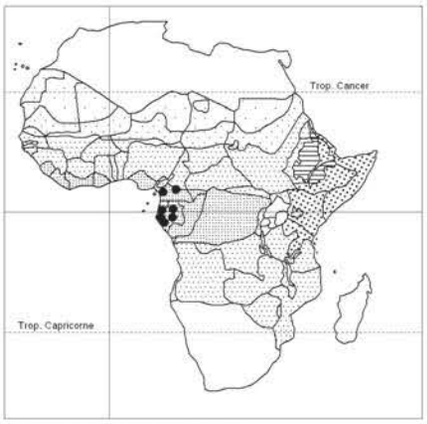
Ficus scott-elliotii



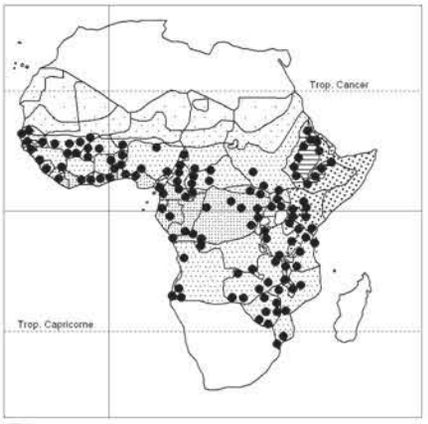
Ficus stuhlmannii



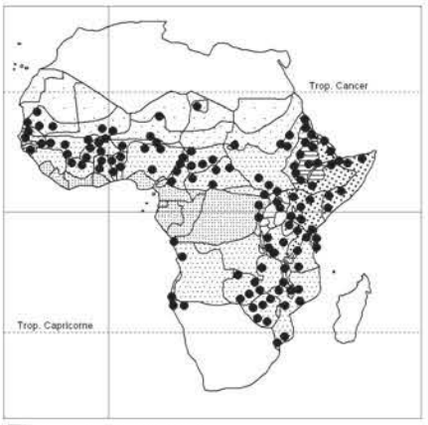
Ficus subcostata



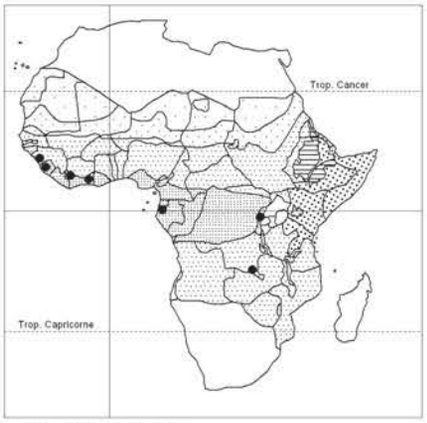
Ficus subsagittifolia



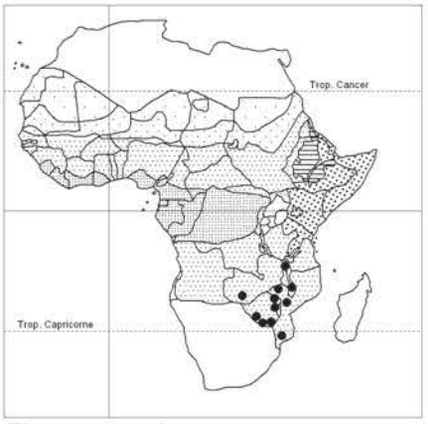
Ficus sur



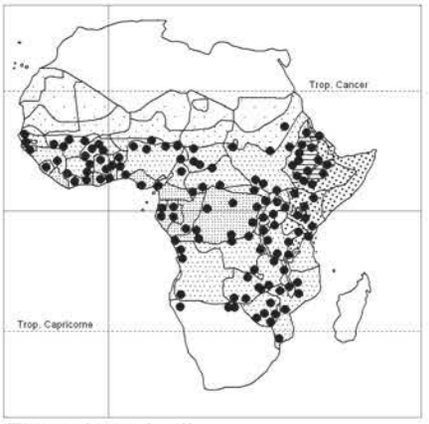
Ficus sycomorus



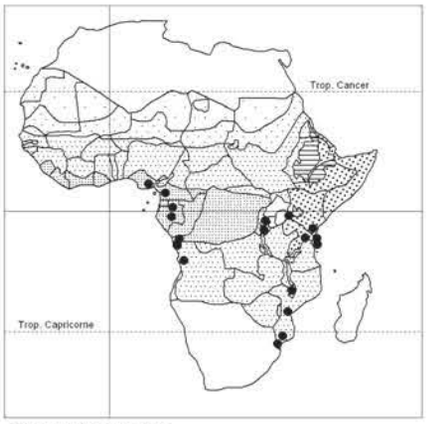
Ficus tesselata



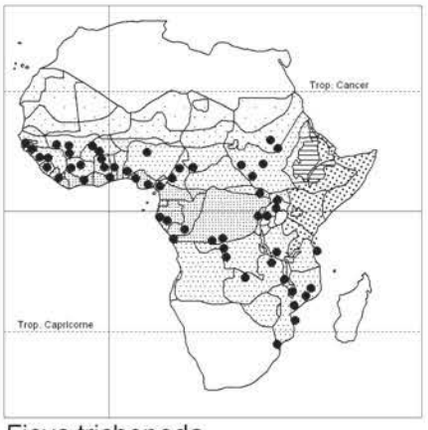
Ficus tettensis



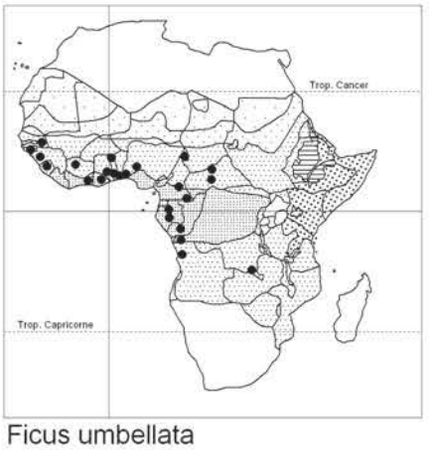
Ficus thonningii



Ficus tremula



Ficus trichopoda



Ficus umbellata

Tree 8-50 m tall, or shrub; bole short, ± cyclindrical, becoming deeply fluted on old specimens, lower branched, crown rounded and dense, very often with numerous aerial, pendant roots; leaves spirally arranged; lamina elliptic to oblanceolate or subobovate 1,5-18 × 1-9 cm, apex acuminate to obtuse or rounded, base cuneate to rounded or subcordate, often slightly inaequilateral; margins entire, superior surface glabrous or sparsely puberulous to pubescent, the midrib more densely so, the inferior surface glabrous or sparsely to densely white- to brownish-puberulous or pubescent on the whole surface, the main veins or only the midrib; petiole 0,5-6 cm long, 1-2 mm thick, glabrous to pubescent; figs in pairs in the leaf-axils, sometimes also below the leaves, yellowish or reddish, c. 5 mm Ø. – Hemi-epiphytic, strangler or terrestrial.

Gallery with *Parinari excelsa, Syzygium staudtii, Ficus saussureana, Polyscias ferruginea, Beilschmiedia* sp.; hollow with *Mitragyna stipulosa, Ficus trichopoda, Ixora laxiflora;* savanna; lake shores; miombo woodland; swamp forest (mushitu); growing on an old baobab in Basari (Togo); *Baikiaea* thickets (mukusi, mutemwa) on Kalahari sand; wooded grassland and dambos; often on termitaria; rocky ground; edges of forest; rain-forest; "coffee forest"; dry evergreen forest; evergreen bushland; farmland; edge forest-savanna with *Syzygium macrocarpum, Uvaria chamae, Monodora tenuifolia, Allophylus africanus;* wet or dry upland forest, often left standing after clearing; rocky sites; wooded grassland; 0-2500 m alt.

Cape Verde Isl.; Pagalu/Annobon, Principe, São Tomé, Bioko/Fernando Poo; Namibia, Botswana, S. Africa, Swaziland.

Also planted.

Berg has proposed a classification recognising extreme entities (or forms), ± clearly associated with geography and habitat (in Fl. Trop. E. Afr., Moraceae: 75-76, 1989, and Berg & Wiebes, Afric. fig trees & wasps: 129-131, 1992):

– *'arcocarpa',* the typical form with sparsely puberulous branchlets and elliptic-oblong leaves, from Senegal to Uganda, Burundi, also Bioko & São Tomé, up to 1200 m alt.;
– *'burkei',* with densely whitish pubescent branchlets, leaves and figs, and with ± obovate leaves, from E & S Africa, 900-1800 m alt.;
– *'dekdekena',* similar to *'petersii',* but leaves narrower and figs ± glabrous, from Ivory Coast, Burkina Faso to Ethiopia, 1000-2100 m alt.;
– *'hochstetteri',* similar to *'dekdekena'* but leaves hairy below, from Zaire, Ethiopia to Tanzania, up to 2200 m alt.;
– *'iteophylla',* with densely whitish pubescent leafy twigs and elliptic-oblong leaves, from Senegal to Zaire, at low alt.;
– *'mammigera',* with sparsely puberulous leafy twigs and ± sessile figs, from E & S Africa in riverine forest, up to 2300 m alt.;
– *'neurocarpa',* with densely puberulous leafy twigs and glabrous small leaves, from E Zaire, Ruanda, Uganda, Tanzania in rocky places, 1500-1800 m alt.;
– *'persicifolia',* with densely brown puberulous leafy twigs and drooping oblong leaves, from Gabon, Angola to Uganda, N Zambia along lakes and rivers, up to 1800 m alt.;
– *'petersii',* similar to *'persicifolia'* and to *'dekdekena'*, with elliptic-obovate leaves, from E & S Africa, up to 1400 m alt.;
– *'rokko',* similar to *'arcocarpa'* but leaves longer, from Guinea-Mali to Angola, Uganda south to E Zimbabwe, São Tomé and Cape Verde Isl., in wet & dry forest, up to 2000 m alt.

Reported as a hemi-epiphyte on *Vitellaria paradoxa (Sapotaceae),* shea-butter tree, in Cameroon (A. Ibrahima & al. in Selbyana 27: 72-78, 2006).

F. tremula Warb., conservation proposed against *F. tremula* (Heer) Heer, fossil possibly *Moraceae* (Ungricht & al. (1628) in Taxon 53: 566-568, 2004, and Brummitt in Taxon 54: 1099, 2005. – Icon.: Engler, Pflanzenwelt O. Afr. C: pl. 10 fig. F-K, 1895; Burrows & Burrows, Figs S. & S.-C. Afr.: 238-240, 2003 (both subsp. **tremula**).

Shrub or multi-stemmed tree 4-10 m tall and 6-10 m wide, or rarely liane to > 18 m tall; leaves in spirals, elliptic to narrowly obovate or rectangular, 2,5-16,5 × 0,7-6,5 cm, both surfaces glabrous, apex shortly acuminate, rarely acute, base rounded, sometimes minutely cordate, margins entire, leaves often folded upwards and boat-shaped, the midrib somewhat reflexed, petiole, 0,7-4,5 cm, 0,5-1 mm thick held stiffly with the leaf blade in a pendulous position and characteristically vibrating in a light wind (like the spikelets of *Eragrostis tremula),* or the leaves pendulous, flattering in the slightest breeze like those of *Brachystegia floribunda;* figs borne on flattened, ± curved spurs 1-3 cm long on the main stems and branches with 1-6 syconia per spur, figs green with creamy warts. – Hemi-epiphytic, strangler or frequently appearing as a terrestrial.

Dry evergreen forest; woodland; coastal bushland and woodland; rain-forest; sclerophyllous forest; wooded savanna; open forests; forest gallery; 0-2400 m alt.

S. Africa.

Comprises 3 subspp.: – subsp.: **tremula** with twigs drying yellowish or greyish and leaves drying dark brown above and greenish beneath, in coastal E Africa (a common epiphyte on *Hyphaene* in Kenya); – subsp. **acuta** (De Wild.) C. C. Berg, often a liane, twigs drying brown to blackish and leaves brownish without a contrast, in wet upland forest of inland Kenya- E Zaire; – subsp. **kimuenzensis** (Warb.) C. C. Berg, in W part of range, at low alt.

Resembling *F. ottoniifolia,* and the latter's subsp. *ulugurensis* sometimes confused in S Malawi, but different in dry state (leafy twigs dark brown in *F. ottoniifolia,* yellowish or pale brown in *F. tremula).*

F. trichopoda Baker – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 87 pl. 18 B, 1959 *(F. congensis);* Burrows & Burrows, o.c.: 133-136; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 279, 283, 2006.

Evergreen tree 5-10-25 m tall with a spread of 15-20 m, branches very stout, spreading almost horizontally, sometimes with several stems, producing numerous aerial roots which reach the ground and develop into pillar roots, thus becoming banyan-like; bole to 2 m Ø, short, stout; leaves alternate, spirally arranged; lamina ± broadly ovate to elliptic, 6-30 × 4-32 cm, apex shortly acuminate to obtuse, base obtuse to cordate, margins entire, upper surface glabrous, puberulous to hirtellous on the main veins, lower surface white hirtellous to tomentellous at least on the midrib, sometimes glabrous; petiole 2-7 cm long, 1-3 mm thick; figs to 4 together in the leaf axils, red or yellow, somewhat dorsiventrally compressed. – Terrestrial. – Stipules *1,5-8 cm long.* – Leaves very similar to those of *F. benghalensis* L.

Mushitu (swamp forest); river banks; dambos and swampy grassland; locally abundant in fringing forest in the savanna regions; sometimes gregarious; moist valley; 0-1200 m alt.

S. Africa; Madagascar. – Not in Ethiopia and Yemen.

F. umbellata Vahl. – Icon.: Aubréville, o.c.: 93 pl. 21 B ; Hawthorne & Jongkind, o.c.: 283.

syn.: *F. tuberculosa* Welw. ex Hiern, *excl.* var. *elliptica* Hiern *(= F. ovata).*

Tree 6-15 m tall, densely leafy all over and even from a little above the base; trunk nearly 0,3 m Ø; branches erect-spreading; branchlets patent, often with nodular protuberances or abbreviated shoots 0,6-1,25 cm thick from which the peduncles take their origin; leaves alternate, in spirals, crowded at the extremities of the branchlets, less crowded below, entire, broadly ovate or oval, cuspidate at the apex, obtuse or rounded-truncate at the somewhat unequal 3-5-nerved base, glabrous or nearly so, 11-26 × 7,5-19 cm; petiole 3-12,5 cm long, 2-4 mm thick, glabrous; figs 2-4 together, originating on the 2-year old branches in large thick fleshy tubercles or just below the leaves, yellowish green, c. 3 cm Ø. – Hemi-epiphytic, strangler or terrestrial.

Wooded savannas; forest gallery; rain-forests; rocks; screes; hardpan; savanna and open forest with *Nuxia congesta, Stereospermum acuminatissimum, Pavetta lasioclada, Lindackeria dentata;* to ± 1100 m alt.

Liberia (Mt. Nimba)? – Confused with *F. polita, F. abutilifolia,* and juvenile forms of *F. bubu.*

F. usambarensis Warb. – Icon.: Engler, Pflanzenwelt Ost.- Afr., C: tab. 11 A-E, 1895; Burrows & Burrows, o.c.: 101-103; Beentje & Mbago (2007): 22.

Tree 15-25 m tall, with a wide-spreading or rounded crown 25-35 m wide; leaves in spirals; lamina oblong to lanceolate, 9,5-14,5 × 4,5-6 cm, apex obtuse to rounded, base obtuse to rounded, margins entire; both surfaces glabrous; petiole 1,5-3,5 cm long, 2-2,5 mm thick; figs 2-7(-10) together on small spurs in the leaf-axils or just below the leaves, minutely hairy, reddish, peduncle 10-15 mm long. – (Secondarily?) terrestrial; probably shortly deciduous.

Woodland near the coast with *Adansonia, Pteleopsis, Tetracera;* shores of lake Tanganyika with *Anthocleista;* miombo woodland with *Brachystegia floribunda, Julbernardia paniculata, Uapaca* spp., *Marquesia macroura,* on quartzite rocks with deep sandy soils; also termitaria; 50-1400 m alt.

Recently found (1995) in N Zambia (identified on a specimen grown in a Lusaka garden) and collected in 1997 in NE Mozambique (fide Burrows & Burrows, o.c.: 104).

Prolific production of small long-stalked figs near tips of leafy twigs.

F. vallis-choudae Delile, incl. var. *pubescens* A. Peter – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 72-75, 2003; Beentje & Mbago (2007): 22; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 277, 2008.

syn.: *Sycomorus schimperiana* Miq.

Spreading tree 5 to ± 30 m tall, with short bole and spreading crown to 30 m wide; old trees sometimes forming long snaking plank buttress roots to 10 m long, sometimes producing root suckers; evergreen or semi-deciduous; leaves ovate to cordiform or ± deltoid, 4-44 × 3-30 cm, apex acute to subobtuse or very shortly acuminate, base obtuse to truncate or cordate, margins coarsely and obtusely dentate to repand, sometimes subentire; upper surface smooth and glabrous or puberulous on the main veins, sometimes scabridulous and hirtellous to hispidulous, lower surface glabrous or puberulous, sometimes hirtellous to pubescent; petiole 2-13,5 cm long, 1-3 mm thick, glabrous or white appressed puberulous to tomentose; figs solitary in the leaf-axils or just below the leaves, yellowish to orange with longitudinal orange to reddish stripes, 1-5 cm Ø (dry), fresh 3-6(-10) cm Ø. – Rarely epiphytic.

Riverine in savanna; lakesides; ground water forest (mushitu); secondary- scrub and forests; forest edge; humid well drained soils in savanna; mixed evergreen forest; 0-1900 m alt.

Cape Verde Isl.

F. variifolia Warb. – Icon.: Bot. Jahrb. Syst. 46: 205, 1912; Ann. Mus. Congo, B, Bot., Sér. 6, 1: tab. 13, 1904; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 79 pl. 14 B, 1959 *("F. bongouanouensis");* Beentje & Mbago (2007): 22; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 267, 275, 2006.

syn.: Enum. 2: 138, 1992; *F. bongouanensis* A. Chev. 1920, nom., non 1917 *(= F. dicranostyla* var. *dicranostyla); F. bongouanouensis* [sic!] sensu Aubréville in Fl. forest. Côte d'Iv., ed. 2, 1: 78, 1959, non *F.bongouanensis* A. Chev. 1917; non *F. bongoensis* Warb. *(= F. thonningii).*

Shrub or tree to 10-35 m tall, with cylindrical bole 1 m Ø, regular, 20-25 m tall with stout, plank buttresses; lamina oblong to elliptic or ± ovate 5-20 × 2-11,5 cm, often larger when juvenile, apex subacute to acuminate, base cordate to rounded, margins entire or almost so, when juvenile irregularly lobed to dissected, divided; both surfaces glabrous to sparsely puberulous, smooth or scabridulous (juvenile white hirsute); petiole 1-5 cm long, 1-2 mm thick; figs solitary or in pairs in the leaf-axils, puberulous, yellow.

Pioneer of cleared areas; forest gallery; N edges of half-deciduous forests; grass savanna; drier types of closed forest; clayey soil in rain-forest; old secondary forest with *Terminalia superba, Albizia ferruginea, Chlorophora regia, Anthocleista nobilis;* 300-1200 m alt.

Very close to *F. dicranostyla* but upper surface of leaves smooth.

F. vasta Forssk. – Icon.: Berg & Wiebes, Afr. fig trees & wasps: 105, 1992; Chaudhary, fl. Kingd. Saudi Arabia ill. 1:116, 2001; Eggli, Ill. handbook succ. pl.: Dicot., 2002; Puff & Sileshi Nemomissa, Pl. Simen: 105, 2005.

syn.: *F. dahro* Del., incl. var. *velutina* Fiori and var. *glabrescens* Hutch.; *F. socotrana* Balf. f.; *F. callabatensis* Warb.; Enum. 2: 138, 1992.

Tree to 16-25 m tall with spreading crown; trunk irregularly shaped, ± buttressed, to 1,5 m Ø; leaves alternate, in spirals; lamina cordiform to ovate, subcircular or elliptic to subreniform, 5-35 × 2,5-25 cm, apex rounded to obtuse or very shortly and bluntly acuminate, base cordate, margins entire or almost so; upper surface rather sparsely hirtellous to hirtellous, puberulous or almost glabrous; petiole 1,5-19 cm long, 1,5-4 mm thick; figs in pairs or solitary in the leaf-axils or just below the leaves, green with white spots, densely pubescent, sometimes warty. – (Secondarily?) terrestrial.

Riverine; on or at the base of rocks; forest clearings and margins; lake shores; occasionally open woodland; secondary bushland; farmland; often as single tree; rocky ground in short grass savanna; 300-2400 m alt.

Yemen, Socotra, Saudi Arabia, Oman.

Replaced in Tanzania and southwards by the very closely related *F. wakefieldii* (put in synonymy by Beentje, Kenya trees, shrubs & lianas: 330, 1994; difference persistent basal bracts of figs in *F. wakefieldii,* caducous in *F. vasta).*

F. verruculosa Warb., incl. var. *stipitata* Mildbr. & Burret – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 79-82, 2003; Beentje & Mbago (2007): 22; Roodt, Shell field guide 1, trees & shrubs, Okavango D.: 26, 1998.

Much-branched or many-stemmed shrub 0,2-0,6 m tall or tree 2-12 m, evergreen, bearing slender aerial roots which sometimes develop into prop roots; leaves alternate; lamina oblong to lanceolate, 3,5-20 × 1,5-8,5 cm, apex subacute to obtuse, base obtuse or rounded to subcordate, margins entire; both surfaces glabrous, with small raised warts below; petiole 0,5-3 cm long, 1-2 mm thick; figs mostly in pairs in the leaf-axils or just below the leaves, red or purple, glabrous, 5-10 mm Ø.

Streams, lakes, swamps, bogs; spring seepage areas in deciduous woodland; commonly in water; occasionally in grassland or wooded grassland; swamp forest margins; sometimes forming thickets; 800 (?and less)-1860 m alt.

Botswana, N Namibia, S. Africa. Not in Niger but in Nigeria.

F. vogeliana (Miq.) Miq., incl. var. *latifolia* Hutch., and var. *texitis* A. Chev. p.p.?; non *F. vogelii* (Miq.) Miq. *(= F. lutea).* – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 77 pl. 13 A, 1959; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 267, 277, 279, 2006.

bas.: *Sycomorus vogeliana* Miq.

Tree 5-20(-30) m tall; trunk 30-90 cm Ø, clear to up to 20 m height, with buttresses or root-spurs extending tortuously for a long distance; lamina broadly elliptic to obovate or oblong, 5-22 × 2,5-11 cm, apex acuminate, base cordate to subtruncate, margins coarsely dentate to subentire; upper surface scabrous to scabridulous, sparsely but on the veins more densely, white to yellow hirtellous or hirsute, lower surface white to yellow hirsute, often only on the main veins; petiole 0,5-5,5 cm long, 1-3 mm thick; figs on branched leafless branchlets to 10 cm long arising from the base of the trunk (and then the figs in the litter underneath the tree) or on usually short branchlets up to the main branches; figs (orange-)red, 2-3 cm Ø. – Geocarpic.

Secondary forest; evergreen forest in moist, swampy or periodically flooded sites (e.g. stream banks); riparian in rain-forest with *Cola gabonensis, Pentaclethra macrophylla, Garcinia afzelii, Endosiphon primuloides;* often planted (fide Akoegninou & al., Fl. analyt. Bénin: 816, 2006, Wageningen); 0-1200 m alt.

Bioko/Fernando Poo.

F. wakefieldii Hutch. – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 109-111, 2003.

Tree 10-25 m tall, with a wide round crown, semi-deciduous; stem somewhat fluted and buttressed; leaves in spirals; lamina cordiform to ovate, broadly elliptic, subcircular, subreniform or sometimes broadly obovate, 6-23 × 5-23 cm, apex rounded or sometimes very shortly and bluntly acuminate, base cordate, margins entire or almost so; upper surface sparsely hirtellous to subhirsute, lower surface sparsely to densely hirtellous to puberulous, on the main veins yellow hirsute; petiole 2-9 cm long, 1,5-5 mm thick; figs in pairs in the leaf-axils initially enclosed in ovoid *calyptrate bud covers* to 1,5 cm long, sessile; figs sessile, densely white- or yellowish hairy. – Strangler at first, secondarily terrestrial.

Riverine, lakesides; wooded grassland; commonly on rock outcrops, scarps or at foot of rocky hills; miombo woodland; often on termite mounds; 200-2000 m alt.

Resembling *F. glumosa.* Very close to *F. vasta* and sunk under this species by Beentje (see *F. vasta* above). Both species share the same pollinator.

F. wildemaniana Warb. ex De Wild. & Th. Durand

Shrub or tree 12-20 m tall; leaves in spirals; lamina lanceolate to oblong or subobovate, often ± pandurate, 15-60 × 5-25 cm, apex acuminate to subacute, base acute or sometimes subattenuate and cordulate, margins entire; both surfaces glabrous; petiole 1,5-8 cm long, 4-10 mm thick; figs 1-2 in the leaf-axils, yellow hirtellous to strigillose, 2,5-4,5 cm Ø. – Hemi-epiphytic.

Rain-forest; gallery; 200-1100 m alt.

Leaves very similar to those of *F. subsagittifolia.*

* * *

TO BE RE-EVALUATED:

Ficus chirindensis C. C. Berg – Icon.: Burrows & Burrows, Figs S. & S.-C. Afr.: 229-232, 2003.

Tree to 35-50 m, deciduous (younger trees evergreen), often with pillar-roots; hemi-epiphyte (seeds germinate high up in the canopy, later sending down roots and plant looking like terrestrial); crown small; trunk fluted or buttressed, sometimes with a few areal roots; bark grey, mottled; leaves spirally arranged, thin, glabrous, (oblong-)elliptic, 5,5-13 × 2,5-7 cm, apex subacuminate, base cordate to emarginate or truncate, rarely rounded or obtuse, margins entire, flat; upper surface dark green, glossy, glabrous, usually minutely puberulous on the midrib, lower surface minutely puberulous on the main veins, sometimes glabrous; petiole 1,2-6 cm long, 1,5-2 mm thick; stipules to 3,5 × 0,5 cm, short white-hairy outside; figs to 5 together, or solitary, on *shortly branching spurs* produced on the older wood down to the main branches, figs glabrous, yellow-green, warty, c. 2 cm Ø, on a 3 cm long peduncle. – Secondarily terrestrial, strangler.

Submontane evergreen or semi-evergreen forests, emergent above the forest canopy; very common; 950-1600 m alt.

Note: According to Burrows & Burrows, l.c., a misunderstood taxon, and the original description with quotations of specimens not belonging here but rather to *F. sansibarica.* It differs from the latter by its distinct spur formation (not with linear-developing spurs), by the smaller warty figs (not 3-7 cm Ø), and by its habitat preferences (not on rocky hillsides or riverine sites).

Dowsett-Lemaire & White (Bull. Jard. Bot. Natl. Belg. 60: 100-104, 1990) sunk the species p.p. (excl. specim. Chapman 567 and ? Meredith s.n.) into synonymy under *F. sansibarica* as they did not find any convincing distinguishing characters (shape of leaves, indumentum of stipules cited as distinguishing by Berg). The two excluded specimens were referred to *"F. modesta" (= F. ottoniifolia* subsp. *ulugurensis).*

Burrows & Burrows, l.c., who present a comparative table of the 5 easily confused *Ficus* species, note that *F. polita* is a smaller tree in coastal forest and rocky gorges with larger fruits than *F. chirindensis,* and that *"F. modesta"* is a small tree on exposed rocky hillsides and along rivers in low-altitude forest with larger fruits (3 × 2 cm), but that its spur formation is similar to that of *F. chirindensis* with which it is probably closely related.

The map on p. 67 is based on records given by Burrows & Burrows and partly by Berg in Fl. Zambes. 9/6: 72, 1991, and by Beentje, Kenya trees, shrubs & lianas: 325, 1994.

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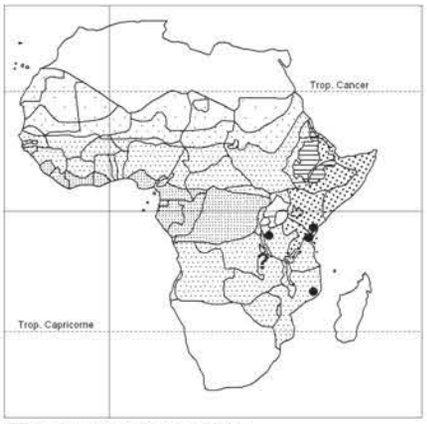
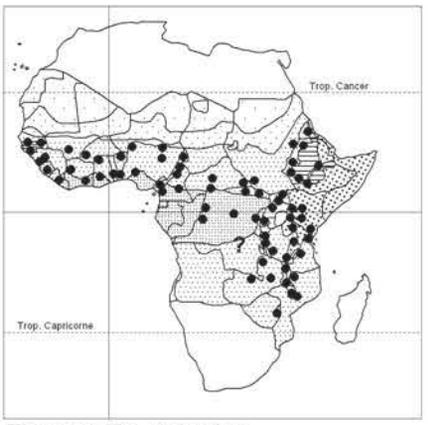
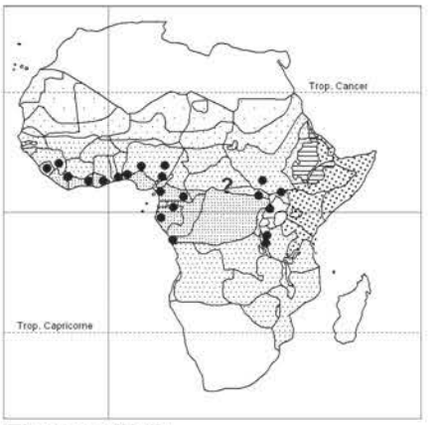


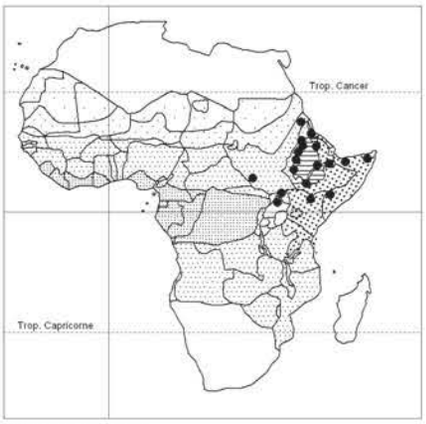
Ficus usambarensis



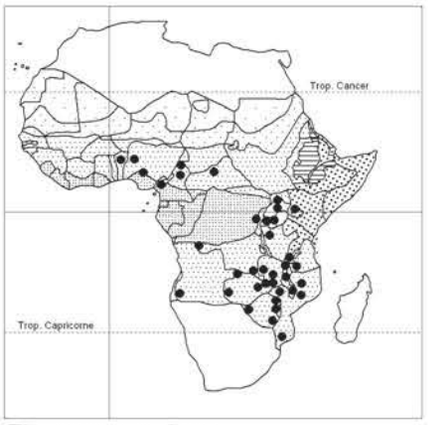
Ficus vallis-choudae



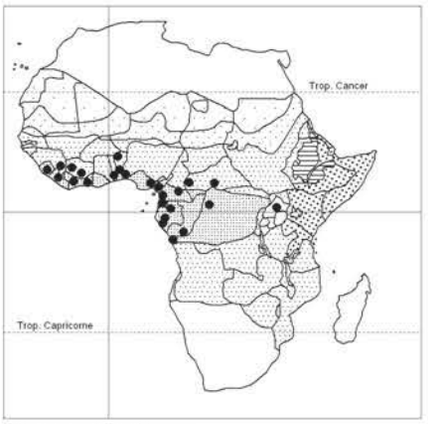
Ficus variifolia



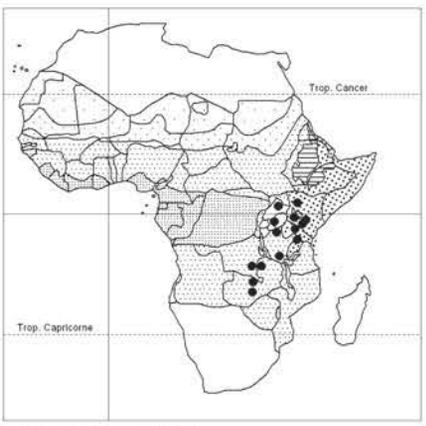
Ficus vasta



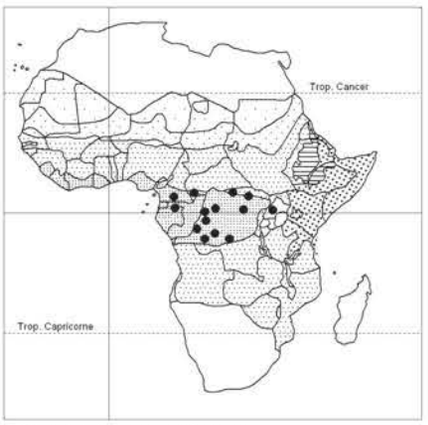
Ficus verruculosa



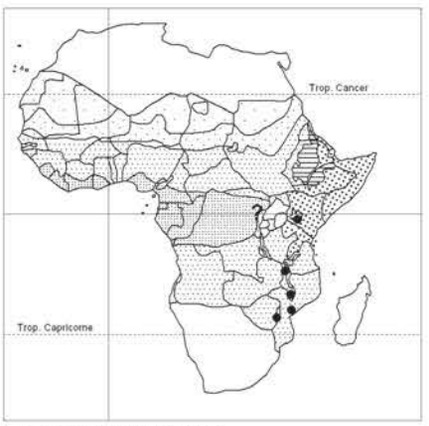
Ficus vogeliana



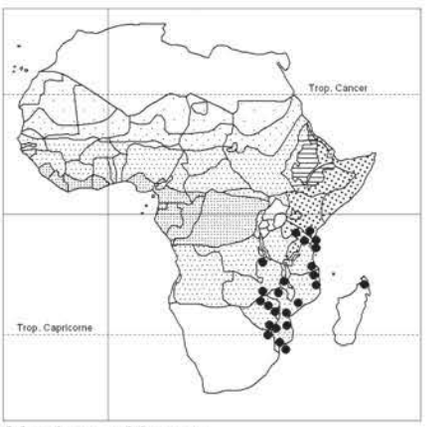
Ficus wakefieldii



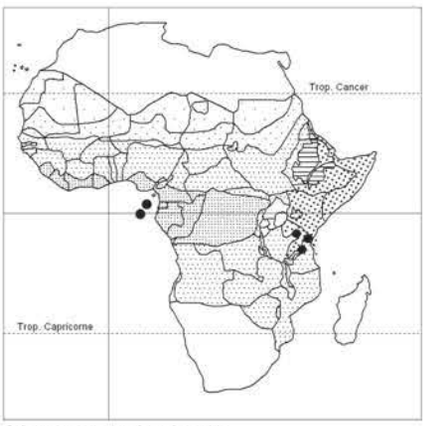
Ficus wildemaniana



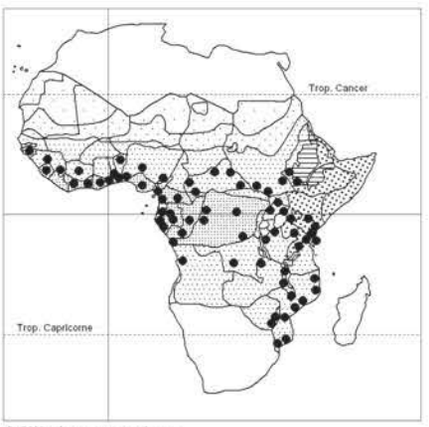
Ficus chirindensis



Maclura africana



Mesogyne insignis



Milicia excelsa

INTRODUCED SPECIES (cultivated and/or naturalised):

Ficus altissima Blume, easily confused with the banyan tree, from the Himalayas to Indonesia, the Philippines (illustrations in Burrows & Burrows, Figs S. & S.-C. Afr.: 278-279, 2003).

F. benghalensis L., banyan tree, from India-Bangladesh (Burrows & Burrows, o.c.: 252-255).

F. benjamina L., from India through Malaysia to the Solomon Isl., N Australia (Burrows & Burrows, o.c.: 256-259).

F. carica L., common fig domesticated already in the Neolithic (finds in the Jordan valley 11400 years old, fide J. Brisson in Le Figaro n° 19255: 16, 30 June 2006), from the Mediterranean Region to Iraq (Burrows & Burrows, o.c.: 245-248).

F. elastica Roxb., rubber fig, from E Himalayas to Indonesia (Burrows & Burrows, o.c.: 263-265).

F. microcarpa L. f., non Vahl *(= F. thonningii),* Malay banyan, possibly confused with *F. benjamina,* from India, Sri Lanka to Malaysia, New Guinea, Australia, Christmas Isl. (Burrows & Burrows, o.c.: 260-262).

F. pumila L., climbing fig, from SE Asia, China, Taiwan, Formosa (Burrows & Burrows, o.c.: 249-251).

F. religiosa L., with drooping long-acuminate leaves, from SE Asia (Burrows & Burrows, o.c.: 272-274).

SYNONYMS:

Ficus acuta De Wild. = **Ficus tremula** subsp. **acuta**

acutifolia Hutch. = **F. asperifolia**

africana Kunth & Bouché = **F. ovata**

afzelii G. Don ex Loudon = **F. saussureana**

aganophila Hutch. = **F. adolfi-friderici**

akaie De Wild. = **F. lutea**

ambigua Forssk. = **F. cordata** subsp. **salicifolia**

annobonensis Mildbr. & Hutch. = **F. thonningii**

anomani Hutch. = **F. craterostoma**

antithetophylla Steud. ex Miq. = **F. capreifolia**

apodocephala Bak. = **F. lutea**

arcuato-nervata Hutch. = **F. ardisioides** subsp. **camptoneura**

arimensis Britton = **F. lutea**

asymmetrica Hutch. = **F. ovata**

baguirmensis Warb. in sched. = **F. ingens**

baoulensis A. Chev. = **F. ovata**

barbata Warb., non Wall. = **F. glumosa**

barombiensis Warb. = **F. polita** subsp. **polita**

baronii Bak. = **F. lutea**

basarensis Mildbr. & Burret = **F. thonningii**

benghalensis A. Rich., non L. = **F. vasta**?

beniensis De Wild. = **F. sur**

bequaertii De Wild. = **F. thonningii**

bongoensis Warb. = **F. thonningii**

bongouanensis A. Chev. 1917 = **F. dicranostyla** var. **dicranostyla**

bongouanensis A. Chev 1920 = **F. variifolia**

bongouanouensis sensu Aubréville 1959 = **F. variifolia**

brachylepis Hiern = **F. sansibarica** subsp. **macrosperma**

brachypoda Hutch., incl. var. *scoana* Chiov. = **F. ovata**

brassii R. Br. ex Sabine = **F. sur**

brevicula Hiern = **F. pygmaea**

brevipedicellata De Wild. = **F. natalensis** subsp. **leprieurii** var. *cuneata* De Wild. = **F. thonningii**

buchneri Warb. = **F. ovata**

budduensis Hutch. = **F. trichopoda**

buettneri Warb., incl. var. *globicarpa* Mildbr. & Burret = **F. ottoniifolia** subsp. **ottoniifolia**

buntingii Hutch. = **F. sansibarica** subsp. **macrosperma**

burkei (Miq.) Miq. = **F. thonningii**

bussei Warb. ex Mildbr. & Burret var. *longepetiolata* Mildbr. = **F. recurvata**

butaguensis De Wild. = **F. thonningii**

buxifolia De Wild. = **F. lingua** subsp. **lingua**

cabrae Warb. = **F. lutea**

caffra (Miq.) Miq., incl. vars. = **F. ingens**

callabatensis Warb. = **F. vasta**

callescens Hiern = **F. cyathistipula** subsp. **cyathistipula**

calotropis Lebrun & Toussaint = **F. amadiensis**

camptoneura Mildbr. = **F. ardisioides** subsp. var. *angustifolia* Mildbr. = **F. ardisioides** subsp. **camptoneura**

camptoneuroides Hutch. = **F. tesselata**

aff. *camptoneuroides* Hutch. sensu Aubrév. = **F. pachyneura**

capensis Thunb., incl. var. *beniensis* (De Wild.) Lebrun, var. *guineensis* (Miq.) Miq., var. *ituriensis* (De Wild.) Lebrun, var. *mallotocarpa* (Warb.) Mildbr. & Burret, incl. fa. *pubifolia* Mildbr. & Burret, var. *ostiolata* (De Wild.) Lebrun, var. *pubescens* Warb. ex De Wild. & T. Durand and var. *trichoneura* Warb. = **F. sur**

caricoides Roxb. = **F. palmata**

chanas Forssk. = **F. sycomorus** subsp. **sycomorus**

changuensis Mildbr. & Burret, incl. var. *somalensis* Pamp. = **F. bussei**

chevalieri Warb. in sched. ex Mildbr. & Burret, nom. = **F. scott-elliotii**

chirindensis auct. non C. C. Berg; Berg, 1988, p.p. = **F. ottoniifolia** subsp. **ulugurensis**?

chlamydodora Warb. = **F. thonningii**

chrysocerasus Warb. = **F. natalensis** subsp. **leprieurii**

clarencensis Mildbr. & Hutch. = **F. chlamydocarpa** subsp. **chlamydocarpa**

cletrophylla Hiern = **F. sur**

cnestrophylla Warb. = **F. asperifolia**

cocculifolia Bak., incl. subsp. *sakalavarum* (Bak.) Perrier 1952, and incl. var. *sakalavarum* (Bak.) Perrier 1928 = **F. sycomorus** subsp. **sycomorus**

cognata N. E. Br. = **F. thonningii**

colpophylla Warb. = **F. asperifolia**

comorensis Warb. = **F. sycomorus** subsp. **sycomorus**

congensis De Wild., incl. var. *mollis* Hutch. = **F. trichopoda**

coriacea De Wild., non Aiton = **F. densistipulata**

corylifolia Warb. ex De Wild. & T. Durand, incl. var. *glabrescens* Warb. = **F. mucuso**

crassipedicellata De Wild., incl. fa. *angustifolia* De Wild., fa. *boonei* De Wild. and fa. (var.?) *cuneata* De Wild. = **F. thonningii**

cyphocarpa Mildbr. = **F. thonningii**

dahro Delile, incl. var. *glabrescens* Hutch. and var. *velutina* Fiori = **F. vasta**

damarensis Engl. = **F. sycomorus** subsp. **gnaphalocarpa**

dar-es-salaamii Hutch. = **F. stuhlmannii**

dawei Hutch. = **F. saussureana**

dekdekena (Miq.) A. Rich., incl. var. *angustifolia* A. Peter and var. *pubiceps* Mildbr. & Burret = **F. thonningii**

delagoensis Sim = **F. sansibarica** subsp. **sansibarica**

demeusii Warb. = **F. artocarpoides**

depauperata Sim = **F. lingua** subsp.

dewevrei Warb. ex De Wild. & Th. Dur. = **F. ottoniifolia** subsp. **ottoniifolia**

dewevreoides De Wild. = **F. ottoniifolia** subsp. **ottoniifolia**

dicranostyla Mildbr. var. *latifolia* A. Chev. and var. *nitida* Hutch. = **F. dicranostyla** var. **dicranostyla**

dinteri Warb. = **F. thonningii**

discifera Warb. = **F. abutilifolia**

djalonensis A. Chev. = **F. calyptrata**

durandiana Warb. = **F. glumosa**

durbanii Warb. = **F. natalensis** subsp. **natalensis**

dusenii Warb. = **F. thonningii**

ealaensis De Wild. = **F. ottoniifolia** subsp. **ottoniifolia**

ebolowensis Mildbr. & Hutch. = **F. densistipulata**

elegans (Miq.) Miq. = **F. artocarpoides**

epiphytica De Wild. = **F. crassicosta**

erici-rosenii R. E. Fries = **F. thonningii**

eriobotryoides Kunth & Bouché, incl. var. *caillei* A. Chev. ex Mildbr. & Burret and var. *monbuttuensis* (Warb.) Lebrun = **F. saussureana**

eriocarpa Warb. = **F. thonningii**

erubescens Warb. = **F. sur**

eucalyptoides Batt. & Trab. = **F. cordata** subsp. **salicifolia**

excentrica Warb. = **F. natalensis** subsp. **leprieurii**

fasciculata Warb. = **F. bussei**

fasciculiflora Hutch. = **F. ottoniifolia** subsp. **ottoniifolia**

fazokelensis (Miq.) Miq. = **F. glumosa**

fernandesiana Hutch. = **F. chlamydocarpa** subsp.

flavovenia Warb. = **F. trichopoda**

fleuryi A. Chev. = **F. vogeliana**

forsskalii Vahl = **F. palmata**

furcata Warb. = **F. natalensis** subsp. **leprieurii** var. *angustifolia* De Wild. = **F. craterostoma**

galactophora Tenore = **F. saussureana**

galpinii Warb. = **F. thonningii**

gambariensis De Wild. = **F. glumosa**

gilletii Warb. = **F. ottoniifolia** subsp. **ottoniifolia**

glumosoides Hutch. = **F. glumosa**

gnaphalocarpa (Miq.) A. Rich. = **F. sycomorus** subsp.

goetzei Warb. = **F. thonningii**

goliath A. Chev. = **F. recurvata**

FICUS

golungensis Hutch. = **F. recurvata**

gombariensis De Wild. = **F. glumosa**

gongoensis De Wild. = **F. sur**

gossweileri Hutch. = **F. sansibarica** subsp. **macrosperma**

guerichiana Engl. = **F. ilicina**

guineensis (Miq.) Stapf = **F. sur**

hararensis Warb. = **F. vasta**

hippopotamii Gerstner = **F. trichopoda**

hochstetteri (Miq.) A. Rich., incl. var. *glabrior* Miq. = **F. thonningii**

holstii Warb. = **F. lutea**

homblei De Wild. = **F. stuhlmannii**

howardiana Sim, incl. var. *glabra* Sim and var. *normalis* Sim = **F. stuhlmannii**

howardii err. cal. = **F. stuhlmannii**

incognita De Wild. = **F. lutea**

indica Forssk. 1775, non L. 1753 = **F. cordata** subsp. **salicifolia**

ingentoides Hutch. = **F. ingens**

inkansuensis Warb. = **F. artocarpoides**

inopinata Mildbr. = **F. variifolia**

integrifolia Sim = **F. sycomorus** subsp. **sycomorus**

intermedia Delile = **F. populifolia**

irumuensis De Wild. = **F. asperifolia**

iteophylla Miq. = **F. thonningii**

ituriensis De Wild. = **F. sur**

johnstonii Stapf = **F. ovata**

kaba De Wild. = **F. lutea**

kagerensis Lebrun & Toussaint = **F. thonningii**

katagumica Hutch. = **F. ingens**

kawuri Hutch. = **F. ingens**

kerstingii Hutch. = **F. abutilifolia**

kiloneura Hornby = **F. fischeri**

kimuenzensis Warb. = **F. tremula** subsp.

kirkii Hutch. = **F. scassellatii** subsp. **scassellatii**

kisantuensis Warb. = **F. artocarpoides**

kitaba De Wild. = **F. glumosa**

kitubalu Hutch. = **F. amadiensis**

kondeensis Warb. = **F. sur**

kotschyana (Miq.) Miq. = **F. platyphylla**

kyimbilensis Mildbr. = **F. bubu**

langenburgii Warb. = **F. sansibarica** subsp. **sansibarica**

lanigera Warb. = **F. lutea**

lateralis Warb. = **F. platyphylla**

laurentii Warb. = **F. barteri**

lecardii Warb., incl. var. *leccardioides* (Warb.) Aubrév. = **F. cordata** subsp.

leccardioides Warb. = **F. cordata** subsp. **cordata**

ledermannii Hutch. = **F. abutilifolia**

leprieurii Miq., incl. var. *intermedia* Hutch. and var. *sessilis* Hutch. = **F. natalensis** subsp.

lichtensteinii Link = **F. sur**

longepedunculata De Wild. = **F. ottoniifolia** subsp. **lucanda**

lucanda Ficalho = **F. ottoniifolia** subsp.
lujae De Wild. = **F. preussii**
lutea sensu auctt., non Vahl = **F. ingens**
luteola De Wild. = **F. craterostoma**
lynesii Lebrun = **F. dicranostyla** var. **dicranostyla**
mabifolia Warb. = **F. thonningii**
macrosperma Mildbr. & Burret = **F. sansibarica** subsp.
maculosa Hutch. = **F. ottoniifolia** subsp. **ottoniifolia**
magenjensis Sim = **F. bussei**
mallotocarpa Warb., incl. var. *trichoneura* (Warb.) A. Peter = **F. sur**
mallotoides Mildbr. & Hutch. = **F. calyptrata**
mammigera R. E. Fries = **F. thonningii**
mammosa Lebrun = **F. natalensis** subsp. **natalensis**
mangenotii A. Chev. = **F. sansibarica** subsp.**macrosperma**
mangiferoides Hutch. = **F. pseudomangifera**
medullaris Warb. = **F. thonningii**
megalodisca Warb. = **F. umbellata**
megaphylla Warb., incl. var. *glabra* Warb. = **F. ovata**
megapoda Bak. = **F. polita** subsp. **polita**
michelsonii Boutique & J. Léonard = **F. scassellatii** subsp. **scassellatii**
microcarpa Vahl, non L. f. = **F. thonningii**
micropison Mildbr. = **F. lingua** subsp. **lingua**
mildbraedii Hutch. = **F. barteri**
mittuensis Warb. = **F. abutilifolia**
modesta F. White = **F. ottoniifolia** subsp. **ulugurensis**
monbuttuensis Warb. = **F. saussureana**
montana Sim = **F. glumosa**
morifolia Forssk., non Lam. = **F. palmata**
munsae Warb. = **F. sur**
mutantifolia Hutch. = **F. craterostoma**
namalalensis Hutch. = **F. densistipulata**
natalensis Hochst. var. *minor* (Sond.) Warb. = **F. burtt-davyi**
nautarum Bak. = **F. lutea**
ndola Mildbr. = **F. amadiensis**
nekbudu Warb. = **F. lutea**
neriifolia A. Rich., non J. E. Sm. = **F. thonningii**
neumannii Kunth & Bouché = **F. lutea**
neurocarpa Lebrun & Toussaint = **F. thonningii**
niamniamensis Warb. = **F. polita** subsp. **polita**
niokoloensis Berh. = **F. asperifolia**
nyanzensis Hutch. = **F. cyathistipula** subsp. **cyathistipula**
obovata Sim = ? **Ehretia amoena** *(Boraginaceae)*
octomelifolia Warb. = **Ficus ovata**
ostiolata De Wild., incl. var. *brevipedunculata* De Wild. = **F. sur**
ovata var. *octomelifolia* (Warb.) Mildbr. & Burret = **F. ovata**
ovato-cordata De Wild. = **F. ingens**
pachyclada Bak. = **F. lutea**

pachypleura Warb. = **F. bubu**
paludicola Warb. = **F. asperifolia**
palustris Sim = **F. capreifolia**
pandurata Hort. = **F. lyrata**
panifica Delile = **F. sur**
paolii Pamp. = **F. capreifolia**
pendula Hiern = **F. asperifolia**
persicifolia Warb., incl. var. *angustifolia* Warb. and var. *glabripes* Warb. = **F. thonningii**
petersii Warb. = **F. thonningii**
petitiana A. Rich. = **F. palmata**
phillipsii Burtt Davy & Hutch. = **F. thonningii**
picta Sim = **F. abutilifolia**
pilosula De Wild. = **F. craterostoma**
plateiocarpa Warb. = **F. sur**
podophylla Bak. = **F. polita** subsp. **polita**
polita Vahl var. *persicicarpa* Hutch. = **F. umbellata**
polybracteata Warb. ex De Wild. & T. Durand = **F. ottoniifolia** subsp. **ottoniifolia**
pondoensis Warb. = **F. ingens**
praeruptorum Hiern = **F. verruculosa**
praticola Mildbr. & Hutch. = **F. conraui**
pretoriae Burtt Davy = **F. cordata** subsp. **salicifolia**
principes Kunth & Bouché = **F. saussureana**
pringsheimiana Braun & K. Schum. = **F. cyathistipula** subsp.
pseudocarica Miq., incl. var. *tomentosa* A. Rich. = **F. palmata**
pseudo-elastica Hiern = **F. ovata**
pseudo-sycomorus Decne. = **F. palmata**
pseudo-vogelii A. Chev. = **F. lutea**
psilopoga Ficalho = **F. thonningii**
pubicosta Warb. ex De Wild. & Th. Durand = **F. thonningii**
pulvinata Warb. = **F. tremula** subsp. **tremula**
punctifera Warb. = **F. exasperata**
pynaertii De Wild. = **F. ottoniifolia** subsp. **ottoniifolia**
quibeba Welw. ex Ficalho = **F. lutea**
rederi Hutch. = **F. cyathistipula** subsp. **cyathistipula**
rehmannii Warb., incl. var. *ovatifolia* Warb. and var. *villosa* Warb. = **F. glumosa**
religiosa Forssk. 1775, non L. 1753 = **F. populifolia**
rhodesiaca Mildbr. & Burret = **F. thonningii**
rhynchocarpa Mildbr. & Burret = **F. cyathistipula** subsp. **cyathistipula**
riparia (Miq.) A. Rich. = **F. sur**
rivae Warb. = **F. vasta**
rokko Warb. & Schweinf. = **F. thonningii**
rubicunda (Miq.) Miq. = **F. glumosa**
rubropunctata De Wild. = **F. craterostoma**
rubroreceptacula auct. (err. cal.) = **F. saussureana**
rubroreceptaculata De Wild. = **F. saussureana**
rudens Hutch. = **F. tremula** subsp. **kimuenzensis**
ruficeps Warb. = **F. thonningii**

rukwaensis Warb. = **F. glumosa**

rupicola Lebrun & Toussaint = **F. thonningii**

ruspolii Warb. = **F. thonningii**

ruwenzoriensis De Wild. = **F. craterostoma**

sakalavarum Bak. = **F. sycomorus** subsp. **sycomorus**

salicifolia Vahl = **F. cordata** subsp. **salicifolia**

fa. *eucalyptoides* (Batt. & Trab.) Maire = **F. codata** subsp. **salicifolia**

var. *australis* Warb. = **F. cordata** subsp. **salicifolia**

var. *latifolia* Hutch. = **F. cordata** subsp. **lecardii**

var. *teloukat* (Batt. & Trab.) Maire = **F. cordata** subsp. **salicifolia**

sapinii De Wild. = **F. ovata**

scabra Sim, non Forst. f., nec Willd. = **F. sycomorus** subsp. **sycomorus**

scabra Willd., non Forst. f., nec Sim = **F. exasperata**

scheffleri Mildbr. & Burret = **F. ottoniifolia** subsp. **ulugurensis**

schimperi (Miq.) A. Rich., incl. var. *hochstetteri* (Miq.) Mildbr. & Burret = **T. thonningii**

schimperiana A. Rich. = **F. ingens**

schinziana Warb. = **F. thonningii**

schweinfurthii Miq. = **F. vallis-choudae**

sciarophylla Warb. = **F. variifolia**

scolopophora Warb. = **F. asperifolia**

scutata Lebrun = **F. natalensis** subsp. **natalensis**

senegalensis Miq. = **F. lutea**

seretii Lebrun & Boutique = **F. vogeliana**

serrata Forssk. = **F. exasperata**

sessilis De Wild. = **F. conraui**

sidifolia Hiern = **F. mucuso**

silicea Sim = **F. exasperata**

smutsii Verdoorn = **F. tettensis**

socotrana Balf. f. = **F. vasta**

soldanella Warb. = **F. abutilifolia**

somalensis (Pamp.) Chiov. = **F. bussei**

somalensis auct. = **F. platyphylla**

sonderi Miq. = **F. glumosa**

sp. (subgen. *Bibracteateae)* sensu Hutch. & Dalziel p.p. = **F. pachyneura**

spectabilis Kunth & Bouché = **F. ovata**

spirocaulis Mildbr. = **F. asperifolia**

spragueana Mildbr. & Burret = **F. thonningii**

stellulata Warb. = **F. vogeliana**

var. *glabrescens* Warb. = **F. sur**

sterculioides Warb. = **F. ottoniifolia** subsp. **lucanda**

stipitata Lebrun = **F. densistipula**

stipulifera Hutch. = **F. conraui**

stolzii Mildbr. = **F. lutea**

storthophylla Warb., incl. var. *cuneata* De Wild. = **F. asperifolia**

stuhlmannii Warb. var. *glabrifolia* Warb. = **F. ingens**

subacuminata (De Wild.) Lebrun = **F. natalensis** subsp. **natalensis**

subcalcarata Warb., incl. var. *vestito-bracteata* (Warb.) Mildbr. & Burret = **F. lutea**

sycomorus L., incl. var. *alnea* Hiern, var. *polybotrya* Hiern and var. *prodigiosa* Hiern = **F. sur**

syringifolia Warb. non Kunth & Bouché = **F. polita** subsp. **polita**

syringoides Warb. = **F. polita** subsp. **polita**

taab Forssk. = **F. cordata** subsp. **salicifolia**

teloukat Batt. & Trab. = **F. cordata** subsp. **salicifolia**

thonningiana (Miq.) Miq. = **F. sur**

toka Forssk. = **Celtis toka** *(Ulmaceae)*

trachyphylla (Miq.) Miq. = **Ficus sycomorus** subsp. **gnaphalocarpa**

triangularis Warb. = **F. natalensis** subsp. **leprieurii**

trichosphaera Bak. = **F. lutea**

tristis Kunth & Bouché = **F. cordata** subsp. **cordata**

tropophyton Lebrun & Toussaint = **F. thonningii**

tuberculosa Welw. ex Hiern = **F. umbellata**

var. *elliptica* Hiern = **F. ovata**

ugandensis Hutch. = **F. sansibarica** subsp. **macrosperma**

ulugurensis Mildbr. & Burret = **F. ottoniifolia** subsp.

umangiensis De Wild., incl. var. *laurentii* De Wild. = **F. ottoniifolia** subsp. **ottoniifolia**

umbrosa Sim = **F. polita** subsp. **polita**

urceolaris Hiern, incl. var. *bumbana* Hiern = **F. asperifolia**

utilis Sim = **F. lutea**

variabilis De Wild. fa. *obtusifolia* De Wild. and fa. *subacuminata* De Wild = **F. natalensis** subsp. **natalensis**

verrucocarpa Warb. = **F. lutea**

vestito-bracteata Warb. = **F. lutea**

villosipes Warb. = **F. sur**

viridimaculata De Wild. = **F. ottoniifolia** subsp. **ottoniifolia**

vogelii (Miq.) Miq., incl. var. *pubicarpa* Mildbr. & Burret = **F. lutea**

vohsenii Warb. = **F. ovata**

volkensii Warb. = **F. natalensis** subsp. **natalensis**

warburgii Winkler = **F. asperifolia**

welwitschii Warb., incl. var. *beroensis* Hiern = **F. cordata**

welwitschii Miq., nom. = **Treculia africana**

whytei Stapf = **T. africana**

winkleri Mildbr. & Burret = **Ficus tesselata**

xanthophylla (Miq.) Martelli = **F. ingens**

xiphophora Warb. = **F. asperifolia**

zambesiaca Hutch. = **F. bussei**

zenkeri Warb. ex Mildbr. & Burret = **F. variifolia**

zobiaensis De Wild. = **F. saussureana**

zuvalensis Sim = **F. trichopoda**

Galochlychia ! tenoreana Gasparrini = **Ficus saussureana**

Galoglychia ! saussureana (DC.) Gasparrini = **F. saussureana**

Sycomorus antiquorum Gasparrini = **Ficus sycomorus** subsp. **sycomorus**

capensis (Thunb.) Miq., incl. fa. *guineensis* (Miq.) Miq. = **F. sur**

(FICUS) SYCOMORUS

gnaphalocarpa Miq. = **F. sycomorus** subsp. **gnaphalocarpa**
guineensis Miq. = **F. sur**
hirsuta Sond. = **F. glumosa**
panifica Miq. = **F. sur**
rigida Miq. = **F. sycomorus** subsp. **sycomorus**
riparia Miq. = **F.** ? **sur**
schimperiana Miq. = **F. vallis-choudae**
sur (Forssk.) Miq. = **F. sur**
thonningiana Miq. = **F. sur**
trachyphylla Miq. = **F. sycomorus** subsp. **sycomorus**
vogeliana Miq. = **F. vogeliana**

Urostigma abutilifolium Miq. = **Ficus abutilifolia**
acrocarpum Miq. = **F. thonningii**
burkei Miq. = **F. thonningii**
caffrum Miq. = **F. ingens**
catalpaefolium Miq. = **F. abutilifolia**
cordatum (Thunb.) Gasparrini = **F. cordata** subsp. **cordata**
dekdekena Miq. = **F. thonningii**
elegans Miq. = **F. artocarpoides**
eriobotryoides (Kunth & Bouché) Miq. = **F. saussureana**
fazokelense Miq. = **F. glumosa**
glumosum (Del.) Miq. = **F. glumosa**
hochstetteri Miq. = **F. thonningii**
ilicinum Sond. = **F. ilicina**
ingens Miq. = **F. ingens**
kotschyanum Miq. = **F. platyphylla**
luteum (Vahl) Miq. = **F. lutea**
natalense (Hochst.) Miq. = **F. natalensis** subsp. **natalensis**
var. *minor* Sond. = **F. burtt-davyi**
neumannii (Kunth & Bouché) Miq. = **F. lutea**
ottoniifolium Miq. = **F. ottoniifolia**
ovatum (Vahl) Miq. = **F. ovata**
politum (Vahl) Miq. = **F. polita**
populifolium (Vahl) Miq. = **F. populifolia**
rubicundum Miq. = **F. glumosa**
salicifolium (Vahl) Miq. = **F. cordata** subsp. **salicifolia**
schimperi Miq. = **F. thonningii**
thonningii (Blume) Miq. = **F. thonningii**
thunbergii Miq. = **F. cordata** subsp. **cordata**
vogelii Miq. = **F. lutea**
xanthophyllum Miq., incl. var. *ovato-cordatum* Sond. = **F. ingens**

MACLURA / *1*

Maclura africana (Bureau) Corner – Icon.: Bull. Jard. Bot. Natl. Belg. 47: 361, 1977; Hook. Ic. Plant. 25: tab. 2473, 1896 (sub nom. *Cardiogyne);* Burrows & Burrows, Figs S. & S.-C. Afr.: 320-322, 2003; Beentje, Kenya trees, shrubs & lianas: 331, 1994.

syn.: *Milicia spinosa* Sim

Tangled shrub or treelet, much-branched, or scrambler to 7-8 m tall, dioecious; branches long, weak, straggling, climbing, arching or drooping; branchlets to 10 cm long, ending in a straight or slightly curved spine; leafy twigs 1-4 mm thick; inflorescences in pairs in the leaf-axils or at the base of the spines, globose, pubescent; fruit finely segmented, mulberry-like, old blackened styles persistent.

Acacia woodland and scrub; rocky hillsides; riverine scrub; along the coast in bushland and dry evergreen forest, forest margins and on sand dunes; extending inland mainly along rivers; sometimes in saline places; pan edges; coral rocks; locally common; 0-1000 m alt.

S. Africa, NE Swaziland; Madagascar, NW coast: Sambirano (a single collection, 1912).

SYNONYMS:

Maclura excelsa (Welw.) Bureau = **Milicia**
regia (A. Chev.) Corner = **Milicia**

MESOGYNE / *1*

Mesogyne insignis Engl. – Icon.: Fl. Trop. E. Afr., Moraceae: 16, 1989; Bot. Jahrb. Syst. 20: pl. 5 figs. M-U, 1895; Engler, Monogr. afrik. Pflanzenfamil. 1, Moraceae: pl. 11 C, 1898.

Shrub or tree, monoecious, to 15 m tall (or to 40 m?); leafy twigs 1-4 mm thick, sparsely appressed-puberulous; inflorescences unisexual, in the leaf-axils, discoid-capitate, involucrate; fruit a drupe-like structure with enlarged fleshy red receptacle.

Rain-forest; 500-1300 m alt.

São Tomé. – Disjunct area W-E.

MILICIA / *2*

Milicia excelsa (Welw.) C. C. Berg – Icon.: Trans. Linn. Soc. London (Bot.) 27: pl. 23, 1869; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 51 pl. 4 B, 1959 (sub nom. *Chlorophora excelsa);* Fl. trop. E. Afr., Moraceae: 5, 1989; Beentje, Kenya trees, shrubs & lianas: 331, 1994; Burrows & Burrows, Figs S. & S.-C. Afr.: 328-331, 2003; Akoegninou & al., Fl. analyt. Bénin: 816, 2006 (Wageningen); Voorhoeve, Liber. high for. trees: 287, 1979; White & al., Evergreen for. fl. Malawi: 394, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 267, 277, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 201, 2007.

Dioecious (or sometimes monoecious ?) tree to 30-50 m tall and with crown to 30 m wide; bole straight, cylindrical, clear to 20-28 m height, 2-2,5 m d.b.h., shortly buttressed or not; bark pale grey to ± black; branches patent; leafy twigs 0,5-6 mm Ø, white-puberulous, pubescent or almost glabrous; leaves in young trees sand papery above, pubescent beneath, margins serrulate, to 25 × 12 cm; leaves in adult trees glabrous above, densely

puberulous beneath, 9-11 × 5-7 cm; flowers in catkins, male ones to 15 cm long, pendulous, female ones 7 cm long, erect; fruiting head green, mulberry-like. Crown in female tree spreading, hemispherical, in male tree dense and dark.

Deciduous, semi-deciduous, or evergreen (primary and secondary) forests; apparently with preference for the drier types but also in ground-water forest; often in forest gallery; forest islands in savanna regions, or left there as single trees; wooded grassland; occasional to dominant; also left in cultivated areas; with *Milicia regia* in Ivory Coast; forest with *Aningeria altissima,* mostly in clearings. – Deciduousness is correlated with flowering time; 0-1350 m alt.

São Tomé, Bioko/Fernando Poo.

Timber excellent, and becoming rare due to overexploitation (Kenya, fide Beentje). Young trees often galled. – Recently replanted in Malawi, after exploitation.

M. regia (A. Chev.) C. C. Berg – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 51 pl. 4 A, 1959 (sub nom. *Chlorophora regia);* Voorhoeve, Liber. high for. trees: 287, 289, 1979; Hawthorne & Jongkind, l.c.

Dioecious tree 30-45 m tall, similar to the above; bole 1,5-2 m Ø; leafy twigs 1-4 mm thick, sparsely white-pubescent.

With *Erythrophleum guineense* and *Parinari excelsa* in wooded savanna in Fouta Djalon (Guinea); gallery forest; also left as a single tree in cultivated areas. More water-demanding and less drought-resistant than *M. excelsa.* Common or rare, at lower altitude; very abundant at forest edges; very common in half-deciduous forests, more rare in evergreen forests; frequent immediately behind the coastal scrub; clearings; from sea-level to ? m alt.

SYNONYMS:

Chlorophora alba A. Chev. = **Milicia excelsa**
excelsa (Welw.) Benth. & Hook. f. = **M. excelsa**
regia A. Chev. = **M. regia**
tenuifolia Engl. = **M. excelsa**
Milicia africana Sim = **Milicia excelsa**
spinosa Sim = **Maclura africana**

MORUS / *1*

Morus mesozygia Stapf ex A. Chev., incl. var. *lactea* (Sim) A. Chev., var. *colossea* A. Chev. and var. *sanda* A. Chev. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 53 pl. 5, 1959; Fl. Camer. 28: 7, 1985; Beentje, Kenya trees, shrubs & lianas: 331, 1994; Burrows & Burrows, Figs S. & S.-C. Afr.: 332-335, 2003; Akoegninou & al., Fl. analyt. Bénin: 817, 2006 (Wageningen); Mendes Ferrão, Fruticult. trop. 2: 429, 2001; White & al., Evergreen for. fl. Malawi: 396, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 273, 2006.

syn.: *Celtis lactea* Sim *(Ulmaceae).*

Shrub 6 m or tree 10-40 m tall with a crown spread of 25 m, deciduous or rarely evergreen, dioecious; bole straight, clear to 20 m height, 0,3-0,7 m Ø; crown very leafy, umbrella-shaped; bark smooth, pinkish grey with white blotches and long vertical lines of large lenticels; leaves thin, long-acuminate, unequal-sided; male flowers in 1-2,5 cm long catkins, female inflorescence ± globose; infrutescence green, dry.

Rain-forest, forests of drier regions; semi-deciduous forests, gallery, forests bordering savannas; often along streams or lakes; also in secondary forests or as solitary trees after clearing; coastal evergreen forests; gully; also planted; cultivated fields; coastal dune-forest; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* forest with *Aningeria altissima, Celtis* sp.; from sea-level to 1650 alt.

NE S. Africa.

Planted as a shade or street tree in W Africa. Wood used for furniture.

Perhaps also in Benin and to be searched for there.

Morus alba L., White Mulberry, var. **alba** and var. **indica** (L.) Bureau *(M. indica* L.) are sometimes cultivated (icon.: Burrows & Burrows, o.c.: 336-339).

SYNONYMS:

Morus excelsa Welw. = **Milicia**
lactea (Sim) Mildbr. = **Morus mesozygia**

MUSANGA / *2*

Sometimes placed in *Cecropiaceae.*

Musanga cecropioides R. Br. ex Tedlie in Bowdich – Icon.: Hook. Ic. Pl. 14: tab. 1306, 1307, 1880; Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 18, 1898 (*M. smithii*); Adam, Fl. descript. Monts Nimba (Mém. Mus. Natl. Hist. Nat., N. S., Sér. B, Bot. 22): 718, 1971; Akoegninou & al., Fl. analyt. Bénin: 458, 2006; Fl. trop. E. Afr., Moraceae: 91, 1989; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 265, 269, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 214, 2007.

syn.: *M. smithii* R. Br. ex Bennett

Tree, dioecious, to 18-45 m; bole straight, to 0,5 m Ø, with stilt- or prop roots to 2-3 m high; crown umbrella-like; branches spreading; branchlets stout, pithy; buds enclosed in large red deciduous stipular sheaths 15-20 cm long, densely silky inside; lamina to 1,1 m Ø with 9-18 radiating segments like a horse chestnut-tree leaf; flowers in globose glomerules. Young plants with entire leaf lamina.

Secondary forests in recent clearings on superficially damp soils; common on old farms in closed forest; rare in rain-forest; swamp forest; along rivers; pioneer plant of rapid growth but short-lived; often gregarious; in pure regular stands; 5-1200 m alt.

São Tomé.

Seems to occupy the same ecological niche as the ± 80 species of *Cecropia* do in the Neotropics.

M. leo-errerae Hauman & J. Léonard – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 279, 2008.

Tree 10-30 m tall, with or without short stilt-roots; leaf lamina 20-40 cm Ø, with 8-11 segments.

Forests regrowth; clearings; road sides; 850-2400 m alt.

MYRIANTHUS / *7*

Sometimes placed in *Cecropiaceae.*

For one species *(M. cuneifolius)* no ecology recorded, and the female inflorescence of *M. serratus* var. *letestui* unknown.

Myrianthus arboreus P. Beauv. – Icon.: idem, Fl. Oware 1: pl. 11-12, 1805; Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 16, 1898; Adam, Fl. descript. Monts Nimba (Mém. Mus. Natl. Hist. Nat., N.S., Sér. B, Bot. 22): 720, 1971; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 61 pl. 8, 1959; F. Busson, Pl. aliment. Ouest afric.: fig. 40, 1965; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 265, 269, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 215, 2007.

Shrub or tree 10-20 m tall, with a spreading, very ramose crown and a short bole 1 m Ø, often branched from the base; leafy twigs 0,5-2,5 cm thick with short (almost) appressed white or sometimes cinnamon coloured to greyish brown hairs, intermixed with sparse longer patent hairs; dioecious rarely monoecious, with stilt-roots; leaf lamina c. 30- c. 90 cm Ø, 5-7-fid, whitish to pale yellow hairy; male inflorescences branched, female ones globose; infrutescence drupe-like, fleshy.

Secondary vegetation; ± open places in rain-forests; damp places in forest; forest gallery and clearings; rather frequent; stream or lagoon and lake sides; flooded ground; sometimes in villages; 8-1200 m alt.

M. cuneifolius (Engl.) Engl. – Icon.: Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 17 D, 1898.

Shrub or tree to 2-3,5 m tall; leafy twigs 0,4-0,6-1 cm thick with brown-red bark and stiff, recurved hairs 0,2-0,5 mm long. Dioecious.

Ecology unknown. Near river (the Gabon); 5-350 m alt.

M. holstii Engl., incl. var. *quinquesectus* Engl. – Icon.: Engler, o.c.: pl. 17 E; Repert. Spec. Nov. Regni Veg. Beih. 40(2): pl. 11, 1932 (sub nom. *M. mildbraedii);* White & al., Evergreen for. fl. Malawi: 397, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 281, 2008.

Tree 5-20 m tall, dioecious, with short bole ± 0,4 m Ø and spreading crown; branches covered ordinarily by brown hairs; leaf lamina 25-60 cm Ø , 3-7-fid, hirtellous to puberulous; male inflorescences spike-like, 4-15 cm long, female ones 1-2 cm Ø, in fruit 5-8 cm Ø.

Rain-forest, sometimes at edges, in regrowth, fallow land, forest gallery and along rivers; fide Hamilton (Forest trees Uganda: 201, 1981) generally ecologically separated from *M. arboreus,* mostly at higher altitudes and mainly on raised sites rather than in swamps; 900-2200 m alt.

M. libericus Rendle – Icon.: Adam, Fl. descript. Monts Nimba (Mém. Mus. Natl. Hist. Nat., N. S., Sér. B, Bot. 22): 721, 1971; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 63 pl. 9 A, 1959; F. Busson, Pl. aliment. Ouest afric.: fig. 41, 1965; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 265, 2006.

Shrub or tree to 9-15 m tall; often branched from the base, apparently without stilt roots; leafy twigs 0,6-1 cm thick with dense patent short stout yellow-brown hairs, becoming ± glabrescent; crown spreading. Dioecious.

Locally abundant in secondary regrowth; also in all forest types; to 900 m alt.

M. preussii Engl. – Icon.: Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 17 A and B (sub nom. *M. gracilis,* both = subsp. **preussii**), 1898.

Shrub 1-3 m or tree to 6-15 m (25-30?) tall; leafy twigs 3-7 mm thick, faintly ribbed to even, with short white to grey hairs; dioecious; leaf lamina 20-30 cm Ø, 5-7-parted; male inflorescence 3-10 cm Ø, female one 1,5-2,5 cm Ø, in fruit 5 cm Ø.

Rather frequent in rain-forest; sometimes in fallow land; riverine forest.

Bioko/Fernando Poo.

Comprises 2 subspp.

M. scandens Louis ex Hauman – Icon.: Fl. Congo Ruanda-Ur. 1: 87, 1948.

Liane, dioecious, with aerial roots; leafy twigs cylindrical, 30-70 cm long, 3-6 mm Ø, with patent white to reddish-brown ± dense hairs 0,3-1 mm long, becoming glabrescent. – The only lianescent *Myrianthus.*

Swampy rain-forest; rather abundant.

M. serratus (Trécul) Benth. & Hook, excl. var. *cuneifolius* Engl. *(= M. cuneifolius).* – Icon.: Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 17 C, 1898; Adam, Fl. descript. Monts Nimba (Mém. Mus. Natl. Hist. Nat., N. S., Sér. B, Bot. 22): 723, 1971; F. Busson, o.c.: fig. 42; Hawthorne & Jongkind, o.c.: 265, 2006.

bas.: *Dicranostachys serrata* Trécul

Shrub or tree to 16 m tall, with generally several stems or ramose near the base, with stilt-roots; Leafy twigs 4-7 mm thick, with appressed short white hairs, becoming glabrescent; dioecious.

Comprises 2 vars. (pistillate inflorescences unknown in var. **letestui** Ruiter).

Riverbanks; 5-225 m alt. (Gabon).

São Tomé?

SYNONYMS:

Myrianthus elegans Engl. = **Myrianthus preussii** subsp. **seretii**

gracilis Engl. = **M. preussii** subsp. **preussii**

laurentii De Wild. = **M. preussii** subsp. **seretii**

mildbraedii A. Peter = **M. holstii**

seretii De Wild. = **M. preussii** subsp. **seretii**

serratus (Trécul) Benth. & Hook. var. *cuneifolius* Engl. = **M. cuneifolius**

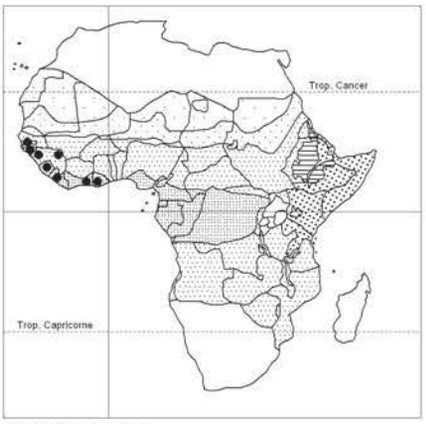
talbotii Rendle = **M. preussii** subsp. **preussii**

SCYPHOSYCE / *2*

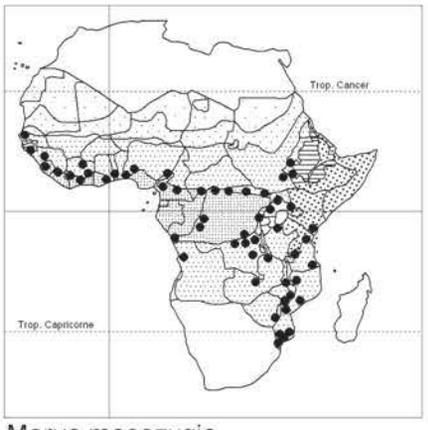
Scyphosyce manniana Baill. – Icon.: Engler, Monogr. Afrik. Pflanzen-Fam. 1, Moraceae: pl. 10, 1898 (sub. nom. *S. zenkeri);* Bull. Jard. Bot. Natl. Belgique 47: 287, 1977.

syn.: *Cyathanthus zenkeri* Engl.; *Scyphosyce zenkeri* (Engl.) Engl.; *S. gilletii* De Wild.

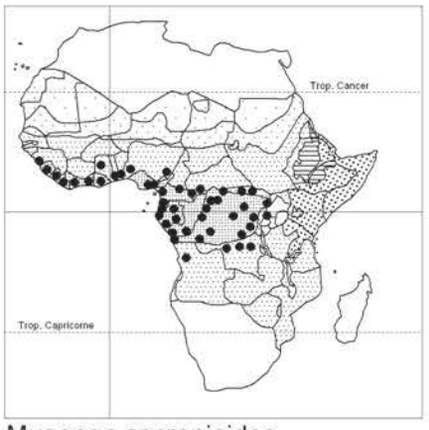
Woody plant of herbaceous habit, monoecious, 22-70 cm tall; rhizomatous; stem simple or sometimes ramose, 1-4 mm thick, leafy towards the apex, rather densely shortly hispid with blackish straight or curved hairs; periderm not peeling off; leaves elliptic, 5-18 × c. 2 cm; inflorescences on short shoots, bisexual, cupshaped, pinkish, with unisexual flowers; female flowers with 2(-3) free tepals.



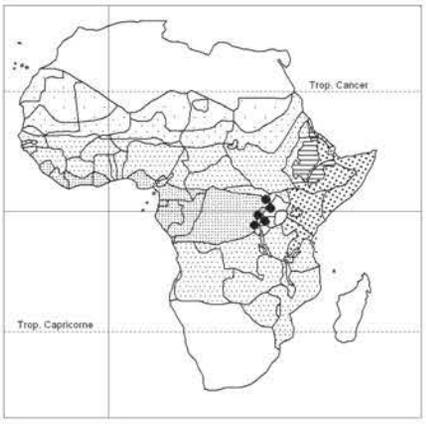
Milicia regia



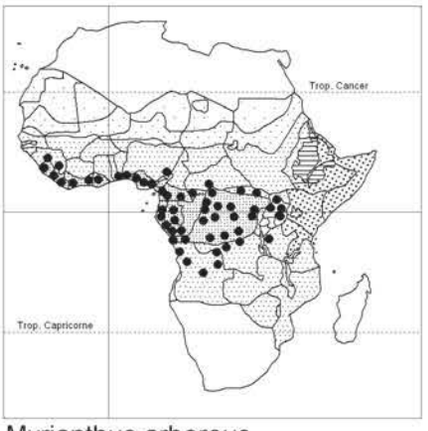
Morus mesozygia



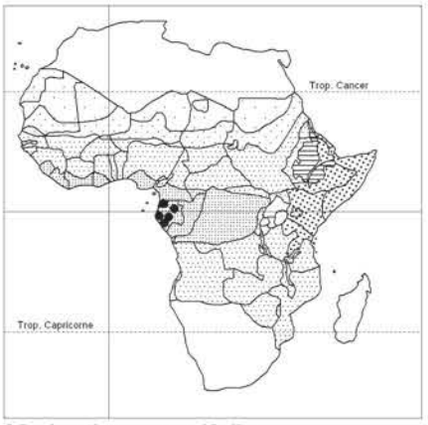
Musanga cecropioides



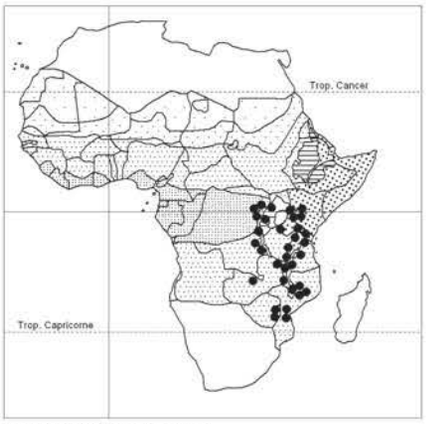
Musanga leo-errerae



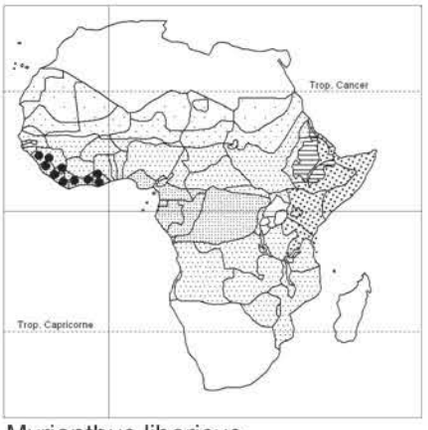
Myrianthus arboreus



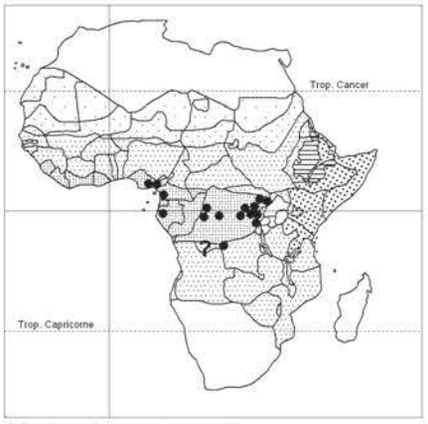
Myrianthus cuneifolius



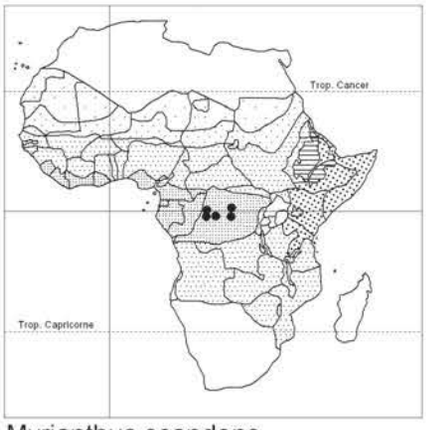
Myrianthus holstii



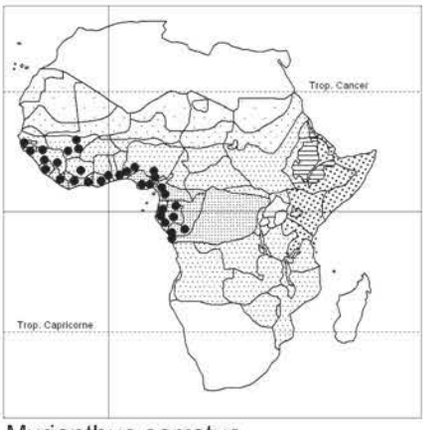
Myrianthus libericus



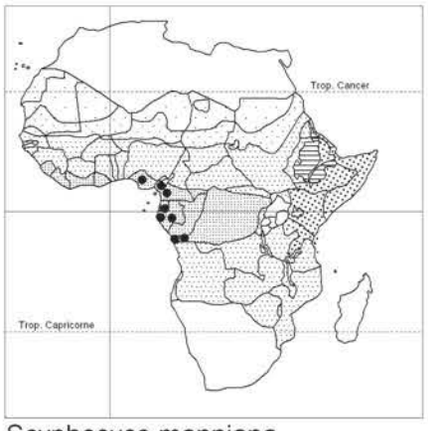
Myrianthus preussii



Myrianthus scandens



Myrianthus serratus



Scyphosyce manniana

Deep shady forest; near streams; often in periodically flooded areas; not common but apparently locally abundant; 50-350 m alt.

Leaves very variable; anther-filaments glabrous to papillose or with indumentum.

S. pandurata Hutch. – Icon.: Bull. Jard. Bot. Natl. Belgique 47: 289, 1977.

Plant suffrutescent to almost herbaceous, to ± 30 cm tall; leafy twigs 2-3 mm thick, puberulous with straight hairs; periderm peeling off transversely; lamina subrhomboid, largest near or above the middle, 5-16 × 2,5-6,5 cm; inflorescences whitish, female flowers with 4 fused tepals.

Rain-forests; along streams; periodically flooded places.

Only known from a small area in SE Nigeria; in 1977 only 9 collections examined by Berg.

STREBLUS / *1*

syn.: *Neosloetiopsis* Engl.

Streblus usambarensis (Engl.) C. C. Berg – Icon.: Bot. Jahrb. Syst. 39: 574, 1907 (sub nom. *Sloetiopsis);* idem 51: 426, 1914; Bull. Jard. Bot. Natl. Belg. 47: 365, 1977; Fl. Trop. E. Afr., Moraceae: 9, 1989 *(Sloetiopsis);* Beentje, Kenya trees, shrubs & lianas: 332, 1994; Burrows & Burrows, Figs S. & S.-C. Afr.: 344-345, 2003; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 271, 2006.

Dioecious or sometimes monoecious much-branched shrub 1-4 m tall or tree 5-10 m; leafy twigs 1-2 mm thick, sparsely to densely puberulous, some or all hairs uncinate, often the hairs distinctly different in length; leaves distichous, obovate, roughly dentate, thin, 7-17 × 2-7 cm, glabrous, long-acuminate; flowers monoecious, male ones in catkins 3 cm long, female ones solitary, small, white, with enlarged calyx; fruit fleshy, bilobed.

Primary or (less commonly) in secondary, mostly (rather) humid forests, usually along streamlets; on sand or limestone; sometimes in swamp forests; forests bordering savannas; riverbeds; coastal scrub (Ghana); forest edges locally abundant; sea-level to 1000 m alt.

Leaves variable in size.

Berg (1988) included the monotypic *Sloetiopsis* Engl. within *Streblus* Lour., a genus occurring in E Africa, Madagascar, Asia-Australia, Polynesia, Hawaii. In Africa with a disjunct area.

TRECULIA / *3*

KUETE, V. & al. (2008). Antimicrobial activity of the methanolic extracts and compounds from Treculia africana and Treculia acuminata (Moraceae). *S. Afric. J. Bot.* 74: 111-115.

Treculia acuminata Baill. – Icon.: Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 15 A & B (sub nom. *T. zenkeri & T. parva).*

syn.: *T. zenkeri* Engl.; *T. parva* Engl.

Dioecious shrub 0,5-3 m tall; leafy twigs 1-6 mm thick, rather densely puberulous with patent to almost appressed hairs, sometimes hirtellous; infrutescence subglobose to transversely ellipsoid, ± 3-5 cm Ø.

Rain-forest; 1-350 m alt.

T. africana Decne. subsp. **africana**, African Breadfruit – Icon.: Ann. Sci. Nat., Bot., Sér. 3, 8: pl. 3 figs. 86-99, 1847; Bot. Mag. 98: pl. 5986, 1872; Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae; pl. 12, 13, 14 B, 1898; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 59 pl. 7, 1959; Andrews, Fl. pl. Anglo-Egypt. Sudan 2: 274, 1952; Bull. Jard. Bot. Natl. Belg. 47: p. 385 figs. 2-8 and p. 389, 1977; Fl. trop. E. Afr., Moraceae: 11, 1989; Burrows & Burrows, Figs S. & S.-C. Afr.: 347-350, 2003; J. E. Mendes Ferrão, Fruticult. trop.: 407-408, 2002; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 267, 273, 2006; White & al., Evergreen for. fl. Malawi: 399, 2001; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 301, 2007.

Dioecious or sometimes monoecious tree 25-36-50 m tall and 10-15 m wide; bole fluted and somewhat twisted, bare below up to 2/3 of its height, ordinarily buttressed, and loosely branched above, terminated by leaf-tufts; branches spreading horizontally or slightly deflexed, long and strong, tortuous; leafy twigs 2-6 mm thick, rather sparsely puberulous to almost glabrous or hirtellous to subtomentose; leaves coriaceous, glabrous, dark green, margins entire, slightly rolled or ± undulate; male inflorscences in the leaf-axils or on older bare branches, round, 3-8 cm Ø, covered with numerous sunken flowers; female ones on short thickened spurs on larger branches and upper stem, in fruit very large, often 10-40 cm Ø and weighing to 12 kg (on cultivated trees to 50 cm Ø and 15 kg), often numerous.

Evergreen (or sometimes deciduous?) tree in humid to primary forest; preferring riveroides, or regionally almost confined to such; also on rocks in riverbeds; swamp forests; secondary forests; regionally abundant to rare; forest gallery; niayes; mixed evergreen forest; woodlands; cultivated areas; 0-1300 m alt.

Principe, São Tomé; Madagascar [subsp. **madagascarica** (N. E. Br.) C. C. Berg with 3 vars.].

Subsp. **africana** comprises 3 vars.:

- var. **africana** [syn.: *T. affona* N. E. Br.; *T. africana* var. *nitida* Engl. and var. *engleriana* (De Wild. & T. Durand) Engl.; *T. engleriana* De Wild. & T. Durand; *T. dewevrei* De Wild. & T. Durand; *Artocarpus ? africanus* Sim; *Treculia centralis* A. Chev., nom. subnud.; *T. erinacea* A. Chev., nom. subnud.; *Ficus whytei* Stapf (in Fl. Trop. Afr.); *Myriopeltis edulis* Welw., nom.; *Ficus welwitschii* Miq., non Warb., nom.];
- var. **inversa** Okafor;
- var. **mollis** (Engl.) J. Léonard [bas.: *T. mollis* Engl.; syn.: *T. africana* var. *mollis* J. Léonard] with densely tomentose twigs, stipules and leaves, from Nigeria through to Zaire.

Widely cultivated near villages,mainly for its fruits, but also latex and roots used. The seeds, rich in protein and oil, serve as low cost meat substitutes, and there is recent increased interest in the plant (cf. Badifu & Akubor in Pl. Foods Human Nutrit. 56: 105-115, 2001; Giami & al. in ibid. 56: 117-126, 2001).

T. obovoidea N. E. Br. – Icon.: Bot. Jahrb. Syst. 40: 547, 1908 (sub nom. *Acanthotreculia);* Engler, Monogr. afrik. Pflanzen-Fam. 1, Moraceae: pl. 14 A (sub nom. *T. staudtii).*

syn.: *T. staudtii* Engl., incl. var. *angustifolia* Engl.; *Acanthotreculia winkleri* Engl.; *Trichilia ! (Treculia) brieyi* De Wild.

Shrub 2,4-7,5 m tall, to tree 9-20 m; deciduous; leafy twigs 1,5-5 mm thick, rather sparsely appressed puberulous; infrutescences like little hedgehogs, borne on trunk and branches, globose to ellipsoid, 5-6,5 cm Ø, covered by the up to ± 2 cm long indurated aculeate bracts.

Primary or sometimes secondary rain-forests; often along streams; locally common; forest gaps; 1-800 m alt.

MAKITA-MADZOU, J.-P. & G.-G. GUITTONNEAU (1992). Structure du péricarpe du *Treculia obovoidea* N. E. Br. (Moraceae, Artocarpoideae). *Bull. Soc. Bot. France* 139, *Lettres Bot.* 2: 135-140.

TRILEPISIUM / *1*

Monotypic.

Trilepisium madagascariense DC.; Berg, Bull. Jard. Bot. Natl. Belg. 47: 299-300, 1977 with full syn. – Icon.: o.c.: 300, 302; Bot. Jahrb. Syst. 51: 439, 1914 (sub nom. *Bosqueia welwitschii, B. cerasiflora, B. phoberos);* Adansonia 8: pl. 4, 1867; Beentje, Kenya trees, shrubs & lianas: 333, 1994; Burrows & Burrows, Figs S. & S.-C. Afr.: 352-354, 2003; Akoegninou & al., Fl. analyt. Bénin: 817, 2006; White & al., Evergreen for. fl. Malawi: 400, 2001; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 267, 269, 273, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 277, 2008.

syn.: *Bosqueia welwitschii* Engl.; *Centrogyne angolensis* Welw., nom.; *Bosqueia cerasifolia* Volkens ex Engl.; *B. carvalhoana* Engl.; *Pontya excelsa* A. Chev.; Enum. 2: 142, 1992.

Tree 6-15-20-40 m tall; bole ± 40-60 cm Ø; often with the trunk fluted at the base, quite bare of branches to nearly half its height; crown loosely pyramidal; branches and branchlets spreading; leafy twigs 0,5-4 mm thick, usually glabrous, sometimes with sparse minute uncinate hairs; leaves distichous, elliptic to obovate, 5,5-11 × 2,5-5 cm, dark glossy green, base often asymmetrical, margins entire; inflorescences monoecious, axillary at leafless nodes, with both sexes borne on a disc-like receptacle with a single central female flower, ellipsoid; infrutescence drupe-like, swollen, 2 cm Ø, dark purple.

Evergreen on the continent in primary or secondary forests in regions with evergreen or semi-deciduous forests; moist forest; often along streams; rare, frequent or dominant; forest patches; flooded forests; sometimes left single in cultivated areas; farmland; borders of savannas; terrestrial, sometimes epiphytic or strangler; 1-400 m alt. (coast), 600–2200 (? 2500) m.

Very variable.

Annobon; Madagascar, Seychelles; S. Africa (Soutpansberg, a centre of plant diversity and endemism in South Africa) with *other species* widespread in neighbouring Zimbabwe, Mozambique, and other south-central African countries but only as isolated populations in different parts of the Soutpansberg as *Millettia stuhlmannii, Oxytenanthera abyssinica, Aloe exselsa, Brackenridgea zanguebarica, Mariscus cylindristachys, Brachystegia saliciformis* [fide Willis & al., Sabonet News 6(3): 209-211, 2001].

Wood perishable. Seeds roasted, eaten. The sap yields a red dye. Rarely cultivated.

SYNONYMS for **Trilepisium madagascariense:**

Bosqueia angolensis Ficalho,
calcicola Léandri,
carvalhoana Engl.,
cerasifolia Volkens ex Engl.,
danguyana Léandri,
manongarivensis Léandri,
occidentalis Léandri,
orientalis Léandri,
phoberos Baill.,
welwitschii Engl.

Bosqueia spinosa Engl. = **Chaetacme aristata** *(Ulmaceae)*

UTSETELA / *1*

Utsetela gabonensis Pellegr., incl. *U. neglecta* Jongkind 1995. – Icon.: Pellegrin, Fl. Mayombe in Mém. Soc. Linn. Normandie, N. S. 1 (3): pl. 6, 1928; Fl. Gabon 26: 103, 1973.

Shrub ramose or not, monoecious, 0,6-2,5 m tall (or more?); leafy twigs 1-3,5 mm thick, puberulous with white to brown retrorse uncinate hairs; leaves distichous; lamina elliptic, 3-19 × 1-8 cm, long-acuminate; inflorescences globular, bisexual, on short shoots in the leaf-axils, with numerous male flowers surrounding a single central female flower.

Forest in understorey, forest gallery, copse wood. Rather rare; 100-300 m alt.

The inflorescences resembling those of *Streblus* sect. *Bleekrodea* (Madagascar; N Malaya, Borneo) and of the neotropical *Helianthostylis.*

URTICACEAE / *17(+1)* g. / *62(+1)* spp.

The genus *Urera* poorly known and for a few species little herbarium material available.

FRIIS, I. (2007). The Tropical East African Urticaceae as a sample for phytogeographical analyses. *In:* ACHOUNDONG, G., ed., *Abstracts XVIIIth AETFAT Congress 26 February- 2 March 2007, Yaoundé, Cameroon:* 76. L'Herbier National du Cameroun, Yaoundé.

HADIAH, J. T. & al. (2008). Infra-familial phylogeny of Urticaceae, using chloroplast sequence data. *Austral. Syst. Bot.* 21: 375-385.

LISOWSKI, S. (2009). Flore (Angiospermes) de la République de Guinée 1 (texte). *Scripta Bot. Belg.* 41: 360-362 *[Urticaceae].*

AUSTRALINA / *1*

Genus of 2 species, one in NE Africa, the other in Australia-New Zealand.

Australina flaccida (A. Rich.) Wedd.

Perennial herb 0,15-0,2 m tall, monoecious, with erect stems and thin, flexible, almost filiform, pubescent stolons to 30-40 cm long from the axils of the lower leaves; younger stems with stiff erect hairs of two different lengths; leaves opposite; male flower clusters in axils of upper leaves, female ones of 1-5 flowers below the latter, occasionally one or a few female flowers in the axils of cataphyls on the stolon; achene enclosed in the persistent perianth.

In shade among rocks, on moist rock faces in bushland and open forest; streamsides in highland forest; 1900-3200 m alt.

Rare, only 9 collections known in 1998. Possibly overlooked.

SYNONYMS:

Australina acuminata Wedd. = **Didymodoxa caffra**
caffra (Thunb.) Prain = **D. caffra**
schimperiana Wedd. = **Australina flaccida**

BOEHMERIA / *1*

A genus of 45-50 species (13 in the New World tropics, the remainder in the Old World tropics, mostly in Asia; Wilmot-Dear & al., Edinb. J. Bot. 66:51, 2009). Delimitation *Boehmeria*/*Pouzolzia difficult.*

Boehmeria macrophylla Hornem.; Jacques-Félix & Rabéchaut, Agron. Trop. 3: 376, 1948. – Icon.: Beentje, Kenya trees, shrubs…: 333, 1994; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 254, 255, 2006; Burrows & Willis, Pl. Nyika Plateau: 278, 2005.

syn.: *B. platyphylla* Hamilton ex D. Don, incl. var. *nigeriana* Wedd., var. *tomentosa* Wedd., fa. *platyphylla* (as fa. *"typica"),* var. *angolensis* Rendle, var. *ugandensis* Rendle

Erect, shrubby or herbaceous perennial plant or shrub 0,5-2-3(?4) m tall with rather thick unbranched or sparsely branched stems, or with long, often overhanging, thinner branches from the underground parts; branches glabrous, pubescent or tomentose, especially in the terminal parts, older branches glabrescent; monoecious; leaves opposite; flowers monoecious or dioecious in globose clusters on long slender racemes.

Raphia vegetation, bushy valley in rain-forest areas; gallery; rocky hills; mountain forests; secondary forests; forest edges; along water in dense tangle; swamps; savannas; old clearings; road sides; among rocks in moist woodland; mixed evergreen forest; swamp forests (mushitu); rain-forest with *Albizia, Macaranga, Croton, Ocotea;* ± 200-2150 m alt.

Extremely variable in habit, in indumentum, size and texture of leaves. – Many forms are cited in Fl. Cameroun 8: 200-207, 1968.

Bioko/Fernandoo Poo; Madagascar, Mauritius; tropical Asia, Indonesia. – A specimen grown at Malmaison near Paris (France) named *Boehmeria caudata* Sw. was described and illustrated by Bonpland (in Descr. pl. rares cult., part 3: 40-42, pl. 15, 1814) and said to be from the Antilles. However, Bonpland stated that this plant is the same as the one described from Mauritius, which is correct. The Malmaison specimen certainly came from the Old World and represents *B. macrophylla* (fide Wilmot-Dear & Friis in Op. Bot. 129: 23, 1996).

Related to **B. nivea** (L.) Hook. f. & Arn., Ramie Grass, an herbaceous much-branched tufted plant to 1 m tall, native of E Asia-Malesia; also introduced in Africa for fibre or as an ornamental.

SYNONYMS:

Boehmeria capensis (Thunb.) Sprengel = **Droguetia iners** subsp. **iners**

hypoleuca (Steud.) Hochst. ex A. Rich. = **Debregeasia saeneb**

pauciflora (Steud.) Blume = **Droguetia iners**

procridioides (Wedd.) Blume = **Pouzolzia parasitica**

rigida Benth. = **Urera**

salicifolia D. Don = **Debregeasia saeneb**

DEBREGEASIA / *1*

A rather well-defined genus of 4 species, with a large distribution in Asia to the Philippines.

Debregeasia saeneb (Forssk.) Hepper & J. R. I. Wood – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia 1: 122, 2001; Puff & Sileshi Nemomissa, Pl. Simen: 107, 2005.

bas.: *Rhus saeneb* Forssk. *(Anacardiaceae)*

syn.: *Missiessya hypoleuca* (Steud.) Wedd.; *Boehmeria salicifolia* D. Don; Enum. 2: 143, 1992.

Erect branched shrub to 4 m tall, monoecious; branchlets slender erect or ascending, leafy and white tomentose above, glabrescent with warm red-brown cortex below; leaves alternate; male and female inflorescences sessile, of globose flower clusters.

Rocky slopes in dry forest and in humid parts of ravines; 1500-2700 m alt.

Yemen, Saudi Arabia; Afghanistan, Pakistan, Jammu and Kashmir, Nepal, India, China (Tibet): full map in Kew Bull. 43: 684, 1988.

SYNONYMS:

Debregeasia bicolor (Roxb.) Wedd. = **Debregeasia saeneb**

hypoleuca (Steud.) Wedd. = **D. saeneb**

salicifolia (D. Don) Rendle = **D. saeneb**

DIDYMODOXA / *1*

Two species in Africa, one of which only in S. Africa; formerly included in *Australina.*

Didymodoxa caffra (Thunb.) Friis & Wilmot-Dear; Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 31-32, 2001. – Icon.: Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 54, 1994.

Annual (perhaps, but very unlikely, also short-lived perennial) herb, monoecious, with erect, rarely procumbent stems, usually branching from the upper parts, to 40 cm tall; younger branches with an indumentum of erect, stiff or fine and slightly curly hairs, sometimes also with few hooked hairs; leaves alternate, long-stalked; inflorescences bisexual, axillary, sessile.

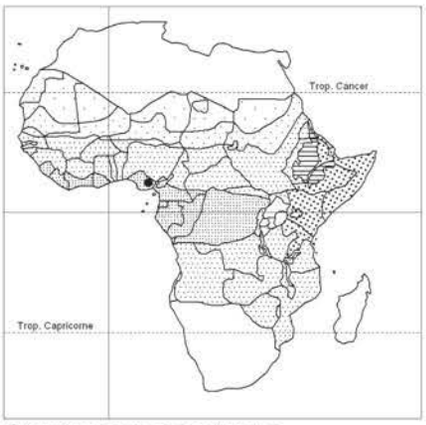
In shade among rocks in high rainfall woodland areas; disturbed sites in upland forest; rain-forest; dry montane forest; in shaded grassland along streams; ± 1000-2840 m alt.

Namibia, S. Africa: a full map in Nord. J. Bot. 8: 52, 1988; Kew Bull. 39: 599, 1984. – The very dicjunct distribution is almost certainly due to under-collection.

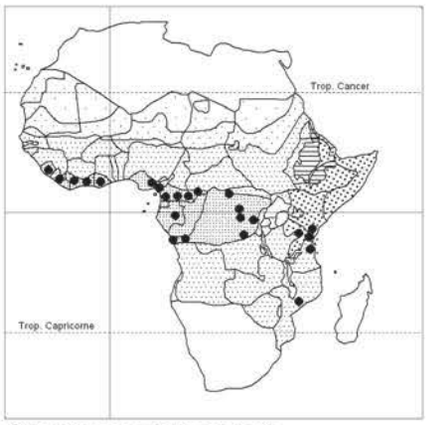
SYNONYMS:

Didymodoxa acuminata (Wedd.) Wedd. = **Didymodoxa caffra**

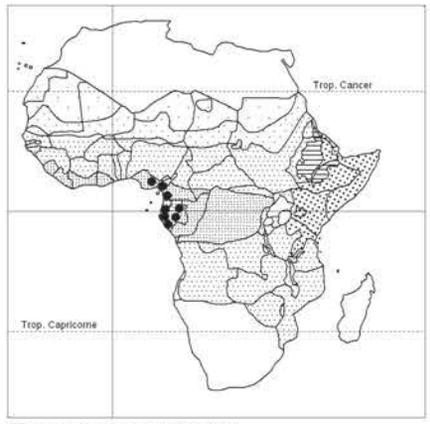
cuneata Wedd. = **D. caffra**



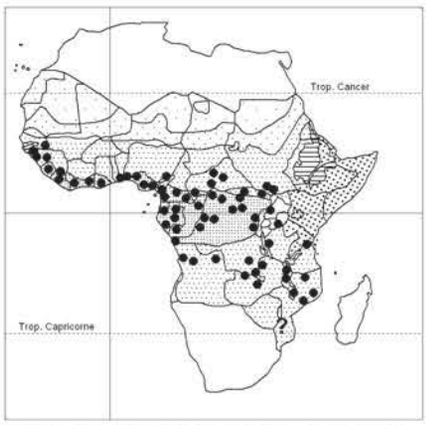
Scyphosyce pandurata



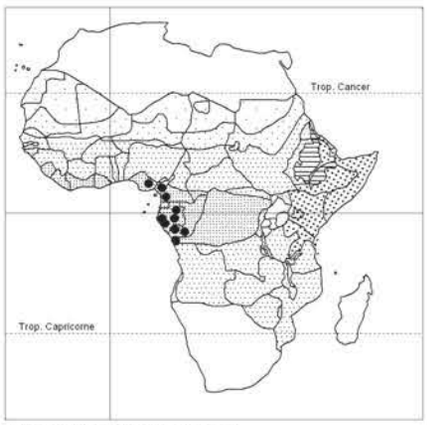
Streblus usambarensis



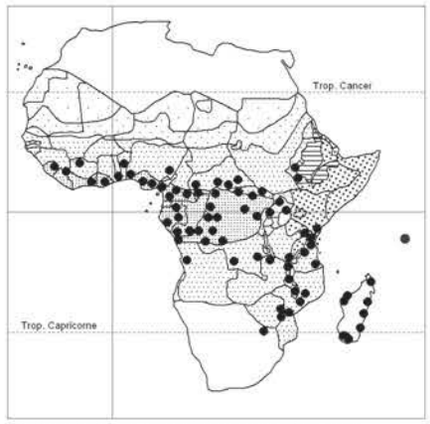
Treculia acuminata



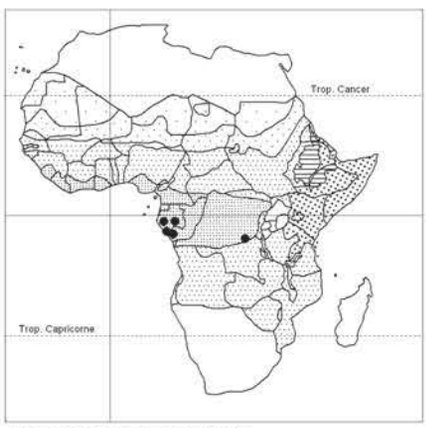
Treculia africana subsp. africana



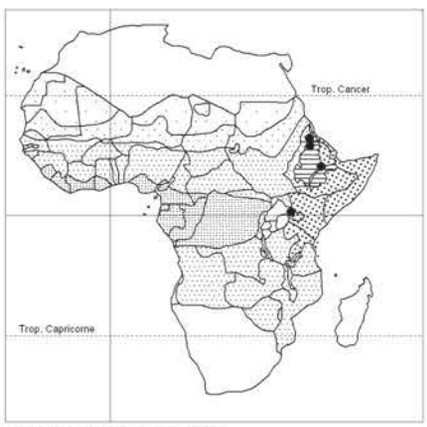
Treculia obovoidea



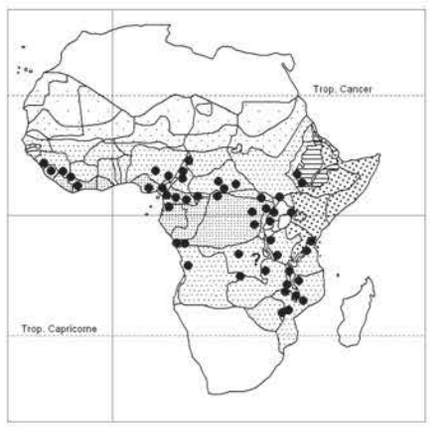
Trilepisium madagascariense



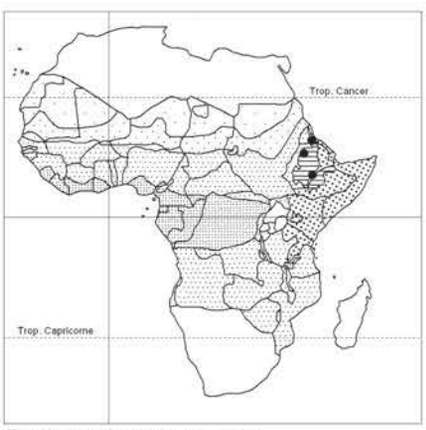
Utsetela gabonensis



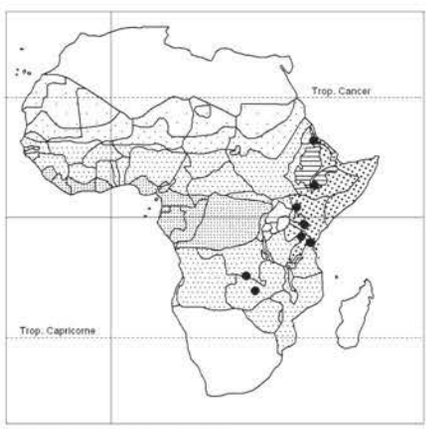
Australina flaccida



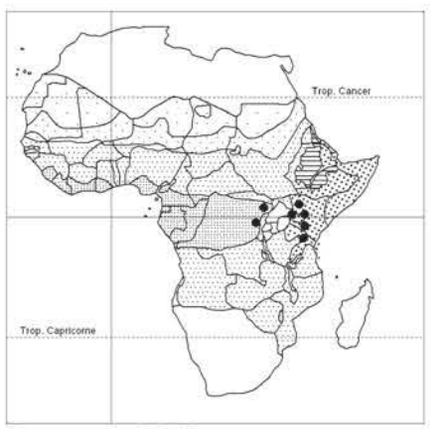
Boehmeria macrophylla



Debregeasia saeneb



Didymodoxa caffra



Droguetia debilis

DROGUETIA / *2*

Seven species distributed from Africa to Yemen, S India, Java, three of them in Africa.

Droguetia debilis Rendle

Perennial herb with prostrate and ascending stems, to ± 20-25 cm tall, monoecious, branching from the base only; young branches with sparse, somewhat appressed, coarse, stiff hairs; *leaves alternate;* inflorescences sessile, on upper part of stem, of 2 kinds occurring together, most of them bisexual (several male flowers + 1 female), others with only 1-2 female flowers.

Humid forest, rain-forest, and dry montane forest; 1000-3090 m alt.

To be expected in Uganda.

D. iners (Forssk.) Schweinf.; Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 27-28, 2001; Puff & Sileshi Nemomissa, Pl. Simen: 108, 2005.

bas.: *Urtica iners* Forssk.

syn.: *U. urens* var. *iners* (Forssk.) Wedd.

Perennial herb or subshrub with prostrate and erect, branched stems to 1-1,5(-2) m tall and creeping or scrambling stems, rooting at the nodes; branches with a very variable indumentum, ranging from subglabrous or with scattered stiff hairs or appressed hairs to an almost woolly tomentum of straight or curly, erect hairs; rhizome woody, slightly thickened; *leaves opposite with reddish-chestnut stipules;* inflorescences as clusters, bisexual, female or mixed in upper axils, in lower axils often only female flower clusters.

"Coffee" forest and plantations; ravines in evergreen bushland; open *Hagenia abyssinica, Hypericum revolutum, Schefflera volkensii* forest; rain-forest with *Albizia, Macaranga, Croton, Ocotea,* at edge; lower edge of bamboo forest; open *Podocarpus latifolius* forest, very common on moist ground; sometimes persisting in hedges, etc. of farmland after forest clearing; lava plains; *Andropogon* formations; 900-3250(-3500) m alt.

Bioko/Fernando Poo; S. Africa (maps in Friis & Immelman, l.c.); Yemen; Madagascar (Kew Bull. 57: 1006, 2002).

Comprises 2 subspp. in our area: – subsp. **iners** [syn.: Enum. 2: 143, 1992; *D. woodii* N. E. Br.; *D. thunbergii* N. E. Br., nom. illegit.; *Parietaria capensis* Thunb.; *Boehmeria capensis* (Thunb.) Sprengel; *"Urtica caffra* alpha", Thunberg specim. s.n. at UPS.]; – subsp. **pedunculata** Friis, with pedunculate male inflorescences, in SE Ethiopia at 2500-2900 m alt. – subsp. **burchellii** (N. E. Br.) Friis & Wilmot-Dear is endemic to S. Africa; – subsp. **urticoides** (Wight) Friis & Wilmot-Dear in S India, Java.

SYNONYMS:

Droguetia diffusa Wedd. = **Droguetia iners** subsp. **iners**
pauciflora (Steud.) Wedd. = **D. iners** subsp. **iners**
thunbergii N. E. Br. = **D. iners** subsp. **iners**
umbricola Engl. = **Didymodoxa caffra**
woodii N. E. Br. = **Droguetia iners** subsp. **iners**

ELATOSTEMA / *4*

Polymorphic genus of c. 200 species in the Old World tropics. Leaves asymmetrical, opposite or alternate by the abortion of one leaf.

Elatostema mannii Wedd.

syn.: *E. angusticuneatum* Engl., incl. var. *dusenii* Engl.

Herb, half-succulent, 15-40 cm tall, monoecious; stems erect from a decumbent base; stem with dense linear cystoliths and scattered hairs often curved-erect on young plants at least; leaves crowded on the upper part of the stem; male inflorescence long-stalked (4 cm), female sessile.

On humid rocks and by streams in forest; wet places; waterfall mist; on humus; 1-600 m alt.

Bioko/Fernando Poo.

E. monticola Hook. f.; Lambinon, Bull. Soc. Roy. Bot. Belg. 91: 209, 1959. – Icon.: Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 53, 1994; Burrows & Willis, Pl. Nyika Plateau: 281, 2005; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 739, 2008.

syn. *E. kiwuense* Engl.; Enum. 2: 143, 1992.

Annual or perennial herb, apparently dioecious, rarely monoecious; stems erect, ascending or trailing, 1!- ± 30 cm tall from prostrate, ± branching rhizomes, often with short crisp hairs in the upper part of the stem; leaves restricted to the upper part of the stems, alternate, in 2 rows, very asymmetric; inflorescences unisexual, of small sessile heads.

Forest and forest-grassland transition; torrent gorges; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa,* on banks of small brook; waterfall mist; *Arundinaria alpina* formation; narrow forest-valley in savanna with *Daniellia oliveri, Lophira lanceolata;* ferrugineous rocks under shade; stone-anfractuosity; forest gallery; epiphyte on hedge plants (Cameroon, fide Sonké & al., Syst. Geogr. Pl. 71: 214, 2002); 950-2800 m alt.

Bioko/Fernando Poo.

Material with immature inflorescences easily confused with *E. paivaeanum.*

E. paivaeanum Wedd., incl. var. *conrauanum* Engl. – Icon.: Fl. Trop. E. Afr., Urticaceae: 40, 1989 (partial); Hawthorne & Jongkind, Woody pl. W. Afr. forests: 254, 2006 (photo.).

syn.: *E. preussii* Engl.; *E. gabonense* H. Schröter; *E. busseanum* H. Winkl.; ? *E.* cf. *zimmermannii* Engl. (Schlieben 2003) in sched.

Annual or perennial, monoecious, fleshy, brown herb (4-)40-100 cm tall with a trailing radicant stem and a creeping rhizome; stems usually unbranched, glabrous or somewhat pubescent; leaves restricted to the upper half of the stem, alternate, drying green-black; stipules conspicuous; inflorescences unisexual, sessile.

Evergreen rain-forest in moist shade of forest floor; wooded humid thalweg; shaded valley sides; sometimes in dense stand; on periodically inundated rocks with *Bolbitis acrosticoides, Anubias;* often along streams; altitudinal transitional forest; weed in cacao plantations (W Cameroon); 475-2100 m alt.

Bioko/Fernandoo Poo. – ? Disjunct area W-E.

Specimens with immature inflorescences difficult to distinguish from large specimens of *E. monticola.* Good flowering material needed for identification of these species.

E. welwitschii Engl., incl. var. *cameroonense* Rendle – Icon.: Fl. Trop. E. Afr., Urticaceae: 40, 1989 (partial).

syn.: *E. henriquesii* Engl.; *E. angolense* Engl. ex Henriq.; *E. sessile* Forster var. *angustifolium* Wedd.; *E. kamerunense* Engl. nom. in sched. and nom. inval.

Perennial herb, monoecious, with creeping rooting rhizomes and erect fleshy stems 40-75 cm tall, 0,5-1 cm Ø at base, usually little branched, pilose to hispid; leaves restricted to the upper half of the stem, alternate; inflorescences unisexual, sessile.

Rain-forest, often along streams; riverine forest; often among rocks; abundant by spots; near water falls; in forest floor shade; 800-1950 m alt.

São Tomé, Bioko/Fernando Poo.

SYNONYMS:

Elatostema angolense Engl. ex Henriq. = **Elatostema welwitschii**

angusticuneatum Engl., incl. var. *dusenii* Engl. = **E. mannii**

busseanum H. Winkler = **E. paivaeanum**

gabonense H. Schröter = **E. paivaeanum**

henriquesii Engl. = **E. welwitschii**

kamerunense Engl. = **E. welwitschii**

kivuense Engl. = **E. monticola**

longiacuminatum (De Wild.) Hauman = **E. monticola**

oppositifolium N. A. Dalzell = **Lecanthus peduncularis**

orientale Engl., incl. var. *longiacuminatum* De Wild. = **Elatostema monticola**

ovatum Wight = **Lecanthus peduncularis**

preussii Engl. = **Elatostema paivaeanum**

sessile Forster var. *angustifolium* Wedd. = **E. welwitschii**

trinerve Hochst. = **Urera**

wallichii Wedd. = **Lecanthus peduncularis**

wightii Wedd. = **L. peduncularis**

cf. *zimmermannii* Engl. in sched. = ? **Elatostema paivaeanum**

FORSSKAOLEA / *2*

Genus of c. 6 species from Canary Isl., S Spain, N & E Africa, Arabia to India. Two species endemic to S. Africa.

Forsskaolea tenacissima L., incl. var. *cossoniana* (Webb) Wedd. and var. *erythraea* A. Terracc. – Icon.: Boulos, Fl. Egypt 1: 19, 1999 (partial); Chaudhary, Fl. Kingd. Saudi Arabia 1: 123, 2001.

syn.: *F. latifolia* Retz., nom. illegit. superfl.; *Caidbeja adhaerens* Forssk.; *Forsskaolea cossoniana* Webb

Annual or perennial monoecious herb or shrublet with branching stems brownish-green to purplish 5-100 cm tall, often woody at the base; stems ± erect or ascending, simple or branching; hairs long, rigid, hooked or spiny and a softer tomentum between; leaves alternate; flowers unisexual, 1-4 in axillary clusters surrounded by densely white-silky bracts.

Amongst big sandstone lumps with *Acacia tortilis, Panicum, Aerva;* sandstone lumps with some sand, with *Lavandula, Francoeuria, Heliotropium, Monsonia, Ochradenus, Salvia;* sand dunes; sandy soil near the sea; lava flows further inland; mountain forest and steppe; cultivated grara; sometimes nitrophile, abundant; scree; rocky wadis; on rocks or rocky places; ± humid places; guelta, gardens, wells; 50-1560 m alt.

N Africa including large parts of the Sahara, Libya, Egypt; SE Spain (Almeria); Saudi Arabia, Yemen, UAE, Qatar; Palestine, S Iran, Afghanistan, Pakistan, NW India. – Introduced into Comoro Isl.

F. viridis Ehrenb. ex Webb,? incl. var. *ehrenbergii* Solms-Laub. – Icon.: Fl. Trop. E. Afr., Urticaceae: 55, 1989; Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 24, 2001 (partial).

syn.: *F. eenii* Rendle

Annual or short-lived perennial monoecious herb ± 0,15-1,2 m tall, branched from a slightly woody or herbaceous base; stems with broad-based curved hairs and denser shorter stiff hairs (often hooked); leaves alternate, base broadly decurrent; inflorescences bisexual, sessile, with lobed woolly bracts.

Open forest; rocky places near the sea; rock crevices; lava flows; sandy riverbed; dry watercourses in shade; neglected plots of cultivation; 1-1800 m alt.

Cape Verde Islands; ?SE Egypt (not in Boulos, Fl. Egypt); SW Saudi Arabia, S Yemen, Hadhramout, Al-Mahra (Willdenowia 32: 262, 2002), Oman, Socotra; Namibia (map in Friis & Immelman o.c.: 25). – Disjunct area.

GIRARDINIA / *2*

A genus of 2 species.

Girardinia bullosa (Steud.) Wedd. – Icon.: Troupin, Fl. Rwanda 1: fig. 31 (1), 1978; Puff & Sileshi Nemomissa, Pl. Simen: 107, 2005.

Annual or short-lived perennial monocarpic monoecious herb; stems unbranched or little branched near the top, somewhat lignified, hollow, 2-3 m tall, to 3,5 cm Ø; bark greenish to dark brown, pilose and densely adorned with stinging hairs to 8 mm long, 2 mm thick; leaves alternate, shallowly lobed, at anthesis mostly fallen from the lower part of the stem; inflorescences dense axillary panicles, male lax little branched, female repeatedly branched, dense.

Clearings and natural glades in rain-forest or at forest edges; grassland along roads and near houses; often in abandoned cultivations; forest with *Podocarpus latifolius, Syzygium guineense, Dombeya torrida;* sometimes in streamside marshes in wet montane forest; 1800-3100 m alt.

G. diversifolia (Link) Friis; Jacques-Félix & Rabéchaut, Agron. Trop. 3, 1948; Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 14-15, 2001 (with map). – Icon.: Fl. Trop. E. Afr., Urticaceae: 14, 1989; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 54, 1994; Burrows & Willis, Pl. Nyika Plateau: 281, 2005; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 735, 2008.

syn.: *G. armata* Kunth, nom. illegit. superfl.; *G. adoensis* (Steud.) Wedd.; *G. heterophylla* Decne. based on *Urtica heterophylla* Vahl, nom. illegit. superfl., incl. the type of *U. palmata* Forssk. (Yemen); *G. heterophylla* Decne. subsp.! *adoensis (*Steud.) Cufod.; *G. palmata* Blume, nom. illegit., non *Urtica palmata* Forssk.; *G. vahlii* Blume, nom. illegit. superfl., based on *Urtica palmata* Forssk.; *Urtica heterophylla* D. Don, nom. illegit., non Vahl; *Urera cannabina* A. Chev.; *Fleurya cannabina* A. Chev., nom. – Full synonymy in Kew Bull. 36: 145-149, 1981.

GIRARDINIA DIVERSIFOLIA

Erect annual or short-lived perennial herb 0,45-1,5-2,5 m tall, monoecious or dioecious by abortion; stem hollow, half-succulent, 1 cm Ø at base, sparsely branched, pubescent and covered with stinging hairs 3-9 mm long and with short stiff hairs; leaves alternate, deeply lobed, usually fallen from the lower part of stem at anthesis; inflorescences paniculate, male on 2 cm long peduncles, female much branched and dense at tips.

Rain-forest, dry evergreen forests, especially in clearings, along roads, moist rocky places; moderately shaded areas near cultivations; in caves and rocky outcrops; forest gallery; *Acanthus*-steppe; grassy savannas; near houses; edge of cultivations in forest with *Podocarpus latifolius*, *Olea capensis, Syzygium guineense;* shady places by streams; the commonest stinging nettle by places in wet forest (Kenya); forest with *Albizia gummifera;* 300-2500 m alt.

S. Africa, Swaziland; Madagascar; Yemen, India, Nepal, Sikkim, Sri Lanka, Burma, Thailand, Laos, China, N Korea, Taiwan, Indonesia (full map in Kew Bull. 36: 152, 1981).

The bast yielding fibre.

SYNONYMS:

Girardinia adoensis (Steud.) Wedd. = **Girardinia diversifolia**

armata Kunth = **G. diversifolia**

condensata (Steud.) Wedd., incl. var. *adoensis* (Steud.) De Wild. = **G. diversifolia**

heterophylla Decne., incl. subsp. *adoensis* (Steud.) Cufod. = **G. diversifolia**

marginata Engl. = **Laportea alatipes**

palmata Blume = **Girardinia diversifolia**

vahlii Blume = **G. diversifolia**

LAPORTEA / *7*

A pantropical genus of c. 22 species.

Laportea aestuans (L.) Chew – Icon.: F. Busson, Pl. aliment. Ouest africain: 121, 1965 (as *Fleurya aestuans);* Dokosi, Herbs Ghana: 222, 1998; Pinto Basto in Fl. Cabo Verde 8, Urticaceae: 12, 2002; Akoegninou & al., Fl. analyt. Bénin: 979, 2206 (Wageningen); Hawthorne & Jongkind, Woody pl. W. Afric. forests: 254, 2006 (photo.); Shih-Huei Chen & Ming-Jou Wu, Taiwania 52: 65-66, 2007.

bas.: *Urtica aestuans* L.

syn.: *U. schimperiana* Steud. (full syn. in Gard. Bull. Singapore 25: 164, 1969); Enum. 2: 144, 1992; *Fleurya aestuans* (L.) Gaudich., 1930, incl. var. *linnaeana* Wedd.; *F. aestuans* (L.) Miq. 1853.

Monoecious annual herb with somewhat fleshy stems slightly woody at base and 2 cm Ø, hollow, with few branches, 0,1-2 m tall, glabrescent to densely covered with simple irritant hairs to ± 1 mm long and soft glandular hairs 1-3 mm long; petiolar scars usually quite conspicuous; leaves restricted to the top of the stem, ovate to ± circular; inflorescences bisexual, much-branched, often not exceeding the leaves (cf. *L. interrupta).*

Rain-forest area, scattered along roads, near habitations, abandoned grounds; more rare in savannas; always in semi-shade; sometimes in rock crevices; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa,* on forest floor; disturbed areas in scrub; cultivations (damp fields neglected after *Arachis hypogaea),* sometimes epiphytic on *Elaeis;* rare in *Acacia-Commiphora* woodland after rains; ± 0-1300 m alt.

LAPORTEA AESTUANS

With or without stinging hairs, but often an unpleasantly stinging plant. Very common in Zaire (49 collections cited in 1948).

Cape Verde Isl.; Bioko/Fernando Poo; Madagascar; Arabia, India, Taiwan, Sumatra, Java, Lesser Sunda Islands; tropical America, West Indies.

A popular potherb (Ghana).

L. alatipes Hook. f.; Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 11-12, 2001 (with map). – Icon.: Burrows & Willis, Pl. Nyika Plateau: 281, 2005; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 739, 2008.

syn.: *Girardinia marginata* Engl.; *Urticastrum alatipes* (Hook. f.) O. Kuntze; *Fleurya urticoides* Engl., incl. var. *glabrata* Rendle; *F. monticola* Volkens ex Engl., nom. invalid.

Monoecious annual or short-lived perennial herb to 1-1,7 m tall; stems erect, soft, but usually somewhat lignified at base, erect or decumbent, little branched, usually with sparse to dense stinging hairs when young, rarely glabrescent; leaves usually fallen from the lower part of the stem at anthesis, alternate, ovate, with punctiform cystoliths; female peduncles towards apex of shoots, stinging-hairy, male ones shorter lower on the shoots.

Forest, forest edges; upland rain-forest, *Hagenia* forest; *Arundinaria* thicket; ravines; usually near water; very common in clearings of *Podocarpus* forest; forest with *Pouteria altissima;* 1000-3500 m alt.

S. Africa.

A fiercely stinging plant.

[**L. grossa** (Wedd.) Chew occurs in E-SE S. Africa (map in Friis & Immelman, o.c.: 13); erroneously indicated for Mozambique, the specimens belonging to *L. mooreana* (fide l.c.).]

L. grossa (Wedd.) Chew cited by Figueiredo & Smith, Plants of Angola: 166, 2008, is perhaps an error.

L. interrupta (L.) Chew

bas.: *Urtica interrupta* L.

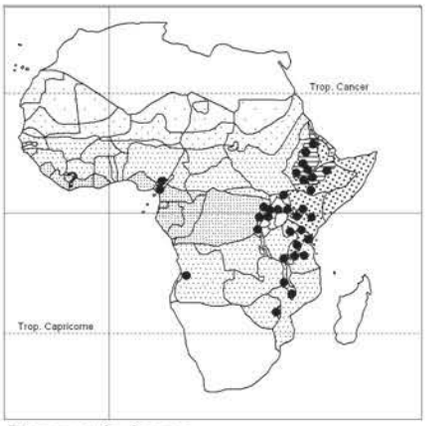
syn.: *U. lomatocarpa* Steud. (full syn. in Gard. Bull. Singapore 25: 145, 1969).

Monoecious annual herb 0,2-1-2 m tall; stems slender, slightly woody at base, usually somewhat branched, pubescent to puberulous, with scattered stinging hairs to 1,5 mm long, sometimes raised on protuberances ± 1 mm high; bark with reddish-chocolate streaks near the apex, reddish-chocolate at base; petiolar scars conspicuous; leaves crowded towards the top of the stem, circular-ovate, cystoliths elongated; inflorescences filiform, spike-like, unbranched, *exceeding* the leaves, usually bisexual, with flower clusters at intervals (cf. *L. aestuans).*

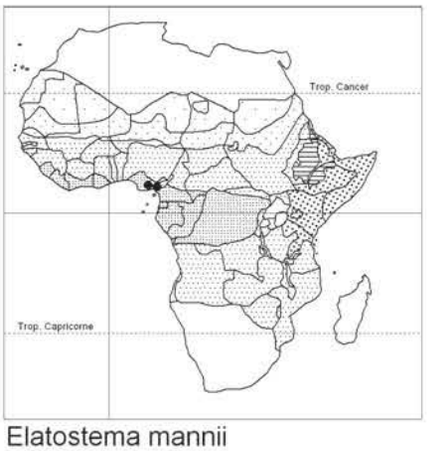
Evergreen rain-forest, often along roads; riverine forest; moist places in wooded grassland; in partial shade; cultivations; granitic screes; 0- ± 1700 m alt.

Widely and thinly scattered in Africa. Widely distributed in Arabia (Willdenowia 34: 178, 2004), India, Sri Lanka, Japan, China, SE Asia, Malesia, Australia (Queensland), Pacific Islands to Oahu (Hawai Isl.) – Guinea Bissau?; not in Zaire *(= L. aestuans).*

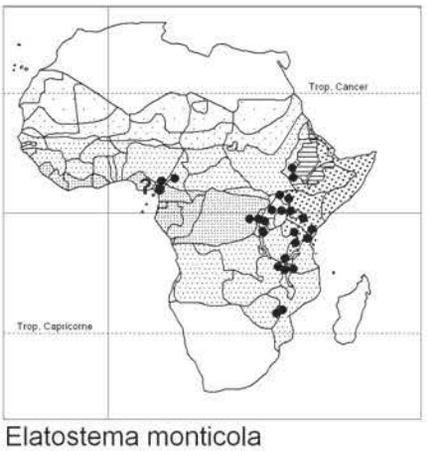
Records in tropical and S. Africa are often made at long intervals (Friis in Fl. Trop. E. Afr., Urticaceae): Ethiopia two early Schimper collections (n° 1471 in 1840) and a recent one by Gilbert and Friis; Cameroon only one Letouzey collection; Mozambique only one Torre collection in 1942; in tropical East Africa some collections from 1932, 1935, 1961, 1964, 1970, 1977 and a single collections by Stolz, 1911 – The species has not been found in the Flora of S. Africa region for over 150 years.



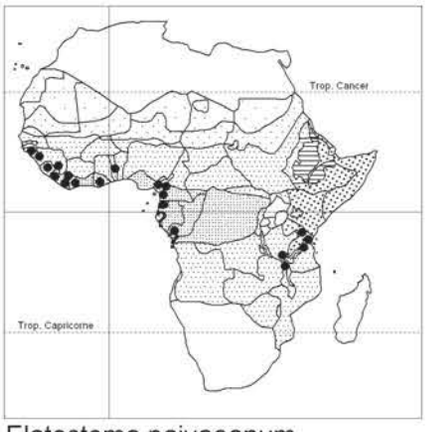
Droguetia iners



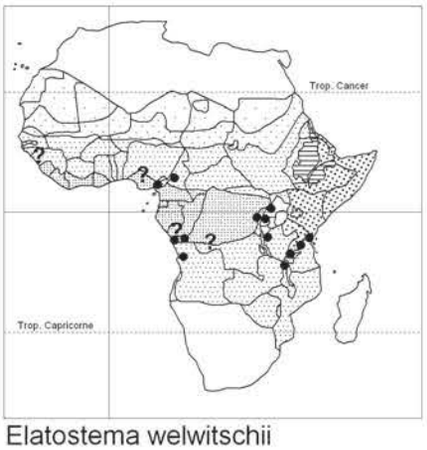
Elatostema mannii



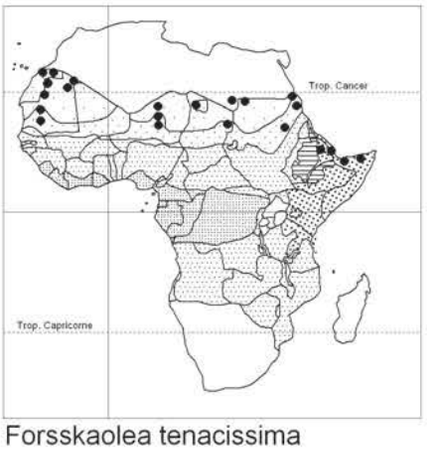
Elatostema monticola



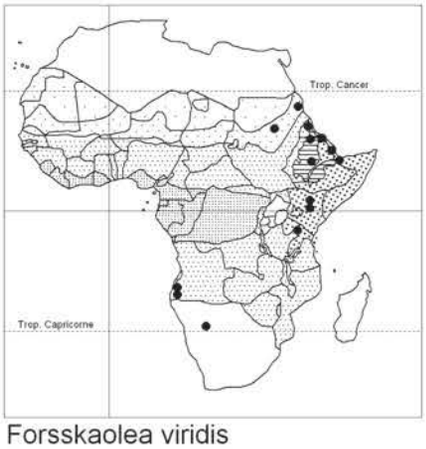
Elatostema paivaeanum



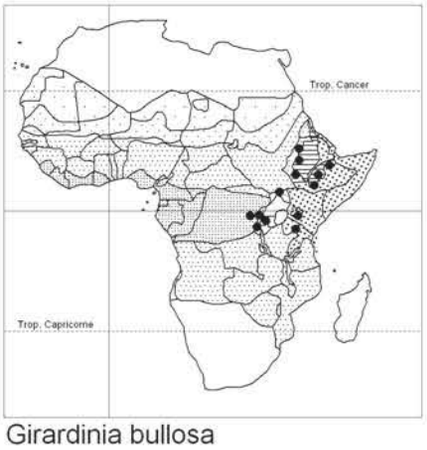
Elatostema welwitschii



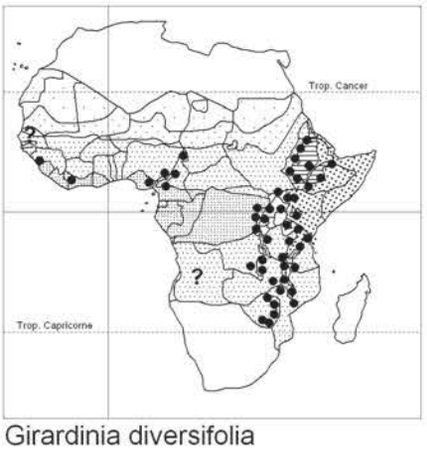
Forsskaolea tenacissima



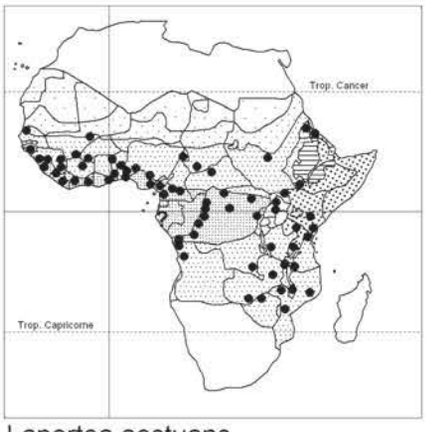
Forsskaolea viridis



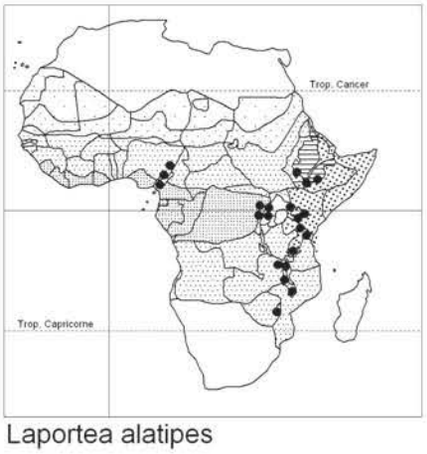
Girardinia bullosa



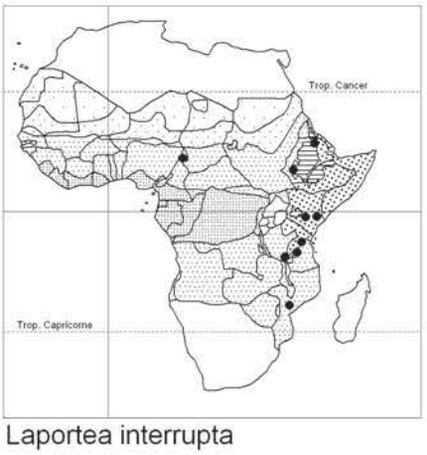
Girardinia diversifolia



Laportea aestuans



Laportea alatipes



Laportea interrupta

L. lanceolata (Engl.) Chew

Annual or presumably perennial dioecious, rarely monoecious herb, sometimes shrubby, reportedly with spreading or sprawling habit to 1-1,5 m tall; stem slightly woody at the base, sparingly branched; young branches glabrescent to glabrous or occasionnally well armed with thin irritant hairs, especially at the apex, to 2 mm long; petiolar scars very conspicuous; leaves crowded towards the top of the branches, elliptic, margins serrate; inflorescences usually unisexual, paniculate, much branched from the base, flowers in small clusters, male ones with *flat* tepals.

Rain-forest, frequently over rocks in clearings; forest edge; on rocks in moist woodland; 50-900 m alt.

Strictly coastal species; the specimen from Zaïre (Semliki) needs further study.

L. mooreana (Hiern) Chew – Icon.: Icon.: Fl. Trop. E. Afr., Urticaceae: 22, 24, 1989 (partial).

syn.: *Pilea mooreana* (Hiern) K. Schum.; *Fleurya funigera* Mildbr; *Laportea grossa* sensu Chew in Gard. Bull. Singapore 25:161, 1969 p.p. quoad specim. Mocamb., non (Wedd.) Chew

Monoecious annual (? and short-lived perennial) herb 0,5-1-2(-? 4) m tall, with few stems 6-8 mm Ø at base from the ± woody base; stems curved-radicant at base, puberulous to pubescent, frequently with violently stinging hairs 1-2 mm long, raised on protuberances 1-2 mm high; leaves crowded towards the top of the stems, with large triangular teeth; inflorescences unisexual or bisexual, paniculate, c. 20 cm long; male flowers also in separate inflorscences in lower leaf-axils, female flowers also in separate inflorescences in upper leaf-axils.

Shady road sides; old cultivations; rain-forest; moist rocks in woodland or wooded grassland; mixed evergreen rain-forest; granitic screes; waste places; sometimes cultivated (for fibre); 800-1600 m alt.

L. ovalifolia (Schumach. & Thonn.) Chew; Bull. Soc. Roy. Bot. Belg. 91: 200, 1959; Hawthorne & Jongkind, Woody pl. W. Afr. forests: 255, 2006. – Icon.: Fl. Congo Belge 1: 193, 1948 (sub nom. *Fleurya podocarpa*); Dokosi, Herbs Ghana: 224, 1998; cf. below under *Pilea procumbens*.

syn.: Enum. 2: 144, 1992; *Urera spicata* A. Chev., nom.; *Fleurya podocarpa* Wedd., incl. var. *amphicarpa* Engl., var. *fulminans* Hiern, var. *mannii* Wedd., and subsp. *repens* Hauman, nom.; *Pilea procumbens* A. Peter; *Fleurya spicata* A. Chev., nom. in sched.

Monoecious, annual or stoloniferous perennial herb, sometimes almost entirely prostrate except for the erect male inflorescences; erect shoots 0,3-1,25-2 m tall; stems slightly woody at base, with few branches, pubescent to glabrescent, sometimes with short ± appressed stinging hairs; petiolar scars conspicuous; leaves usually restricted to the erect shoots, but sometimes also from the stolons; inflorescences unisexual, male ones to 50 cm long, female ones to 5 cm long, mostly from stolons and then geocarpic.

Rain-forest incl. transitional; swamp forest; along streams; forest gallery; sometimes epiphytic; fallow land; cultivations (palm and banana plantations); forest edges; waste places; clearings; sometimes very abundant; sandy or sandy-clayey soils; *Raphia* formation; near houses; 0-2900 m alt.

Leaves very variable in size (3-10 × 2-8 cm) and shape.

Bioko/Fernando Poo.

Sometimes cultivated as a pot-herb.

The collection from Mt. Kenya cited by Chew 1969 (p. 152) is *L. alatipes* (Verdcourt 2051).

L. peduncularis (Wedd.) Chew

syn.: *Fleurya capensis* Wedd. 1856, excl. spec. typ., non (Thunb.) Wedd. 1854; *Urtica mitis* Hochst., nom. nud.; *Fleurya mitis* Wedd., nom. nud.; *F. capensis* var. *mitis* Wedd.; *F. peduncularis* var. *mitis* (Wedd.) Wedd.; *F. mitis* (Wedd.) N. E. Br. – All of subsp. **peduncularis**.

Annual or short-lived perennial herb, monoecious or dioecious by abortion; stems soft, ± erect, decumbent or scrambling, sometimes rooting at lower nodes, 0,45-1,5 m long, woody at base, rarely branched from the base or unbranched, pubescent to glabrescent, with few to fairly numerous stinging hairs ± 1 mm long, sometimes raised on protuberances 0,5-1 mm high; leaves restricted to upper part of stem at anthesis, margin with 5-8 pairs of teeth (subsp. **latidens**) or 12-25 pairs (subsp. **peduncularis**); inflorescences paniculate with flowers in small clusters, female in upper leaf-axils, male in lower axils.

Transitional- and rain-forests, especially in secondary growth; along paths and rivers; scrub; dune forest, coastal scrub; 50-1700 m alt.

S. Africa (maps in Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 12-13, 2001).

Comprises 2 subspp.: – subsp. **peduncularis**; – subsp. **latidens** Friis [syn.: Enum. 2: 144, 1992; *L. interrupta* sensu Chew 1969, p.p. quoad specim. Schlechter 2791, non *Urtica interrupta* L.], in coastal areas of S. Africa, Mozambique.

SYNONYMS:

Fleurya aestuans (L.) Gaud. and (L.) Miq. = **Laportea aestuans**

alatipes (Hook. f.) N. E. Br. = **L. alatipes**

bathiei Léandri = **L. aestuans**

begonioides A. Chev., nom. = **Pilea angolensis** subsp. **angolensis**

caffra Chew = **Laportea peduncularis** subsp. **peduncularis**

cannabina A. Chev. = **Girardinia diversifolia**

capensis Wedd. 1856, p.p. = **Laportea peduncularis** subsp. **peduncularis**

capensis var. *mitis* Wedd. = **L. peduncularis** subsp. **peduncularis**

funigera Mildbr. = **L. mooreana**

interrupta (L.) Gaud. = **L. interrupta**

interrupta sensu Chew, p.p. = **L. peduncularis** subsp. **latidens**

lanceolata Engl. = **L. lanceolata**

mitis Wedd. and (Wedd.) N. E. Br. = **L. peduncularis** subsp. **peduncularis**

monticola Volkens ex Engl. = **L. alatipes**

mooreana (Hiern) Rendle = **L. mooreana**

ovalifolia (Schumach. & Thonn.) Dandy, incl. var. *repens* (Hauman) Lambinon = **L. ovalifolia**

peduncularis Wedd. = **L. peduncularis**

perrieri Léandri = **L. aestuans**

podocarpa Wedd., incl. var. *amphicarpa* Engl., var. *fulminans* Hiern, var. *mannii* Wedd. and subsp. *repens* Hauman = **L. ovalifolia**

sarmentosa A. Chev. = **Urera oblongifolia**

spicata A. Chev. = **Laportea ovalifolia**

urophylla Mildbr. = **L. mooreana**

urticoides Engl., incl. var. *glabrata* Rendle = **L. alatipes**

Laportea bathiei Léandri = **Laportea aestuans**

caffra Chew = **L. peduncularis** subsp. **peduncularis**

caffra auct. = **L. peduncularis** subsp. **latidens**

carruthersiana Hiern = **Obetia**

grossa sensu Chew 1969 p.p. (Moz.), non (Wedd.) Chew = **Laportea mooreana**

repens Wedd.= ? **Urera repens**

LECANTHUS / *1*

Lecanthus peduncularis (Wall. ex Royle) Wedd. – Icon.: Royle, Ill. Bot. Himalay. Mts. 2: pl. 83 (figs. 2 & 3), 1839 (sub nom. *Procris peduncularis* et *P. obtusa);* R. Wight, Icon. pl. Indiae Orient. 6: pl. 1985, 1853 (sub nom. *Elatostema ovata);* Weddell, Monogr. Urticacées: pl. 9 C, 1856 (sub nom. *Lecanthus wightii);* Fl. Ethiopia 3: 313, 1989.

bas.: *Procris peduncularis* Wall. ex Royle

syn.: *P. obtusa* Royle cited as "*P. obovata* Wall. ex Royle" by Letouzey in Fl. Cameroun 8: 180, 1968); *Elastostema oppositifolium* N. A. Dalzell; *E. ovatum* Wight; *Lecanthus wightii* Wedd., nom. illegit.; *L. major* Wedd.; *L. wallichii* Wedd.

Annual herb from some cm to 40 cm tall, brittle, with one to many fleshy stems, erect from a scrambling, radicant, subterranean base; leaves opposite, very variable in size; inflorescences long-pedunculate (to 5 cm), filiform, unisexual, rarely bisexual, male ones small and bell-shaped, female ones larger with many flowers on a flat disc-shaped receptable.

Shady, humid undergrowth in forest; under boulders or in rock crevices, often among moss; ± 1650-2200 m alt.

A very polymorphic species.

Bioko/Fernando Poo. – Not in E. Africa; Zaire? Malawi? Distributed in the mountains of the Old World tropics: from India to S China, Indonesia, Philippines. Not in Tahiti *[=Pilea solandri* (B. C. Seemann) J. Florence; bas.: *Lecanthus solandri* B. C. Seemann].

OBETIA / *3*

Six species occurring from E & SW Africa to Madagascar, Aldabra, Mascarene & Comoro Isl. Very close to *Laportea* and *Girardinia.*

Obetia carruthersiana (Hiern) Rendle – Icon.: Bot. Jahrb. Syst. 51: 424, 1914; B. Curtis & C. Mannheimer, Tree Atlas Namibia: 64-65, 2005.

syn.: *Urera engleriana* Dinter, nom. invalid.

Shrub or tree 1,2-7 m tall; stem stout, erect-patent, dusky red, sparingly branched in stout branches armed all round with crowded straight slender subulate pallid deciduous spreading excessively stinging prickles articulated at or near small tubercular dusky base; branches leafy at the apex; leaves alternate; flowers unisexual, paniculate, from the older branches before the leaves appear on long herbaceous shoots.

Primitive forests by streams; widely distributed, almost always on rocky outcrops in dry scrub or subdesert vegetation; 800-1800 m alt.

Namibia (full map, Kew Bull. 38: 227, 1983; Friis & Immelman in Fl. S. Afr. 9, Urticaceae: 9, 2001).

O. radula (Bak.) B. D. Jackson – Icon.: Bot. Jahrb. Syst. 51: 423, 1914; Fl. Madagascar 56: 5, 1965; Beentje, Kenya trees, shrubs & lianas: 334, 1994.

Sparsely branched shrub or tree 5-13 m tall, presumably dioecious; trunk 0,2-0,5 m Ø at base, with main branching point either near the base or at the top, ultimate branchlets ± 0,8 cm thick, when dry, probably more when fresh, covered with large (1,5-2,5 × 1,2-1,8 cm) persistent stipules and stinging hairs; leaf-scars very noticeable on the branches; the whole plant has an appearance not unlike a paw-paw *(Carica papaya)* or an unbranched *Araliaceae;* leaves always clustered at the end of the branches, deeply lobed to pinnatifid; flowers yellow-green in cymes (male 10 cm long, female 15-30 cm).

Rocky hill-sides in evergreen or semi-evergreen bushland (chiefly on hills of the basement complex, less commonly on basalt and lava); sometimes at rocky lake- and river sides; margins of dry forest; local or sometimes in isolated stands on rocky outcrops of both granite and volcanic rocks; forest gallery; 500-2000 m alt.

Madagascar; Comoro Isl. (full map, Kew Bull. 38: 227, 1983).

Stem fibres used for weaving.

O. tenax (N. E. Br.) Friis – Icon.: Hook. Ic. Pl. 18: tab. 1748, 1888; R. Grant & V. Thomas, Sappi tree spotting, Bushveld: 294-295, 2000.

Shrub or tree, branched, deciduous, 2-7 m tall, presumably dioecious; branches bronzy brown or pinkish brown, smoth; numerous stinging hairs on younger branches, petioles and lower surface of leaves; inflorescences unisexual, in the axis of fallen leaves.

Rocky ravines in deciduous bushland; very frequently on granite outcrops; 1000-1400 m alt.

S. Africa, Botswana (full map, Kew Bull. 38: 227, 1983; Friis & Immelman in Fl. S. Afr. 9, Urticaceae: 9, 2001).

In habit very similar to *O. carruthersiana,* and perhaps no more than a subspecies of the latter, but with subcordate or truncate leaves and stipules to 7 × 2,5 mm (not leaves cordate and stipules to 12 × 6 mm).

SYNONYMS:

Obetia australis Engl. = **Obetia carruthersiana**

ficifolia (Savigny) Gaudich. var. *heracleifolia* Persoon = **O. radula**

laciniata Bak. = **O. radula**

morifolia Bak. = **O. radula**

pinnatifida Bak. = **O. radula**

PARIETARIA / *3*

About 10 species (c. 60 described) widely distributed in the tropics, subtropics and warm temperate regions. – Important character for delimitation of taxa: the sex distribution of the flowers.

Parietaria alsinifolia Del. – Icon.: Boulos, Fl. Egypt 1: 19, 1999; Maire, Fl. Afr. Nord 7: 173, 1961.

Annual herb, 5-45 cm tall, monoecious, pilose-hairy with long weak hairs and short, glandular hairs; stems and branches procumbent, ascending or erect, thin, terete, ± flaccid, much branched from the base and often also somewhat above; leaves alternate; flowers in axillary clusters of female and bisexual flowers; fruiting bracts strongly accrescent, persistent.

Humid rock cracks; 2200 m alt.

Algeria: central Sahara; Egypt; Saudi Arabia, Oman, UAE, Qatar, Iraq, Syria, Iran, Afghanistan, Pakistan and C Asia.

(P. debilis G. Forst.)

Annual herb not woody at base, not rooting at base; stems weak, ± erect, <50cm tall; bracts linear or lanceolate, as long as perianth or shorter, scattered glandular-hairy; inflorescence with one central hermaphrodite flower with 1 bract accompanied by 1-2 lateral female flowers with 3 bracts; nuts fall off together with the hairy persistent perianth (fide Gebauer in Nord J. Bot. 14: 502, 1994).

First described from New Zealand. Cosmopolitan.

All tropical African taxa were often lumped together with this annual species. Distribution map for the whole of Africa in Wickens, Fl. Jebel Marra: 278 map 90, 1976. – The annual *P. debilis* G. Forst. is cited by Boulos, Fl. Egypt 1: 18 and fig. p. 19, 1999; also by Friis & Immelman in Fl. South. Afr. 9, Urticaceae: 21-22, 2001, with a map for Namibia and S. Africa. The latter authors also quote B. L. Burtt who suggests that the S. African mountain specimens belong to *P. micrantha* Ledeb. from the Himalayas; however these plants are also very similar to the New Zealand and Polynesia material from which the type of *P. debilis* originated. So Friis & Immelman are reluctant to change the name of the African species.

In the following list, we have, however, followed Gebauer's treatment of the tropical African taxa.

The specimens of *P. debilis* from Djibouti need revision.

P. laxiflora Engl. – Icon.: Nord. J. Bot. 14: 505, 1994.

syn.: *P. debilis* fa. *laxiflora* (Engl.) Letouzey; *P. debilis* auct., non G. Forst. (cf. Enum. 4: 667, 1997); *P. alsinifolia* auct., non Del.; *P. mauritanica* Durieu var. *erecta* auct., non Wedd.

(Annual or) short-lived perennial herb; stems prostrate, sometimes rooting at the nodes. Ascending or climbing, to 3 m long, slightly branched, with scars of deciduous leaves and shoots, woody at the base, reddish brown, with scattered glass hairs and dense curved hairs partly arranged in two single lines, occasionally with sessile or stalked reddish glands when young; leaves alternate, with reticulate venation; inflorescences lax, branched, with 10-30 flowers, all unisexual, male & female flowers intermixed, perianth (reddish) brown.

Under rocky anfractuosity in subalpine meadows; shady sites in forest; lake sides; valleys; mountain slopes; forest-grassland transition; 1100-2400 m alt.

Bioko/Fernandoo Poo.

(P. micrantha Ledeb.)

An annual herb member of the *P. debilis*-group with membranaceous perianth and black nuts, occurs, according to Gebauer o.c.: 512-513, in tropical Africa at higher altitudes. It was recorded from S. Africa by Hilliard & Burtt (Notes Roy. Bot. Gard. Edinb. 43: 402, 1986), and considered by them as conspecific with the Himalayan plant. See note above under *P. debilis.*

P. ruwenzoriensis Cortesi – Icon.: Nord. J. Bot. 14: 508, 510, 1994.

syn.: *P. debilis* auct., non G. Forst.; *P. scandens* Engl.; Enum. 4: 667, 1997.

Annual ? or short-lived perennial herb, sometimes rooting at the nodes, sometimes climbing to 2 m, mostly much branched, branches sometimes elongated, with ascending leafy branchlets; stems reddish-brown with curved hairs, which are not arranged in lines, with glandular hairs or flexuous hairs; sometimes woody below; leaves alternate, without distinct reticulate venation; inflorescence dense, with 1-4(-10) flowers, female or hermaphrodite; perianth with green tips.

Valley; mountain slopes; forest; on a rock with shallow soil in a glade in the upper part of the bamboo zone; 1650-4000 m alt.

Comprises 2 subspp.: – subsp. **ruwenzoriensis,** lacking glandular hairs and with all flowers hermaphrodite with 4 stamens; – subsp. **keniensis** Gebauer with glandular hairs but lacking flexuous hairs and flowers mostly hermaphrodite with 1-4 stamens, or sometimes female; in E part of range.

SYNONYMS:

Parietaria abyssinica A. Rich. = **Pouzolzia guineensis**

capensis Thunb. = **Droguetia iners** subsp. **iners**

microphylla L. = **Pilea** (introd.)

sonneratii Poir. = **Phenax**

[PHENAX] / *1*

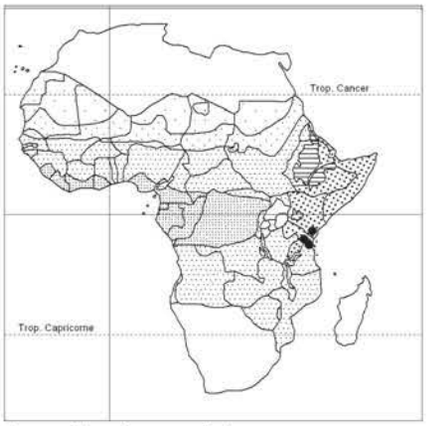
[**Phenax sonneratii** (Poir.) Wedd.]

Erect, presumably perennial herb with ± fleshy stems to ± 1 m tall; stems and branches glabrous or with few, scattered, stiff hairs, some of which have a hooked tip; inflorescence almost cone-shaped.

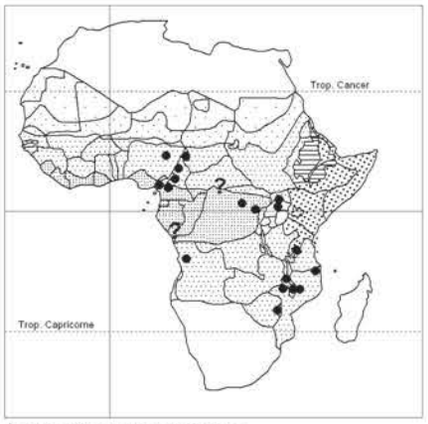
Open sandy river banks; 100 m alt.

Only known in tropical Africa from a single collection in Cameroon. Later also a collection from São Tomé. Indigenous in Central America; introduced or naturalized in West Indies, E Brazil, French Guiana, common in the Lesser Antilles and in Jamaica; also one locality in India and another one in Burma. Not in Mauritius. The precise identity of *Phenax* from Madagascar needs further studies.

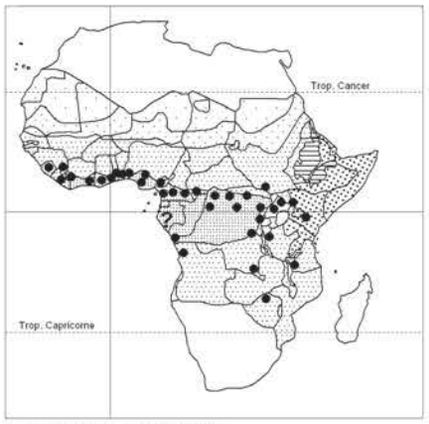
Not mapped.



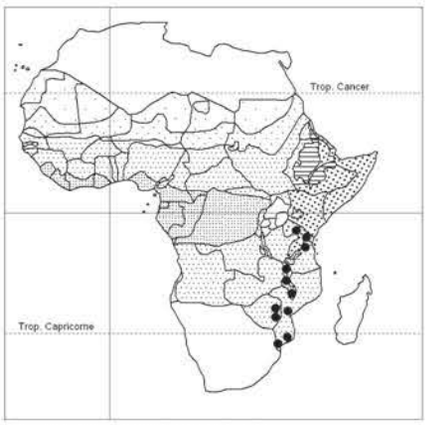
Laportea lanceolata



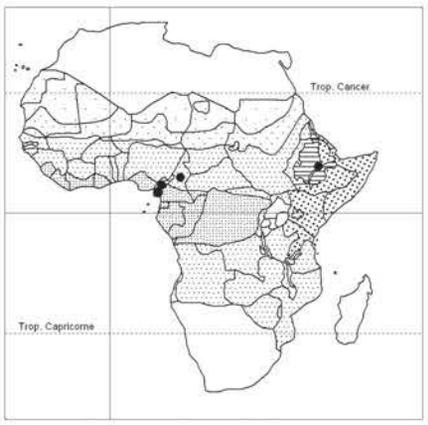
Laportea mooreana



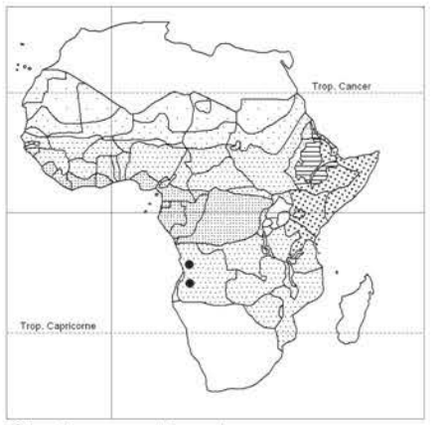
Laportea ovalifolia



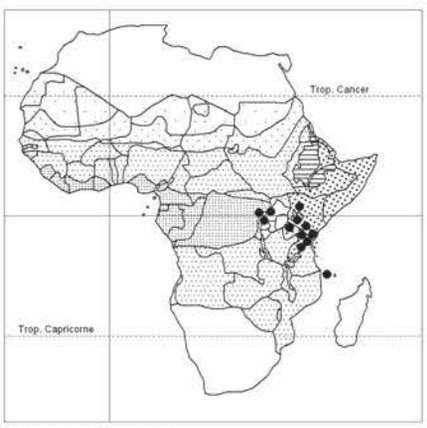
Laportea peduncularis



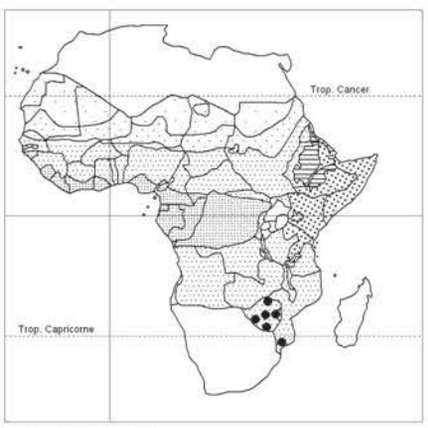
Lecanthus peduncularis



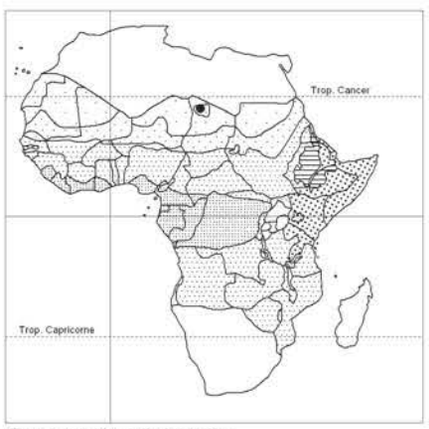
Obetia carruthersiana



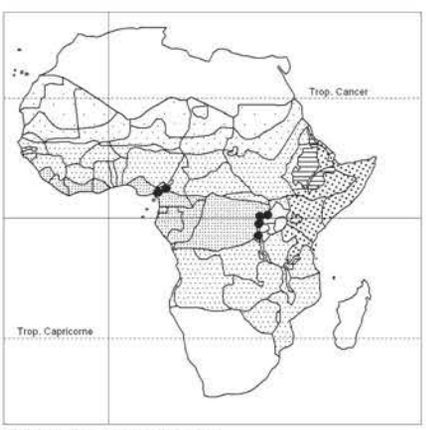
Obetia radula



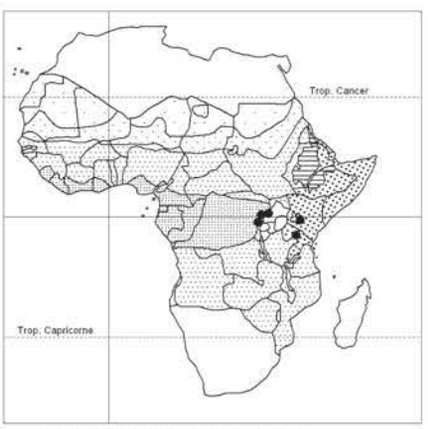
Obetia tenax



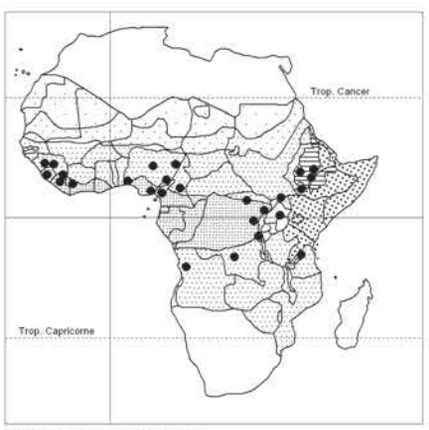
Parietaria alsinfolia



Parietaria laxiflora



Parietaria ruwenzoriensis



Pilea angolensis

PILEA / *9*

About 250 species in the tropics. Monoecious herbs with opposite leaves.

Pilea angolensis (Hiern) Rendle – Icon.: Kew Bull. 44: 573, 1989.

bas.: *Adicea tetraphylla* (Steud.) O. Kuntze var. *angolensis* Hiern

syn.: *Urera begonioides* A. Chev.; *Fleurya begonioides* A. Chev., nom. in sched.; *Pilea divaricata* Hauman – All of subsp. **angolensis.**

Slender, erect, very brittle, intensely green annual succulent herblet, simple or ramose, ± 6-30 cm tall; somewhat rigid in the living state, but quickly becoming quite limp, glabrous and unarmed but sometimes with a few straight rigid long setae on the upper part of the stem; also with tiny, scattered reddish glands; inflorescences very short of small few-flowered clusters male ou female.

In crevices of wet rocks or under boulders in forest or in moist woodlands; on rocks along streams; shady places; rocky outcrop with wet flushes and thin soil with *Selaginella njamnjamensis, Aeollanthus* spp., *Aloe* sp. and many annuals; often with mosses; epiphytic or lithophytic; weed of cultivation (Ethiopia); 700-1800 m alt.

Comprises 2 subspp.

P. bambuseti Engl. – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 737, 2008.

Perennial herb with creeping rhizomes and erect stems from prostrate base, 0,5->1 m tall; stems unbranched or little branched, glabrous; male and female inflorescences branched, to >10 cm long flattened panicles with small glomerules of flowers.

Rain-forest; bamboo forest; often along streams and in ravines; sclerophyllous forest; 1000-2700 m alt.

Comprises 2 subspp.: – subsp. **aethiopica** Friis in Ethiopia, with ovate leaves; – subsp. **bambuseti** with lanceolate leaves in SW part of range.

P. goetzei Engl.

Erect or ascending perennial herb with conspicuous rhizome; stems often quadrangular, sometimes ± entirely prostrate or to 80 cm tall, glabrous, or with a few scattered hairs, juicy; the 2 leaves of a pair ± unequal, stipules stiff, translucent, persisting; male and female inflorescences long-peduncled, flowers in clusters at the tips.

Forest, often on moist rocks along streams; 1300-2400 m alt.

Limited area of distribution, endemic to the Ulugurus.

P. holstii Engl.

Erect perennial herb with creeping basal part 0,2-1 m tall or more; stems unbranched or little branched, glabrous; the 2 leaves of a pair subequal; inflorescences male or female, much branched, with flowers in small scattered clusters.

Transitional- and rain-forest; rather abundant in forest gallery; among stones along brooks; 200-1400 (?1800) m alt.

P. johnstonii Oliv. – Icon.: Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 54, 1994.

Perennial herb with prostrate, ascending and erect fleshy stems ± 0,45-0,8 m tall; glabrous or with scattered hairs, and generally unbranched shoots; the 2 leaves of a pair subequal, stipules broad, brown, papery, persistent; inflorescences male or female, of globose clusters on long stalks.

Erica arborea zone; rain-forest, in shade on floor; sometimes as an epiphyte in shade on trunks of tree ferns or tree trunks; bamboo forest; *Philippia* scrub; Ericaceous bushland; *Hagenia* forest and woodland; dry montane forest; often along small streams; often with mosses and other moisture- and shade-loving plants; *Podocarpus latifolius* forest; ravines near waterfall on river; 1250-3600 m alt.

Comprises 3 subspp.: – subsp. **johnstonii** [syn.: *P. johnstonii* var. *runssorensis* Engl. and var. *heterophylla* T. C. E. Fr. in sched.] with branched peduncle to female inflorescence, in E part of range; – subsp. **kiwuensis** (Engl.) Friis, with short peduncle to female inflorescence in WC part of range; – subsp. **rwandensis** Friis, with thin leaves and female inflorescence with only one flower cluster, in W part of range (detail maps in Kew Bull. 44: 580, 582, 1989).

The commonest *Pilea* in E. Africa.

[**P. microphylla** (L.) Liebmann] – Gunpowder plant – Dokosi, Herbs Ghana: 225, 1998 ; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 255, 2006. – Icon.: Lindley, Collect. bot. 1: pl. 4, 1821; Akoegninou & al., Fl. analyt. Bénin: 981, 2006.

bas.: *Parietaria microphylla* L.

syn.: *Pilea muscosa* Lindl.

Annual (or short-lived perennial ?) monoecious herb, erect or procumbent 5-30 cm tall, often much-branched, mat-forming; stems juicy, glabrous; the 2 leaves of a pair very unequal, <1 cm long, *margins entire;* stipules minute, caducous; inflorescences small, ± subsessile clusters in the leaf-axils, with few male and 5-10 female flowers, or only female flowers. – The pollen is ejected with force.

In coastal zones, scattered throughout Africa; also inland; often a garden weed in damp soil, in flower pots, on bare walls.

Native of tropical S. America. Pantropical.

Not mapped (map in Kew Bull. 44: 598, 1989).

Cultivated as a succulent plant (U. Eggli, Ill. handb. succ. pl., dicot.: 448-449, 2002).

[P. nummulariifolia (Sw.) Wedd.**]**

bas.: *Urtica nummulariifolia* Sw.

Perennial herb to >15 cm tall, puberulous; stems prostrate and erect; the 2 leaves of a pair equal, small, ± suborbicular, 1 cm Ø, margins finely crenate; inflorescences axillary and terminal, paniculate, with scattered small clusters of flowers.

Recorded introduced in Zaire (Bas-Congo: Kisantu).

Native to tropical S. America, the Antilles.

Not mapped.

(**P. procumbens** A. Peter) – Icon.: Feddes Repert., Beih. 40, 2/1 (Fl. Deutsch-Ostafr.): pl. 12 fig. 1 a & b, 1932.

Is not a *Pilea* but probably a procumbent form of *Laportea ovalifolia* (fide Friis in Kew Bull. 44: 598, 1989).

P. rivularis Wedd., incl. var. *brevinoda* (Lambinon) Lambinon, var. *macrodonta* (Bak.) Léandri and var. *stipulata* (Hutch. & Dalziel) Lambinon, incl. fa. *hypsophila* (Hauman ex Lambinon) Lambinon – Icon.: Friis & Immelman in Fl. south. Afr. 9, Urticaceae: 16, 2001; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 445, 2008.

syn.: *P. macrodonta* Bak.; *P. comorensis* Engl.; *P. worsdellii* N. E. Br.; *P. ceratomera* Wedd., incl. var. *mildbraedii* Engl., var. *stipulata* (Hutch. & Dalziel) Lambinon incl. fa. *hypsophila* Hauman ex Lambinon, and var. *brevinoda* Lambinon (and other forms, cf. Enum. 2: 145, 1992); *P. magambensis* Engl.; *P. stipulata* Hutch. & Dalziel; *P. anivoranensis* Léandri

Perennial herb with prostrate often ± lignified and ascending rather stout stems, radicant at the base, slightly or not ramose 0,3-1,2 m tall; apparently mostly dioecious, or at least each shoot unisexual; stems glabrous, with linear cystoliths and occasionally reddish or orange glands in epidermis; the 2 leaves of a pair ± equal, with large transparent persistent stipules; inflorescences dense sessile glomerules, mostly unisexual.

Chiefly in forest in ravines, by paths and along small streams or other moist habitats, bamboo forest; *Podocarpus latifolius* forest; forest with *Podocarpus latifolius, Olea capensis, Syzygium guineense* at brook; 300-3400 m alt. – Terrestrial or epiphytic.

Very varible in: over all size, colour of indumentum, size and shape of leaves, and size of flowers.

Bioko/Fernando Poo, São Tomé; S. Africa; Comoro Isl., Madagascar (maps in Kew Bull. 44: 569, 1989 and Friis & Immelman, o.c.: 17).

P. sublucens Wedd.; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 255, 2006.

syn.: *P. preussii* Engl.

Annual or ? perennial, delicate, glabrous herb 10-40 cm tall; stems prostrate and ascending, little branched, fleshy, with a few scattered reddish glands and linear cystoliths in epidermis; the 2 leaves of a pair ± equal to very unequal; inflorescences unisexual with few flowers in small clusters on short ± branched peduncles.

Humid rocky blocks in river beds or river sides at the foot of a cascade with mosses, *Selaginella leonensis*, *Argostemma pumilum*, *Streptocarpus elongatus,* etc. (vide Boissiera 32: 258, 1980). – Very humid undergrowth in gallery; with *Cyathea* in ravine; on *Cyathea* in humus at the base of petiole; in compact turf between *Cyathea* on humus-bearing soil; rain-forest; humid, rocky undergrowth in thalweg; on humid gneiss in cascade; sometimes abundant; *Elatostema paivaeanum* grows in the same stations on Mt Nimba; swampy *Raphia* formations; ± 400-1900 m alt.

Bioko/Fernando Poo.

P. tetraphylla (Steud.) Blume, incl. var. *major* Rendle and var. *hypnophila* (Bak.) Léandri – Icon.: Burrows & Willis, Pl. Nyika Plateau: 281, 2005; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 737, 2008.

bas.: *Urtica tetraphylla* Steud.

syn.: *Pilea quadrifolia* A. Rich.; *Adicea tetraphylla* (Steud.) O. Kuntze s. str.; *Pilea hypnophila* Bak.; *P. modesta* Bak.

Annual herb with fleshy pinkish stems, 3-40 cm tall, unbranched or branched from the lower 1-3 nodes, sometimes reaching flowering with the cotyledons persistent; apparently monoecious;

stems glabrous, eglandular, with minute linear cystoliths in epidermis, sometimes from a creeping base; the 2 leaves of a pair equal, but the leaves often increase in size from the base to the top of stem, with decreasing length of petiole upwards; thus leaves ± verticellate at top of plant; inflorescences paniculate, male or female.

Disturbed places in rain-forests; under rocks and in other damp habitats; sometimes as a garden weed; bamboo forest; sometimes epiphytic; "coffee" forest; rivulets and pool side; clearings; *Podocarpus latifolius* forest; rain-forest with *Albizia, Macaranga, Croton, Ocotea,* on moist slope along trail (vide also Boissiera 32: 258, 1980); 650-2800 m alt.

Bioko/Fernando Poo; Madagascar.

P. usambarensis Engl.

Perennial herb with prostrate and ascending glabrous stems, 8-40-70 cm tall; the 2 leaves of a pair ± equal; stipules insignificant; inflorescences unisexual, forming long-pedunculate heads.

Rain-forest; dry montane forest; often along small streams; base of trunk in forest (epiphytic); bambusetum; sometimes in sclerophyllous forest; often in deep shade; also on the forest floor; 900-3160 m alt.

Comprises 3 vars.: – var. **usambarensis**, with ovate leaf lamina; – var. **engleri** (Rendle) Friis [syn.: *P. longipes* Engl. 1895, nom. illegit., non Liebmann 1851], with elliptic leaves; – var. **veronicifolia** (Engl.) Friis, with nearly circular leaves. – Some overlap in morphology and distribution exists between the varieties.

SYNONYMS:

Adicea tetraphylla (Steud.) Kuntze = **Pilea tetraphylla**

var. *angolensis* Hiern = **P. angolensis** subsp. **angolensis**

Pilea angolensis sensu Hauman, non (Hiern) Rendle = **Pilea sublucens**

anivoranensis Léandri = **P. rivularis**

ceratomera Wedd., incl. var. *brevinoda* Lambinon, var. *mildbraedii* Engl. and var. *stipulata* (Hutch. & Dalziel) Lambinon incl. fa. *hypsophila* Hauman ex Lambinon = **P. rivularis**

chevalieri R. Schnell = **P. sublucens**

christiaensenii Lambinon = **P. angolensis** subsp.

comorensis Engl. = **P. rivularis**

divaricata Hauman = **P. angolensis** subsp. **angolensis**

elatostematifolia Hauman = **P. johnstonii** subsp. **kiwuensis**

engleri Rendle, incl. fa. *contracta* Hauman = **P. usambarensis** var. **engleri**

hypnophila Bak. = **P. tetraphylla**

johnstonii Oliv. var. *heterophylla* T. C. E. Fr. = **P. johnstonii** subsp. **johnstonii**

var. *runssorensis* Engl. = **P. johnstonii** subsp. **johnstonii**

kiwuensis Engl. = **P. johnstonii** subsp.

longipes Engl. = **P. usambarensis** var. **engleri**

macrodonta Bak. = **P. rivularis**

magambensis Engl. = **P. rivularis**

mildbraedii (Engl.) Engl.= **P. rivularis**

modesta Bak. = **P. tetraphylla**

muscosa Lind. = **P. microphylla** (introd.)

preussii Engl. = **P. sublucens**

procumbens A. Peter = **Laportea ovalifolia**
quadrifolia A. Rich. = **P. tetraphylla**
stipulata Hutch. & Dalziel = **P. rivularis**
veronicifolia Engl. = **P. usambarensis** var.
worsdellii N. E. Br. = **P. rivularis**

POUZOLZIA / *6*

Thirty-six species recognized by Wilmot-Dear & Friis (2006). Many are often difficult to distinguish (cf. also under **Boehmeria**).

Pouzolzia peteri: all original material from 1926 destroyed; never recollected.

KRAVTSOVA, T. I. & al. (2003). Morphology and anatomy of fruits in Pouzolzia (Urticaceae) in relation to taxonomy. *Kew Bull.* 58: 297-327.

WILMOT-DEAR, C. M. & I. FRIIS (1996). The New World species of Boehmeria and Pouzolzia (Urticaceae, tribus Boehmerieae). A taxonomic revision. *Op. Bot.* 129: 1-103.

WILMOT-DEAR, C. M. & I. FRIIS (2006). The Old World species of Pouzolzia (Urticaceae, tribus Boehmerieae). A taxonomic revision. *Nord. J. Bot.* 24: 5-111.

Pouzolzia denudata De Wild. & Th. Durand – Icon.: Nord. J. Bot. 24: 41, 2006.

syn.: *P. andongensis* Hiern; Enum. 2: 145, 1992.

Erect herb or sarmentous "liane" or undershrub 0,3-2(-3) m tall, sometimes trailing at the base and radicant; stem golden brown, little ramose, ± woody but brittle, glabrous at the base, with erect hairs towards the apex, very tenacious, 3 mm thick, growing in dense masses; leaves ± ovate 4-10 × 2-5 cm, with long petiole, glabrous to hairy; flowers unisexual, mixed in the axillary inflorescences; female flowers unique in the genus by their golden gleaming perianths.

Very common in forest regions; rain-forest; way sides; scrub after cultivation; "coffee" forests and with other cultivated plants: cocoa, banana-tree; old clearings; secondary vegetation; forest edges; by streams; bushy rocky places; 0-1050 m alt.

Bioko/Fernando Poo.

Similar to certain less tomentose forms of *P. mixta* var. *mixta* in Uganda-Ethiopia where the two species overlap.

P. fadenii Friis & Jellis

syn.: *P. bracteosa* Friis

Annual semi-succulent herb 0,1-1 m tall with thin, branching root-system; smaller plant with one main stem, larger plants branching from base, erect or somewhat decumbent; main stems usually with (few-) many greatly reduced side-branches only up to 0,5 (-1,5) cm long bearing inflorescences and much reduced leaves, otherwise unbranched or with a few "normal" branches; "normal" stems slender in apical part, 0,7-0,9 mm Ø with sparse to abundant spreading short fine hooked hairs, later glabrescent; leaves gradually smaller upwards the stem and of different form towards apex, lower ones ovate (8 × 3,5 cm) with dentate margins, upper ones narrower, often entire; leaves on reduced lateral shoots bract-like; inflorescences axillary, mainly on the reduced side-branches, bisexual with 1-10 male flowers and 1-few female ones.

Rain- and riverine forests; alluvium near river; 0-220 m alt.

Similar to small specimens of *P. parasitica,* but more slender, annual, and with variable leaf size.

Seems to be rare, but is probably overlooked.

P. guineensis Benth., incl. var. *abyssinica* (A. Rich.) Rendle; but excl. var. *madagascariensis* Weddell *(= P. boiviniana)* and var. *seyrigii* Léandri *(= P. weddellii).* – Icon.: Fl. Cameroun 8: 187, 1968; Nord. J. Bot. 24: 41, 2006; Akoegninou & al., Fl. analyt. Bénin: 981, 2006; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 255, 2006.

syn.: Enum. 2: 145, 1992.

Annual or short-lived perennial herb 0,1-1(-2) m tall, lignified at base, branched from the base or throughout, pubescent in the upper part, mixed with sparse to abundant long erect hairs; stems erect or ascending, terete, greenish (or reddish), often with few-many fleshy reduced flower-bearing side branches (to 5 mm long) bearing bract-like leaves; leaves (narrowly) ovate, entire in lower part of main stem, in size gradually smaller upwards, apex long-acuminate; upper leaf surface with small conspicuous cystoliths and few bulbous-based hairs, lower surface often with whitish arachnoid tomentum; inflorescences bisexual of few male and female flowers.

Secondary forests; riverine forest in savanna areas; humid wooded grassland; open places: lake sides, forest edges and clearings, way sides, villages, rubbish; gregarious, very common; in shade under trees; sometimes among rocks; rocky hills, granitic screes; often associated with the forest-wooded grassland ecotone; plantations of coffee, cocoa, banana-tree, etc.; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* 0-1300 m alt.

Very variable; the extremes have been named *P. guineensis* and *P. abyssinica.*

Bioko/Fernando Poo; São Tomé, Principe. – Not in the Comoro Isl. ["var. *madagascariensis* Weddell" = **P. boiviniana** (Blume) Wedd., nor in Madagascar ["var. *seyrigii* Léandri" = **P. weddellii** Léandri].

Leaves used as vegetable (Dikosi, Herbs Ghana: 226, 1998).

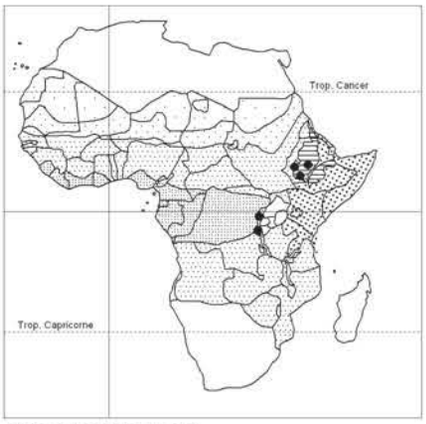
Can be confused with the sympatric *P. denudata,* but distinguished from the latter by the hooked hairs on male perianth and the greenish coarse-hairy (not golden, glabrous) female perianth.

P. mixta Solms-Laub. 1864 (1867; see note in Nord. J. Bot. 124: 50, 2006). – Icon.: Friis & Immelman in Fl. south. Afr. 9, Urticaceae: 18, 2001 (var. **mixta**); Nord. J. Bot. 24: 48, 2006.

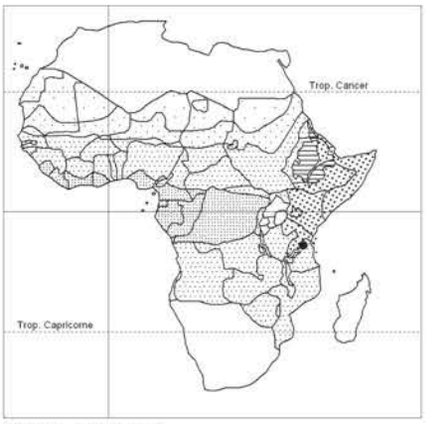
Shrub, erect or ± scrambling, 0,9-3(-5) m tall; stems lignified with wide spongy pith or hollow centre, ultimate branchlets ± 1,5 mm thick; bark longitudinally striate, greyish- or reddish-brown, inflorescence- and leafscars prominent, especially on young stems; dense curved or arachnoid hairs on the young parts, later glabrescent; leaves mostly broadly ovate, gradually smaller towards apex of stem, upper surface dark green with abundant prominent cystoliths and stiff hairs (± velvety texture), lower surface with dense arachnoid whitish tomentum; inflorescences in axils of fallen and existing leaves, male or bisexual.

Wooded grassland, especially along edges of riverine forest or on rocky outcrops (volcanic, limestone, granitic); shady forest; open deciduous woodland; wooded ravines; riverine thickets; sometimes on sand; 100-1900 m alt.

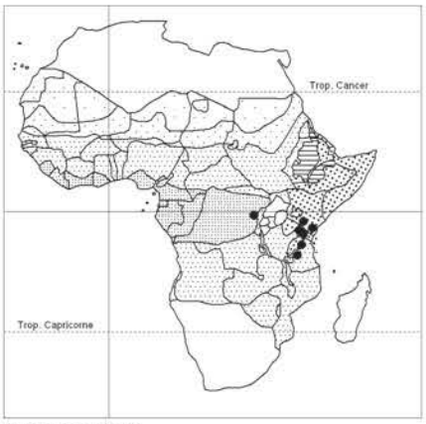
Variable in size and indumentum of leaves.



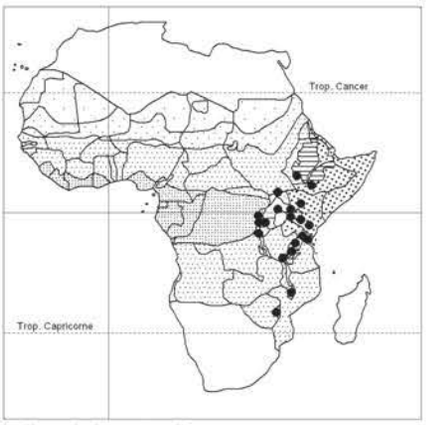
Pilea bambuseti



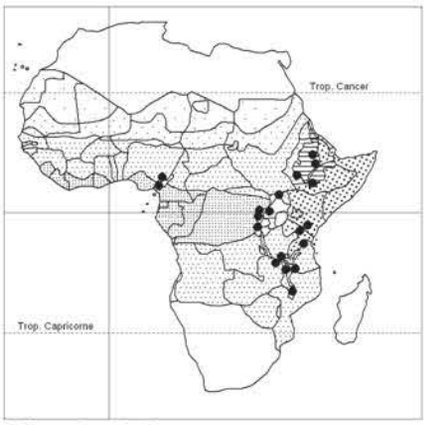
Pilea goetzei



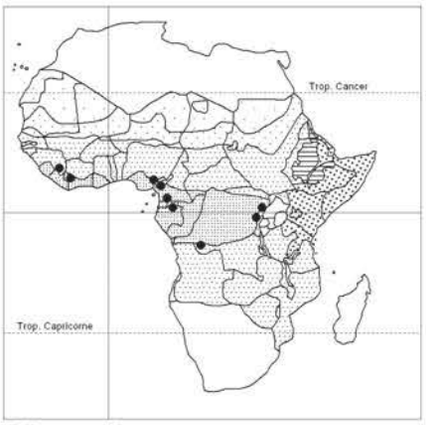
Pilea holstii



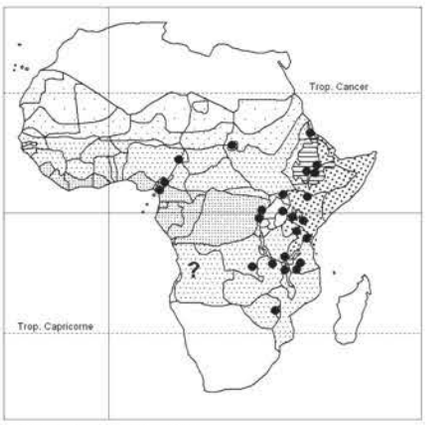
Pilea johnstonii



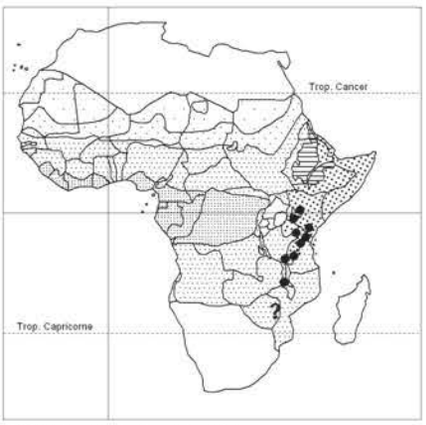
Pilea rivularis



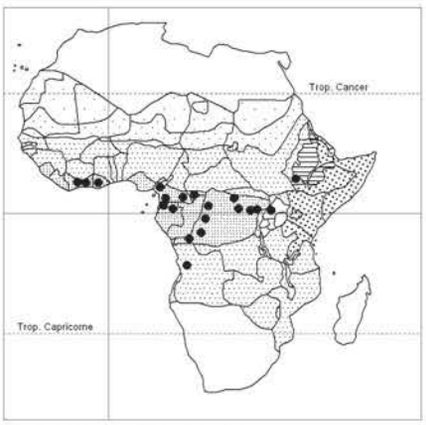
Pilea sublucens



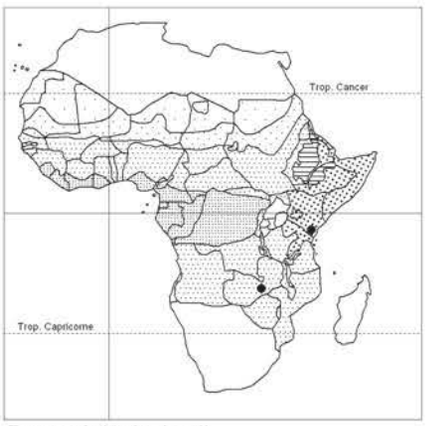
Pilea tetraphylla



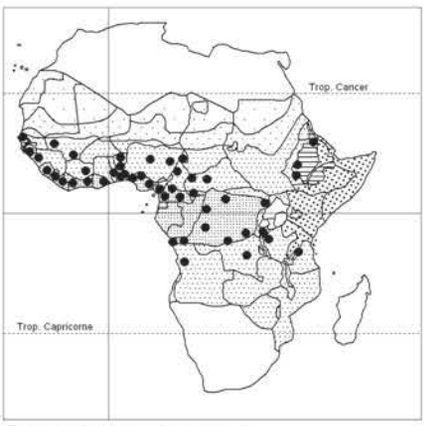
Pilea usambarensis



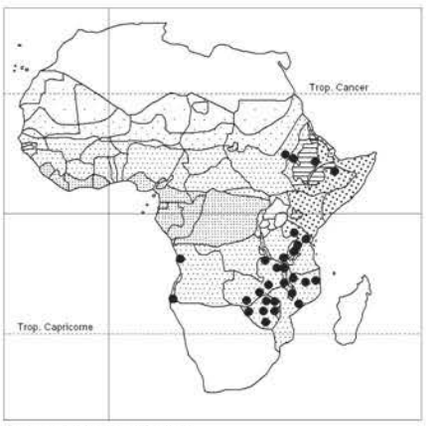
Pouzolzia denudata



Pouzolzia fadenii



Pouzolzia guineensis



Pouzolzia mixta

Namibia, S. Africa, Botswana; Madagascar; Yemen (full map in Kew Bull. 39: 591, 1984; Nord. J. Bot. 24: 52, 54, 2006; also Friis & Immelman, o.c.: 19).

Comprises 2 vars: – var. **mixta** [syn.: *P. hypoleuca* Wedd.; *Pipturus integrifolia* Baker 1882, non *Pouzolzia integrifolia* Dalzell 1851 = *P. hirta* (Blume) Hassk.; *Pouzolzia baronii* Léandri; *P. arabica* Deflers; *P. huillensis* Hiern; *P. fruticosa* Engl.]; – var. **shirensis** (Rendle) Friis & Wilmot-Dear [bas.: *P. shirensis* Rendle] differs from var. **mixta** in lack of a tomentose indumentum on the leaf underside; restricted of S Malawi in woodland at low alt.

Disjunction Ethiopia-Tanzania.

P. parasitica (Forssk.) Schweinf. – Icon.: Wilmot-Dear & Friis in Op. Bot. 129: 64, 1996; Fl. Cameroun 8: 191, 1968.

syn.: Enum. 2: 145, 1992; *P. procridioides* (Wedd.) Wedd., incl. var. *hirsuta* Wedd.; *P. phenacoides* Killip

Erect or ascending perennial herb 0,8-3 m tall, sometimes scrambling, often with slender shoots from a woody base, which may be to 50 mm Ø; stems of ± prostrate forms often rooting at lower nodes; bark brown, pubescent to hirsute or with long dense patent hairs; leaves ovate to elliptic-ovate (8-12 × 4-7 cm) (crenate-)serrate, upper surface with fine appressed hairs and numerous cystoliths, lower surface with long spreading hairs; inflorescences with numerous male flowers (lower parts of flowering axes) or few female flowers in upper parts of axes, intermediate inflorescences mixed.

Wide range of habitats: riverine forest, evergreen and deciduous bushland, and derived vegetation types; *Brachystegia* woodland; along paths; stream edges; in grassland along rivers; between rocks in moist woodland and wooded grassland; with *Pilea tetraphylla* into humid cracks on doleritic cliff; old clearings; rain-forest with *Albizia, Macaranga, Croton, Ocotea;* "coffee" forest and other plantations; usually in shade of dense vegetation; often on termite hills; (800-)900-2800 m alt.

S. Africa, Swaziland; Yemen; tropical America from Guatemala, Nicaragua, Costa Rica, Colombia, Peru, Bolivia; apparently rare here (map in Op. Bot. 129: 68, 1996).

P. peteri Friis – Icon.: Feddes Repert. Nov. Sp., Beibl. 40, 2(1): tab. II 12, fig. 2 a-i, 1932.

Perennial herb to 1,5 m long; creeping basal parts to 30 cm long, 2 mm thick, with bundles of roots; stem erect, one or a few from the rhizome, branching only in the lower ¼, these branches with leaves only; main stem angular, densely pubescent; leaves usually whorled, brittle, (narrowly) ovate, 4 × 1 cm, with entire margins; inflorescences bisexual axillary clusters.

Humid grassland, along streams; 960-1370 m alt.

All material of this species in herbaria would appear to have been destroyed in 1943 by bombing on Berlin. Collected in 1926. It has never been recollected. The species belongs to a group of taxa widespread in tropical Asia (fide Friis, Fl. Trop. E. Afr., Urticaceae: 52, 1989).

SYNONYMS:

Margarocarpus procridioides Wedd. = **Pouzolzia parasitica**
schimperianus Wedd., nom. illegit. = **P. guineensis**
Pouzolzia abyssinica (A. Rich.) Blume = **Pouzolzia guineensis**
andongensis Hiern = **P. denudata**
arabica Deflers = **P. mixta** var. **mixta**

batesii Rendle, excl. specim. Bates 214 = **P. denudata**
bracteosa Friis = **P. fadenii**
conulifera Friis & Jellis = **Phenax sonneratii**
cordata Peter 1932, non Bennett 1838 = **Pouzolzia peteri**
dewevrei De Wild. & Th. Durand = **P. guineensis**
erythraeae Schweinf. = **Didymodoxa caffra**
flaccida A. Rich. = **Australina**
fruticosa Engl. = **Pouzolzia mixta** var. **mixta**
golungensis Hiern = **P. guineensis**
guineensis Benth. var. *madagascariensis* Wedd. = **P. boiviniana** (Madag.)
var. *seyrigii* Léandri = **P. weddellii** (Madag.)
guineensis auct, (Fl. W. Trop. Afr., ed. 2, 1: 622, 1958, p.p.) = **P. denudata**
huillensis Hiern = **P. mixta** var. **mixta**
hypoleuca Wedd. = **P. mixta** var. **mixta**
pauciflora (Steud.) A. Rich. = **Droguetia iners** subsp. **iners**
phenacoides Killip = **Pouzolzia parasitica**
piscicelliana Buscal. & Muschl. = **Didymodoxa caffra**
procridioides (Wedd.) Wedd., incl. var. *hirsuta* = **Pouzolzia parasitica**
shirensis Rendle = **P. mixta** var.

PROCRIS / *1*

Procris crenata C. B. Robinson – Icon.: Fl. Trop. E. Afr., Urticaceae: 43, 1989.

Herbaceous plant, perennial, with short, thick, fleshy rhizome, 2 cm Ø and more; stem fleshy, erect, radicant at base, generally not ramose, 20-50 cm tall or more, 15-20 mm Ø when fresh; ? monoecious; leaves at base opposite, very unequal in the pair, soon falling; stipules fused; large-leaf lamina lanceolate, 7-15 × 1-2,5 cm, small one 8 × 2 mm; male inflorescence (rare) a single few-flowered cluster; female clusters with short peduncles on peduncle 1 cm long.

Rain-forest; epiphytic (sometimes facultative) on trunks and larger branches in deep shade; less common on the ground or epilithic; evergreen forests; riversides; widespread but apparently rather rare; 800- ± 1900 m alt. (Biedinger & E. Fischer in Ecotropica 2: 121-142, 1996).

Bioko/Fernando Poo; São Tomé, Annobon, Principe; Madagascar, Mascarene Isl.; tropical Asia as far east as the Philippines.

In Angola without locality; Guinea?

SYNONYMS:

Procris hypoleuca Steud. = **Debregeasia saeneb**
obovata Wall. ex Royle = **Lecanthus peduncularis**
peduncularis Wall. ex Royle = **L. peduncularis**
wightiana sensu Hauman (Congo belge), non Wall. ex Wedd. = **Procris crenata**

URERA / *16*

About 35 species in tropical America, Africa-Madagascar, Pacific Islands. Extremely difficult, with many transitional forms.

A few species imperfectly known, and only few herbarium specimens available: *Urera cuneata, U. gabonensis, U. mannii, U. talbotii.*

Urera batesii Rendle

syn.: *U. benthamiana* Wedd. in sched.; ? *U. hypselodendron* (Hochst. ex A. Rich.) Wedd. var. *platyrrhachis* Hauman, nom. invalid.

Shrub, trailing or climbing by rootlets; stems slender, purplish, 6 m long, unarmed, glabrous, woody. Whole plant, incl. the fruit very urticant.

On rocks; forest; 1-200 m alt.

Bioko/Fernando Poo. – Zaire?

Few collections known from mainland Africa.

U. cordifolia Engl.; Jacques-Félix & Rabéchaut, Agron. Trop. 3: 355, 1948.

Climber to 8-10 m long, with purplish branches armed with numerous compressed elongated-triangular, 2-3 or more forked spines ending in stinging hairs; flowering shoots 5,5-11 mm thick; stem ± pentagonal or starry at the base ± 3 cm Ø with sometimes 5 crests with suberose protuberances; leaves alternate, ovate-orbicular, 16-27 × 11-21 cm with long petiole (7-23 cm); flowers numerous in axillary, branched panicles 10-17 cm long, with short stinging hairs. Dioecious, very rarely monoecious.

Common in the rain-forest zone; scrub on old cultivations, way sides; stream sides; in thickets at forest edges; 1-1440 m alt.

Principe ?

Urera gabonensis Pierre, nom. provis. invalid. in sched. – Icon.: Fl. Cameroun 8: 97, 1968, resembles specimens of *U. cordifolia* from Cameroon and Gabon in the following characters: very young shoots covered with a dense ferruginous pubescence, leaves elliptic to suborbicular or obovate (20 × 12 cm) with rounded-emarginate base, margins entire or rarely crenulate-toothed towards the rounded apex with a short triangular acumen, lamina thin (Letouzey 3774, 3818, 4407, collected on streamsides). Or it is near *U. talbotii* known from only 2 specimens.

The complex *U. batesii-U. cordifolia-U. gabonensis-U. talbotii* is unclear, and studies in situ are needed.

U. cuneata Rendle; Hawthorne & Jongkind, Woody pl. W. afric. forests: 256, 2006.

Liane with stout, terete, sparsely armed stem with simple slender columnar protuberances bearing short stinging hairs, and also hispidulous. Very distinctive plant, at once recognised by the wedge-shaped leaves 15-20 × 9-12 cm, petiole 1,2 cm long, margin denticulate.

Forest.

Only known from 2 specimens?

U. flamigniana Lambinon

Liane reaching 5-8 m in height with rounded stem or slightly pentagonal in section, to 3 cm Ø at base; bark smooth with epidermal erect, conical prickles 1-2 mm long and a dense to very dense golden brown pubescence.

In the rain-forest zone; savannas near forest; fallow land.

U. gravenreuthii Engl.; Akoegninou & al., Fl. analyt. Bénin: 982, 2006 (Wageningen).

syn.: ? *U. hypselodendron* sensu Hauman, Fl. Congo belge 1: 181-182, 1948 quoad specim. Louis 7686, 11114; *U. rigida* sensu F.W.T.A., ed. 2, 1(2): 618, 1958 quoad specim. Dalziel 8194.

Liane reaching 4,5-8 m in height; branches unarmed, reddish to reddish-green, angular when old, pubescent or puberulous when young.

Forest; 700-1800 m alt.

Nigeria? (Dalziel 1021); Angola? (Gossweiler 13879).

The delimitation of the species *U. flamigniana-U. gravenreuthii-U. cordifolia-U. mannii* is unclear, and it is difficult to separate them. More and complete collections are needed, with thorough observations in situ.

U. hypselodendron (Hochst. ex A.Rich.) Wedd., excl. var. *flamigniana* (Lambinon) Hauman – Icon.: Fl. Trop. E. Afr., Urticaceae: 8, 1989; Beentje, Kenya trees, shrubs & lianas: 334, 1994; Burrows & Willis, Pl. Nyika Plateau: 281, 2005, Puff & Sileshi Nemomissa, Pl. Simen: 107, 2005; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 283, 2008.

syn.: *U. schimperi* Wedd., nom. illegit.; *Urera crenulata* Engl.

Liane climbing to a height of 3-25 m or more; stems semi-succulent, with numerous adventitious roots; bark of young stems reddish-brown, pubescent to glabrescent, without protuberances and stinging hairs but with numerous large leaf-scars; older stems with glabrous, smooth or striate, reddish-brown corky bark, usually not peeling; leaves elliptic to ovate, 5-16 × 2,5-10 cm, ± pubescent; flowers small, green, in pink-orange paniculate unisexual slightly urticant inflorescences; fruit orange.

Common in clearings of rain-forest and dry evergreen forest, along forest edges, riverine or ravine forests; sometimes climbing on isolated trees left in farmland; *Podocarpus latifolius, Dombeya* open forest; *Podocarpus latifolius-Syzygium* forest; bamboo vegetation; 1000-2950 m alt.

Distinctive by the 4-lobed female perianth (very unequal, 2 outer short + 2 inner subcircular, longer) but often confused with *U. flamigniana* (so in Fl. Congo belge 1: 182, 1948 and Troupin, Fl. Rwanda 1: fig. 30/2 A-C, 1978; cf. Fl. Trop. E. Afr., Urticaceae: 9, 1989).

According to Burkill, Useful pl. W. trop. Afr., ed. 2, 5: 242, 2000, reported from Guinea-Bissau (identification correct?, or introduced?; the bark yields a strong fibre).

U. keayi Letouzey – Icon.: Hawthorne & Jongkind, Woody pl. W. Afric. forests: 257, 2006 (leaf).

syn.: *U. repens* sensu F.W.T.A., ed. 2, 1(2): 618, 1958 quoad specim. Baldwin 6255, Irvine 1858, Morton GC 7811.

Very often a climbing plant, sometimes trailing. Near *U. repens* but leaves ovate, male inflorescences paniculiform to 15 cm long on a peduncle to 4 cm long (not corymbiform on a peduncle to 18 cm); infrutescences speading, 8-15 cm Ø (not contracted, 5-6 cm Ø).

Under shade in undergrowth of rain-forest but also in open places: way sides, coffee plantations, etc.; common.

[**U. mannii** (Wedd.) Benth. & Hook. f. ex Rendle, incl. var. *paucinervis* Rendle]

bas.: *Scepocarpus mannii* Wedd.

Shrub, small tree or liane, 3-6 m long; branches not armed with prickle-like protuberances, reddish or reddish-green, young parts pubescent or puberulous; leaves smooth above, densely setose-pubescent on nerves below, lamina 10-30 cm long, petiole 13 cm.

Forest (liane) or open vegetation (tree or shrub).

It is very difficult to decide if *U. mannii* is restricted to Principe, São Tomé, Annobon and ? Bioko/Fernando Poo and or if it occurs also from Liberia to W Cameroon (? confusion with *U. rigida).* It is maintained by Burkill, Useful pl. W. trop. Afr.: 243, 2000; by Akoegninou & al., Fl. analyt. Bénin: 982, 2006; and preliminary by Hawthorne & Jongkind, Woody pl. W. Afric. forests: 256, 2006.

Not mapped.

U. oblongifolia Benth. – Icon.: Hawthorne & Jongkind, o.c.: 257 (leaf).

syn.: *U. sarmentosa* A. Chev.; *Fleurya sarmentosa* A. Chev.; *Urera obovata* Benth. var. *longifolia* Wedd.; *U. liberica* Engl. ex Mildbr.

Liane, glabrous, 15-20 m tall, climbing by adventitious roots on the slender almost unarmed reddish stems; leaves ± entire, thin, with few white hairs, without urticant hairs on petiole, petiole slender ca 10 cm long; leaves mostly on short side shoots; flowers with urticant hairs.

Forests, primary and secondary; epiphytic; regrowth; forest gallery with *Parinari excelsa*; plateau with *Salacia alpestris, Cissus petiolata, Justicia flava;* 475-1600 m alt.

U. obovata Benth., excl. var. *longifolia*Wedd. *(= U. oblongifolia)* and excl. var. *jehefo* Hiern – Icon.: F. Busson, Pl. alimentaires Ouest africain: 125, 1965.

Liane; stems ramose, armed with many short prickle-like protuberances, to 30 m tall; leaves not scabrid above, ± puberulous beneath, 8-11 × 3,5-6 cm, margins crenate, petiole slender.

Swamp with *Pteris togoensis, Enneastemon barteri, Nervilia* sp.; forest and forest regrowth; 475-900 m alt.

U. repens (Willd.) Rendle; Bull. Soc. Roy. Bot. Belg. 91: 198, 1959. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 983, 2006.

bas.: *Laportea* ? *repens* Willd.

syn.: *Urera geophila* Mildbr., nom. nud.

Perennial creeping herb, several m long, with thin woody radicant stems to 5 mm Ø; bark with crests and longitudinal, irregular furrows and epidermal appendices, 2 mm long, flattened, sharp-pointed or bifid to multifid, ending in a stinging, deciduous hair; leaf lamina suborbicular, c. 10 cm Ø , on a long (10-15-30 cm) erect petiole, veins often reddish; flowers pinkish, unisexual, in erect long-pedunculate panicles borne in the axils of fallen leaves. – Very urticant.

Rain-forest on dry ground; often abundant in *Raphia* formations; on humid rocks; forming mats of several m^2; 1-600 m alt.

Bioko/ Fernando Poo.

Certain specimens cited in Fl. W. Trop. Afr. from Liberia and Ghana belong to *U. keayi* (cf. above under his species).

U. rigida (Benth.) Keay – Icon.: Hawthorne & Jongkind, Woody pl. W. Afric. forests: 254, 257, 2006 (partial).

syn.: *U. elliotii* Rendle

Liane with stout, rather soft stems, to 25 m tall, ramose, sparsely armed with many protuberances tipped with stinging hairs, or with spiny coarse hairs; leaves broad-elliptic, ± scabrid above, sparsely hairy beneath, to 24 × 16 cm, margins crenate, petiole to 13 cm long; fruit red. All parts urticant.

Primary- and secondary forests; wooded ravine; forest gallery; forest edges; secondary scrub on granitic mountain top; epiphytic on base of trunk of *Elaeis guineensis;* humid, swampy hollow with *Nephrolepis biserrata, Culcasia angolensis, Strychnos afzelii;* ± 300-1500 m alt.

? Cameroon (the specimen Dalziel 8184 is possibly *U. gravenreuthii* fide Letouzey, but represents *U. rigida* fide Keay and also fide Cheek).

U. robusta A. Chev. – Icon.: Hawthorne & Jongkind, o.c.: 257 (leaf).

Woody urticant liane, climbing on trees to 15-20 m tall; sometimes an epiphyte; clothed throughout with stinging hairs; younger stems pubescent: leaf lamina ± obovate, 7-14 cm long, scabrid above, sparsely pubescent beneath, margins dentate, petiole to 10 cm long.

Stream sides in forest; 900 m alt.

U. sansibarica Engl. – Icon.: Fl. Trop. E. Afr., Urticaceae: 8, 1989 (partial).

Liane, climbing to 3 m or higher; stems with reddish-brown, sometimes peeling bark, usually (especially on younger parts) with numerous fleshy protuberances to 5 mm long, crowned by a number of stinging hairs; young stems densely pubescent to hirtellous, older stems glabrescent; leaves ovate or elliptic, 7,5-15 × 5-10 cm, white pubescent; flower panicles to 10 cm long.

Over rocks and trees in coastal forest and evergreen scrub; transitional rain-forest; apparently often associated with limestone areas; frequently in forest glades; 5-900 m alt. (? or 1800).

U. talbotii Rendle

Shrub, trailing or climbing by rootlets; stem to 0,6 cm thick, glabrous but profusely armed with simple or forked protuberances which end in very small stinging hairs.

Forest.

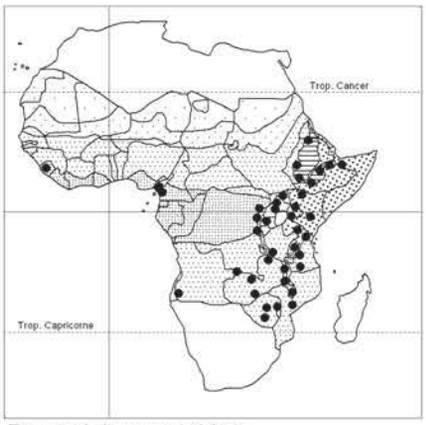
Only known from 2 specimens.

Perhaps conspecific with *U. cordifolia* and *U. gabonensis* (cf. above under *U. cordifolia*) but seems different from *U. batesii.*

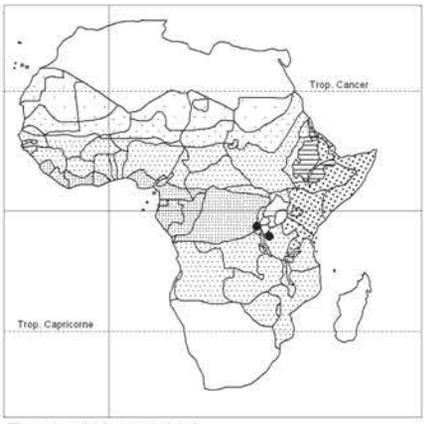
U. thonneri De Wild. & Th. Durand; Jacques-Félix & Rabéchaut, Agronomie trop. 3: 367, 1948.

syn.: *U. henriquesii* Engl.; *U. dewevrei* De Wild. & Th. Durand; *U. obovata* Benth. var. *jihefo* Hiern excl. specim. Welwitsch 6294; *U. dinklagei* Engl.; *U. benthamii* Wedd. in sched.

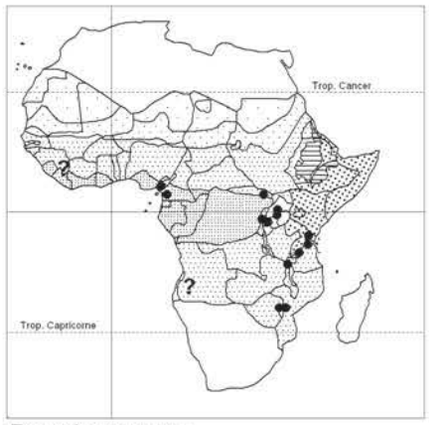
Subshrub or liane, sometimes epiphytic on old trunks, to 6 m in height; stem to 2,5 cm Ø very ramose, with drooping, angular, often hollow branchlets 2-3 mm Ø, and with adventitious roots; armed with stinging hairs, or unarmed; bark (greenish) purplish, furrowed; leaves elliptic-obovate, 9-16 × 4-8 cm, long-acuminate, brittle, margins entire, petiole 3-7 cm long; inflorescences unisexual, borne on older branches in axils of fallen leaves, paniculate, long-pedunculate.



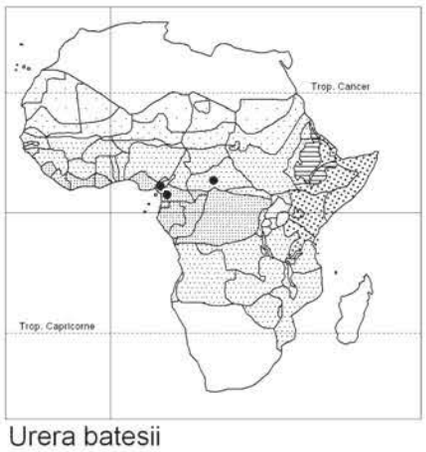
Pouzolzia parasitica



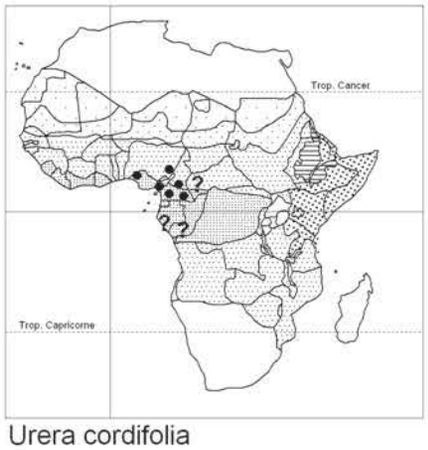
Pouzolzia peteri



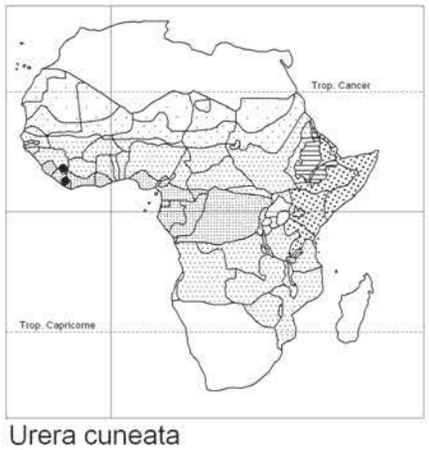
Procris crenata



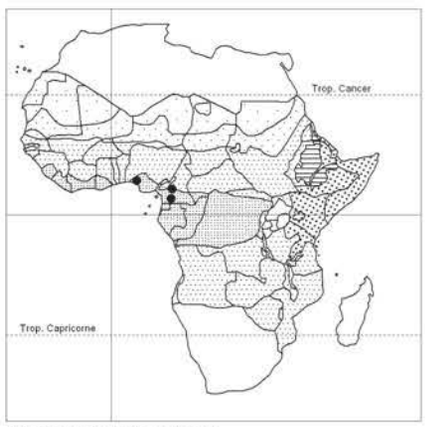
Urera batesii



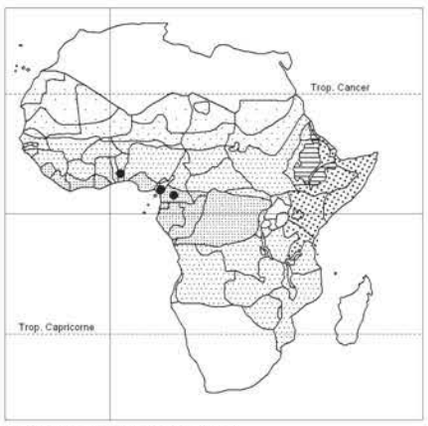
Urera cordifolia



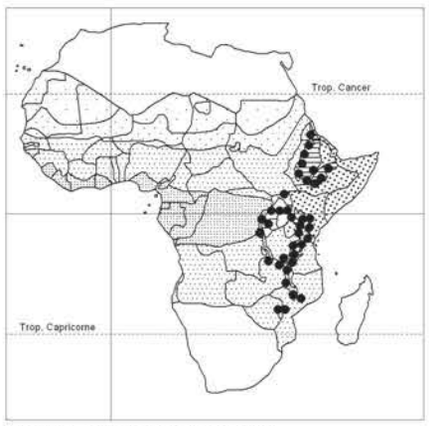
Urera cuneata



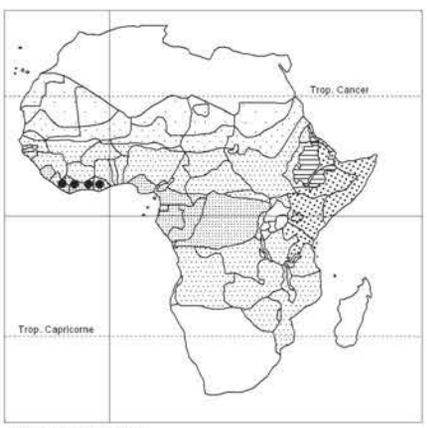
Urera flamigniana



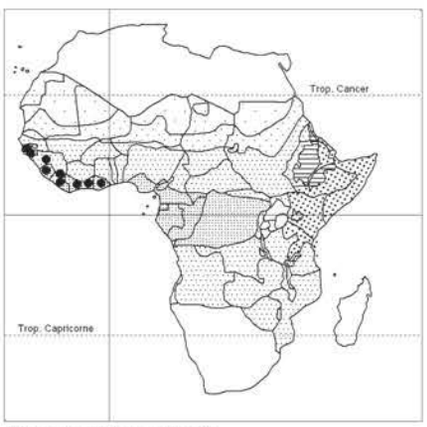
Urera gravenreuthii



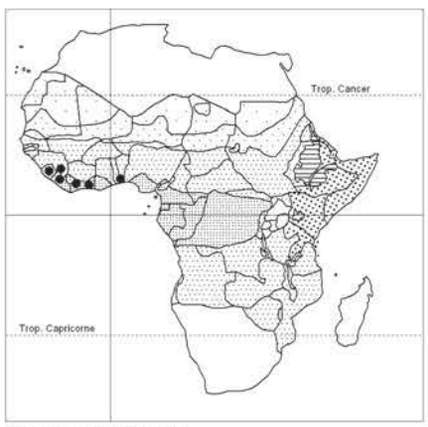
Urera hypselodendron



Urera keayi



Urera oblongifolia



Urera obovata

Dense or ± open rain-forests; secondary forests, cocoa plantations; stream sides; swampy places; *Raphia* vegetation, etc.; rather common; old clearings; 450-1200 m alt.

Bioko/Fernando Poo.

U. trinervis (Hochst ex Krauss) Friis & Immelman – Icon.: F. Busson, Pl. alimentaires Ouest africain: 124, 1965 (as *"U. cameroonensis");* Friis & Immelman in Fl. south. Afr. 9, Urticaceae: 6, 2001; Akoegninou & al., Fl. analyt. Bénin: 982, 2006 (sub nom. *U. cameroonensis);* Hawthorne & Jongkind, Woody pl. W. Afric. forests: 257, 2006 (leaf); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 283, 2008.

syn.: *U. arborea* De Wild. & Th. Durand; *U. laurentii* De Wild.; *U. gilletii* De Wild.; *U. woodii* N. E. Br.; *U. usambarensis* Rendle; *U. cameroonensis* Wedd., incl. var. *laurentii* (De Wild.) Rendle; *U. acuminata* Gaud. var. *cameroonensis* (Wedd.) Léandri, excl. specim. cit.; *U. obovata* Benth. var. *jihefo* Hiern quoad specim. Welwitsch 6294.

Liane, climbing to 30-60 m or more; stems softly woody, semi-succulent, to 10 cm Ø at base; bark grey to brownish-black, longitudinally striate, glabrous, rarely pubescent, with large leaf scars on young branches but very rarely with raised protuberances; pith wide, spongy, or stems hollow in centre; sometimes with adventitious roots on stems; leaves fleshy, ovate or elliptic, 4-15 × 3-8 cm, ± glabrous, margins entire; flowers yellowish in male or female panicles 3 cm long.

Open places in rain-forest or half-deciduous forest; regrowths; young secondary forest; stream sides; wooded thickets; scrubby edges of meadows in forest; swamp forest; clearings; sometimes sprawling over rocks or among boulders; 1-1600 m alt. – Partially epiphytic.

São Tomé; S. Africa. Liberia? Also Ethiopia?

Grown near villages (Zaire). With copious clear exudate when cut.

SYNONYMS:

Urera acuminata Gaud. var. *cameroonensis* (Wedd.) Léandri, p.p. = **Urera trinervis**

arborea De Wild. & T. Durand = **U. trinervis**

benthamiana Wedd. in sched. = **U. batesii**

benthamii Wedd. in sched. = **U. thonneri**

braunii Engl. = **U. sansibarica**

cameroonensis (Wedd.) Léandri, incl. var. *laurentii* (De Wild.) Rendle = **U. trinervis**

cannabina A. Chev. = **Girardinia diversifolia**

crenulata Engl. = ? **Urera hypselodendron**

dewevrei De Wild. & T. Durand = **U. thonneri**

dinklagei Engl. = **U. thonneri**

elliotii Rendle = **U. rigida**

engleriana Dinter = **Obetia carruthersiana**

fischeri Engl. = ? **Urera sansibarica**

gabonensis Pierre = see under **U. cordifolia**

geophila Mildbr. = **U. repens**

gilletii De Wild. = **U. trinervis**

henriquesii Engl. = **U. thonneri**

hypselodendron (Hochst. ex A. Rich.) Wedd. var. *flamigniana* (Lambinon) Hauman, nom. illegit. = **U. flamigniana**

var. *platyrrhachis* Hauman = ? **U. batesii**

hypselodendron sensu Hauman p.p. = ? **U. gravenreuthii**

laurentii De Wild. = **U. trinervis**

liberica Engl. ex Mildbr. = **U. oblongifolia**

obovata Benth. var. *jihefo* Hiern p.p. = **U. thonneri**, **U. trinervis**

obovata Benth. var. *longifolia* Wedd. = **U. oblongifolia**

radula Bak. = **Obetia radula**

repens sensu F.W.T.A., ed. 2, p.p. = **Urera keayi**

rigida sensu F.W.T.A., ed. 2, p.p. = **U. gravenreuthii**

sarmentosa A. Chev. = **U. oblongifolia**

schimperi Wedd. = **U. hypselodendron**

spicata A. Chev. = **Laportea ovalifolia**

tenax N. E. Br. = **Obetia tenax**

usambarensis Rendle = **Urera trinervis**

woodi N. E. Br. = **U. trinervis**

Scepocarpus mannii Wedd. = **Urera mannii**

URTICA / *2*

About 80 species most of which in N temperate regions and a few in the southern ones.

EDOM, G. (2001). The Nettle, plant of great benefit. *Veld & Flora* 87/3: 130-131.

KAVALALI, G. M. (2003). An introduction to Urtica (botanical aspects). *In:* KAVALALI, G. M., ed., *Urtica: Therapeutic and nutritional aspects of stinging nettles:* 1-11. Taylor & Francis, London & New York.

[**Urtica dioica** L. – Common Nettle]

Erect perennial herb 30-150 cm tall, dark green, dioecious, with a creeping rhizome; all parts with stinging hairs; stipules linear; inflorescences much branched, c. 10 cm long, male and female ones similar.

Introduced weed, also in S. Africa (cf. Friis & Immelman, Fl. South. Afr. 9, Urticaceae: 3, 5, 2001 (with regional map).

Very variable [for subspecies, etc., see M. Weigend, Urtica dioica subsp. cypria, with a re-evaluation of the U. dioica group (Urticaceaea) in western Asia. *Willdenowia* 36: 811-822].

Not mapped.

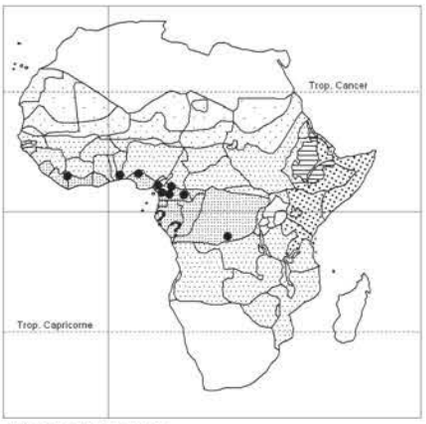
U. massaica Mildbr. – Icon.: Peter, Fl. Deutsch-Ostafr. 2/1: pl. 13, 1, 1932; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 54, 1994.

Erect perennial dioecious herb to 2 m tall, with little branched ± quadrangular stems, 6-7 mm Ø, forming loose clumps from a creeping rhizome; all parts of plant with fiercely stinging hairs 1,5-2 mm long, raised on protuberances ± 1 mm high, otherwise glabrous to puberulous; flowers in pairs of spike-like unbranched racemes 2,5-4,5 cm long.

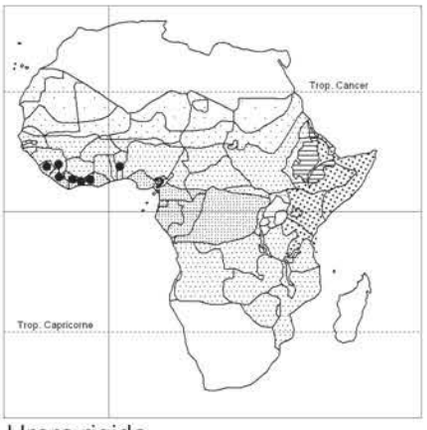
Clearings and natural open glades in rain-forest and moist evergreen bushland; often near human dwellings, especially where cattle are keept; waste land, way sides; wooded gully; sometimes in savanna; 400-3400 m alt.

U. simensis Hochst. ex Steud. – Icon.: Fl. Ethiopia 3: 303, 1989; Puff & Sileshi Nemomissa, Pl. Simen: 107, 2005.

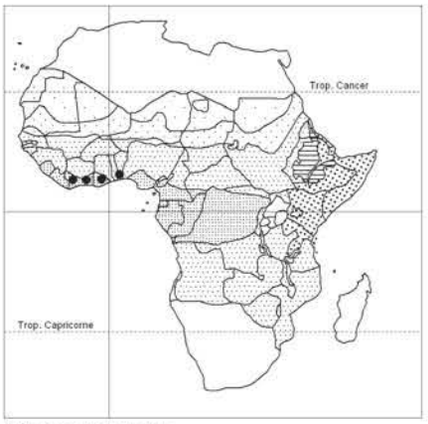
Erect, pale green, dioecious, almost unbranched perennial herb to ± 1 m tall from a creeping rhizome, finely pubescent to glabrescent, with numerous, to 2,5 mm long stinging hairs on lamina,



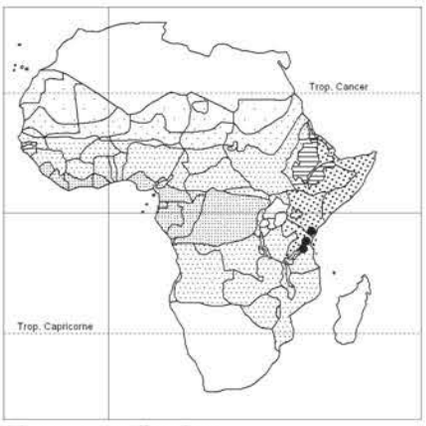
Urera repens



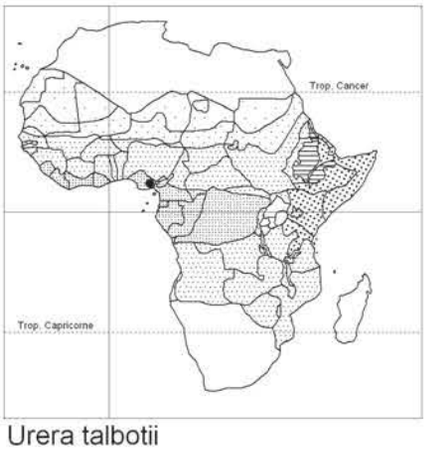
Urera rigida



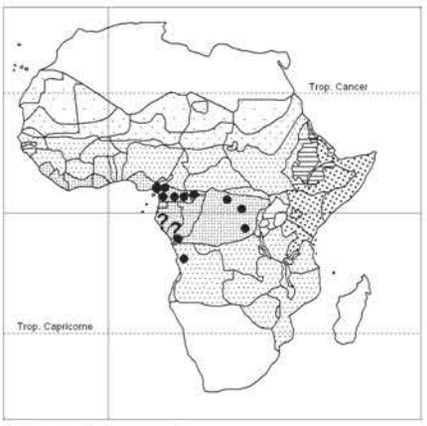
Urera robusta



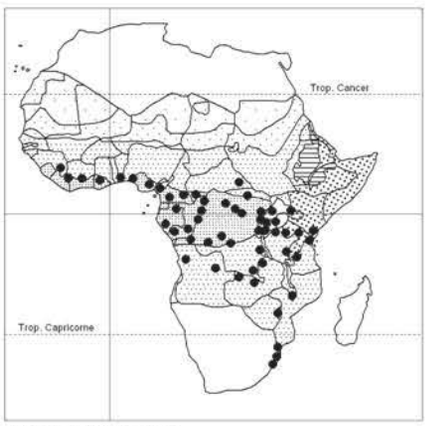
Urera sansibarica



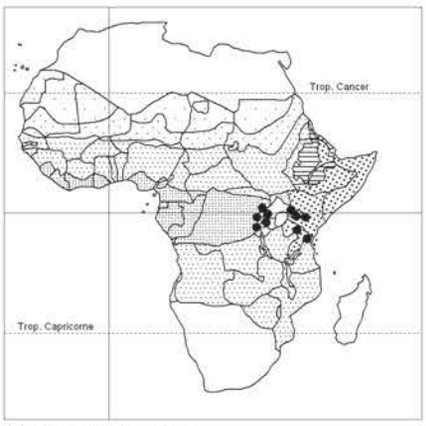
Urera talbotii



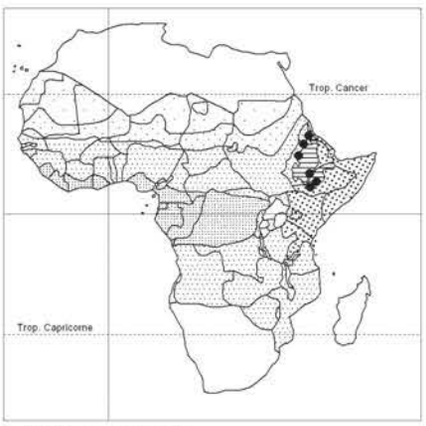
Urera thonneri



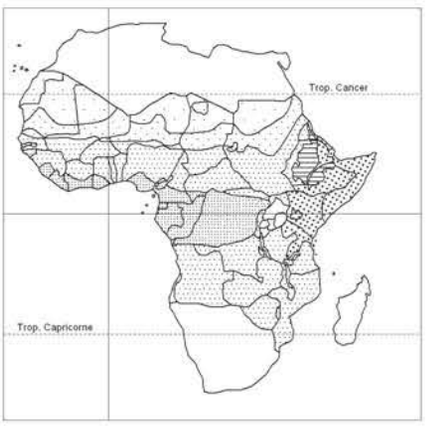
Urera trinervis

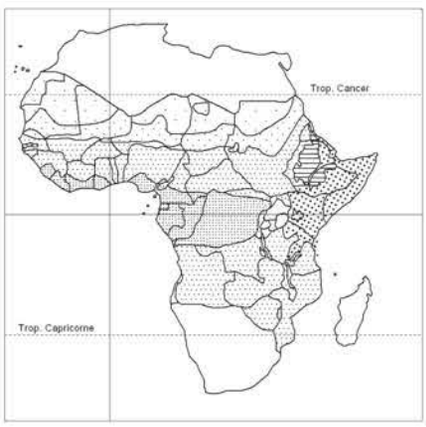


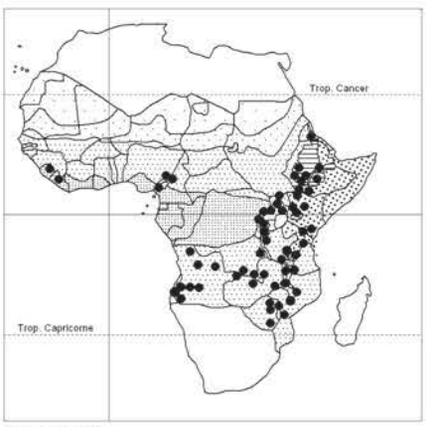
Urtica massaica



Urtica simensis







Ilex mitis

URTICA SIMENSIS

petioles and inflorescences; stipules broadly ovate-triangular; flowers in spike-like unbranched racemes to 5 cm long, 4 at each node.

Grassland; most common in disturbed places, often in large quantities near houses; 1500-3400 m alt.

[**U. urens** L.], excl. var. *iners* Forssk. *(= Droguetia iners).* – Icon.: Boulos, Fl. Egypt 1: 19, 1999.

Annual erect monoecious herb to 60 cm tall, often branched from the base; leaf lamina elliptic with cuneate base; flower panicles clustered in the leaf axils, shorter than petiole, with male and female flowers mixed; plant glabrous except for the stinging hairs.

Weed of cultivations, roadsides, in villages; at medium and high altitudes.

Cosmopolitan in temperate regions. Also in S. Africa (map in Friis & Immelman, o.c.: 5).

Not mapped.

SYNONYMS:

Urtica adoensis Steud. = **Girardinia diversifolia**

aestuans L. = **Laportea**

bullosa Steud. = **Girardinia**

caffra Thunb. = **Didymodoxa**

caffra "alpha" in herb. Thunb. = **Droguetia iners** subsp. **iners**

condensata Steud. = **Girardinia diversifolia**

diversifolia Link = **G. diversifolia**

heterophylla Vahl, nom. superfl. = **G. diversifolia.**

heterophylla D. Don non Vahl = **G. diversifolia**

hypselodendron Hochst. ex A. Rich. = **Urera**

iners Forssk. = **Droguetia iners**

interrupta L. = **Laportea interrupta**

lomatocarpa Steud. = **L. interrupta**

muralis Vahl = **Pouzolzia parasitica**

nummularifolia Sw. = **Pilea** (introd.)

parasitica Forssk. = **Pouzolzia parasitica**

pauciflora Steudel = **Droguetia iners** subsp. **iners**

schimperiana Steudel = **Laportea aestuans**

tetraphylla Steudel = **Pilea**

urens L. var. *iners* (Forssk.) Wedd. = **Droguetia iners**

AQUIFOLIACEAE / *1* g./ *1* sp.

ILEX / *1*

A genus of c. 400 (or 600) species throughout the tropical, subtropical or temperate regions worldwide but absent from N. America. Only one indigenous in Africa S of the Sahara.

DEL PERO MARTÍNEZ, M. & al. (1997). Distribution of Flavonoid Aglycones in Ilex Species (Aquifoliaceae). *Biochem. Syst. Ecol.* 25: 619-622.

LOIZEAU, P.-A. & al. (2005). Towards an understanding of the distribution of Ilex L. (Aquifoliaceae) on a World-wide scale. *Biol. Skr.* 55: 501-520.

ILEX

Ilex mitis (L.) Radlk., incl. fa. *kilimandscharica* Loes., fa. *capensis* (Sond.) Loes., fa. *camerunensis* Loes., fa. *monticola* (Tul.) Loes., var. *kilimandscharica* (Loes.) Loes., and var. *erythraea* Fiori – Friis, Forests & Forest Trees NE Trop. Afr.: 176, 177, map 76 (p. 309), 1992. – Icon.: Robyns in Fl. Congo Belge 9: 111, pl. 11, 1960; Mendes in Fl. Zambes. 2 (2): 354, 1966; Beentje, Kenya trees, shrubs & lianas: 335, 1994; S. Andrews in Bothalia 24: 164, 1994; F. White & al., Evergreen Forest Fl. Malawi: 151, 2001; Loesener in Engler & Prantl, Natürl. Pflanzenfam. 20 b: 65, 1942 (var. *kilimandscharica);* Villiers in Fl. Cameroun 19: 37, 1975; Hutchinson, Botanist S. Africa: 232, 1946; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 280, 2008.

bas.: *Sideroxylon mite* L.

syn.: *Scleroxylum mite* (L.) Willd.; *Myrsine mitis* (L.) Spreng.; *Ilex capensis* Harv. & Sond.; *I. monticola* Tul.; *Prinos lucidus* Aiton; *Chrysophyllum millerianum* Lam.; *Manglilla milleriana* (Lam.) Pers.; *Leucoxylon laurinum* E. Mey., nom. nud.; *Celastrus sieberi* Bernh. in herb. Krauss, nom. nud.

Evergreen shrub (sometimes straggling), or more usually a tree, dioecious, (1,8-)3-18-30(-40) m; trunk 0,3-1(-5,5) m Ø at base, sometimes with buttresses (large trees); bark (whitish) grey, smooth when young, later pustulate and fissured; young branchlets often puberulous; leaves alternate, elliptic to almost round, 2,5-14 cm long, 1,3-5 cm wide, dark green, coriaceous, margin entire or toothed; flowers white in cymes, fragrant; drupe yellow to red, edible. – Honey white, highly rated.

Moist or high rainfall (or rarely dry) upland forest, riverine forest, often beside rivers and streams; upland rain-forest and derived thicket, rain-forest clumps in upland grassland; hillside thicket; *Podocarpus latifolius-Syzygium* open forest and near stream; upland rain-forest with *Albizia, Macaranga, Croton, Ocotea;* 750-3150 m alt.

Extremely variable (leaf shape and size), but easily recognized in the field (thick shining leaves with impressed midrib above).

Bioko/Fernando Poo; Swaziland, Lesotho, S. Africa; Madagascar. – Not in Namibia, Botswana.

Comprises 2 vars.: – var. **mitis;** – var. **schliebenii** Loes. (only in Tanzania, Uluguru Mts.) with small ± round leaves.

Cultivated in Europe as a glasshouse or stove plant before 1816 (fide S. Andrews, Bothalia l.c.).

* * *

Ilex paraguariensis A. St.-Hil., Yerba mate, Paraguay tea, an evergreen tree to 12 m and grey bark, a native of Paraguay, Brazil, Uruguay, Argentina is cultivated in E Africa.

* * *

SYNONYM:

Ilex crocea Thunb. = **Elaeodendron** *(Celastraceae)*

CELASTRACEAE / *11* g./ *55* spp.

(excl. *Brexia*, see *Brexiaceae*, and *Hippocrateaceae).*

"The Celastraceae are a morphologically poorly defined, but natural family…"(Islam & al. in Syst. Bot. 31: 512, 2006). The family is well supported by floral structure features (Bot. J. Linn. Soc. 149: 129-194, 2005; Bot. Žurn. 89: 1385-1402, 2004).

"The Celastraceae sensu stricto have been expanded to include Hippocrateaceae, Stockhousiaceae, *Brexia, Empleuridium,* and *Plagiopteron…* and may need to be expanded further to include Parnassiaceae…". Although monophyly of Celastraceae is well supported, most intergeneric relationships are not" (Islam & al., l.c.).

One species *(Gymnosporia nguruensis)* known only from the type lacking flowers.

* * *

ARCHER, R. H. (1998). Southern African Celastraceae. *Plantlife* 19: 5-8.

ISLAM, M. B. & al. (2006). Phylogeny of the Elaeodendron group (Celastraceae) inferred from morphological characters and nuclear and plastid genes. *Syst. Bot.* 31: 512-524.

LISOWSKI, S. (2009). Flore (angiospermes) de la République de Guinée 1 (texte). *Scripta Bot. Belg.* 41 [p. 120-123].

MATTHEWS, M. L. & P. K. ENDRESS (2005). Comparative floral structure and systematics in Celastrales (Celastraceae, Parnassiaceae, Lepidobotryaceae). *Bot. J. Linn. Soc.* 149: 129-194.

SAVINOV, I. A. (2004). The comparative morphology of reproductive organs in the context of taxonomy of Celastraceae family. *Bot. Žurn.* 89: 1385-1402.

SAVINOV, I. A. (2006). Some morphological basics for a revision of the tribe Celastreae Loes. (Celastraceae R. Br.). *Wulfenia* 13: 207-215.

ALLOCASSINE / *1*

Isolated monotypic genus.

ARCHER, R. H. & A. E. VAN WYK (1998). A taxonomic revision of Allocassine N. Robson (Celastraceae). *S. Afr. J. Bot.* 64: 189-191.

Allocassine laurifolia (Harv.) N. Robson – Icon.: Harvey, Thesaurus capensis 2: pl. 185, 1863 (sub nom. *Elaeodendron* ? *laurifolium);* Archer & Van Wyk, o.c.: 190.

syn.: *Cassine laurifolia* (Harv.) Davison; *Elaeodendron laurifolium* Harv.

Shrub, climbing or scrambling or liane, 3-5 m tall; branches ± flattened and grey when young, eventually becoming terete and dark purplish-red, glabrous; leaves (sub-) opposite, often alternate on young shoots, bluish-green; inflorescences pedunculate, compact; sepals greenish with reddish cilia, petals yellow-green, disc fleshy, entire; fruit red, ellipsoid, 2,5-3,2 × c. 2 cm, with a black large seed.

Evergreen forest, especially in gorges; 120-1600 m alt.

S. Africa, Swaziland.

APODOSTIGMA – See Hippocrateaceae

BEQUAERTIA – See Hippocrateaceae

BREXIA – See Brexiaceae

CAMPYLOSTEMON – See Hippocrateaceae

(CASSINE)

Cassine aethiopica Thunb., incl. var. *burkeana* (Sond.) Loes. = **Mystroxylon aethiopicum**

albivenosa (Chiov.) Cufod. = **Elaeodendron buchananii**

aquifolia Fiori = **E. aquifolium**

buchananii Loes. = **E. buchananii**

crocea (Thunb.) Kuntze = **E. croceum**

engleriana Loes. = **Mystroxylon aethiopicum** subsp. **schlechteri**

glauca (Pers.) Kuntze var. *kamerunensis* Loes. = **Elaeodendron buchananii**

holstii Loes. = **Mystroxylon aethiopicum** subsp. **schlechteri**

lacinulata Loes. = **Elaeodendron schlechterianum**

matabelica (Loes.) Steedman = **E. matabelicum**

oppositus Wall. = **Pleurostylia**

parvifolia E. Mey., nom. nud. = **Elaeodendron zeyheri**

schlechteri (Loes.) Davison = **Mystroxylon aethiopicum** subsp.

schlechteriana Loes. = **Elaeodendron schlechterianum**

schweinfurthiana Loes. = **E. schweinfurthianum**

sp. 1 sensu White 1962 = **E. matabelicum**

stuhlmannii (Loes.) Blakelock = **E. schlechterianum**

transvaalensis (Burtt Davy) Codd = **E. transvaalense**

CATHA / *1*

(Sometimes considered as synonym of *Gymnosporia).*

Monospecific genus. The species *C. cassinoides* is a *Lydenburgia* from S. Africa.

DOLD, T. & M. COCKS (2000). Khat goes to court again. *Plantlife* 23: 11-12.

FRIIS, I. (1993). C. F. Hochstetter's scientific names for G. W. Schimper's early collections of African plants. *Fragm. Flor. Geobot., Suppl.* 2/1: 183-201 [cf. p. 201].

GESS, R. W. (1998). Foglie di resistenza: l'uso della Catha edulis nel Kenya settentrionale e in Etiopia. Leaves of Endurance: the use of Catha edulis in Northern Kenya and Ethiopia. *Eleusis, N. S.* 1: 51-64.

HIRST, M. (2003). Catha edulis e il suo utilizzo: conoscenza locale fra gli Xhosa dell'Eastern Cape (Sud Africa). Catha edulis and its utilization: local Xhosa knowledge in the Eastern Cape (South Africa). *Eleusis, N. S.* 6-7: 3-28.

LEMOINE, J.-P. (2005). Un Paradis artificiel nommé qât. *Garance Voyageuse* 70: 36-39.

LEMORDANT, D. (2001). Le qat. *Bull. Soc. Linn. Provence* 52: 3-12.

ROBINSON, S. (2000). The cost of Catha edulis. *Ingens Bull.* 22: 11-12 (reprinted from *Time,* December 13, 1999).

SAVINOV, I. A. (2006). Some morphological basics for a revision of the tribe Celastreae Loes. (Celastraceae R. Br.). *Wulfenia* 13: 207-215.

VARNECKE, H. (2006). Erythroxylum coca und Catha edulis – Zwei Blattdrogenpflanzen aus Südamerika und Ostafrika. *Gärtner-Bot. Brief* 163/2: 39-42.

VOSSEN, H. A. M. van der (2002). Catha edulis (Vahl) Forssk. ex Endl. *In:* OYEN, L. P. A. & R. H. M. J. LEMMENS, Eds., *Ressources végétales de l'Afrique tropicale. Précurseur* (Traduction de: Plant Resources of Tropical Africa. Precursor, 2002): 56-60. Programme PROTA, Wageningen, Pays-Bas.

CATHA

Catha edulis (Vahl) Forssk. ex Endl. – Icon.: Fl. Pl. Africa 43: pl. 1685, 1974; Abedin & al., Celastraceae, in Chaudhary, Fl. Kingd. Saudi Arabia 2/1: 283, 2001; Dold & Cocks, o.c.: 11; Lemordant, o.c.: 6; Vossen, o.c.: 58; Luksenberg & Nsanzurwimo in Taxonomania 21: 15, 2007 (photos. Rwanda); F. White & al., Evergreen forest fl. Malawi: 184, 2001; Coates Palgrave, Trees south. Afr., ed. 3: ill. 156, 2002.

bas.: *Celastrus edulis* Vahl

syn.: *Catha inermis* J. F. Gmel., nom. illegit.; *Methyscophyllum glaucum* Eckl. & Zeyh.; *Trigonotheca serrata* Hochst.; *Dillonia abyssinica* Sacleux; *Catha forskalii* A. Rich.; *Hartogia thea* E. Mey., nom. nud.

Shrub or tree 2-25 m tall, glabrous; stems pale grey-green, flattened when young, becoming vinous red, terete; leaves narrowly elliptic, opposite on flowering shoots, alternate on vegetative shoots; flowers white to yellow in dichasial pedunculate cymes; fruit red, ellipsoidal, 5-10 × 2-3 mm, pendulous; seeds with a long wing.

Evergreen forest, usually near the margins; riverine forest; thickets in *Combretum* wooded grassland; woodland often on rocky hills; 1100-2400 m alt.

S. Africa, SW Arabia.

An important crop; the leaves are chewed as a mild stimulant, staining the mouth red. The first utilisation goes back to Alexander the Great in 326 B.C. (fide Lemoine o.c.); the earliest known reference to the use of Qat is that of an Arabic manuscript written in 1587 who states that in about 1454 coffee in Aden began to rival another drink made from the leaves of Qat (fide Dold & Cocks, o.c.).

SYNONYMS:

Catha acuminata (L.) C. Presl = **Gymnosporia**
buxifolia (L.) G. Don = **Gymnosporia**
europaea (Boiss.) Boiss. = **G. senegalensis** subsp.
fasciculata Tul. = **Maytenus undata**
forskalii A. Rich. = **Catha edulis**
inermis J. F. Gmel. = **C. edulis**
montana (Roth) G. Don = **Gymnosporia senegalensis**
senegalensis (Lam.) G. Don = **G. senegalensis**
spinosa Forssk. = **G. parviflora** subsp. **parviflora**

(CELASTRUS)

Celastrus acuminatus L. f., incl. var. *microphyllus* Sond. = **Gymnosporia acuminata**
albatus N. E. Br. = **Maytenus undata**
andongensis Oliv. = **Gymnosporia** ? **buxifolia**
arbutifolius Hochst. ex A. Rich., incl. var. *major* A. Rich. = **G. arbutifolia**
atkoi A. Rich. = **G. arbutifolia** subsp. **arbutifolia**
buxifolius L. = **G. buxifolia**
concinnus N. E. Br. = **G. harveyana** subsp. **harveyana**
coriaceus Guill. & Perr. = **G. senegalensis**
cymosus Solander = **G. buxifolia**
edulis Vahl = **Catha**
euonymoides Welw. ex Oliv. = **Gymnosporia putterlickioides** subsp.
europaeus Boiss. = **G. senegalensis** subsp.

(CELASTRUS)

fasciculatus (Tul.) Boiv. ex Hoffm. = **Maytenus undata**
filiformis L. f. = **Secamone** *(Apocynaceae)*
gracilipes Welw. ex Oliv. = **Gymnosporia gracilipes**
gracilis Welw. ex Oliv. = **G. gracilis**
huillensis Welw. ex Oliv. = **Maytenus undata**
lancifolius Thonn. = **M. undata**
laurifolius A. Rich. = **M. undata**
littoralis A. Chev., nom. nud. = **Gymnosporia buchananii**
luteolus Del. = **Maytenus undata**
montanus Roth = **Gymnosporia senegalensis**
mossambicensis Klotzsch = **G. mossambicensis**
mucronatus Eckl. & Zeyh. = **G. acuminata**
ndelleensis A. Chev. = **Gymnosporia buchananii**
obscurus A. Rich. = **G. obscura**
oppositus Wall. = **Pleurostylia**
parviflorus Vahl = **Gymnosporia parviflora**
populifolius Lam. = **G. acuminata**
procumbens L. f. = **Maytenus**
rupestris Eckl. & Zeyh. = **Gymnosporia acuminata**
saharae Battand. = **G. senegalensis**
senegalensis Lam., incl. var. *inermis* A. Rich. = **G. senegalensis**
serratus Hochst. ex A. Rich. = **G. serrata**
var. *steudneri* Engl. = **G. gracilipes** subsp. **arguta**
sieberi Bernh. in herb. Krauss, nom. nud. = **Ilex mitis** *(Aquifoliaceae)*
undatus Thunb. = **Maytenus**
verrucosus E. Mey. ex Sonder = **Putterlickia**
zeyheri Sond. = **Maytenus undata**

(CROCOXYLON)

Crocoxylon croceum (Thunb.) N. Robson = **Elaeodendron**
excelsum Eckl. & Zeyh. = **E. zeyheri**
transvaalense (Burtt Davy) N. Robson = **E. transvaalense**

CUERVEA – See **Hippocrateaceae**

ELACHYPTERA – See **Hippocrateaceae**

ELAEODENDRON / *7*

Elaeodendron Jacq. 1782, predating *Elaeodendron* Murray 1784 and Jacq. f. 1787, fide Archer & van Wyk, o.c.: 94.

ARCHER, R. H. (1998). See above under *Celastraceae.*

ARCHER, R. H. & A. E. VAN WYK (1998). A taxonomic revision of Elaeodendron Jacq. (Cassinoideae: Celastraceae) in Africa. *S. Afr. J. Bot.* 64: 93-108.

Elaeodendron aquifolium (Fiori) Chiov. – Icon.: Chiovenda, Fl. Somala 1: tab. 47 fig. 1, 1929 (habit); Thulin, Fl. Somal. 2: 117, 1999.

bas.: *Cassine aquifolia* Fiori *("aquifolium").*

syn.: *Hartogia agrifolia* Chiov. *("agrifolium").*

ELAEODENDRON AQUIFOLIUM

Dioecious shrub or irregular tree 1,8-4 m tall; bark greyish brown, cracking longitudinally, yellow pigment present, at least in root bark; branchlets subangular to terete, greyish brown; with very stiff and pronunced leaf lobe spines; flowers bisexual, greenish white or yellowish in few-flowered short dichasia; fruit drupaceous, white or brown.

Deciduous bushland; open *Commiphora* or *Acacia-Commiphora* woodland with dense shrub layer; *Acacia-Terminalia* bushland; on limestone, pale sandy soil, or silty clay soil; 25- ± 1350 m alt.

The distinction between *E. schlechterianum* and *E. aquifolium* is in need of further study.

E. buchananii (Loes.) Loes. – Icon.: Fl. Zambes. 2 (2): 389, 1966; Fl. Trop. East Afr., Celastraceae: 30, 1994; Beentje, Kenya trees, shrubs & lianas: 337, 1994; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 685, 2006 (leaf).

syn.: *E. warneckei* Loes.; *E. keniensis* Loes.; *E. friesianum* Loes.; *E. stolzii* Loes.; *E. glaucum* Pers. var. *kamerunense* Loes. (neotype: Gomez 3); *Cassine glauca* (Pers.) Kuntze var. *kamerunensis* (Loes.) R. Wilczek; *Elaeodendron kamerunense* (Loes.) Villiers; *E. albivenosum* Chiov.; *Cassine albivenosa* (Chiov.) Cufod.

Shrub or tree 1-30 m tall; trunk to 25 cm Ø, much branched; bark purplish brown, prominently lenticellate; branches 4-lined or not, flattened to quadrangular and pale grey when young, becoming terete and vinous red to red-brown with prominent whitish lenticels; leaves with glandular-crenate or denticulate margins; flowers unisexual, female ones with petaloid staminodes; inflorescences axillary or in axils of specialized shoots, paniculate and many-flowered, c. 5 cm long; fruit cream or yellow.

(Dry) evergreen forest and thickets; riverine forest; deciduous woodland (on termite mounds); grasslands; sometimes in secondary communities; deciduous forest edges; *Podocarpus latifolius* forest; 1000(?and less)-2290 m alt.

Related to *E. xylocarpum* (Vent.) DC. from Central America, sharing dioecious flowers with petaloid staminodes.

E. kamerunense may well be regarded as a different, good species; more material and fieldwork are needed.

Poisonous.

E. croceum (Thunb.) DC., *excl.* var. *heterophyllum* Loes. and var. *triandrum* Dinter *(= E. transvaalense)*. – Icon.: S. Afr. J. Bot. 64: 95, 1998; Archer& Condy in Fl. Pl. Africa 54: pl. 2112, 1995; Coates Palgrave, Trees south. Afr., ed. 3: ill. 160, 2002.

bas.: *Ilex crocea* Thunb.

syn.: *Elaeodendron capense* Eckl. & Zeyh.; *Cassine crocea* (Thunb.) Kuntze, non C. Presl; *Elaeodendron papillosum* Hochst.; *Cassine papillosa* (Hochst.) Kuntze

Evergreen tree 2,5-10,5 m tall, glabrous; bark greyish with layers of powdery yellow pigment (= Saffron, Common Saffron, Saffron wood) in exposed rhytidome, exfoliating in thin scales, surface longitudinally fissured; branchlets subangular to terete, grey-brown, lenticels prominent, black; leaves dark green above, paler below, with glandular-denticulate to spinulose dentate (on juvenile shoots) margins; inflorescences towards apices of branchlets, compact dichasial, 1-many-flowered; flowers bisexual, whitish green; fruit cream.

Evergreen forest; 1100-1980 m alt.

S. Africa; introduced into St. Helena.

Decorative garden plant in S. Africa. Wood used, but most parts of the plant poisonous.

ELAEODENDRON

E. matabelicum Loes. (neotype: Miller 8290). – Icon.: Coates Palgrave, Trees south. Afr., ed. 3: ill. 159, 2002.

syn.: *Cassine matabelica* (Loes.) Steedman; *Elaeodendron fruticosum* N. Robson

Shrub or tree 1,5-20 m tall; bark greyish with yellow pigment absent or hardly visible, exfoliating in irregular scales, surface smooth to roughly fissured; branchlets subangular to terete, greyish-brown, lenticels usually inconspicuous, whitish; leaves yellowish green, paler below, with glandular-crenate margins; inflorescences pedunculate, stout, regularly dichasial, with numerous (20-80) densely arranged bisexual, greenish flowers; fruit cream or yellow, drying reddish. Distinctive species, widespread.

Dry open deciduous woodland; wooded grassland; 425-1525 m alt.

Botswana.

E. schlechterianum (Loes.) Loes. – Icon.: Fl. Trop. E. Afr., Celastraceae: 30, 1994.

bas.: *Cassine schlechteriana* Loes.

syn.: *C. lacinulata* Loes.; *Elaeodendron lacinulatum* (Loes.) Loes.

Shrub or tree 2-18 m tall; branches 4-lined or not, flattened to angular, pale grey to purplish when young, becoming terete and red-brown to grey-brown or whitish with prominent whitish or grey lenticels; yellow pigment not observed in bark which is smooth or finely reticulate; leaves greyish-green, often glossy above, paler below, spinulate-dentate; inflorescences compact dichasial, 3-15-flowered; flowers bisexual or partly unisexual, cream to greenish; fruit cream, 12-22 cm long.

Dry deciduous woodland especially on alluvium; also riverine; fringing forest; termite mounds; 0-1500 m alt.

E. schweinfurthianum (Loes.) Loes., incl. var. *cyclophyllum* Chiov. and var. *obovatum* Chiov.

bas.: *Cassine schweinfurthiana* Loes.

syn.: *Elaeodendron somalense* Vatke in sched.; *E. somalense* Engl. ex Loes.

Shrub or tree 0,5-3-6-10 m tall, much branched, lax, dioecious; bark grey brown, smooth or flaky, yellow pigment not observed; branches 4-lined and pale grey when young, becoming terete and red-brown to grey-brown or whitish with prominent lenticels; leaves greyish-green, margins entire, rarely with spinulose-denticulate teeth; inflorescences pedunculate, compact dichasial, 1-10-flowered, flowers bisexual or unisexual, greenish-cream; fruit white, small (5-10 mm long).

Coastal bushland, deciduous and semi-evergreen, on sand or coral; swamps and forest margins close to the sea and tidal lagoons; 0-400 m alt.

E. transvaalense (Burtt Davy) R. H. Archer – Icon.: B. Curtis & C. Mannheimer, Tree atlas Namibia: 405-406, 2005; Coates Palgrave, Trees south Afr., ed. 3: ill. 162, 2002.

bas.: *Salacia* ? *transvaalensis* Burtt Davy

syn.: *Pseudocassine transvaalensis* (Burtt Davy) Bredell; *Crocoxylon transvaalense* (Burtt Davy) N. Robson; *Cassine transvaalensis* (Burtt Davy) Codd; *Hippocratea seineri* Seiner, nom. nud.; *Elaeodendron croceum* (Thunb.) DC. var. *heterophyllum* Loes. and var. *triandrum* Dinter

Irregular shrub to tall rounded bush or tree 1,5-13,5 m tall; branches angular or striate and grey-green when young, becoming vinous-red with whitish lenticels (± inconspicuous)

and eventually grey and terete; yellow pigment in bark absent or hardly visible; rhytidome exfoliating in thin scales; surface deeply longitudinally fissured; leaves alternate (!), spiralled to clustered or subopposite, green to greyish green, margins entire to glandular-denticulate on juvenile shoots; inflorescences towards tips of branchlets, compact dichasial, 3-10 flowered; flowers bisexual, 3-merous (!), greenish-cream; fruit cream or yellowish, drying dark brown.

Open woodland; thickets, scrub; sandy soil; termite mounds; 0-1400 m alt.

Namibia, Caprivi Strip, Botswana, NE S. Africa, Swaziland.

E. zeyheri Spreng. ex Turcz. – Icon.: F. Thonner, Blütenpflanzen Afrikas: pl. 83, 1908 (sub nom. *E. croceum);* S. Afric. J. Bot. 64: 104, 1998.

syn.: *Rhamnus zeyheri* Spreng. ex Harv. in syn., nom. nud., non *R. zeyheri* Sond.; *Cassine parvifolia* E. Mey., nom. nud.; *Salacia zeyheri* Planch. ex Harv.; *Crocoxylon excelsum* Eckl. & Zeyh.; *Elaeodendron croceum* auctt.: N. Robson in Fl. Zamb. 2(2): 41, 1965, non Thunb.; Thonner, l.c.; *E. excelsum* (Eckl. & Zeyh.) Ettingsh.

Shrub or tree 1-12 m tall; branches angular and brownish-green when young, becoming vinous red with whitish lenticels and eventually terete and grey with prominent brownish lenticels; bark greyish with layers of conspicuous powdery yellow pigment, rhytidome exfoliating in thin scales, surface longitudinally fissured; leaves coriaceous, with glandular-denticulate margins; inflorescences pedunculate, ± compact dichasial, 3-7-flowered; flowers bisexual, greenish-cream; fruit yellowish, drying dark brown, 2-2,5 cm Ø.

Evergreen forest and near rivers.

E S. Africa

Confusion possible with *E. croceum,* but leaf margins glandular-denticulate (not spinulose-denticulate), and ovary 2-locular (not 3-4 locular).

SYNONYMS:

Elaeodendron aerthiopicum (Thunb.) Oliv. = **Mystroxylon**
afzelii Loes. = **Elaeodendron buchananii**
fa. *djalonense* Roberty = ?
albivenosum Chiov. = **E. buchananii**
bussei Loes. = **E. schlechterianum**
capense Eckl. & Zeyh. =**E. croceum**
croceum (Thunb.) DC. var. *heterophyllum* Loes. and var. *triandrum* Dinter = **E. transvaalense**
croceum auctt. = **E. zeyheri**
excelsum (Eckl. & Zeyh.) Ettingsh. = **E. zeyheri**
friesianum Loes. = **E. buchananii**
fruticosum N. Robson = **E. matabelicum**
glaucum Pers. var. *kamerunense* Loes.= **E. buchananii**
kamerunense (Loes.) Villiers = **E. buchananii**
keniense Loes. = **E. buchananii**
lacinulatum (Loes.) Loes. = **E. schlechterianum**
laurifolium Harv. = **Allocassine**
microcarpum White & Francis = **Pleurostylia opposita**
mindanaense Merr. = **P. opposita**
oligocarpum (Eckl. & Zeyh.) Ettingsh. = **Robsonodendron eucleiforme**

papillosum Hochst. = **Elaeodendron croceum**
somalense Engl. ex Loes. = **E. schweinfurthianum**
somalense Vatke in sched. = **E. schweinfurthianum**
stolzii Loes. = **E. buchananii**
stuhlmannii Loes. = **E. schlechterianum**
warneckei Loes. = **E. buchananii**

EUONYMUS / *1*

A genus of 129 species mainly in Asia; 2 in Africa, 2 in Madagascar.

MA, J.S. (2001). A Revision of Euonymus (Celastraceae). *Thaiszia – J. Bot., Košice* 11: 1-264.

SAVINOV, I. A. (2007). Some morphological basics for a revision of the tribe Euonymeae Loes. (Celastraceae R. Br.). *Wulfenia* 14: 97-104.

Euonymus congolensis R. Wilczek – Icon.: Fl. Gabon! 22: 7, 1973; Fl. Congo Belge 9: 127, 1960.

Liane, ? shrub or tree to 8 m tall; branches slender, subcylindrical, indistinctly 4-striate, grey-green to grey-brown; twigs 4-winged; lenticels numerous, conspicuous; leaves subopposite, glabrous, acuminate, with finely dentate margins; flowers greenish in axillary cymes.

Dry forest; forest gallery and edges; 150-350 m alt.

SYNONYMS:

Euonymus colpoon Lam. = **Osyris compressa** *(Santalaceae)*
inermis Forssk. = **Ochna** *(Ochnaceae)*

GYMNOSPORIA / *35*

"There is still controversy about the taxonomic status of *Gymnosporia.* Some taxonomists treat *Gymnosporia* as a section of *Maytenus* on the basis of morphological and chemical studies (…), whereas others treat *Gymnosporia* as a separate genus on the basis of certain morphological characteristics or molecular experiments (…). From field observations and the checking of specimens, it is difficult to separate *Gymnosporia* from *Maytenus* as they have many similar characters. Therefore, we believe that it is more reasonable to treat *Gymnosporia* as a section of *Maytenus* until proof becomes available to support *Gymnosporia* as a separate genus." (XIN-SHENG QIN & al. in *Bot. J. Linn. Soc.* 158:534, 2008).

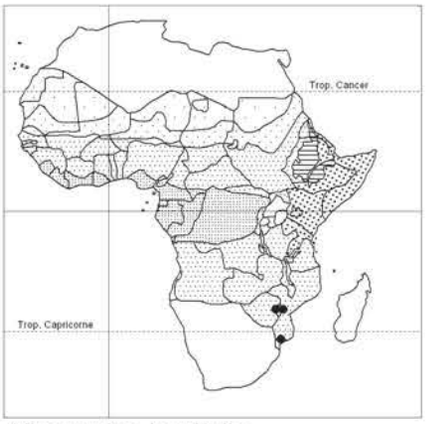
Genus readily distinguishable by the following combination of characters: – thorns or modified stems usually present; – short shoots or spur shoots usually present; – leaves alternate and/or fasciculate; – inflorescences of a dichasial type; – flowers unisexual, though appearing hermaphrodite owing to the presence of staminodes in female and pistillodes in male flowers; – ovary usually 3-locular, occasionally 2- or 4-locular; – ovules 2 per locule; – seeds (in)completely enveloped by an aril, or aril only a basal rim (fide Jordaan & van Wyk, 2006).

One species *(G. nguruensis)* known only from the type lacking flowers.

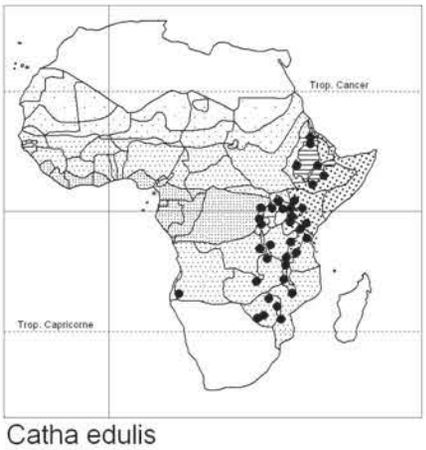
ARCHER, R. H. (1998). Southern African Celastraceae. *Plantlife* 19: 5-8.

JORDAAN, M. (1999). Studies in subfamily Celastroideae (Celastraceae): generic concepts. *Plantlife* 20: 7-8.

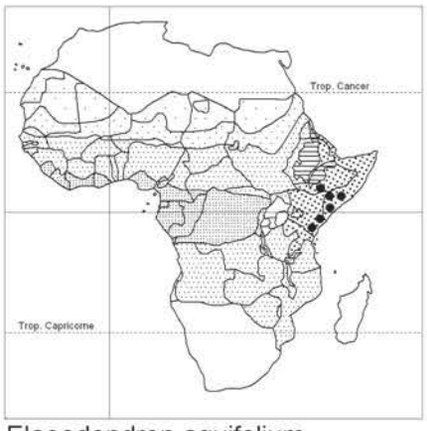
JORDAAN, M. & A. E. VAN WYK (1999). Systematic studies in subfamily Celastroideae (Celastraceae) in southern Africa: reinstatement of the genus Gymnosporia. *S. Afr. J. Bot.* 65: 177-181.



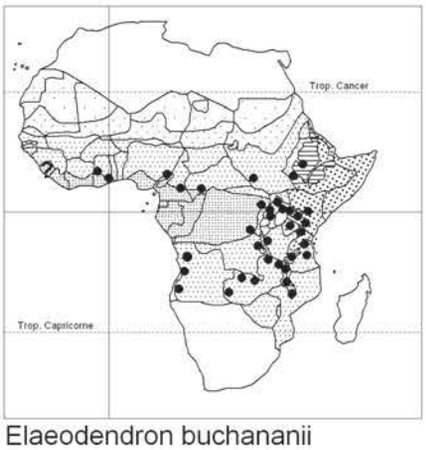
Allocassine laurifolia



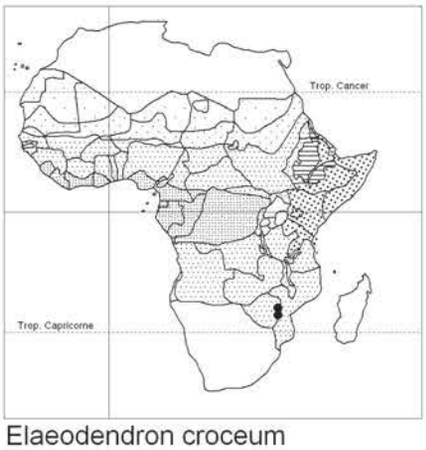
Catha edulis



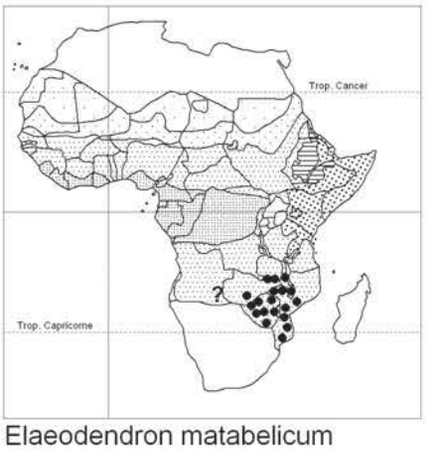
Elaeodendron aquifolium



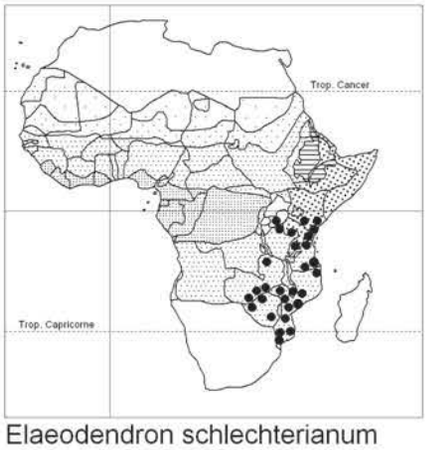
Elaeodendron buchananii



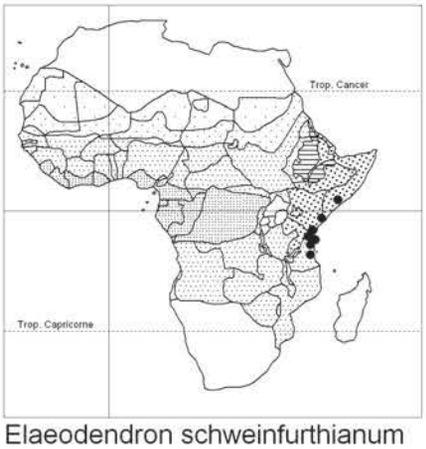
Elaeodendron croceum



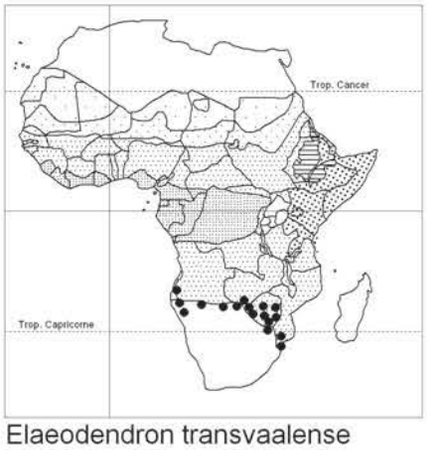
Elaeodendron matabelicum



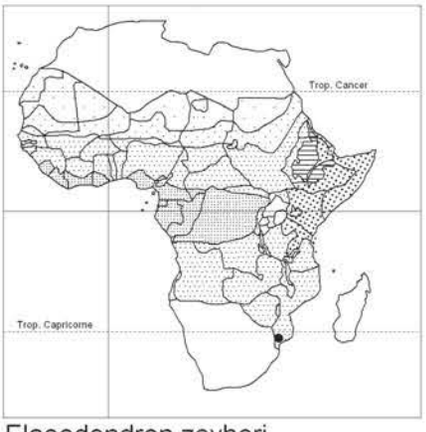
Elaeodendron schlechterianum



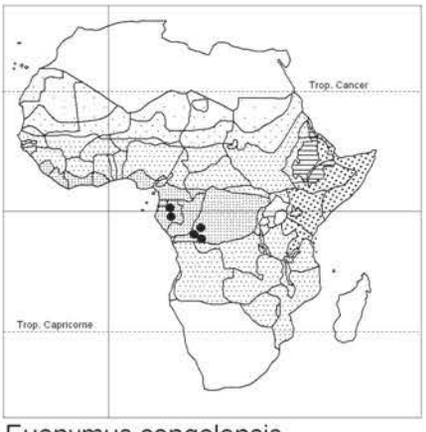
Elaeodendron schweinfurthianum



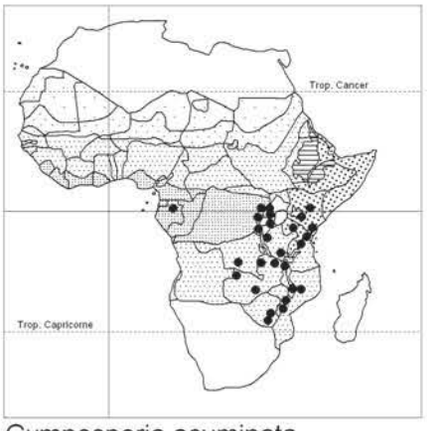
Elaeodendron transvaalense



Elaeodendron zeyheri



Euonymus congolensis



Gymnosporia acuminata

GYMNOSPORIA

JORDAAN, M. & A. E. VAN WYK (2003). A taxonomic revision of the Gymnosporia mossambicensis group (Celastraceae: Celastroideae). *Kew Bull.* 58: 833-866.

JORDAAN, M. & A. E. VAN WYK (2006). Sectional classification of Gymnosporia (Celastraceae), with notes on the nomenclatural and taxonomic history of the genus. *Taxon* 55: 515-525.

ROGERS, C. B. & al. (1999). A convenient thin layer chromatographic technique for chemotaxonomic application in Maytenus (Celastraceae). *S. Afr. J. Bot.* 65: 174-176.

SAVINOV, I. A. (2006). See above under **Catha**.

Gymnosporia acuminata (L. f.) Szyszyl., incl. var. *lepidota* (Loes.) Loes. and var. *microphylla* (Sond.) Davison – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 265, 2008 (sub gen. *Maytenus*).

bas.: *Celastrus acuminatus* L. f.

syn.: *Catha acuminata* (L. f.) C. Presl; *Gymnosporia lepidota* Loes., incl. var. *ruwenzoriensis* Loes. and var. *kilimandscharica* Loes.; *G. meruensis* Loes.; *G. populifolia* (Lam.). Dummer; *Celastrus populifolius* Lam.; *C. rupestris* Eckl. & Zeyh.; *C. mucronatus* Eckl. & Zeyh.; *C. acuminatus* var. *microphyllus* Sond.; *Maytenus lepidota* (Loes.) Robyns & Lawalrée, incl. var. *kilimandscharica* (Loes.) Robyns & Lawalrée; Enum. 2: 148, 1992 (sub nom. *Maytenus acuminata)*.

Shrub or tree 0,3-25(-30) m tall, erect or ± spreading, unarmed, glabrous; branches ± markedly 4-lined when young, eventually terete and longitudinally striate; flowers pink or red, solitary or in few-flowered cymes; fruit yellow or red, 2-3 lobed; leaves when broken showing latex threads, also in dry state.

Understorey and margin of forest or riverine forest; montane rainforest and thicket; wooded swamp; 486-3300 m alt.

Two varieties under *Maytenus acuminata:* – var. *acuminata;* – var. *uva-ursi* Brenan; intermediates are known on Mt. Mulanje.

G. addat Loes.; S. Siebert in Veld & Flora 90: 57, June 2004.

syn.: Enum. 2: 148, 1992 (sub gen. *Maytenus*).

Shrub or tree 2-30 m tall, usually unarmed or with spines to 1,2 cm long; branches dark brown with pale brown lenticels, glabrous; leaves acuminate; flowers functionally unisexual, white, in pedunculate glabrous cymes 2,5-6,5 cm long; fruit pink to red, 3-gonous to round.

Forest and forest margins; along stream, with *Podocarpus gracilior, Juniperus procera, Hagenia abyssinica, Pygeum africanum, Syzygium guineense, Croton macrostachys, Hypericum revolutum, Olinia aequipetala, Maesa lanceolata, Rosa abyssinica, Rapanea simensis, Erica arborea, Nuxia congesta;* forest, dominant together with *Buddleja polystachya, Ekebergia capensis, Pittosporum viridiflorum, Prunus africana, Schefflera volkensii,* all covered in epiphytes and lianes (Bale Mts.); ± 2200-3000 m alt.

G. arbutifolia (Hochst. ex A. Rich.) Loes. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2(1): 279, 2001 (sub nom. *Maytenus arbutifolia*).

bas.: *Celastrus arbutifolius* Hochst. ex A. Rich.

syn.: *C. atkaio* A. Rich.; *Maytenus arbutifolia* (Hochst. ex A. Rich.) R. Wilczek; *M. engleriana* (Loes.) Cufod., incl. var. *macrantha* (Loes.) Cufod.; Enum. 2: 148, 1992.

GYMNOSPORIA ARBUTIFOLIA

Shrub or tree 0,3-12 m tall, with spines to 7 cm long, often numerous, terminating short axillary shoots; branches ± flattened, ± angular, reddish purple and brown puberulous to shortly pubescent when young, becoming terete, striate, glabrous, with numerous pale lenticels; flowers white or cream, solitary or in few-flowered cymes, dioecious; fruit reddish, 3-lobed; seeds with a fleshy rugose *dark violet aril* at base.

Riverine forest; forest margins; thickets; degraded forest; (bushed) grassland; along roads; wooded savannas; open *Juniperus* forest; evergreen scrub; 1200-3000 m alt.

Yemen, Saudi Arabia (Asir).

Comprises 2 subspp.: – subsp. **arbutifolia;** – subsp. **sidamoensis** (Sebsebe) M. Jordaan [bas.: *Maytenus arbutifolia* (Hochst. ex A. Rich.) R. Wilczek var. *sidamoensis* Sebsebe] with leaves tomentose beneath, from Sidamo, Ethiopia.

G. arenicola M. Jordaan – Icon.: S. Afric. J. Bot. 65: 316, 1999.

syn.: *Maytenus heterophylla* (Eckl. & Zeyh.) N. Robson subsp. *arenaria* N. Robson, Fl. Zamb. 2(2): 366, 1966 p.p., *excl.* type: Barbosa & Lemos 8514 *(= G. markwardii).*

Gnarled straggling shrub or tree to 7 m tall, glabrous; brachyblasts very short; branches angular, reddish brown when young, becoming terete and grey with age, often with insect galls (thickened areas); spines to 9,5 cm long; leaves in fascicles, or alternate towards tips of branchlets, glabrous, obovate, with revolute margins; flowers white to yellowish, in few-flowered cymes; fruit 3-lobed, *verrucose, yellow-orange red;* seed with yellow aril partially covering seed.

Coastal sand dunes, with scrub and forest; mostly on forest margins in sandy acid soils, often near wet places.

NE S. Africa (coast).

G. buchananii Loes. – Icon.: Fl. Cameroun 19: 29, 1975; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 685, 2006 (partial).

syn.: *Maytenus buchananii* (Loes.) R. Wilczek; Enum. 2: 148, 1992; *Celastrus littoralis* A. Chev., nom. nud.; *"Gymnosporia ndelleensis* A. Chev." in Sillans, Les savanes de l'Afrique centrale: 308, 1958, without basionym, comb. invalid. – *Celastrus ndelleensis* A. Chev., Etudes Fl. Afr. Cent. Franç. 1: 57, 1913 (not a *nomen* as quoted in Index Kewensis) but with a description in French: "Arbuste liane s'élevant de 5 à 8 mètres de hauteur, fleurs d'un blanc-verdâtre, n° 8156" (Ndellé, 20-25 avril 1903). – *Gymnosporia ndeleensis* ! A. Chev. in Aubréville, Fl. Forest. soudano-guinéenne: 351, 1950. – Specimens cited by different authors: Chevalier 8156, 7565 (not 1565); Tisserant 1886, 139, 1474. – *Maytenus ovata* (Wight & Arn.) Loes. var. *ovata* fa. *pubescens* (Schweinf.) Blakelock in Keay, Fl. W. trop. Afr., ed. 2, 1(2): 625, 1958.

Shrub or tree 2-9 m tall, sometimes sarmentose or scandent, with spines to 2 cm long, terminating short axillary branches usually on older parts; branches ± flattened, ± angular, purplish-brown and chocolate- to fawn-puberulous when young, becoming terete, striate, with numerous pale lenticels; leaves not fasciculate, glabrous; flowers white to cream, stamens or styles exceeding petals, in short cymes; fruit pale pink to bright red, obconic, 3-lobed; seeds red turning brown with a fleshy smooth white-yellow aril at base.

Fringing forest, coastal formations; *Hagenia* woodland; swampy forests; xerophyllous thickets; drier evergreen forest; *Loudetia*

arundinacea grassland with scattered trees; rocky area in grassland with colonising thicket; small copse on basalt plateau; forest margins; 0-2640 m alt.

Gymnosporia filamentosa Loes. might be the earliest name for this species, but the specimens were destroyed in Berlin in 1943 (incl.var. *major* Loes. and var. *minor* Loes.).

G. buxifolia (L.) Szyszyl., incl. var. *genuina* (Sond.) Loes. and var. *glomeruliflora* Davison, ? but excl. var. *holtzii* Loes. *(= Gymnosporia ?).* – Icon.: Bot.Mag. 46: pl. 2070, 1819 (sub nom. *Celastrus cymosus);* V. Thomas & R. Grant, Sappi tree spotting Highveld, rev. ed.: 199-201, 2002; B. Curtis & C. Mannheimer, Tree atlas Namibia: 396, 2005; F. White & al., Evergreen forest fl. Malawi: 189, 2001 (sub nom. *Maytenus heterophylla*).

bas.: *Celastrus buxifolius* L., non *Maytenus buxifolia* Griseb.

syn.: *Gymnosporia condensata* Sprague; *Maytenus cymosa* (Solander) Exell 1952, non Krug. & Urb. 1904; *M. heterophylla* (Eckl. & Zeyh.) N. Robson subsp. *heterophylla*, Fl. Zamb. 2(2): 364, 1966, p.p.; *Celastrus cymosus* Solander; *Catha buxifolia* (L.) G. Don; *Gymnosporia heterophylla* sensu auct. afr. trop., non (Eckl. & Zeyh.) Loes.

prob. syn.: *Gymnosporia beniensis* Robyns & Lawalrée; *G. brevipetala* Loes.; *Maytenus andongensis* (Oliv.) Exell & Mendonça; *M. angolensis* Exell & Mendonça; *M. brevipetala* (Loes.) R. Wilczek; *Celastrus andongensis* Oliv.; *G. nyassica* Gilli 1970, non *G. nyassica* Burtt Davy & Hutch. 1932; *G. bequaertii* De Wild.

Evergreen shrub or tree 2-9 m tall; bark light brown when young, becoming darker and flaking to very dark, rough, corky and fissured with age; young branches green becoming light brown, very often with insect galls which appear as swellings on the stem; spines sharp, slender to robust, 3-10 cm long; leaves elongate, smooth, papery-parchment-like; flowers small, white-cream, produced in profusion, with a strong unpleasant scent.

This species has: – usually 3-lobed capsules that become white or reddish with brown patches; – dwarf spur-branchlets very short; – leaves and flowers are only occasionally borne on the green spines.

Forest, forest margins; scrub; grassland; woodland; often in riverine areas; ± 30-2620 m alt.

Botswana, NC Namibia.

The true **G. heterophylla** (Eckl. & Zeyh.) Loes. is a shrub to 1,5 m tall occurring in S. Africa from Grahamstown to Limpopo Province.

G. cortii Pic. Serm. – Icon.: Pichi Sermolli, Miss. studio Lago Tana 7, Rich. Bot. Part 1: pl. 44, 1951.

syn.: *Maytenus cortii* (Pic. Serm.) Cufod.

Shrub with spines to 2 cm long; branches light to dark grey with white lenticels, glabrous; leaves elliptic-ovate, glabrous; flowers 1-3 cm short cymes; capsule light brown with green spots, 3-gonous, glabrous.

Slopes of mountain ridge; ± 3350 m alt.

Only known from three specimens collected in 1937.

G. drummondii (N. Robson & Sebsebe) M. Jordaan – Icon.: Kew Bull. 58: 860, 2003.

bas.: *Maytenus drummondii* N. Robson & Sebsebe

Scandent shrub or tree to 12 m tall, glabrous; branches angular, dark purplish, becoming terete and grey, with numerous lenticels, bark light grey and smooth; spines to 4,2 cm long, with tips pointing backwards; leaves chartaceous, glabrous, elliptic-obovate, midrib prominently raised above; flowers white-cream, fragrant, 3-15 per cyme; fruit pyriform, pink to red.

Evergreen forest and thickets, on limestone; 0-1950 m alt.

Madagascar.

G. glaucophylla M. Jordaan in E. Schmidt, M. Lötter & W. McCleland, Trees and Shrubs of Mpumalanga and Kruger Natl. Park: 676, 2002, nom. nov. for:

syn.: *Maytenus heterophylla* (Eckl. & Zeyh.) N. Robson subsp. *glauca* N. Robson

Usually a shrub but occasionally a tree to 3 m tall; young branches reddish purple, becoming metallic grey and eventually cream-white; bark deeply fissured, splitting longitudinally to reveal yellow underbark; spines slender, to 3,5 cm long; leaves with almost entire margins; fruit red and smooth, with a persistent style.

Open woodland and stony places.

S. Africa.

G. gracilipes (Welw. ex Oliv.) Loes.

bas.: *Celastrus gracilipes* Welw. ex Oliv.

Shrub or shrubby tree 0,5-6 m tall with spines to 4-6 cm long; branches green to orange brown, with lenticels, glabrous or puberulous; leaves not fasciculate, glabrous, with singly or doubly serrate margins; flowers (greenish) white to cream tinged pink, many (5-60) in 3-4 cm long dichasial cymes; fruit pyriform, pink to red, 1-2, 2 cm long, pendulous.

Thikets; forest margins; grassland with scattered trees; along rivers; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* another type of rain-forest with *Albizia, Macaranga, Croton, Ocotea; Podocarpus latifolius, Olea capensis* forest; rocky bushy places at the skirts of primitive forests; 870-2800 m alt.

Comprises 2 subspp.: – subsp. **gracilipes** [syn.: *G. trothae* Loes.; *G. gillettii* De Wild.; *Maytenus serrata* (Hochst. ex A. Rich.) R. Wilczek var. *gracilipes* (Welw. ex Oliv.) R. Wilczek], whole plant puberulous, leaf margins crenulate; – subsp. **arguta** (Loes.) M. Jordaan [bas.: *Gymnosporia gracilipes* (Welw. ex Oliv.) Loes. var. *arguta* Loes.; syn.: *Maytenus gracilipes* (Welw. ex Oliv.) Exell & Mendonça subsp. *arguta* (Loes.) Sebsebe; *M. serrata* (Hochst. ex A. Rich.) R. Wilczek var. *arguta* (Loes.) R. Wilczek; *M. ovata* (Wall. ex Wight & Arn.) Loes. var. *ovata* fa. *ovata; M. ovata* var. *arguta* (Loes.) Blakelock s. str.; *Gymnosporia serrata* (Hochst. ex A. Rich.) Loes. var. *steudneri* (Engl.) Loes. and var. *niansaica* Loes.; *G. ellenbeckii* Loes.; *G. castellii* Pic. Serm.; *Maytenus arguta* (Loes.) N. Robson; *M. castellii* (Pic. Serm.) Cufod.; *M. ellenbeckii* (Loes.) Cufod.; *M. royleana* sensu Cufod. 1962, quoad specim. ex Ethiopia], whole plant glabrous, leaf margins serr(ul)ate.

G. gracilis Loes., non *Maytenus gracilis* (Pierre) Loes. – Icon.: Kew Bull. 58: 847, 2003.

Shrub or tree to 4 m tall, rarely sarmentose; branchlets shortly and densely dark brown-puberulous and terete, becoming glabrous and whitish; brachyblasts short; spines few, slender, to

4,2 cm long, puberulous or glabrous; leaves small, glabrous; flowers small, white in 1-2 cm long dichasia; fruit reddish; seeds completely enveloped by an orange or yellow aril.

Evergreen forest margins; *Brachystegia* woodland; coastal thickets; 0-2000 m alt.

Comprises 2 subspp.: – subsp. **gracilis** [syn.: *G. ambonensis* Loes.; *G. zanzibarica* Loes.; *Maytenus mossambicensis* (Klotzsch) Blakelock var. *ambonensis* (Loes.) N. Robson]; – subsp. **usambarensis** M. Jordaan: young branchlets becoming glabrous and pale grey with age and differing further in having angular stems when young and subangular stems when mature; the spines are more often terminate short lateral branches, rather than being axillary.

G. grandifolia (Davison) M. Jordaan in E. Schmidt, M. Lötter & W. McCleland, Trees and Shrubs of Mpumalanga and Kruger Natl. Park: 676, 2002.

bas.: *G. angularis* (Sond.) Sim var. *grandifolia* Davison

Tree to 7 m tall; twigs subterete, not angular and striate; bark grey; spines to 14 cm long, seldom bearing leaves and flowers; fruit woody and often 4-lobed.

A true forest species in inland and coast, in the shade.

S. Africa.

G. gurueensis (N. Robson) M. Jordaan – Icon.: Kew Bull. 58: 852, 2003.

bas.: *Maytenus mossambicensis* (Klotzsch) Blakelock var. *gurueensis* N. Robson

Suffrutex to 0,75 m tall, rhizomatous; stem pubescent; spines axillary, few, slender, to 10 mm long; flowers white, with unequal sepals in puberulous axillary cymes; fruit dark purplish brown, smooth; seeds completely enveloped in an orange aril.

Deciduous woodland; 500-1000 m alt.

Considered vulnerable (2002); confined to Gurué Distr., Mozambique.

G. harenensis (Sebsebe) M. Jordaan

bas.: *Maytenus harenensis* Sebsebe

Shrub or tree to 6 m tall with spines to 8 mm long; branches flattened, dark to reddish brown, glabrous, sometimes appressed puberulous in the young ones, without or with scattered pale white lenticels; flowers bisexual, c. 7 mm Ø, to 25 in each cyme 2,5-5 cm long; fruit pink to red, 3-gonous, glabrous; seeds with white glossy fleshy aril at base.

Forest in the *Schefflera abyssinica, Hagenia abyssinica* zone; 2600-3040 m alt.

Discovered in 1986.

G. harveyana Loes. – Icon.: Kew Bull. 58: 842, 2003.

syn.: *Celastrus concinnus* N. E. Br.; *Gymnosporia concinna* (N. E. Br.) Bews.; *Maytenus mossambicensis* var. *mossambicensis* sensu N. Robson, Fl. Zamb. 2(2): 362 p.p., 1966, *excl.* var. *gurueensis* N. Robson, sed quoad specim. Chase 6279; sensu N. Robson, Fl. Trop. E. Afr., Celastr.: 9, 1994 p.p. quoad specim. Milne-Redhead & Taylor 10958, Stolz 1495, Carmichael 266. – All of subsp. **harveyana**.

Shrub or tree to 9 m tall, glabrous; branches reddish purple to reddish brown with pale lenticels, and young branchlets angular, becoming terete; brachyblasts to 4 mm long; spines axillary, slender, to 70 mm long; flowers unisexual, white, in short inflorescences; fruit pink to red, globose, semi-fleshy; seeds rugulose, with an orange-red aril completely enveloping the seed (subsp. **harveyana**). – Or shrub or tree to 3 m tall: young branchlets dark brown puberulous, angular; spines to 10 mm long, terminal on short, slender, lateral branches or axillary on young branchlets (subsp. **stolzii**); capsule not seen in this subsp.

Fairly widespread in forest patches; evergreen forest (margins and in understorey); 1200-2100 m alt.

S. Africa (full map: Kew Bull. 58: 843, 2003).

Comprises 2 subspp.: – subsp. **harveyana;** – subsp. **stolzii** (N. Robson) M. Jordaan [bas.: *Maytenus mossambicensis* (Klotzsch) Blakelock var. *stolzii* N. Robson].

G. keniensis (Loes.) M. Jordaan

bas.: *S. serrata* (Hochst. ex A. Rich.) Loes. var. *keniensis* Loes.

syn.: *Maytenus keniensis* (Loes.) N. Robson & Sebsebe

Shrub to 4 m tall, sometimes straggling, with spines to 6 cm long; branches flattened, angular, purplish green and puberulous when young, becoming terete, striate, greyish, with pale lenticels, soon glabrous; leaves elliptic, margins serrate, glabrous; flowers greenish-cream, dioecious, in 3 cm long cymes; fruit reddish, 3-angled.

Forest; 1050-2300 m alt.

G. livingstonei M. Jordaan – Icon.: Kew Bull. 58: 854, 2003.

Suffrutex to 1 m tall, producing several erect, unbranched or few-branched shoots from a woody underground rootstock; glabrous in all parts; stems angular at maturity; bark pale brown; spines few, slender, to 3,4 cm long, axillary, often floriferous and leafy; leaves alternate on young branches, fasciculate on spines, pale grey-green, elliptic, 3-6(-7,5)x 1-3,5 cm, with conspicuous reticulate venation, margins reddish, rounded-serrulate; flowers white, unisexual, few in long-pedunculate cymes; fruit pink to red, smoth, globose; seeds with an orange-red aril completely enveloping the seed.

Wooded grassland adjacent to riverine forest or woodland; 900-1860 m alt.

Resembling *G. mossambicensis* subsp. *mossambicensis,* but rhizomatous.

G. maranguensis (Loes.) Loes.

bas.: *S. senegalensis* (Lam.) Loes. var. *maranguensis* Loes.

Multistemmed, much-branched shrub to 3 m tall, or tree with a weeping habit, to 6 m tall; bark smooth, light brown to light grey; young branches green, becoming light grey to black, occasionally thickened with insect galls; spines slender to robust, 0,8-10 cm long, often bearing the leaves and flowers.

Closely related to *G. buxifolia* but: – capsules smooth, 2-lobed which turn yellow and red (not usually 3-lobed that become white or reddish with brown patches as in *G. buxifolia).*

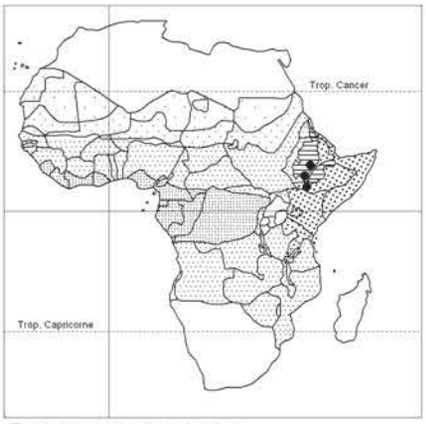
Arid savanna; valley bushveld; river banks; often on termite mounds; 1000-1900(-2440) m alt. (Tanzania) ? and less.

S. Arica.

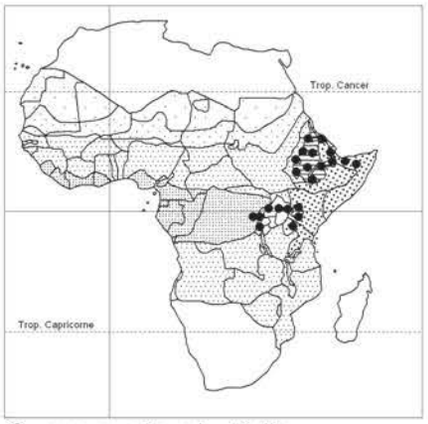
G. markwardii M. Jordaan – Icon.: S. Afr. J. Bot. 65: 318, 1999.

syn.: *Maytenus heterophylla* subsp. *arenaria* sensu N. Robson, Fl. Zambesiaca 2(2): 366, 1966 p.p. quoad holotypum Barbosa & Lemos 8514.

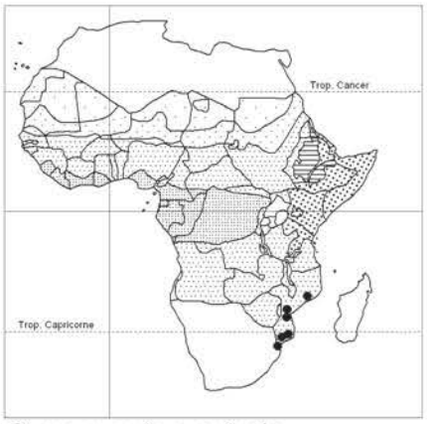
Rhizomatous geoxylic suffrutex with erect, sparsely branched stems, usually not more than 80 cm tall, rarely to 1,5 m, forming extensive colonies, spinescent or occasionally without spines,



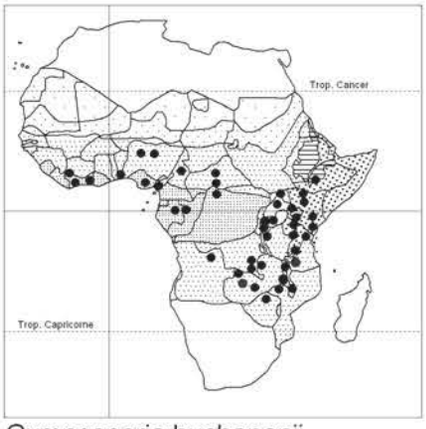
Gymnosporia addat



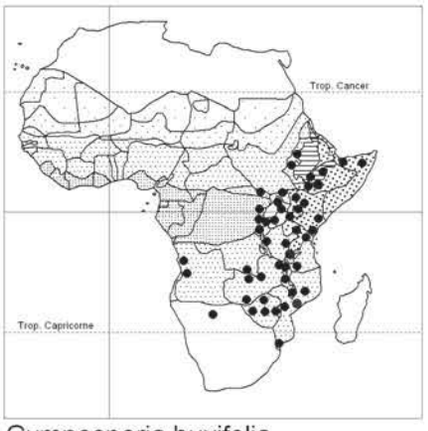
Gymnosporia arbutifolia



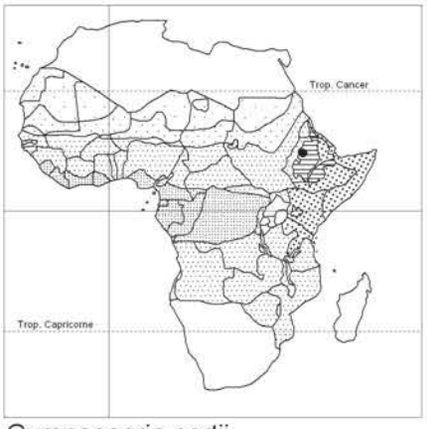
Gymnosporia arenicola



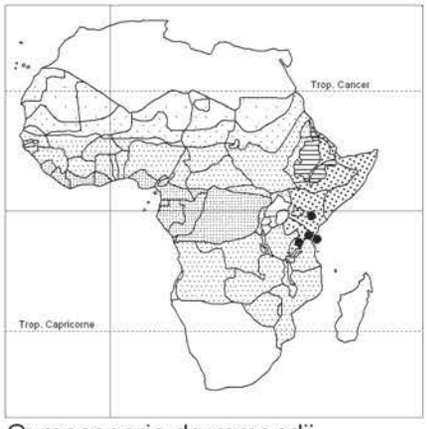
Gymnosporia buchananii



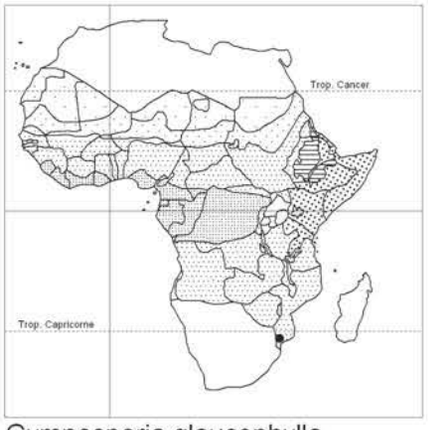
Gymnosporia buxifolia



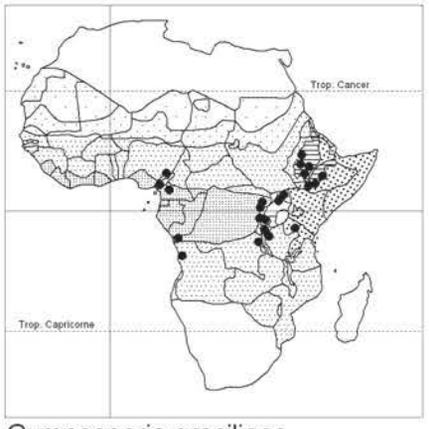
Gymnosporia cortii



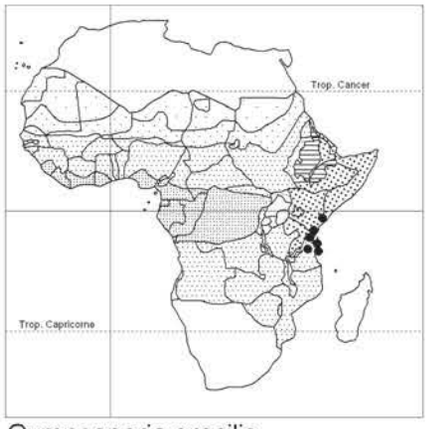
Gymnosporia drummondii



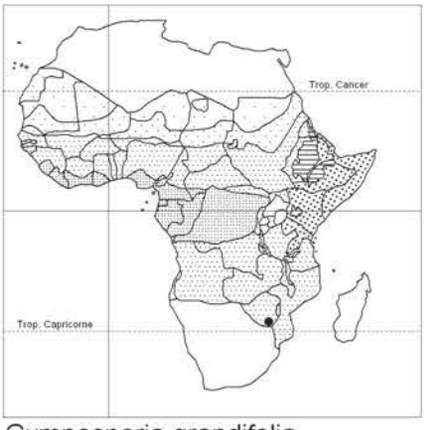
Gymnosporia glaucophylla



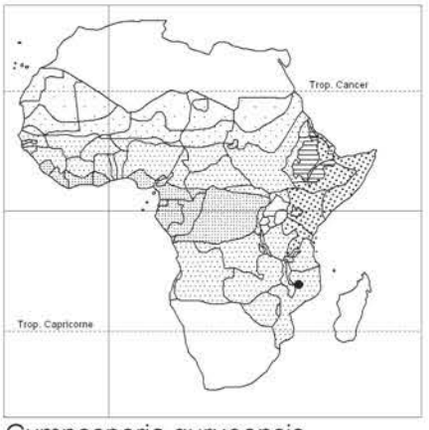
Gymnosporia gracilipes



Gymnosporia gracilis



Gymnosporia grandifolia



Gymnosporia gurueensis

glabrous; brachyblasts usually absent; branches angular and green when young, becoming terete and grey with age, smooth; spines short and slender, to 10 mm long; leaves alternate, rarely fasciculate, obovate; stipules very short; flowers white-cream, 5-merous, unisexual, produced in profusion, in short, terminal or axillary subdichasia; fruit 2-valved, smooth; seeds reddish brown, glossy, aril white partially covering the seed.

Coastal grassland on acid, nutrient-poor, sandy soil.

S. Africa (Kwazulu-Natal).

Taxonomic affinites uncertain.

G. masindei (Gereau) M. Jordaan; Novon 11: 43, 2001, Taxon 55: 520, 2006.

bas.: *Maytenus masindei* Gereau

syn.: *M. conferta* Masinde ex N. Robson, 1994, nom. illegit., non (Ruiz & Pavón) Reissek ex Loes., 1892.

Shrub or tree, with ascending branches, 2-4 m tall, glabrous, with axillary spines 5-13 mm long; branches lined, subterete, soon greyish white except on coppice growth, the bark cracking and detaching in small pieces; leaves mostly crowded on short shoots, leathery, discolourous, 10-28 × 2-8 mm, but on long shoots and coppice sometimes obovate, to 12 mm wide; flowers unisexual, 5-merous, white in cymes to 1,5-2 cm long; fruit beige, thickly coriaceous, ± woody, 3-locular; seeds orange with a cream aril covering lower half.

Coastal bushland and thicket; 30-245 m alt.

Material has been named *Maytenus heterophylla.*

Herbarium specimens often black-dotted by a dermataceous hyphomycete, *Epicoccum purpurascens* Schlecht. (fide Fl. Trop. E. Afr., Celastraceae: 17, 1994).

G. matoboensis M. Jordaan, Taxon 55: 520, 2006.

syn.: *Maytenus heterophylla* (Eckl. & Zeyh.) N. Robson subsp. *puberula* N. Robson 1965, non *Gymnosporia puberula* M. A. Lawson, 1875.

Slender tree to 3 m tall, usually single-stemmed; bark black, becoming longitudinally fissured; branches round, reddish brown, velvety when young, becoming dark grey, without lenticels; dwarf spur-branchlets very short, bearing leaves and flowers; spines slender, to 1 cm long; leaves narrowly oblanceolate to spathulate, margins entire, glabrous above, white-puberulous beneath; cymes few-flowerd. Capsule known! (about 10 mm long, velvety, seeds 1-3, yellowish brown, partly covered by a white aril).

Fringing forest.

Endemic to the Matobo Hills complex (SW Zimbabwe).

Near *G. pubescens* and *G. putterlickioides.*

G. mossambicensis (Klotzsch) Loes.; Kew Bull. 58: 837, 2003. – Icon.: ibid.: 839. – Neotype: Torre 4129.

bas.: *Celastrus mossambicensis* Klotzsch

syn.: *Maytenus mossambicensis* (Klotzsch) Blakelock; Fl. Zambes. 2(2): 362, 1966, *excl.* specim. Chase 6279, *excl.* var. *gurueensis* N. Robson *(= G. gurueensis);* Fl. Trop. East. Afr., Celastraceae 1994, *excl.* specim. Milne-Redhead & Taylor 10958, Stolz 1495, Carmichael 266, *excl.* var. *ambonensis* (Loes.) N. Robson *(= G. gracilis* subsp. *gracilis),* and *excl.* var. *stolzii* N. Robson *(= G. harveyana* subsp. *stolzii).*

Multi-stemmed, much-branched shrub to 8 m tall, perfectly glabrous; branches reddish brown, terete to subangular, with pale lenticels on young branchlets; spines axillary, to 10 mm long or 80 mm on young branchlets; leaves small, membranous, pale green, ± ovate, 1-5 × 0,6-2,5 cm; inflorescences very lax, filiform, usually exceeding leaves, long-pedicellate; flowers white, unisexual; fruit obconic-trigonous, semi-inflated, smooth, pink; seed completely covered by an orange-red aril.

Mainly on sandy soils in thickets, *Brachystegia* or mixed woodland; montane rain-forest (N Malawi); 0-1000 m alt.

S. Africa (full map: Kew Bull. 58: 838, 2003).

G. nguruensis (N. Robson & Sebsebe) M. Jordaan, Taxon 55: 520, 2006.

bas.: *Maytenus nguruensis* N. Robson & Sebsebe

Shrub, with spines to 1 cm long, axillary, glabrous; branches lined, becoming purplish brown to greyish brown, without visible lenticels; leaves fasciculate, pale green, 6,5-8 × 2,5-4,3 cm, margins irregularly serrate or serrulate-dentate; cymes c. 5 cm long, flowers not seen; fruit red, rugulose, glabrous, 3-locular; seeds 4-5, reddish-brown, glossy, with a thin yellowish aril enveloping lower part.

Ravine forest with *Podocarpus, Marattia;* 1550 m alt.

Only known from the type collected in 1978.

G. obbiadensis Chiov.

syn.: *Maytenus obbiadensis* (Chiov.) Cufod.

Spreading shrub at least 0,35 m tall and to 2 m wide, with spines to 3 cm long; branches ash-grey or sometimes brownish in young parts, terete, becoming fissured, without or with few pale lenticels, glabrous; leaves alternate or subopposite on spines, ash-grey to glaucous; flowers unisexual, white-pale yellow, 5-merous, in small, short cymes; fruit red-purple, globose, leathery, smooth to wrinkled; seeds 1-2, dark red to dark brown,with a white aril covering obliquely most of the surface.

Sand dunes; short grassland and pastures on sand; with *Grewia ceracifera, Terminalia* aff. *polycarpa, Acacia* spp.; to 330 m alt.

Probably an adaptation of *Gymnosporia senegalensis* to the open sandy habitats.

G. obscura (A. Rich.) Loes., 1893.

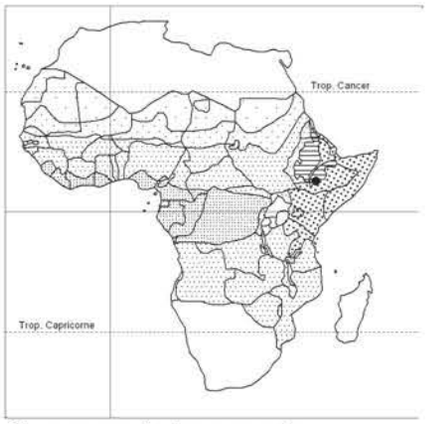
bas.: *Celastrus obscurus* A. Rich.

syn.: *Maytenus obscura* (A. Rich.) Cufod.; *Gymnosporia obscura* (A. Rich.) Fiori, 1912; *G. serrata* (Hochst. ex A. Rich.) Loes. var. *obscura* (A. Rich.) Fiori; Enum. 2: 149, 1992 (sub gen. *Maytenus).*

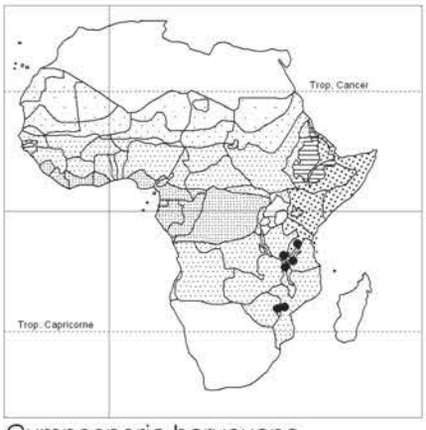
Shrub or tree 2-10 m tall with spines to 4 cm long; branches black or dark grey to dark brown with numerous pale lenticels, glabrous; leaves not fasciculate, glabrous, elliptic-oblong, 3-8,5 × 1,7-5(-8) cm; margins crenulate-serrulate; flowers white-cream, greenish tinged, 5-merous, bisexual, in 1-2,5 cm long slender cymes; fruit red(-brown), obconic 3-gonous, 5-8 mm long, coriaceous, glabrous; seeds reddish brown, glossy, with a fleshy smooth pale-yellow aril at base.

Open woodland; grassland; forest margins; sometimes along streams; scrub; ravine forest; *Pteridium* grassland; 1000-3100 m alt.

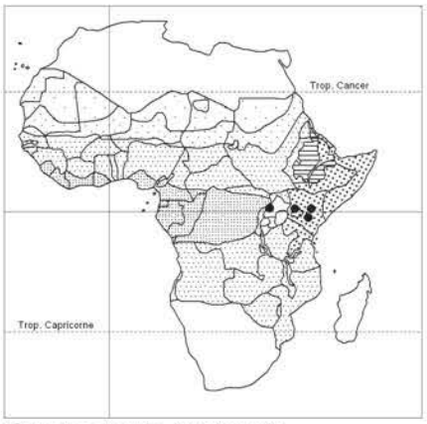
Saudi Arabia (Abha; fide Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 273, 2001).



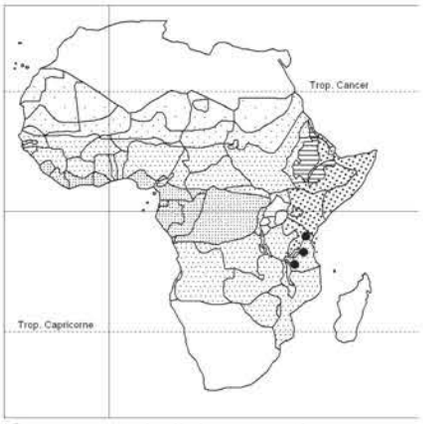
Gymnosporia harenensis



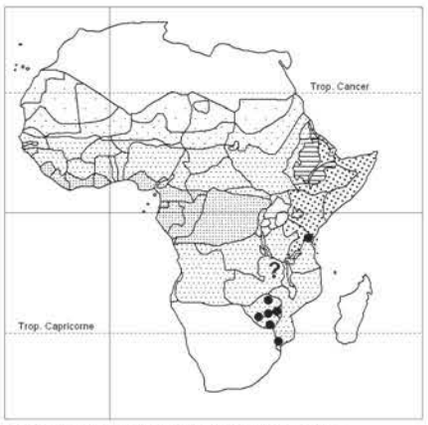
Gymnosporia harveyana



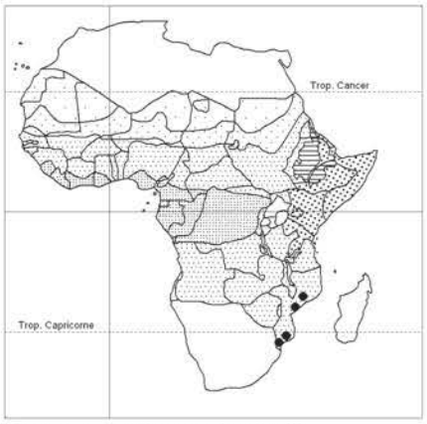
Gymnosporia keniensis



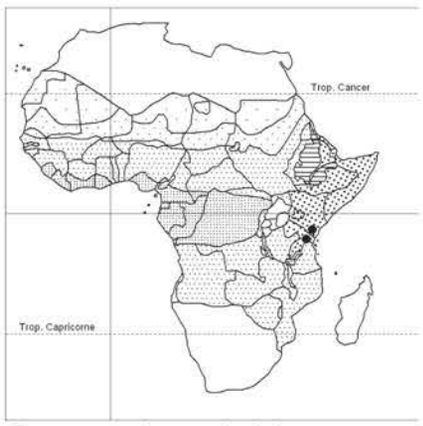
Gymnosporia livingstonei



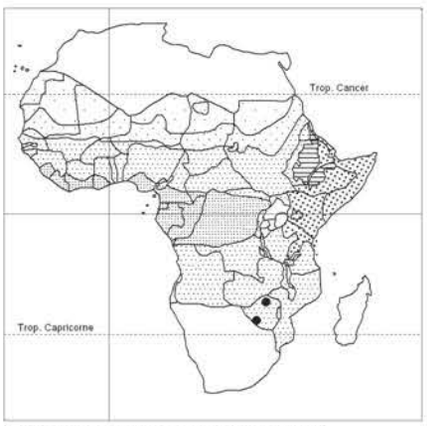
Gymnosporia maranguensis



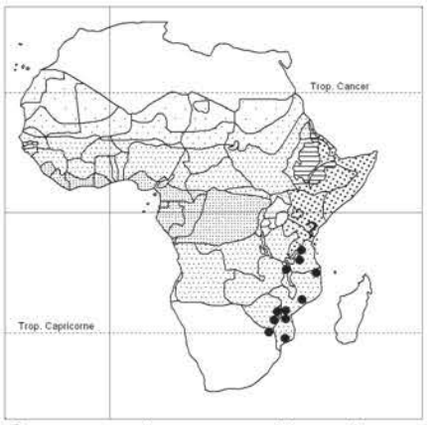
Gymnosporia markwardii



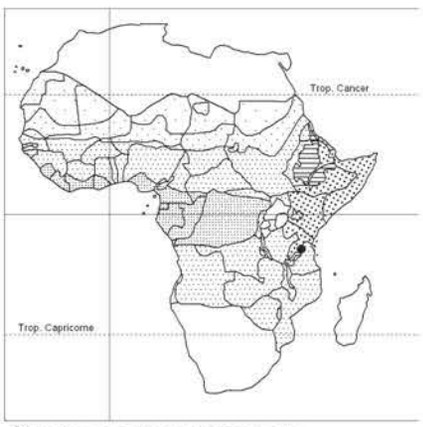
Gymnosporia masindei



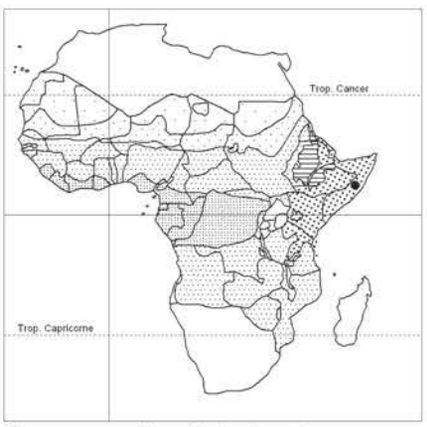
Gymnosporia matoboensis



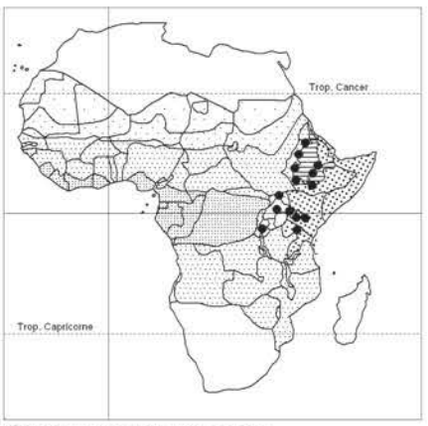
Gymnosporia mossambicensis



Gymnosporia nguruensis



Gymnosporia obbiadensis



Gymnosporia obscura

G. oxycarpa (N. Robson) M. Jordaan in E. Schmidt, M. Lötter & W. McCleland, Trees and Shrubs of Mpumalanga and Kruger Natl. Park: 676, 2002.

bas.: *Maytenus oxycarpa* N. Robson

Shrub 0,9-1,5 m tall; spines to 2 cm long terminating short branches, glabrous; branches flattened, ± angular and purplish-brown when young, becoming terete, greyish, not or slightly striate, without visible lenticels; flowers pale green, bisexual, in small cymes; capsule pendulous, 3-lobed, conical, woody, 1,5-2,5 cm long, the lobes ending in a distinct point; seeds reddish-brown, rugose, with a fleshy yellow aril at base.

Woodland on sandy soil; 402-555 m alt.

S. Africa (Kruger National Park).

Near *G. tenuispina*.

G. parviflora (Vahl) Chiov. (sphalm. *"parvifolia")* subsp. **eritreana** (Sebsebe) M. Jordaan, Taxon 55: 522, 2006.

bas.: *Celastrus parviflorus* Vahl; *Maytenus eritreana* Sebsebe, Nord. J. Bot. 4: 463, 1984.

syn.: *Maytenus parviflora* (Vahl) Sebsebe; *Catha spinosa* Forssk., nom. invalid. – Of subsp. **parviflora** (in Arabia).

Shrub to 2 m tall with spreading branches, and spines to 2,7 cm long; branches brown to greyish with numerous pale lenticels, glabrous or practically so; leaves elliptic, 1-12 × 0,6-6,8 cm, leathery, glabrous; flowers unisexual, 3-50 in 1,5-5,5 cm long cymes; fruit pink to red, 3-gonous, glabrous; seeds brown, glossy, with a white aril at base.

Evergreen bushland often on steep slopes, with *Dichrostachys cinerea, Dodonaea viscosa, Rumex nervosus, Psiadia ? punctulata;* 450-2000 m alt.

Saudi Arabia (Asir), Yemen (subsp. **parviflora**; icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill.: 2/1: 278, 2001).

G. pubescens (N. Robson) M. Jordaan in E. Schmidt, M. Lötter & W. McCleland, Trees and Schrubs of Mpumalanga and Kruger Natl. Park: 676, 2002.

bas.: *Maytenus pubescens* N. Robson

Shrub 0,6-2,4 m tall, bushy, with spines to 6 cm long, terminal or terminating short axillary branches; branches terete or subangular, reddish-brown, shortly whitish-pubescent at first, becoming terete, grey-brown or dark grey, eventually glabrous; leaves fasciculate or not, pale green, ± spathulate, densely shortly pubescent; flowers dioecious, white-cream, in small dichasial cymes; fruit yellow, 6-7 mm long, ± woody; seeds reddish-brown, glossy, with a thin yellowish aril obliquely covering most of the surface.

Colophospermum mopane scrub; also among rocks.

S. Africa.

Near *G. matobensis, G. putterlickioides* also with hairy leaves.

G. punctata (Sebsebe) M. Jordaan, Taxon 55: 522, 2006.

bas.: *Maytenus punctata* Sebsebe

syn.: *Maytenus* sp. sensu Cufodontis 1958: 481, quoad specim. Bally 11003.

Shrub to 2 m tall, armed with spines to 2,5 cm long; branches dark brown to grey, lined, without or with pale lenticels, pubescent to puberulous at least in young parts; leaves alternate, pale green to glaucous, 0,8-3 × 0,5-2 cm; flowers yellowish, bisexual, in slender 1-3,5 cm long cymes; fruit dark red, 2-3-angled, leathery, glabrous, smooth to wrinkled; seeds reticulate, brown, glossy, with a yellow aril at base.

Subcoastal limestone plateau, with *Acacia etbaica, A. horrida, A. sarcophylla, Balanites glabra, Buxus hildebrandtii, Cadia purpurea;* 700-1500 m alt.

G. putterlickioides Loes. – Icon.: Fl. Trop. E. Afr. Celastr.: 7, 1994.

Shrub, rarely a tree, usually 1-3 m tall, many-stemmed from the base, sometimes straggling, occasionally reaching 6 m, pubescent; bark pale grey to brown; branches angular at first, becoming round, with pale lenticels; spines pungent, to 8 cm long, bearing the dwarf spur-branchlets that carry the leaves and flowers; dwarf spurs sometimes ending in a spine; leaves often in fascicles, usually on spines, fawn pubescent on both sides; flowers bisexual, white with a red disk in regularly dichasial cymes 1,5-5 cm long; fruit pink to red, flattened, 3-gonous; seeds ± completely enveloped by a thin whitish aril.

Dry deciduous woodland, wooded grassland, often in rocky places; thickets, termite mounds; riverine areas; xerophyllous scrub; 30-1800 m alt.

S. Africa (Kruger National Park).

Comprises 2 subspp.: – subsp. **putterlickioides** [syn.: *Maytenus putterlickioides* (Loes.) Exell & Mendonça; *Gymnosporia fischeri* Loes., incl. var. *magniflora* Loes. and var. *parviflora* Loes.; *G. borumensis* Loes.]; – subsp. **euonymoides** (Welw. ex Oliv.) M. Jordaan, Taxon 55, 524, 2000 [bas.: *Celastrus euonymoides* Welw. ex Oliv.; syn.: *Gymnosporia euonymoides* (Welw. ex Oliv.) Loes., non *Maytenus euonymoides* Reissek; *Maytenus welwitschiana* Exell & Mendonça].

G. richardsiae (N. Robson & Sebsebe) M. Jordaan, Taxon 55: 522, 2006.

bas.: *Maytenus richardsiae* N. Robson & Sebsebe

Shrub or tree to 3 m tall, sometimes semi-scandent, with spines to 1 cm long; branches ± flattened, ± angular, reddish purple and glabrous when young, becoming terete, striate, without lenticels; leaves not fasciculate, glabrous; flowers white, bisexual, in 3-6 cm long slender cymes; fruit green to reddish, obconic 3-gonous; seeds with a white basal aril.

Ericaceous scrub at edges of dry evergreen forest; 1500-2850 m alt.

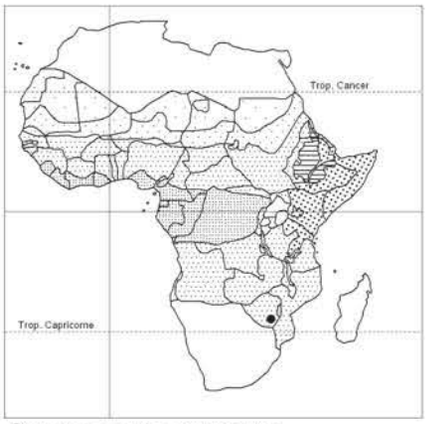
G. schliebenii (Loes. ex) M. Jordaan – Icon.: Kew Bull. 58: 860, 2003.

Shrub or tree, to 4 m tall, glabrous; branchlets angular, branches with pale lenticels; spines axillary or terminating short lateral branches, to 18 mm long, straight and spreading; leaves glabrous; alternate; flowers white, unisexual, in long-pedunculate axillary inflorescences; fruit smooth, 3-gonous; seeds with an orage-red aril completely enveloping the seed.

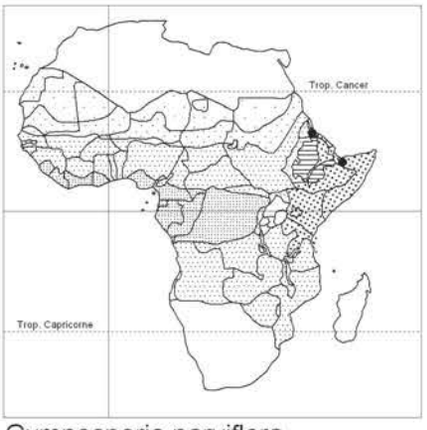
Forest; 700 m alt. (and certainely more).

G. senegalensis (Lam.) Loes., incl. var. *angustifolia* Engl. & Loes. and fa. *minor* Loes., var. *djalonensis* Aubrév., descr. gall., var. *inermis* A. Rich., and var. *spinosa* Engl. ex Loes.; but excl. var. *maranguensis* Loes. *(= G. maranguensis).* – Icon.: Schnell in Ic. Plant. African. 1: pl. 11, 1953; Fl. Trop. E. Afr., Celastraceae: 15, 1994; Fl. Somalia 2: 113, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2(1): 280, 2001 (sub gen. *Maytenus);* Akoegninou & al., Fl. analyt. Bénin: 461, 2006 (Wageningen); Berhaut, Fl. ill. Sénégal 2: 270, 1974.

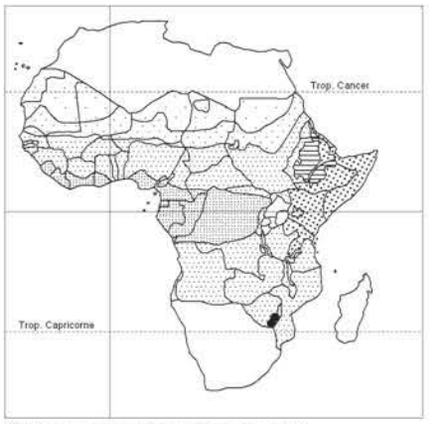
bas.: *Celastrus senegalensis* Lam.



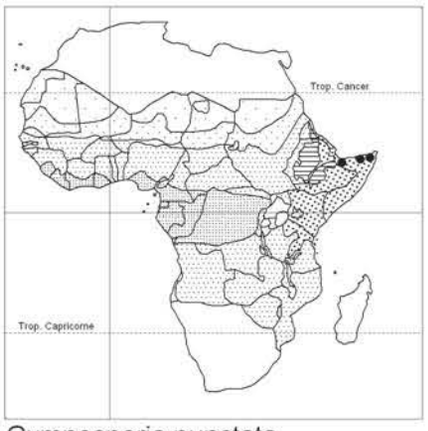
Gymnosporia oxycarpa



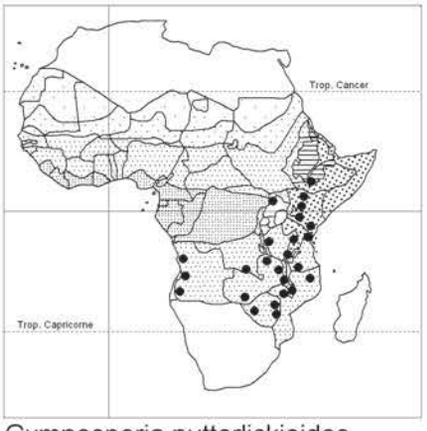
Gymnosporia parviflora



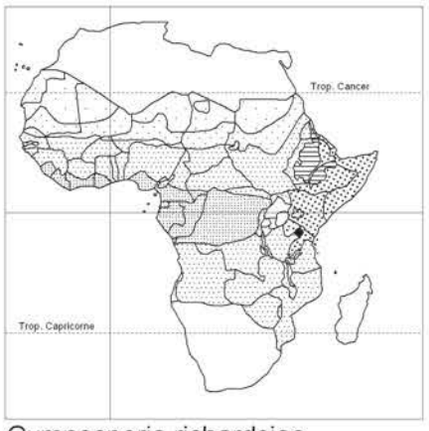
Gymnosporia pubescens



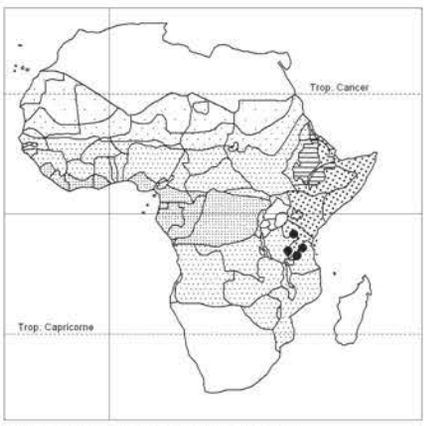
Gymnosporia punctata



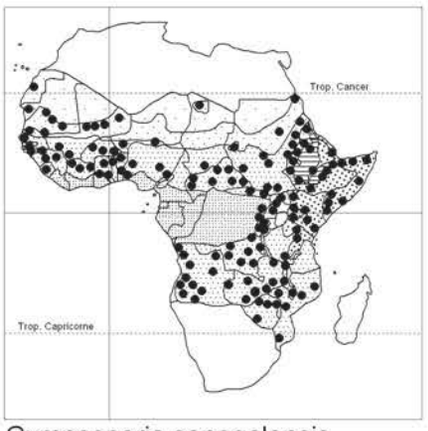
Gymnosporia putterlickioides



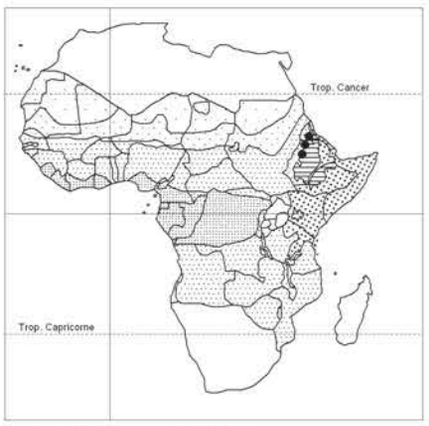
Gymnosporia richardsiae



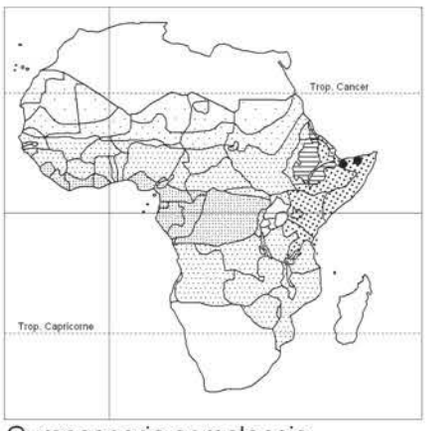
Gymnosporia schliebenii



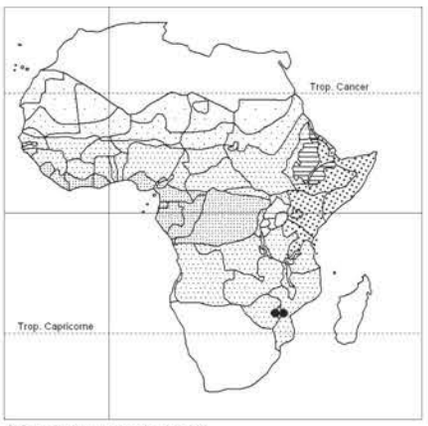
Gymnosporia senegalensis



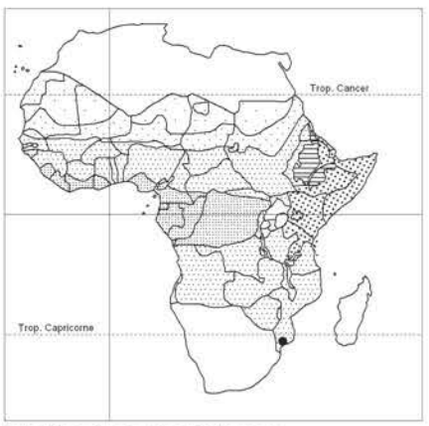
Gymnosporia serrata



Gymnosporia somalensis



Maytenus chasei



Maytenus procumbens

GYMNOSPORIA SENEGALENSIS

syn.: *Celastrus montanus* Roth; *C. coriaceus* Guill. & Perr.; *C. saharae* Battand.; *Catha montana* (Roth) G. Don; *C. senegalensis* (Lam.) G. Don; *Gymnosporia montana* (Roth) Benth., p.p. quoad typum; *G. eminiana* Loes.; *G. coriacea* (Guill. & Perr.) Eggeling; *G. crenulata* Engl.; *G. eremoecusa* Loes.; *G. benguellensis* Loes.; *G. intermedia* Chiov.; *Maytenus senegalensis* (Lam.) Exell; *M. baumii* (Loes.) Exell – For full synonymy see Robson in Bol. Soc. Brot., Sér. 2, 39: 14, 1965, and Sebsebe in Symb. Bot. Upsal. 25(2): 84, 1985.

Shrublet, shrub or tree, semi-deciduous, usually 2-6 m tall but sometimes creeping 0,15-15 m; bark light grey, smooth; young branchlets markedly reddish, sometimes with straight slender spines to 7 cm long; dwarf spur branchlets very reduced and only found on the spines; branches unlined, ± flattened, reddish-purple to reddish-brown, often densely glaucous, and sometimes with numerous pale indistinct lenticels at first, becoming terete and eventually grey-brown; leaves blueish-green, sometimes fasciculate, glabrous; flowers white-cream, scented, unisexual (plants dioecious or rarely monoecious), in slender 1-4 cm long cymes; fruit yellow or red, coriaceous, smooth, 2-6 mm long; seeds 1-2, dark red-brown, glossy, with a fleshy smooth white aril obliquely covering the lower half. – With a beautiful profusion of short-lived flowers that can litter the ground like confetti.

Wide variety of habitats: open woodland, wooded grassland; grassland; bushland; often on termite mounds and in thickets; scrub; riverine fringe thicket; margins of vleis; coastal dune scrub; association with *Acacia seyal, Abutilon bidentatum* sub-association with *Rhus vulgaris (R. incanum)* in rocky thalweg deeply embanked; sand; sandy-mudy slope; gravelly soils; on rocks; black cotton soil; on gypsum; in pastures and in humid situations (Angola); sometimes invading; 0-2440 m alt.

Canary Isl. (Lanzarote, Fuerteventura: subsp. **europaea**?); N & S Morocco (N: near Jebha and El Hoceïma Natl. Park, fide A. Benabid, Flore & écosystèmes du Maroc: 39-40, 2000), Algeria and SE Iberian Peninsula: subsp. **europaea** (Boiss.) Rivas Mart. ex Güemes & M. B. Crespo [bas.: *Celastrus europaeus* Boiss.; syn.: *Catha europaea* (Boiss.) Boiss.; see Lazaroa 26: 83-92, 2005, and Bocconea 1: 35, 1991, and Fl. Iber. 8: 179-181, 1997, with fig.]; Sahara: Tadmayt, Tefedest, Tassili N'ajjer, S Colomb-Béchar, N Adrar des Iforas, erg Djemel; Egypt: Gebel Elba; Namibia, Botswana, S. Africa; Aldabra; N Madagascar; Saudi Arabia, Yemen, Oman; Iran: Sistan; Afghanistan; W Pakistan; India, Bangladesh. – Full map in Bol. Soc. Brot., Sér. 2, 39: map 1, 1965.

Important medicinal plant.

LINDSEY, K, L. & al. (2006). Antibacterial activity of maytenonic acid isolated from the root-bark of Maytenus senegalensis. *S. Afric. J. Bot.* 72: 473-477.

MATU, E. N. & al. (2006). Micropropagation of Maytenus senegalensis (Lam.) Excell (sic!). *S. Afric. J. Bot.* 72: 409-415.

G. serrata (Hochst. ex A. Rich.) Loes., incl. var. *schimperi* Fiori; but excl. var. *keniensis* Loes. *(= G. keniensis),* var. *niansaica* Loes. and var. *steudneri* (Engl.) Loes. (both = *G. gracilipes* subsp. *arguta),* var. *obscura* (A. Rich.) Fiori *(= G. obscura).*

bas.: *Celastrus serratus* Hochst. ex A. Rich.

syn.: *Maytenus serrata* (Hochst. ex A. Rich.) R. Wilczek, excl. var. *arguta* (Loes.) R. Wilczek *(= G. gracilipes* subsp. *arguta)* and var. *gracilipes* (Welw. ex Oliv.) R. Wilczek *(= gracilipes* subsp. *gracilipes);* Enum. 2: 149, 1992. (sub gen. *Maytenus).*

GYMNOSPORIA SERRATA

Shrub or tree 0,8-4 m tall, with spines to 2,7 cm long; branches grey to brownish-purple, densely pubescent, with brown lenticels; leaves leathery, glabrous; flowers unisexual, white to yellowish-green, pubescent, 1-50 in short cymes; fruit pink to red; seeds brown with a yellowish aril at base.

Rocky or grassy slopes or in flatter areas in open fields as bushes often in clumps of 2-4 together; ± 1650-2250 m alt.

Has been recorded from Uganda, Imatong Mountains, but this seems to be a misidentification for *G. gracilipes* subsp. *arguta* according to Friis & Vollesen, Fl. Sudan-Uganda border 2: 621, 2005.

G. somalensis Loes.

syn.: *Maytenus somalensis* (Loes.) Cufod. sensu str., Bull. Jard. Bot. Etat, Brux. 28, Suppl.: 480, 1958, non prob. sensu Cufodontis in Senckenberg. Biol. 41: 370 and pl. 57 fig. 2, 1960; 43: 290, 1062.

Shrub 1-2,5 m tall with spines to 3,6 cm long; branches grey to dark grey, lined, smooth to rough, with few white lenticels, pubescent; leaves alternate, pubescent, greyish-green, usually orbicular, 0,4-2,5 × 0,5-1,8 cm; flowers unisexual, white-pale yellow, in 1-3,5 cm long cymes (2-5-flowered); fruit pink to light red; seeds brown with a white aril at base.

Limestone escarpment; in evergreen bushland with *Acacia etbaica, Boswellia carteri, Buxus hildebrandtii, Cadia purpurea, Dracaena schizantha;* 540-1800 m alt.

* * *

Gymnosporia hemipterocarpa M. Jordaan, Bothalia 38: 150-153, 2008, occurs just S of southernmost Mozambique.

Gymnosporia littoralis (Backer) M. Jordaan [bas.: *Gymnosporia montana* var. *littoralis* Backer, non *Celastrus littoralis* A. Chev., nom. nud.] is a plant from S Thailand, Malaysia and Java.

Maytenus littoralis Carvalho-Okano is a plant from Brazil.

SYNONYMS:

Gymnosporia albata (N. E. Br.) Sim = **Maytenus undata**
amaniensis Loes. = **Gymnosporia acuminata**
ambonensis Loes. = **G. gracilis** subsp. **gracilis**
angularis (Sond.) Sim var. *grandifolia* Davison = **G. grandifolia**
arbutifolia sensu Chiov. p.p. = **G. buchananii**
atkaio (A. Rich.) Loes. = **G. arbutifolia** subsp. **arbutifolia**
benguellensis Loes. = **G. senegalensis**
beniensis Robyns & Lawalrée = **G. buxifolia**
bequaertii De Wild. = ? **G. buxifolia**
borumensis Loes. = **G. putterlickioides subsp. putterlickioides**
brevipetala Loes. = ? **G. buxifolia**
bukobina Loes. = **G. acuminata**
buxifolia (L.) Szyszyl. var. *holtzii* Loes. = ? **G. buxifolia**
buxifolioides Loes. = ?
castelli Pic. Serm. = **G. gracilipes** subsp. **arguta**
concinna (N. E. Br.) Bews. = **G. harveyana** subsp. **harveyana**
condensata Sprague = **G. buxifolia**
coriacea (Guill. & Perr.) Eggeling = **G. senegalensis**
crenulata Engl. = **G. senegalensis**
deflexa Sprague = **Maytenus undata**

ellenbeckii Loes. = **Gymnosporia gracilipes** subsp. **arguta**
eminiana Loes. = **G. senegalensis**
engleriana Loes., incl. var. *macrantha* Loes. = **G. arbutifolia** subsp. **arbutifolia**
eremoecusa Loes. = **G. senegalensis**
euonymoides (Welw. ex Oliv.) Loes. = **G. putterlickioides** subsp.
fasciculata (Tul.) Loes. = **Maytenus undata**
ferruginea Bak.= **Euclea crispa** *(Ebenaceae)*
filamentosa Loes. var. *brevistaminea* Loes. = **Gymnosporia arbutifolia** subsp. **arbutifolia**
var. *major* Loes. = **G. buchananii**
var. *minor* Loes. = **G. buchananii**
var. *pubescens* sensu Cufod. 1958 = **G. arbutifolia** subsp. **arbutifolia**
fischeri Loes., incl. var. *magniflora* Loes., and var. *parviflora* Loes. = **G. putterlickioides** subsp. **putterlickioides**
gillettii De Wild. = **G. gracilipes** subsp. **gracilipes**
goetzeana Loes.= **Maytenus undata**
gracilipes (Welw. ex Oliv.) Loes. var. *arguta* Loes. = **Gymnosporia gracilipes** subsp. **arguta**
heterophylla sensu auct. afr. trop. non (Eckl. & Zeyh.) Loes. = **G. buxifolia**
huillensis (Welw. ex Oliv.) Szyszyl. = **Maytenus undata**
intermedia Chiov. = **Gymnosporia senegalensis**
lancifolia (Thonn.) Loes. = **Maytenus undata**
laurifolia (A. Rich.) Loes. = **M. undata**
lepidota Loes., incl. var. *kilimandscharica* Loes. and var. *ruwenzorica* Loes. = **Gymnosporia acuminata**
luteola (Del.) Loes. = **Maytenus undata**
maliensis Schnell = **M. undata**
meruensis Loes. = **Gymnosporia acuminata**
montana (Roth) Benth. p.p. quoad typum = **G. senegalensis**
"ndelleensis A. Chev." = **G. buchananii**
nyasica Burtt Davy & Hutch. 1932 = **Pterocelastrus echinatus**
nyassica Gilli 1970 = ? **Gymnosporia buxifolia**
obscura (A. Rich.) Fiori 1912 = **G. obscura** (A. Rich.) Loes. 1893
peglerae Davison = **Maytenus undata**
procumbens (L. f.) Loes. = **M. procumbens**
rehmannii Szyszyl. = **M. undata**
senegalensis (Lam.) Loes., incl. var. *angustifolia* Engl. & Loes., incl. forma *minor* Loes. and var. *djalonensis* Aubrév., and var. *inermis* A. Rich., and var. *spinosa* Engl. ex Loes. = **Gymnosporia senegalensis**
var. *maranguensis* Loes. = **G. maranguensis**
serrata (Hochst. ex A. Rich.) Loes
var. *keniensis* Loes. = **G. keniensis**
var. *niansaica* Loes. = **G. gracilipes** subsp. **arguta**
var. *obscura* (A. Rich.) Fiori = **G. obscura**
var. *steudneri* (Engl.) Loes. = **G. gracilipes** subsp. **arguta**
trothae Loes. = **G. gracilipes** subsp. **gracilipes**
undata (Thunb.) Szyszyl. = **Maytenus undata**
zanzibarica Loes. = **Gymnosporia gracilis** subsp. **gracilis**
zeyheri (Sond.) Szyszyl. = **Maytenus undata**

(HARTOGIA)

Hartogia agrifolia Chiov. = **Elaeodendron aquifolium**
thea E. Mey. = **Catha edulis**

HELICTONEMA – See **Hippocrateaceae**

HIPPOCRATEA – See **Hippocrateaceae**

LOESENERIELLA – See **Hippocrateaceae**

MAYTENUS / *3*

Genus distinguishable (from *Gymnosporia)* by the following combination of characters: – plants unarmed; – leaves spirally arranged; – flowers in cymes, rarely spike-like, with or without stalks, or in clusters or fascicles; bisexual; – ovary without a stalk, often partly embedded in the disc, 2- to 5-chambered.

Maytenus chasei N. Robson

Shrub or tree 2-6 m tall, glabrous except sometimes the young shoots; branches 4-lined, becoming terete, longitudinally striate; leaves dark green, glossy above, paler beneath, margins shallowly glandular-crenulate-denticulate; fruit green, 2-3-lobed; seeds orange embedded in the aril.

Evergreen forest; 1140-1800 m alt.

Related to *M. undata,* both without latex.

M. procumbens (L. f.) Loes.

bas.: *Celastrus procumbens* L. f.

syn.: *Gymnosporia procumbens* (L. f.) Loes.

Shrub or tree to 6-10 m tall, sometimes bushy or scandent or drooping or ± procumbent (in S. Africa), glabrous; branches lined when young, becoming terete; leaves pale green, concolorous, margins with 3-5 spinulose glandular denticles on each side; fruit bright yellow to orange (-brown), ± 3-lobed; seeds orange-brown enclosed by an aril.

Woodland and scrub near the sea, on sandy soil ; 0-150 m alt.

S. Africa.

Belonging to the *M. undata* complex.

M. undata (Thunb.) Blakelock – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2(1): 282, 2001; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 685, 2006 (partial); E. Schmidt & al., Trees & Shrubs Mpumalanga…: 356-357, 2002.

bas.: *Celastrus undatus* (Thunb.)

syn.: *Gymnosporia undata* (Thunb.) Szyszyl.; *G. luteola* (Del.) Loes.; *Celastrus lancifolius* Thonn.; *C. luteolus* Del.; *C. laurifolius* A. Rich.; *Catha fasciculata* Tul.; *Celastrus zeyheri* Sond.; *C. huillensis* Welw. ex Oliv.; *C. fasciculatus* (Tul.) Boiv. ex Hoffm.; *Gymnosporia zeyheri* (Sond.) Szyszyl.; *G. huillensis* (Welw. ex Oliv.) Szyszyl.; *Celastrus albatus* N. E. Br.; *Gymnosporia deflexa* Sprague; *G. albata* (N. E. Br.) Sim; *G. peglerae* Davison; *Maytenus goetzeana* (Loes.) Loes.; *M. laurifolia* (A. Rich.) Loes.; *M. huillensis* (Welw. ex Oliv.) Loes.; Enum. 2: 149, 1992.

MAYTENUS UNDATA

Shrub or tree 1,5-15 m tall, evergreen, much branched, sometimes scandent, glabrous, *very variable;* branches ± markedly lined when young, becoming terete; crown globular; leaves pale green or silvery to dark green, margins often glandular-denticulate to spinose dentate; flowers white to pale yellow, fragant; fruit white, pinkish red or orange, 3-gonous with rounded or carinate lobes; seeds orange-brown, ± completely embedded in an oblique aril.

Fringing forest; woodland, incl. dry; *Podocarpus latifolius, Olea* forest; rain-forest with *Albizia, Macaranga, Croton, Ocotea;* forest with *Hypericum, Dombeya;* granitic rocks; *Podocarpus, Syzygium* forest; forest edges; river banks; around waterfalls; coastal bushland; *Acacia-Commiphora* bushland; edge of *Buxus* scrub; mixed evergreen bushland; rocky limestone slopes; 0-3200 m alt.

Botswana, S. Africa; Madagascar; Comoro Is.; Saudi Arabia (Asir), Yemen.

Maytenus ilicina (Burch.) Loes. [bas.: *Celastrus ilicinus* Burch.) is a good species from central S. Africa. – **M. lucida** (L.) Loes. and **M. procumbens** (L. f.) Loes. (see above) are also distinctive.

SYNONYMS:

Maytenus acuminata (L. f.) Loes. = **Gymnosporia acuminata**
- *addat* (Loes.) Sebsebe = **G. addat**
- *amaniensis* (Loes.) Loes. = **G. acuminata**
- *andongensis* (Oliv.) Exell & Mendonça = ? **G. buxifolia**
- *angolensis* Exell & Mendonça = ? **G. buxifolia**
- *arbutifolia* (Hochst. ex A. Rich.) R. Wilczek = **G. arbutifolia**
  - var. *sidamoensis* Sebsebe = **G. arbutifolia** subsp. **sidamoensis**
- *arguta* (Loes.) N. Robson = **G. gracilipes** subsp. **arguta**
- *baumii* (Loes.) Exell = **G. senegalensis**
- *brevipetala* (Loes.) R. Wilczek = ? **G. buxifolia**
- *buchananii* (Loes.) R. Wilczek = **G. buchananii**
- *bukobina* (Loes.) Loes. = **G. acuminata**
- *castellii* (Pic. Serm.) Cufod. = **G. gracilipes** subsp. **arguta**
- *conferta* Masinde ex N. Robson = **G. masindei**
- *cortii* (Pic. Serm.) Cufod. = **G. cortii**
- *cymosa* (Solander) Exell = **G. buxifolia**
- *drummondii* N. Robson & Sebsebe = **G. drummondii**
- *edgari* Exell & Mendonça = **G. buchananii**
- *ellenbeckii* (Loes.) Cufod. = **G. gracilipes** subsp. **arguta**
- *engleriana* (Loes.) Cufod. var. *macrantha* (Loes.) Cufod. = **G. arbutifolia** subsp. **arbutifolia**
- *eritreana* Sebsebe = **G. parviflora** subsp.
- *fasciculata* (Tul.) Loes. = **Maytenus undata**
- *goetzeana* (Loes.) Loes. = **Maytenus undata**
- *gracilipes* (Welw. ex Oliv.) Exell & Mendonça
  - subsp. *arguta* (Loes.) Sebsebe = **Gymnosporia gracilipes** subsp. **arguta**
  - subsp. *gracilipes* = **G. gracilipes** subsp. **gracilipes**
- *harenensis* Sebsebe = **G. harenensis**
- *heterophylla* (Eckl. & Zeyh.) N. Robson
  - subsp. *arenaria* N. Robson excl. typ. = **G. arenicola**
  - subsp. *arenaria* sensu N. Robson, Fl. Zamb. p.p. = **G. markwardii**
  - subsp. *glauca* N. Robson = **G. glaucophylla**
  - subsp. *heterophylla* p.p. = **G. buxifolia**
  - subsp. *puberula* N. Robson = **G. matoboensis**

MAYTENUS

- *huillensis* (Welw. ex Oliv.) Loes. = **Maytenus undata**
- *keniensis* (Loes.) N. Robson & Sebsebe = **Gymnosporia keniensis**
- *lancifolia* (Thonn.) Loes. = **Maytenus undata**
- *laurifolia* (A. Rich.) Loes. = **Maytenus undata**
- *lepidota* (Loes.) Robyns & Lawalrée, incl. var. *kilimandscharica* (Loes.) Robyns & Lawalrée = **Gymnosporia acuminata**
- *luteola* (Del.) Andrews = **Maytenus undata**
- *masindei* Gereau = **Gymnosporia masindei**
- *meruensis* (Loes.) Loes.= **G. acuminata**
- *mossambicensis* (Klotzsch) Blakelock = **G. mossambicensis**
  - var. *ambonensis* (Loes.) N. Robson = **G. gracilis** subsp. **gracilis**
  - var. *guruensis* N. Robson = **G. gurueensis**
  - var. *mossambicensis* sensu N. Robson, Fl. Zamb. p.p. = **G. harveyana** subsp. **harveyana**
  - var. *rubra* (Harv.) Blakelock = **G. mossambicensis**
  - var. *stolzii* N. Robson = **G. harveyana** subsp. **stolzii**
- *nguruensis* N. Robson & Sebsebe = **G. nguruensis**
- *obbiadensis* (Chiov.) Cufod. = **G. obbiadensis**
- *obscura* (A. Rich.) Cufod. = **G. obscura**
- *obscura* (A. Rich.) Cufod. p.p. = **G. addat**
- *ovata* (Wall. ex Wight & Arn.) Loes.
  - var. *arguta* (Loes.) Blakelock = **G. gracilipes** subsp. **arguta**
  - var. *ovata* fa. *pubescens* (Schweinf.) Blakelock p.p. = **G. serrata**, **G. buchananii**
  - var. *ovata* fa. *ovata* = **G. gracilipes** subsp. **arguta**
- *ovata* sensu Cufod. 1958 p.p. = **G. addat**
- *oxycarpa* N. Robson = **G. oxycarpa**
- *parviflora* (Vahl) Sebsebe = **G. parviflora**
- *pubescens* N. Robson = **G. pubescens**
- *punctata* Sebsebe = **G. punctata**
- *putterlickioides* (Loes.) Exell & Mendonça = **G. putterlickioides**
- *richardsiae* N. Robson & Sebsebe = **G. richardsiae**
- *rhodesica* Exell = **G. acuminata**
- *royleana* sensu Cufod. 1962 quoad specim. aethiop. = **G. gracilipes** subsp. **arguta**
- *senegalensis* (Lam.) Exell = **G. senegalensis**
- *serrata* (Hochst. ex A. Rich.) R. Wilczek
  - var. *arguta* (Loes.) R. Wilczek = **G. gracilipes** subsp. **arguta**
  - var. *gracilipes* (Welw. ex Oliv.) R. Wilczek = **G. gracilipes** subsp. **gracilipes**
- *somalensis* (Loes.) Cufod. s. str. = **G. somalensis**
- cf. *somalensis* sensu Cufod. = **G. arbutifolia** subsp. **sidamoensis**
- sp. sensu Cufod. 1958 p.p. = **G. punctata**
- *verrucosa* E. Mey. ex Sond. = **Putterlickia**
- *welwitschiana* Exell & Mendonça = **Gymnosporia putterlickioides** subsp. **euonymoides**
- *zeyheri* (Sond.) Loes. = **Maytenus undata**

MYSTROXYLON / *1*

syn.: *Cassine* sensu Loes., 1892 et auct. plur.

Mystroxylon aethiopicum (Thunb.) Loes. subsp. **schlechteri** (Loes.) R. M. Archer – Icon.: Fl. Pl. Afr. 55: 2134, 1997; Beentje, Kenya trees, shrubs & lianas: 342, 1994; F. White & al., Evergreen forest fl. Malawi: 186, 2001; E. Schmidt & al., Trees & shrubs Mpumalanga…: 359, 2002; Coates Palgrave, Trees south. Afr., ed. 3: ill. 158, 2002.

bas.: *(Cassine aethiopica* Thunb.); *Mystroxylon schlechteri* Loes.

syn.: *Cassine schlechteri* (Loes.) Davison; *Mystroxylon aethiopicum* (Thunb.) Loes. var. *pubescens* (Oliv.) Brenan; *Cassine engleriana* Loes.; *Mystroxylon englerianum* (Loes.) Loes.; *Cassine holstii* Loes.; *Mystroxylon holstii* (Loes.) Loes.; *M. goetzei* Loes.; *M. ussanguense* Loes.; *Cassine aethiopica* Thunb. var. *burkeana* (Sond.) Loes. 1893, non *Mystroxylon burkeanum* Sond. 1859-1860; *M. aethiopicum* (Thunb.) Loes. var. *burkeanum* (Sond.) Loes. 1900, non *M. burkeanum* Sond. 1859-1860 [syn.: *Mystroxylon aethiopicum* (Thunb.) Loes. subsp. *burkeanum* (Sond.) R. H. Archer].

Evergreen, rarely deciduous shrub or tree 1-20 m tall; or scrambling shrub branched from the base, stems numerous, with Rhamnoid habit; branches drooping, bole short, crown narrow; bark rough, dark brown, smooth to longitudinally and transversally fissured; branchlets terete, eventually flattened (very rarely angular), usually velutinous to puberulous when young, eventually glabrous; leaves alternate, dark and glossy above, much paler below, ovate, 2-7 × 1-5 cm; flowers yellow-green in 2 cm long cymes, bisexual; drupe orange to red.

Large ecological amplitude. Evergreen forest and scrub; *Juniperus* forest; rain-forests; banks of streams in wet forests; open or coastal woodland; often on termite hills; stony bushy places; sandy secondary thickets; savannas; xerophyllous forests; semi-evergreen bushland and scrub on sandy clay loam; open forests with *Brachystegia;* 0-3000 m alt.

Very variable.

Subsp. **schlechteri** occurs in Tropical Africa, S. Africa, Botswana, Namibia, Madagascar, Comoro Isl.; subsp. **aethiopicum:** southern parts of the Western Cape and Eastern Cape. The taxon previously known as *Cassine velutinum* (Loes. ex Harv.) Davison, will probably be given infraspecific status; it is probably the same for the specimens from Aldabra Isl. and the Seychelles. *Mystroxylon burkeanum* Sond. 1859-60 is a good species from S. Africa or it may also be considered a subsp. of *M. aethiopicum.* – Subsp. **burkeanum** (Sond.) R. H. Archer comb. et stat. nov. in E. Schmidt & al., Trees & shrubs Mpumalanga…, ed. 2: 676, 2007; in S. Africa.

Very similar to the S. African *Maytenus peduncularis* except for the drupaceous fruit.

PLATYPTEROCARPUS / *1*

Platypterocarpus tanganyikensis Dunkley & Brenan – Icon.: Fl. Trop. E. Afr., Celastr.: 24, 1994.

Tree 13-27 m tall "having in some cases upwards of 12 m of clear stem, more often branching at 6 m and upwards, branches following the line of the stem rather than spreading outwards; bark of a dirty greyish colour, apparently having a slightly reddish-yellow tinge, in the older trees near the base and in the thicker part of the bole fissured with deep cracks about 5-10 cm apart". Branches 4-lined and slightly flattened when young, becoming terete; leaves dark green and glossy above, paler and dull below, ovate-lanceolate, 4-13 × 1-6 cm; flowers bisexual, in short cymes; *fruit winged, indehiscent* (unique among African *Celastraceae).*

Transition zone between wet and dry forest, with *Cassipourea elliottii, Fagaropsis angolensis, Catha edulis, Calodendrum eickii, Rawsonia usambarensis, Bersama holstii, Ochna holstii;* evergreen forest with *Podocarpus, Juniperus procera, Ocotea usambarensis, Ficalhoa* forest on grey sandy soil; fairly common; 1500-1900 m alt.

When in flower, and on a merely superficial examination resembling a *Gymnosporia* species. – Affinities with *Tripterygium* from E. Asia and *Wimmeria* from Central America.

PLEUROSTYLIA / *3*

Pleurostylia africana Loes.; Coates Palgrave, Trees south. Afr., ed. 3: 626-627, 2002 (also *P. capensis;* also D. von Ahlefeldt & al., Medicin. pl. S. Africa's seaboard: 142-143, 2003 with map). – Icon.: Fl. Trop. E. Afr., Celastr.: 28, 1994; Beentje, Kenya trees, shrubs & lianas: 343, 1994; Coates Palgrave, Trees south. Afr., ed. 3: ill. 163, 2002.

syn.: *P. heynei* Wight & Arn. var. *acutifolia* Suess.

Tree or shrub 1-20 m tall, with rounded crown; branches pale grey-green, 4-lined when young, becoming vinous red, eventually terete; branchlets 4-winged; leaves glossy above, ± concolorous beneath, elliptic, 3,5-12 × 1-4 cm, margins entire; flowers bisexual, greenish, in small clusters; drupe green.

Termite mounds; rocky hillsides; deciduous woodland; stream-banks; forest margins on well-drained soils; wooded savannas; 420-1800 m alt.

Closely allied to the S. African **P. capensis** (Turcz.) Loes. This species seems to reach the southern border of Mozambique, a large tree 20 m tall, differing from *P. africana* by having more numerous ovules in each compartment of the ovary (6-8, not 2-4).

P. opposita (Wall.) Alston – Icon.: Ding Hou in Fl. Males. Ser. 1, 6, Celastraceae: 287, 1963.

bas.: *Celastrus oppositus* Wall.

syn.: *Pleurostylia wightii* Wight & Arn.; *Elaeodendron microcarpum* White & Francis; *E. mindanaense* Merrill

Tree or shrub to 15 m tall; stems pale grey-green, 4-lined when young, becoming whitish, eventually terete; leaves grey-green, ± glaucous, ± obovate, 3-8 × 1,5-5,5 cm, margins entire; flowers green, bisexual, in condensed rounded clusters; fruit white, 1(2)-seeded.

Dune scrub.

S India, Sri Lanka, S China, Malaysia to Australia (Queensland) and New Caledonia.

Only one specimen recorded for the African mainland.

PLEUROSTYLIA

P. serrulata Loes.

Shrub 2-8 m tall; stem 15 cm Ø, with branches and branchlets overhanging river or reaching the soil; young branchlets pubescent with simple or stellate white hairs; bark grey-brown, ± clearly longitudinally striate; leave (sub-)opposite, dark green and glabrous above, paler and pubescent beneath; flowers bisexual, yellowish, 4-merous in long-pedunculate cymes; stigma not peltate (unique in the genus); fruit orange-red, asymmetric, 1-seeded.

Rain-forest, stream sides; 850-900 m alt.

PRIONOSTEMMA – See **Hippocrateaceae**

PRISTIMERA – See **Hippocrateaceae**

(PSEUDOCASSINE)

Pseudocassine transvaalensis (Burtt Davy) Bredell = **Elaeodendron transvaalense**

PTEROCELASTRUS / *1*

Pterocelastrus echinatus N. E. Br. – Icon.: Davison in Bothalia 2: 323 pl. 13 fig. 2 (sub nom. *P. rehmannii),* 1927; F. White & al., Evergreen forest fl. Malawi: 186, 2001; E. Schmidt & al., Trees & Shrubs Mpumalanga…: 360-361, 2002.

syn.: *P. galpinii* Loes.; *P. rehmannii* Davison; *Gymnosporia nyasica* Burtt Davy & Hutch.

Shrub or tree 0,3-18 m tall; branches angular, greyish when young, becoming vinous red and eventually terete with whitish lenticels; leaves alternate, (dark) green and glossy above, paler and dull beneath, 3-8 × 1-4 cm, ± ovate, margins entire; flowers bisexual, greenish, white or yellow, in pedunculate numerous-flowered dichasial inflorescences; fruit capsular, red, with 1-3 ± ridge-like protuberances from each (=3) valve.

Evergreen forest; on rocky slopes; scrub forest; edges of montane rain-forest; 1230-2400 m alt.

S. Africa, Swaziland.

PUTTERLICKIA / *1*

JORDAAN, M. (1999). Studies in subfamily Celastroideae (Celastraceae): generic concepts. *Plantlife* 20: 7-8.

JORDAAN, M. & A. E. VAN WYK (1998). Systematic studies in subfamily Celastroideae (Celastraceae) in southern Africa: The genus Putterlickia. *S. Afric. J. Bot.* 64: 322-329.

Putterlickia verrucosa (E. Mey. ex Sonder) Szyszyl. – Icon.: Bothalia 2: 323 pl. 13 fig. 1, 1927; S. Afric. J. Bot. 64: 326, 1998; E. Schmidt & al., Trees & shrubs Mpumalanga…: 362-363, 2002.

bas.: *Celastrus verrucosus* E. Mey. ex Sonder

Straggling shrub or tree 1-3 m tall, spreading, much branched, with spines 4-7 cm long and short shoots, glabrous; branches terete, with angular twigs, reddish or purplish brown, becoming grey-brown and verrucose with prominent whitish warty lenticels, each with a longitudinal slit; leaves tufted, coriaceous, ± obovate, 2-4 × 1-2 cm, glabrous, margins entire or serrate revolute; flowers white or cream 5-merous, bisexual, in few-flowered cymes; ovule ± 6 per locule; capsule woody, brownish-red, to 2,5 cm long; seeds 2-8, reddish brown, enveloped by an orange aril.

Evergreen forest; deciduous woodland.

E S. Africa, Swaziland.

REISSANTIA – See **Hippocrateaceae**

SALACIA – See **Hippocrateaceae**

SALACIGHIA– See **Hippocrateaceae**

SIMICRATEA – See **Hippocrateaceae**

SIMIRESTIS – See **Hippocrateaceae**

THYRSOSALACIA – See **Hippocrateaceae**

TRISTEMONANTHUS – See **Hippocrateaceae**

BREXIACEAE / *1* g./ *1* sp.

Formerly placed in *Saxifragaceae (Brexioideae), Grossulariaceae*, recently in *Celastraceae.*

MATTHEWS, M. L. & P. K. ENDRESS (2005). Comparative floral structure and systematics in Celastrales (Celastraceae, Parnassiaceae, Lepidobotryaceae). *Bot. J. Linn. Soc.* 149: 129-194.

BREXIA / *1*

syn.: *Thomassetia* Hemsl.

Brexia Thouars, nom. cons. – A genus of 12 species from E Africa (one species) to the Seychelles (G. E. Schatz, Fl. Génér. Arbres Madagascar, 2001), formerly considered to comprise 1 variable species.

Brexia madagascariensis (Lam.) Ker Gawl., incl. var. *mossambicensis* Oliv. – Icon.: Bot. Reg. 9: pl. 730, 1823; Thonner, Blütenpfl. Afr.: pl. 61, 1908; Thonner, Fl. Pl. Afr.: pl. 60 opposite p. 233, 1915; Gomes e Sousa, Dendrol. Moç. 1: pl. 23, 1966; Robson in Fl. Zambes. 4: 60, 1978; Schatz, o. c.: 106 ; Beentje & Bandeira, Field guide mangrove trees Afr. & Madag.: 76, 2007.

bas.: *Venana madagascariensis* Lam.

syn.: cf. Fl. Zambes. 4: 61, 1978.

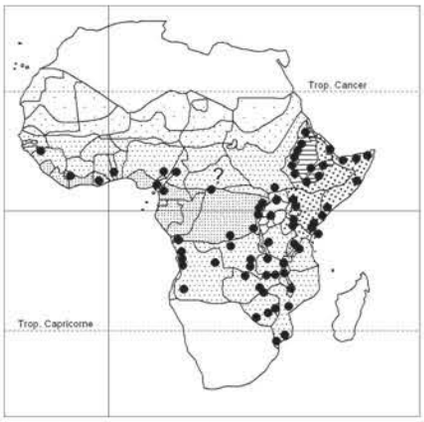
Evergreen shrub or tree, much branched, glabrous, (2-)3-7 (-10) m tall; stems smooth, angular when young, later terete; leaves coriaceous, shining, narrowly oblong (young shoots) to broadly obovate (mature shoots), 3,5-35 cm long, 2-7,6 cm wide, with margin spinose dentate (young shoots) to crenate or entire, apex rounded or notched); peduncle of inflorescence flattened or ± winged; flowers 2,5-3 cm Ø, petals greenish-white, fleshy, early deciduous; drupe 5-ribbed, capable of floating in the sea for several months without the seeds losing their viability; seeds keeled.

Coastal evergreen bushland on coral, on sandy (-loamy) soil or coarse rocky ground; edges of saline water swamp forest, mangrove swamps; fringing forest and eroded ridges near the sea; 0-40 m alt.

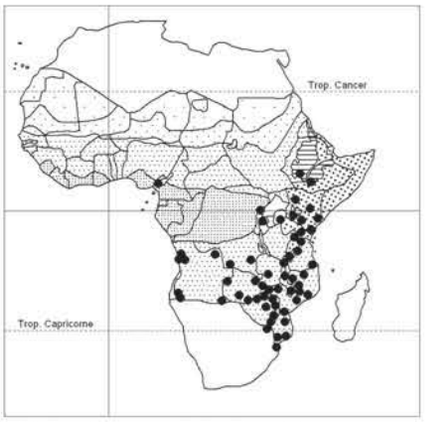
Very variable in leaf shape, also on the same plant. Mainland material with fewer-flowered inflorescences and larger fruits (var. *mossambicensis).*

Madagascar, Comoro Isl., Seychelles.

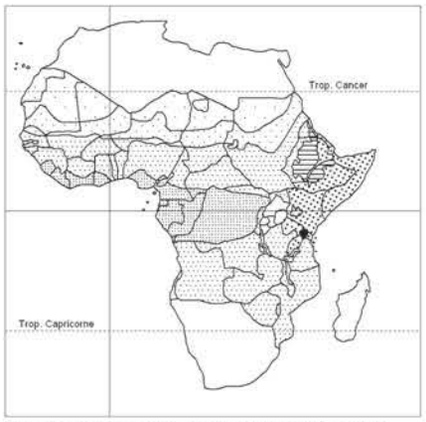
Cultivated at Bayswater (England) in the early 19th century (Bot. Reg. 9).



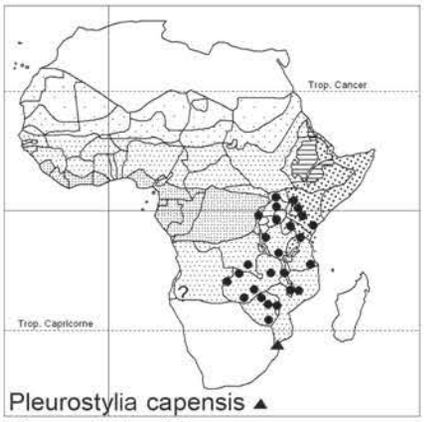
Maytenus undata



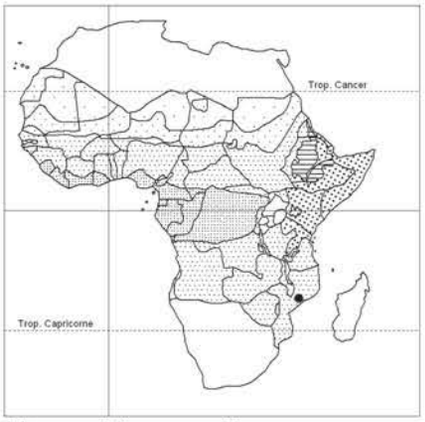
Mystroxylon aethiopicum subsp. schlechteri



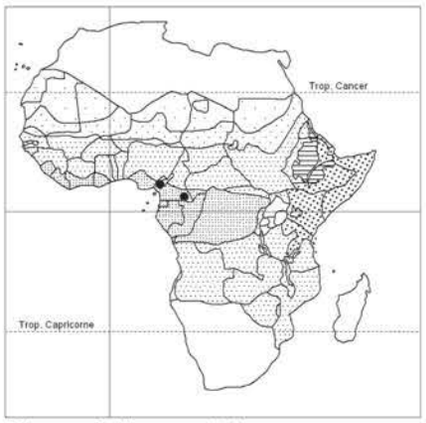
Platypterocarpus tanganyikensis



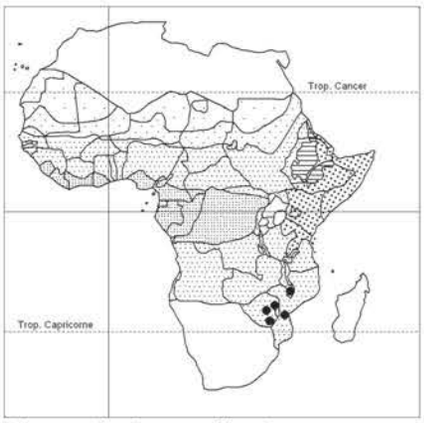
Pleurostylia capensis ▲
Pleurostylia africana ●



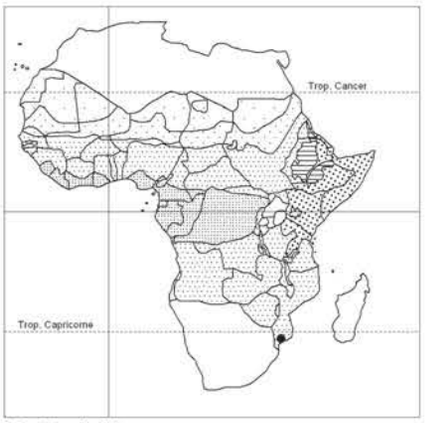
Pleurostylia opposita



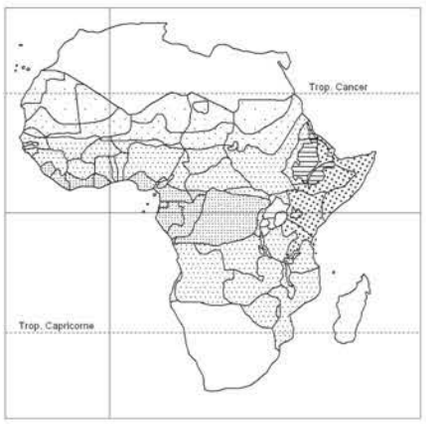
Pleurostylia serrulata

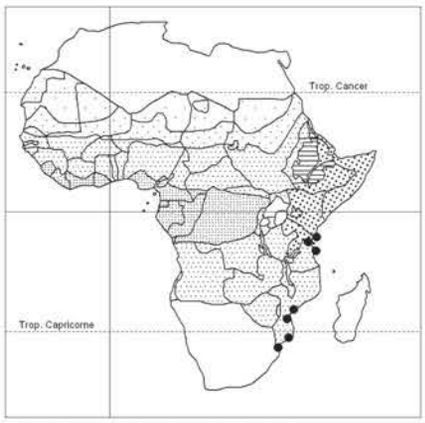


Pterocelastrus echinatus

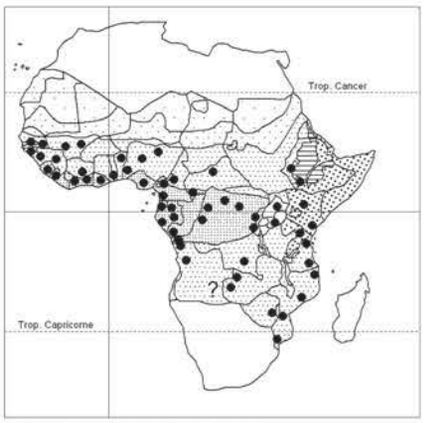


Putterlickia verrucosa

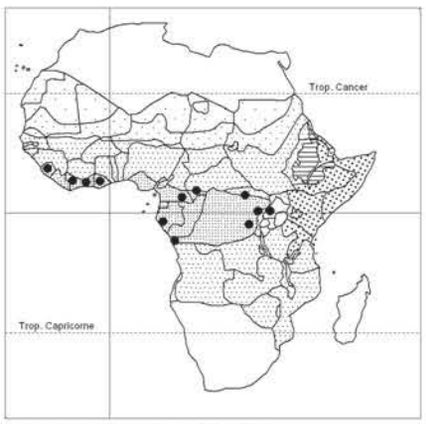




Brexia madagascariensis



Apodostigma pallens



Bequaertia mucronata

HIPPOCRATEACEAE / *17* g./ *139* spp.

In more recent floras and checklists included in *Celastraceae.*

KOUAMÉ, N. F. & al. (2007). The family Hippocrateaceae in Côte d'Ivoire: distribution and ecological factors. *In:* SEBSEBE DEMISSEW & al., eds., *XVIIth AETFAT Congress 21-26 September 2003: Abstracts:* 62-63. Addis Ababa University Press.

LISOWSKI, S. (2009). See above under **Celastraceae** p. 99.

MATTHEWS, M. L. & P. K. ENDRESS (2005). See above under **Celastraceae**.

Many species are poorly known, and undercollected: fruit unknown in 20(+1?) species (= >14%), no *ripe* fruit known in further 5 species (in all = 25 + 1? spp. = > 19%), no ecology recorded for 7 species (= c. 5%), 12 species are known only from the type (= >8%), and further 10 species are known from only 2 or 3 gatherings.

APODOSTIGMA / *1*

Monotypic.

Apodostigma pallens (Planch. ex Oliv.) R. Wilczek – Icon.: Fl. Trop. E. Africa, Celastraceae: 56, 1994; Fl. Camer. 32: 157, 159, 1990; Akoegninou & al., Fl. Bénin: 460, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 682, 691, 2006; Berhaut, Fl. ill. Sénégal 2: 262, 1974.

syn.: *Hippocratea verdickii* De Wild.; *H. chariensis* A. Chev., nom. subnud.; *H. oliveriana* Hutch. & M. B. *Moss* p.p. *excl.* specim. Warnecke 157, 302.; *H. amaniensis* Loes., nom. in sched. – Full synonymy in Hallé, Mém. Inst. Franç. Afr. Noire 64: 95, 1962.

Liane 5-15->30 m in height with stems >8 cm Ø; old bark often greyish or whitish, slightly fibrous; young branches smooth, sometimes with 4 small ridges, glabrous, becoming terete; flowers fragrant, white to yellow-orange, brownish red when dry, in dense short axillary cymes; fruit whitish, of (1-)3 mericarps.

Forest patches in savanna and savanna edges; rain-forests; lagoons; riverine forests; dense deciduous woodland; dryish thickets; rocky places; swamps; swampy forests; forests with *Xylopia;* 0-1700 m alt.

Very variable in: appearance of bark, texture and nervation of leaves.

Madagascar (var. **pallens** fa. **capuroniana** N. Hallé).

Comprises 3 vars., and forms A, B, C, D sensu N. Hallé 1962: – var. **pallens**; – var. **buchholzii** (Loes.) N. Hallé; – var. **dummeri** N. Hallé & B. Mathew

BEQUAERTIA / *1*

Monotypic.

Bequaertia mucronata (Exell) R. Wilczek – Icon.: Fl. Trop. E. Africa, Celastraceae: 71, 1994; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 687, 2006 (partial).

Liane to 15-25 m in height; branches with brownish red bark, becoming pale and flaky with age; main stem > 10 cm Ø; twigs smooth, with longitudinal ridges; leaves papery when dry; flowers white, turning orange-red, in compact axillary cymes; petals very fleshy, not spreading; stamens 3; fruit flat, 2-3 cm Ø.

Damp forests; forest with *Triplochiton scleroxylon;* river banks; near sea level to 1000 m alt.

CAMPYLOSTEMON / *4*

African genus, combining characters of *Hippocrateaceae* and *Celastraceae.*

Campylostemon angolense Oliv., incl. var. *gossweileri* Loes.; sensu Blakelock in Fl. W. Trop. Afr., ed. 2, 1(2): 622, 1958, *excl.* syn. *C. warneckeanum* Loes. ex Fritsch and *excl*. specim. Irvine 2894, Thomas D 115, Keay FHI 22820, Ujor FHI 23915, and *excl.* syn. *C. kennedyi* (Hoyle) Hoyle & Brenan, *Hippocratea kennedyi* Hoyle, *Campylostemon mitophorum* Loes., and *excl.* specim. Warnecke 157, 302, Kennedy 858, Smeathmann, Vigne 4859, Winkler 1467, Mildbraed 6478. – Icon.: Fl. Trop. E. Africa, Celastraceae: 72, 1994.

syn.: *Hippocratea chevalieri* Hutch. & M. B. Moss; *Campylostemon duchesnei* De Wild. & T. Durand; *C. schweinfurthianum* Loes.

Woody slender liane to 6-10-25 m in height and sometimes the stems as much as 50 m in length with opposite, long, pendulous branches; young branches ± quadrangular, green becoming reddish to blackish, then flaky; older wood 5 cm or more Ø with a many-grooved somewhat star-shaped coss-section; bark soft corky *(Vitex*-like); latex present; flowers brilliant white, turning yellow-orange to violet; mericarps 4-6 cm long.

Denser forest; gallery and secondary forests; thickets; savanna edges; fallow land; rocky hills; forest patches; meadow in forest; 50-1220 m alt.

(**C. bequaertii** De Wild.)

Liane with stems 1,5-3 cm Ø; branches often thickened or twisted like a tendril; branchlets ± brownish, rough-lenticellate.

Perhaps a var. of *C. warneckeanum* with dry often brownish leaves, very slightly denticulate with very fine, indistinct nerves; limb often 3,5-9 cm long. – Maintained as a good species by Sosef & al., Check-list pl. vascul. Gabon: 99, 2006.

Forests with lianes sometimes flooded; riparian- and secondary forests; islands in streams.

C. laurentii De Wild. (non *Salacia laurentii* De Wild.), incl. var. *schliebenii* Loes. (Fl. Trop. E. Africa, Celastraceae: 73, 1994, cited as possibly from Tanzania, T2, Makerere Exped. 116, specimen in need of confirmation). – Icon.: Fl. Cameroun 32: 231, 1990.

Woody liane to 30 m in height, stem to 25 cm Ø; branches reddish-brown, ± slightly rough when dry, sometimes with fine edges; twigs finely tuberculate; leaves with veins paler than limb below; petals fleshy, spreading; stamens 5; fruit 9 × 4 cm.

Forest edges; rocks; xerophyllous scrub; riparian; dry- or swampy forests; 750 m alt.

In Uganda and Tanzania fide N. Hallé; var. *schliebenii* in Tanzania.

C. mitophorum Loes. – Icon.: Fl. Cameroun 32: 225, 1990 (partial).

Woody, glabrous liane >20 m in height, with latex; branches reddish, slightly reddish, slightly rough; fruit unknown.

Rain-forest; *Raphia* formations; 100 m alt.

Bioko / Fernando Poo.

CAMPYLOSTEMON

C. warneckeanum Loes. ex Fritsch – Icon.: Fl. Cameroun 32: 227, 229, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 687, 2006 (partial).

Woody liane >5-6 m in height near *C. angolense* but twigs tuberculate and not winged (not smooth), bracts at the top of the peduncle 2-3 mm long (not 3-4 mm), peduncle 4-angular in cross-section (not 4-winged); petals spreading, fleshy; fruit 6 × 2,5 cm.

Wet and riverine forests. Not so heliophilous as *C. angolense;* 1-600 m alt.

Not in Gabon *(= C. bequaertii, C. laurentii),* but possibly so; not in Congo-Brazzaville and probably Centr. Afr. Rep.

INSUFFICIENTLY KNOWN TAXA (cf. Loesener in Notizbl. Bot. Gart. Mus. Berlin-Dahlem 13/120: 564-577, 1937; N. Hallé in Fl. Cameroun 32: 224, 1990):

Campylostemon danckelmannianum Loes. & Mildbr. 1922 nom., in Loes. o.c.: 573.

Near *C. bequaertii,* but: leaves narrowly and acutely acuminate (not obtuse or obtusely acuminate), to 8 cm long (not 10 cm), and flowers large (6 mm Ø, not petals only 1,5 mm long). Latex present in all parts.

Type: Mildbraed 5514; S Cameroon, Ebolowa prov., between Sangmelina and Ebolowa, 11 km W Sangmelina, spreading in the vegetation of rocks; flowering in June 1911. Destroyed in Berlin 1943.

C. lindequistianum Loes. 1922 nom., in Loes. o.c.: 569, incl. fa. *minor* Loes. 1922 nom., in Loes. o.c.: 570.

Near *C. laurentii;* but: leaves acutely and long-acuminate (not obtusely and shortly), inflorescences 2-3,5 cm long (not 3-9 cm), young twigs and inflorescence axes ± smooth (not rough or tuberculate). Little latex present. – Fa. *minor* with smaller leaves (6-11 cm long, not 7,5-16 cm).

Types: Mildbraed 5360 and 4741, respectively; S Cameroon, Lomie prov., in the Dja-bend, on grassland in rain-forest, flowering in May 1911; fa. *minor* at edge of grassland between shrubs in rain-forest, 900 m alt., flowering in March 1911. – Types destroyed in Berlin 1943.

SYNONYMS:

Campylostemon duchesnei De Wild. & T. Durand = **Campylostemon angolense**

kennedyi (Hoyle) Hoyle & Brenan = **Salacia laurentii**

nigrisilvae N. Hallé = **Tristemonanthus**

pynaeartii De Wild. = **Campylostemon warneckeanum**

schweinfurthianum Loes. = **C. angolense**

CUERVEA / *2*

Disjunct genus: C. & S. America (S Mexico to Guiana, West Indies, Amazonia, Brazil, Peru) – tropical Africa (see Brittonia 3: 396-405, 1940). Five species (fide Mennega & Hedin in Berry & al., Flora of the Venezuelan Guayana 5: 600, 1999), 2 in Africa.

Cuervea isangiensis (De Wild.) N. Hallé – Icon.: Fl. Cameroun 32: 182, 1990.

Large liane with rounded branches; stems subrounded, with corky protuberances at the insertion of branches; bark with long prominent greyish lenticels; flowers 8-12 mm Ø, in cymes on long panicles.

Forest; torrent sides; rocks; 350-1000 m alt.

C. macrophylla (Vahl) R. Wilzcek ex N. Hallé – Icon.: Fl. Cameroun 32: 187, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 682, 691, 2006.

syn.: *Hippocratea rotundifolia* Hook. f.

Liane 4-20 m and more in height with rounded, glabrous branches, smooth at first becoming dark grey, rather rough and densely lenticellate; bark conspicuously thick; flowers 15-20 mm Ø in lax inflorescences.

Forest gallery; wet periodically flooded places; swamp forest; sometimes at forest edges near the shore; 10-750 m alt.

ELACHYPTERA / *3*

Disjunct genus: S. America, Honduras to Guiana and southwards to S Brazil and adjacent Argentina (see Brittonia 3: 383-391, 1940). Seven species from America, Africa and Madagascar (1), fide Mennega & Hedin in Berry & al., Flora of the Venezuelan Guyana 5: 601, 1999).

Elachyptera bipindensis (Loes.) N. Hallé ex R. Wilczek – Icon.: Fl. Cameroun 32: 145, 147, 1990.

Liane > 10-30 m in height; wood details unknown; stems and branches with olive-green hue when dry, ±lenticellate.

Rain-forest, riparian; *Raphia* formation.

E. holtzii (Loes. ex Harms) R. Wilczek – Icon.: Bol. Soc. Brot., Sér. 2, 26: pl. 2, 1952; Consp. Fl. Angol. 2(1): 17, 1954, sub nom. *Hippocratea hierniana;* Fl. Cameroun 32: 145, 147, 1990; Fl. Trop. E. Africa, Celastraceae: 50, 1994 (partial).

Liane to 4-12 m in height; wood details unknown; young branches smooth, glabrous, slightly 4-winged.

Evergreen- and semi-evergreen forests; sometimes along rivers, bushy places; on firm- or flooded ground; 120-950 m alt.

The type of *Hippocratea hierniana* Exell & Mendonça is heterogeneous: flowers = *Elachyptera holtzii;* fruit = *Simicratea welwitschii.*

ELACHYPTERA

E. parvifolia (Oliv.) N. Hallé – Icon.: Mildbraed, Wiss. Ergebn. Deutsch. Z. –Afr. Exped. 1907-1908, 2: pl. 60, 1912, sub nom. *Hippocratea kageraensis;* Fl. Cameroun 32: 145, 147, 1990; Fl. Trop. E. Africa, Celastraceae: 50, 1994 (partial); E. Schmidt & al., Trees & shrubs Mpumalanga …: 352-353, 2002 (sub gen. *Hippocratea*).

syn.: *Hippocratea kageraensis* Loes.; *Reissantia parviflora* (Oliv.) N. Hallé, incl. var. *kageraensis* (Loes.) N. Hallé

Sarmentous shrub or liane, glabrous, > 10 m in height; bole to 12 cm Ø; young branches yellowish or silvery brown, lenticellate, rounded.

Ecology very variable from very dry to humid situations; gallery edges, rain-forest; relictual with *Guibourtia copallifera* or *Gilletiodendron glandulosum* on sandstone in Mali; meadow in forest; mixed wood with *Proteaceae, Myrtaceae, Loganiaceae,* etc.; dry woodland and thickets; often on rocky outcrops or sand; 3-±1900 m alt.

Very variable in habit, size and texture of leaves – perhaps in relation to the ecological diversity.

São Tomé; S. Africa. – Perhaps in Mauritania (flowering material required).

SYNONYM:

Elachyptera bipindensis (Loes.) N. Hallé, nom. = **Elachyptera bipindensis**

HELICTONEMA / *1*

Monotypic.

Helictonema velutinum (Afz.) Pierre ex N. Hallé – Icon.: Fl. Trop. E. Afr., Celastraceae: 44, 45, 1994; Bot. Jahrb. Syst. 34: 120, 1904; Fl. Cameroun 32: 137, 139, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 687, 2006.

syn.: *Salacia unguiculata* De Wild. & Th. Durand; *Helictonema klaineanum* Pierre; *Hippocratea velutina* Afzel., incl. var. *apiculata* A. Chev.

Liane to 30 m in height, the main stem exceeding 10 cm Ø, swollen at nodes; bark coarsely scaly and longitudinally fissured, greyish yellow; young branches densely reddish-brown stellate-hairy; petals conspicuously fimbriate.

Thickets and forest margins; wet to dry forests; forest gallery; rain-forest with *Uapaca guineensis, Strephonema pseudocola, Calpocalyx brevibracteatus, Guarea cedrata,* etc.; clump of trees; 5-1060 m alt.

São Tomé.

HIPPOCRATEA / *2*

Disjunct genus: C. & S. America (C Mexico, S Florida, West Indies, continental S. America to Bolivia, Paraguay, N Argentina, S Brazil) – tropical Africa; 3 species: 1 (with 2 vars.) in America, 2 in Africa. (see Brittonia 3: 356-367, 1940; Mennega & Hedin in Berry & al., Flora of the Venezuelan Guyana 5: 602, 1999).

Hippocratea myriantha Oliv. – Icon.: Fl. Congo belge 9: 171, 1960; Fl. Cameroun 32: 217, 219, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 689, 2006 (partial).

HIPPOCRATEA MYRIANTHA

syn.: *H. pachnocarpa* Loes. ex Fritsch

Liane 3-45 m in height; young branches rounded, glabrous, with ± white-bluish bloom; old branches ± lenticellate; old wood 4-furrowed, to 20 cm Ø, with greyish, slightly rugose bark; stipule scars completely surrounding the twigs; foliage forming a drooping garland; flowers small, yellowish white, crowded in short-hairy inflorescences longer than the leaves.

Wet, sometimes flooded forests; degraded forest; forest gallery; rocks etc.; 2-1350 m alt.

H. vignei Hoyle – Icon.: Hawthorne & Jongkind, l.c.

Woody climber reaching the tops of trees; glabrous except the inflorescence; stems ± angular to strongly fluted; bark sometimes ± corky; branchlets slender, terete, flattened at the distant nodes; leaf margins serrate (in *H. myriantha* ± smooth).

Closed forest; common.

SYNONYMS:

Hippocratea adolphi-friderici Loes. ex Harms = ? **Prionostemma fimbriata**

affinis De Wild., non Cambess. in St. Hil. = **Simirestis dewildemaniana**

africana (Willd.) Loes. = **Loeseneriella africana**

var. *obtusifolia* (Roxb.) N. Hallé = **L. africana** var. **richardiana**

var. *richardiana* (Cambess.) N. Robson = **L. africana** var. **richardiana**

var. *schimperiana* (Hochst. & Steud. ex A. Rich.) Loes. = **L. africana** var. **richardiana**

africana sensu F.W.T.A., ed. 2. p.p. = **L. ectypetala**

andongensis Welw. ex Oliv. = **Pristimera**

andongensis sensu Consp. Fl. Angol., p.p. = **P. andongensis, Simirestis dewildemaniana**

apiculata Welw. ex Oliv. = **Loeseneriella**

apocynoides Welw. ex Oliv. var. *typica* fa. *australis* Loes. and var. *mildbraedii* Loes. = **L. apocynoides**

var. *typica* fa. *borealis* Loes. = **L. apocynoides** var. **guineensis**

subsp. *guineensis* (Hutch. & M. B. Moss) N. Robson = **L. africana** var. **guineensis**

aptera Loes. ex Harms = **Elachyptera holtzii**

bequaertii De Wild. = **Pristimera paniculata**

bipindensis Loes. = **Elachyptera**

bojeri Tul. = **Pristimera**

bruneelii De Wild. = **Loeseneriella apocynoides** var. **apocynoides**

buchananii Loes. = **Reissantia buchananii**

fa. *dolichocarpa* Loes. = **R. parviflora**

buchholzii Loes. = **Apodostigma pallens** var.

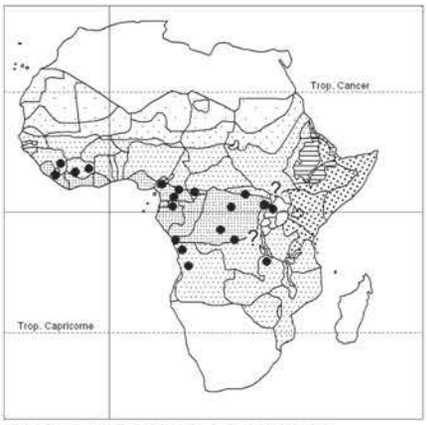
busseana Loes. = **Elachyptera parvifolia**

camerunica Loes. = **Loeseneriella**

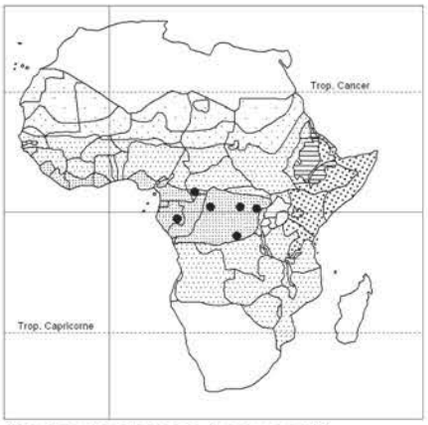
chevalieri Hutch. & M. B. Moss = **Campylostemon angolense**

cinerascens Loes. nom. nud. = **Pristimera andongensis** var. **adongensis**

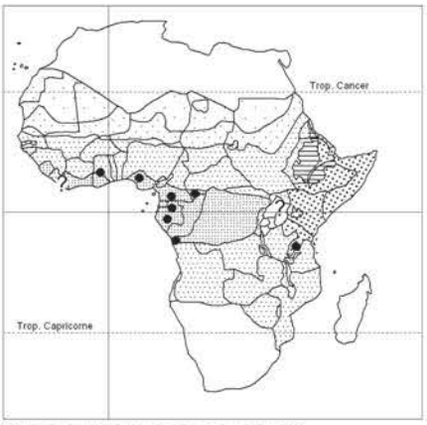
clematoidea (or "*clematides")* De Wild. = **Loeseneriella clematoides**



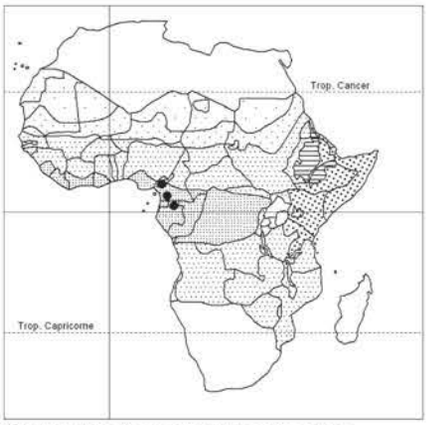
Campylostemon angolense



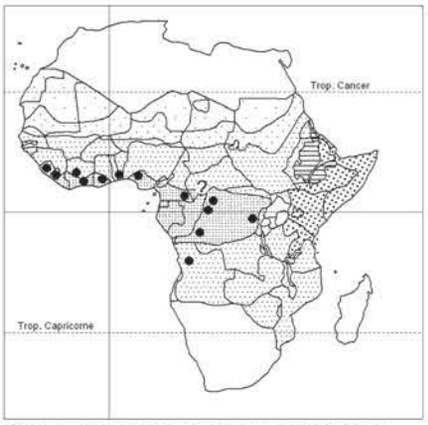
Campylostemon bequaertii



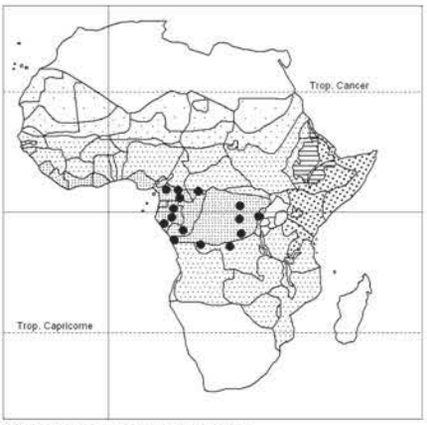
Campylostemon laurentii



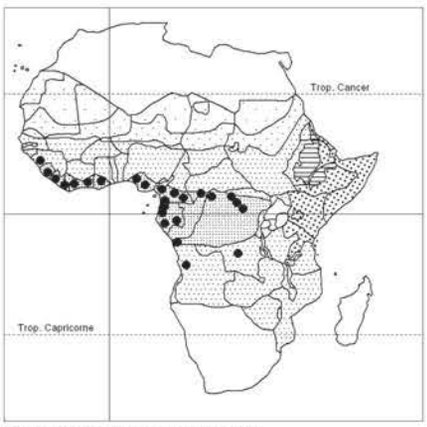
Campylostemon mitophorum



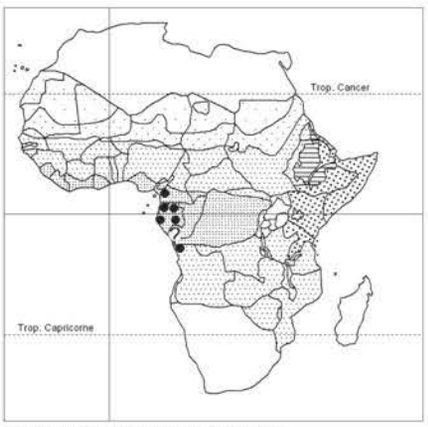
Campylostemon warneckeanum



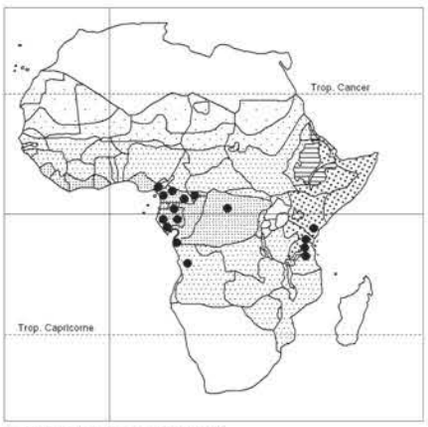
Cuervea isangiensis



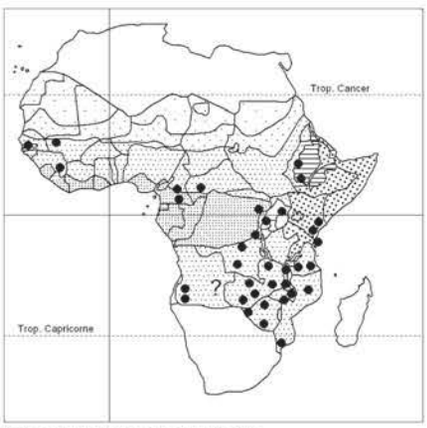
Cuervea macrophylla



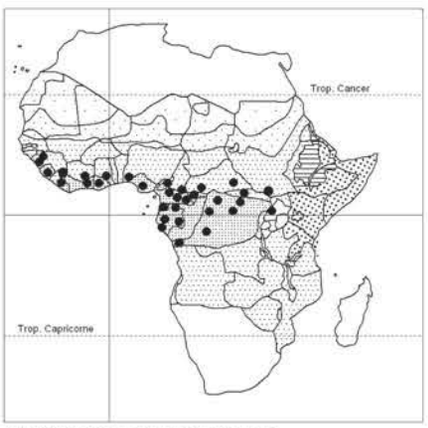
Elachyptera bipindensis



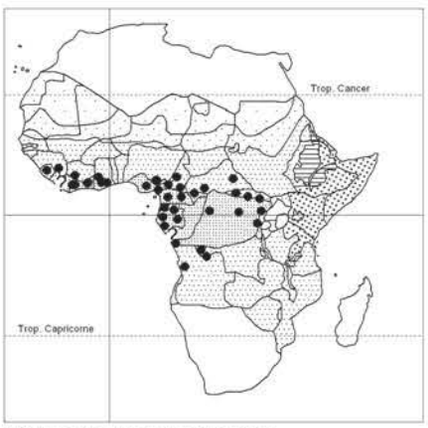
Elachyptera holtzii



Elachyptera parvifolia



Helictonema velutinum



Hippocratea myriantha

clematoides Loes. = **L. clematoides**

crenata (Klotzsch) K. Schum. & Loes. ex Loes. = **L. crenata**

cymosa De Wild. & Th. Dur. and, incl. var. *schweinfurthiana* (Loes.) Loes. = **L. africana** var. **africana**

var. *togoensis* Loes. = **L. africana** var. **togoensis**

delagoensis Loes. = **Prionostemma**

fimbriata Exell = **Prionostemma**

fredericqui R. Wilczek = **Salacia longipes**

goetzei Loes. = **Simirestis**

gossweileri Exell = **Loeseneriella apocynoides** var. **apocynoides**

graciliflora Welw. ex Oliv. = **Pristimera graciliflora**

subsp. *newalensis* Blakelock = **P. graciliflora** subsp.

guineensis Hutch. & M. B. Moss = **Loeseneriella apocynoides** var.

guineensis sensu Wilczek = **L. apocynoides** var.

hierniana Exell & Mendonça = **Elachyptera holtzii** (flowers), **Simicratea welwitschii** (fruit)

hirtiuscula Dunkley = **Reissantia parviflora**

holtzii Loes. ex Harms = **Elachyptera**

indica Willd. = **Reissantia indica**

var. *parviflora* (N. E. Br.) Blakelock = **R. parviflora**

iotricha Loes. = **Loeseneriella**

isangiensis De Wild. = **Cuervea**

kageraensis Loes. = **Elachyptera parvifolia**

kairolecta Loes. ex Harms = **Bequaertia mucronata**

kennedyi Hoyle = **Salacia laurentii**

kirkii Oliv. = **Loeseneriella crenata** var. **crenata**

lasiantha Loes. ex Harms = **L. crenata** var. **loandensis**

loandensis Exell = **L. crenata** var.

loeseneriana Hutch. & M. B. Moss = **Reissantia indica** var.

loesleriana sensu Exell 1932 = **R. indica** var. **loeseneriana**

longipes Oliv. = **Salacia**

longipetiolata Oliv. = **Pristimera**

luteoviridis Exell = **Pristimera**

macrophylla Vahl = **Cuervea**

madagascariensis Lam. = **Salacia**

menyharthii Schinz = **Reissantia buchananii**

molunduina Loes. ex Harms = **Cuervea isangiensis**

mucronata Exell = **Bequaertia**

nematobrachion Loes. in herb. = **Thyrsosalacia**

nitida Oberm. = **Loeseneriella africana** var. **richardiana**

obtusifolia Roxb. = **L. africana** var. **richardiana**

var. *eminiana* Loes. = **L. africana** var. **richardiana**

var. *fischeriana* (Loes.) R. Wilczek = **L. africana** var. **richardiana**

var. *richardiana* (Cambess.) Loes. and fa. *crassior* Loes. = **L. africana** var.

var. *schimperiana* (Hochst. ex Steud. ex A. Rich.) Loes. = **L. africana** var. **richardiana**

var. *schweinfurthiana* Loes. = **L. africana** var. **africana**

obstusifolia sensu Oliv. F.T.A. (misapplied) = **L. africana** var. **richardiana**

odorata De Wild. = **L. africana** var. **africana**

pachnocarpa Loes. ex Fritsch = **Hippocratea myriantha**

pallens Planch. ex Oliv. = **Apodostigma**

paniculata Vahl = **Pristimera**

paniculata sensu F.W.T.A., ed. 2, p.p. = **Prionostemma unguiculata**

parvifolia N. E. Br. = **Reissantia**

parvifolia Oliv. = **Elachyptera**

parvifolia sensu O. B. Miller 1952 = **Reissantia parviflora**

plumbea Blakelock & R. Wilczek = **Pristimera**

polyantha Loes. = **P. paniculata**

preussii Loes. = **P. preussii**

pygmaeantha Loes. ex Harms = **Elachyptera parvifolia**

pynaertii De Wild. = **Loeseneriella apiculata**

richardiana Cambess. = **L. africana** var.

ritschardii (R. Wilczek) N. Robson = **Prionostemma delagoensis** var.

rotundifolia Hook. f. = **Cuervea macrophylla**

rowlandii Loes. = **Loeseneriella**

rubrocostata Pierre nomen = **Elachyptera bipindensis**

scheffleri Loes. = **Simirestis**

schimperiana Steud. & Hochst. ex A. Rich. = **Loeseneriella africana** var. **richardiana**

schlechteri Loes. = **Pristimera longipetiolata**

var. *peglerae* Loes. = **P. bojeri** (Madagascar)

seineri Seiner, nom. nud. = **Elaeodendron transvaalense** *(Celastraceae)*

semlikiensis Robyns & Tournay = **Bequaertia mucronata**

senegalensis Lam. = **Salacia senegalensis**

var. *madagascariensis* (Lam.) Poir. = **Salacia madagascariensis**

sp. (3) sensu Beentje 1994: 338 = **Simirestis brianii**

sp. sensu O. B. Miller 1952 = **Reissantia parviflora**

staudtii Loes. = **Simirestis staudtii**

unguiculata Loes. = **Prionostemma**

velutina Afzel. = **Helictonema**

venulosa Hutch. & M. B. Moss = **Loeseneriella clematoides**

verticillata Steud. var. *madagacariensis* (Lam.) Pers. = **Salacia madagascariensis**

volkensii Loes. = **Pristimera andongensis** var. **volkensii**

welwitschii Oliv. = **Simicratea**

yaundina Loes. = **Loeseneriella**

LOESENERIELLA / *10*

In the Old World.

Loeseneriella africana (Willd.) N. Hallé, incl. var. *odorata* (De Wild.) R. Wilczek – Icon.: Fl. Cameroun 32: 213, 215, 1990; Fl. Trop. E. Africa, Celastraceae: 60, 1994; Beentje, Kenya trees, shrubs & lianas: 338, 1994 (sub gen. *Hippocratea);* Akoégninou & al., Fl. analyt. Bénin: 462, 2006; E. Schmidt & al., Trees & shrubs Mpumalanga …: 349, 2002 (photos.; sub gen. *Hippocratea);* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 682, 2006 (photo.); Berhaut, Fl. ill. Sénégal 2: 266, 1974.

Liane usually 2-15 m or more in height but sometimes only 2 m in exposed situations; old branches often covered with rough white lenticels; trunk to 10 cm Ø, with grooved wood; branchlets green, strongly 4-angled when young; flowers fragrant, petals green, anthers orange.

Evergreen tangle in *Combretum* woodland; woodland on small hills in extensive cultivations; rain-forest with *Albizia, Macaranga, Croton, Ocotea; Podocarpus latifolius, Olea capensis* forest; evergreen forest; fringing forest; thickets; forest fringing swamps, rivers; edge of rain-forest; wadis, gueltas; coastal woodland; scrub; open rocky places; dryish (rocky) woodland; under shade in sahelian and sudanian zones; hollows; termite mound; 1-2440 m alt.

Variable (leaves with serrate or nearly entire margins); widespread.

Bostwana, Caprivi Strip, S. Africa; India, Sri Lanka, Burma, Laos.

Not in Indonesia *[L. macrantha* (Korth.) A. C. Smith], not in Australia *[L. barbata* (Muller) C. T. White].

Comprises 3 vars. in Africa: – var. **africana** [syn.: *Hippocratea obtusifolia* Roxb. var. *schweinfurthiana* Loes.; *H. cymosa* De Wild. & Th. Durand, incl. var. *schweinfurthiana* (Loes.) Loes.; *H. odorata* De Wild.]; – var. **richardiana** (Cambess.) N. Hallé [syn.: *H. africana* var. *richardiana* (Cambess.) N. Robson; *H. nitida* Oberm.; *Hippocratea schimperiana* Steud. & Hochst. ex A. Rich.; *H. obtusifolia* Roxb. var. *richardiana* (Cambess.) Loes. and fa. *crassior* Loes.; *H. africana* var. *obtusifolia* (Roxb.) N. Hallé; *H. obtusifolia* Roxb. var. *eminiana* Loes., var. *fischeriana* Loes., var. *schimperiana* (Hochst. & Steud. ex A. Rich.) Loes.; *Loeseneriella africana* (Willd.) N. Hallé var. *fischeriana* (Loes.) R. Wilczek; *Hippocratea obtusifolia* sensu Oliv. in F.T.A. 1: 369, 1868]; – var. **togoensis** (Loes.) N. Hallé.

Var. **richardiana** is very similar to Indian *H. obtusifolia* Roxb. *[= L. africana* (Willd.) N. Hallé var. *obtusifolia* (Roxb.) N. Hallé]; a detailed study is required to elucidate the relationship between the two taxa [e.g.: Schlieben 5261 = var. *obtusifolia* according to Hallé (1986), but = var. *richardiana* according to Robson, Hallé & al. (1994)].

L. apiculata (Welw. ex Oliv.) N. Hallé & R. Wilczek – Icon.: Fl. Cameroun 32: 195, 1990.

syn.: *Hippocratea pynaertii* De Wild.

Liane to 30-40 m in height; stem with nearly smooth or slightly rugose bark, pale grey ochre or grey-brown, sometimes longitudinally fissured; old woody stem 18 cm Ø, with deep furrows splitting into 4 lobes; flowers green with central white "column", petals 4,5-6 × 1,2-1,5 mm.

Rain-forests, sometimes flooded; forest edges; schistose or clayey soils; forest with *Scorodophloeus zenkeri;* riverine forest; 200-700 m alt.

L. apocynoides (Welw. ex Oliv.) N. Hallé ex J. Raynal – Icon.: Fl. Cameroun 32: 206-207, 1990; Fl. Trop. E. Africa, Celastraceae: 44, 1994 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 687, 2006 (partial); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 263, 2008 (sub gen. *Hippocratea).*

Liane 10- >30 m in height, simulating in the living state some species of *Apocynaceae* as to habit and external aspect of the flowers; branches and branchlets spreading at right angles, rusty puberulent; wood with radiating furrows (4 grooves in a stem 1-1,5 cm Ø increasing by dichotomy of the wood to 8, 16, 32 in a 4 cm Ø stem); flowers greenish, greyish or yellowish, sometimes slightly red-brown, 3-8 mm Ø.

Damp forests; secondary thickets; open gaps in developed secondary deciduous forest; near marigot in degraded forest gallery; rain-forest with *Heritiera utilis;* forest on ± rocky summit; ± 300-2135 m alt.

Comprises 2 vars.: – var. **apocynoides** [syn.: *Hippocratea gossweileri* Exell; *H. bruneelii* De Wild.; *H. apocynoides* Welw. ex Oliv. var. *typica* fa. *australis* Loes. and var. *mildbraedii* Loes.]; – var. **guineensis** (Hutch. & M. B. Moss) N. Hallé [syn.: *Hippocratea apocynoides* var. *typica* fa. *borealis* Loes.].

MUTTWEZI, O. (1999). The use of Loeseneriella apocynoides around Bwindi impenetrable National Park, Southwest Uganda. *In:* TIMBERLAKE, J. & S. KATIVU, eds., *African Plants: Biodiversity, Taxonomy and Uses:* 523-527. Royal Botanic Gardens, Kew.

L. camerunica (Loes.) N. Hallé – Icon.: Fl. Cameroun 32: 199, 1990 (partial).

Woody liane with glabrous internodes, brownish and slightly rough-lenticellate when old; flowers yellowish, 10-12 mm Ø, in cymes 4-8 cm long.

Lagoon; rain-forest; rare and localized; near sea-level to ?

L. clematoides (Loes.) R. Wilczek ex N. Hallé – Icon.: Fl. Cameroun 32: 195, 197, 1990; Hawthorne & Jongkind, Woody pl. west. trop. forests: 686, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 183, 2007.

syn.: *Hippocratea venulosa* Hutch. & M. B. Moss; *H. clematoidea* De Wild. (also *"clematides").*

Liane 40-100 m long with trunk >20 cm Ø; bark smooth or rough, yellowish brown or greyish, longitudinally fissured and slightly transversely so; old woody stem as in *L. apiculata;* growing twigs and inflorescences densely covered with tiny hairs (like in *L. ectypetala);* leaves glabrous; flowers 13-20 mm Ø, fragrant, pale green becoming yellowish brown with the central "column" white, disk and stamens orange, in shape resembling those of *Clematis vitalba.*

Forest patches; gallery forest; semi-evergreen forest; along footpath with *Acacia pinnata, Grewia* spp.; dense forest with *Guarea cedrata;* swamps; 500-1280 m alt.

Not in Ghana (Darko 907 = *L. ectypetala);* not in Malawi (Burtt Davy 22407 on Pemba).

L. crenata (Klotzsch) R. Wilczek ex N. Hallé – Icon.: Fl. Trop. E. Afr., Celastraceae: 44, 1994 (partial); Fl. Cameroun 32: 199, 1990; E. Schmidt & al., Trees & shrubs Mpumalanga …: 351, 2002 (photos.).

Shrub, often scandent or scrambling, 2-4 m tall (fide Fl. Zamb.) or liane 25-40 m long (fide Fl. Trop. E. Afr.); trunk usually with smooth bark, finely marked with small lenticels, brownish grey, sometimes slightly rough, fissured and grey; wood deeply furrowed (17-22 grooves, 2-5 mm deep on wood of

2-3,2 cm Ø); upper internodes brownish-puberulous; branchlets conspicuous with dense rusty hairs, 4-angled at first, later round; leaves often very small, ± round, rusty-hairy, with slight glandular teeth; petals greenish, 2,5-4 mm long, densely reddish-brown, pubescent outside.

Acacia-Commiphora bushland; rocky places; dryish forest and bush; often on sandy soils; granite outcrops; secondary thickets; 1-2250 m alt.

S. Africa (Kruger Natl. Park); Madagascar. – Not in Ethiopia.

Comprises 2 vars. in our area: – var. **crenata** (syn.: *Hippocratea kirkii* Oliv.); – var. **loandensis** (Exell) N. Hallé (syn.: *Hippocratea lasiantha!* Loes. ex Harms), in W and C parts of the range. – Var. **rubiginosa** (H. Perrier) N. Hallé in Madagascar.

L. ectypetala N. Hallé; Akoégninou & al., Fl. analyt. Bénin: 463, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 686, 688, 2006.

syn.: *Hippocratea africana* sensu Fl. W. Trop. Afr., ed. 2, 1(2): 628, 1958, quoad specim. Onochie in Brenan 8948.

Liane with main branches nearly 4-angular; lateral branches cylindrical; bark beige or brown-greyish, nearly smooth, flaky on the old trunks; wood very deeply grooved; growing twigs and inflorescences densely covered with tiny hairs (like in *L. clematoides);* leaves glabrous; flowers yellow and green, fragrant, 15-19 mm Ø.
Forest; common in Ivory Coast and with the very close *L. clematoides* in Man region and mid-Cavaly.

L. iotricha (Loes.) N. Hallé – Icon.: Fl. Cameroun 32: 209, 211, 1990; Adam, Fl. Mts Nimba 2: 738, 1971 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 687, 2006.

Liane > 15 m long; main branches sub-4-angular, others cylindrical; internodes for a long time covered with dense reddish-brown hairs, becoming blackish or dark-sepia; bark slightly rough, greyish; trunk grooved; leaves hairy; flowers pale yellow with brown indumentum, sweet-scented, 5-9 mm Ø.

Closed forest, evergreen and semi-deciduous; 150-790 m alt.

Very variable species very close to *L. apocynoides,* both representing multiple populations in rapid evolution; morphological and ecological features difficult to define.

Comprises 2 vars.

L. rowlandii (Loes.) N. Hallé – Icon.: Fl. Cameroun 32: 203, 205, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 682, 689, 2006.

Liane 25-50 m long; internodes glabrous; branches cylindrical; bark dark, longitudinally striate, with scattered verrucose blisters; flowers 1-1,5 mm Ø, calyx olive green, petals yellowish green or orange, fimbriate along margins, disk deeper green, anthers dark yellow.

Dry types of closed forest; forest edges; semi-evergreen forest; rocky places; forest gallery with *Markhamia tomentosa, Spathodea campanulata, Clerodendrum schweinfurthii;* secondary forest; 150-1100 m alt.

L. yaundina (Loes.) N. Hallé & R. Wilczek – Icon.: Fl. Cameroun 32: 203, 1990 (partial).

Liane 4-40 m long; stems and branches rounded, with brown-blackish or greyish bark; flowers greenish, whitish, yellow, yellowish to orange, 10-12 mm Ø, anthers yellow. Seed known!

Gallery forest; in humus on clayey subsoil; swampy forests; 250-800 m alt.

SYNONYMS:

Loeseneriella africana var. *odorata* (De Wild.) R. Wilczek and var. *schweinfurthiana* (Loes.) N. Hallé = **Loeseneriella africana** var. **africana**

var. *fischeriana* (Loes.) R. Wilczek = **L. africana** var. **richardiana**

crenata R. Wilczek, nom. inval. = **L. crenata** R. Wilczek ex N. Hallé

guineensis (Hutch. & M. B. Moss) N. Hallé = **L. apocynoides** var. **guineensis**

guineensis sensu Wilczek, Fl. Congo Belge 9: 152, 1960 = **L. apocynoides** var. **apocynoides**

paniculata (Vahl) R. Wilczek var. *nigrescens* R. Wilczek = **Simirestis tisserantii**

ritschardii R. Wilczek = **Prionostemma delagoensis** var.

yaundina (Loes.) N. Hallé, nom. inval. = **Loeseneriella yaundina** (Loes.) N. Hallé & R. Wilczek

PRIONOSTEMMA / *3*

Pantropical; 5 species: 1 in C.–S. America, 1 in Asia, 3 in Africa.

Prionostemma delagoensis (Loes.) N. Hallé

Liane 3-6-10 m long, glabrous; stems pale- to olive green, terete or 4-lined when young becoming purplish- brown or red, eventually red-brown, terete, with dense whitish sometimes laterally elongated or ± prominent round lenticels.

Dry rocky or sandy soils; open woodland, thicket and dune scrub; 0-450 m alt.

S. Africa.

Comprises 2 vars.: – var. **delagoensis**; – var. **ritschardii** (R. Wilczek) N. Hallé: seed unknown, and only 3 gatherings cited.

P. fimbriata (Exell) N. Hallé – Icon.: Fl. Cameroun 32: 191, 1990 (partial).

Liane 10-20 m long, glabrous; branches rounded; petals ciliate-fimbriate, green to chocolate-brown or white; fruit and seeds unknown.

Riparian forest; sometimes frequent (Angola); c. 100 m alt. (Gabon).

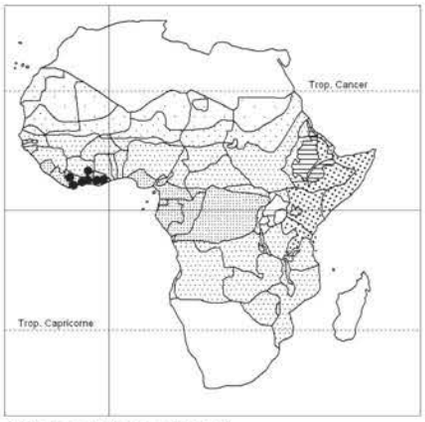
P. unguiculata (Loes.) N. Hallé – Icon.: Fl. Cameroun 32: 191, 193, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 691, 2006 (partial).

syn.: *Hippocratea paniculata* sensu Fl. W. Trop. Afr., ed. 2, 1(2): 627, 1958, quoad specim. Small 868, and *excl.* syn. *H. polyantha* Loes., *H. bequaertii* De Wild.

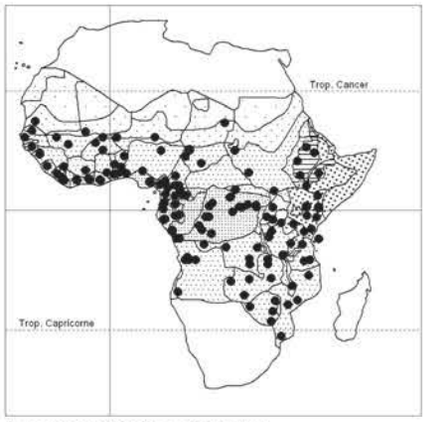
prob. syn.: *H. adolphi-friderici* Loes. ex Harms (type: Mildbraed 4118, Cameroon, destroyed).

Liane 5- >10 m long, glabrous; young branches rounded, smooth at first, soon tuberculate; bark lenticellate; young inflorescence branches short yellow-green hairy; flowers greenish, petals glabrous except fimbriate margins, entire (fa. *typica*) or jagged-fringed (W-African fa.).

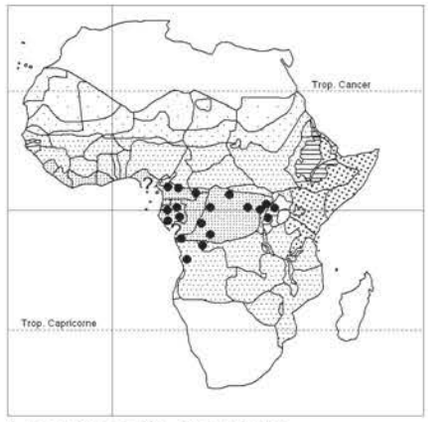
Forests near the coast, on lagoons; riparian forest; near sea-level -800 m alt.



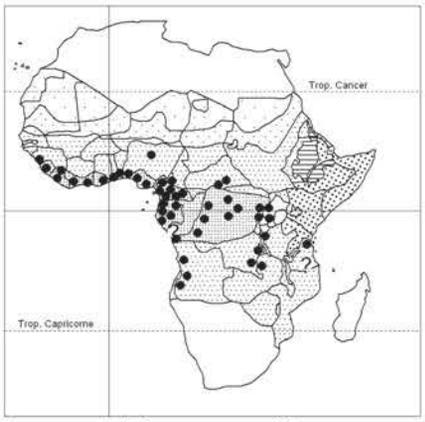
Hippocratea vignei



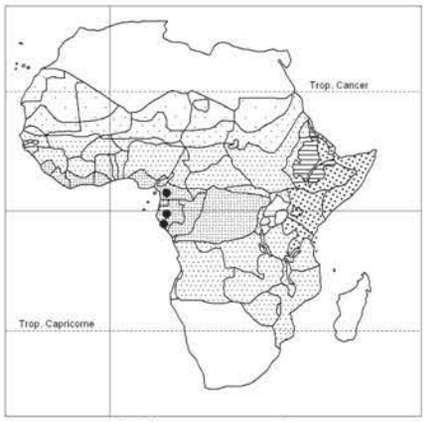
Loeseneriella africana



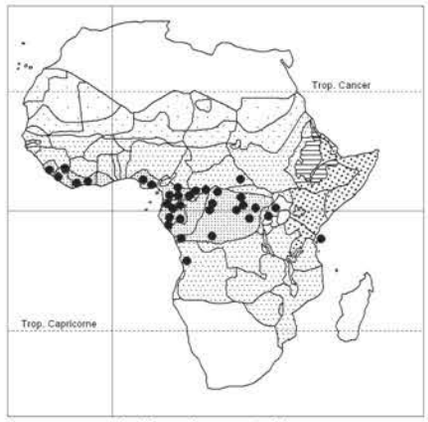
Loeseneriella apiculata



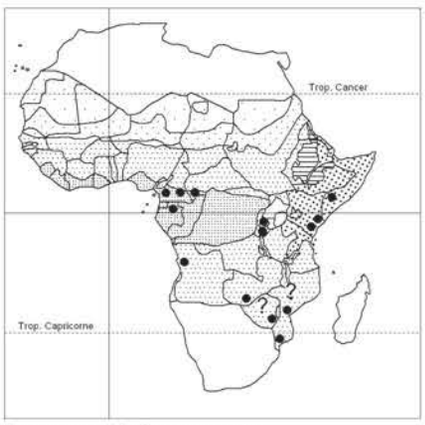
Loeseneriella apocynoides



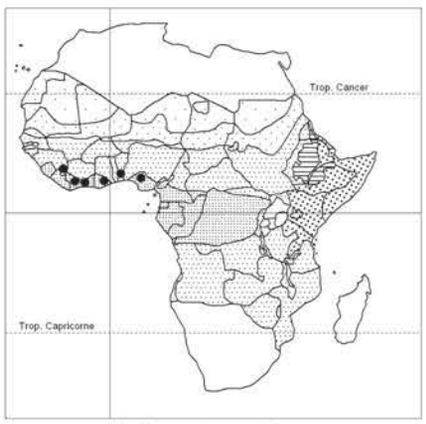
Loeseneriella camerunica



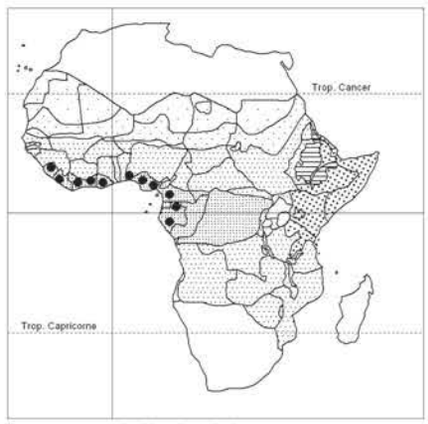
Loeseneriella clematoides



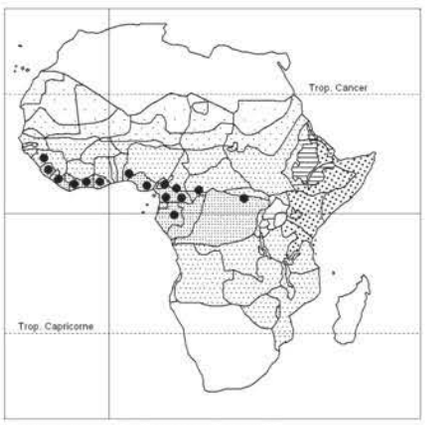
Loeseneriella crenata



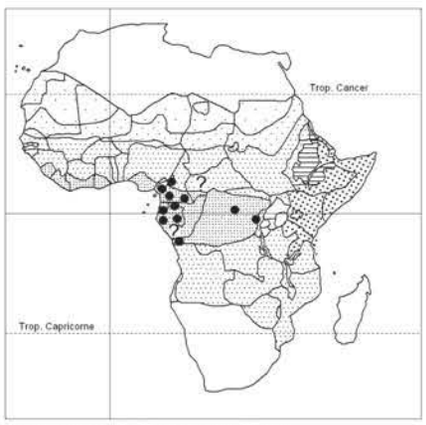
Loeseneriella ectypetala



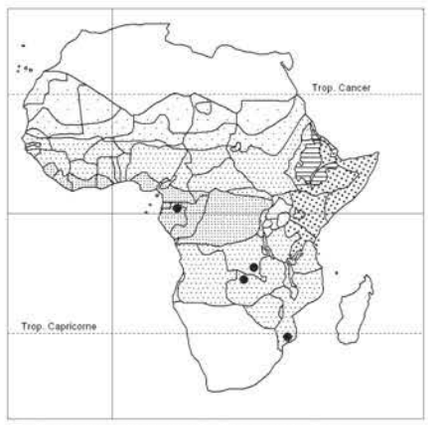
Loeseneriella iotricha



Loeseneriella rowlandii



Loeseneriella yaundina



Prionostemma delagoensis

PRISTIMERA / *10*

Pantropical, disjunct genus (of 24 species according to Mennega & Hedin in Berry & al., Flora of the Venezuelan Guayana 5: 608, 1999); our figures differ: 10 spp. in America, 4 in Madagascar, 1 in Indonesia. Several of the 10 species in Africa are poorly known.

Pristimera andongensis (Welw. ex Oliv.) N. Hallé – Icon.: Fl. Cameroun 32: 171, 1990; Fl. Trop. E. Africa, Celastraceae: 64, 1994 (partial).

Evergreen shrub or tree, usually scandent or scrambling, rarely erect, 4-20 m tall, glabrous; stems grey- to olive green and 4-lined when young, becoming reddish-brown and eventually greyish, terete, with numerous ± prominent whitish lenticels. Often drying greyish-green.

Thickets; dense woodland; bushland; forest gallery; firm-ground forests; bushy places at the base of rocks; sometimes very common (Angola); 0-1200 m alt.

Comprises 3 vars.: – var. **andongensis** [syn.: *Hippocratea andongensis* in Consp. Fl. Angol. 2(1): 18, 1954, *excl.* specim. Gossweiler 4430, 4707, 4730 (= *Simirestis dewildemaniana); Simirestis luteoviridis* sensu Hallé, Mém. Inst. Franç. Afr. Noire 64:77, 1962, quoad specim. Zenker 2918, Le Testu 8452. Bouni-voir 4-11A], in Zaire, Angola; – var. **cinerascens** N. Hallé in Cameroon, Gabon, Zaire; – var. **volkensii** (Loes.) N. Hallé & B. Mathew in E-SE part of range.

Not in Uganda.

Very near the American *P. tenuiflora* (Mart. ex Peyr.) A. C. Sm. from C. America, West Indies to Amazonian Brazil and adjacent Peru and Colombia.

P. biholongii N. Hallé – Icon.: Fl. Cameroun 32: 169, 1990 (partial).

Liane >5 m long, with cylindrical, reddish-brown branches, covered with white lenticels.

Ecology unknown; 700-900 m alt.

Known only from 2 collections (1962, 1963).

Seems near to *P. breteleri*, but flower features particular. Could be a natural hybrid ?: *P. breteleri* × *Loeseneriella rowlandii.*

[**P. bojeri** (Tul.) N. Hallé]

In Madagascar.

– "Var. *leioclada"* Loes., nom. nud.? [type: G. Scheffler 151, non 154, annotated *P. bojeri* var. *leioclada* (Loes.) N. Hallé, 1978, in herb. G.; from Kenya: Kibwesi, 1000 m alt.] needs re-evaluation.
– *Hippocratea schlechteri* Loes. var. *peglerae* Loes., Feddes Repert. 49: 227, 1940, from S. Africa = *Pristimera bojeri* from Madagascar.

P. breteleri N. Hallé – Icon.: Fl. Cameroun 32: 169, 1990 (partial).

Liane > 5 m long, with cylindrical, reddish-brown branches, sometimes dotted with fine, white lenticels; fruit unknown.

Ecology unknown.

Insufficiently known (2 collections only).

P. graciliflora (Welw. ex Oliv.) N. Hallé – Icon.: Fl. Cameroun 32: 175, 1990 (partial); Fl. Trop. E. Africa, Celastraceae: 64, 1994 (partial).

Liane 5-20-40 m long, or scandent shrub to 6 m; all parts glabrous; young stems ± terete, smooth or with 4 low ridges [subsp. **newalensis** (Blakelock) N. Hallé]; plant drying blackish. Seeds known!

Rain-forest with *Albizia, Macaranga, Croton, Ocotea, Pouteria adolfi-friederici, Schefflera abyssinica* near river, forest edges; river banks; edges of forest patches in meadow enclosed in forest; thickets; 300-1800 m alt.

Comprises 2 subspp.

P. longipetiolata (Oliv.) N. Hallé – Icon.: E. Schmidt. & al., Trees & Shrubs Mpumalanga …: 351, 2002 (photos., sub gen. *Hippocratea).*

Shrub, usually scandent, to at least 5 m tall, glabrous; stems olive green and 4-lined when young, becoming wine red (sometimes) and eventually greyish-brown, terete, with numerous small whitish lenticels, not prominent and often scarcely visible.

Fringing forest, dry woodland, scrub in dry areas; ± 250-600 m alt.

S. Africa (Transvaal).

P. luteoviridis (Exell) N. Hallé; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 690, 2006 (distribution in the area not enough known). – Icon.: Fl. Cameroun 32: 163, 1990.

syn.: *Hippocratea indica* sensu Fl. W. Trop. Afr., ed. 2, 1(2): 627, 1958, quoad specim. Cooper 409; *Simirestis luteoviridis* sensu N. Hallé 1962, p.p. (cf. *Pristimera andogensis).*

Slender liane with cylindrical branches; bark greyish, nearly smooth or slightly rugose; fruit doubtful for var. **luteoviridis** (Liberia).

Coastal forest (Cameroon).

Comprises 2 vars.: – var. **kribiana** N. Hallé in S Cameroon.

P. mouilensis (N. Hallé) N. Hallé – Icon.: Notul. Syst. Herb. Mus. Paris 16: 128, 1960.

Liane with cylindrical, smooth branches, greyish-brownish, the youngest ones olive coloured when dry.

Ecology unknown (? forest).

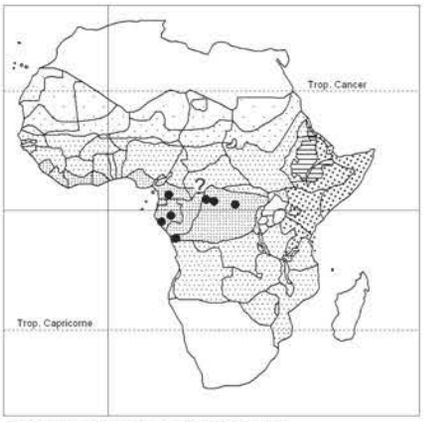
Only known from the type collected in 1924.

P. paniculata (Vahl) N. Hallé – Icon.: Guillemin & al., Fl. Sénég. 1: pl. 25, 1833; Fl. Cameroun 32: 163, 165, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 691, 2006 (partial); Fl. Trop. E. Africa, Celastraceae: 60, 1994, and Loesener in Mildbraed, Deutsch. Zentr.-Afrik. Exp.: pl. 61, 1912 (both sub nom. *Pristimera* and *Hippocratea polyantha,* respectively); Berhaut, Fl. ill. Sénégal 2: 284, 1974 (sub nom. *Simirestis paniculata).*

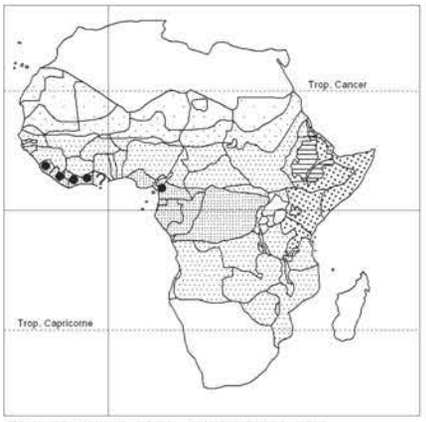
syn.: *Hippocratea polyantha* Loes.; *Pristimera polyantha* (Loes.) N. Hallé; *Hippocratea bequaertii* De Wild.

Liane or scandent shrub 2-8-12 m long, sometimes bushy (in coastal degraded vegetation); young stems smooth, glabrous, green, cylindrical; older stems brownish without obvious lenticels.

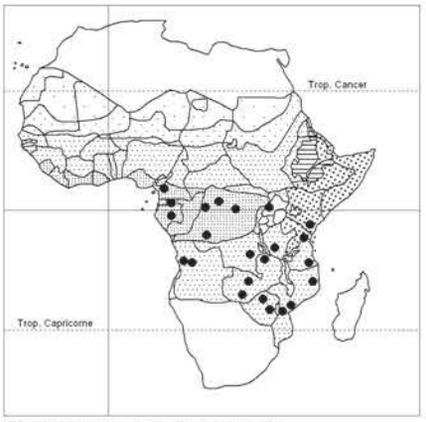
Swamps, sub-littoral forest; forest margins; riverine thickets; wooded savanna in valleys; forest gallery; sandy soil; by water; 1-1900 m alt.



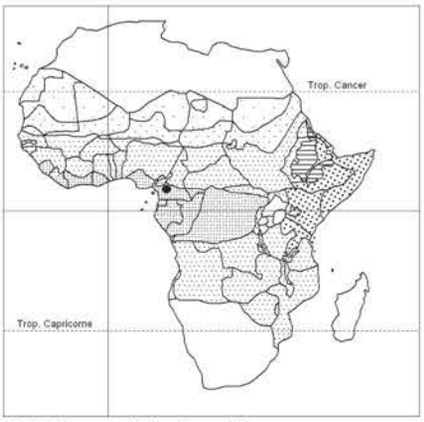
Prionostemma fimbriata



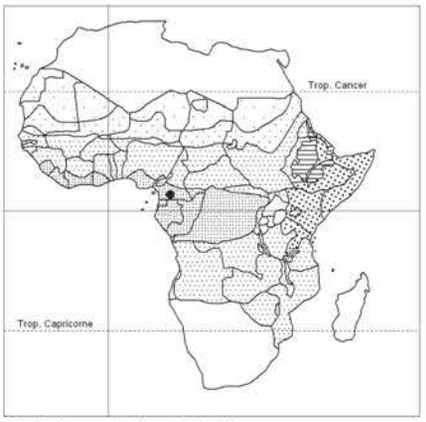
Prionostemma unguiculata



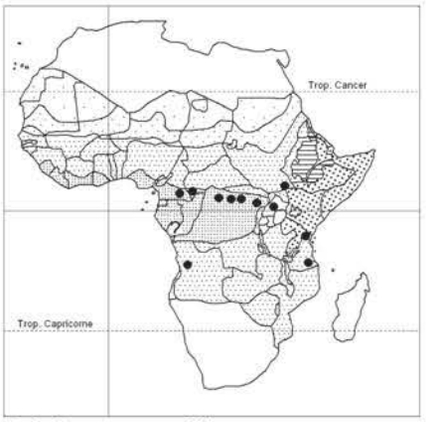
Pristimera andongensis



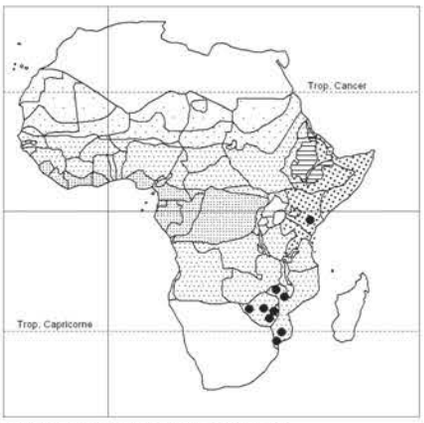
Pristimera biholongii



Pristimera breteleri



Pristimera graciliflora



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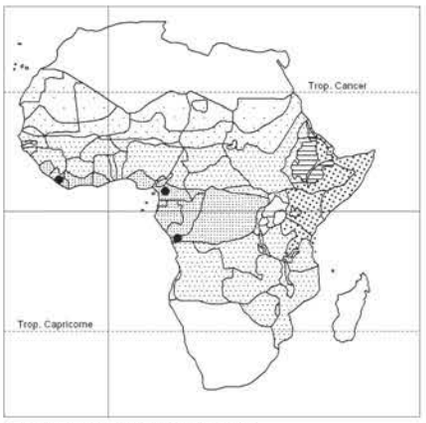
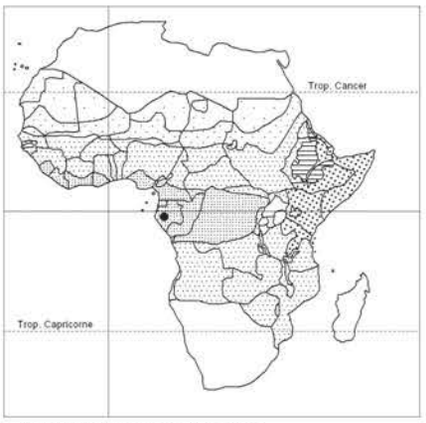
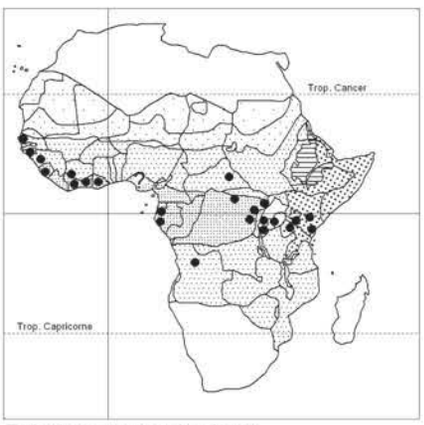


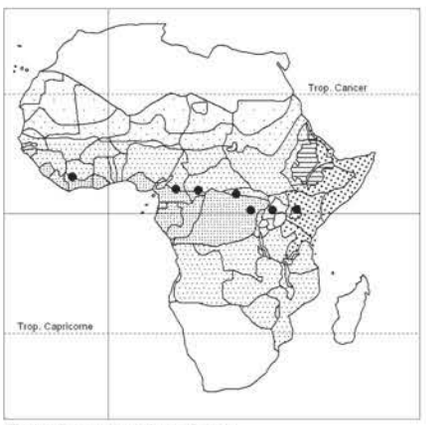
Pristimera luteoviridis



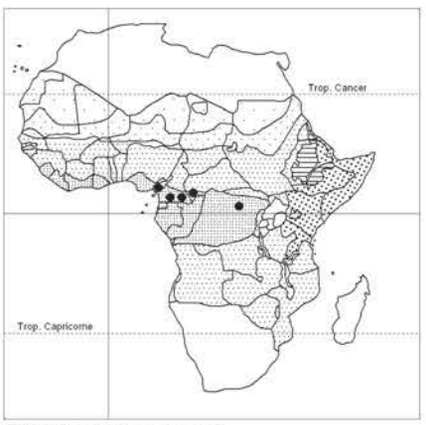
Pristimera mouilensis



Pristimera paniculata



Pristimera plumbea



Pristimera preussii

PRISTIMERA

P. plumbea (Blakelock & R. Wilczek) N. Hallé; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 690, 2006 (distribution not enough known in the area). – Icon.: Fl. Cameroun 32: 167, 1990 (partial); Fl. Trop. E. Africa, Celastraceae: 64, 1994 (partial).

Tall liane with cylindrical, nearly smooth stems becoming very finely lenticellate.

Mixed forest; 650-1600 m alt.

The three specimens from Ivory Coast lack flowers, like the single gathering from Cameroon.

P. preussii (Loes.) N. Hallé – Icon.: Fl. Cameroun 32: 175, 1990 (partial).

Liane 4- >60 m long, with stem 4 cm Ø; very near *P. graciliflora* but flower pedicels 0,2-1 mm (not 3-12 mm); flowers, inflorescences and leaves not or only slightly blackening when dry. The two species occur together in the Mouloundou region, S Cameroon.

Rain-forest; swampy forest; riparian; 400-700 m alt.

SYNONYMS:

Pristimera indica (Willd.) A. C. Sm. = **Reissantia**

polyantha (Loes.) N. Hallé = **Pristimera paniculata**

REISSANTIA / *3*

Six species in the Old World.

Reissantia buchananii (Loes.) N. Hallé, excl. fa. *dolichocarpa* Loes. *(= R. parviflora);* Coates Palgrave, Trees south. Afr., ed. 3: 630, 2002. – Icon.: Fl. Trop. E. Africa, Celastraceae: 50, 1994 (partial).

syn.: *Hippocratea menyharthii* Schinz

Tree or scandent shrub, 1,5-9 m tall; stems and older branches reddish- or greyish-brown, glabrous, with many lenticels; young branches terete or sometimes weakly 4-angled, densely pubescent.

Dry scrub or dry woodland, often in river valleys; coastal scrub; *Colophospernum mopane* woodland; 0-1300 m alt.

Botswana. – Malawi?

R. indica (Willd.) N. Hallé – Icon.: Fl. Trop. E. Africa, Celastraceae: 53, 1994 (var. **orientalis**); E. Schmidt & al., Trees & shrubs Mpumalanga …: 351, 2002 (photo.); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 691, 2006 (partial); Fl. Cameroun 32: 151, 1990; Berhaut, Fl. ill. Sénégal 2: 274, 1974.

syn.: *Hippocratea indica* fa. *longepetiolata* Loes.; *H. indica* sensu F.W.T.A., ed. 2, 1(2): 627, 1958, *excl.* specim. Jaeger 21, 2213, 3830 and Cooper 409 *(= Elachyptera parvifolia).*

Liane 4-20 m in height or ± scandent shrub 1-8 m; stems and older branches dark green, greyish brown or reddish brown, glabrous, usually with indistinct lenticels; young branches 4-angled.

Thickets in ravines and on hill slopes; damp or dry deciduous forests; savannas; open bush; mopane woodland; riverine; fallow land in forest; on rocks; 200-1200 m alt.

Bioko / Fernando Poo; Namibia, Caprivi Strip, S. Africa (Transvaal), Botswana. – Not in Mali *(= Elachyptera parvifolia).* – India, Sri Lanka to the Philippines and Timor (var. **indica**).

REISSANTIA INDICA

Comprises 3 vars. in our area: – var. **astericantha** (N. Hallé) N. Hallé, with leaves drying green and dark green flowers drying black, widespread in W & C tropical Africa; – var. **loeseneriana** (Hutch. & M. B. Moss "loesneriana") N. Hallé *("Hippocratea loesleriana"* sphalm. in Exell, J. Bot. 70, Suppl. Polypet.: 225, 1932), with leaves drying dark, widespread in W & C tropical Africa; – var. **orientalis** N. Hallé & B. Mathew with leaves drying green and yellow flowers, in E-SE part of range.

R. parviflora (N. E. Br.) N. Hallé – Icon.: Berhaut, Fl. ill. Sénégal 2: 279, 1974.

syn.: Enum. 4: 623, 1997; *Hippocratea "parvifolia"* (sphalm.) and *H.* sp. (Pole Evans 4203) sensu O. B. Miller in J. S. Afric. Bot. 18: 49, 1952.

Liane or scandent shrub, usually < 4 m tall; stems and older branches reddish- or purplish-brown; lenticels indistinct; branchlets persistently 4-angled; leaves velvety.

Dryish deciduous thickets, often on sandy soils, Kalahari sands; 120-1400 m alt.

Variable in size of flowers and length of leaf petioles.

Botswana, Namibia, Caprivi Strip.

Has been confused with *R. buchananii*, but is more closely related to *R. indica* differing from the latter by pubescent stems and leaves and greenish smaller flowers.

SYNONYMS:

Reissantia astericantha N. Hallé = **Reissantia indica** var.

parvifolia (Oliv.) N. Hallé, incl. var. *kageraensis* (Loes.) N. Hallé = **Elachyptera**

SALACIA / *82*

A pantropical genus of 180-200 species present in America (37 spp.), tropical Africa (82), S. Africa (2), Asia (± 80). The Cameroon-Gabon area with c. 56 (60) species is the richest in Africa, followed by the Zaire (44).

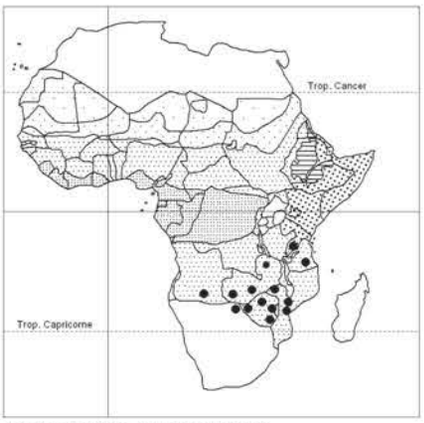
Several species poorly known; and it can "be very difficult to identify newly collected specimens …" and in spite of a new species proposed for Gabon … "it will certainly not be the last" (Jongkind in Adansonia, Sér. 3, 28: 102, 2006; cf. also Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 2006, and other recent works citing unidentified specimens. – As to our list we cite below 17(+3) species without fruit, further 3 spp. without ripe fruit, 1 sp. without seeds, 2 spp. without ecology; 8 (+3) species are known only from the type and further 5 from only 2-3 collections.

Salacia adolphi-friderici Loes. ex Harms, non *Hippocratea adolphi-friderici* Loes. ex Harms *(= ? Prionostemma fimbriata)* nec *Salacia fredericqui* R. Wilczek *(= S. longipes);* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 698, 2006. – Icon.: Fl. Cameroun 32: 99, 1990 (partial).

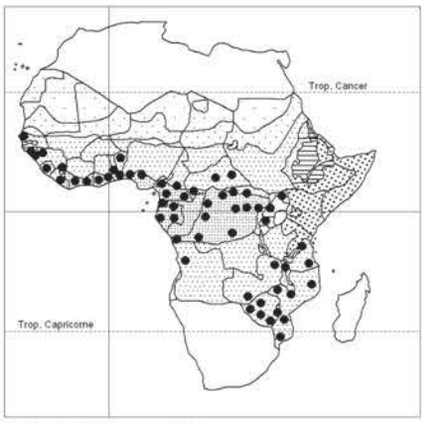
syn.: Enum. 2: 153, 1992; *S. echinulata* sensu Fl. Congo belge 9: 224, 1960, *excl.* specim. Louis 4324.

Liane 25 – >100 m long, glabrous; stem 12 cm Ø; branches subcylindrical, smooth, olive green, widened at the nodes, ± lenticellate.

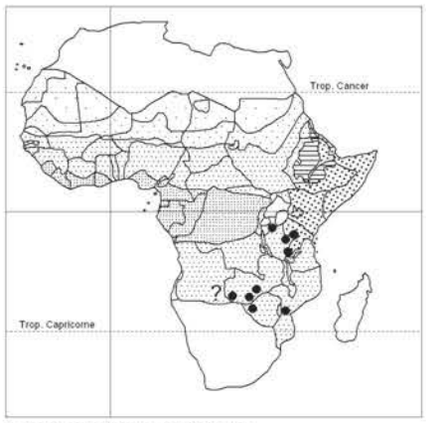
Rain-forests, incl. semi-deciduous; riverine forests; 650 m alt.



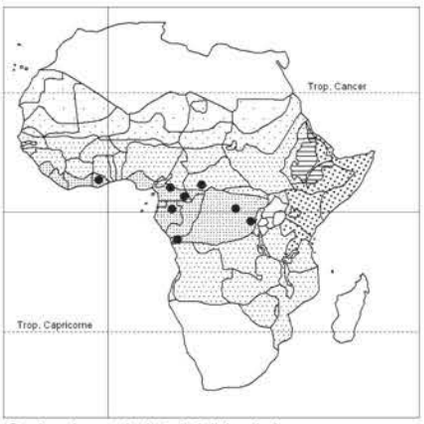
Reissantia buchananii



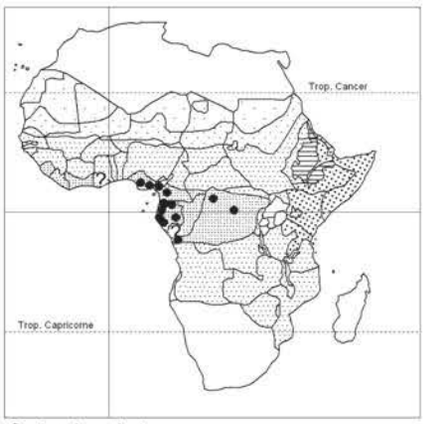
Reissantia indica



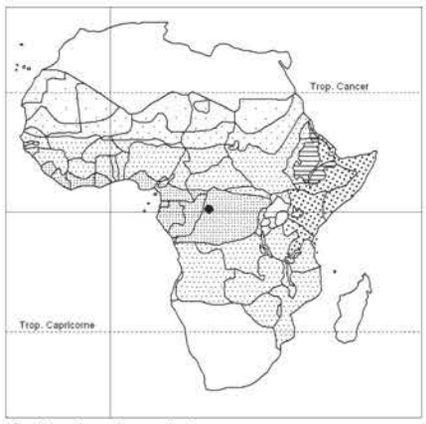
Reissantia parviflora



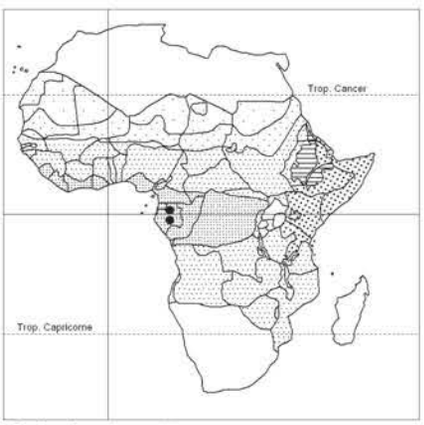
Salacia adolphi-friderici



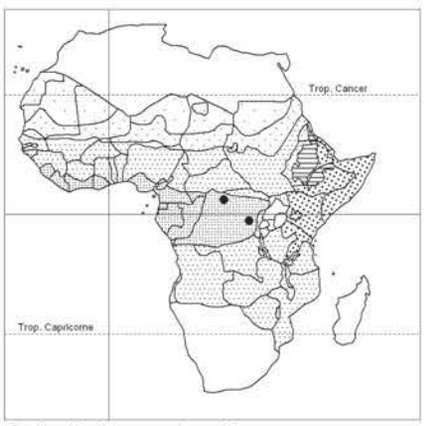
Salacia alata



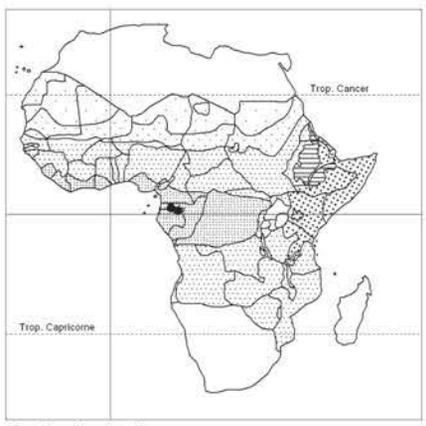
Salacia alveolata



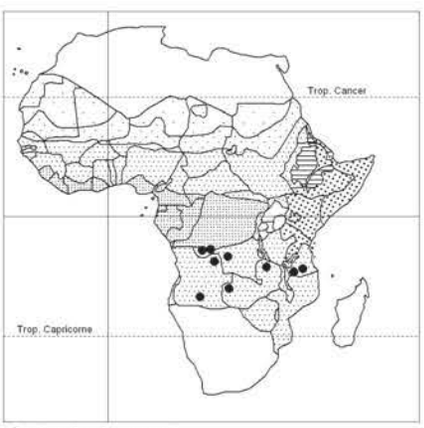
Salacia annettae



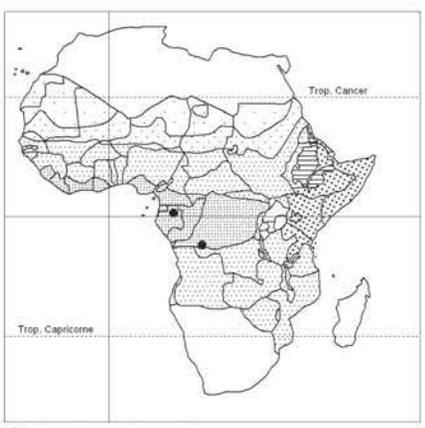
Salacia bangalensis



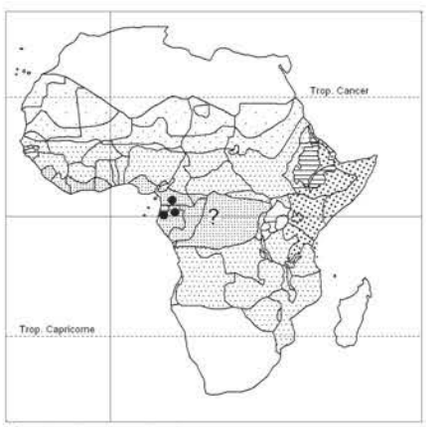
Salacia belingana



Salacia bussei



Salacia callensii



Salacia capitulata

SALACIA

S. alata De Wild. – Icon.: Fl. Cameroun 32: 95, 1990 (partial).

syn.: *Garcinia nobilis (Guttiferae)* sensu F.W.T.A., ed. 1, 1(1): 236, 1927, quoad specim. Talbot 1385, non Engl. (type: Staudt 109!).

Liane 3-30 m tall, glabrous; internodes slightly rugose, 4-5-winged (wings straight 0,5-2 mm broad).

Rain-forests; riparian; heavy or sandy soils; rocks; dry primitive forests; 0-1000 m alt.

Comprises 2 vars.

S. alveolata Louis ex R. Wilczek

Liane, glabrous, with cylindrical branches, lenticellate, rough; branchlets sub-4-angular to cylindrical, lightly lenticellate; fruit unknown.

Dry hillock in swamp forest.

Only known from the type collected in 1936.

Very near *S. debilis.*

S. annettae N. Hallé – Icon.: Fl. Cameroun 32: 107, 1990 (partial).

Liane; stems (internodes) with blunt edges, sub-rounded when young, brownish, very scabrous by micro-prickles.

Dense bushy forest, partially flooded, on a *Ficus* sp.; islet in stream; 758 m alt.

Discovered in 1972; only 3 collections known.

S. bangalensis Vermoesen ex R. Wilczek

syn.: *S. pierlotii* R. Wilczek

Glabrous liane with rounded branches, ± lenticellate-rugose; branchlets ± flattened to cylindrical, lenticellate; ripe fruit unknown.

Secondary forest with *Pycnanthus angolensis, Treculia africana,* wet places; riverine forest periodically flooded.

S. belingana N. Hallé – Icon.: Fl. Cameroun 32: 115, 1990 (partial).

Liane > 10-20 m long, glabrous; branches early lenticellate, ± reddish.

Rain-forest; 725 m alt.

Discovered in 1964; only 3 collections known.

S. bussei Loes., incl. var. *grandifolia* R. Wilczek – Icon.: Fl. Trop. E. Africa, Celastraceae: 37, 1994.

syn.: *S. rehmannii* Schinz var. *baumii* Loes.

Glabrous branched shrub with erect annual shoots from a woody stock, 0,2-1 m tall; stems subterete, green, ± smooth or somewhat ridged, becoming rough and brownish purple. Geoxylic suffrutex (Nord. J. Bot. 1: 728, 1982).

Grassland; scrub; dryish deciduous woodland; degraded open forest; hillslopes; villages; sandy soil; ± 700-1600 m alt.

S. callensii R. Wilczek – Icon.: Fl. Cameroun 32: 121, 1990 (partial).

Shrub or glabrous liane, ±2 m tall; branches and branchlets cylindrical, smooth.

Forests; 650-800 m alt. (Gabon).

SALACIA

S. capitulata N. Hallé – Icon.: Fl. Cameroun 32: 92, 1990 (partial).

Liane to 20 m tall, glabrous; young branches 4-angled.

Rain-forest; sometimes on isolated rocky summits; 500-922 m alt.

S. cerasifera Welw. ex Oliv. – Icon.: Fl. Cameroun 32: 87, 1990 (partial); Fl. Trop. E. Afr., Celastraceae: 35, 1994 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 699, 2006 (partial).

syn.: *S. elliotii* Loes.; *S. erecta* sensu Fl. W. Trop. Afr., ed. 2, 1(2): 633, 1958, quoad specim. Scott Elliot 4595.

Glabrous liane or scandent shrub to 25 m tall; stems green, smooth, ±angular and ridged when young, becoming greyish brown or purplish and subterete, the lenticels not especially prominent.

Coastal bush; damp forest; generally riverine or in swampy places; dry primitive forests; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* 0-2070 m alt.

Comprises 2 vars.

Not in Zambia.

S. chlorantha Oliv., incl. subsp. *dalzielii* (Hutch. & M. B. Moss) N. Hallé and subsp. *demeusei* (De Wild. & T. Durand) N. Hallé – Icon.: Fl. Cameroun 32: 126, 1990 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 695, 2006.

syn.: *S. macrocarpa* Welw. ex Oliv. 1868, non Korthals 1848, var. *typica* Loes., var. *latifolia* Loes., var. *angustifolia* (Scott Elliot) Loes., var. *grandiflora* Loes., *S. angustifolia* Scott Elliot; *S. doeringii* Loes., *S. euryoides* Hutch. & M. B. Moss; *S. senegalensis* sensu F.W.T.A., ed. 2, 1(2): 631, 1958, quoad specim. Scott Elliot 4870, 5433, 5486, Thomas 2358, Keay FHI 28262, Thomson 93 (cf. also under *S. columna); S. ripicola* Louis in sched.; Enum. 2: 153, 1992.

Shrub ± 2 m tall or liane to 20 m tall or more, glabrous; stems with paired lines, green, smooth and ± flattened at first, becoming terete or subangular, purple or reddish-purple and verruculose with numerous prominent lenticels; branches reddish-brown.

Evergreen forests; fringing forests (incl. periodically flooded); swamps; fallow land; scrub; to 700 m alt.

S. columna N. Hallé – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 695, 2006 (partial).

syn.: *S. senegalensis* sensu F.W.T.A., ed. 2, 1(2): 631, 1958, quoad specim. Deighton 2627, 3105, Baldwin 11550, Chevalier 21161 (cf. also under *S. chlorantha).*

Liane 6-10 m tall; young branches cylindrical, glabrous, smooth, without lenticels. Fruit fresh sweet, edible.

Forests, in ravines and on level ground; ± 480 m alt. (Liberia, Mts Nimba).

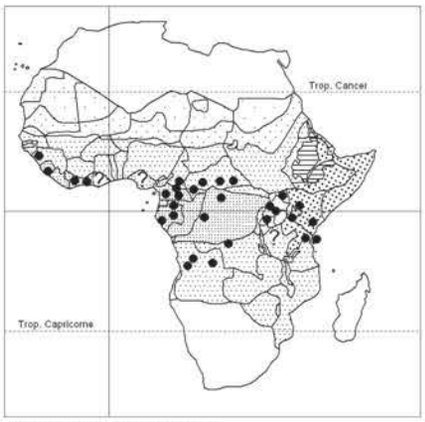
Comprises 2 vars.

S. congolensis De Wild. & Th. Durand

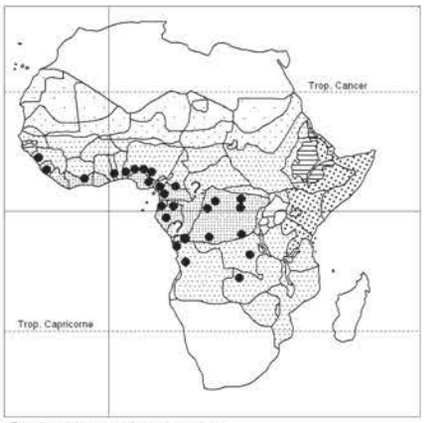
Glabrous liane; branches ± lenticellate-rugose; branchlets slightly 4-angular , flattened, smooth.

Riparian forest.

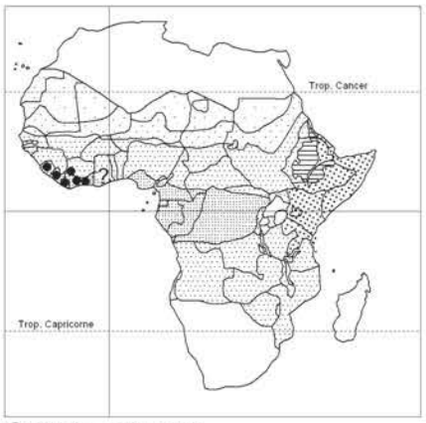
Ann. Mus. Congo belge, Bot., Sér. 1, 1: plate 43 figs. 2, 3, 4, 9, 1899 are incorrect as for androecium and disk.



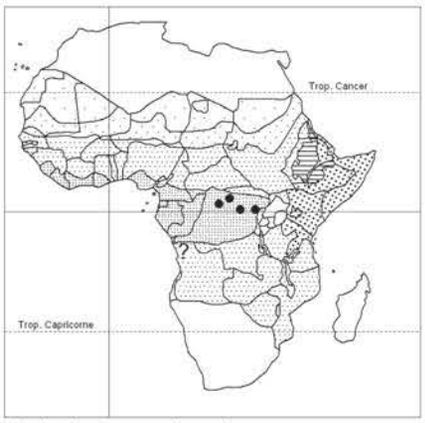
Salacia cerasifera



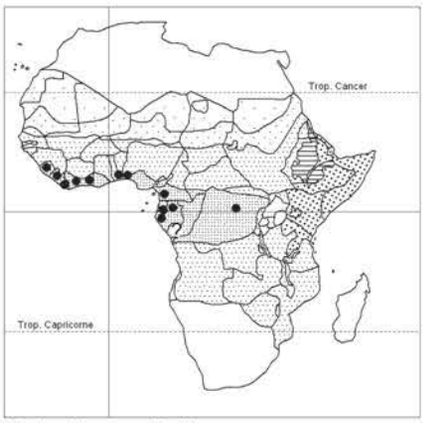
Salacia chlorantha



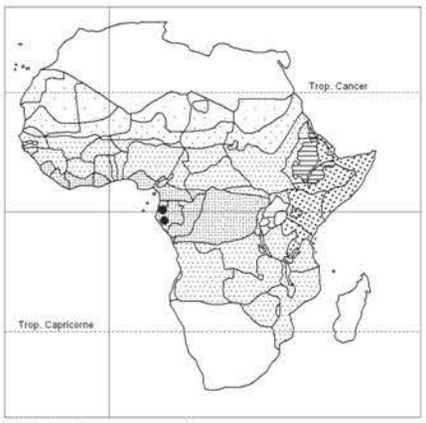
Salacia columna



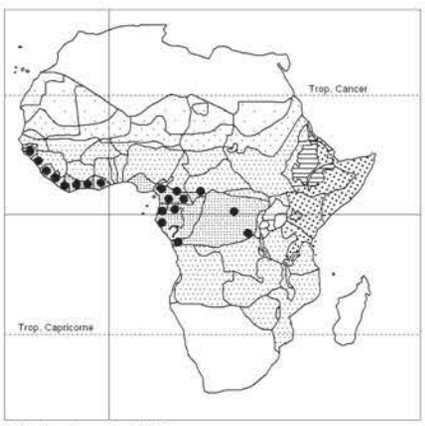
Salacia congolensis



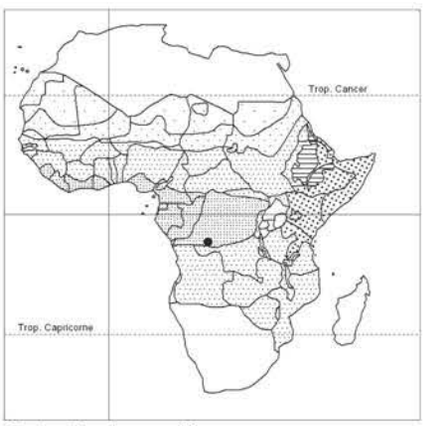
Salacia cornifolia



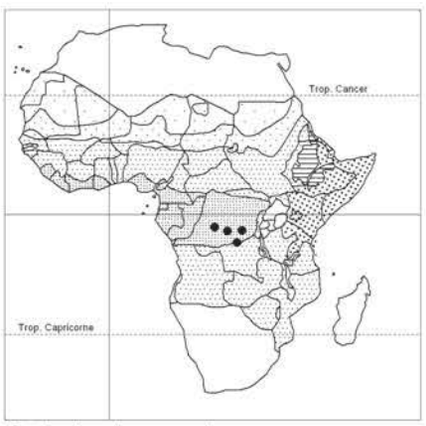
Salacia coronata



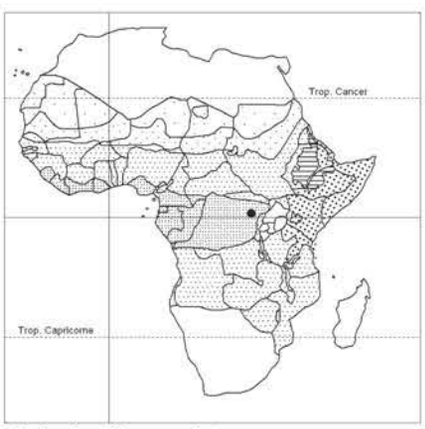
Salacia debilis



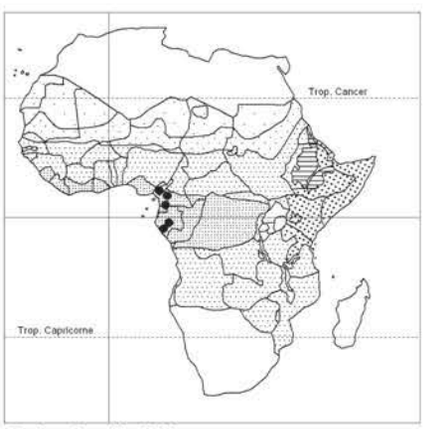
Salacia devredii



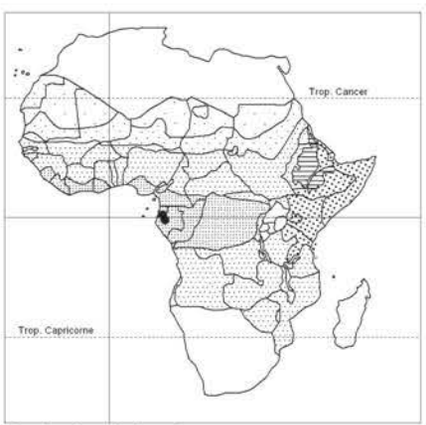
Salacia dewevrei



Salacia dicarpellata



Salacia dimidia



Salacia diplasia

SALACIA

S. cornifolia Hook. f., *excl.* var. *crassipetala* Oliv. *(= S. nitida).* – Icon.: Adam, Fl. descr. Mts Nimba 2: 741, 1971; Fl. Cameroun 32: 103, 1990; Akoégninou & al., Fl. analyt. Bénin: 465, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 699, 2006 (partial).

Liane 3 – >20 m tall, glabrous; internodes cylindrical or angular, smooth, olive green when dry. Fruit pulp sweet, edible.

Evergreen forests, sublittoral forest edges on sand; sometimes in rain-forest but rare and scattered; 0-750 m alt.

Not in Tanzania *(= S. orientalis).*

Leaf petioles often galled; galls rounded, 1-5 mm Ø.

S. coronata N. Hallé – Icon.: Fl. Cameroun 32: 121, 1990 (partial).

Glabrous liane; young stems smooth, olive green, flattened near the nodes; fruit unknown.

? Very wet rain-forest.

Only known from 2 collections made in 1897 and 1927, respectively.

S. debilis (G. Don) Walpers – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 697, 2006 (partial); Berhaut, Fl. ill. Sénégal 2: 280, 1974.

bas.: *Calypso debilis* G. Don *(Calypso* Thouars 1804 = *Celastraceae-Hippocrateaceae,* non Salisb. = *Orchidaceae).*

syn.: *Salacia tomiensis* A. Chev., p.p., quoad specim. Chevalier 10918.

Liane, slender, glabrous, 3-30 m tall; young internodes with 4 conspicuous ridges with prominent tubercles; branches often lenticellate; old stem deeply lobed in cross section.

Rain-forest or old-secondary forest; flowering at edges, sides or windfallen wood; fallow land; forest with *Gilbertiondendron dewevrei* or with *Parinari excelsa,* etc.; open secondary forest with *Anthocleista kerstingii, Sterculia tragacantha, Afzelia africana, Chlorophora regia, Lonchocarpus cyanescens, Rungia guineensis, Phaylopsis silvestris …;* forest gallery; 200-1700 m alt.

Bioko / Fernando Poo. – ? Congo Brazzaville (confusion with Centr. Afr. Rep.).

S. devredii R. Wilczek

Undershrub or liane, ± 2 m tall, glabrous; branches and branchlets cylindrical; bark blackish brown, lenticellate-rugose.

Valley forest; forest with *Brachystegia.*

Only known from 2 collections made in 1955 and 1956, respectively.

S. dewevrei De Wild. & Th. Durand

Shrub, tree, sometimes liane to 20 m tall, glabrous; branches cylindrical, smooth or slightly lenticellate, brownish; branchlets ± flattened, smooth, greenish.

Forests.

Very near *S. dusenii* and perhaps a subsp. of the latter (fide Hallé, 1986).

S. dewevrei sensu Exell 1927 (Gossweiler 6776) = *S. mayumbensis.*

SALACIA

S. dicarpellata Loes.

Glabrous liane with ± flattened branches, 5,5 mm Ø, blackish; branchlets ± flattened near the apex, 1-2 mm Ø; fruit unknown.

High forest.

Only known from the type (Mildbraed 3238!) collected ante 1910, destroyed.

S. dimidia N. Hallé – Icon.: Fl. Cameroun 32: 81, 1990 (partial).

Erect shrub 0,3-1 m tall, glabrous; young stems olive green when dry, smooth, 4-angled; bark becoming brownish.

? Forest; 50-950 m alt.

S. diplasia N. Hallé – Icon.: Fl. Cameroun 32: 81, 1990 (partial).

Erect shrub, 1-2 m tall, glabrous; young stems olive green, ± smooth, 4-winged; young leaves pinkish brown; bark greyish with longitudinal whitish cracks; seeds unknown.

Slope of deep river valley in rain-forest.

Only known from 2 gatherings made in 1963 and 1968, respectively.

(**S. ducis-wuerttembbergiae** Hochst.) – Imperfectly known.

Shrub with subterete branches; bark greyish; leaves opposite, obovate, obtusely serrate, coriaceous, glabrous, much reticulated especially beneath, base cuneate into a short petiole; panicles axillary, dichotomous, six times shorter than the leaves; peduncles and pedicels with two bracteoles at the base; flowers very small; fruit baccate, 1-3-celled.

By watercourses.

First collected in 1841 by "Paulus Guilielmus dux Würtembergiae" … "in itinere per Nubiam et provinciam Fassokel" (= Fazughli). Unknown by Oliver in Fl. Trop. Afr. 1: 377, 1868; no specimens seen by H. M. El Amin, Trees and shrubs of the Sudan: 284, 1990. Reported from the Sudan (Nuba Mts and Blue Nile Provinces) by Broun & Massey, Fl. Sudan: 219, 1929. – ? Type lost in Stuttgart, 1944.

Not mapped.

S. dusenii Loes. – Icon.: Fl. Cameroun 32: 53, 1990 (partial).

Liane (? or tree) to 8-15 m tall, glabrous; branches light-grey to brownish.

Forest; 300-1600 m alt.

Not in Zaire (confusion with Cameroon); ? Guinea (Mts Nimba).

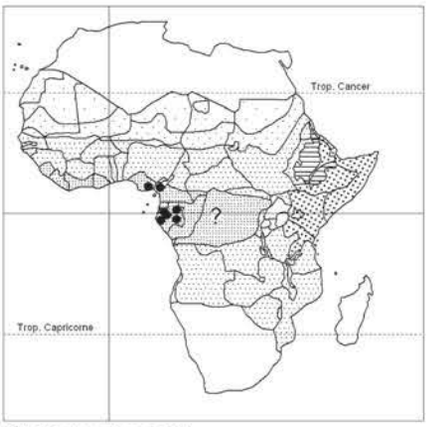
S. ekoka Louis ex R. Wilczek

Liane; stem to 10-12 cm Ø; young branches with reddish brown bark when dry, becoming greyish and lenticellate.

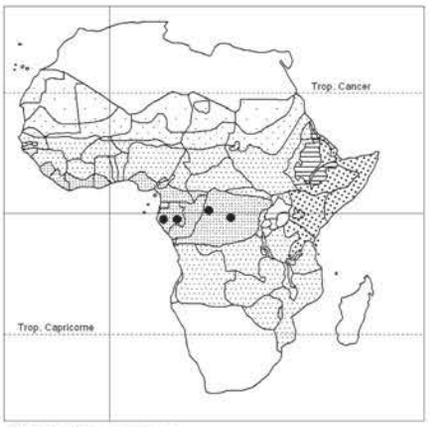
Riparian forest, flooded or swampy.

S. elegans Welw. ex Oliv., excl. var. *pynaertii* (De Wild.) R. Wilczek *(= S. pynaertii)* – Icon.: Fl. Cameroun 32: 117, 1990 (partial); Fl. Trop. E. Africa, Celastraceae: 35, 1994 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 682, 695, 2006.

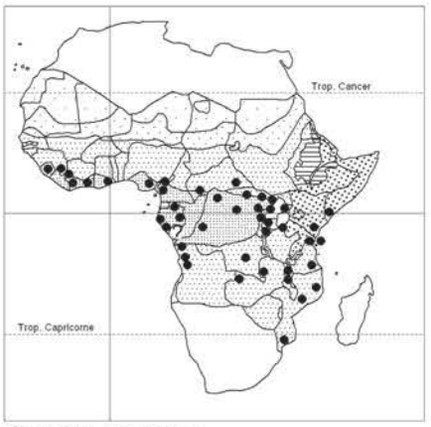
syn.: *S. floribunda* Tul. 1857, incl. fa. *mombassensis* Loes., fa. *kumbensis* Loes., fa. *subintegra* Loes. non Wight 1840, but *excl.* fa. *amaniensis* Loes. *(= S. erecta); S. semlikiensis* De Wild., incl. var. *subcordatifolia* De Wild.; ? *S. zanzibarensis* Vatke ex Loes., quoad specim. Zimmermann 7300, 7303, *non* 7301 and 7302 *(= S. erecta).*



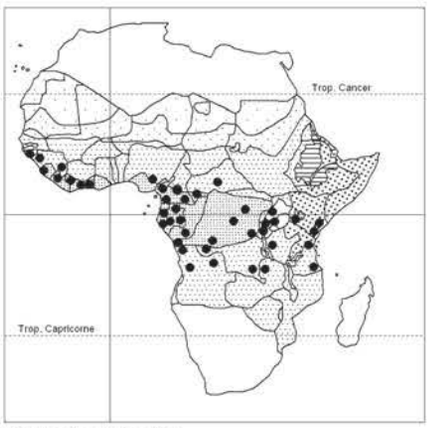
Salacia dusenii



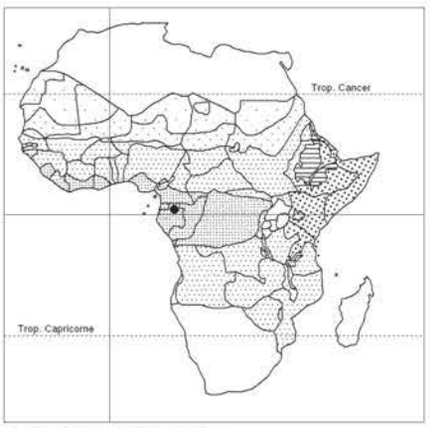
Salacia ekoka



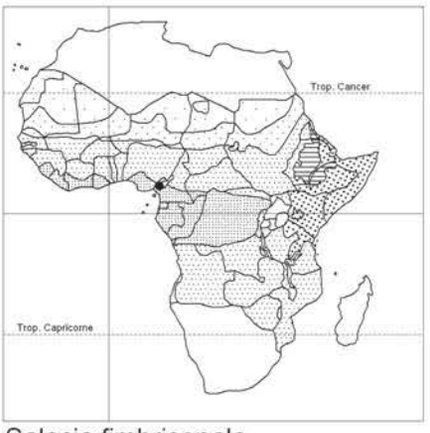
Salacia elegans



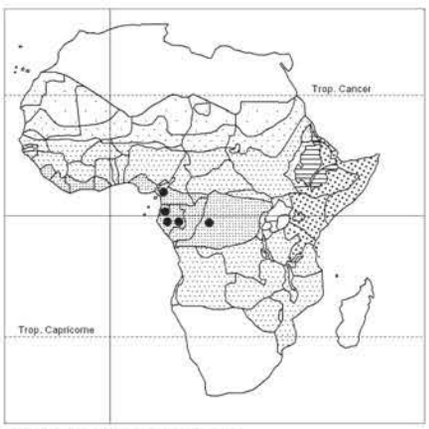
Salacia erecta



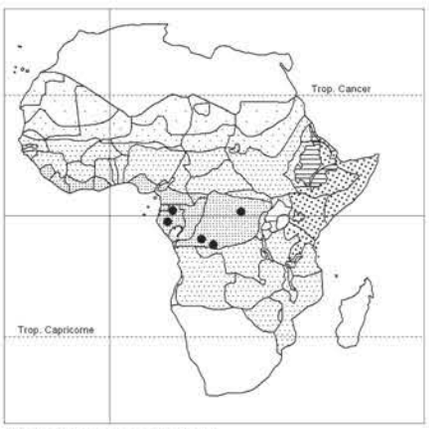
Salacia ferrifodina



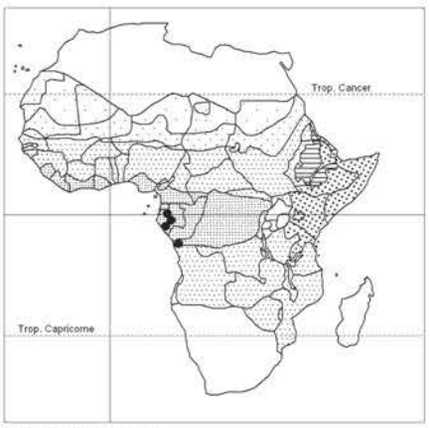
Salacia fimbrisepala



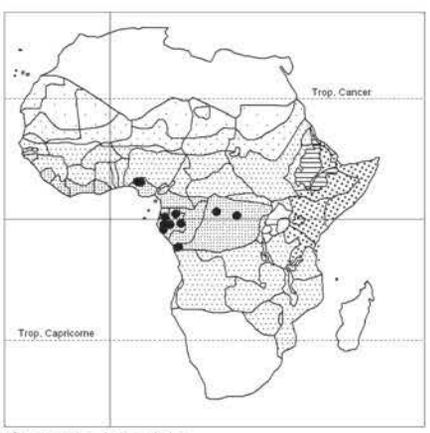
Salacia gabunensis



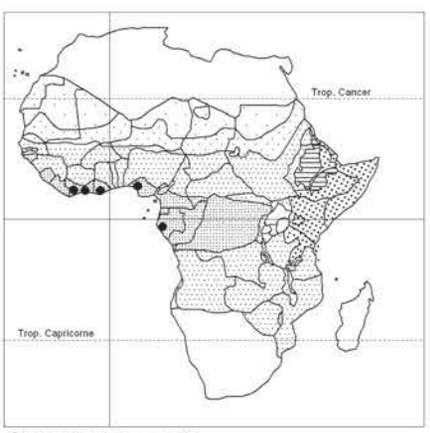
Salacia germainii



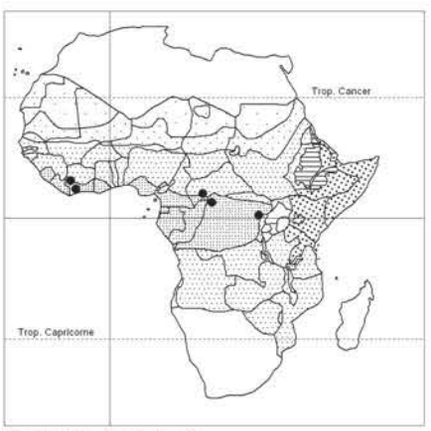
Salacia hallei



Salacia hispida



Salacia howesii



Salacia ituriensis

Glabrous shrub 1-6 m tall often with climbing branches or liane 8-40 m; main stems 5-15 cm Ø, pale green, smooth, rather flattened but with ridges when young, becoming reddish purple, terete (climbing shoots sometimes angled), with white lenticels.

Evergreen forest; fringing forest; thick deciduous woodland; regrowth; isolated rocks; wooded rocky ridges; swampy forests; thickets; lake-shore thickets and on rocks; 1-1650 m alt.

Very variable, in leaf-size, degree of toothing of leaf margins, length of inflorescence peduncles (cf. Fl. Trop. E. Africa, Celastraceae: 36, 1994 and Hawthorne & Jongkind, o.c.: 694).

Comoro Isl.

Comprises 2 vars. (fruit unknown in var. **inurbana** N. Hallé).

S. erecta (G. Don) Walp.; sensu F.W.T.A., ed. 2, 1(2): 633, 1958, *excl*. specim. Scott Elliot 4595, Imp. Inst., Irvine 894, Baumann 489; Chevalier 22768, Dalziel 1067, 1153. – Icon.: Adam, Fl. Mts Nimba 2: 742, 1971, and 3: 1363, 1975; Fl. Cameroun 32: 89, 91, 1990 (partial); Fl. Trop. E. Africa, Celastraceae: 35, 1994 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 697, 2006 (partial); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 265, 2008

bas.: *Calypso erecta* G. Don (cf. under *Salacia debilis).*

syn.: *Salacia alpestris* A. Chev.; *S. floribunda* Tul. fa. *amaniensis* Loes.; *S. zanzibarensis,* quoad specim. Zimmermann, 7301, 7302, *non* 7300, 7303 *(= S. elegans); S. tomiensis* A. Chev., p.p. quoad specim. Chevalier 5626, 5628.

Glabrous shrub 1-7 m tall often with climbing branches or liane 15-20 m long; stems 4-angled or with paired ridges, green or purplish, becoming terete, dark purplish grey, smooth, or rough with conspicuous raised lenticels.

Evergreen forest; forest edges; forest gallery; semi-deciduous forest; bushy places along streams; 1-2400 m alt.

S. Africa. Not in Benin *(= S. cornifolia).*

Comprises 4 vars.

S. ferrifodina N. Hallé – Icon.: Fl. Cameroun 32: 83, 1990 (partial).

Drooping liane >10 m tall; internodes smooth, subcylindrical near the bases, flattened towards the apex; fruit unknown; flower with very strange fragrance (…"rappelant les termites et les gorilles", fide Hallé).

Ecology unknown.

Only known from the type collected in 1964.

S. fimbrisepala Loes.

Glabrous liane or ?erect shrub with densely lenticellate old branches; fruit unknown.

Stream; ± 1000 m alt.

Only known from the type (Lehmbach 228, destroyed) collected ante 1910.

Near *S. letestui.* – Not in Ghana (Johnson 648 = *S. preussii* var. *louisii).*

S. gabunensis Loes., incl. formae *gabunensis, teneriflora* Loes. and *volkensiana* (Loes. ex Harms) N. Hallé; excl. specim. Evrard 2349, Léonard 258 (Zaire). – Icon.: Fl. Cameroun 32: 72, 1990 (partial).

Liane 6- >10 m tall.

Forest; near sea-level to 1190 m alt.

S. germainii R. Wilczek – Icon.: Not. Syst. 16: 134, 1960 sub nom. *S. chlorion;* Fl. Cameroun 32: 83, 1990 (partial).

Liane 5- >10 m tall; stem 6 cm Ø, glabrous; young internodes 4-ridged, olive green when dry.

Riparian forests; swamp; elevated, very wet crests; 500-1000 m alt.

Comprises 3 vars.: – var. **germainii**; – var. **chlorion** (N. Hallé) N. Hallé; – var. **cordata** R. Wilczek

S. hallei Jongkind – Icon.: Adansonia, Sér. 3, 28: 102, 2006.

syn.: *S.* sp. sensu N. Hallé, Fl. Gabon 29: 145, 1986 – Icon.: o.c.: pl. 39, p. 139, fig. 12-19.

Liane 10 m tall; branchlets densely lenticellate, glabrous. Unique by the combination of glabrous leaves with a transverse tertiary venation, a conspicuous pedunculate inflorescence and glabrous flowers c. 10 mm Ø with almost round petals 3,5-4,5 mm wide and with 4-6 ovules in each carpel; fruit unknown.

Rain-forest; 160-560 m alt.

First collection made in 1919 in Angola, the second in 1978 (Gabon); the two are incomplete; better material was later collected on different sites in Gabon: in 1986, 1990, 1997, 1999.

In Flore du Gabon 29: 36, 1986, this species will key out next to *S. devredii* and *S. lehmbachii,* but shape of disk different.

Could possibly occur in dense forest of Congo-Brazzaville S of Gabon.

S. hispida Blakelock – Icon.: Fl. Cameroun 32: 109, 1990 (partial).

Shrub 2-3 m tall or liane to 12 m; stem 8 cm Ø; branches green becoming grey, cylindrical, ± striate, scabrous and hispid with violaceous hairs to 2 mm long becoming black when dry.

Rain- and swampy forests; climbing over *Synsepalum afzelii* in high forest; cliff; 170-700 m alt.

S. howesii Hutch. & M. B. Moss – Icon.: Fl. Cameroun 32: 109, 1990 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 687, 2006 (partial).

Shrub 1,5 m tall or more, normally liane with stem >3 cm Ø; bark greyish with crevices; young internodes olive grey with very fine, erect pale green pubescence; older twigs purplish-black; inflorescence like a small broom. Fruit known!

Forest; 300-760 m alt.

S. ituriensis Loes. (sphalm. *"huriensis"* in Fl. Congo belge 9: 581, 1960).

Glabrous liane; branches and branchlets 4-winged, obscurely papillose-rugose.

Semi-deciduous forest; coastal bush; low altitudes.

Not in Ghana (Johnson 648 = *S. preussii* var. *louisii);* Louis 3575 from Zaire = *S. preussii* var. *louisii.*

S. kivuensis R. Wilczek

Erect shrub, glabrous, 2-3 m tall; branches and branchlets cylindrical, brownish, lenticellate-rugose; ripe fruit unknown.

Hollow with *Cyathea* in transitional forest.

S. klanei Pierre ex R. Wilczek – Icon.: Fl. Cameroun 32: 135, 1990.

Liane; internodes grey when dry, slightly 4-ridged or -winged.

Forest or disturbed forest; c. 5 m alt. (Gabon).

S. kraussii (Harv.) Harv. – Icon.: E. Schmidt & al., Trees & Shrubs Mpumalanga …: 363, 2002 (photos.).

bas.: *Diplesthes kraussii* Harv.

syn.: *Salacia alternifolia* Hochst.

Shrub 1-3 m tall (?sometimes climbing) or a shrublet with annual shoots from a rhizome with chrome yellow layer beneath the bark, glabrous; stems purple-red, ridged and flattened at first, becoming striate or angular and eventually terete, greyish, with numerous slightly prominent lenticels on older shoots.

Dune scrub; thickets; open deciduous woodland near the coast; 0-90 m alt.

S. Africa (Natal).

S. lateritia N. Hallé – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 693, 2006.

syn.: *S. pyriformis* sensu F.W.T.A., ed. 2, 1(2): 632, 1958, quoad specim. Linder 253, Chevalier 19419.

Liane; stem apex with epiderm exhibiting wide longitudinal folds, yellowish brown, coarse, when dry; on the older branches the surface becoming squamose, fulvous-brownish; leaves minutely papillose below; flowers *fulvous orange,* 10-13 mm Ø; fruit much longer than wide, with 3 longitudinal ridges.

Forests ?

S. laurentii De Wild., *non Campylostemon laurentii* De Wild. – Icon.: Fl. Cameroun 32: 133, 1990 (partial).

syn.: *Salacia crampeli* A. Chev. nom. in sched. (Chevalier 6233, Centr. Afr. Rep., Fort Crampel = Kaga Bandoro); *Hippocratea kennedyi* Hoyle; *Campylostemon kennedyi* (Hoyle) Hoyle & Brenan

Sarmentous shrub 1 m tall or liane >5-8 m; stems 4 cm Ø, glabrous, flattened, sometimes 4-ridged, glaucous-green, smooth at first, becoming blackish-purple, finely lenticellate-rugulose.

Forest edges; gallery forest in rather dry zones.

? Ethiopia (not in Fl. Ethiopia 3, 1989), ? Mozambique (not in Fl. Zambesiaca 2/2, 1963-66); ? Sudan.

S. lebrunii R. Wilczek – Icon.: Fl. Cameroun 32: 107, 1990 (partial).

Liane; stem >1 cm Ø; internodes glabrous, 4(-5)-subwinged, finely pustulous, olivaceous.

Rain-forest; c. 330 m alt. (Gabon).

S. lehmbachii Loes., incl. var. *usambarensis* Loes. (= ? var. **leonensis**). – Icon.: Fl. Cameroun 32: 53, 1990 (partial); Fl. Trop. E. Africa, Celastraceae: 35, 1994 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 693, 2006; Adam, Fl. Mts Nimba 2: 745, 1971 (sub nom. *S. leonensis).*

Tree 1-9 m tall or shrub *not* sarmentose, 1-3 m, entirely glabrous; young branches yellowish or greenish, not slender, smooth, 4-angled, becoming dark or greyish green, warted and subtererte; flowers orange-red; fruit cucumber-shaped, without ridges.

Coastal- and rain-forest (specimens from Kenya only *appear* to be this species; further material needed); according to Hallé this species does not grow in very wet forests or low on the coast; gallery forest; ? savanna; (?45)-1750 m alt.

Variable species, rather forming a complex than one species (6 vars., one of these with two forms). Two syntypes are probably lost (Lehmbach 116, 208), the third one (Staudt 52) should not be considered for lectotypification according to N. Hallé (material incomplete).

SALACIA

S. lenticellosa Loes. ex Harms – Icon.: Fl. Cameroun 32: 79, 1990.

Shrub 2 m tall or liane to 25 m, glabrous; young branches soon brownish and lenticellate, later rough and greyish.

On the northern limit of the rain-forest (= hylaea); 200-1009 m alt.

S. leptoclada Tul. – Icon.: Fl. Trop. E. Africa, Celastraceae: 35, 1994 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 697, 2006 (partial).

syn.: *S. baumannii* Loes.! *not "baumiana"* in F.T.E.A., Celastr.: 43, 1994; *S. wardii* I. Verdoorn; ? *S. leptoclada* sensu F.W.T.A., ed. 2, 1(2): 631, 1958, *excl.* syn. *S. floribunda* Tul. *(= S. elegans), S. elegans* Welw. ex Oliv., *S. zanzibarensis (= S. elegans);* the single specimen cited, Talbot, Oban, needs re-evaluation *(= ? S. pynaertii); S. erecta* sensu F.W.T.A., l.c.: 633, quoad syn. *S. baumannii* Loes.

Shrub, tree or liane, 1-25 m tall, glabrous; stems subterete, often with raised lines when young, green, becoming greyish or purplish, sometimes rough with raised lenticels; fruit round, red, 1-2 cm Ø, edible.

Evergreen or deciduous forests; subcoastal scrub; fringing forest near the coast; 50-2200 m alt.

S. Africa (Natal); Comoro Is., Madagascar.

S. letestui Pellegr., non *S. letestuana* Pellegr. *(= Salacighia).* – Icon.: Fl. Cameroun 32: 37, 1990 (partial).

Liane >25 m tall; young branches glabrous, smooth, brown, the younger slightly flattened at the nodes, slightly 4-ridged; fruit unknown.

Swampy forest; liane in high forest; 170-700 m alt.

? Guinea (Chevalier 20381?).

S. letouzeyana N. Hallé – Icon.: Fl. Cameroun 32: 63, 1990 (partial).

Entangled liane 2,5-6 m tall or ± twining and drooping 8-10 m, glabrous; young internodes smooth, pale yellowish when dry; bark becoming ± reddish-brown, later greyish.

Forest and bush on abandoned cultivated ground; 20-960 m alt.

Discovered in 1969.

S. loloensis Loes. – Icon.: Fl. Cameroun 32: 57, 1990 (partial).

Shrub 1,5-4 m tall; stems >3 cm Ø; young branches smooth, olivaceous; old bark blackish grey, slightly rugose.

Rain-forest, sometimes flooded; 150-600 m alt.

Variable.

Comprises 2 vars.: – var. **loloensis** (syn.: *S. loloensis* Loes. var. *marmorata* Loes.; *S. schlechteri* Loes.); – var. **sibangana** N. Hallé

S. longipes (Oliv.) N. Hallé – Icon.: Fl. Cameroun 32: 49, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 689, 2006 (partial; var. **camerunensis**).

bas.: *Hippocratea longipes* Oliv.

Liane, glabrous, rather slender, 1-6 m tall (var. **longipes**), or >10-15 m, cable-like (var. **camerunensis**); internodes cylindrical or 4-ridged or 4-winged (Gabon); dried twigs and leaves with yellowish powder in small blisters; fruit orange, fleshy, longer than wide, 6,5 × 2-4 cm (cf. *S. nitida).*

Forest with *Cynometra-Khaya;* rain-forest; gallery forest; granitic soil; 60-1400 m alt.

Comprises 3 vars. (with intermediates) and 2 forms: – var. **longipes;** var. **camerunensis** (Loes.) N. Hallé [bas.: *S.*? *camerunensis* Loes.; syn.: *S.* sp. D sensu Fl. W. Trop. Afr., ed. 2, 1(2): 634, 1958] with 2 forms: – fa. **camerunensis**; – fa. **fredericqii** (R. Wilczek) N. Hallé [bas.: *S. fredericqii* R. Wilczek; syn.: *S. fredericqii* var. *parvifolia* ("parvifiola") R. Wilczek] also in W. Africa; – var. **longipetiolata** (Loes;) N. Hallé in Congo and Zaire.

S. lovettii N. Hallé & B. Mathew – Icon.: Fl. Trop. E. Africa, Celastraceae: 35, 1994 (partial).

Liane, glabrous; stems quadrangular, green and smooth, becoming terete and brown; fruit unknown.

Evergreen forest, moist places by river with *Erythrophleum suaveolens, Afroserlisia cerasifera, Parinari excelsa;* 500-?1372 (?-1350) m alt.

Discovered in 1983 in the Uzungwa Mountains with a surviving patch of lowland forest, largely destroyed in other Tanzanian mountains, e.g. Uluguru and Usambaras.

S. lucida Oliv.; Fl. W. Trop. Afr., ed. 2, 1(2): 633, 1958, *excl.* specim. Chevalier 17090, 17300 *(= S. oliveriana),* 17791 *(= S. togoica).* – Icon.: Fl. Cameroun 32: 125, 1990 (partial).

Glabrous liane 5-20 m tall; young branches slightly compressed at the nodes; branches cylindrical with smooth bark; fruit unknown.

Sometimes in coastal forests and mangroves; low altitudes.

Not in Ivory Coast.

S. luebbertii Loes.

Shrublet 30-60 cm tall, glabrous; stems with paired raised lines, olive green and smooth at first, becoming 4-angular and reddish-purple.

Mixed woodland and thickets on Kalahari Sand.

Namibia (Ovamboland, Grootfontein, Okawango).

S. madagascariensis (Lam.) DC. – Icon.: Fl. Trop. E. Afric., Celastr.: 37, 1994; Beentje, Kenya trees, shrubs & lianas: 344, 1994.

bas.: *Hippocratea madagascariensis* Lam.

syn.: *H. verticillata* Steud. var. *madagascariensis* (Lam.) Pers.; *Tonsella madagascariensis* (Lam.) Vahl; *Hippocratea senegalensis* Lam. var. *madagascariensis* (Lam.) Poir.

Glabrous scandent shrub or liane to at least 6 m tall, evergreen; stems quadrangular, smooth and green at first, soon becoming subterete, purplish brown or greyish, densely covered with raised lenticels, fruit pink or orange, round, 2-3 cm Ø.

Littoral scrub; moist or dry forest; coastal and lowland evergreen forest or bushland; deciduous or semi-deciduous woodlands; often on sandy soils; open clumped semi-evergreen bushland with glades; 0-1300 m alt.

Madagascar.

Confused with *S. senegalensis;* related to *S. dentata* Bak. and *S. madagascariensis* fa. *minimifolia* Perrier from Madagascar.

S. mamba N. Hallé – Icon.: Fl. Cameroun 32: 115, 1990 (partial).

Liane, glabrous, 6-20 m tall; stem >1,5 cm Ø, the narrowest internodes reddish and scabrous by fine, dark lenticels.

Riversides in rain-forest; wooded ravine; 500-950 m alt.

S. mannii Oliv., incl. fa. *soyauxii* (Loes.) N. Hallé [bas.: *S. soyauxii* Loes. (corolla >8 mm Ø)]. – Icon.: Fl. Cameroun 32: 39, 1990 (partial).

syn.: *S. cuspidicoma* Loes.

Shrub 0,8-6 m tall, sometimes scandent, or liane 3- >15m long; internodes rugose, often reddish-brown with whitish lenticels when dry; flowers very variable in size.

Forest; forest gallery; 1-900 m alt.

Bioko / Fernando Poo. – Not in Liberia.

Very near *S. kivuensis;* near *S. rufescens.*

S. maudouxii R. Wilczek

Glabrous liane; branches cylindrical and twigs ± flattened, smooth; fruit unknown.

Blackish moist alluvium. On *Fagara.*

Only known from the type collected in 1949.

S. mayumbensis Exell & Mendonça – Icon.: Fl. Cameroun 32: 57, 1990 (partial).

syn.: *S. dewevrei* sensu Exell in J. Bot. 65, Suppl., Polypet: 80, 1927, non De Wild. & T. Durand (= Gossweiler 6776).

Glabrous shrub 0,5-3,5 m tall, erect, sometimes ± sarmentose; young internodes with a pair of fine ridges.

Rain-forest; shady humid situation; near sea-level to 1300 m alt.

The Exell & Mendonça plate (Bol. Soc. Brot., Sér. 2, 26: pl. 3, 1952) is partly erroneous (see Hallé, Fl. Gabon 29: 78, 1986).

S. miegei N. Hallé; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 692, 2006.

Liane sometimes bushy; young branches glabrous, cylindrical; leaf petioles conspicuously ribbed and twisted; ? fruit unknown.

Forest; discovered in 1956.

S. ndakala R. Wilczek

Erect shrub or tree, glabrous, 2-8 m tall, with cylindrical branches; twigs flattened, smooth, brownish; fruit unknown.

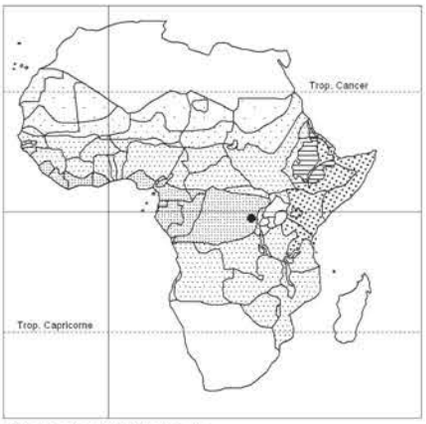
Forest with *Gilbertiodendron dewevrei, Symphonia globulifera;* rain-forests; 925 m alt.

S. nitida (Benth.) N. E. Br.; Fl. W. Trop. Afr., ed. 2, 1(2): 633, 1958, *excl.* syn. *S. whytei.* – Icon.: Fl. Cameroun 32: 111, 1990 (partial); F. Busson, Pl. aliment. Ouest afric.: fig. 142, 1965; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 697, 2006 (partial).

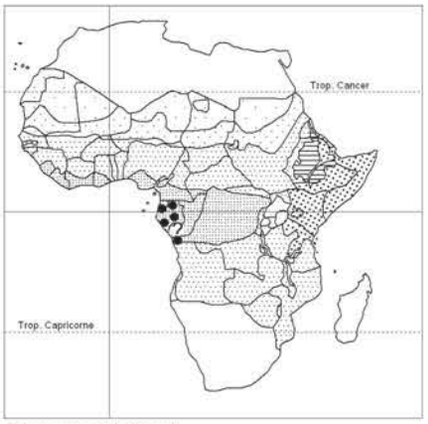
bas.: *Gymnema nitidum* Benth. *(Asclepiadaceae),* excl. descr. flowers.

Liane 1-30 m tall; main stem >6 cm Ø; internodes smooth, flexible, green; bark yellow-orange below the surface; dried twigs and leaves with yellowish powder (cf. *S. longipes);* fruit orange-red, much longer than wide, 6-10 × 2,4-4 cm, pulp sweet, edible.

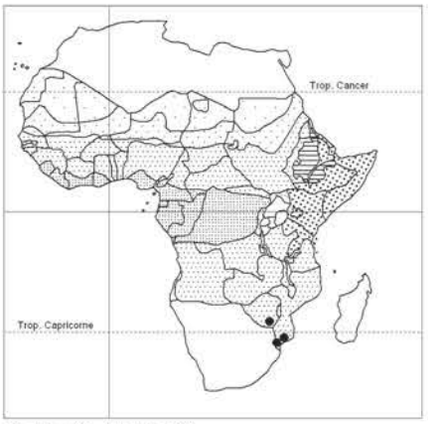
Various types of rain-forest on firm ground; secondary formations, even on recent temporary roads; near sea shore; fallow land with young *Musanga cecropioides;* savanna thickets on sandy soil; near sea-level to 650 m alt.



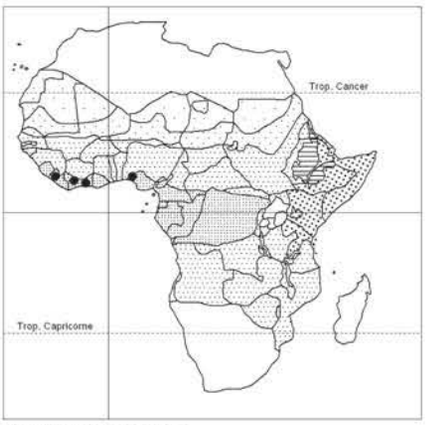
Salacia kivuensis



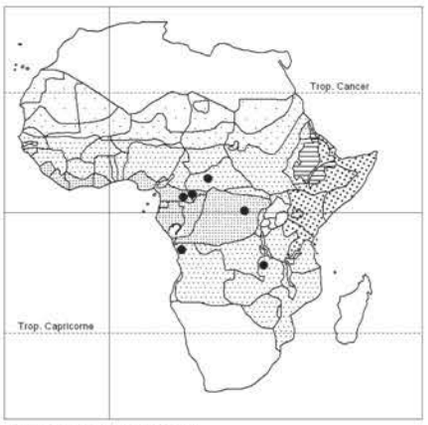
Salacia klainei



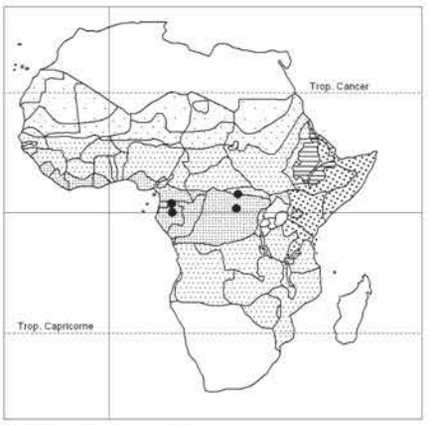
Salacia kraussii



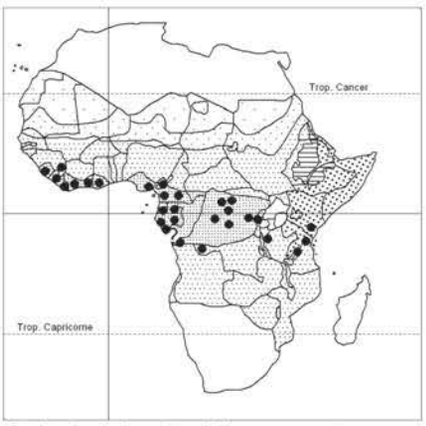
Salacia lateritia



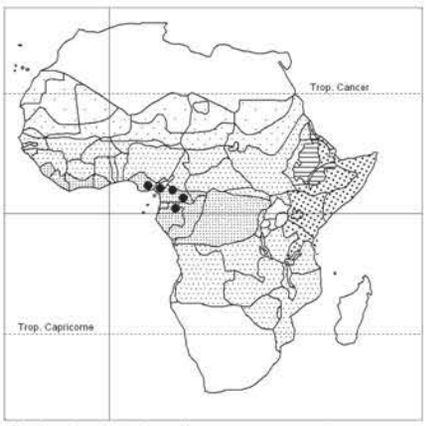
Salacia laurentii



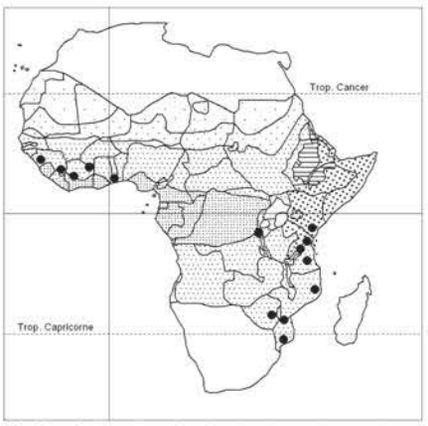
Salacia lebrunii



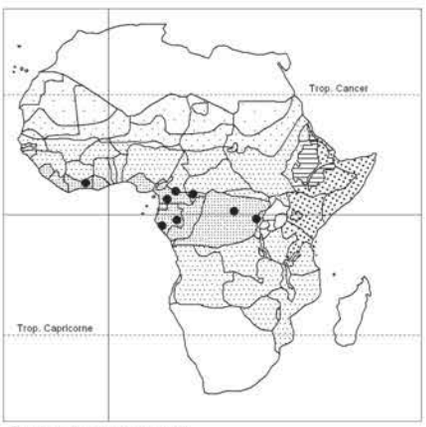
Salacia lehmbachii



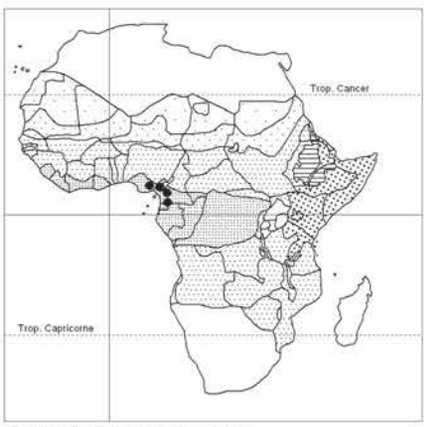
Salacia lenticellosa



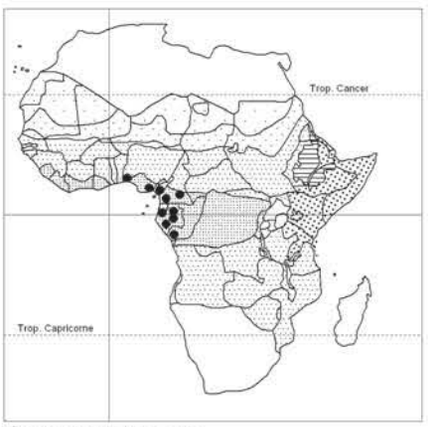
Salacia leptoclada



Salacia letestui



Salacia letouzeyana



Salacia loloensis

Comprises 2 vars.: – var. **nitida** [syn.: *S. cornifolia* Hook. f. var. *crassipetala* Oliv.; *S. bipindensis* sensu Mangenot, Ic. Pl. Afric. IFAN 4: pl. 93, 1957; *S.* sp. C sensu Fl. W. Trop. Afr., ed. 2, 1(2): 634, 1958]; – var. **bipindensis** (Loes.) N. Hallé [syn.: *S. bipindensis* Loes. and var. *obovata* Loes., nom. illegit.] from Nigeria eastwards.

S. oliveriana Loes. – Icon.: Fl. Cameroun 32: 125, 1990 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 693, 2006 (partial).

Bushy liane, or very long, glabrous; main stem >3 cm Ø; internodes often slender, smooth; latex of wood red (cf. *S. cerasifera* without latex); fruit longer than wide, 10 × 3,5 cm, with sweet edible pulp.

Forest edges or canopy near the coast, but very rare inland (Lastoursville in Gabon, Eala & Lukweli in Zaire); forest gallery; semi-deciduous forest; near sea-level to ± 530 m alt.

Comprises 2 vars.: – var. **oliveriana** [syn.: *S. oblongifolia* Oliv. 1868, non Blume 1825 (Java); *S. johannis-albrechtii* Loes. & H. J. P. Winkler]; – var. **adiopodoumella** N. Hallé from Ivory Coast, more vigorous in all parts.

S. orientalis N. Robson; Fl. Trop. E. Africa, Celastraceae: 39, 1994.

Shrub or liane, to at least 3 m tall, glabrous; stems markedly quadrangular, pale brown to purplish-brown and smooth at first, becoming grey-brown to yellowish-brown and 4-lined or terete, without or with numerous small scarcely prominent lenticels; mature fruit unknown.

Mixed woodland and thicket; *Brachystegia* or mixed damp woodland; to 700 m alt.

Closely related to *S. calypso* DC. from NE Madagascar; also near *S. congolensis.*

S. owabiensis Hoyle – Icon.: Fl. Cameroun 32: 129, 131, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 695, 2006 (partial).

syn.: *S. pyriformis* sensu F.W.T.A., ed. 2, 1(2): 632, quoad specim. Chevalier 21266, Roberty 15521, Brass s.n., Irvine 2228, 2269, Lyon FH 2641, Vigne FH 4007, St. C. Thomson FH 3943, Keay & Meikle FHI 25661, non (Sabine) Steud.; *S. senegalensis* sensu F.W.T.A., l.c.: 631, quoad specim. Chevalier 21109, 16688, non (Lam.) DC.

Shrub sometimes sarmentous or liane, glabrous; young branches cylindrical, smooth, broadened at the nodes, becoming striate and rugose, grey-brownish; fruit round, red, tuberculate, often with 3 ridges, ± 5 cm Ø.

Forests and very moist forest edges; deciduous forest; 460-475 m alt. (Mt Nimba).

Confused with *S. pyriformis* in F.W.T.A., ed. 2, 1(2): 632, 1958; but calyx and fruit different. Without fruit they are inseparable.

S. pallescens Oliv. – Icon.: Fl. Cameroun 32: 60-61, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 693, 2006 (partial).

syn.: *S. pelophila* Louis ms. in sched.

Erect shrub 1,5-5 m tall (? and more); branches ±spreading in a regular crown; young internodes smooth, olive, greenish; petals purple-black, stamens orange; fruit orange with darker spots or lines, smooth, without ridges, ± round, 1,5-3 cm Ø.

Rain-forests (undergrowth or edges), sometimes periodically flooded or swampy, or with lianes; high forest; to 1600 m alt.

S. pierrei N. Hallé – Icon.: Fl. Cameroun 32: 101, 1990 (partial).

Glabrous liane >5 m tall; old branches rough, lenticellate, greyish; young internodes nearly smooth and olive-green when dry; fruit red, round, rough, 2,5-5,5 cm Ø.

Forests near the coast and at edges (vast bushy screens); rare and riverine in inland forests; 30-500 m alt.

S. preussii Loes. – Icon.: Fl. Cameroun 32: 37, 1990 (partial).

Shrub 0,8 m tall or liane to 4->40 m, glabrous; branches subcylindrical, smooth, olive greenish, slightly widened at the nodes, sometimes with 4 fine ridges. Fruit known!

Forest (undergrowth and gallery); 1-950 m alt.

Comprises 2 vars.: – var. **preussii**, incl. fa. *staudtii* Loes.; – var. **louisii** (R. Wilczek) N. Hallé

Near *S. fimbrisepala, S. ituriensis*.

S. pynaertii De Wild.; Schippers, Légumes africains indigènes: 445, 2004. – Icon.: Loesener in Mildbr., Deutsch. Zentr.-Afr. Exped. 1907-1908, 2: pl. 62, fig. A, 1912 (type lost; sub nom. *S. mildbraediana);* Fl. Cameroun 32: 117, 1990 (partial); Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 259, 2007.

syn.: *S. mildbraediana* Loes.; *S. erecta* sensu Exell & Mendonça, Consp. Fl. Angol. 2(1): 16, 1956, quoad specim. Gossweiler 13698, 14113.

Glabrous liane, 2-20 m tall; young branches smooth, flattened, brownish when dry; old branches becoming terete, light reddish-brown or ochraceous-beige with longitudinally ± fissured bark and scarcely prominent lenticels; fruit round, orange to red, ± smooth, 1-2,5 cm Ø.

Evergreen- and fringing forests; swampy forests; 500-1500 m alt.

Confused with *S. elegans, S. erecta;* near *S. gerrardii* Harv. from S. Africa [see Fl. Zamb. 2(2): 402, 1966].

Perhaps in Nigeria (Oban, Talbot s.n. sub nom. *S. leptoclada);* the specimen Scheffler 46 is *S. elegans* in F.T.E.A., Celastrac: 36, 1994 but *S. pynaertii* in Hallé, Fl. Gabon 29: 149, 1986.

S. pyriformioides Loes. – Icon.: Fl. Cameroun 32: 41, 1990 (partial).

Liane 5-8 m tall, glabrous; stem >4-5 cm Ø; internodes olive green when dry; rarely a sarmentous shrub.

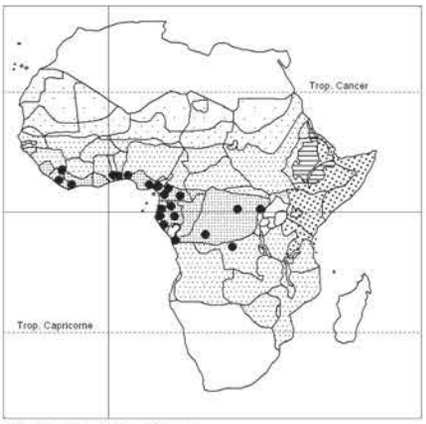
Rare in rain-forest on firm ground; swampy forests; to 700-1600 m alt.

Resembling *S. dusenii.*

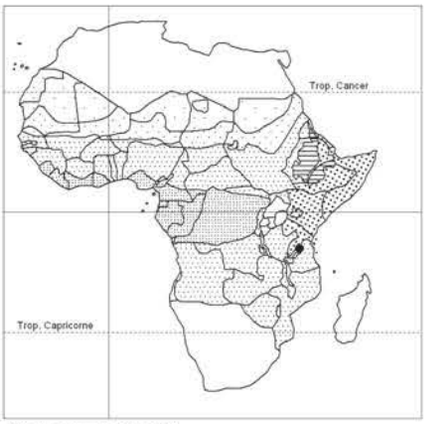
S. pyriformis (Sabine) Steud., *excl.* var. *obtusa* Oliv. *(= S. stuhlmanniana);* Fl. West Trop. Afr., ed. 2, 1(2): 632, 1958, *excl.* syn. *S. talbotii* Bak. f., *S. owabiensis* Hoyle, *excl.* specim. Linder 253, Chevalier 19419 *(= S. lateritia);* Fl. Congo belge Ru.-Ur. 9: 198, 1960, *excl.* syn. *S. laurentii* and E. & M. Laurent s.n. – Icon.: Fl. Cameroun 32: 133, 1990 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 695, 2006 (partial).

bas.: *Tonsella pyriformis* Sabine

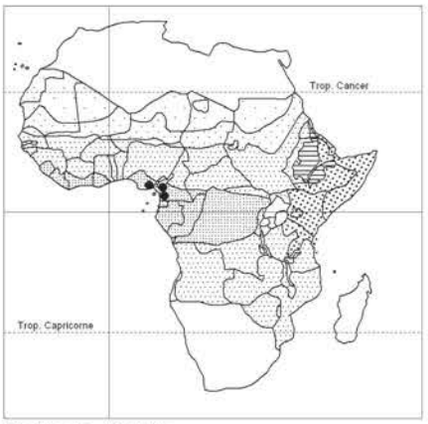
syn.: *Calypso pyriformis* (Sabine) G. Don.; *Salacia elongata* Hook. f.; *Garcinia wentzeliana* Engl. *(Guttiferae/Clusiaceae); S. bequaertii* De Wild.; *S. pengheensis* De Wild., incl. var. *angustifolia* De Wild.



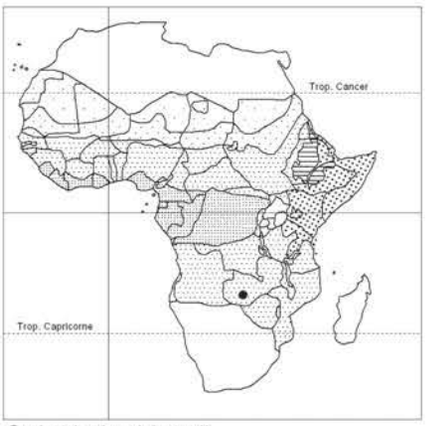
Salacia longipes



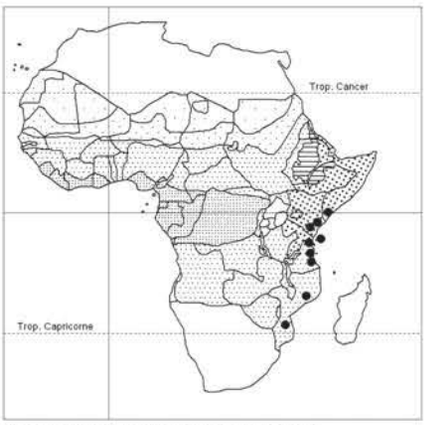
Salacia lovettii



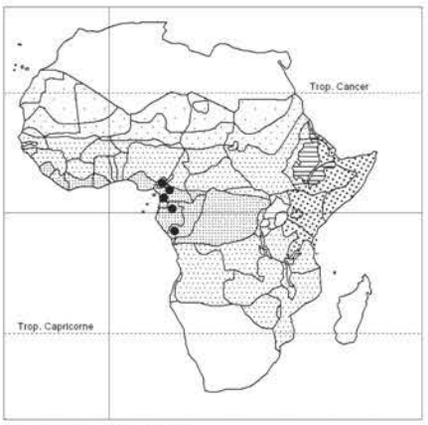
Salacia lucida



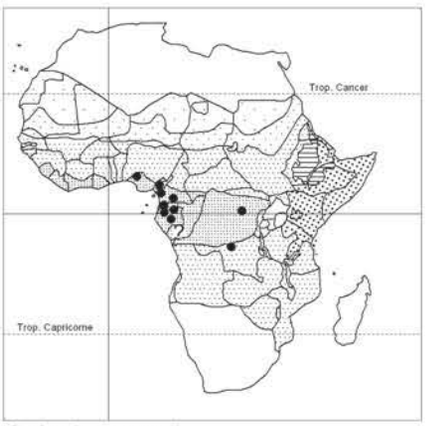
Salacia luebbertii



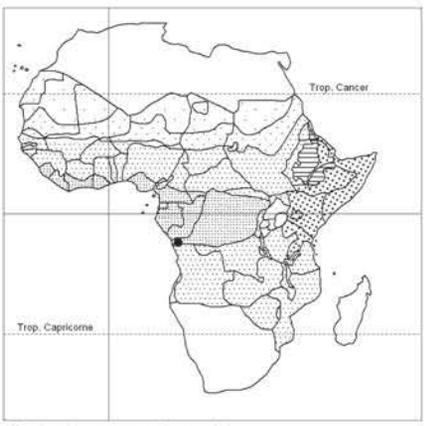
Salacia madagascariensis



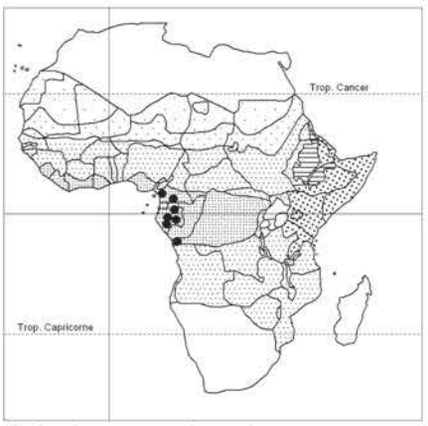
Salacia mamba



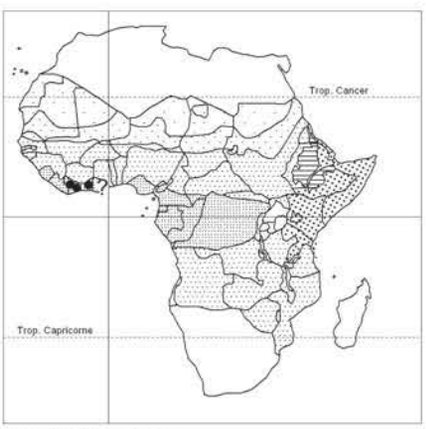
Salacia mannii



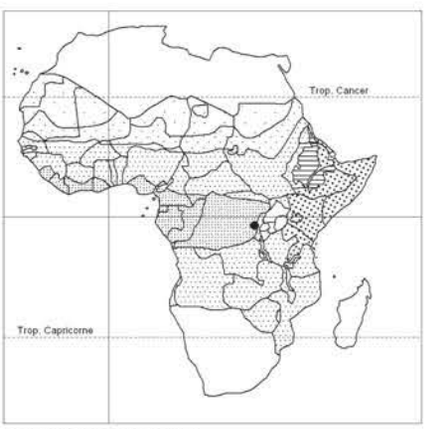
Salacia maudouxii



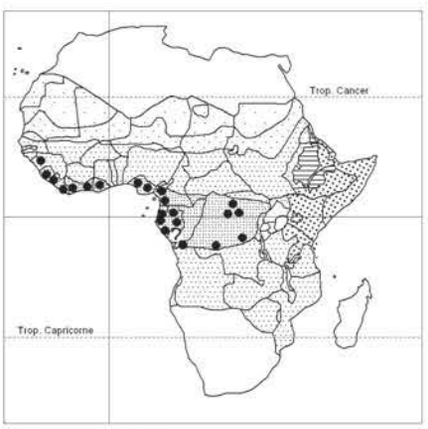
Salacia mayumbensis



Salacia miegei



Salacia ndakala



Salacia nitida

SALACIA PYRIFORMIS

Sarmentous shrub or liane 4->12 m tall, glabrous; main stem 7 cm Ø; twigs terete or slightly flattened, smooth, becoming greyish or dark brown, ± lenticellate or not; flowers greenish, anthers bright orange; fruit ± round, smooth but with ridges, 2,5-5 cm Ø (cf. *S. owabiensis).*

Evergreen forest and margins; riparian, ± flooded forests; secondary forests; thickets on road-sides, sometimes frequent; forest with *Triplochiton scleroxylon;* near sea-level-1300 m alt.

São Tomé.

Not in Senegal nor in Kenya.

Resembling *S. owabiensis* but probably occurring in drier types of vegetation.

S. quadrangulata R. Wilczek

Glabrous shrub; branches with scattered, elliptic lenticels; twigs 4-winged, ± papillose; fruit unknown.

Grassy savannas; dry, sandy bush.

Near *S. tuberculata.*

S. regeliana J. Braun & K. Schum., incl. var. *dinklagei* Loes. – Icon.: Fl. Cameroun 32: 27, 31, 1990 (partial).

syn.: *S. zenkeri* sensu Exell in J. Bot. 65, Suppl. Polypet.: 79, 1927, non Loes. (Gossweiller 7872).

Liane 5-20 m tall, glabrous; main stem 2,5 cm Ø; internodes rugose or smooth, often olive-hued; fruit elliptical, 7-11 × 3,5-5 cm, with irregular surface.

Flooded places in open forest; 1-1000 m alt.

S. rhodesiaca Blakelock

Shrub or tree 1,2-6 m tall, with low, rounded crown; bark black, smooth; stems ± flattened with paired raised lines at first, becoming terete and rugulose, densely chocolate-brown to fawn-pubescent (also whitish?).

Brachystegia woodland or mixed dry deciduous woodland; grassy savannas; 1250-1800 m alt.

Very near *S. howesii.*

In Flore du Gabon 29: 138-140, 1986, N. Hallé determined a Le Testu specimen (8765) as *"S.* aff. *rhodesiaca".* Sosef & al., Check-list pl. vascul. Gabon: 105, 2006, confirm the presence of *S. rhodesiaca* in Gabon, adding a gathering by de Wilde determined by N. Hallé.

S. rivularis Louis & R. Wilczek

Glabrous liane, with cylindrical branches, 4-15 m tall; bark brown-violaceous, densely lenticellate, rugose; branchlets ± flattened and lenticellate.

Rain-forests or swampy forests.

(**S. rufescens** Hook. f.)

Woody plant with cylindrical, slightly striate branches; branchlets densely yellow punctate; bark with rufescent colour; fruit unknown and only one flower in bud known; leaves coriaceous, reddish when dry.

Only known from the single type specimen Roscher in T. Vogel; scarcely sufficient for determination but it is not *S. senegalensis* (which has latex).

The second specim. cited in F.W.T.A., ed. 2, 1(2): 632, 1958 (Thomas 5197) is *S. senegalensis.*

SALACIA RUFESCENS

S. rufescens is very near *S. mannii* and *S. soyauxii* (or may be a hybrid between *S. senegalensis* and *S. pyriformis* fide F.W.T.A., ed. 2).

Sierre Leone – not mapped.

Scholes 202 from Ghana is perhaps *S. rufescens*.

S. senegalensis (Lam.) DC., excl. synonyms cited in Enum. 2: 155, 1992. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 695, 2006 (partial); Berhaut, Fl. ill. Sénégal 2: 282, 1974.

bas.: *Hippocratea senegalensis* Lam.

syn.: *Tonsella senegalensis* (Lam.) Vahl; *Calypso senegalensis* (Lam.) Cambess.

Liane, sometimes bushy, or shrub to 2 m tall; branches brown; with gibbous lenticels; bark light grey-beige; young twigs conspicuously tuberculate; fruit ± round, ± smooth.

Gallery forest; higher dunes in the Cape Verde Peninsula (fide Berhaut); forest in damp places.

Not in Ghana, Benin, Ivory Coast, Nigeria (confusions with *S. chlorantha:* Thomas 2358, Keay FHI 28262, Thomson 93, Scott Elliot 4870, 5433, 5486; with *S. owabiensis:* Chevalier 16688, 21100; with *S. columna:* Deighton 2627, 3105, Baldwin 11550, Chevalier 21161).

S. staudtiana Loes. – Icon.: Not. Syst. 16: 134, 1960; Adam, Fl. Mts Nimba 2: 748, 1971 (var. **leonensis**); Fl. Cameroun 32: 45, 47, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 697, 2006 (var. **leonensis**, partial).

Sarmentous shrub, 2-3 m tall or liane >8 m, glabrous; main stem 2-3 cm Ø; internodes smooth olive green when dry; fruit round, orange, ± smooth, with a stipe, 2-3 cm Ø.

Rain-forest with *Guacea cedrata, Santiria trimera, Cola maclaudii, Parinari excelsa, Strephonema pseudocola, Pterocarpus mildbraedii, Klainedoxa gabonensis,* etc.; sometimes in coastal rain-forests; forest gallery; half-deciduous forests; forest regrowth; 1-1500 m alt.

Very variable in surface structure of twigs (ridged or not), shape of flower disc and sepals, size of fruit, etc.

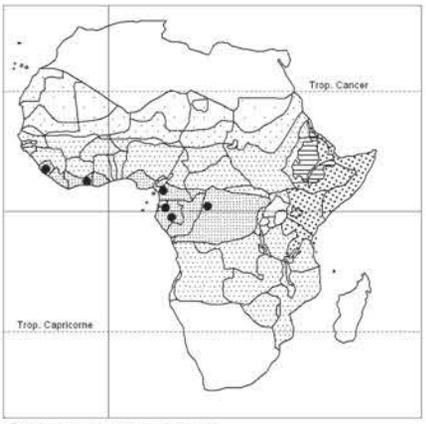
São Tomé.

Comprises 6 vars. (of unequal value): – var. **staudtiana** in Cameroon-Gabon; – **cerasiocarpa** (R. Wilczek) N. Hallé (bas.: *S. tshopoensis* De Wild. var. *cerasiocarpa* R. Wilczek in Zaire); – var. **leonensis** Loes. (syn.: *S. caillei* A. Chev. ex Hutch. & M.B. Moss); – var **longuria** N. Hallé in Gabon; – var. **scaphodisca** N. Hallé in Gabon-Congo; – var. **tshopoensis** (De Wild.) N. Hallé (bas.: *S. tshopoensis* De Wild.), in Cameroon-Gabon-Zaire.

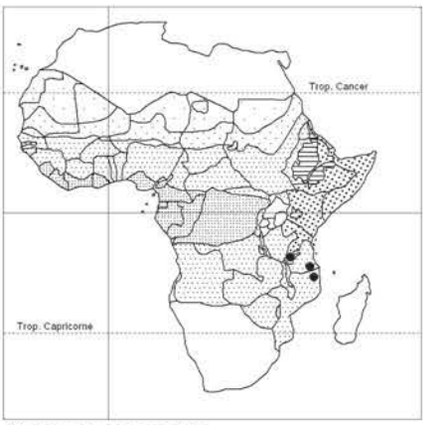
S. stuhlmanniana Loes. – Icon.: Fl. Cameroun 32: 122, 1990 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 695, 2006 (partial).

syn.: *S. pyriformis* (Sabine) Steud. var. *obtusa* Oliv.; *S. gilgiana* Loes.; *S. lomensis* Loes.; *S. livingstonii* Loes.; *S. somalensis* Chiov.; *S. leonensis* sensu Chevalier, Explor. Bot. 1: 134, 1920, quaod specim. Chevalier 19327.

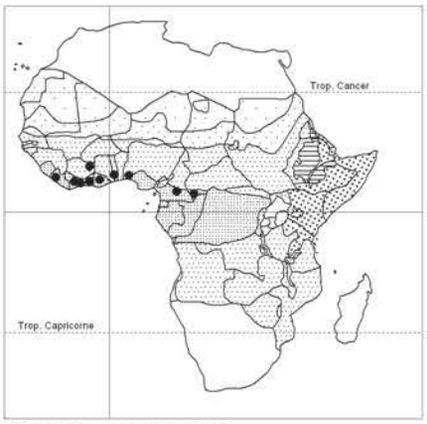
Glabrous shrub, tree, or liane to 6-15 m tall; stems smooth, somewhat flattened and green at first, becoming terete, rough, greyish brown or pale brown; latex threads visible in broken leaf; leaf margins entire; fruit orange, round, sweet, edible, often with 3 ridges, to c. 3 cm Ø.



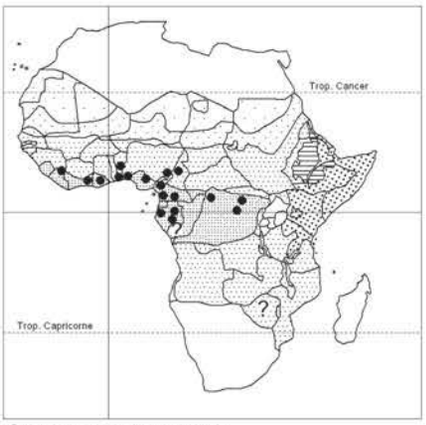
Salacia oliveriana



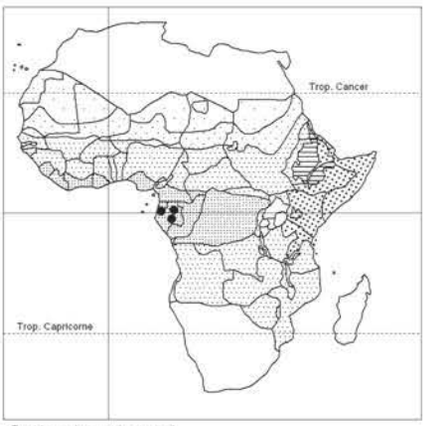
Salacia orientalis



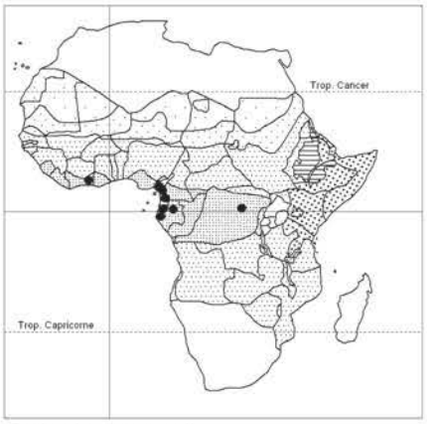
Salacia owabiensis



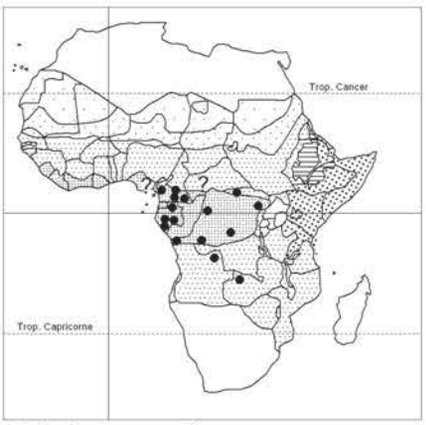
Salacia pallescens



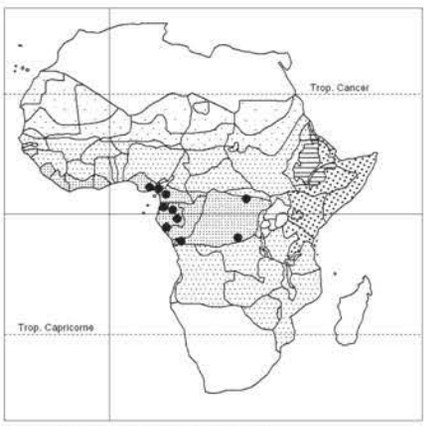
Salacia pierrei



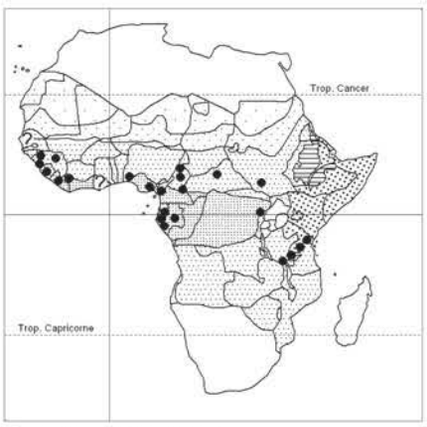
Salacia preussii



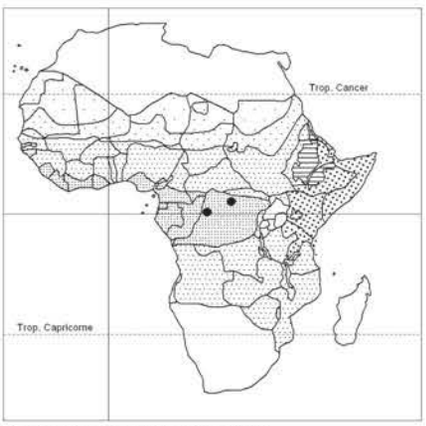
Salacia pynaertii



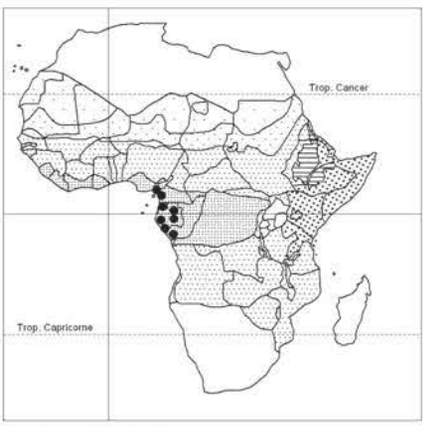
Salacia pyriformioides



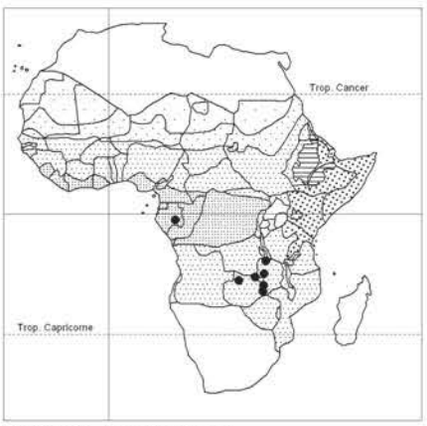
Salacia pyriformis



Salacia quadrangulata



Salacia regeliana



Salacia rhodesiaca

Rain-forest; riverine and coastal forests; coastal bushland; riverine deciduous scrub and woodland; seasonally flooded plains on sandy alluvial soil with *Acacia, Grewia, Thespesia* spp.; 0-1000 m alt.

Very close to *S. pyriformis*.

Treated under *S. lomensis* in Fl. W. Trop. Afr., ed. 2, 1(2): 632, as well as in Fl. analyt. Bénin (Akoégninou & al.): 465, 2006. The W African specimens have smaller and narrower leaves (3-6,5-8 × 1-2-3,5 cm) than the E African ones (6-12 × 3,5-7,5-9 cm), and the flowers are less numerous (1-4) in each fascicle.

S. subicterica N. Hallé – Icon.: Fl. Cameroun 32: 63, 1990 (partial).

Liane with internodes ± 4-fine-lined; fruit unknown.

Ecology unknown (? forest).

Only known from the type collected in 1929; a second specimen is doubtfully conspecific (Florence 1724).

Near *S. pallescens.*

S. talbotii Bak. f. – Icon.: Fl. Cameroun 32: 131, 1990 (partial).

Liane >5 m tall, glabrous; internodes smooth, ochre, 6-7 cm long; flowers often with supernumerary petals and petaliform sepals; fruit orange, cylindrical, 7-10 × 5 cm, 3-ridged, warty.

Riversides in high rain-forest; 15-300 m alt.

Near *S. pyriformis* and confused with it.

S. tessmannii Loes. – Icon.: Fl. Cameroun 32: 101, 1990 (partial).

Glabrous liane; old branches densely lenticellate; fruit unknown.

Ecology unknown; 450 m alt. (or 500).

Only known from the type.

Near *S. pyriformioides.*

S. togoica Loes. – Icon.: Mém. Mus. Natl. Hist. Nat., N. S., Sér. B, Bot. 22: 750, 1971; Fl. Cameroun 32: 65, 67, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 699, 2006 (partial).

Liane or scandent shrub, glabrous, with cylindrical, smooth or nearly so internodes, ±10 m tall; under-bark brownish yellow or orange; fruit ± round, 3-5 cm Ø, slightly tuberculate, faintly 3-ridged.

Rain- and secondary forests; grassy savanna; mangrove edge; riparian; near sea-level to 600 m alt.

? Zaire (mixed forests on firm ground).

S. tuberculata Blakelock – Icon.: Fl. Cameroun 32: 95, 1990 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 699, 2006 (partial).

Glabrous liane or climbing shrub, 3-4,5 m tall; young branches olive green when dry, subcylindrical, 4-angular or subwinged (wings to 0,5 mm broad), with finely rugose epiderm; fruit ± tuberculate or smooth, ± round, 2-5 cm Ø.

(Riverine) forest; forest edges; 330 m alt.

Comprises 2 vars.: – var. **tuberculata;** – var. **ngaziensis** (Louis ex R. Wilczek) N. Hallé, with many-flowered (40) fascicles.

S. villiersii N. Hallé – Icon.: Fl. Cameroun 32: 99, 1990 (partial).

Glabrous liane; young internodes with fine ridges; fruit unknown.

Riverside.

Only known from the type collected in 1968.

Near *S. erecta.*

S. viridiflora R. Wilczek

Glabrous liane; branches cylindrical and branchlets flattened-subwinged, densely rugose-papillose.

Rain-forest periodically flooded.

Two collections known (1910, 1939).

S. volubilis Loes. & H. J. P. Winkler – Icon.: Fl. Cameroun 32: 71, 1990 (partial).

Liane 1-15 m tall, glabrous; young internodes 4-subwinged; without latex!; fruit round, smooth, 2 cm Ø.

Forest; 50-750 m alt.

According to the original description the branches are hairy and the leaves glabrescent. However, the isotype seen by N. Hallé has glabrous branches. In Fl. W. Trop. Afr., ed. 2, 1(2): 629, 1950, the plant is said to have latex, which is not the case.

S. whytei Loes. – Icon.: Fl. Cameroun 32: 75,77, 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 699, 2006 (partial).

syn.: *S. nitida* sensu F.W.T.A., ed. 2, 1(2): 633, 1958, quoad specim. Cooper 254, White s.n., Richards 3299, Brenan & Jones 9591, non (Benth.) N. E. Br.; *S. erecta* sensu consp. Fl. Angol. 2(1): 26, 1954, quoad specim. Gossweiler 4371, non (G. Don) Walp.

Liane, slender and not over 2-3 m tall, or more robust 3-15 m and more; stem to 1 cm Ø; young branches sometimes very slender, cylindrical, smooth with wax layer, or with very fine ridges; old branches ± rugose-suberose, brownish; inner bark red-brown; flowers orange-brown, anthers yellow; fruit round, orange red, with ridges and protuberances, 3-4 cm Ø, with a sweet mucilaginous edible pulp.

Very wet forests, often in riparian situations; forests on firm ground with *Scorodophloeus;* secondary forests on plateau; 1-900 m alt.

Variable. W-African specimens are often more slender than the equatorial ones.

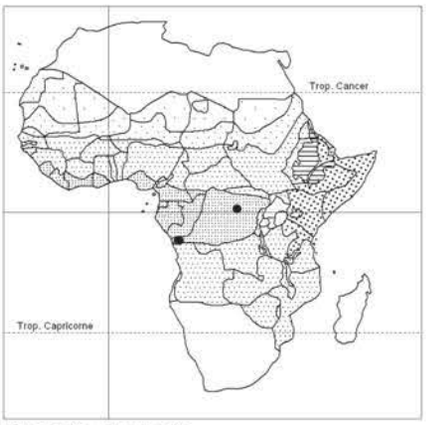
Comprises 3 vars. (with intermediates): – var. **whytei**, incl. fa. **ophiurella** N. Hallé; – var. **toussaintii** (R. Wilczek) N. Hallé, from Zaire; – var. **vermoeseniana** (R. Wilczek) N. Hallé, often with leaf galls like those of *S. cornifolia.*

S. zenkeri Loes. – Icon.: Fl. Cameroun 32: 31, 33 1990; Hawthorne & Jongkind, Woody pl. west. Afric. forests: ? 682-683, 695, 2006 (partial).

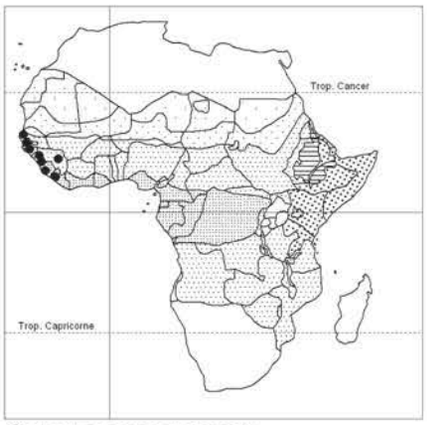
Shrub 1,2 m tall, or more often a liane to 30 m; young internodes lenticellate; without latex; fruit elliptic, smooth, with 3 slight ridges, red, 4,5-9,5 × 3-4 cm.

Rain-forest; 1-800 m alt.

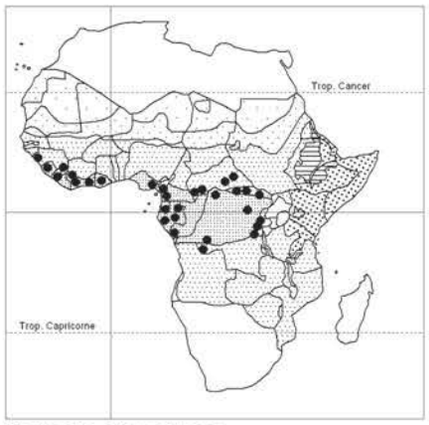
Not in Zaire *(= S. bangalensis).*



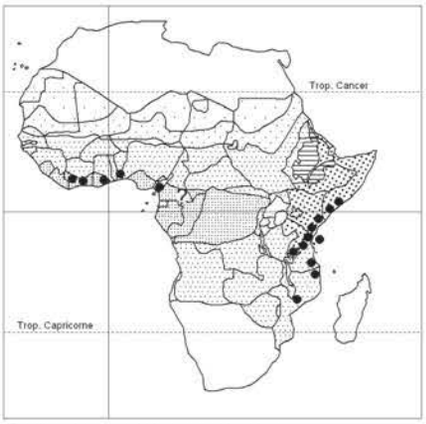
Salacia rivularis



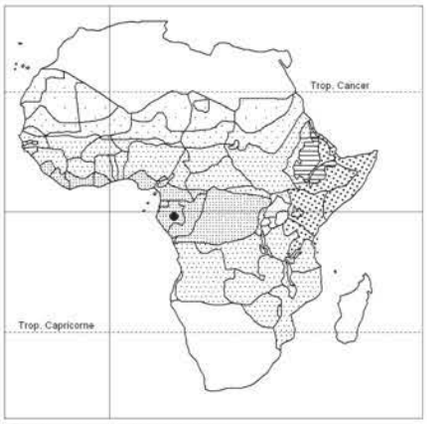
Salacia senegalensis



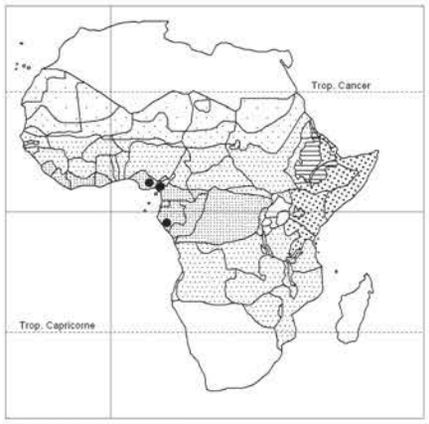
Salacia staudtiana



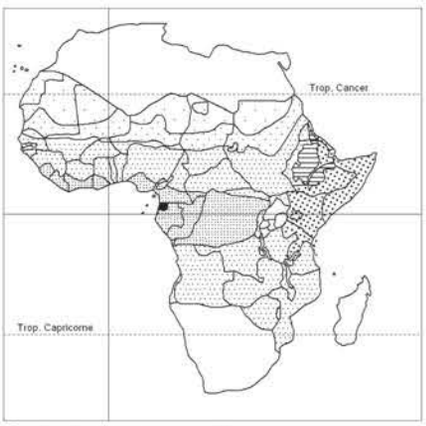
Salacia stuhlmanniana



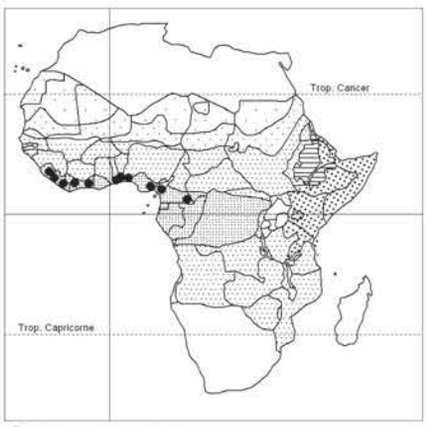
Salacia subicterica



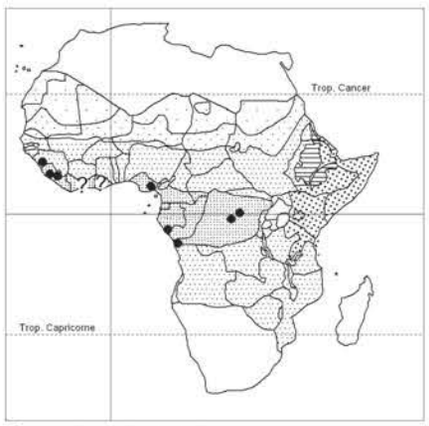
Salacia talbotii



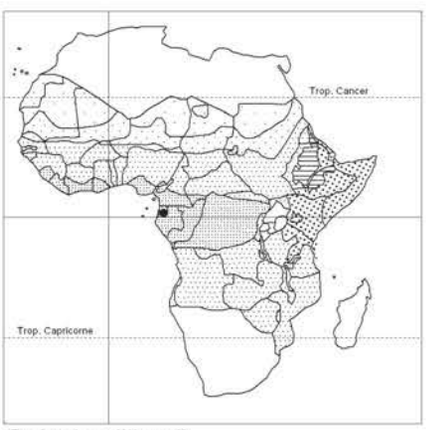
Salacia tessmannii



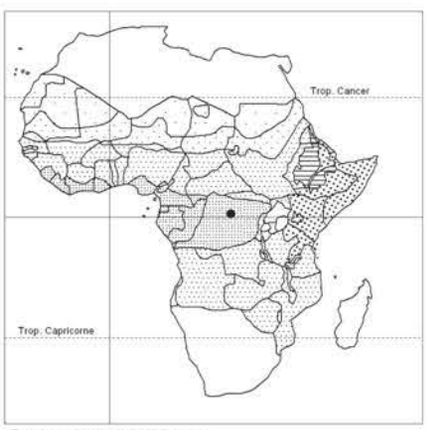
Salacia togoica



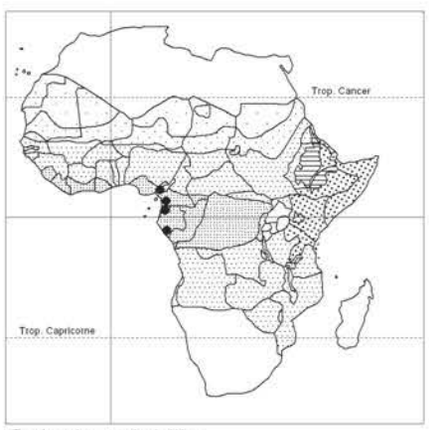
Salacia tuberculata



Salacia villiersii



Salacia viridiflora



Salacia volubilis

SALACIA

INSUFFICIENTLY KNOWN TAXA:

Salacia conraui Loes. – A glabrous shrub without latex; young branchlets densely lenticellate; leaves opposite; fruit unknown. – Very close to *S. zenkeri.* – From NW Cameroon (Conrau 104), collected in 1898-1899. Type destroyed?

S. eurypetala Loes. – Glabrous plant with terete, finely lenticellate branchlets and opposite leaves, without latex; fruit unknown. – Resembling *S. mannii* (syn.: *S. soyauxii).* – Rainforest in SW Cameroon (Kumba; Staudt 930), collected in 1895-1897.

S. sulphur Loes. & H. J. P. Winkler ("sulfur"). – Scandent shrub?, with a yellow latex; branchlets glabrous, 4-subangular; leaves opposite; fruit unknown. – Probably near *S. adolphi-friderici.* – From S Cameroon (Kribi; Winkler 809), collected in 1904.

SYNONYMS:

Calypso (Celastraceae/Hippocrateaceae) debilis G. Don = **Salacia debilis**

erecta G. Don = **S. erecta**

pyriformis (Sabine) G. Don = **S. pyriformis**

senegalensis (Lam.) Cambess. = **S. senegalensis**

Campylostemon kennedyi (Hoyle) Hoyle & Brenan = **Salacia laurentii**

Diplesthes kraussii Harms = **Salacia kraussi**

Garcinia (Guttiferae/Clusiaceae) nobilis sensu F.W.T.A., ed. 1, p.p., non Engl. = **Salacia alata**

wentzeliana Engl. = **S. pyriformis**

Gymnema nitidum Benth. *(Asclepiadaceae)* excl. descr. flow. = **Salacia nitida**

Salacia alpestris A. Chev. = **Salacia erecta**

alternifolia Hochst. = **S. kraussii**

angustifolia Scott Elliot = **S. chlorantha**

baumannii Loes. (not *"baumiana")* in F.T.E.A. = **S. leptoclada**

baumii (Loes.) Exell & Mendonça = **S. bussei**

bayakensis Pellegr. = **S. letestui**

bequaertii De Wild. = **S. pyriformis**

bipindensis Loes. = **S. nitida** var. **bipindensis**

bipindensis sensu Mangenot 1957 = **S. nitida** var. **nitida**

bipindensis Loes. var. *obovata* Loes. = **S. nitida** var. **bipindensis**

caillei A. Chev. ex Hutch. = **S. staudtiana** var. **leonensis**

camerunensis Loes. = **S. longipes** var. **camerunensis**

var. *longipetiolata* Loes. = **S. longipes** var. **longipetiolata**

chlorantha Oliv. subsp. *demeusei* (De Wild. & Th. Durand) N. Hallé = **S. chlorantha**

chlorion N. Hallé = **S. germainii** var.

congolensis sensu Fl. Zambes. = **S. laurentii**

cornifolia sensu N. Hallé 1962 = **S. adolfi-friderici**

cornifolia Hook. f. var. *crassipetala* Oliv. = **S. nitida** var. **nitida**

crampeli A. Chev. = **S. laurentii**

cuspidicoma Loes. = **S. mannii**

dalzielii Hutch. & M. B. Moss = **S. chlorantha**

demeusei De Wild. & Th. Durand = **S. chlorantha**

denudata A. Chev., nom. = **Salacighia letestuana**

dewevrei sensu Exell 1927, non De Wild. & T. Durand = **Salacia mayumbensis**

dewildemaniana R. Wilczek = **S. erecta** var.

doeringii Loes. = **S. chlorantha**

echinulata Louis ex R. Wilczek = **S. adolfi-friderici**

echinulata sensu Fl. Congo belge, p.p. = **S. adolfi-friderici**

elegans Welw. ex Oliv. var. *pynaertii* (De Wild.) R. Wilczek = **S. pynaertii**

elliotii Loes. = **S. cerasifera**

elongata Hook. f. = **S. pyriformis**

erecta sensu F.W.T.A., ed. 2, p.p. = **S. cerasifera, S. erecta, S. leptoclada**

erecta sensu Consp. Fl. Angol., p.p. = **S. pynaertii, S. whytei**

euryoides Hutch. & M. B. Moss = **S. chlorantha**

fimbrisepala sensu F.W.T.A., ed. 2, p.p. (Johnson 648) = ? **S. preussii** var. **louisii**

floribunda Tul. and forms, *excl.* fa. *amaniensis* Loes. = **S. elegans**

floribunda Tul. fa. *amaniensis* Loes. = **S. erecta**

fredericqii R. Wilczek, incl. var. *parvifolia* R. Wilczek = **S. longipes** var. **camerunensis**

gabunensis Loes., p.p. = **S. gabunensis**

gilgiana Loes. = **S. stuhlmanniana**

"huriensis" Fl. Congo belge 9, index, sphalm. = **S. ituriensis**

johannis-albrechtii Loes. & H. J. P. Winkler = **S. oliveriana** var. **oliveriana**

kabweensis R. Wilczek = **S. erecta** var. **kabweensis**

leonardii R. Wilczek incl. var. *kivuensis* R. Wilczek = **S. erecta** var. **leonardii**

leonensis Hutch. & M. B. Moss = **S. lehmbachii** var. **leonensis**

var. *cucumerella* N. Hallé = **S. lehmbachii** var. **leonensis** fa. **cucumerella**

leonensis sensu Chevalier 1920, p.p.= **S. stuhlmanniana**

leptoclada sensu F.W.T.A., excl. syn. plur. = ? **S. leptoclada**

letestuana Pellegr. = **Salacighia**

linderi Loes. ex Harms = **Salacighia**

livingstonii Loes. = **Salacia stuhlmanniana**

loloensis Loes. var. *marmorata* Loes. = **S. loloensis** var. **loloensis**

lomensis Loes. = **S. stuhlmanniana**

louisii R. Wilczek = **S. preussii** var.

lucida sensu F.W.T.A., ed. 2, p.p. = **S. lucida, S. oliveriana, S. togoica**

macrocarpa Welw. ex Oliv. and vars. = **S. chlorantha**

mildbraediana Loes. = **S. pynaertii**

mortehanii R. Wilczek = **S. erecta** var. **dewildemaniana**

ngaziensis Louis ex R. Wilczek = **S. tuberculata** var.

nitida sensu F.W.T.A., ed. 2, p.p. = **S. nitida, S. whytei**

oblongifolia Oliv. = **S. oliveriana** var. **oliveriana**

SALACIA

owabiensis Hoyle, p.p. = **S. owabiensis, S. pyriformis, S. lateritia**

pelophila Louis = **S. pallescens**

pengheensis De Wild., incl. var. *angustifolia* De Wild. = **S. pyriformis**

pierlotii R. Wilczek = **S. bangalensis**

pyriformis (Sabine) Steud. var. *obtusa* Oliv. = **S. stuhlmanniana**

pyriformis sensu F.W.T.A., ed. 2, p.p. = **S. lateritia, S. owabiensis**

pyriformis sensu R. Wilczek 1960, p.p. = **S. laurentii**

racemosa Loes. ex Harms = **Thyrsosalacia**

rehmannii Schinz var. *baumii* Loes. = **Salacia bussei**

ripicola Louis = **S. chlorantha**

schlechteri Loes. = **S. loloensis** var. **loloensis**

semlikiensis De Wild., incl. var. *subcordatifolia* De Wild. = **S. elegans**

senegalensis sensu F.W.T.A., ed. 2, p.p. = **S. chlorantha, S. columna, S. owabiensis**

senegalensis sensu R. Wilczek 1960 = **S. chlorantha**

simtata Loes. = **S. madagascariensis**

somalensis Chiov. = **S. stuhlmanniana**

soyauxii Loes. = **S. mannii**

sp. sensu Hallé, Fl. Gabon 29 = **S. hallei**

sp. A sensu F.W.T.A., ed. 2, 1(2): 632, 1958 = **S. loloensis**

sp. C sensu F.W.T.A., ed. 2, 1(2): 634, 1958 = **S. nitida** p.p.

sp. D sensu F.W.T.A., ed. 2, 1(2): 634, 1958 = **S. longipes** var. **camerunensis**

sp. 2 sensu White, Forest fl. north. Rhodesia = **S. chlorantha**

tomiensis A. Chev. p.p. = **S. debilis, S. erecta**

toussaintii R. Wilczek = **S. whytei** var.

transvaalensis Burtt Davy = ? **Elaeodendron transvaalense** *(Celastraceae)*

tshopoensis De Wild. = **Salacia staudtiana** var. **tshopoensis**

var. *cerasiocarpa* R. Wilczek = **S. staudtiana** var. **cerasiocarpa**

uregaensis R. Wilczek = **S. lehmbachii** var. **uregaensis**

var. *aurantiaca* N. Hallé = **S. lehmbachii** var. **aurantiaca**

vermoeseniana R. Wilczek = **S. whytei** var.

volkensiana Loes. ex Harms = **S. gabunensis** fa. **volkensiana**

wardii I. Verdoorn = **S. leptoclada**

wendjiensis R. Wilczek = **S. cerasifera** var.

zanzibarensis Vatke ex Loes., p.p. = ? **S. elegans, S. erecta**

zenkeri sensu Exell 1927 = **S. regeliana**

zenkeri sensu N. Hallé 1962 = **S. bangalensis**

zeyheri Planch. ex Harv. = **Elaeodendron zeyheri** *(Celastraceae)*

Tonsella madagascariensis (Lam.) Vahl = **Salacia madagascariensis**

pyriformis Sabine = **S. pyriformis**

senegalensis (Lam.) Vahl = **S. senegalensis**

SALACIGHIA / *2*

Tropical African genus.

Salacighia letestuana (Pellegr.) Blakelock – Icon.: Fl. Cameroun 32: 11, 13, 1990; Adam, Fl. Mts Nimba 2: 751, 1971; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 697, 2006.

syn.: *Salacia denudata* A. Chev., nom.

Liane 10-35 m tall; stem ± round, 3-10 cm Ø; branches rough, lenticellate, reddish; bark thin, smooth, brittle; flowers with green petals, anthers and style orange; sepals 2 or 3; fruit ± round, ± tuberculate, 3-4 cm Ø, orange-red.

High forest, dry or not; rocky places; *Raphia* formations; swampy and riverine forests; 1-1000 m alt. – Not uncommon.

? Kivu (Zaire). – Also in Uganda, fide Hawthorne & Jongkind, o.c.: 696.

S. linderi (Loes. ex Harms) Blakelock – Icon.: Adam, Fl. Mts Nimba 2: 752, 1971 (= Mém. Mus. Natl. Hist. Nat., N. S., Sér. B, Bot. 22).

bas.: *Salacia linderi* Loes. ex Harms

Liane to 15 m tall; stem 20 cm Ø; bark rugose, lenticellate; sepals 4 or 5. Fruit known! round, orange, c. 3,5 cm Ø.

Rain-forest; forest clearings, riversides; ± 800 m alt. – Rare.

SYNONYM:

Salacighia malpighioides Loes. = **Salacighia letestuana**

SIMICRATEA / *1*

Monotypic.

Simicratea welwitschii (Oliv.) N. Hallé – Icon.: Fl. Cameroun 32: 141, 143 1990; Fl. Trop. E. Africa, Celastraceae: 47, 1994; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 691, 2006 (partial).

Shrub or liane, much-branched, 5-10 m tall or more; green parts remaining olive green or becoming blackish when dry; glabrous; older bark covered with a thin papery orange layer; exfoliating in large flat corky flakes; fruit of 3 flattened mericarps, each dehiscing into 2 caducous valves.

Forest; maintaining itself in degraded scrubland; borders of primitive forests along river banks; swampy forest; around coastal lagoons, very common; maritime thickets; savannas with *Pennisetum;* 1-1175 m alt.

SIMIRESTIS / *8*

Tropical African genus, but partly poorly known. More collections needed.

Simirestis atractaspis N. Hallé; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 690, 2006.

Liane, glabrous.

Ecology unknown (? forest).

Only known from the type collected in 1978.

S. brianii N. Hallé – Icon.: Fl. Trop. E. Afr., Celastr.: 64, 1994 (partial).

syn.: *Hippocratea* sp. (K 3: Kakamega, specim. Hansen 903, 935) sensu Beentje, Kenya trees, shrubs & lianas: 338, 1994.

Glabrous liane to 30 m tall, stem 3 cm Ø and more; young stems greenish brown or pale brown, terete; older stems darker brown and conspicuously lenticellate, terete.

Wet evergreen forest with *Celtis durandii, Fagara macrophylla, Trema orientalis, Bequaertiodendron oblanceolatum; Podocarpus latifolius* forest; 1350-1950 m alt.

S. dewildemaniana N. Hallé, Bull. Mus. Hist. Nat., Paris, Sér. 2, 30: 465, 1958, nom. nov.; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 690, 2006. – Icon.: Fl. Cameroun 32: 179, 181, 1990.

syn.: *Hippocratea andongensis* sensu Consp. Fl. Angol. 2(1): 18, 1954, quoad specim. Gossweiler 4430, 4707, 4730.

Glabrous liane, smelling strongly of *Trigonella foenum-graecum;* young stems pale green, terete, later becoming dark brown, conspicuously lenticellate.

Forest; river sides; 1000-2290 m alt.

S. goetzei (Loes.) N. Hallé – Icon.: Fl. Trop. E. Afr., Celastr.: 64, 1994; Troupin, Fl. Rwanda 2: 337, 1983; F. White & al., Evergreen forest fl. Malawi: 186, 2001 (sub gen. *Hippocratea).*

Glabrous liane, or scandent undershrub, 15->20 m tall; young stems green, 4-angled; older stems reddish or brownish red, 4-ridged, with conspicuous lenticels.

(Moist) evergreen and riverine forests; forest with *Symphonia, Syzygium* on basalt; secondary forest; 90-3000 m alt.

S. klaineana N. Hallé – Icon.: Not. Syst. 16: 128, 1960; Fl. Cameroun 32: 177, 1990 (partial).

Glabrous liane >10 m tall; branches narrow, cylindrical; old stems 2 cm Ø with *woody, conical spines* blunt at apex (Icon.: Fl. Gabon 29: 215, 1986); ripe fruit unknown.

Edges of subcoastal savanna.

Only known from the Libreville area (collected in 1896, 1899, 1900-03 and 1961, 1968).

S. scheffleri (Loes.) N. Hallé – Icon.: Fl. Trop. E. Afr., Celastr.: 64, 1994 (partial).

Glabrous liane; young stems green, weakly 4-angled or ± terete with 4 inconspicuous ridges; older stems purplish brown, terete with conspicuous lenticels.

Forest, apparently at edges; sometimes in thickets; to 1900 m alt.

S. staudtii (Loes.) N. Hallé – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 691, 2006 (partial); Fl. Cameroun 32: 177, 1990 (partial).

bas.: *Hippocratea staudtii* Loes.

Glabrous liane 5-10 m tall; branches smooth, cylindrical or with very fine ridges; fruit unknown.

Rain-forest; 800 m alt.

Collected twice: in 1890-1894 (Cameroon) and 1965 (Sierra Leone).

S. tisserantii N. Hallé; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 690, 2006. – Icon.: Fl. Cameroun 32: 181, 183 1990.

syn.: *Loeseneriella paniculata* (Vahl) R. Wilczek var. *nigrescens* R. Wilczek

Liane; branches cylindrical, glabrous, becoming dull greyish; bark rugose, lenticellate.

Forests.

Very near *S. dewildemaniana.*

SYNONYMS:

Simirestis andongenis (Welw. ex Oliv.) N. Hallé & R. Wilczek = **Pristimera**

delagoensis (Loes.) N. Hallé = **Prionostemma**

fimbriata (Exell) N. Hallé = **Prionostemma**

graciliflora (Welw. ex Oliv.) N. Hallé & R. Wilczek = **Pristimera**

isangiensis (De Wild.) R. Wilczek = **Cuervea**

luteoviridis (Exell) N. Hallé sensu Hallé 1962, p.p. = **Pristimera andongensis, P. luteoides**

mouilensis N. Hallé = **Pristimera**

paniculata (Vahl) N. Hallé = **Pristimera**

plumbea (Blakelock & R. Wilczek) N. Hallé = **Pristimera**

polyantha (Loes.) N. Hallé = **Pristimera paniculata**

preussii (Loes.) N. Hallé = **Pristimera**

ritschardii (R. Wilczek) N. Hallé ex R. Wilczek = **Prionostemma delagoensis** var.

unguiculata (Loes.) N. Hallé = **Prionostemma**

welwitschii (Oliv.) N. Hallé = **Simicratea**

THYRSOSALACIA / *4*

Thyrsosalacia nematobrachion Loes. – Icon.: Not. Syst. 16: 130, 1960; Fl. Cameroun 32: 15, 1990.

syn.: *Hippocratea nematobrachion* Loes. in herb.

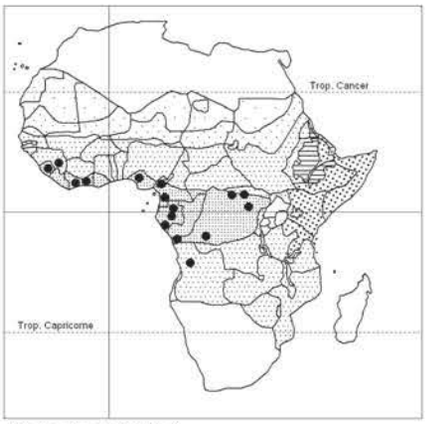
Shrub 0,3-2 m tall or liane 4-4,5 m.

Humid forest or swampy; sometimes on rocky slopes; 300-1000 m alt.

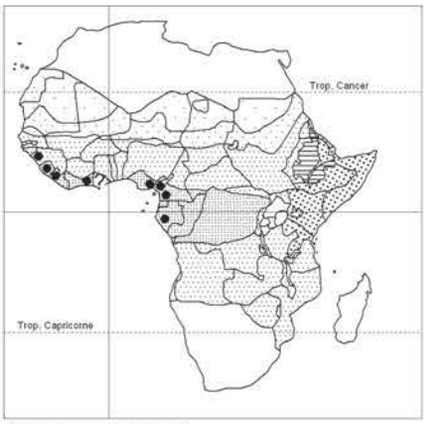
T. pararacemosa N. Hallé – Icon.: Fl. Cameroun 32: 17, 1990.

Shrub 0,5-1,5 m tall, ± scandent, or liane to 6 m; bark wrinkled, cracked.

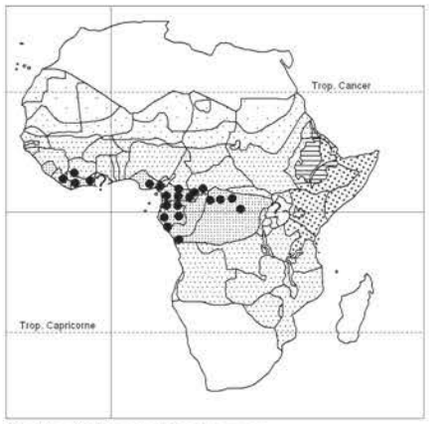
In dense clumps, rather localized, in undergrowth of forest; 100-500 m alt.



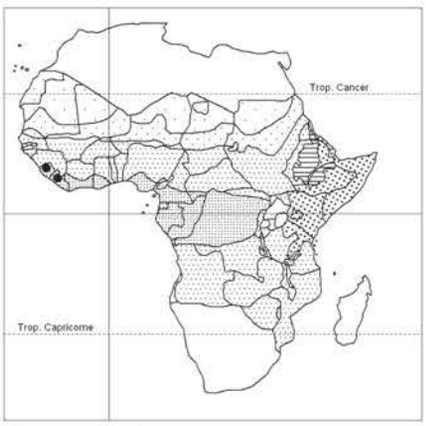
Salacia whytei



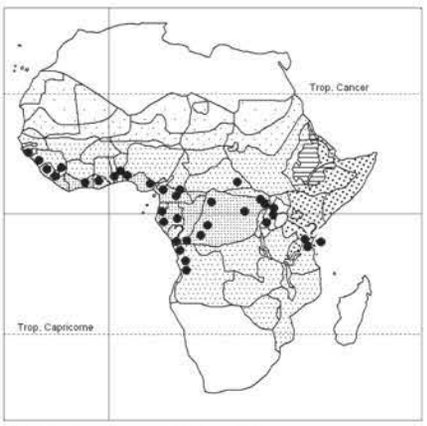
Salacia zenkeri



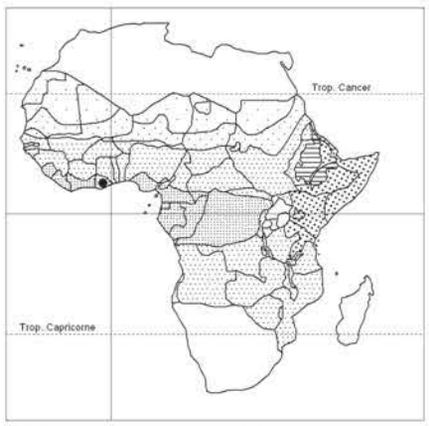
Salacighia letestuana



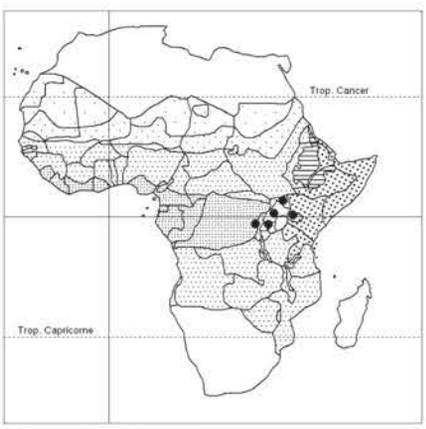
Salacighia linderi



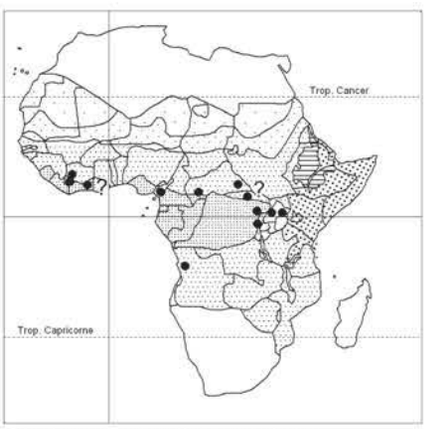
Simicratea welwitschii



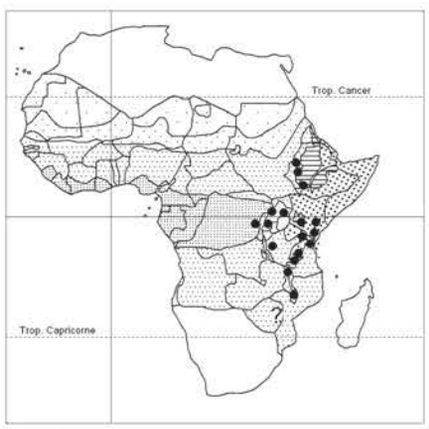
Simirestis atractaspis



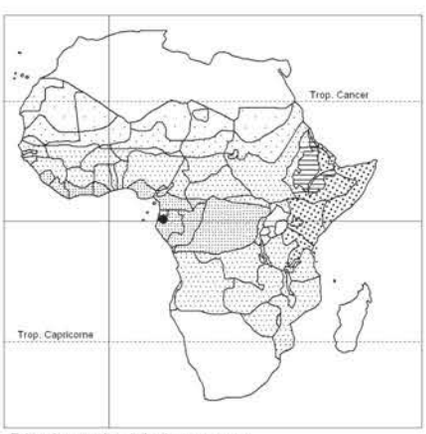
Simirestis brianii



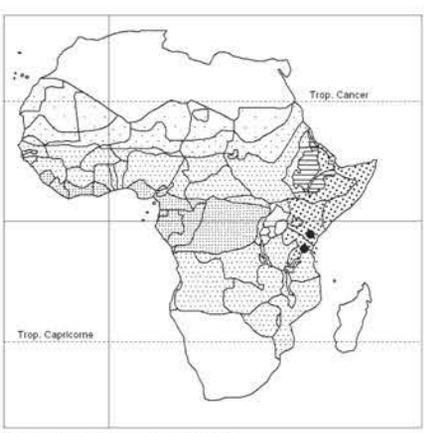
Simirestis dewildemaniana



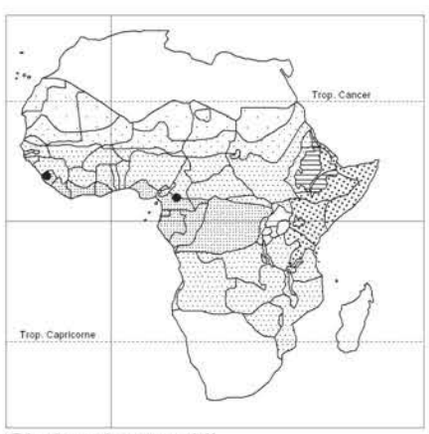
Simirestis goetzei



Simirestis klaineana



Simirestis scheffleri



Simirestis staudtii

THYRSOSALACIA

T. racemosa (Loes. ex Harms) N. Hallé

bas.: *Salacia racemosa* Loes. ex Harms

Shrub, erect or scandent, 1-1,5 m tall or tree 7-9 m.

High forest; 100-1000 m alt.

Perhaps conspecific with *T. pararacemosa* but disk simple, saucer-shaped, entire (not double, lobed). New investigations and more material needed.

T. viciflora N. Hallé – Icon.: Not. Syst. 16: 130, 1960; Fl. Cameroun 32: 19, 1990.

Woody, glabrous liane; branches cylindrical; ripe fruit and seeds unknown.

Ecology unknown (? forest).

Only known from the type (with many isotypes) collected in 1930.

TRISTEMONANTHUS / *2*

Tristemonanthus mildbraedianus Loes. – Icon.: Fl. Cameroun 32: 223, 1990 (partial).

Glabrous liane; branches reddish-brown becoming scaly; fruit unknown.

Swampy forests; swamps; grassfield in rain-forest on rocky outcrops; forest with *Caesalpiniaceae;* 350-730 m alt.

T. nigrisilvae (N. Hallé) N. Hallé – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 683, 687, 2006.

Small liane; stem > 15 mm Ø; older branches with swollen nodes; young twigs 4-angular, smooth, reddish brown, outer layer flaking (flakes 5 cm long, 3 mm wide); leaves discolourous, green above, brownish beneath; larger stems sinuous to deeply fluted, with bark ±filling up the ridges.

Primary and secondary forests, most common in wetter types; 500-1100 m alt. (Liberia, Mts Nimba).

ICACINACEAE / *14* g./ *72* spp.

Ca. 400 species in 52-54 genera; distribution tropical to subtropical with several genera extending into temperate regions.

Badly in need of revision.

Summary of our lack of knowledge: in 3 species male flower unknown and in another species the male flower known only in bud (in all = >4%); in 7 species (+1?) female flower unknown (= in all >8%); no fruit seen in 4 species (= >5%); no ecology recorded for 1 species (= >1%); 5 species (= c. 7%) are known only from the type.

KÅREHED, J. (2001). Multiple origin of the tropical forest tree family Icacinaceae. *Amer. J. Bot.* 88: 2259-2274.

LENS, F. & al. (2008). The wood anatomy of the polyphyletic Icacinaceae s.l. and their relationships within asterids. *Taxon* 57: 525-552.

LISOWSKI, S. (2009). Flore (angiospermes) de la République de Guinée 1 (texte). *Scripta Bot. Belg.* 41: 212-213.

POTGIETER, M. J. & A. E. VAN WYK (1999). Leaf anatomy of the southern African Icacinaceae and its taxonomic significans. *S. Afric. J. Bot.* 65: 153-162 *[Apodytes, Cassinopsis, Pyrenacantha]*.

ALSODEIOPSIS / *10*

syn: *Alsodeiidium* Engl.

A tropical African genus. Species often very close and difficult to separate from each other.

Alsodeiopsis chippii Hutch.; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 344, 2006.

Shrub; young branchlets slender, pilose with long *spreading* hairs, also so on leaves below; leaves oblong-obovate, 7-13 cm long, 3-5 cm wide, acuminate, base unequal-sided; flowers few, yellow; fruit c. 1,2 cm long, veined.

Rain-forest undergrowth; wet evergreen forest near coast.

Very few collections known.

A. mannii Oliv., excl. form with smaller leaves *(= A. weissenborniana).* – Icon.: Fl. Gabon 20: 25, 1973.

Shrub to 1 m tall with grey bark; young branchlets pubescent, longitudinally striate, old ones glabrous; leaves oblanceolate to oblong-obovate, subequal at base, 13-21 × 4,5-8 cm, undersurface glabrous; flowers several, pale green in dense drooping cymes; drupe 1-4 × 0,8-1,5 cm, orange.

Forests, forming tufts, by rivers; up to c. 800 m alt.

A. poggei Engl. – Icon.: Fl. Gabon 20: 29, 1973.

syn.: *A. staudtii* auct., non Engl., e.g. De Wild., Pl. Bequaert. 1: 236, 1922.

Shrub 2-5 m tall; young branchlets with rust-coloured hairs, older ones glabrous with grey bark; leaves glabrous above, densely pubescent with spreading (var. **poggei**) or appressed (var. **robynsii**) hairs, elliptic to oblong-elliptic, 4-13 × 1,8-5,5 cm, base unequal-sided; flowers yellow, in drooping inflorescences; drupe 1-1,5 × 0,5 cm, brownish, reticulate.

Closed forest on humid soil, swamp forest, riversides; secondary formations; 65-400 m alt. (Gabon).

Comprises 2 vars.: – var. **poggei**; – var. **robynsii** Boutique in W and N parts of range.

A. rowlandii Engl. – Icon.: Fl. Gabon 20: 29, 1973.

syn.: *A. bequaertii* De Wild.; *Microdesmis puberula* auct., non Hook. f. ex Planch., Pl. Bequaert. 3: 503, p.p., 1924.

Shrub 1,5-3,5 m tall; young branchlets rusty or yellowish pubescent, old ones glabrous; leaves elliptic, acutely long-acuminate, 3-16 × 3,5-6 cm, base unequal-sided, lower surface shortly appressed-pubescent; flowers yellow, pubescent; drupe 1,3-1,8 × c. 0,6 cm, sparsely appressed pubescent, orange to red.

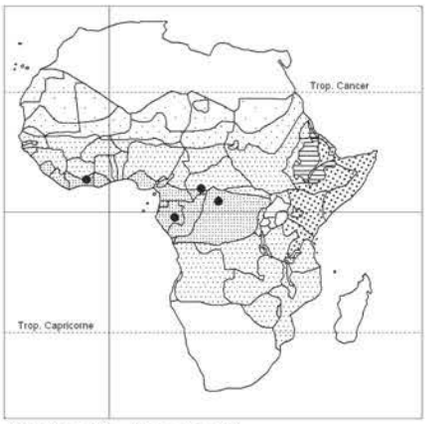
Forest on stream-banks; closed forest on dry soil.

A. rubra Engl. – Icon.: Engler, Pflanzenwelt Afrikas 3(2): 253,1921, and Engler & Prantl, Nat. Pflanzenfam., ed. 2, 20b: 359, 1942; Fl. Gabon 20: 21, 1973.

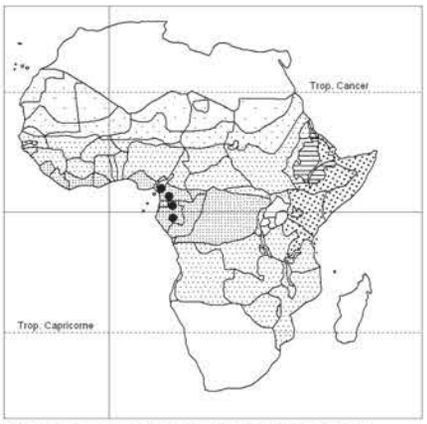
Shrub 1-2,5 m tall with hirsute stems; young branchlets pubescent with yellowish, golden or reddish brown hairs, so also leaf petiole, both leaf surfaces and inflorescence; leaves elliptic-lanceolate, 8,5-18 × 4,5-6 cm, bicolorous, lighter brownish green below, base strongly unequal-sided; flowers yellowish or pale orange; drupe orange, pubescent, 2,8 × 1 cm.

Forest on stream-banks; c. 600 m alt. (Gabon).

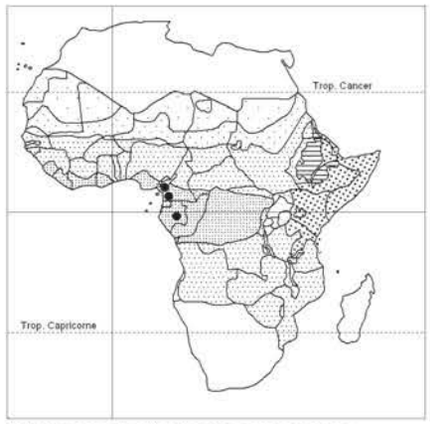
Record from Liberia probably erroneous *(= A. villosa ?).*



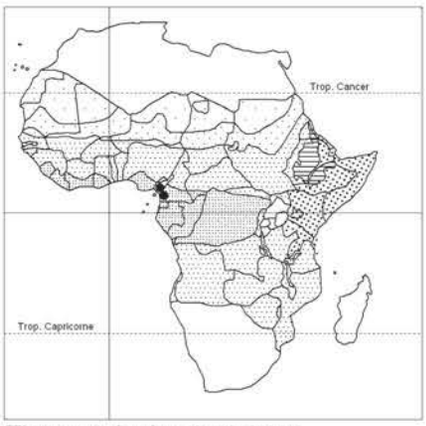
Simirestis tisserantii



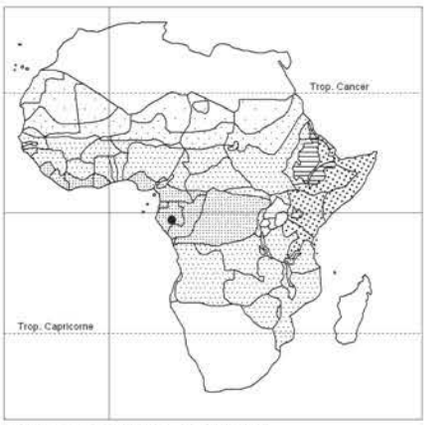
Thyrsosalacia nematobrachion



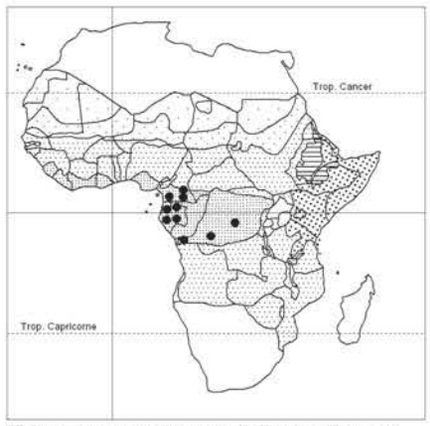
Thyrsosalacia pararacemosa



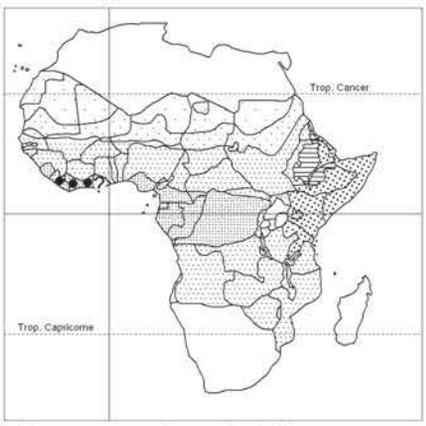
Thyrsosalacia racemosa



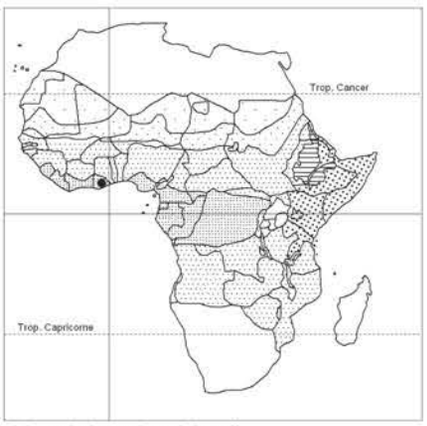
Thyrsosalacia viciflora



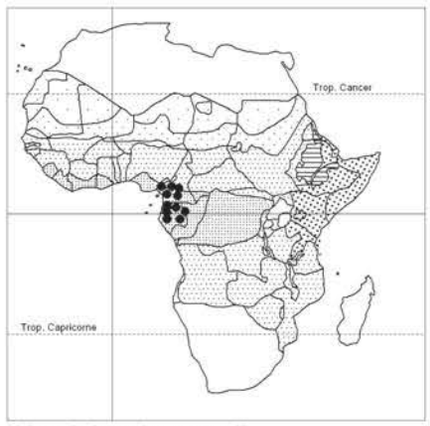
Tristemonanthus mildbraedianus



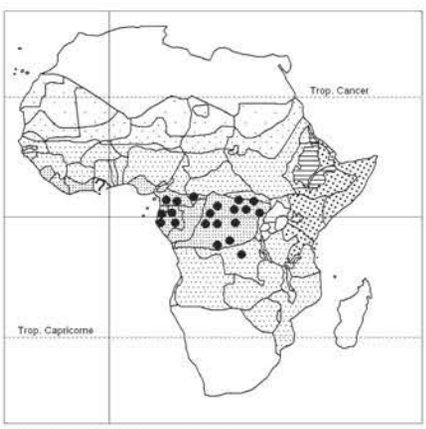
Tristemonanthus nigrisilvae



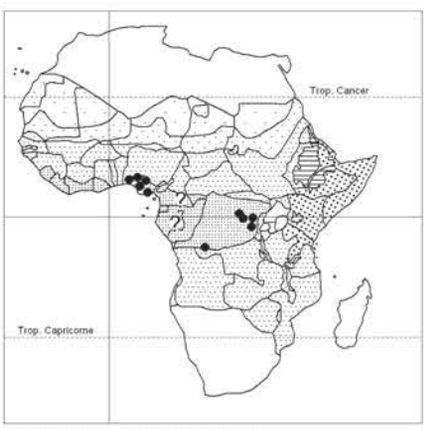
Alsodeiopsis chippii



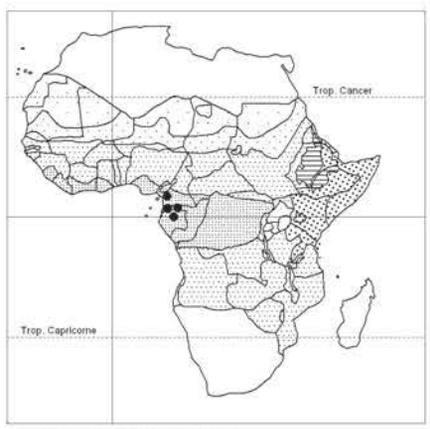
Alsodeiopsis mannii



Alsodeiopsis poggei



Alsodeiopsis rowlandii



Alsodeiopsis rubra

ALSODEIOPSIS

A. schumannii (Engl.) Engl. (1897).

bas.: *Alsodeiidium schumannii* Engl.

syn.: *Alsodeiopsis schumannii* Engl. 1894, nom. subnud.

Tree or shrub to 12 m tall; young branches covered in golden-brown indumentum; leaves lanceolate, 5-12 × 1,5-5 cm, densely strigose with golden-brown hairs, bicolorous, lower surface yellow green; flowers yellowish in lax panicles; drupe pubescent, orange-red, 2,2 cm × 1,5 cm Ø.

Lowland and upland rain-forests; riverine forest; in undergrowth; 900-2000 m alt.

A. staudtii Engl. – Icon.: Fl. Gabon 20: 25, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 340, 345, 2006.

syn.: *A. weissenborniana* auct., non J. Braun & K. Schum., e.g. in A. Chevalier, Explor. Bot. Afr. Occ.: 128, 1920.

Shrub (or tree) 2-5 m tall; old branchlets longitudinally striate, slightly pubescent with *appressed* yellow hairs; leaves glabrous above, sparsely appressed pubescent below, elliptic to oblanceolate, 5-12 × 2-4,5 cm, base strongly unequal-sided, secondary nerves with pocket-like domatia; flowers yellow, few in panicles; drupe sparsely pubescent, red, 1-1,3 × 0,5-0,7 cm, reticulate.

Evergreen forest in undergrowth, common along rivers, on humus-rich soil; up to c. 500 c. alt.

Resembling *A. weissenborniana,* but leaves larger, more acute at apex, and flowers larger.

[**A. tessmannii** Engl., non *Chlamydocarya tessmannii* Engl. *(= Pyrenacantha cordicula)].*

Shrub resembling *A. rowlandii* but leaves with longer petiole and with ovate, acute blade (10-12 × 5 cm), and with only 4 pairs of lateral nerves.

Ecology ?

Recorded only from Equatorial Guinea (Río Campo); E. Guinea López, Ensayo geobot. Guinea Cont. Esp.: 316, 1946; C. Aedo & al., Bases document. Fl. Guinea Ecuat.: 212, 1999.

Plant of uncertain status. Perhaps ? the same as *Chlamydocarya tessmannii* Engl., also from Equatorial Guinea.

Not mapped.

A. villosa Keay – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 345, 2006 (partial).

Erect shrub to c. 1,2 m tall; young branchlets pilose with brownish spreading hairs (1-1,5 mm long) covering the grey bark; leaves oblong-(ob)lanceolate, 9-18 × 3-7 cm, upper surface appressed-puberulous and with long stiff hairs on midrib and nerves, undersurface densely pilose; inflorescence and flowers densely villous with long reddish-brown hairs; drupe densely orange-pilose, 15 × 9 mm, 5,5 mm Ø.

Wet evergreen forest.

Resembling *A. rubra* but cymes shorter and fruits smaller; differs from *A. chippii* by smaller sepals (2 mm long, not 1,5 mm), brown-hairy petals (outside) and larger fruits.

A. weissenborniana J. Braun & K. Schum. – Icon.: Fl. Gabon 20: 21, 1973.

Shrub to 2 m tall, with umbrella-like crown; young branchlets yellow-pubescent, glabrescent, bark grey; leaves elliptic to (ob-)lanceolate, 4,5-10 × 1,7-4 cm, bicolorous, pubescent on both surfaces, base very unequal-sided, secondary nerves with pocket-like domatia; flowers axillary, 2-3, yellowish; drupe pubescent, red.

Forest near rivers; 1-800 m alt.

ALSODEIOPSIS

A. zenkeri Engl. – Icon.: Fl. Gabon 20: 29, 1973.

Shrub much-branched, or tree to 8 m tall and more, with drooping branches like a weeping willow; branchlets appressed pubescent with yellowish hairs, glabrescent; leaves glabrous above, densely yellow to rusty brown appressed-pubescent below, bicolorous (dark green above, yellowish green below), elliptic, 4-13 × 1,3-3,5 cm, base nearly symmetrical, secondary nerves with pocket-like domatia; flowers brownish, pubescent outside, in panicles; drupe pubescent, reticulate, 1,5 × 0,8 cm, with persistent calyx.

Forest on stream-banks and islands in rivers, waterfalls; c. 85 m alt.

Close to *A. schumannii.*

Fruits edible.

SYNONYMS:

Alsodeiopsis bequaertii De Wild. = **Alsodeiopsis rowlandii**

glaberrima Engl. ex Hutch. & Dalziel = **Olax gambecola** *(Olacaceae)*

holstii Engl. = **Leptaulus**

laurentii De Wild. = **Rinorea aruwimensis** Engl. *(Violaceae)*

oblongifolia Engl. = **Desmostachys**

oddonii De Wild. = **Leptaulus holstii**

staudtii auct., non Engl., in De Wild. Pl. Bequaert. = **Alsodeiopsis poggei**

tessmannii Engl. = ? (cf. list of species above under **Alsodeiopsis**)

weissenborniana auct., non J. Braun & Schum.; in Chevalier 1920 = **A. staudtii**

APODYTES / *1*

syn.: *Jobalboa* Chiov.

A genus of c. 15 species (8 according to Labat & al., o.c.) distributed in an area from Africa, Madagascar, to China and Australia, Queensland (cf. van Wyk and Potgieter in S. Afric. J. Bot. 60: 231, 1994).

LABAT, J.-N. & al. (2006). Révision synoptique du genre Apodytes (Icacinaceae) à Madagascar et aux Comores. *Adansonia,* Sér. 3, 28: 379-387.

Apodytes dimidiata E. Mey. ex Arn. – Icon.: Fl. Zambes. 2(1): 346, 1963; A. J. Scott in Fl. Mascareignes 71, Icacin.: 2, 1997; Schatz, Fl. génér. arbres Madag.: 228, 2001; Sleumer in Fl. Males., Sér. 1, 7(1): 48, 1972; White & al., Evergreen forest fl. Malawi: 292, 2001; Coates Palgrave, Trees south. Afr., ed. 3: ill. 164, 2002; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 267, 2008

syn.: Enum. 2: 157, 1992; *A. stuhlmannii* Engl.; *Icacina mauritiana* Miers; *Apodytes mauritiana* (Miers) Bak.; *A. frappieri* Cordem.; *A. beddomei* Mast.; *A. bequaertii* De Wild. (of var. **acutifolia**); *Hemilobium ficifolium* Welw.

Evergreen tree 5-25(-30) m, or (sometimes flowering as a) much branched shrub 4-5 m tall ; bole to 80 cm Ø, fluted in larger trees; heart-wood extremely hard, pink or pale violet; bark smooth, grey; young branches purplish green with appressed pale brown hairs, older ones dark grey with pale lenticels; leaves (ovate-) elliptic, 2-15 × 1,2-8 cm, dark green, glossy, drying black above; flowers small, sweet-scented, white, in panicles, petals free; nut ovoid-reniform, black, ± compressed, with a red fleshy lateral appendix. – In habit resembling *Ficus benjamina.*

APODYTES DIMIDIATA

Coastal evergreen (clump) bushland; fringing forest in *Brachystegia-Julbernardia* woodland; mountain grassland; *Podocarpus-Olea-Syzygium* upland rain-forest, often remaining as solitary trees in grassland after forest clearing; upland dry forest; secondary and riverine forests; secondary *Acacia-Combretum* woodland grassland; *Juniperus* forest; also among rocks on inselbergs, lava plain; gullies, streambanks; 0-450 m (coast), 750-2600 m alt. (inland).

Variable in leaf shape and hairiness of ovary and fruit, with a geographical trend; acute leaf apex and glabrous fruit (Ethiopia-Tanzania; var. **acutifolia**); specimens from S. Africa with pubescent fruit (var. **dimidiata**).

S. Africa, Swaziland; Madagascar, Mascarenes, Aldabra; S. India, Sri Lanka (map in Sleumer Fl. Males., Sér. 1, 7: 49, 1972).

Two varieties are recognized by some authors: – var. **acutifolia** (Hochst. ex A. Rich.) Boutique, widespread in NE, E & C Africa; – var. **dimidiata**, widespread in E & south. Africa, also extra-African. – In Ethiopia only var. **acutifolia.**

– Differences are small and inconsistant.
– Several varieties have been described from Madagascar (Perrier de la Bâthie in Fl. Madag. 119, Icacin.: 16-20, 1952).

SYNONYMS:

Apodytes beninensis Hook. f. ex Planch. = **Rhaphiostylis beninensis**

var. β Oliver = **R. ferruginea** var. **ferruginea.**

CASSINOPSIS / *2*

A genus of 6 species, 4 of which endemic to Madagascar.

Cassinopsis ilicifolia (Hochst.) Kuntze

bas.: *Hartogia ilicifolia* Hochst.

syn.: *Casine ilicifolia* Hochst. in syn.; *Cassinopsis capensis* Sond.

Scrambling shrub, glabrous, spiny, to 6 m tall; branches alternate, terete, ± flexuous, shining, green; spines straight, very acute, c. 2,5 cm long, in age apparently at the forks of older branches; leaves opposite, 4-6 × 2-2,5 cm, shining above, margins ± serrulate, rarely entire; flowers white in short cymes; drupe (nearly dry) yellow-orange, c. 1 cm long.

Wooded kloofs, stream banks; c. 300-1845 m alt. (S. Africa).

S. Africa, Swaziland.

C. tinifolia Harv.

Straggling unarmed shrub or tree to 4 m tall; bark smooth, grey; leaves 3-9 × 2,5 cm, margins entire, recurved; inflorescence more than half as long as a leaf; flowers white; drupe elongated, corrugated, 0,8 cm long, black.

Edges of mountain forest; wooded gullies, riverine formations; 15-1730 m alt. (S. Afr.).

S. Africa, Swaziland.

CHLAMYDOCARYA / *5*

Tropical African genus.

Chlamydocarya anhydathoda Villiers – Icon.: Adansonia, Sér. 2, 10: 430, 1970; Fl. Gabon 20: 91, 1973.

syn.: *C. trillesiana* Pierre ms.

Liane, dioecious, with long ribbed twisted stem, sparsely pubescent or glabrous; leaves alternate, with unpleasant smell, with 8-9 pairs of secondary nerves, without hydathodes; male inflorescence a 3-8 cm long spike, female one to 25 cm long, petals glabrous inside; drupe flattened, with 2 lateral ridges, edible.

Ecology not recorded.

C. gossweileri Exell

Liane to c. 2 m tall, dioecious; branches ± striate, glabrous; leaves papery, 25 cm long, 11 cm wide, with c. 6 pairs of secondary nerves; flowers in axillary 10 cm long spikes, with brown-tomentose rhachis; fruit dusky brown, 1,5 × 1,5 cm, with a tube at the apex c. 7 mm long formed from the accrescent corolla.

Shady humid forests, twining on undershrubs.

Distinguished from *C. thomsoniana* by the puberulous midrib and nerves on lower surface of leaf (not pilose).

C. macrocarpa A. Chev. ex Hutch. & Dalziel – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 340, 351, 2006.

Liane 3-4 m tall, dioecious; leaves glaucous, reticulate, sparingly pubescent beneath, ± elliptic, 9-30 × 4-12 cm, with 8-10 pairs of secondary nerves, margins entire; male flowers in long spikes; corolla in fruit densely setose-pubescent, elongated beyond the fruit body into an inflated cone 2,5-4 cm long, 1,5-2,2 cm broad at base; fruits yellowish or orange, in clusters on stems behind leaves, with a long orange papery beak, covered with irritant hairs.

Forests of various types.

Closely related to *C. soyauxii.*

C. soyauxii Engl. – Icon.: Fl. Gabon 20: 93, 1973.

Liane, dioecious, with ribbed twisted short-pubescent stem (such pubescence also on leaf petiole); leaves coriaceous, glabrous, shining green above, yellowish green beneath, oblong-elliptic, 14-17 × 5-13 cm, with 8-15 pairs of secondary nerves, without hydathodes; inflorescences: long many-flowered spikes; petals free, densely pubescent outside with long spreading hairs on lower part, and short appressed hairs on upper part, inside pubescent on lower half; ovary glabrous; corolla elongated beyond the fruit body into an inflated elongated sphere 2,5 cm long, 2 cm broad at base.

Ecology not recorded.

C. thomsoniana Baillon – Icon.: Fl. Gabon 20: 97, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 349, 2006 (partial).

syn.: *C. rostrata* Bullock [fruits only; leaves are *Calycobolus africanus* (G. Don) Heine, *Convolvulaceae,* fide F.W.T.A., ed. 2, 1/2: 643, 1958]; *Chlamydocarya* sp. sensu Germain & Evrard, in Publ. Inst. Natl. Etude Agron. Congo Belge (INEAC), Sér. Sci.: 67: 15, 98, 1956.

CHLAMYDOCARYA THOMSONIANA

Liane, dioecious, small, with ± bristly, deeply furrowed stem and pubescent branches; leaves elliptic–oblong, 10-28 × 4-15 cm, pubescent, greyish green above, yellowish green and reticulate beneath, with 7-8 pairs of secondary nerves, margins denticulate, with hydathodes; male flowers in 3-6 cm long catkins; female ones in star-like clusters; fruit orange to scarlet, corolla with spreading irritating bristly hairs elongated into a tube 4-8 cm long, < 1,5 cm broad at the conical base.

Primary and secondary semideciduous forests; forest with *Brachystegia laurentii;* also on islands in river; 1-910 m alt.

Probably also in Ghana.

SYNONYMS:

Chlamydocarya capitata Baillon = **Polycephalium**

glabrescens Engl. = **Pyrenacantha**

klaineana Pierre = **Chlamydocarya soyauxii**

lobata Pierre = **Polycephalium**

rostrata Bullock (fruits) = **Chlamydocarya thomsoniana**

rostrata Bullock (leaves) = **Calycobolus africanus** *(Convolvulaceae)*

sp. sensu Germain & Evrard = **Chlamydocarya thomsoniana**

staudtii Engl. = **Pyrenacantha**

tenuis Engl. = **Pyrenacantha acuminata**

tessmannii Engl., nom. invalid. = **Pyrenacantha villiersii**

trillesiana Pierre ms. = **Chlamydocarya anhydathoda**

DESMOSTACHYS / *4*

Confined to tropical Africa and Madagascar–Comoros.

Desmostachys brevipes (Engl.) Sleumer, excl. var. Boutique *(= D. oblongifolia).* – Icon.: Fl. Gabon 20: 49, 1973.

syn.: *Sarcostigma brevipes* (Engl.) Engl.

Liane 4-8 m tall; branchlets yellowish grey, appressed pubescent; leaves alternate, short-petiolate, oblanceolate, 11-17,5 × 4,5-7,5 cm; flowers white, 5-merous, in clusters of glomerules 12-24 cm long.

Forest ("Urwald"), near river; 60-600 m alt.

D. oblongifolia (Engl.) Villiers – Icon.: Fl. Gabon 20: 49, 1973.

Shrub 0,5-2,5 m tall; branchlets appressed yellow-pubescent; leaves short-petiolate, elliptic or oblanceolate, 10,5-16 × 3, 5-6 cm; flowers yellowish, 5-merous, in clusters 1-2 cm long.

Plateau forest, swamp forest; 100-550 m alt.

Similar to *D. brevipes*, but inflorescence different.

D. tenuifolius Oliv. – Icon.: Fl. Gabon 20: 45, 1973.

syn.: *D. preussii* Engl.

Shrub or sometimes small tree 2 m tall, with drooping branches; stem longitudinally striate, bark grey; young branchlets appressed short-pubescent, glabrescent; leaves petiolate, glabrous, elliptic to oblanceolate; flowers white, 4-merous, petals small (3-6 mm long), in thin pendulous spikes, resembling those of *Antidesma vogelianum (Euphorbiaceae);* drupe orange.

Forest, forest gaps; scrub; near river; at foot of inselberg; 1-c. 900 m alt.

DESMOSTACHYS TENUIFOLIUS

Variable in size and shape of leaves (15-24 × 4,5-8 cm in var. **tenuifolius**, smaller and narrowly elliptic in var. **angustifolius**), and in length of inflorescence (15-20 cm long in var. **tenuifolius**, vs. 5-7 cm in var. **angustifolius**).

Bioko / Fernando Poo.

Comprises 2 vars.: – var. **tenuifolius**; – var.: **angustifolius** Pellegr. ex Villiers (syn.: *D. tenuifolius* Oliv. var. *angustifolius* Pellegr. ms.) localised in Gabon.

Record from Sierra Leone (Barter specim.) is probably from Bioko.

D. vogelii (Miers) Stapf – Icon.: Fl. Gabon 20: 45, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 345, 2006 (partial).

bas.: *Sarcostigma vogelii* Miers

Shrub, often scandent, or small tree 3-6 m tall; stem very short-pubescent; bark longitudinally striate, chestnut brown; leaves petiolate, oblong-elliptic-oblanceolate, 13-30 × 4,5-13 cm, with minute scale-like dots beneath; flowers white, 5-merous, in supra-axillary spikes 22-37 cm long (longer than leaves), petals c. 1 cm long, loosely joined below to form a tube c. 6 mm long; drupe yellow. Wood yellow, very hard.

Forest.

* * *

Desmostachys planchoniana Miers, a Madagascan liane, cited in Fl. Trop. Afr. 1: 354, 1868, as from Mozambique (Forbes specim.) has probably not been collected in mainland Africa (cf. Fl. Zambes. 2/1: 351, 1963).

SYNONYM:

Desmostachys tenuifolius sensu A. Chev., 1920, non Oliv. = **Stachyanthus occidentalis**

ICACINA / *5*

syn.: *Thollonia* Baillon

African genus with 5-merous flowers.

NATIONAL RESEARCH COUNCIL of the National Academies (2008). *Icacina In: Lost crops of Africa volume 3, Fruits:* 280-289. The National Academies Press, Washington DC.

Icacina claessensii De Wild. – Icon.: Fl. Gabon 20: 53, 1973.

Sarmentose liane reaching the top of the canopy; branchlets light brown, shining, glabrous, strongly ridged; flowers green or yellowish, fragrant, sessile in many-flowered racemes 5-7 cm long.

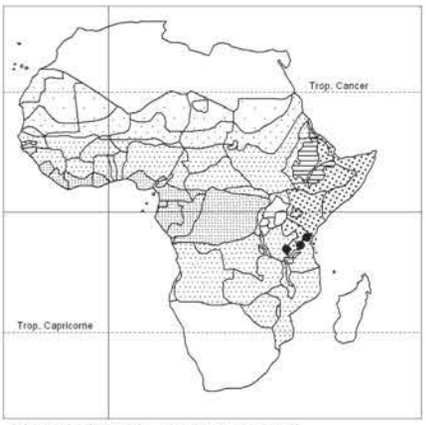
Forest on firm ground, riverine forest, forest gallery; 100 m alt.

I. guessfeldtii Aschers. ex Engl. – Icon.: Engler in Bot. Jahrb. Syst. 43: 185, 1909; Fl. Gabon 20: 53, 1973.

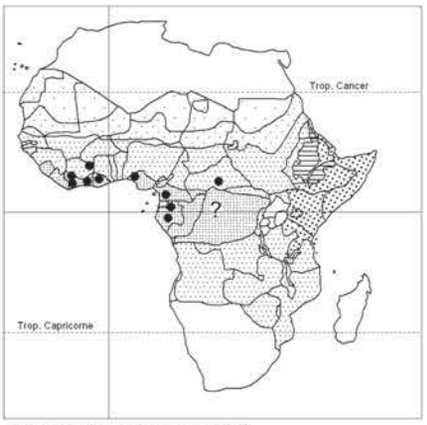
syn.: *I. guessfeldtii* Aschers. nom. nud.

Shrublet or shrub to 6 m tall; branchlets glabrous, shining chestnut brown, longitudinally striate; flowers cream, solitary or in few-flowered axillary clusters, petals glabrous outside.

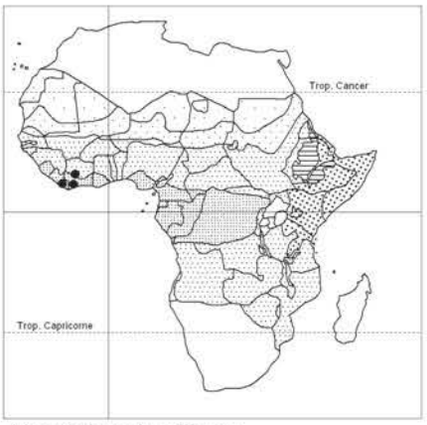
Forest associations; to c. 700 m alt. (Angola).



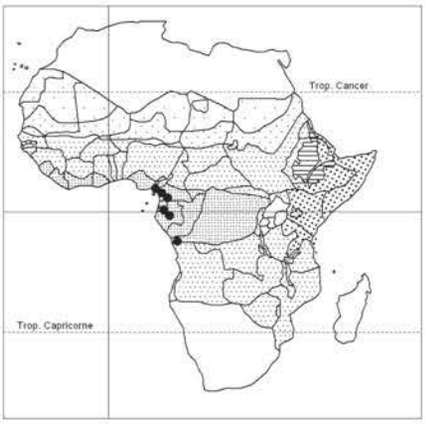
Alsodeiopsis schumannii



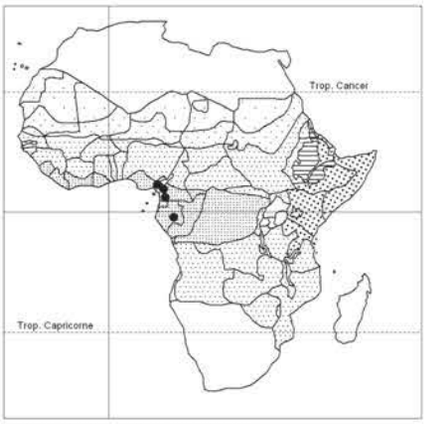
Alsodeiopsis staudtii



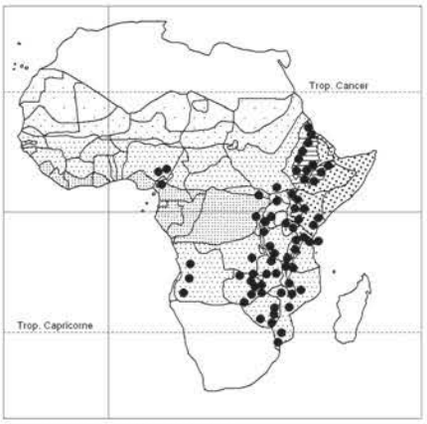
Alsodeiopsis villosa



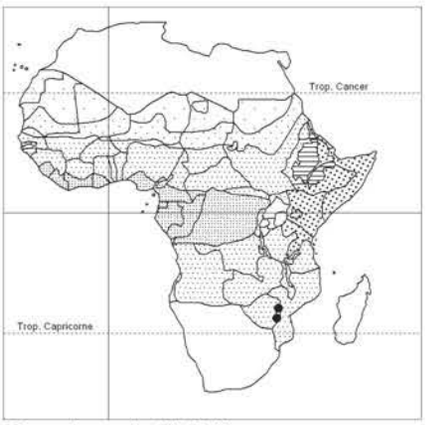
Alsodeiopsis weissenborniana



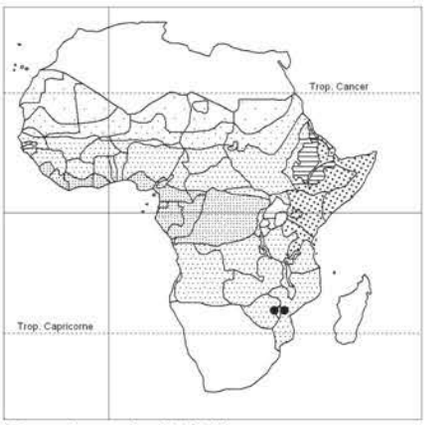
Alsodeiopsis zenkeri



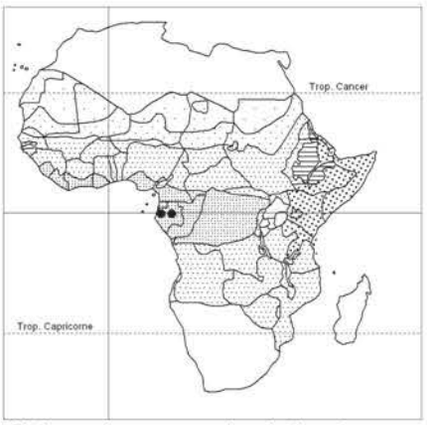
Apodytes dimidiata



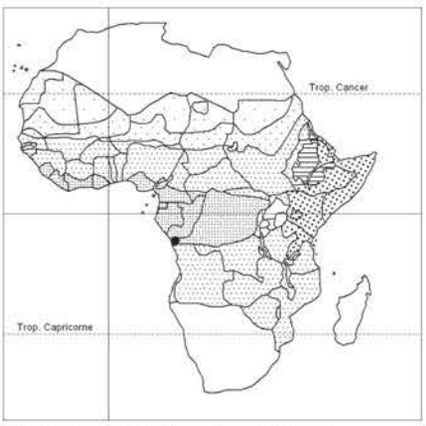
Cassinopsis ilicifolia



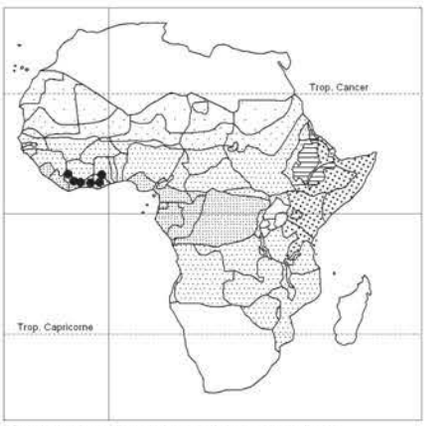
Cassinopsis tinifolia



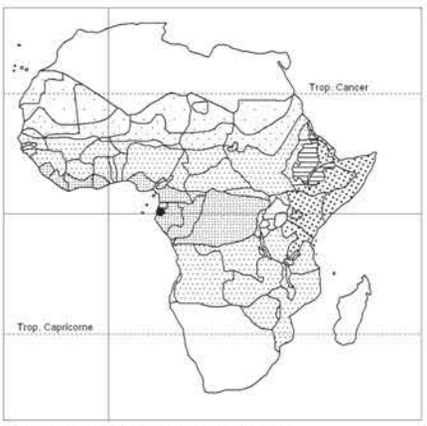
Chlamydocarya anhydathoda



Chlamydocarya gossweileri



Chlamydocarya macrocarpa



Chlamydocarya soyauxii

ICACINA

I. mannii Oliv. – Icon.: Bot. Mag. 102: pl. 6260, 1876; Fl. Gabon 20: 55, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 340, 347, 2006.

syn.: *Thollonia racemosa* Baillon

Scandent or straggling shrub, or liane 1,5-6 m tall, with a large underground tuber; branchlets light brown, glabrous or densely pubescent (var. **lebrunii**); leaves broadly (ob-)ovate, usually large (6-25 × 3-14 cm), ± densely pubescent (var. **lebrunii**) to glabrescent beneath; flowers pedicellate, cream, strongly fragrant, in short (1-3,5 cm long) axillary clusters; petals pubescent outside, bearded within, much longer than calyx; fruit orange-red, 4 cm long, surface sandpaper-like.

Evergreen forest, swamp and gallery forests, forest clearings; 5-1200 m alt.

Comprises 2 vars. (var. **lebrunii** Boutique in WC Zaire and Gabon).

I. oliviformis (Poiret) J. Raynal; Fay in Econ. Bot. 47: 163-170, 1993. – False Yam. – Icon.: Berhaut, Fl. ill. Sénégal 4: 128, 1975; Adansonia 2: pl. 9, 1861-1862 (flower), sub nom. *I. senegalensis;* Akoegninou & al., Fl. analyt. Bénin: 593, 2006; Mendes Ferrão, Fruiticultura tropical 2: 217, 2001.

syn.: Enum. 2: 157, 1992.

Erect woody herb, suffrutex or scandent shrub 0,4-1 m tall with a large fleshy underground tuber 50 cm long, 30-50 cm Ø, 25 kg in weight, with long roots, and sending up yellow glabrous or pubescent leafy shoots; leaves obovate to rounded, 5-15 × 4-10 cm, conspicuously reticulate, ± glabrous; flowers cream-yellow, fragrant, in lax corymbose cymes forming a terminal panicle; petals shortly hairy outside; fruit red, 3 cm long, tomentellous, with a thin sweet edible pulp. Other parts of plant toxic.

Savanna, savanna scrub and forest; locally abundant and troublesome as a weed; roadsides, waste places, cultivations, old farmland, especially in cotton- or yam-fields; edge of seasonally flooded *Elaeis* forest; often in sandy soils. Difficult to eradicate.

Tuber and seeds are famine food.

Resembling *Chrysobalanus icaco (Chrysobalanaceae);* described as *Hirtella oliviformis* by Poiret.

Comprises 2 vars.: – var. **oliviformis**; – var. **pubescens** (Boutique) Fay (with densely pubescent branchlets and lower leaf surface, in N Zaire).

I. trichantha Oliv. (often cited as "triacantha").

Scandent shrub to 2 m tall with a very large underground tuber; branchlets rusty-tomentose- pubescent; leaves oblong-elliptic, 10-28 × 17 cm, pilose beneath; flowers cream, densely crowded in very short simple or slightly branched racemes or spikes; petals villous outside, ± as long as calyx; drupe red, velvety, 2,5 cm long.

Forest, forest regrowth, jungle; weed of rice-paddies; forming natural undergrowth in teak plantations (S & C Benin), formerly dominated by *Triplochiton scleroxylon, Celtis mildbraedii, C. zenkeri, Antiaris toxicaria, Albizia adianthifolia, A. ferruginea, A. zygia, Ceiba pentandra;* on leached rather acid (ptt 4,8-6,4) soils, on ± steep and rocky slopes; indicating humid conditions; also coastal.

GANGLO, J. C. & B. DE FOUCAULT (2005). Le groupement végétal à Icacina trichantha Oliv. dans le sous-bois naturel des plantations de Teck (Tectona grandis L. f.) du sud et du centre-Bénin: composition et diversité floristique, valeurs indicatrices écologiques et sylvicole. *Acta Bot. Gall.* 152: 389-402.

ICACINA

SYNONYMS:

Icacina ledermannii Engl. = **Leptaulus daphnoides**

macrocarpa Oliv. = **Lavigeria**

mauritiana Miers = **Apodytes dimidiata**

sarmentosa A. Chev. = **Rhaphiostylis ferruginea** var. **ferruginea**

senegalensis A. L. Juss. = **Icacina oliviformis** var. **oliviformis**

var. *pubescens* Boutique = **I. oliviformis** var. **pubescens**

(ICACINOPSIS)

Icacinopsis annonoides Roberty = **Dichapetalum barteri** *(Dichapetalaceae)*

IODES / *8*

Iodes Blume; *Jodes* Rchb.; *Yodes* Kurz

20-30 species in tropical and insular Asia, and in Africa incl. Madagascar.

In tropical Africa insufficiently known: male flower unknown in 1 species, female flower unknown in 2 (or 3?) species, no fruit seen in 1 species. Two species known only from the type.

Iodes africana Welw. ex Oliv. – Icon.: Fl. Gabon 20: 7, 1973; Sleumer in Engler & Prantl, Pflanzenfam., ed. 2, 20b: 378, 1942 (details); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 343, 2006 (partial).

Dioecious liane reaching the upper forest canopy, with extra-axillary tendrils; stems flattened and ± twisted, 1-6 cm wide; young shoots shortly pubescent with yellow appressed hairs; leaves opposite, glabrous on both surfaces, not glossy; flowers yellow in many-flowered cymose panicles; male flowers without calyx.

Forest on firm ground, drier or inundated; bushy borders of primitive woods in valley, sporadic; thickets along river; islands in river; 80-1300 m alt.

I. kamerunensis Engl. – Icon.: Fl. Gabon 20: 9, 1973.

Dioecious liane covered with yellow-rusty brown soft hairs; tendrils extra-axillary; leaves densely tomentose beneath; male flowers with calyx; female flowers unknown?

Open bush, forest; 690 m alt.

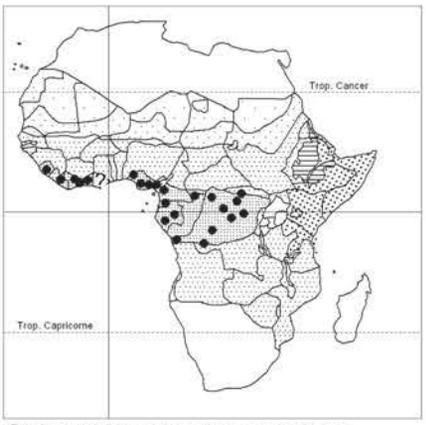
I. klaineana Pierre – Icon.: Fl. Gabon 20: 11, 1973.

syn.: *I. laurentii* De Wild.; *I. talbotii* Hook. f. ex Hutch. & Dalz.

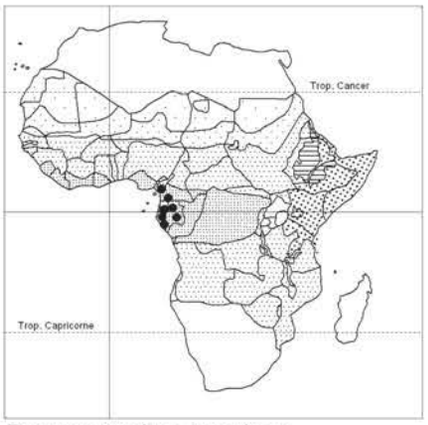
Sarmentose shrub or liane 3-20 m tall with twisted stem and tendrils, all parts spreading, yellow hairy; hairs either of 2 sorts (long hirsute *and* short appressed in var. **klaineana**) or only short ones present (var. **tomentosa** Villiers); flowers cream, male ones with calyx, in short cymes.

Forest; 1-700 m alt.

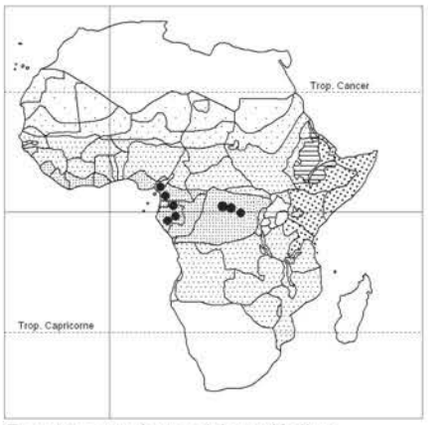
Resembling *I. liberica;* sometimes difficult to separate the two species.



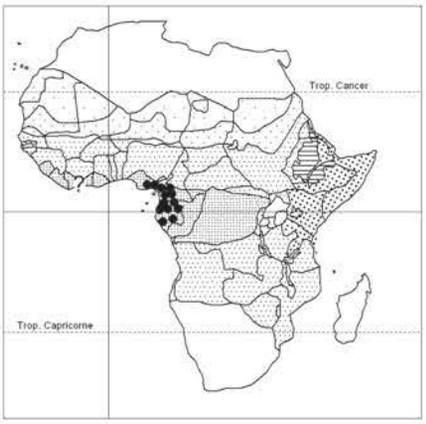
Chlamydocarya thomsoniana



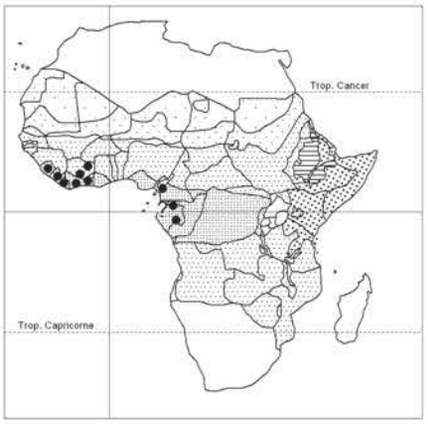
Desmostachys brevipes



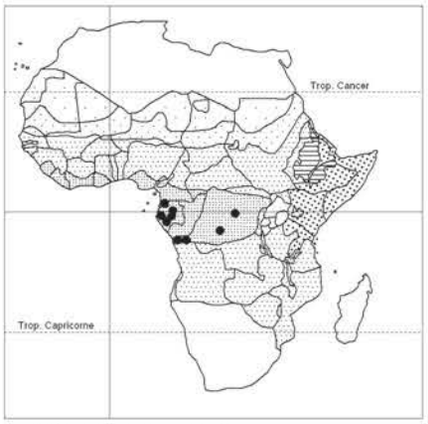
Desmostachys oblongifolius



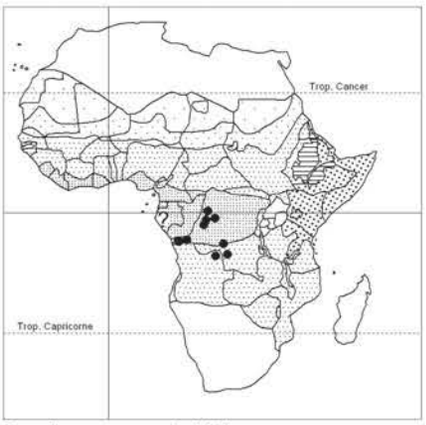
Desmostachys tenuifolius



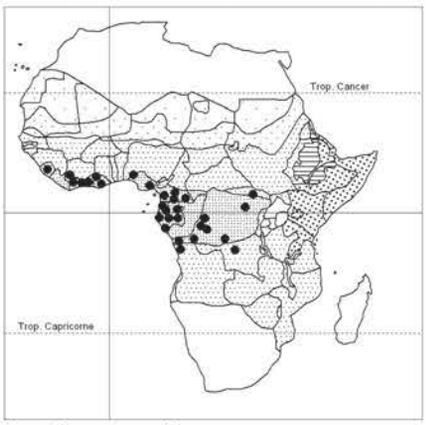
Desmostachys vogelii



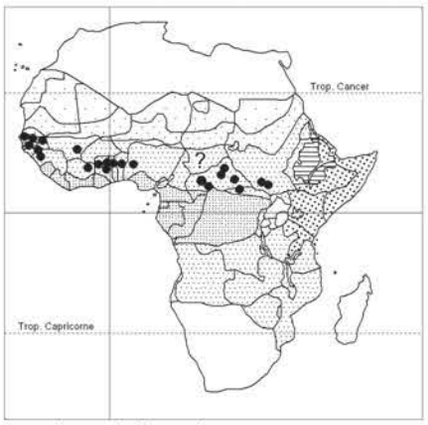
Icacina claessensii



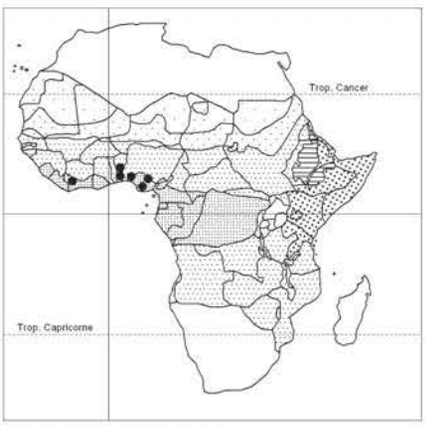
Icacina guessfeldtii



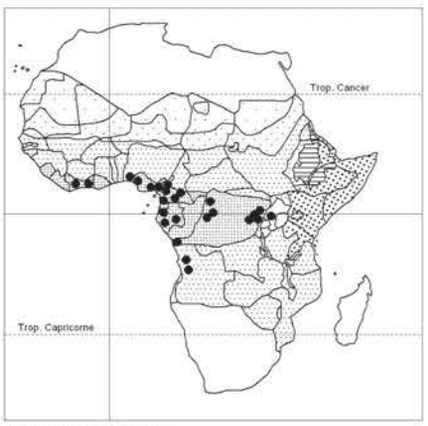
Icacina mannii



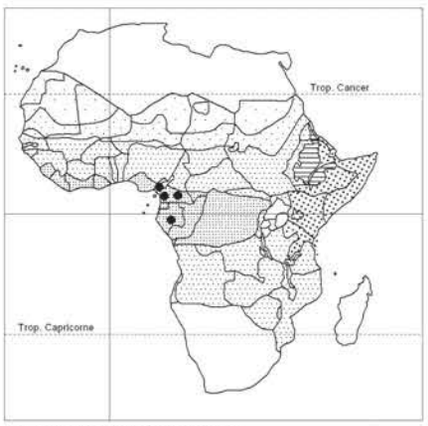
Icacina oliviformis



Icacina trichantha



Iodes africana



Iodes kamerunensis

IODES

I. liberica Stapf – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 340, 341, 343, 2006.

syn.: *I. reticulata* Stapf (1905), non King (1895), nom. illegit.

Climbing shrub or liane to 20 m tall; branchlets and tendrils shortly yellowish pubescent, glabrescent; leaves glabrous, glossy, closely reticulate; flowers yellow, male ones with calyx, in cymose panicles 3-10 cm long. Fruit often aborted.

Semi-deciduous and evergreen forests, secondary forests, forest regrowth, forest patches; c. 500 m alt. (Mts. Nimba).

Variable in shape of leaves.

Resembling *I. klaineana;* similar to *I. africana* but leaves different.

I. pierlotii Boutique

Liane with stem to 25 m long, 9-10 cm Ø; young branchlets rusty puberulous, glabrescent; leaves tomentellous beneath, with very short appressed hairs; male flowers unknown; female flowers with calyx, only known on fruit, in robust panicles 6-8 cm long.

Forest with *Uapaca, Blighia, Staudtia.*

Known only from the type collected in 1955 (fruiting specimen).

I. seretii (De Wild.) Boutique – Icon.: Fl. Gabon 20: 9, 1973; Fl. Cameroon 15: 9, 1973.

syn.: *I. trichocarpa* Mildbr.; *I. laurentii* sensu Staner in Bull. Jard. Bot. Etat, Brux. 15: 415, 1939, non De Wild.; *I. hirsuta* Louis, nom. nud.

Liane to 5 m tall, yellowish to rusty brown hirsute on stems, tendrils, leaf petioles, inflorescences and fruits; leaves pubescent to tomentose beneath without apparent reticulation; male and female flowers without calyx in cymose panicles, dense to longish lax, 2-9 cm long.

Firm ground and riverine forest, islands in river, forest gallery; 1-500 m alt.

Variable in type of inflorescence, perhaps due to hybridization with *I. africana* and *I. seretii.*

I. usambarensis Sleumer – Icon.: Beentje, Kenya trees, shrubs & lianas: 346, 1994.

Slender liane with thin pubescent stems golden-brown when young; tendrils extra-axillary; leaves paper-like, glossy green above, glabrous or sparsely pubescent, with tufts of yellow-brown hairs in nerve axils beneath; flowers small terminal cymes.

Edges of lowland rain-forest in coastal areas, sometimes persisting on cultivated ground; up to 100 m alt.

I. yangambiensis Louis ex Boutique.

Liane 4 m tall with rusty-brown indumentum; stem 0,8 cm Ø, black with white striae, conspicuously lenticellate; young branchlets puberulous-tomentellous with short hairs, glabrescent; leaves cuneate at base, elliptic, 12-18,5 × 6-9,5 cm, glabrous to sparsely pubescent beneath; panicles tomentellous, 5-7 cm long, of flowers in dense glomeruli, male ones white, with calyx; female flower and fruit unknown.

Primary rain-forest; 470 m alt.

Known only from the type collected in 1937.

Resembling *I. kamerunensis* but leaf petiole longer, and leaf blade cuneate at base and sparsely pubescent above.

IODES

SYNONYMS:

Iodes hirsuta Louis, nom. = **Iodes seretii**

laurentii De Wild. = **I. klaineana** var. **klaineana**

laurentii sensu Staner = **I. seretii**

reticulata Stapf = **I. liberica**

talbotii Hook. f. ex Hutch. & Dalziel = **I. klaineana** var. **klaineana**

trichocarpa Mildbr. = **I. seretii**

LASIANTHERA / *1*

Monospecific.

Lasianthera africana P. Beauv. – Icon.: Palisot de Beauvois, Fl. Oware: pl. 51, 1806; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 20b: 361, 1942; Rev. Bot. Appl. Agron. Trop. 27: 503, 1947; Fl. Gabon 20: 15, 1973; L. Pauwels, Nzayilu N'ti, guide arbres… Kinshasa: 156, 1993.

Shrub or tree 3-6(-10) m tall, glabrous; branchlets terete, slightly ridged; bark pale green; leaves alternate, elliptic, 9-20 × 3-10 cm, acumen long-caudate; flowers small, white in small heads in leaf-opposed pedunculate cymes; anthers densely villose, visible as white tufts; drupes flattened, elliptic, 1-1,5 cm long, longitudinally ribbed.

Rain-forest, forest gallery, forest gaps and edges; cleared forests; secondary forest and thicket, in understorey; 1-1200 m alt.

Bioko/Fernando Poo.

Comprises 2 vars. [var. **microphylla** Pellegr. ex Villiers with small narrow leaves (3,5-8 × 1-2 cm) in Gabon].

Not found in Ghana or west of the River Niger; record from Chama, River Saint-Jacques (Santo Iago), by Palisot de Beauvois is either a locality in now Nigeria, or wrong (cf. F.W.T.A., ed. 2, 1/2: 638, 1958; Irvine, Woody pl. Ghana: 464, 1961).

LAVIGERIA / *1*

Monospecific.

Lavigeria macrocarpa (Oliv.) Pierre – Icon.: Hook. Ic. Plant., Ser. 4, 4 (= 24): pl. 2338, 1894, sub nom. *Icacina macrocarpa;* Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 20b: 372, 1942; Fl. Gabon 20: 67, 1973.

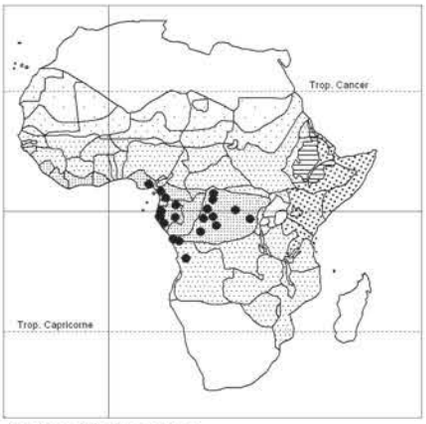
bas.: *Icacina macrocarpa* Oliv.

syn.: *Lavigeria salutaris* Pierre.

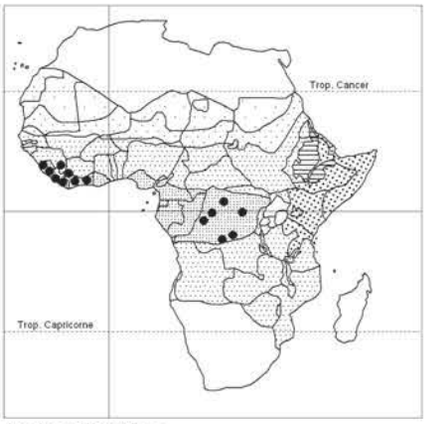
Extensive liane to c. 24 m long, cauliflorous, with a large underground tuber; stem ± 4-angular, 4 cm Ø, stellate-pubescent; branchlets and leaves somewhat yellow to rusty stellate pubescent; leaves alternate, elliptic, in canopy 12-28 × 5-11 cm, glabrous above; flowers very small in loosely branching rusty pubescent-tomentose panicles resembling those of *Chrysobalanus icaco (Chrysobalanaceae),* on main stem; petals glabrous, drupe ovoid, corrugated, 5-11 cm long, c. 4 cm Ø, edible.

Forests, forest gallery; 1-1200 m alt.

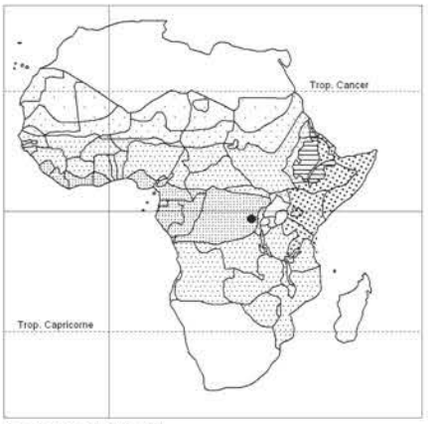
Bioko/Fernando Poo.



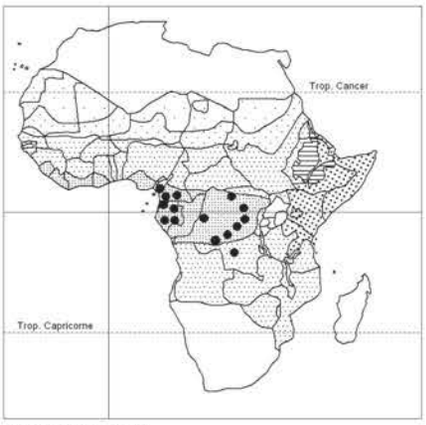
Iodes klaineana



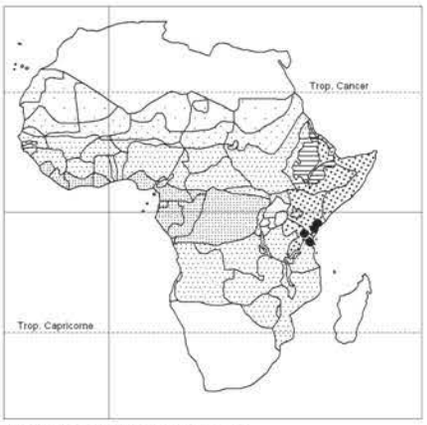
Iodes liberica



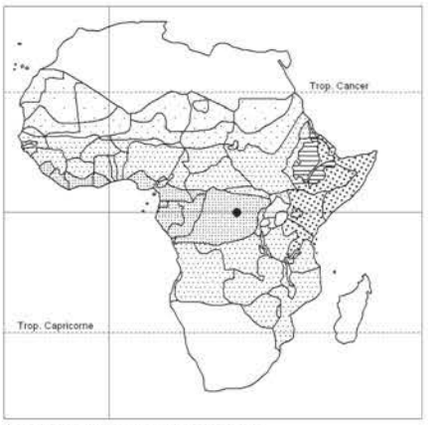
Iodes pierlotii



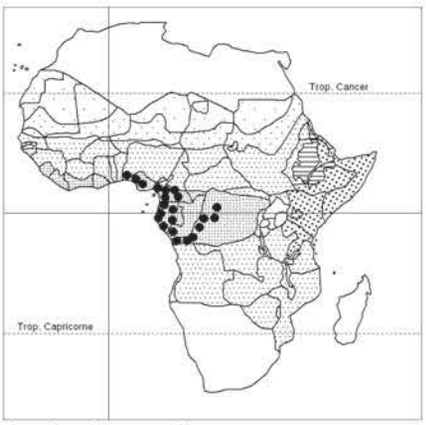
Iodes seretii



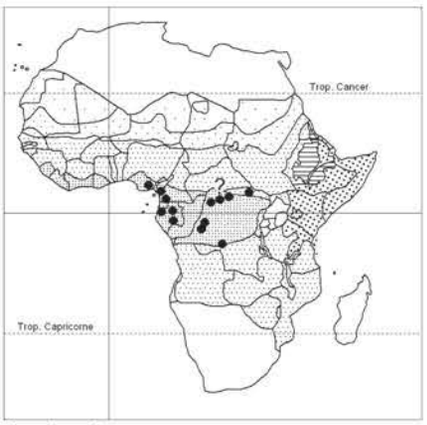
Iodes usambarensis



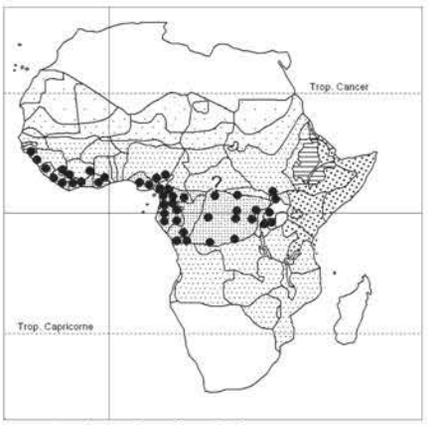
Iodes yangambiensis



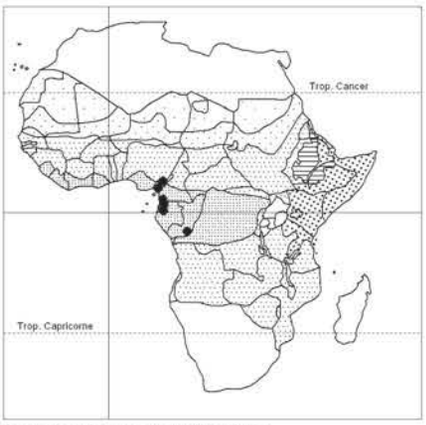
Lasianthera africana



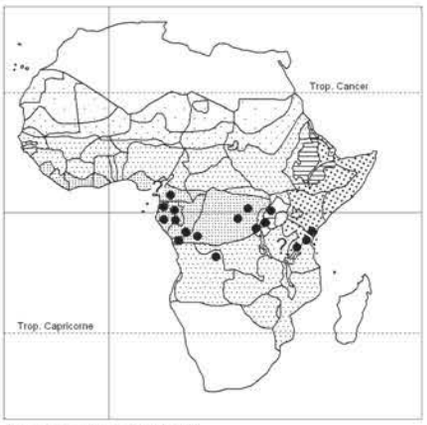
Lavigeria macrocarpa



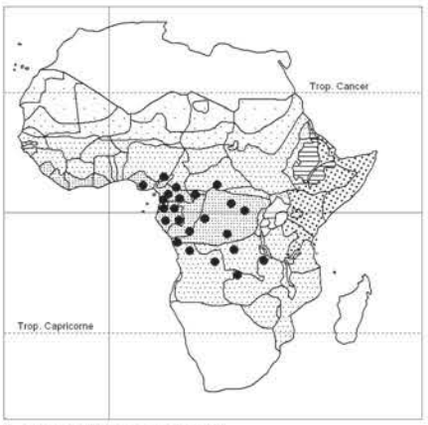
Leptaulus daphnoides



Leptaulus grandifolius



Leptaulus holstii



Leptaulus zenkeri

LEPTAULUS / *4*

syn.: *Acrocaelium* Baill.

In tropical Africa and Madagascar (2-3 endemic species).

Leptaulus daphnoides Benth., excl. var. *macrophylla* Oliv. *(= L. grandifolius).* – Icon.: Hook. Ic. Plant., Ser. 4, 4 (= 24): pl. 2339, 1894; Aubréville, Fl. Forest. Côte d'Ivoire 1: pl. 28, figs 7-11, 1959; Fl. Trop. E. Afr., Icacin.: 3, 1968; Adam, Fl. descr. Monts Nimba 2: 757, 1971; Fl. Gabon 20: 63, 1973 (details); Berhaut, Fl. ill. Sénégal 4: 132, 1975; Fl. Parc Natl. Taï (Côte d'Ivoire): 154, 2000 (colour photos.); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 341, 345, 2006.

syn.: *Icacina ledermannii* Engl.

Shrub or tree, glabrous, evergreen, 8-20 m tall; bole straight, sometimes fluted, c. 90 cm in girth; upper branches sometimes drooping; leaves glabrous, glossy, elliptic, 6-16 × 2-7 cm, alternate; flowers white, very fragrant, corolla tubular c. 1 cm long with very short lobes, calyx lobes not recurved, many ± sessile (extra) axillary cymes; drupe ovoid, c. 1,5 cm long, papillose (favourite food of monkeys in W Cameroon).

High deciduous forest, lowland rain-forest, riverine forest, on river banks, swamp forest; firm-ground forest; common in secondary jungle; 1-1515 m alt.

Bioko/Fernando Poo.

L. grandifolius Engl.

syn.: *L. daphnoides* Benth. var. *macrophylla* Oliv.

(Shrub or) small tree 3-6 m tall, glabrous, with branches and leaves horizontally spreading; leaves large, oblong-elliptic, 14–28 × 6-10 cm; flowers white-yellowish, fragrant, corolla c. 1,5 cm long, tubular, calyx lobes recurved, many in extra-axillary cymes; drupe oblong-ovoid, c. 3 cm long, glabrous.

Primary forest; c. 250 m alt.

L. holstii (Engl.) Engl. – Icon.: Beentje, Kenya trees, shrubs …: 346, 1994; Fl. Trop. E. Afr., Icacin.: 3, 1968 (partial).

bas.: *Alsodeiopsis holstii* Engl.

syn.: *A. oddonii* De Wild.; *Leptaulus oddonii* (De Wild.) Engl.

Shrub or small tree 1-3-7 m tall; young branches glabrous to puberulous; leaves elliptic-oblong 6-17 × 2-6,5 cm, with a very characteristic acumen rounded at apex, glabrous, papery, ± waxy above; flowers white-yellowish green, corolla tubular, 1,5-3,5 mm long, with very small lobes, many in subsessile axillary cymes; drupe ovoid, 1-1,5 cm long, smooth, shining red.

Evergreen rain-forest, especially ravines; forest gallery; 250-1950 m alt.

L. zenkeri Engl.; Lobreau-Callen & Villiers in Adansonia, Sér. 2, 11: 135-139, 1971. – Icon.: E. J. Mendes in Fl. Zambes. 2/1: 344, 1963; Fl. Gabon 20: 63, 1973.

syn.: Enum. 2: 158, 1992.

Evergreen much-branched shrub or small tree 0,7-5 m tall; bark pale grey-brown; branchlets glabrous to puberulous; leaves oblong-elliptic, 6-12 × 3,5-5 cm, long-acuminate, acumen subspathulate; flowers white-yellow fragrant, 1 cm long, corolla tubular, lobes c. 2,5 mm long, few (1-6) in extra axillary clusters; drupe ovoid, 0,8-1,5 cm long, red.

Evergreen rain-forest on dry land; muteshi (forest-relics) forest, seasonally flooded evergreen gallery forest fringing river; island in river; in understorey; 50-1515 m alt.

Comprises 2 vars. (var. **longipedicellata** Villiers with clusters of many pedicellate flowers; Gabon, Lastoursville).

SYNONYMS:

Leptaulus congolanus (Baill.) Lobreau-Callen & Villiers = **Leptaulus zenkeri**

daphnoides Benth. var. *macrophylla* Oliv. = **L. grandifolius**

gossweileri Cavaco = **L. holstii**

oddonii (De Wild.) Engl. = **L. holstii**

(NEOSTACHYANTHUS) – See **STACHYANTHUS**

POLYCEPHALIUM / *2*

Tropical African genus.

Polycephalium capitatum (Baill.) Keay – Icon.: Adam, Fl. descr. Monts Nimba 2: 758, 1971 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 349, 2006 (partial).

syn.: *Synclisia scabrida* sensu A. Chev., Explor. Bot. Afr. Occ. Franç. 1: 17, 1920, p.p., non Miers *(= Menispermaceae)* and *S. ferruginea* sensu A. Chev., Fl. Viv. A.O. F. 1: 100, 1938, p.p.; non (Diels) Hutch. & Dalziel *[= Albertisia ferruginea* (Diels) Forman, *Menispermaceae],* quoad specim. Chevalier 20989, 21157.

Small dioecious liane 10 m tall with brown-pilose indumentum throughout; leaves variable in shape, often 3-lobed, to 20 cm long, 10 cm broad, 3-nerved at base; flowers green, campanulate, male or female, in heads, calyx tubular, 3-lobed; fruits densely clustered, covered by the enlarged persistent calyx, to 2,5 cm long, orange.

Forest, in understorey; secondary forest and jungle; up to 500-700 m alt.

P. lobatum (Pierre) Pierre ex Engl. – Icon.: Sleumer in Engler & Prantl, Nat. Pflanzenfam. ed. 2, 20b: 386, 1942, sub nom. *P. poggei* (from Bot. Jahrb. Syst. 24: pl. 7, 1898); Fl. Gabon 20: 99, 1973.

bas.: *Chlamydocarya lobata* Pierre

syn.: *Polycephalium poggei* Engl.; *P. integrum* De Wild. & Th. Durand; *P. mildbraedii* Engl., nom. nud.

Dioecious liane with longitudinally striate stem to 10 m long; all parts covered with erect red hairs; leaves extremely variable in shape and size, often 3-lobed, palmately nerved, 6-17 × 8-22 cm; male flowers in panicles of pendunculate heads, female ones in solitary axillary heads, calyx tubular, 3-lobed; fruits forming a hairy stellate ball, enveloped by the enlarged persistent calyx, 4 cm long.

Half-deciduous forest, secondary forests, forest edges, fallow land; in wet situations with *Aframomum laurentii, Selaginella* (Angola); 850-1000 m alt. (Cameroon).

Also in W. tropical Africa?

PYRENACANTHA / *17*

syn.: *Monocephalium* S. Moore

About 25 species in tropical and subtropical Africa and Madagascar, S & SE Asia (2 spp).

Drupe laterally compressed; flowers small, in lax (supra-) axillary spikes.

Several species are poorly known, i.e. undercollected, and more material is needed.

Our lack of knowledge, in particular: no male flowers (and inflorescence) in 2 species (= <12%), no female flowers in 2 species (= <12%), no fruit in 1 species (= < 6%); no ecology is recorded for 1 species (= <6%); 2 species (= <12%) are known only from the type.

BRETELER, F. J. (2008). A new name for Pyrenacantha cordicula and establishment of the identity of Chlamydocarya tessmannii and Pyrenacantha acuminata (Icacinaceae). *Syst. Geogr. Pl.* 78: 127-131.

LABAT, J.-N. & al. (2006). Révision synoptique du genre Pyrenacantha (Icacinaceae) à Madagascar. *Adansonia, Sér.* 3, 28: 389-404.

Pyrenacantha acuminata Engl. – Icon.: Fl. Gabon 20: 77, 1973; Adam, Fl. descr. Mts. Nimba 3: 1365, 1975; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 351, 2006 (partial); Engler, Pflanzenwelt Afr. 3/2: fig. 129, 1921 (sub nom. *C. tessmannii* = lectotype, and Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 20b: 387, 1942).

– Neotype: Zenker 1752.

syn.: *Chlamydocarya tenuis* Engl.; *C. tessmannii* Engl.; *Pyrenacantha vogeliana* sensu A. Chev., Explor. Bot. Afr. Occ. Franç. 1: 128, 1920, p.p., quoad specim. Chevalier 21156, non Baill.; *P.* sp. A sensu F.W. T. A., ed. 2; *P.* ? *undulata* Engl.

Slender dioecious liane with ± flattened stems, 3-15 m long, shortly pubescent, longitudinally striate; *leaves* narrowly elliptic-lanceolate, 5-13 × 2-4,5 cm, margins sometimes undulate, lower surface densely *appressed-pubescent* with a "combed" appearance, with prominent hydathodes; flowers green; drupe orange-pink, 1-3 cm long, with short beak.

Closed (drier) forests, flooded or seasonally flooded; forest with *Terminalia* 1-550 m alt.

Not in Angola *(= P. sylvestris).* – Specimen Leeuwenberg 2804! (not 2084) from Ivory Coast is perhaps a new species (fide Breteler 2008).

Resembling *P. lebrunii*, but indumentum of leaves different.

P. gabonica Breteler & Villiers, Adansonia, Sér. 3, 22: 201, 2000. – Icon.: o.c.: 203.

Liane, dioecious, golden hispid-velvety throughout; leaves papery, light green, obovoid-elliptic, c. 11-12 × c. 6-7 cm, base rounded, apex short-acuminate, hydathodes prominent, pubescent, pearshaped; male flowers in 3 cm long spikes, 4-merous; female flowers and fruit unknown.

Forest.

Close to *P. staudtii* but leaves densely pubescent above and hydathodes pubescent and prominent. Also near *P. sylvestris.*

Known only from the type collected in 1999.

P. glabrescens (Engl.) Engl. – Icon.: Adam, Fl. descr. Monts Nimba 2: 761, 1971; Fl. Gabon 20: 75, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 351, 2006 (partial).

bas.: *Chlamydocarya glabrescens* Engl.

syn.: *Pyrenacantha mangenotiana* J. Miège

Liane, dioecious, to 30 m long; stem ± glabrous, 8-10 cm Ø, slightly ridged; young branchlets and leaf petioles pubescent; leaves ± oblanceolate, 8-16 × 3,5-8 cm, glabrous above, sparsely pubescent to glabrous beneath, base ± rounded, apex shortly acuminate, hydathodes absent; flowers yellowish-green, male and female ones in 4-10 cm long spikes, 4-merous; drupe orange, 3-3,5 cm long, pubescent (hooked hairs), without beak.

Forest; secondary forest; forest edges-savanna; thickets; coastal in wet areas; 1-550 m alt.

P. grandiflora Baill. – Icon.: Hutchinson, Botanist S Africa: 311, fig. excl. B, 1946.

Liane or scrambling shrub, usually monoecious, 0,1-7 m tall; stems rugose with circular whitish lenticels; leaves ovate, 5-14 × 4-11 cm, subcircular, apex mucronulate, margin doubly dentate, with hydathodes, base cordate, basal nerves palmate; male flowers in up to 16 cm long supra-axillary spikes; females flowers (rarely bisexual) solitary near leaf-axil.

Bushland, dry woodland.

S. Africa (45-1700 m alt.).

P. grandifolia Engl.

Liane with yellowish-rusty pubescent stem, leaf petioles and inflorescence axes; leaves ± glabrous, oblong, large, 20-23 × 9-10 cm, base slightly auriculate, apex short-acuminate, without hydathodes, with *long* petiole (2-2,3 cm); inflorescence a spike 10 cm long; petals persistent around the drupe; drupe red, pubescent, *large,* 4 cm long; flowers unknown.

Ecology not recorded (forest?).

Resembling *P. glabrescens.*

Known only from the type (Zenker 3480) collected in 1907, now destroyed (B).

P. kaurabassana Baill. ("kamassana" sphalm.); L. Newton, Check-list Kenyan succ. pl.: 30, 2003.

syn.: *P. menyhartii* Schinz ("menyharthii").

Climbing or trailing dioecious plant with annual herbaceous stems to 3 mm long, all parts hispid; from a perennial subterranean subglobose tuber 15-30 cm Ø; leaves olive green, very variable in shape, 7-9 × 5-7 cm, subentire to deeply 3-5(-7)-lobed, basal nerves palmate, hydathodes present; flowers in spikes or erect shoots appearing before the subtending leaves; flowers yellowish green, 4-merous; male spikes dense, 3-4 cm long on 4-12 cm long slender, peduncles, female ones 1-1,5 cm long, subcapitate; fruits densely aggregated, yellow-orange, c. 2 cm long.

Bushland, dry woodland, among rocks, on rocky outcrops, coral, and termite mounds; *Anogeissus-Pterocarpus* and *Acacia* woodland, on grey sandy soil; rarely under *Brachystegia* or cashew, on the Kenyan coast; 1-1550 m alt.

S. Africa, Swaziland.

P. kirkii Baill.

Liane with hairy stem to 15 m long, 1,2 cm Ø at base, sometimes smaller and more slender; old stems glabrous, slightly furrowed; leaves papery, elliptic-rhombic, small, 3-7(-12) × 1-3,5(-6) cm, sometimes slightly lobed, glabrous and shining green above, greyish-green and pubescent beneath, base rounded, hydathodes absent; male flowers in 1,5-4,5 cm long supra-axillary spikes, female ones in 1 cm long spikes on sometimes leafless stems; drupes orange, 1,7 cm long, puberulous, in clusters.

Dense forests in ravines (Zaire); semi-deciduous forest, woodland.

Very close to *P. volubilis* Wight from India.

P. klaineana Pierre ex Exell & Mendonça – Icon.: Fl. Gabon 20: 73, 1973; Hawthorne & Jongkind, Woody pl. west Afric. forests: 341, 351, 2006.

Liane, dioecious reaching the tree tops, with an unpleasant smell; stem 15-20 m long, > 4 cm Ø; branches pubescent or glabrous; young twigs hollow; leaves large, papery, ovate, (6-)15-25 × (4-)10-16 cm, pubescent beneath or not (var. **congolana**), cordate at base, basal nerves palmate, hydathodes present; flowering racemes in fascicles on the old wood below the leaves and sometimes at base of stems, in understorey, male ones 5-12 cm long, flowers 3-merous; drupe c. 2,5 cm long, rugose, tomentellous.

Closed wet forest; forest regrowth; 200-500 m alt.

Comprises 2 vars. (var. **congolana** Boutique drying black, leaf nerves glabrous).

Perhaps in Ghana.

P. lebrunii Boutique.

Small dioecious liane with densely greenish-rusty pubescent stems, c. 1,5 cm Ø at base, weakly twisted and ridged; *leaves* ± elliptic, with *erect hairs,* 7,5-16 × 2,5-8 cm, with obovate hydathodes; male inflorescences lax, 3-10 cm long, in axillary clusters; female flowers in axillary spikes; flowers 4-merous, bright green; drupe 1-1,5 cm long, puberulous.

Forest associations; to 1300 m alt.

Not in Gabon *(= P. sylvestris).*

Resembling *P. acuminata* but indumentum of leaves different.

P. longirostrata Villiers – Icon.: Adansonia, Sér. 2, 12: 284, 1972; Fl. Gabon 20: 87, 1973.

syn.: *P.* sp. C sensu Keay in Fl. W. Trop. Afr., ed. 2, 1/2: 642, 1958.

Slender dioecious liane > 6 m long, with glabrous weakly twisted stem; young shoots pubescent; leaves elliptic, long-acuminate, drying blackish, 13-18 × 4,3-8 cm, glabrous above, ± pubescent beneath, hydathodes absent; male flowers and inflorescence unknown; female flowers in groups on 6-9 cm long peduncle; drupe 3-3,5 cm long, orange, long-beaked.

Forest; 200-400 m alt.

P. malvifolia Engl. ("malvaefolia"), incl. var. – Icon.: Thulin, Fl. Somal. 2: 121, pl. 3 A (colour photo., habit), 1999; L. Newton, Check-list Kenyan succ. pl.: inside front cover (photo.), 2003; Bugaret & Bugaret, Connaiss. succul. & xérophytes du Monde: 174, 2006; Plant Talk 36: 25, 2004 (photo.).

syn.: Enum. 2: 158, 1992; *P. globosa* Engl., nom. illegit. (Dec. 1893).

Liane with stems 2-15 m long or climbing shrub arising from an exposed or partially submerged whitish tuber, boulder-like, to 1,5 m Ø, 75 cm high, covered with a grey-buff ± papery epidermis; young shoots pubescent, green, soon becoming grey to buff; leaves ± reniform with 3-7(-8) irregular lobes, palmately veined, with hydathodes; flowers dioecious, rarely monoecious or bisexual, appearing on new shoots before or during early leaf; fruits yellow-orange, aggregated on short lateral branches.

Dry *Acacia-Commiphora* or semi-evergreen bushland and scrub, often on rocky soil, lava, limestone or granite; on the coast also in dry forest; 0-1560 m alt.

Variable in habit (shorter and less twining stems in N Somalia) and leaf hairiness (more densely hairy in Somalia); recognition of infraspecific taxa does not seem to be justified.

Bisexual flowers occasionally at base of male spikes.

SEIDELT, R. (2008). Pyrenacantha malvifolia – Riesenknollen aus Kenia. Kakteen & Andere Sukk. 59: 47-51 [many photos.].

P. puberula Boutique

Liane with stem to 3 cm Ø reaching the upper canopy, with puberulous to glabrescent branchlets; leaves elliptic to ovate, 5-20 × 2-9 cm, glabrous above, puberulous beneath with short erect hairs, with hydathodes; flowers 4-merous, greenish; male and female spikes in axillary groups or on leafless shoots, some flowers bisexual; drupe orange-red, scabrous, c. 1,5 cm long.

Forest with *Gilbertiodendron dewevrei;* seasonally inundated forest; swamp forest; secondary forest; riverbanks.

Similar to *P. sylvestris* but hairiness of leaves and type of inflorescence different.

P. scandens Planch. ex Harv. – Icon.: W. H. Harvey, Thesaurus capensis 1: pl. 23, 1859.

Liane, dioecious, 0,1-3 m long with densely setose young branches with retrorse bristles; bark rough, grey; leaf petiole very hairy, limb variable in shape, palmately veined, 5-10 × 2,5-6,5 cm, 3(-5)-lobed in lower part of branches, others ovate, sparsely hispid above, densely hispid beneath with patent straight hairs, without hydathodes; male spikes (supraaxillary) c. 5 cm long; female flowers in short sub-capitate pedunculate few-flowered spikes; drupe hispid, c. 1,8 cm long.

Forest.

Variable in shape and size of leaves.

S. Africa (15-1035 m alt.).

P. staudtii (Engl.) Engl. – Icon.: Engler, Bot. Jahrb. Syst. 24: pl. 8 figs. A-D, 1898 (sub nom. *Chlamydocarya staudtii);* Sleumer in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 20b: 389, 1942; Fl. Gabon 20: 81, 1973.

bas.: *Chlamydocarya staudtii* Engl.

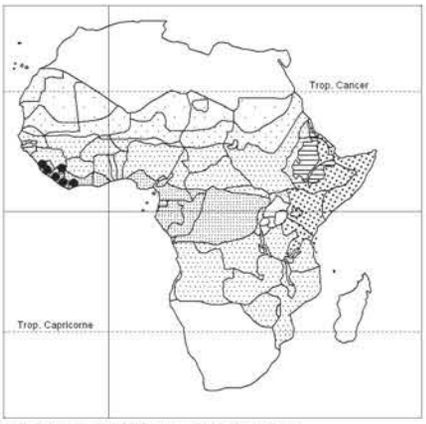
syn.: *Monocephalium batesii* S. Moore; *M. zenkeri* S. Moore; *Pyrenacantha zenkeri* (S. Moore) Exell; *P. batesii* (S. Moore) Exell; *P. ugandensis* Hutch. & Robyns – All of var. **staudtii**.

Scandent dioecious shrub or liane; stem to 6 m long, 5-10 cm Ø, pubescent to tomentose, sometimes glabrescent; branchlets rusty-yellowish tomentellous; leaves elliptic-lanceolate, 6-19 × 3-9 cm, densely puberulous beneath with curly hairs (without a "combed" appearance; cf. *P. acuminata)* with small hydathodes; male flowers in very densely-flowered spikes 3 cm long; female ones in congested shortly pedunculate globose heads; drupe obovoid, 1-1,4 cm long, tomentose.

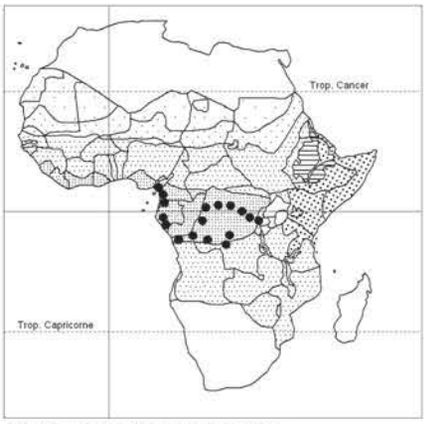
Lake shore forest; open bush; secondary jungle, forest regrowth; 30-900 m alt.

Comprises 2 vars.

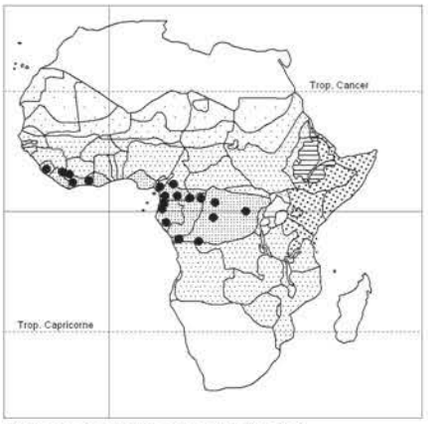
Also in NW Tanzania (T1)?



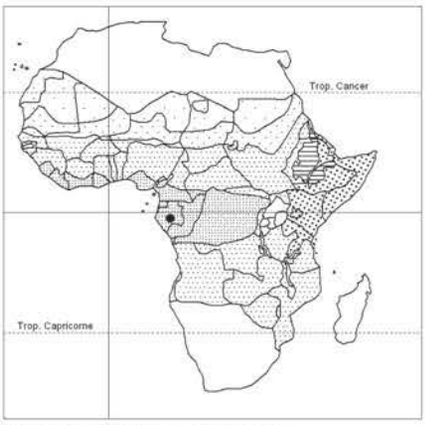
Polycephalium capitatum



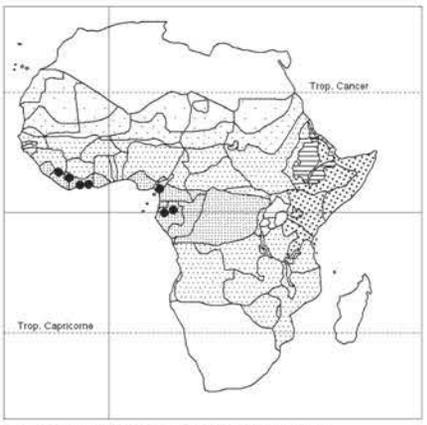
Polycephalium lobatum



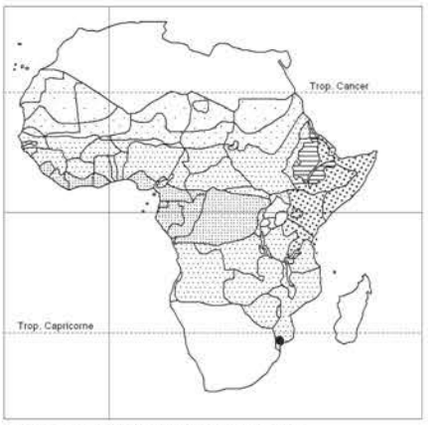
Pyrenacantha acuminata



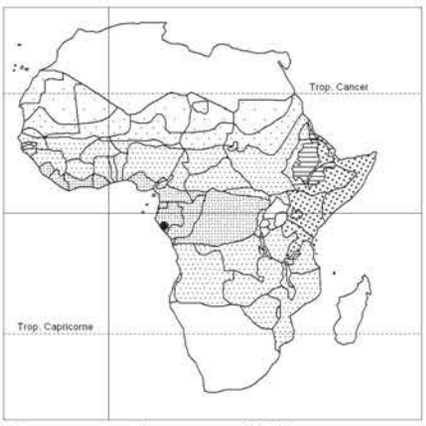
Pyrenacantha gabonica



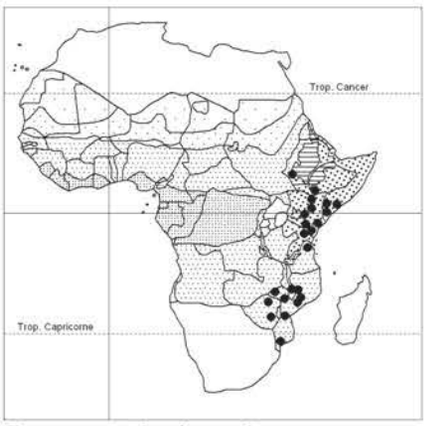
Pyrenacantha glabrescens



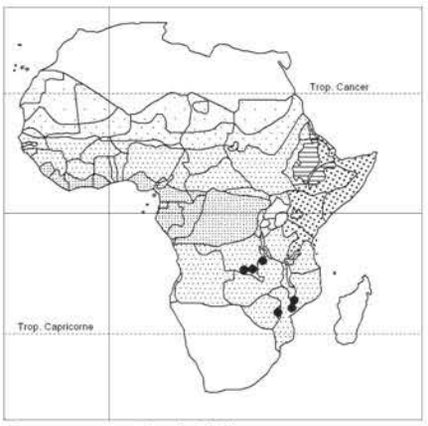
Pyrenacantha grandiflora



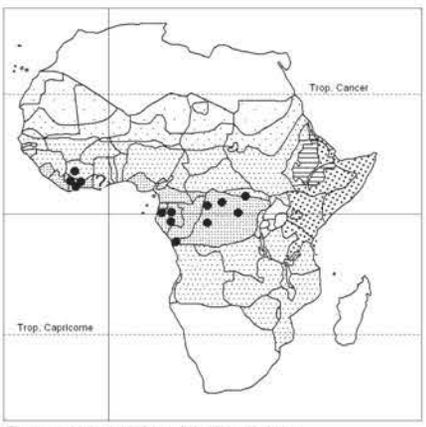
Pyrenacantha grandifolia



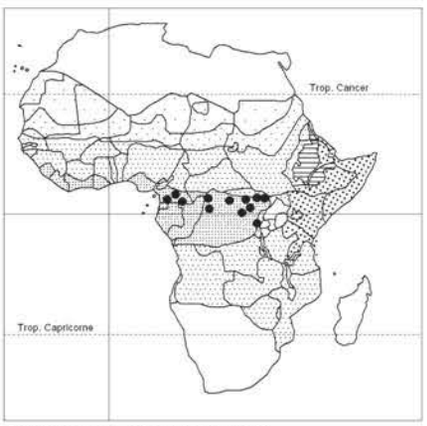
Pyrenacantha kaurabassana



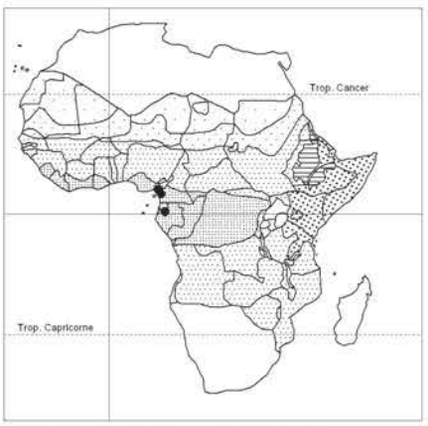
Pyrenacantha kirkii



Pyrenacantha klaineana



Pyrenacantha lebrunii



Pyrenacantha longirostrata

P. sylvestris S. Moore – Icon.: Fl. Gabon 20: 83, 1973.

syn.: *P. acuminata* sensu auctt., non Engl. (Angola); *P. lebrunii* sensu Sosef & al., Checklist pl. vasc. Gabon: 200, 2006, non Boutique

Slender dioecious liane; stem 6 > 20 m long, 1-2 cm Ø, densely rusty-red pubescent when young, later glabrescent; leaves rusty-red when young, later greyish silky, elliptic-ovate, 6-18 × 3-8 cm, glabrous grey-green above, densely pubescent beneath, with hydathodes; flowers in fasciculate or rarely solitary (supra-) axillary racemes; drupe orange-pink, rusty-red tomentose, c. 1,5 × 1,5 cm.

Forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa; Aningeria altissima-Chlorophora-Celtis* lowland rainforest; forest with *Celtis;* 900-1100 m alt.

Formerly confused with *P. acuminata* in Angola and in Gabon.

P. villiersii Breteler 2008 nom. nov., Syst. Geogr. Pl. 78: 130, 2008. – Icon.: ibid.: 130; Villiers in Adansonia, Sér. 2, 12: 287, 1972, sub nom. *P. cordata;* Fl. Gabon 20: 89, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 351, 2006 (partial).

syn: *P. cordata* Villiers 1972, nom. illegit. & superfl., non Thode 1924; *P. cordicula* Villiers 1973, substitute name and nom. illegit.

Liane, dioecious, to 2 m tall, felty-pubescent (soft to touch) throughout; leaves elliptic, 11,5-22 × 5-11 cm, base rounded, apex acuminate, nerves yellow below, hydathodes absent; male flowers known, in axillary fascicles of racemes 5-12 cm long; female ones in dense axillary glomerules; drupe known, green, felty 1,7 × 1,2 cm.

Wet evergreen forest; 100-760 m alt.

Not recollected in Ivory Coast since 1959. Seems very scarce throughout its range, and is rarely collected (fide I. Darbyshire in M. Cheek & al., Pl. Kupe, Cameroon: 160, 2004).

P. vogeliana Baill. – Icon.: Adam, Fl. descr. Monts Nimba 2: 760, 1971; Fl. Gabon 20: 77, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 351, 2006 (partial).

syn.: *P dinklagei* Engl.

Small slender dioecious liane; stem scabrid, glabrescent, reddish brown, longitudinally striate; leaves oblong-elliptic, 6-22 × 3-8 cm, glabrous and glossy above, sparsely strigose beneath, with hydathodes; flowers yellow, in solitary 8 cm long axillary spikes; drupes orange-red, clustered at apex of an enlarged peduncle to 10 cm long, ovoid, beaked, 1,5-2 cm long.

Riverine and freshwater swamp forests, semi-deciduous forests, river-banks; 1-900 m alt.

Disjunct species; but the gap seems to be partially explained by lack of material (fide Lucas in Fl. Trop. E. Afr., Icacin.: 15, 1968). A species widely and disparately dispersed.

IMPERFECTLY KNOWN TAXA:

Pyrenacantha undulata Engl. – Fl. W. Trop. Afr., ed. 2, 1: 642, 1958, and perhaps identical with *P.* sp. A, l. c., from Ghana, S Nigeria; a slender liane with small greenish flowers (cf. also Irvine, Woody pl. Ghana: 466, 1961). Possibly a synonym under *P. acuminata* (cf. Hawthorne & Jongkind, Woody pl. west. Afric. forests: 350, 2006).

P. sp. B sensu Fl. W. Trop. Afr., l. c.; from Sierra Leone.

P. sp. nov. aff. *grandifolia* Engl., sensu Cable & Cheek, Pl. Mt. Cameroon: 60, 1998.

P. sp. nov., sensu Cheek & al., Mapping pl. biodiversity Mt. Cameroon: 113, 1996 (cf. Enum. 4: 627, 1997).

P. sp. sensu Lucas in F.T.E.A., Icacin.: 15, 1968; from Uganda.

SYNONYMS:

Pyrenacantha acuminata sensu auctt., non Engl. = **Pyrenacantha sylvestris**

batesii (S. Moore) Exell = **P. staudtii** var. **staudtii**

brevipes Engl. = **Desmostachys**

canaliculata Pierre = **Pyrenacantha vogeliana**

cordata Villiers, non Thode = **P. villiersii**

cordicula Villiers = **P. villiersii**

dinklagei Engl. = **P. vogeliana**

globosa Engl., nom. illegit. = **P. malvifolia**

"kamassana" Baill. = **P. kaurabassana**

lebrunii sensu Sosef & al. = **P. sylvestris**

mangenotiana J. Miège = **P. glabrescens**

menyhartii Schinz = **P. kaurabassana**

ruspolii Engl. = **P. malvifolia**

sp. A sensu F.W.T.A. = **P. acuminata**

sp. B sensu Irvine 1961 = **Stachyanthus occidentalis**

sp. C sensu F.W.T.A., ed. 2 = **Pyrenacantha longirostrata**

ugandensis Hutch. & Robyns = **P. staudtii** var. **staudtii**

vitifolia Engl. = **P. kaurabassana**

vogeliana sensu A. Chev. p.p., non Baill. = **P. acuminata**

zenkeri (S. Moore) Exell = **P. staudtii** var. **staudtii**

RHAPHIOSTYLIS / *7*

Rhaphiostylis Planch. ex Benth.; syn.: *Rhaphiostyles* Benth. & Hook.; *Chelonocarya* Pierre

Tropical African genus.

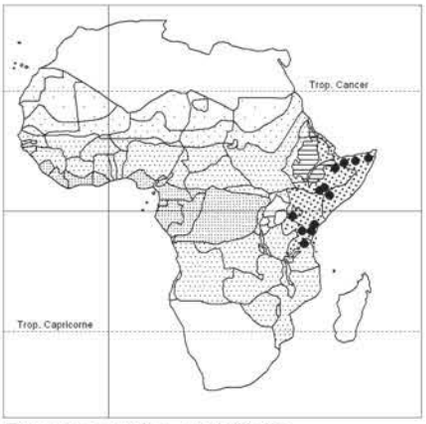
Some taxa insufficiently known. *R. parvifolia:* fruit unknown.

Rhaphiostylis beninensis (Hook. f. ex Planch.) Planch. ex Benth. – Icon.: Hook. Ic. Plant., N. S. 4 (= 8): pl. 778, 1848 (sub nom. *Apodytes beninensis);* Adam, Fl. descr. Mts Nimba 2: 763, 1971; Berhaut, Fl. ill. Sénégal 4: 136, 1975; Lucas in Fl. Trop. E. Afr. Icacin.: 7, 1968; Fl. Zambes. 2/1: 348, 1963; Fl. Ethiop. 3: 350, 1989; Akoegninou & al., Fl. analyt. Bénin: 593, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 347, 2006.

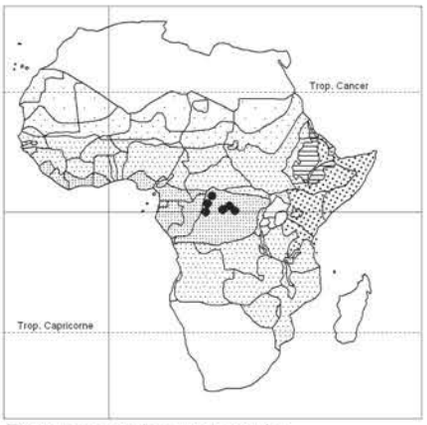
bas.: *Apodytes beninensis* Hook. f. ex Planch., s. str., excl. var. β Oliver (F.T.A. 1: 355, 1868).

syn.: *Rhaphiostylis jollyana* Pierre ms.; *R. stuhlmannii* Engl.; *R. scandens* Engl.; *R. heudelotii* Planch. ex Miers; *R. latifolia* Pierre; *Ptychopetalum cuspidatum* R. E. Fries *(Olacaceae).*

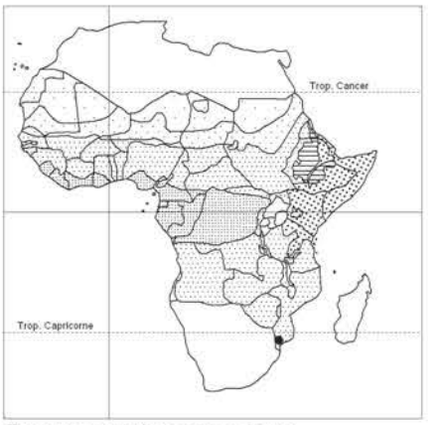
Evergreen glabrous ± straggling shrub or liane 10-15 m tall, rarely a tree 5-8 m; bark smooth, dark grey; young branchlets reddish-brown, becoming grey; leaves alternate, elliptic-lanceolate; flowers white, fragrant, numerous in ± axillary fascicles; drupe red, reniform, glossy black and reticulately wrinkled or drying. Plant drying black.



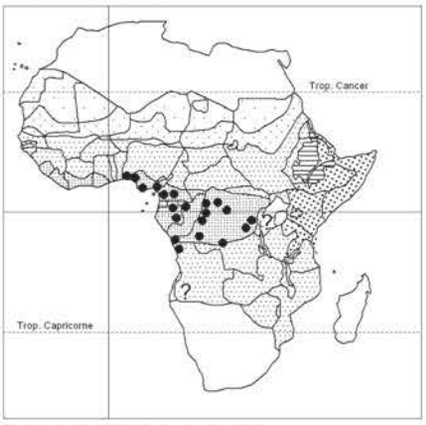
Pyrenacantha malvifolia



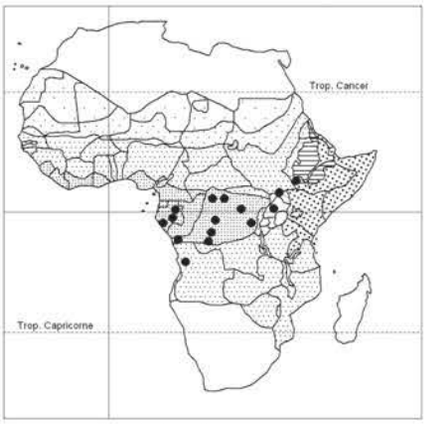
Pyrenacantha puberula



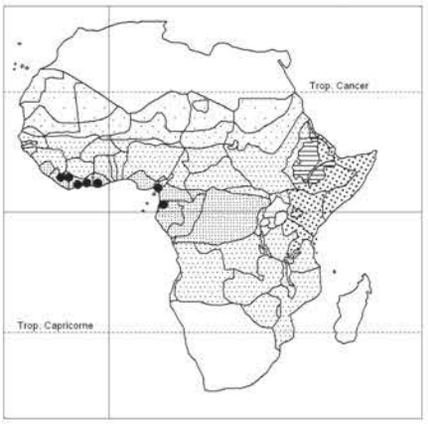
Pyrenacantha scandens



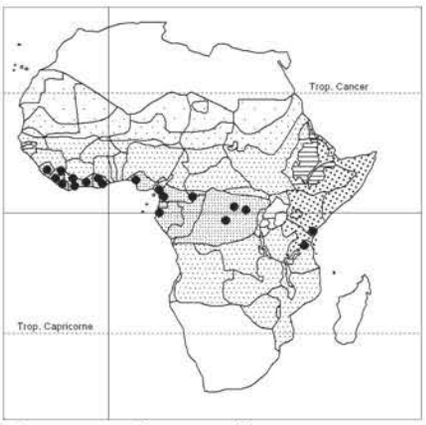
Pyrenacantha staudtii



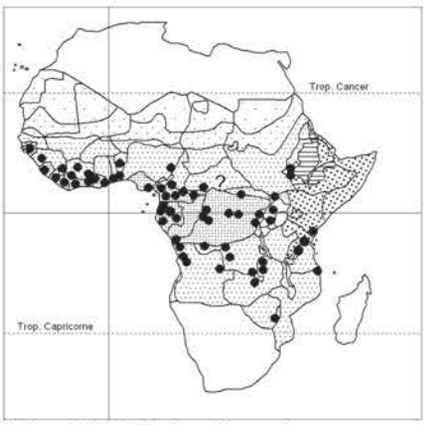
Pyrenacantha sylvestris



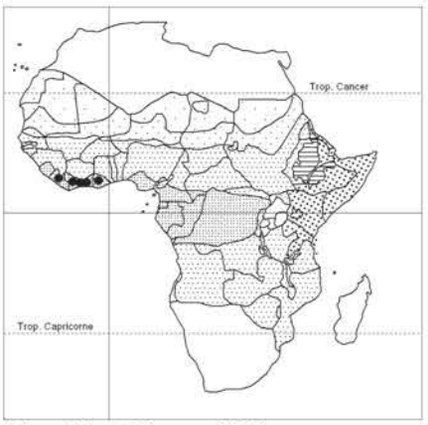
Pyrenacantha villiersii



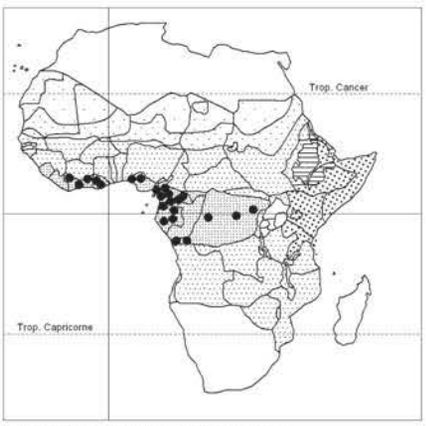
Pyrenacantha vogeliana



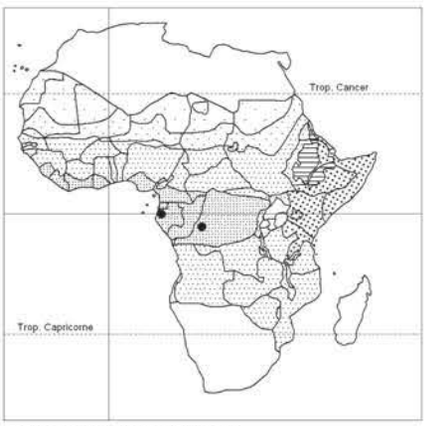
Rhaphiostylis beninensis



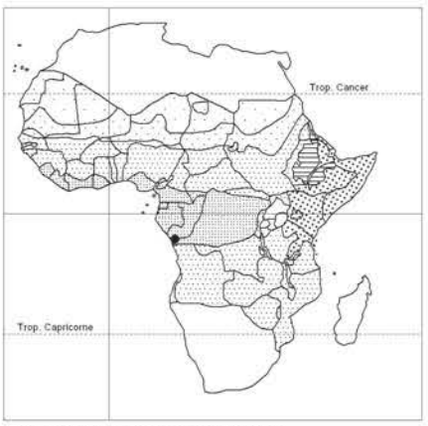
Rhaphiostylis cordifolia



Rhaphiostylis ferruginea



Rhaphiostylis fusca



Rhaphiostylis parvifolia

Rain-forest with *Diospyros abyssinica, Garcinia buchananii, Uvariopsis congoensis, Turraea floribunda, Manilkara* etc.; rain-forest with *Albizia, Macaranga, Croton, Ocotea,* forest edge; evergreen bushland and thicket, semi-deciduous thicket, especially on sandy loam; riverine forest, gallery woods in ravines; edges of wet forest; forest regrowth; deciduous or savanna forest, (coastal) savanna; *Aningeria altissima-Chlorophora-Celtis* rain-forest; firm-ground and swamp forests; forest patches; 20-1790 m alt.

Very variable in size and shape of leaves (5-15 × 2-8 cm) and in number of flowers per inflorescence.

In Kenya: collected once in Shimba Hills (K7).

R. cordifolia Hutch. & Dalziel – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 341, 347, 2006.

Scandent shrub climbing over trees; branchlets and leaves densely spreading white long-hairy; leaves distinctly ovate-elliptic, 5-12 × 2-6 cm, ± sessile, cordate at base and obtusely long-acuminate; flowers cream in axillary clusters; fruit glabrous, 2-lobed, to 1,5 cm, red.

High forest, in undergrowth.

R. ferruginea Engl. excl. var. *parvifolia* S. Moore *(= R. parvifolia).* – Icon.: Bot. Jahrb. Syst. 43: 182, 1909; Engler & Drude, Veg. Erde 9/1, 2: 726, 1910, and 9/3, 2: 257, 1921; Fl. Gabon 20: 39, 1973 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 341, 347, 2006.

syn.: *Apodytes beninensis* Hook. f. ex Planch. var. β Oliv. in F.T.A. 1: 356, 1868; *Icacina sarmentosa* A. Chev., nom. – Both of var. **ferruginea**.

Scandent shrub or liane to 35 m long; branchlets, pedicels and calyces brownish-tomentellous; leaves on both surfaces puberulous, ± oblong, 5-15 × 2-6 cm, cuneate at base; flowers white, few in axillary fascicles; ovary densely pilose; drupe coarsely verrucose.

Closed forest, rain-forest, forest gallery; 30-620 m alt.

Variable in size and pubescence of leaves and in pubescence of petals.

Bioko/Fernando Poo.

Comprises 2 vars.

Resembling *R. beninensis,* but rusty-pubescent, and with smaller leaves and few-flowered inflorescences.

R. fusca (Pierre) Pierre, excl. var. *villosa* Pellegr. *(= R. ferruginea* var. *villosa).* – Icon.: Fl. Gabon 20: 39, 1973.

bas.: *Chelonocarya fusca* Pierre

Liane; branchlets puberulous when young, old stems glabrous; leaves glabrous, upper surface blackish, chestnut brown beneath, long-elliptic, 6-11 × 1,5-4 cm; flowers white, numerous in axillary fascicles; ovary pubescent; drupe glabrous, warty.

Forests.

Comprises 2 vars.: – var. **fusca;** – var. **vanderystii** Boutique

R. parvifolia (S. Moore) Exell

bas.: *R. ferruginea* Engl. var. *parvifolia* S. Moore

Liane to >30 m long; trunk cable-like, "as thick as a man's arm"; young branchlets, and leaf petioles tawny tomentellous; leaves ± elliptic, 2,5-5,5 × 1,5-2,8 cm, stellate-puberulous; flowers white, all parts tawny tomentellous; fruit unknown.

Mixed woods, near river.

Near *R. ferruginea* but leaves smaller and petals hairy outside.

R. poggei Engl.

Scandent glabrous shrub; leaves oblong, glabrous, 8 × 3-4 cm, long-acuminate; flowers numerous in axillary fascicles; ovary hirsute but glabrous at base.

Forest?

Very few collections known.

R. preussii Engl. – Icon.: Fl. Gabon 20: 35, 1973 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 347, 2006.

Liane or scandent shrub 10 m tall; stems and leaves glabrous; leaves ovate-elliptic, 7,5-15 × 2-6 cm, long-acuminate, *not drying black;* flowers white, numerous in axillary fascicles; ovary densely pilose; drupe reticulate.

Wetter forests; 20-800 m alt.

Resembling *R. beninensis* but leaf acumen longer and plant not usually drying black. Difficult to separate the two species when sterile.

* * *

INSUFFICIENTLY KNOWN TAXA:

Rhaphiostylis elegans Engl.

Shrub with thin branchlets 0,5-1 mm Ø and nearly sessile leaves 5-8 × 3-5 cm, long-acuminate (2 cm); flowers unknown; drupe ± kidney-shaped.

In Cameroon: Bipinde (type only: Zenker 3615, Jan. 1908; B delet.).

Not mapped.

R. ovatifolia Engl. ex Sleumer.

syn.: *R. ovatifolia* Engl., nom.

Liane with glabrous stem, branches and leaves; leaves ovate-elliptic, 7-11 × 3,5-5,5 cm; 5-7 white flowers in axillary fascicles, ovary glabrous at base. Said to be near *R. preussii.*

In Cameroon: Elabi near Kribi (type only: Ledermann 648, Sept. 1908; B delet.).

Not mapped.

R. subsessilifolia Engl.

Shrub with thin green branchlets 1 mm Ø and ± sessile ovate leaves 6-9 × 4-6 cm, long-acuminate (c. 1 cm); flowers unknown; fruit kidney-shaped.

In Cameroon: Batanga (type only: Dinklage 1028, Dec. 1890; B delet.).

Not mapped.

SYNONYMS:

Rhaphiostylis beninensis Hook. f. ex Planch. var. β Oliv. = **Rhaphiostylis ferruginea** var. **ferruginea**

ferruginea Engl. var. *parvifolia* S. Moore = **R. parvifolia**

fusca (Pierre) Pierre var. *villosa* Pellegr. = **R. ferruginea** var.

heudelotii Planch. ex Miers = **R. beninensis**

jollyana Pierre, ms. = **R. beninensis**

latifolia Pierre = **R. beninensis**

scandens Engl. = **R. beninensis**

stuhlmannii Engl. = **R. beninensis**

zenkeri Engl. = **R. beninensis**

STACHYANTHUS / *5*

syn.: *Neostachyanthus* Exell & Mendonça

In tropical Africa.

Some species poorly known: for 1 species the male flower known only in bud; for 3 species the female flowers are lacking; for 1 species the fruit is unknown, no ecology recorded and it is known only from the type.

Stachyanthus cuneatus Engl. ex Sleumer

syn.: *S. cuneatus* Engl., nom.

Dioecious liane; stems c. 1 cm Ø, glabrous, with brown bark, slightly hirsute when young; leaves oblong 10-14 × 4,5-5,5 cm, glabrous above, appressed-pubescent beneath, long-petiolate (1,5-2 cm); male inflorescence a lax spike on old wood; female flower and fruit unknown.

Ecology unknown; 200-300 m alt.

Known only from the type collected in 1909 (Ledermann 6437, B delet.).

S. devredii Boutique

Liane, dioecious, 3 m long; young branchlets glabrous but often with a tuft of hairs above the leaf axil; leaves elliptic-obovate 6,5-16 × 3-6 cm, glabrous beneath, petiole 8-13 mm long, tip long-acuminate; male flowers only known in bud; female flowers unknown, but infrutescence 5-8 cm long; drupe brownish-orange, 2-2,7 cm long, 1,3-1,5 cm wide, coarsely reticulate (fig. in Bull. Jard. Bot. Etat, Brux. 29: 431, 1959; Fl. Congo Belge 9: 259, 1960).

Forest with *Brachystegia,* semi-deciduous forest, plateau forest, disturbed forest.

Resembling *S. occidentalis* but leaf veins not yellowish orange in dry state, and fruit larger.

S. donisii (Boutique) Boutique

Liane, dioecious, with cable-like stem c. 0,8-2 cm Ø; young branchlets sparsely puberulous to glabrous; leaves ovate-elliptic, 7-16 × 3-7,5 cm, ± glabrous beneath, petiole 4-15 mm long, ± knee-bent; male flowers in 5-7 cm long spikes; female flowers unknown but infrutescence 5-7 cm long; drupe deep blue or yellow, 1,7 cm long, 1 cm wide, slightly reticulate (fig. in Fl. Congo Belge l.c.).

Swampy rain-forest, forest gallery, dry ravine, disturbed forest; clearing in dry semi-deciduous forest; c. 350-570 m alt.

Similar to *S. zenkeri* but fruit smaller and less reticulate.

S. occidentalis (Keay & J. Miège) Boutique – Icon.: Hawthorne & Jongkind, Woody pl. west Afric. forests: 341, 351, 2006.

syn.: *Desmostachys tenuifolius* sensu A. Chev., Explor. Bot.: 126, 1920, non Oliv.; *Pyrenacantha* sp. B sensu Irvine, Woody Pl. Ghana: 466, 1961 (Vigne 1620).

Slender shrubby liane with very thin stems 5(-12) mm Ø, dioecious; branchlets and petioles sparingly pubescent or glabrous; leaves elliptic-ovate 9-20 × 4-8,5 cm, midrib and main nerves yellow or orange beneath; flowers green in long racemes (28 cm), in fascicles from the stem below the leaves and solitary and slightly supra-axillary among the leaves; drupe orange, c. 1 cm Ø.

Semi-deciduous forests, in understorey, very common in places; roadsides; farm regrowth; sometimes a weed.

STACHYANTHUS

S. zenkeri Engl. – Icon.: Engler in Bot. Jahrb. Syst. 24: pl. 8 figs. E-K, 1898.

syn.: see under *S. nigeriensis* below; *S. obovatus* S. Moore

Slender liane, dioecious 7-10 m tall; stems c. 4,5 cm Ø; branchlets and petioles at first rather long bristly-pilose; leaves obovate-oblong 10-23 × 4-10 cm, with appressed bristly hairs to glabrescent beneath; flowers greenish-yellow in pendulous cauliflorus spikes, male spikes to 25 cm long in fascicles below the leaves; drupe large (2,2-3 cm long, c. 1,8 cm wide).

Forest, in understorey; swampy and riverine forests; 1-600 m alt.

Variable in hairiness, plants from Cameroon more hirsute than others.

Bioko/Fernando Poo.

* * *

Stachyanthus nigeriensis S. Moore

syn.: *Neostachyanthus nigeriensis* (S. Moore) Exell & Mendonça

The type from Oban, Nigeria (Talbot s. n.), is a mixture of a single inflorescence, probably of *Stachyanthus zenkeri,* and a leafy shoot of *Calycobolus heudelotii* (Bak. & Oliv.) Heine [syn.: *Prevostea heudelotii* (Bak. & Oliv.) Hall. f.], *Convolvulaceae* (fide Fl. W. Trop. Afr., ed. 2, 1/2: 643, 1958).

SYNONYM:

Stachyanthus obovatus S. Moore = **Stachyanthus zenkeri**

For synonyms under *Neostachyanthus*, see Enum. 2: 158, 1992.

SALVADORACEAE / *3* g. / *5* spp.

AZIMA / *1*

syn.: *Monetia* L'Hérit.

Four species from Africa through to the Philippines.

Azima tetracantha Lam., incl. var. *laxior* C. H. Wright – Icon.: Robyns in Fl. Congo Belge 9: 235, 1960; Fl. South. Afr. 26: 131, 1963; Fl. Zambes. 7(1): 376, 1983; Thulin, Fl. Somal. 2: 123, 1999; Schatz, Fl. génér. arbres Madag.: 380, 2001; E. Schmidt & al., Trees & shrubs Mpumalanga…, ed. 2: 537, 2007.

syn.: *Monetia barlerioides* L'Hérit.; *Azima spinosissima* Engl.; *A. angustifolia* DC.

Evergreen spiny dioecious shrub, sometimes scrambling, much branched, tangled, 0,5-3 m tall; spines axillary, paired, to 4 cm long, pale green, glabrous (to ± pubescent or hairy); branches ± angled, often arching or scandent; leaves yellow-green; flowers small, greenish, in small axillary clusters; berries white, similar to those of mistletoe, 6-8 mm Ø.

Mangrove edges, sea-dunes, coastal bushland, not far from high-water mark; in scrub on eroded ground, and particularly on saline or alkaline soils near lakes and seasonal rivers; rocky bushy maritime hilly places; dry thinly bushy places; inland often also on swamp edges; riverine woodland; 0-1740 m alt.

AZIMA TETRACANTHA

Varies considerably over its wide range, but distinctive: length of inflorescences, simple branched, i.e. flowers may be solitary, in pairs, glomerules or cymes; also variable in shape of leaves; male plants may be ± spineless. A variety *pubescens* H. Perrier described from Madagascar (descr. gall. in Fl. Madag. 118: 4, 1946).

Namibia, S. Africa, Swaziland; Madagascar, Aldabra, Comoro Isl., Mascarenes (Mauritius, recently introduced), Arabia (Oman, Yemen fide Thulin & al. in I. Friis & O. Ryding, eds., Biodiversity Res. Horn of Africa Reg., Biol. Skr. 54: 150, 2001); India, Sri Lanka, to the Philippines.

Spineless shoots are easily confused with *Salvadora persica* (sometimes mixed on herbarium sheets); if fruits are present, the larger ones of *Azima* are recognizable.

SYNONYM:

Azima pubescens Suess. = **Carissa spinarum** L. (syn.: *C. edulis, Apocynaceae)*

DOBERA / *2*

syn.: *Tomex* Forssk.; *Schizocalyx* Hochst.; *Platymitium* Warb.

Two species in Africa, 1 extending to India.

Dobera glabra (Forssk.) Poir., excl. var. *macalusoi* (Mattei) Fiori and var. *subcoriacea* Engl. & Gilg – Icon.: Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 20b: 237, 1942; Fl. Ethiop. 3: 354 (fig. 110.1.2), 1989; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 290, 2001; Audru & al., Pl. Vasc. Rép. Djibouti, Fl. ill. 3(2): 460, 1994.

bas.: *Tomex glabra* Forssk.

syn.: *Dobera coriacea* (Hochst.) A. DC.; *Schizocaylx coriaceus* Hochst.; *Salvadora glabra* (Forssk.) Baillon; *Dobera macalusoi* sensu Fiori in Chiov. (1926), non Mattei

Evergreen unarmed much-branched shrub or tree, 1,8-7,5 m tall; bole c. 0,6 mm Ø; crown spreading; bark green to dark grey, fissured into rectangular patches, "like elephant skin"; branchlets green, finely pubescent; leaves opposite, coriaceous, olive-green; flowers bisexual, white; petals free (3,5-)4,5-5 mm long, filaments 1,6-2 mm long, ovule solitary; drupe light brown, rough, c. 2 cm long, edible (P. M. Maundy, Traditional Food Plants of Kenya: 122, 1999).

Open grassy thorny scrub with *Acacia* spp. and *Balanites; Acacia* scrub on alluvium; sandy grey alluvial soil with *Adenium* and *Moringa;* drainage lines in *Acacia mellifera* shrub "steppe"; in dry stony soil at edge of dry river-bed; edges of grassland; dry bush; *Acacia* savanna; *Acacia* open woodland with grassy clearings; often on rocky hillsides; bushland and woodland often near luggas; often remaining in cultivated places and being the main emergent tree; 1-1250 m alt.

Very variable in shape of leaves, also in size of flowers (smaller in Arabia, India).

S Arabia (Yemen, Saudi Arabia); India (Bombay, rare).

D. loranthifolia (Warb.) Harms – Icon.: Gomes e Sousa, Dendrol. Moçamb. 2: pl. 200, 1967; Fl. Zambes. 7(1): 378, 1983; Thulin, Fl. Somal. 2: 124, 1999; Hook. Ic. Pl. 31: pl. 3017, 1915 (sub nom. *D. allenii).*

bas.: *Platymitium loranthifolium* Warb.

DOBERA LORANTHIFOLIA

syn.: *Dobera macalusoi* Mattei ("the identity of the 3 syntypes not quite certain", fide Thulin, Fl. Somal. 2: 126, 1999); *D. glabra* (Forssk.) Poir. var. *macalusoi* (Mattei) Fiori and var. *subcoriacea* Engl. & Gilg; *D. allenii* N. E. Br.; *D. roxburghii* sensu Bak. in Fl. Trop. Afr. 4(1): 21-22, 1902, p.p., quoad specim. Wakefield, non Planch.

Evergreen unarmed much-branched tree, 3-15 m; crown bushy, rounded or conical; trunk thick "almost like a baobab", c. 50 cm Ø; bark black to pale grey(-brown), flaky or reticulately fissured or smooth; leaves leathery, glabrous, glaucous, sometimes glandular (specimens Kenya/Somali border); flowers (greenish) white; petals 3-3,5 mm long, filaments c. 1 mm long, ovules 2 (cf. *D. glabra);* drupe yellow, 1-1,5 cm long, 1-seeded, edible.

Wooded grassland, *Acacia* scrub, coastal dry evergreen forest; common in *Sideroxylon diospyroides-Diospyros-Lamprothamnus-Newtonia hildebrandtii* forest island clumps on grey sandy loam; dominant tree in open grass savanna country, on black cotton soil; savanna, especially near valley floor, frequent; tidal flats, margins of mangrove formation; local with *Julbernardia magnistipulata, Afzelia quanzensis, Commiphora, Diospyros, Sideroxylon* on margin of *Avicennia marina* mangrove on yellow clay loam; fairly common in relics of original vegetation in coastal old cultivations now abandoned and regenerating, on kaolin-based area of hills (1956); near water but not swampy area; open scrub on reddish sands; 0-810 m alt.

Variable in aspect of bark and leaves (atypical specimens in N Kenya), and in shape and hairiness of leaves.

* * *

Dobera roxburghii Planch. figuring in (J. G. Baker) Fl. Trop. Afr. 4(1): 21-22, 1902, excl. specim. Wakefield (Mombasa = *D. loranthifolia),* was studied by Verdcourt (Kew Bull. 19: 155, 1964) on a copy of the drawing (of *Blackburnia monadelpha*, N° 171, Kew Bull. 11: 314, 1956) present in the Calcutta herbarium. This drawing "does not depict *Dobera glabra* although what it does represent I have not yet been able to determine".

SALVADORA / *2*

Five species: tropical Africa, Madagascar through to Asia.

We here adopt Verdcourt's concept (Kew Bull. 19: 147-154, 1964), based on material from the entire area of distribution.

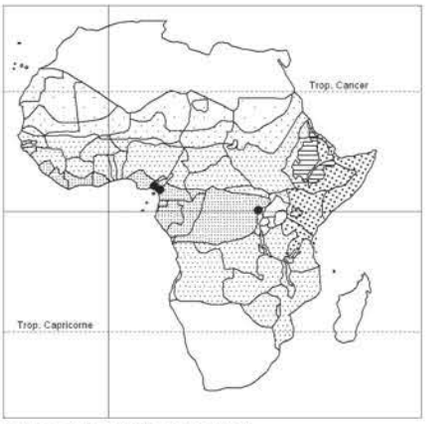
Salvadora australis Schweick. – Icon.: R. Grant & V. Thomas, Sappi Tree Spotting Lowveld: 180-181, 2001; E. Schmidt & al., Trees & shrubs Mpumalanga…, ed. 2: 539, 2007.

syn.: *S. augustifolia* Turrill var. *australis* (Schweick.). I. Verd.

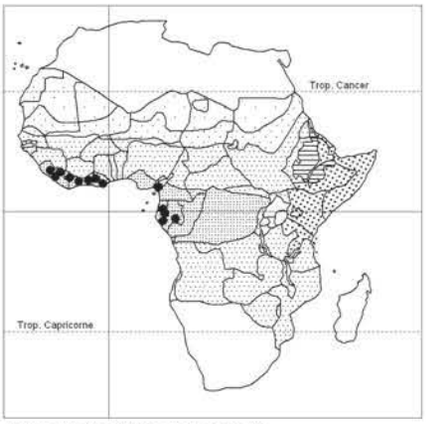
Tree or (bushy) shrub, unarmed, often much-branched, 3-7 m tall, with drooping branches; sometimes emitting an unpleasant odour; bark greyish brown, scaling and rough near base becoming flaking in rectangular sections with age; young branchlets terete, grey-pubescent; leaves thick, linear-oblong, grey-puberulous, petiole short and indistinct; flowers bisexual, greenish white, campanulate, petals 4, joined at base, persisting (not conspicuous) on drupe; *conspicuous* glands alternating with stamens (not so in *S. persica).*

In hot areas, along river banks, on floodplains; brackish and sandy flats or on limestone near rivers; often on termite mounds; 25-1000 m alt.

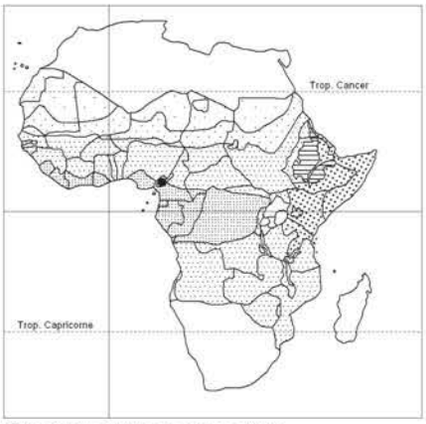
NE S. Africa, Swaziland.



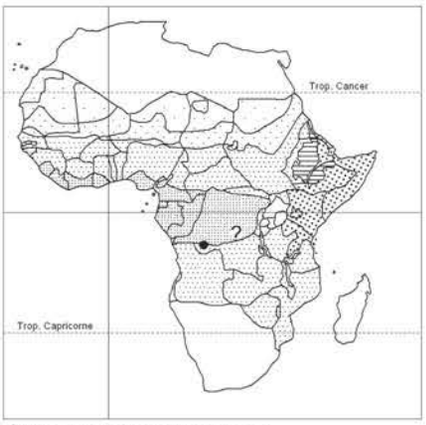
Rhaphiostylis poggei



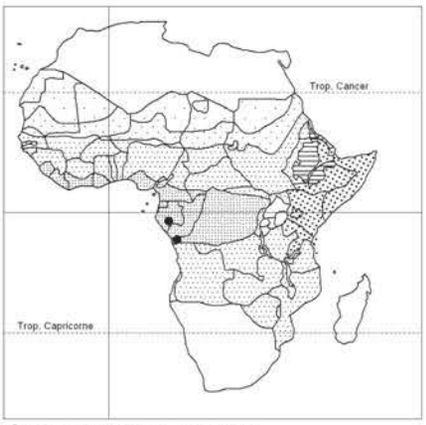
Rhaphiostylis preussii



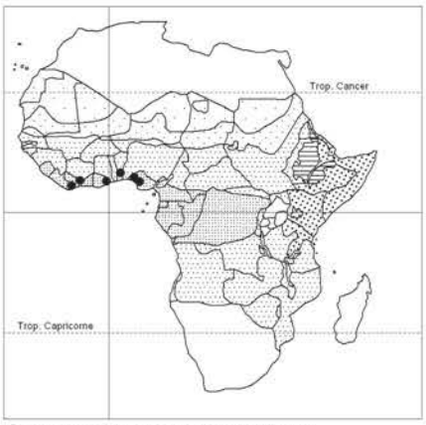
Stachyanthus cuneatus



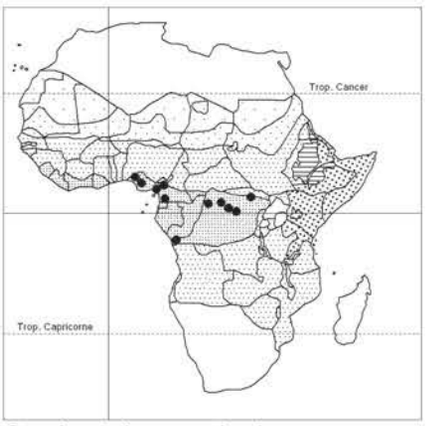
Stachyanthus devredii



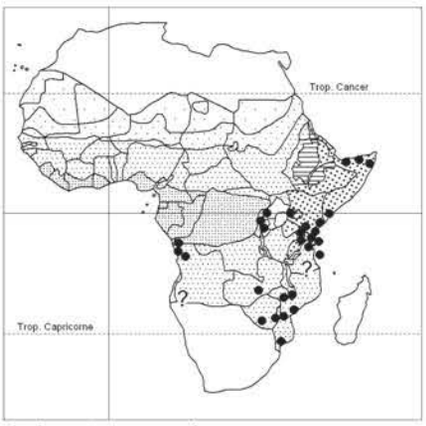
Stachyanthus donisii



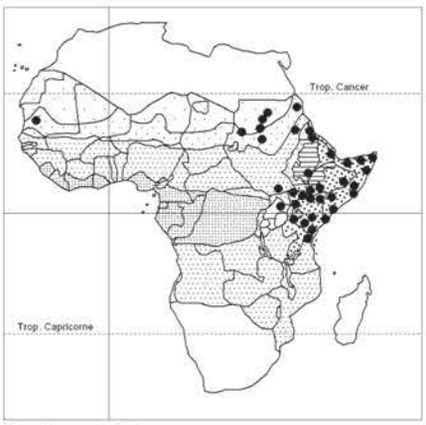
Stachyanthus occidentalis



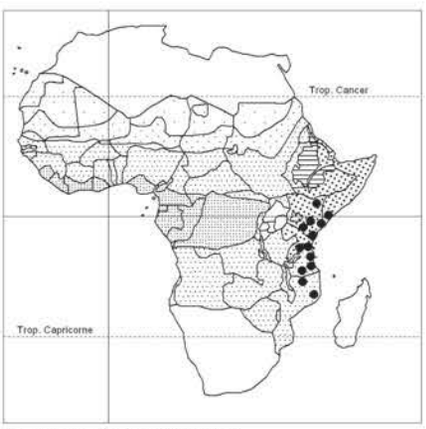
Stachyanthus zenkeri



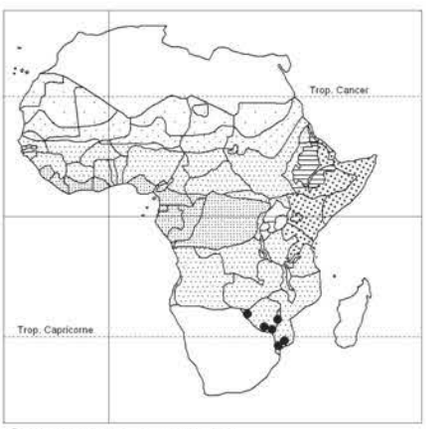
Azima tetracantha



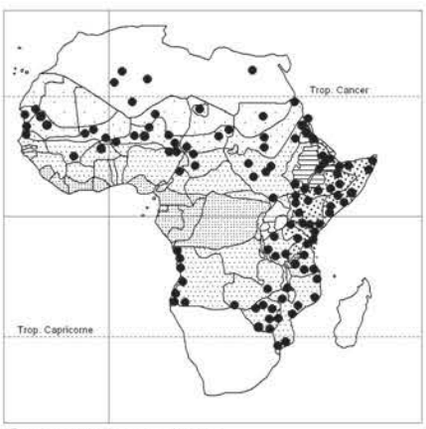
Dobera glabra



Dobera loranthifolia



Salvadora australis



Salvadora persica

SALVADORA

S. persica L. – Mustard tree (the leaves when chewed taste like mustard), Salt bush. – Icon.: Sleumer in Engler & Prantl, Nat. Pflazenfam., ed. 2, 20b: 236, 1942; Aubréville, Fl. Forest. Soud.-Guin.: 350, 1950; Busson, Pl. aliment. Ouest Afric.: fig. 143, 1965; Portères, o. c.: 3, 1974; Fl. Cameroun 19: 41, 1975; Fl. Ethiop. 3: 354 (fig. 110.1.1), 1989; Thulin, Fl. Somal. 2: 125, 1999; Boulos, Fl. Egypt 2: 81, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2(1): 289, 2001 (var. **wightiana**); Audru & al., Pl. Vasc. Rép. Djibouti, Fl. ill. 3(2): 462, 1994; E. Schmidt & al., l.c.

syn.: *S. paniculata* Zucc. ex Steud., nom. nud.?; *S. crassinervia* Hochst. ex T. Anders., nom. nud.; *Lauridia* ? *multiflora* Engl.

Evergreen unarmed bushy shrub or (sometimes) tree 0,6-9 m tall, often broader than high, glabrous or pubescent, much branched, sometimes emitting an unpleasant odour; stems grey or whitish; bark brown, slightly rough; branches widely spreading, long, often pendulous or semiscandent, the flowering ones often hanging vertically for 1 m; leaves ± succulent, coriaceous, pale green, ovate to occasionally orbicular, sometimes with glandular dots, petiole distinct; flowers bisexual, greenish or yellowish white, glands between stamens inconspicuous; drupe red, conspicuous, with persistent calyx at base, edible (pungent taste).

Dry locations, most often along rivers, wadis, luggas, lakes or wells; dry *(Acacia)* bushland, (wooded) grassland, fringing *Acacia-Commiphora* woodland; dense thorn scrub and thickets, associated with *Capparaceae; Hyphaene* associations near springs and desert flood plains mostly on saline, sandy or loamy soils; coastal and riverine scrub; dunes behind the coastline, dune-hills; desert depressions, not swampy but seasonally flooded; sandy maritime rocky places; stony ground along wadis; on gypsum or coral just above high-tide level (Somalia; var. **cyclophylla** in particular); 0-1500(-1850) m alt. – Forming pure stands (in desert depressions), spreading bushy cover or inpenetrable thickets. – "Often the only green plant seen during the dry seasons … where it grows" (P. M. Maundy, Traditional Food Plants of Kenya: 203, 1999).

Very variable but "the variation is difficult to express in a hierarchy of names" (Verdcourt, Kew Bull. 19: 147, 1964). Certain characters are correlated with amount of rainfall. Verdcourt (l. c.) retained 6 varieties in Africa (see below), based on hairiness, length of leaf petiole and flower pedicel, shape of leaves, length of anthers.

Morocco (fide Fennane & al., Fl. prat. Maroc 2: 205, 2007), S Algeria, Libya ("seems to be extinct … or is left very rare due to camel grazing …"; in Oasis di Giarabub, Al Jaghbub, fide El-Taife in Fl. Libya 69: 1-3, 1980, with illustration); Egypt, Sinai; Namibia, Caprivi strip, Botswana, NE S. Africa; Socotra, Saudi Arabia, UAE, Yemen, Oman, Israel, Syria, Jordan; S Iran, Pakistan, NW India, Sri Lanka to China.

Comprises 6 vars. in our area:

– var. **angustifolia** Verdc. (syn.: *S. oleoides* sensu Blatter 1921, non Decne.; non *S. angustifolia* Turrill from Madagascar and islands), narrow-leaved, occurring in N Somalia, Yemen;

– var. **crassifolia** Verdc., exceptionally thick-leaved, on gypsum in N Somalia, Socotra;

– var. **cyclophylla** (Chiov.) Verdc. in Kew Bull. 19: 152, 1964, non Cufod. 1958, nom. invalid.; (bas.: *S. cyclophylla* Chiov.); with nearly rounded leaves, on coral, near the sea, mangrove edges, sand dunes and bushland at low alt., in S Somalia, E Kenya;

– var. **parviflora** Verdc., with very small flowers and anthers (0,25 mm long), in Zambia, on river banks;

SALVADORA PERSICA

– var. **persica** (syn.: *S. persica* var. *densiflora* Welw. ex Hiern, cf. note below), with thin flexible leaves, and shoots, leaves and inflorescences mostly glabrous; widespread in dry areas from W and N Africa through to southern Africa, Arabia, India, Sri Lanka;

– var. **pubescens** Brenan (syn.: *S. villosa* Maire), with shoots, leaves and inflorescences distinctly velvety pubescent, occurring from Sinai, Arabia, E Africa, southwest to Angola.

In Pl. Welwitsch. 1(3): 659, 1898, Hiern describes var. *densiflora* (ms. Welwitsch), not cited by Verdcourt (1964). An isotype (Welwitsch 944) at Geneva (G) seems to belong to var. **persica**.

Intermediates occur between varieties; in Kenya, e.g., between var. **percica** and respectively var. **pubescens** and var. **cyclophylla.**

Other varieties are described from Asia:

– var. **wightiana** (Planch. ex Thwaites) Verdc. (bas.: *S. wightiana* Planch. ex Thwaites; syn.: *S. indica* Wight, non Royle, nom. nud.; *S. koenigii* Arnott; *S. persica* sensu Roxb. 1832, non L.);

– var. **petiolata** Post (Fl. Syria, Palest. & Sinai).

Almost all parts of the plant are used, in particular in traditional medicine. Fruits can be found in local markets. The seed is rich in oil (c. 45%). Monkeys and birds eat the fruits. The whole plant is grazed by, e.g., camels. The plant is suitable in shelter-beds and as wind breaks. Twigs are used as toothbrushes.

MATHUR, S. & al. (2002). Salvadora persica: A wonder drug plant. *The Botanica (Delhi)* 52: 134-137.

PORTÈRES, R. (1974). Un curieux élément culturel arabico-islamique et néo-africain: les baguettes végétales mâchées servant de frotte-dents. *J. Agric. Trop. Bot. Appl.* 21(1-3): 1-36.

SYNONYM:

Salvadora glabra (Forssk.) Baillon = **Dobera**

OLACACEAE / *12* g. / *35* spp.

excl. *Octoknema (Octoknemaceae)* and *Opiliaceae*.

Mature seeds unknown in one species *(Engomegoma gordonii)*. Another one *(Strombosia fleuryana)* known only from the type lacking fruit.

"As traditionally circumscribed, the family Olacaceae contains a morphologically diverse assemblage of genera that has historically caused much confusion regarding their classification. For example, Olacaceae contain parasites and nonparasites, climbing lianas and trees, and members with dichlamydous and monochlamydous perianths" (Malécot & Nickrent, 2008: 97).

HEIDE-JØRGENSEN, H. S. (2008). *Parasitic flowering plants.* Brill, Boston & Leiden.

MALÉCOT, V. & D. L. NICKRENT (2008). Molecular phylogenetic relationships of Olacaceae and related Santalales. *Syst. Bot*. 33: 97-106.

MALÉCOT, V. & al. (2004). A morphological cladistic analysis of Olacaceae. *Syst. Bot.* 29: 569-586.

ANACOLOSA / *1*

A genus essentially south-east Asian of 17 species, one in W Africa, 2 endemic to Madagascar.

Anacolosa uncifera Louis & Boutique – Icon.: Bull. Jard. Bot. Bruxelles 18: 257, 1947; Fl. Gabon 20: 109, 1973.

Liane 8-10 m tall or sometimes shrub with sarmentous branches; stem to 8 cm Ø, with hooked spines (petiole origin) adherent to the base of an axillary branch; old branches reddish or grey, ridged; leaves glabrous, ± chestnut brown beneath; flowers bisexual, tubular, greenish (white) in short axillary fascicles; flower nectary disk accrescent, forming a freshy greenish cup around the fruit.

Primitive marshy forests, seasonally flooded; forest edges; c. 470-1000 m alt.

APTANDRA / *1*

Four species three of which (with bisexual flowers) occur in Amazonian S. America; one, dioecious, in W. Africa (Sleumer in Fl. Neotrop. Monogr. 38: 111-116, 1984).

Aptandra zenkeri Engl.; incl. var. *latifolia* Engl. – Icon.: Sleumer in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 16b: 28, 1935; De Wildeman, Miss. E. Laurent 1: 378, 1907 (photo. branch with fruits); Irvine, Woody Pl. Ghana: 468, 1961; Keay, Trees Nigeria: 317, 1989; Fl. Gabon 20: 157, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 325, 329, 2006.

syn.: *Harmandia congoensis* Pierre ex Tiegh., nom. provis.; *Lecomtea congoensis* Pierre nom. provis. in publ. ined., ex Tiegh., nom. nud.?; *Harmandia pycnantha* Pierre ms.

Shrub or tree 4-15 m tall, dioecious, branching low, with terete glabrous lenticellate branches; stem to 25 cm Ø; branchlets green, longitudinally ridged; wood pale pink, hard; leaves ± fleshy; flowers small, greenish white in short axillary racemes; fruit black, shining, surrounded by much enlarged, circular disk-like calyx (c. 8 cm Ø), first greenish yellow, turning orange or pink, brick-red when falling.

Valley forest, deciduous forest in undergrowth, in damp places; firm ground mixed forest, *Gilbertiodendron dewevrei* or *Scorodophloeus zenkeri* forests; river banks, often flooded, with *Ficus, Berlinia, Lonchocarpus, Ouratea, Tabernaemontana,* etc.; 125-850 m alt.

SYNONYM:

Aptandra gore Hua = **Ongokea**

COULA / *1*

Monospecific.

Coula edulis Baill., incl. var. *cabrae* (De Wild. & T. Durand) J. Léonard – African Walnut. – Icon.: Engler in Notizbl. Kön. Bot. Gart. Mus. Berlin 5, Appendix 21: 7, 1909; Sleumer in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 16b: 13, 1935; Adam, Fl. descr. Mts Nimba 2: 765, 1971; Voorhoeve, Liber. high forest trees: 299, 1979; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 105, 1959; Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 399, 2000; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 325, 2006.

syn.: *C. cabrae* De Wild. & T. Durand; *C. utilis* S. Moore

COULA EDULIS

Tree, evergreen, to 18-20-33 m, branching from c. 3-4-7 m height; crown dense, much-branched; bole to 0,8 m Ø and 2 m in girth; bark smooth, thin, brownish; slash pale brown, yielding (like leaves and fruit) a whitish gummy latex in young trees, turning black on exposure; branchlets and young foliage densely covered with a scurf of very short rusty stellate hairs; leaves 10-20 × 5-9 cm, long-acuminate, glabrous when mature, with long pulvinate petioles; flowers small, bisexual, greenish white, in small axillary inflorescences; fruit walnut-like with a thick woody smooth shell and edible sweet chestnut tasting kernel.

Evergreen wet and (semi-)deciduous rain-forests, in understorey, often frequent or dominant; often on clayey soils; 1-700 m alt.

Confused with *Diogoa zenkeri.*

DIOGOA / *2*

Sometimes included in *Strombosiopsis.*

BRETELER, F. J. (2007). A reconsideration of the species delimitation in Diogoa (afrotropical Olacaceae). *Syst. Geogr. Pl.* 77: 239-245.

Diogoa retivenia (S. Moore) Breteler, o.c.: 240. – Icon.: ibid.: 241-242 (+ map).

bas.: *Strombosia retivenia* (retevenia) S. Moore (type Talbot 1465).

Similar to *D. zenkeri,* but: leaf petiole 1-1,5(-2, 5) cm long (not 1,5-3-4,5 cm), lateral nerves of blade in 5-6(-8) pairs (not 6-10), flowers c. 3 mm long (not 5-6 mm). anthers up to 0,5 mm long (not 1,5-2 mm), fruit (ovary half inferior) with a *strong* equatorial ridge (not indistinct).

Rain-forest.

Doubtful specimens, Thomas 2245 (at P, not K & YA) and Letouzey 9025, with aberrant fruits (equatorial ridge different) represent perhaps a third species, but more complete material needed.

Diogoa zenkeri (Engl.) Exell & Mendonça – Icon.: Consp. Fl. Angol. 1(2): pl. 17 opposite to p. 336, 1951; Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 391, 2000 (details); Breteler (2007): 241. – Lectotype Zenker 2260 (P).

syn.: *Strombosia majuscula* S. Moore; *Strombosiopsis ? klaineana* Pierre ms., non *"Strombosia ? klaineana* Pierre error." *(= Strombosia grandifolia).*

Tree 5-20(-30-50) m tall, glabrous; bole cylindrical, 25-30(-50) cm Ø; foliage resembling that of *Coula edulis*; leaves 15-40 × 4-12 cm; flowers 5-merous, cream, in short congested axillary racemes; fruit distinctive, 4-5 cm Ø, partially enclosed by the accrescent receptacle which makes a ridge around the fruit at its middle, edible (cf. *D. retivenia).*

Evergreen and semi-deciduous rain-forest, also on river banks; primary firm-ground forests with *Macrolobium dewevrei* or *Scorodophloeus zenkeri;* 1-720 m alt.

Confused with *Coula edulis*.

Disjunct, with a distribution gap like *Dichapetalum congoense* Engl. & Ruhland, *D. mundense* Engl., *Heckeldora staudtii* (Harms) Staner, *Rourea erythrocalyx* (Gilg ex G. Schellenberg) Jongkind, *R. myriantha* Baill., *Trichoscypha reygaertii* De Wild.

ENGOMEGOMA / *1*

Monospecific.

Engomegoma gordonii Breteler; Lebrun & Stork, Enum. 4: 642, 1997. – Icon.: Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 397, 2000.

Tree to at least 35 m; bole 70 cm dbh.; branches and branchlets glabrous; leaves wine-red when young, glabrous, later dark green; laticifers lacking; flowers in small axillary fascicles, white; calyx remaining small; fruit obovoid, 2,5-3 × 2,5 cm, smooth, glabrous, long-stalked (2-3,5 cm); mature seeds unknown.

Primary and old secondary rain-forest; 100-700 m alt.

Flowers very similar to those of the neotropical *Tetrastylidium;* but in pollen characters resembling *Diogoa.*

Fruiting material was available more than 30 years before the first collected flowers (in 1991).

HEISTERIA / *3*

syn.: *Acrolobus* Klotzsch; *Phanerocalyx* S. Moore

About 33 species most of which in C. and S. America, south to SE Peru; 3 in Africa. Specimens with leaves and ± ripe fruits needed for determination; flowering specimens (often thus collected) can only be named tentatively.

Heisteria parvifolia Smith, incl. var. *ledermannii* Engl., and var. *angustifolia* De Wild., and fa. *grandifolia* Engl. ex De Wild. (sub var. *grandifolia* Engl. in De Wild., Bull. Jard. Bot. Etat, Brux. 4: 67, 1914, error?); Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 390-391, 2000. – Icon.: De Wildeman, Pl. Thonner. Congol., Sér. 2: 38, 1911; Sleumer in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 16b: 16, 1935; A. Walker & R. Sillans, Pl. utiles Gabon: pl. 44 opposite to p. 316, 1961; Klotzsch, Philipp Schoenlein's botanischer Nachlass auf Cap Palmas, 1857 (sub nom. *Acrolobus schoenleinii* and *A. parvifolius);* Fl. Trop. E. Afr., Olacaceae: 2, 1968; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 325, 329, 2006.

syn.: *H. elegans* A. Chev., nom. nud.; *H. missionis* Pierre; *H. papaman* Pierre; *Acrolobus parvifolius* Klotzsch; *A. schoenleinii* Klotzsch; *Phanerocalyx talbotiorum* S. Moore

Shrub 0,5-6 m tall or sometimes tree 8-14(-25) m glabrous, evergreen; bole 30-40(-60-70) cm Ø, slightly fluted at base and often with conspicuous lenticels; branches long, arching, drooping and much branched at extremities, narrowly winged; foliage dense; flowers small, bisexual, greenish-white or yellowish or pinkish in axillary fascicles; calyx accrescent, much enlarged and deep red in fruit, star-like with 5 deep divisions; fruit greyish white. – Ornamental. Casting a heavy shade.

In a variety of habitats. Evergreen moist rain-forest, forest gallery; primary firm-ground forests but also often in seasonally flooded forests; open secondary formations; common in understorey; marigot edges; bush in savanna; 1-1450 m alt.

Variable in shape and size of leaves and fruiting calyx.

Bioko/Fernando Poo, Principe, S. Tomé.

MALAISSE, F. & al. (2004). Heisteria parvifolia (Olacaceae), an underestimated shrub or small tree with oil-producing seeds. *Syst. Georg. Pl.* 74: 17-25 [with a detailed map].

H. trillesiana Pierre – Icon.: Fl. Gabon 20: 131, 1973 (partial); A. Chevalier, Vég. utiles Afr. trop. franç., Forêt bois Gabon: pl. 11, 1917.

Shrublet or shrub 3-5 m tall, rarely a small tree 12-20 m; bole clear to 3-7 m height, 15-40 cm Ø; bark greyish on rusty ground, scaly; branchlets narrowly winged; leaves glabrous; flowers small, whitish in many-flowered axillary fascicles; calyx accrescent, enlarged, red to brown in fruit, 4 cm Ø, with *short* lobes; drupe black, ridged.

Moist forests, marshes, depressions; rare in coastal areas, but common in mountain areas on river banks; 130-500m alt.

Difficult to identify without fruit; leaves and fruiting calyx similar to those of *H. zimmereri;* but flowers resembling those of *H. parvifolia.*

H. zimmereri Engl. – Icon.: Engler, Pflanzenwelt Afrikas 3 (1 A): 85, 1915; A. Walker & R. Sillans, Pl. utiles Gabon: pl. 44 opposite to p. 316, 1961 (partial); Fl. Gabon 20: 131, 1973 (partial).

Shrub or spreading tree 4-7(-15) m tall with conical crown; trunk straight, to 50 cm Ø; wood rosy-grey; bark brown, slightly scaly; branchlets narrowly winged; leaves glabrous but granular and secondary nerves inconspicuous (not so in *H. parvifolia);* flowers long-pedicellate, few in axillary fascicles, (whitish) green; calyx accrescent with wavy margin or only slightly lobed in fruit; drupe yellowish brown.

Evergreen moist rain-forest, primary forest, often on river banks; 100-535 m alt.

Can be confused with *H. parvifolia* (when without fruit).

SYNONYM:

Heisteria winkleri Engl. = **Diospyros pseudocalycina** *(Ebenaceae)*

LAVALLEOPSIS = STROMBOSIA

OCTOKNEMA – See Octoknemaceae

OLAX / *12*

About 40 species from Africa and Madagascar to Australia.

ROGERS. Z. S. & al. (2006). A synoptic revision of Olax L. (Olacaceae) in Madagascar and the Comoro Islands. *Adansonia, Sér. 3,* 28: 71-100.

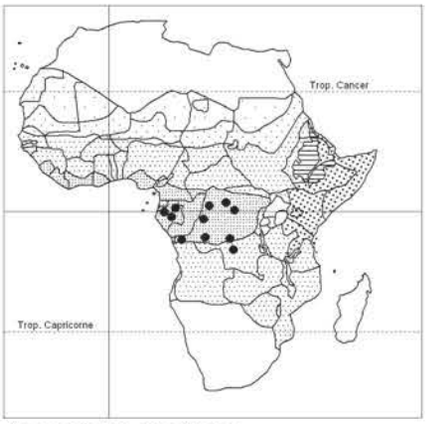
Olax aschersoniana Büttner

Loose shrub with angular, densely leafy branches; branchlets green with decurrent leaves; racemes distichous; flowers bisexual, white-yellow, stamens 6, staminodes 3; calyx accrescent, disk-like in fruit, 1 cm Ø; drupe smooth with a hooked persistent style.

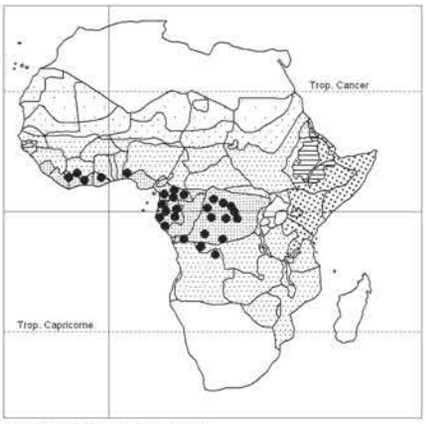
Bush on river banks; to c. 750 m alt.

O. dissitiflora Oliv.; Garcia & Vidigal in Fl. Moçamb. 44, Olacac.: 6-7, 1979. – Icon.: Fl. Trop. E. Afr., Olacac.: 8, 1968; Fl. Madag. & Comores 59: 5, 1955 (sub nom. *O. andronensis);* Rogers & al. (2006): 83; Curtis & Mannheimer, Tree Atlas of Namibia: 76, 2005.

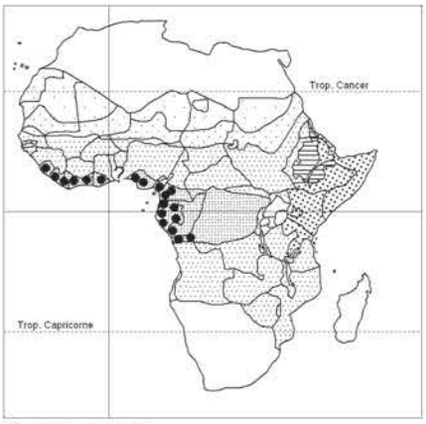
syn.: *O. stuhlmannii* Engl.; *O. andronensis* Baker



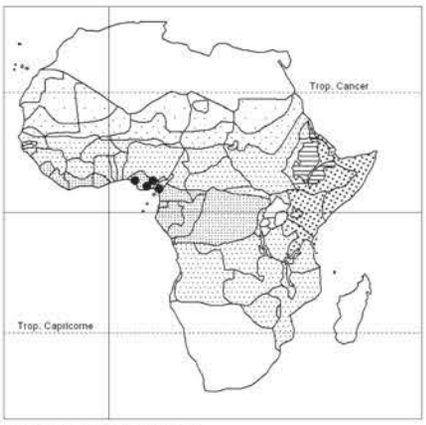
Anacolosa uncifera



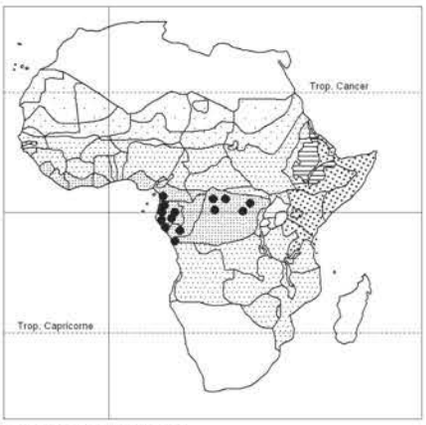
Aptandra zenkeri



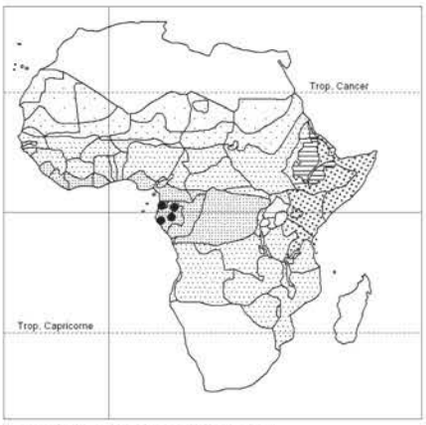
Coula edulis



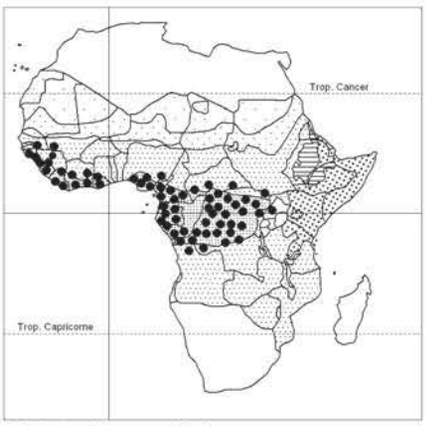
Diogoa retivenia



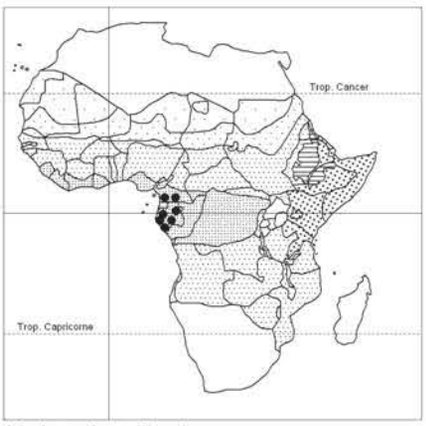
Diogoa zenkeri



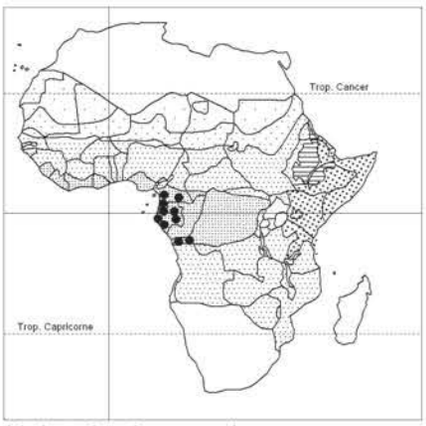
Engomegoma gordonii



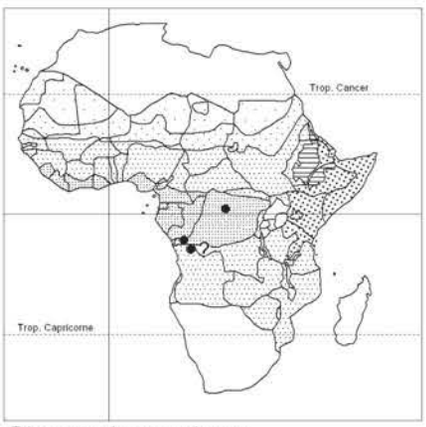
Heisteria parvifolia



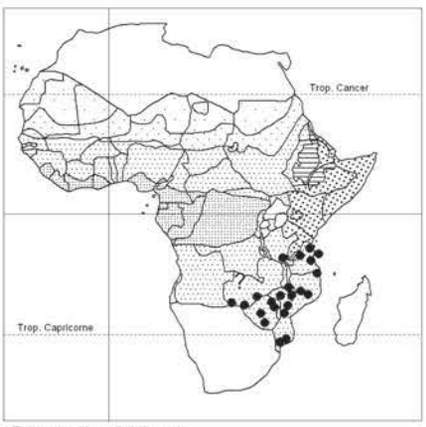
Heisteria trillesiana



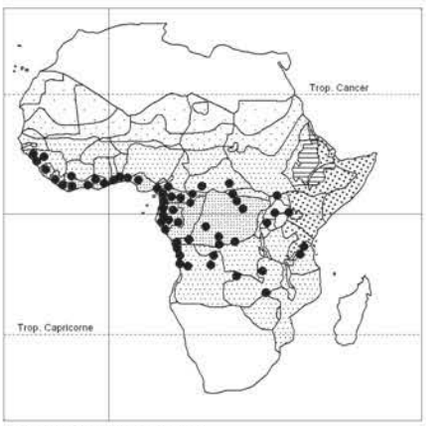
Heisteria zimmereri



Olax aschersoniana



Olax dissitiflora



Olax gambecola

Evergreen or semi-deciduous glabrous shrub or (mostly) tree 3-12 m tall; crown rounded, low, spreading; bark smooth, light grey; young branches flexuous; flowers white, sweet-scented, solitary or in short axillary racemes; stamens 3, staminodes 5; calyx accrescent in fruit, fleshy, enclosing the red drupe nearly to the apex crowned with remains of style.

Deciduous woodland; relic or riverine thickets; lowland dry evergreen forest; river banks, flood-plains, sandy slopes near rivers; rocky outcrops; 1-1600 m alt.

Caprivi Strip, Botswana, S. Africa, Swaziland; Madagascar.

Not in SE Kenya *(= O. obtusifolia).*

O. gambecola Baill. – Icon.: Fl. Trop. E. Afr., Olacac.: 8, 1968; White, Forest Fl. N. Rhod.: 43, 1962; Adam, Fl. descr. Mts. Nimba 2: 765, 1971; Akoegninou & al., Fl. analyt. Bénin: 833, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 325, 327, 2006.

syn.: *O. viridis* Oliv., excl. var. *staudtii* Engl. *(= O. staudtii); O. poggei* Engl.; *O. alliacea* (De Wild.) Vermoesen ex Boutique; *Ptychopetalum alliaceum* De Wild.; *P. nigricans* De Wild.; *Olax verruculosa* Engl.; *O. ubanghensis* A. Chev.; *O. pyramidata* A. Chev., nom.; *O. minquartioides* Baill. ex Pellegr.; *Alsodeiopsis glaberrima* Engl. ex Hutch. & Dalziel

Shrublet or shrub, glabrous, 0,3-3(-8) m tall; branches 4-winged, white-spotted; young twigs very pustulate; flowers white in axillary racemes; stamens 3-4, staminodes 5-6; calyx a disk at base, non-accrescent in fruit.

Evergreen or mixed forests; lowland rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* rain-forest in wet situations, riverbanks, but also on firm ground or seasonally flooded places; gallery forest; "only in the shadiest and most humid spots in forest" (Gossweiler, Angola, fide Engler); dense *Syzygium-Brachystegia* woodland on Kalahari sand; 1-1350 m alt.

Variable in shape and size of leaves.

Leaves when crushed have a garlic flavour.

O. gossweileri Exell & Mendonça

syn.: *Ximenia americana* sensu Exell p.p., J. Bot. 65, Suppl. Polypet.: 70-71, 1927, quoad specim. Gossweiler 2239, 2682, non L.

Deciduous shrub or tree to 5 m tall, with glabrous branchlets and subsessile leaves; flowers rather large with 3 petals, 3 stamens and (2-)3 staminodes; calyx non-accrescent.

Meadow near stream; c. 50 m alt.

Resembling *O. obtusifolia* (with 5-6 staminodes).

O. latifolia Engl. – Icon.: Fl. Gabon 20: 123, 1973; Sleumer in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 16b: 25, 1935 (sub nom. *O. longifolia* et *O. tessmannii).*

syn.: *O. pynaertii* De Wild.; *O. longifolia* Engl.; *O. tessmannii* Engl.; *O. zenkeri* Engl.

Shrub, or tree, 0,5-3 m tall; bark grey, longitudinally ridged; branches green, 4-sided; leaves glabrous, very variable (7-22 × 3-10 cm); flowers pink, in axillary racemes, stamens 6, staminodes 3; calyx accrescent, enclosing completely the orange fruit.

Forest on firm ground; river banks; rocks; 1-1585 m alt.

O. mannii Oliv. – Icon.: Sleumer in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 16b: 26, 1935 (sub nom. *O. mannii* et *O. macrocaylx);* Fl. Gabon 20: 117, 1973; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 327, 2006 (partial).

syn.: *O. longiflora* Engl.; *O. macrocaylx* Engl.; *O. major* Stapf; *O. gilletii* De Wild.; *O. insculpta* Hutch. ex Bak.

Shrub 0,6-3 m tall, glabrous; branches 4-winged; young twigs smooth, not pustulate; leaves very variable (6-15 × 2-7 cm), with *short* petiole, brownish when dried; flowers greenish white, rather large, stamens 3, staminodes 4-5; calyx accrescent, enclosing the ripe orange fruit.

Closed forest, in moist clayey-sandy soils; wet evergreen and montane forests; river-banks, marsh; 1-850 m alt.

Probably also in Ghana.

Resembling *O. gambecola* but calyx around fruit different.

O. obtusifolia De Wild. – Icon.: De Wildeman in Ann. Mus. Congo Belge, Bot., Sér 4, 1: pl. 40. figs. 6-11, 1903.

Shrub, or tree, 1,5-6(-15) m tall, glabrous; branches with reddish-brown bark, exfoliating; young branchlets deep green, becoming rust-coloured, channelled; leaves small (4-8 × 2-4 cm), pale green, with very short petiole; flowers greenish white, rather large, solitary or in racemes, stamens 3, staminodes 5-6; calyx only slightly accrescent in fruit, disk-like, c. 0,5 cm Ø; drupe orange-red, showy, c. 2,5 cm Ø, with a very large stone.

Rain-forest, in understorey; dry evergreen forests; open woodland in higher-rainfall areas, especially on rocky hills; dry plateau woodland; 300-1500 m alt.

Plants and flower organs tend to be larger in N part of range.

Resembling *O. gossweileri.*

Material from SE Kenya (Shimba Hills) was previously named *O. dissitiflora* (fide Beentje, Kenya, trees, shrubs & lianas: 349-350, 1994).

O. pentandra Sleumer

Shrub or small tree 2-5 m tall, glabrous; leaves small (3,5-5,5 × 1-1,5 cm), subsessile; flowers solitary, axillary, on short slender peduncles, stamens 5, staminodes 5(6); calyx accrescent, completely enclosing the orange fruit.

Wooded grassland; 180-240 m alt.

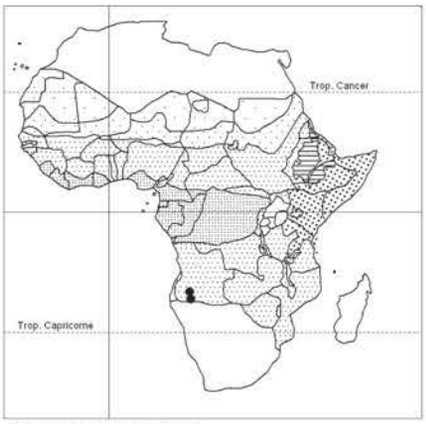
Known only from S Tanzania (T8).

O. staudtii (Engl.) Engl. or ? M. Michaud, [Contrib. Etude Olacacées Afrique Tropicale, in Mém. Inst. Fond. Afr. Noire 75: 220, 1966 (type: Staudt 364; stated by Michaud as of 1896, cited by Engler as of July 1895; type seen by Michaud at Paris, P, according to his p. 165)]. – Icon.: Michaud o.c.: 221, 1966 (partial); Fl. Gabon 20: 123, 1973 (partial).

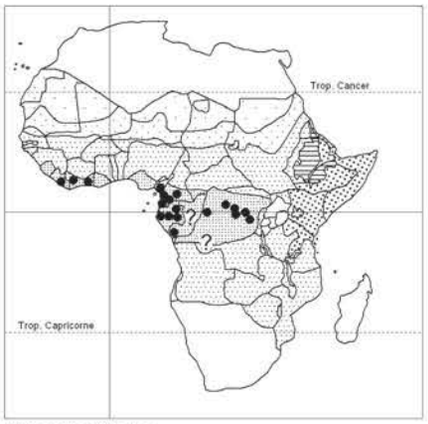
bas.: *O. viridis* Oliv. var. *staudtii* Engl., Notizbl. Königl. Bot. Gart. Berlin 2: 285 (not 286), 1899 (type Staudt 364, July 1895, Lolodorf, Cameroon).

syn.: *O. staudtii* Engl., nom. nud. (without description and type) in Engler & Prantl, Nat. Pflanzenfam., Nachtr. 1: 146, 1897 (cited in Index Kewensis, Suppl. 2: 126, 1904); *O. staudtii* Engl. nom. nud., Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 27 (not 24), 1935.

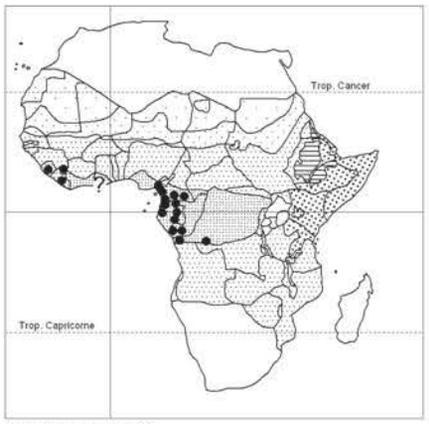
Shrub 0,6-1,5 m tall, glabrous; bark transversely ridged and longitudinally striate; branches green, 4-winged; flowers in axillary racemes, stamens 6, staminodes 3; calyx accrescent, enclosing ± entirely the fruit.



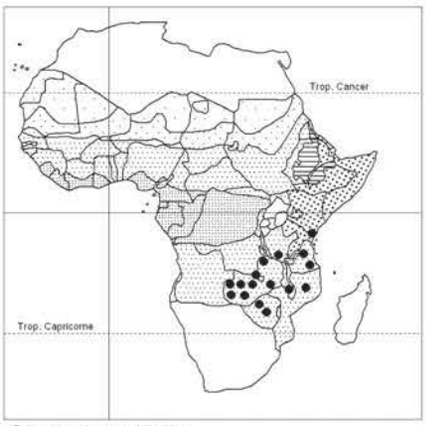
Olax gossweileri



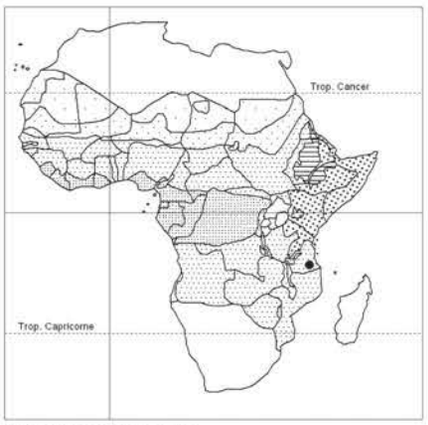
Olax latifolia



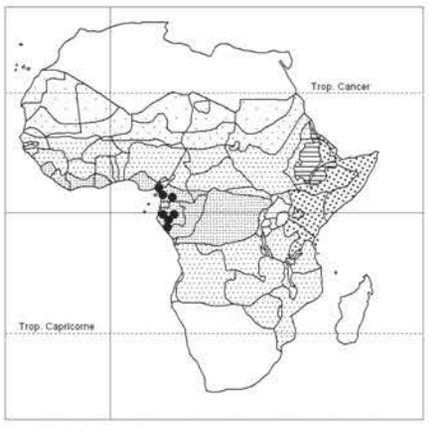
Olax mannii



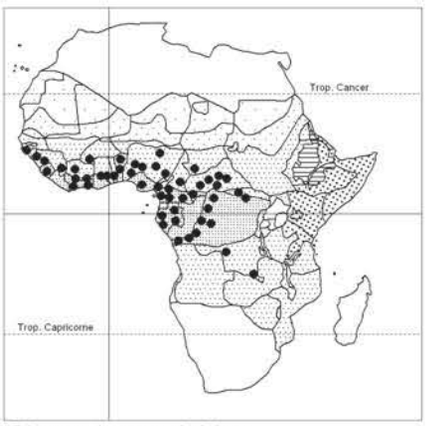
Olax obtusifolia



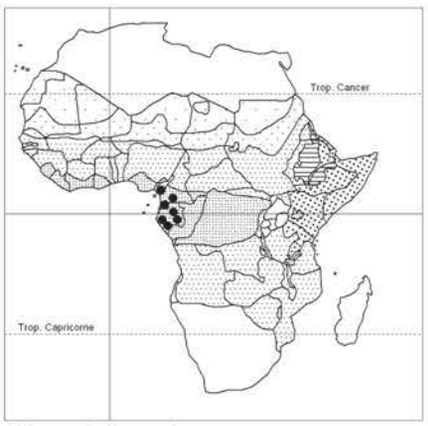
Olax pentandra



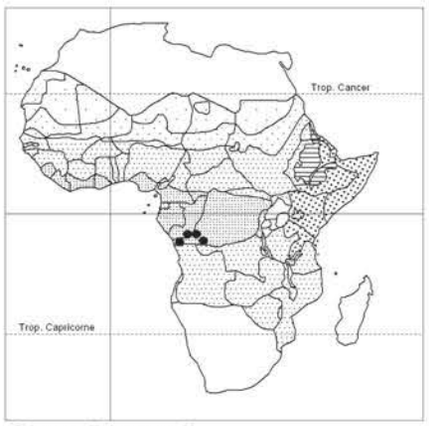
Olax staudtii



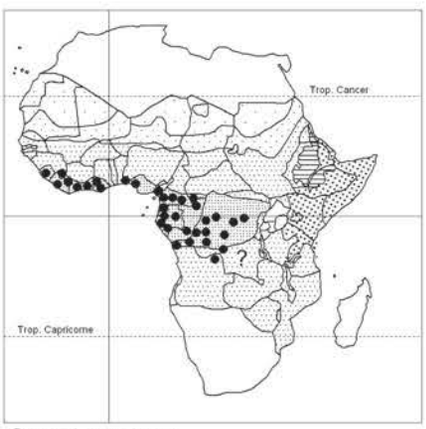
Olax subscorpioidea



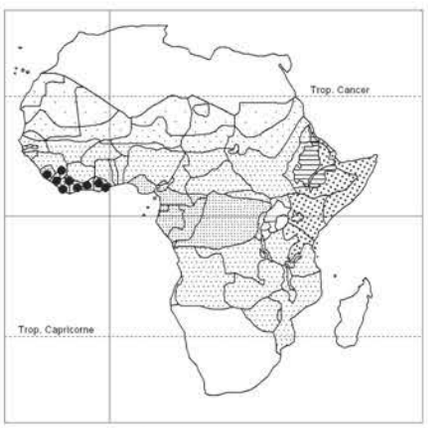
Olax triplinervia



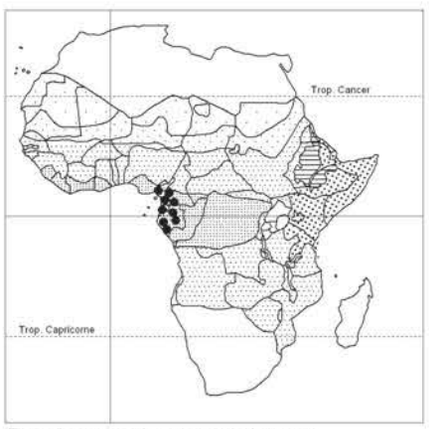
Olax wildemanii



Ongokea gore



Ptychopetalum anceps



Ptychopetalum petiolatum

Forest; sometimes on rocks; 1-400 m alt.

Resembling *O. triplinervia, O. latifolia;* close to the latter, but flower different.

Remark: This species is usually referred to as "O. staudtii Engl.". It was, however, first *described* by Engler on *variety level.* Although Engler lists an "O. staudtii Engl." (first in Nat. Pflanzenfam., Nachtr. 1: 146, 1897, then in Bot. Jahrb. Syst. 43: 161, 1909), he never refers to *O. viridis* var. *staudtii* as basionym (however, citation of the basionym was not required before 1 January 1953). *O. staudtii* could eventually be considered a nomen nudum. We have not been able to trace a combination due to Engler, however considered as the author by V. Malécot (in herb. Genève and in e-mail of 17.VIII. 2006). As far as we know M. Michaud was the first to propose such a transfer, although he omitted his own authorship in the chapter heading, still referring to Engler as the author. Michaud writes that he saw the "holotype" at Paris, P (perhaps an isotype there), giving 1896 as the year of collection (in Engler's description stated as of July 1895, in flower and fruit; an isotype at Genève, G, is dated 1895 (the preprinted 1896 corrected to 1895).

O. subscorpioidea Oliv. – Icon.: Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 25, 1935 (sub nom. *O. subscorpioidea* et *O. laurentii);* Aubréville, Fl. Forest. Côte d'Iv., ed. 2, 1: 109, 1959; Fl. Gabon 20: 117, 1973. – All of var. **subscorpioidea** Hawthorne & Jongkind, Woody pl. west. Afric. forests: 325, 327, 2006.

syn.: *O. laurentii* (De Wild.) Engl.; *Ptychopetalum laurentii* De Wild.; *Olax schlechteri* Engl.; *O. gambecola* sensu A. Chev., Explor. Bot. 1: 124, 1920, non Baill.; *O. chariensis* A. Chev., nom. nud. [p.p. = var. **subscorpioidea**, p.p. = var. **durandii** (Engl.) Michaud].

Dense shrub or tree 4-8-10 m tall with long thin, often drooping branches; bole 10-20-30 cm Ø, 60 cm in girth; bark green, smooth; young branchlets longitudinally ridged and transversely striate; leaves dark green, glabrous, 2,5-10(-18) × 1,5-3,5(-6) cm, those on flowering branches often very small; flowers greenish white on short zigzag lateral branchlets, petals 5, stamens 5-6, staminodes 3; calyx slightly enlarged in fruit, cup-like, 3-7 mm Ø; fruits yellow-orange-red, often spectacular, edible. – Whole plant smelling of garlic (twigs used as chew-sticks).

Primary and secondary forests, jungle, forest edges, as undergrowth; deciduous and semi-deciduous moist forests, forest gallery; forming thickets in shady places of savanna; on acid soils; roadsides, old fields; transitional woodland-forest fringing river banks; dry forest; locally common; 1-1515 m alt.

Comprises 2 vars.

O. triplinervia Oliv. – Icon.: Fl. Gabon 20: 123, 1973.

syn.: *O. denticulata* Engl.; *O. autraniana* Pierre (section *"Neurolax"* in Plantes du Gabon, Bull. Mens. Soc. Linn. Paris 2: 1295, 1897).

Shrub 0,5-2,5 m tall, glabrous; branches green, ridged and striate; leaves dark green, *3-nerved*, variable, 8-20 × 3-7,5 cm; flowers yellowish green, orange or red, stamens 5-6, staminodes 3; calyx accrescent, enclosing the fruit; drupe yellow to reddish brown.

Primary forest; wooded savanna; riverbanks; 1-800 m alt.

O. wildemanii Engl. – Icon.: Michaud, Mém. Inst. Fond. Afr. Noire 75: 209, 1966 (partial).

Shrub to 4 m tall, glabrous; branchlets green, winged, thin, flexuous, <4 mm Ø, with dense foliage; leaves small (2,5-7 × 0,8-3,5 cm); flowers solitary or in few-flowered axillary racemes, stamens 5, staminodes 3; calyx accrescent, yellow-orange, enclosing the fruit (with smell of garlic).

Forest, gallery forest, in understorey, often near rivers; up to c. 600 m alt.

Close to *O. triplinervia*. Sterile specimens resembling *O. subscorpioidea.*

SYNONYMS:

Olax alliacea (De Wild.) Vermoesen ex Boutique = **Olax gambecola**

anceps (Oliv.) Roberty = **Ptychopetalum**

andronensis Baker = **Olax dissitiflora**

autraniana Pierre = **O. triplinervia**

chariensis A. Chev. p.p. = **O. subscorpioidea** var. **subscorpioidea** and var. **durandii**

denticulata Engl. = **O. triplinervia**

durandii Engl. = **O. subscorpioidea** var.

gambecola sensu A. Chev. 1920, non Baill. = **O. subscorpioidea** var. **subscorpioidea**

gilletii De Wild. = **O. mannii**

insculpta Hutch. ex Baker = **O. mannii**

laurentii (De Wild.) Engl. = **O. subscorpioidea** var. **subscorpioidea**

longiflora Engl. = **O. mannii**

longifolia Engl. = **O. latifolia**

macrocalyx Engl. = **O. mannii**

major Stapf = **O. mannii**

minquartioides Baill. ex Pellegr. = **O. gambecola**

poggei Engl. = **O. gambecola**

pynaertii De Wild. = **O. latifolia**

pyramidata A. Chev. = **O. gambecola**

schlechteri Engl. = **O. subscorpioidea** var. **subscorpioidea**

stuhlmannii Engl. = **O. dissitiflora**

tessmannii Engl. = **O. latifolia**

ubanghensis A. Chev. = **O. gambecola**

verruculosa Engl. = **O. gambecola**

viridis Oliv. = **O. gambecola**

var. *staudtii* Engl. = **O. staudtii**

zenkeri Engl. = **O. latifolia**

ONGOKEA / *1*

Monotypic.

Ongokea gore (Hua) Pierre – Anguek – Icon.: Engler in Notizbl. Kön. Bot. Gart. Mus. Berlin 5, Appendix 21: 3, 1909; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 29, 1935 (sub nom. *O. kamerunensis* et *O. gore);* A. Walker & R. Sillans, Pl. utiles Gabon: pl. 45 opposite to p. 318, 1961; Adam, Fl. descr. Mts. Nimba 2: 767-768, 1971; Fl. Gabon 20: 161, 1973; Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 393, 2000; Aubréville, Fl. forest Côte d'Iv., ed. 2, 1: 101, 1959; Voorhoeve, Liber. high forest trees: 299, 301, 304, 1979; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 329, 2006 (partial).

bas.: *Aptandra gore* Hua

syn.: *Ongokea klaineana* Pierre; *O. kamerunensis* Engl.; *Schoepfianthus zenkeri* Engl. ex De Wild., nom. nud.

Evergreen glabrous tree (9-)30-50 m; bole straight, cylindrical, unbuttressed but sometimes swollen at base, free to 15-20 m height, 0,8-1,25 m Ø, c. 3 m in girth; bark dark green, thick, hard, cracking into small scales; branchlets compressed or ± winged; foliage dense, light green, shiny; flowers small, bisexual or unisexual, 4-merous, in paniculate clusters at the end of the shoots; anthers united into a tube; calyx accrescent, green, leathery, enclosing the yellow ± fleshy fruit whose tip is visible between the 2-4 lobes of the splitting calyx; drupe c. 3 cm Ø.

Primary high forest on firm ground or seasonally flooded; riverine forest; deciduous forest; locally common; 1-1000 m alt.

Fruits used by children as tops. The fruit kernel contains c. 60% of a reddish yellow oil, thickening on exposure to air, with an unpleaseant odour.

PTYCHOPETALUM / *2*

syn.: *Athesiandra* Miers ex Benth. & Hook. f.; *Anisandra* Planch. ex Oliv.

Four species: 2 in tropical S. America, 2 in Africa.

Ptychopetalum anceps Oliv., incl. var. a and var. b Oliv., Fl. Trop. Afr. 1: 348, 1868. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: 117, 1959; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 326, 327, 2006.

syn.: *Olax anceps* (Oliv.) Roberty; *Athesiandra anceps* Miers, ms.; *Anisandra nigrescens* Planch., ms.

Shrub 0,5-3 m tall, glabrous; branches acutely angled ; branchlets green, strongly 2-winged; leaves sessile, 5-11(-17) × 2-4 (-6) cm, with base often cordate and surrounding the twigs; flower buds very acute, 7 mm long, enclosed by large bracts; flowers bisexual, white, in short scanty racemes, calyx small; drupes single or in pairs, cherry-like, on short hanging stalks.

Evergreen and deciduous moist forests, common in understorey; also coastal, and inland on river banks.

Seen from a distance confused with *Oxystigma oxyphyllum* (Harms) J. Léonard *(Caesalpiniaceae).*

Resembling an *Olax* species.

P. petiolatum Oliv. – Icon.: Hook. Ic. Pl. 24: pl. 2330, 1894; Fl. Gabon 20: 149, 1973 ; Michaud in Mém. Inst. Fond. Afr. Noire 75: 198, 1966 (partial).

Shrub or tree 3-10(-30) m tall, glabrous; stem 15 cm Ø; branchlets terete, greenish or blackish, slightly 2-winged; leaves shortly petiolate, larger than those of *P. anceps* (7-19 × 3-7 cm); flower buds rounded at apex, 4-5 mm long; bracts deciduous; flowers bisexual, yellow; drupe red, often with 6 longitudinal grooves.

PTYCHOPETALUM PETIOLATUM

Evergreen moist rain-forest, in understorey; 5-800 m alt. – Common in Cameroon, less so in other parts of range.

Comprises 2 vars.

Leaves resembling those of *Lasianthera africana (Icacinaceae),* but leathery.

SYNONYMS:

Ptychopetalum acuminatissimum Engl. = **Ptychopetalum petiolatum** var. **petiolatum**

alliaceum De Wild. = **Olax gambecola**

cuspidatum R. E. Fr. = **Rhaphiostylis beninensis** *(Icacinaceae)*

laurentii De Wild. = **Olax scorpioidea** var. **scorpioidea**

nigricans De Wild. = **O. gambecola**

STROMBOSIA / *7*

syn.: *Lavalleopsis* Tiegh.; *Cosmoneuron* Pierre; *Cosmoneura* Pierre

Palaeotropical, with c. 10 species; one of the African species occurs on mountains, the others in the Guineo-Congolian rainforest.

Flowers bisexual, 5-merous (cf. *Strombosiopsis).*

Strombosia fleuryana Breteler, Syst. Geogr. Pl. 77: 119, 2007. – Icon.: ibid.: 120.

Shrub or tree 5-10 m tall; branchlets 3-4-angled, glabrous; leaves glabrous, *petioles short* (2-3-5 mm, not > 5 mm as in the other species), blade ± oblanceolate, (5-)8-10(-13) × (2-)3-4 cm, equal-sided at base, nerves prominent beneath; flowers subsessile, glomerulate; fruit unknown.

Rain-forest.

Known only from the type collected in 1912.

S. gossweileri S. Moore

Evergreen erect slender tree 15-25 m, glabrous; branchlets two-edged; leaves caudate-acuminate, papery, shiny, 12-17 × 4-5,5 cm, with 4-5 pairs of secondary nerves, prominent beneath; nerves connecting the side-nerves obscure; flowers white, few in axillary clusters, calyx 4 mm, petals 2 mm and easily shed; fruit 16 × 12 mm.

"Shady humid woods at Belize" (Mayumbe, Angola), common; "frequent among forest trees".

The identity of this species has been uncertain. No herbarium material is available at Genève, G. M. Michaud (1966: 252) suggested an eventual synonymy with *S. zenkeri* but he did not dispose of any material at Paris, P, either. However, Breteler (2007: 121) shows that it is a distinct species.

According to S. Moore (J. Bot. 58: 225, 1920) the species is "easily distinguished from *S. zenkeri* by the two-edged branchlets" and the larger leaves. The same features are, however, found in *S. zenkeri.*

Known only from the type (Gossweiler 7007) and another specimen without mature flowers from the same place (Gossweiler 7648).

S. grandifolia Hook. f.; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 22, 1935, but *excl.* fig. 10 p. 21 *(= S. scheffleri).* – Icon.: A. Chevalier, Vég. utiles Afr. trop. franç. 9, Forêt bois Gabon: p. 139 pl. 11, 1917 (sub nom. *Lavalleopsis densivenia);* Fl. Gabon 20: 141, 1973; Michaud in Mém. Inst. Fond. Afr. Noire 75: 257, 1966 (partial).

syn.: *Lavalleopsis grandifolia* (Hook. f.) Tiegh.; *L. densivenia* Engl.; *L. longifolia* De Wild. & Th. Durand; *L. klaineana* (Pierre) Tiegh. ex Engl.; *Cosmoneuron klaineanum* Pierre (name used in anatomical study; = *Comoneura klaineana* Pierre ms., erroneously distributed as *Strombosia ? klaineana* Pierre; based on Klaine 428, Libreville, Gabon; non *Octoknema klaineana* Pierre).

probable syn.: *Strombosia cyanescens* Mildbr., nom. (see note at the end of *Strombosia).*

Evergreen (shrublike) tree or shrub 4-20(-30) m tall, glabrous; bole short, free to 5-6 m height, 8-60(-80) cm Ø; crown dense, spreading; wood violet-red, hard, bark-slash red, without exudation (used as dye); branchlets terete; leaves ovate-elliptic, 7-30 × 3-16 cm, papery, shining, with 4-8 pairs of secondary nerves, prominent beneath, tertiary venation finely parallel; flowers bisexual, with sepals distinct, fasciculate (5-30) on a pad-like very short lateral shoot; petals pale green, 1-3 mm long; drupe 1,7 × 1,2 cm, with remains of calyx at apex.

Primary shady forest; firm-ground, moist, swampy or seasonally flooded forests, gallery forest, in understorey; often on shores of lakes and streams; common or gregarious; 1-1100 m alt.

Very variable in shape and size of leaves and in size of fruits.

Bioko/Fernando Poo.

S. nigropunctata J. Louis & J. Léonard; Harris, Vascul. Pl. Dzanga-Sangha Res. in Scr. Bot. Belg. 23: 152, 2002; Breteler, Syst. Geogr. Pl. 77: 121, 2007.

syn.: *S. cyanescens* Mildbr., nom. nud. in Wiss. Ergebn. 2. Deutsch. Zentr. Afr.-Exped. 1910-1911, 2.: 54, 1922 (based on Mildbraed 4454, 4551; these do not represent *S. zenkeri* or *S. scheffleri* as previously believed).

Evergreen tree 25 m, glabrous; bole 30 cm Ø; branchlets yellow-green, hardly compressed; leaves ± ovate-oblong, shiny above and hardly pustular, 10-14 × 4-6 cm, with 7-10 pairs of secondary nerves conspicuous beneath and anastomosing at leaf margins; flowers whitish, sepals 0,8 mm long, petals 5-6 mm long with black dots, stamens 5 mm long; fruit c. 2,2 × 1,7 cm.

Firm-ground forest; forest dominated by *Macrolobium dewevrei.*

S. pustulata Oliv. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 1: pl. 25 p. 103, 1959 (sub nom. *S. glaucescens* var. *lucida);* Fl. Gabon 20: 141, 1973 ; Keay, Trees Nigeria: 120, 1989; Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 401, 2000; Voorhoeve, Liber. High forest trees: 301, 1979 (sub nom. *S. glaucescens);* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 329, 2006 (partial).

syn.: *Strombosiopsis rigida* Engl. ms.

Evergreen tree (10-)20(-45) m, glabrous; crown small, dense; bole straight, 0,2-1 m Ø, 1,2 m in girth and base with short sharp root spurs; bark characteristic, smooth, yellowish-violet or ochreous-grey, peeling off in flakes (3-4 cm Ø), and leaving white patches; sapwood yellowish, sometimes gummy; branchlets subterete; leaves oblong to elliptic, thickly papery, 4-10(-15) × (2-)3-7 cm with 4-6 pairs of lateral nerves connected by a network of veins, shiny or mat, with or without (var. **lucida**) pustules on underside; flower pedicels with small bracteoles, petal whitish 4-5 mm long; fruit blackish purple, 1-3 cm long (eaten by birds).

Firm-ground rain-forest on well-drained soil; moist forest; closed shady forest, often on lake- and river sides; common and widespread (by birds); 1-770 m alt.

Comprises 2 vars.: – var. **pustulata;** – var. **lucida** (J. Léonard) Villiers (fig. of fruits in Hook. Ic. Pl. 23: pl. 2299, 1894, and Aubréville, l. c.).

According to Breteler (2007) it is still to be prooved that *S. pustulata* s. str. with a long style is conspecific with the short-styled *S. glaucescens.*

S. scheffleri Engl. – Icon.: Engler in Notizbl. Kön. Bot. Gart. Mus. Berlin 5, Appendix 21: 5, 1909; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: fig. 10, 1935; Fl. Gabon 20: 141, 1973; Troupin, Fl. Rwanda 1: 175, 1978; White & al., Evergreen for. fl. Malawi: 417, 2001: Beentje, Kenya trees, shrubs & lianas: 350, 1994; Fl. Zambes. 2/1: 335, 1963.

syn.: *S. toroensis* S. Moore; *S. minor* Engl.; *S. grandifolia* auctt., e. g. Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: fig. 10, f. sol., 1935, etc. from Uganda area, non Hook. f.

Evergreen tree (8-)15-35(-40) m, glabrous; bole clean, often divided from the base, slightly buttressed, to 50 cm Ø; bark grey brown, smooth but warty, flaking like a plane tree *(Platanus);* wood red or white, hard; young branches flexuous, green, compressed, becoming pale brown, cylindrical; leaves (ovate-)oblong, 6-20(-37) × 3-13 cm, light green, shining, not pustular below, with 4-8 pairs of secondary nerves, nervules straight or slightly reticulate, venation distinct; flowers greenish yellow or white, scented, in axillary or extra-axillary clusters, petals 3-5 mm long, pedicels without bracteoles; fruit black, distinctive, obconical, turbinate, 2-3 cm long, with a circular depression at apex and a long persistent style.

Lowland rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* sometimes dominant as a canopy tree in (sub-)montane and fringing forests; forests with *Pouteria altissima* or *Albizia gummifera* or *Newtonia buchananii;* upland rain-forest with *Albizia, Macaranga, Croton, Ocotea,* in understorey; wooded ravines; understorey tree in high rainfall savanna near streams; 10-2500 m alt.

Very variable in size and arrangement of leaves, in interpetiolar distances, even in the same tree.

Bioko/Fernando Poo.

Leaves often devoured by insects.

Specimen Mildbraed 4551 (S Cameroon) determined in herb. as *S. scheffleri* is *S. nigropunctata* (fide Breteler 2007), cf. above.

S. zenkeri Engl.

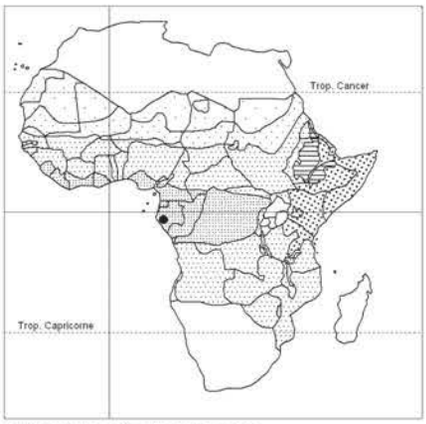
syn.: *S. mannii* Engl.

Evergreeen tree 13-15 m; branchlets subterete, slightly ridged, densely leafy; leaves coriaceous, narrowly elliptic, not pustular below, shiny, with 5-8 pairs of lateral nerves, venation ± irregular, obscure; flowers pale green, sepals distinct, ciliate, petals 1,5-2,5 mm long, with 1-2 bracts at base of pedicel; fruit 2-2,5 × 1,2-1,7 cm, long-stalked.

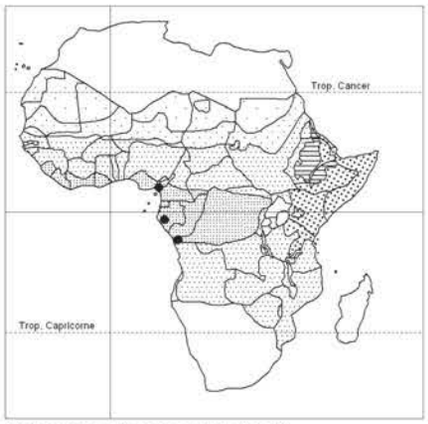
Forest; 1-1650 m alt.

Distinct from *S. gossweileri* (fide Breteler 2007: 121). – Specimen Mildbraed 4454 (S Cameroon) determined in herb. as *S. zenkeri* is *S. nigropunctata* (cf. above).

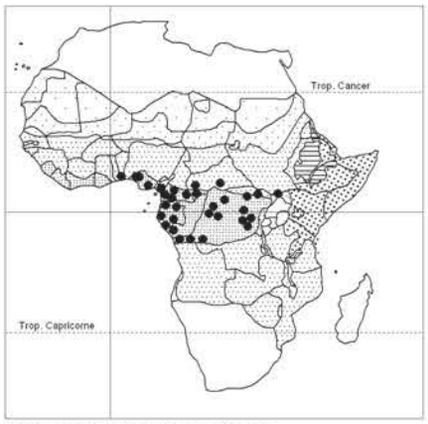
Can be confused with *Strombosiopsis tetrandra.*



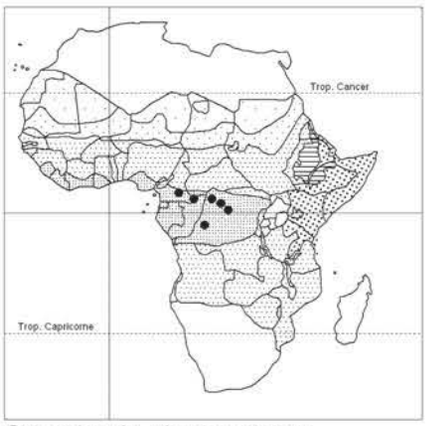
Strombosia fleuryana



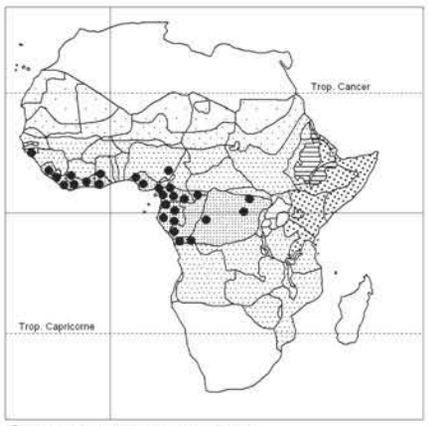
Strombosia gossweileri



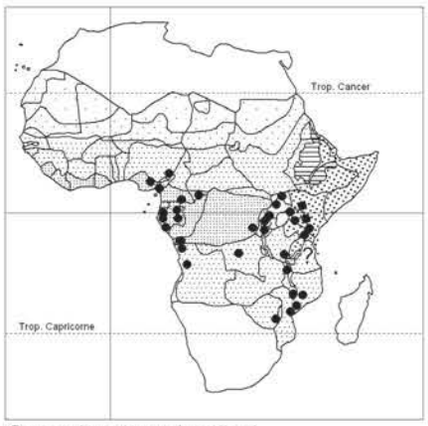
Strombosia grandifolia



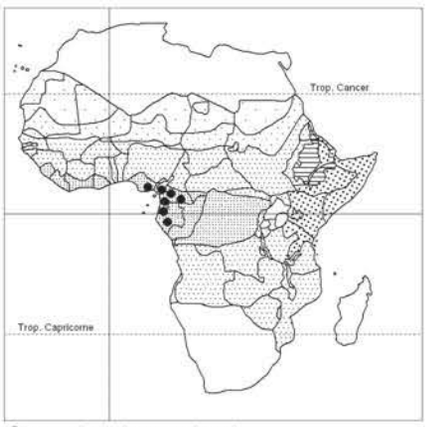
Strombosia nigropunctata



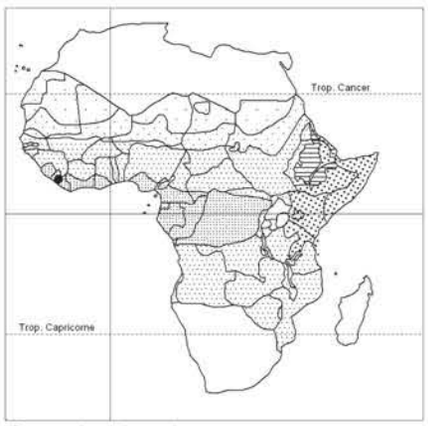
Strombosia pustulata



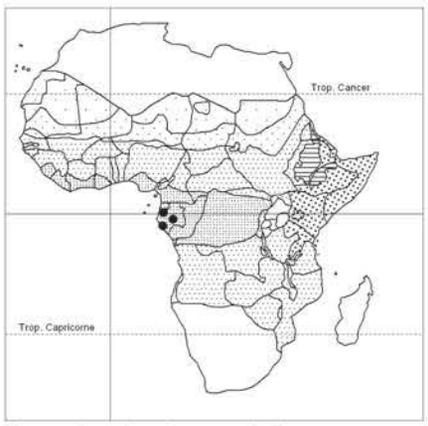
Strombosia scheffleri



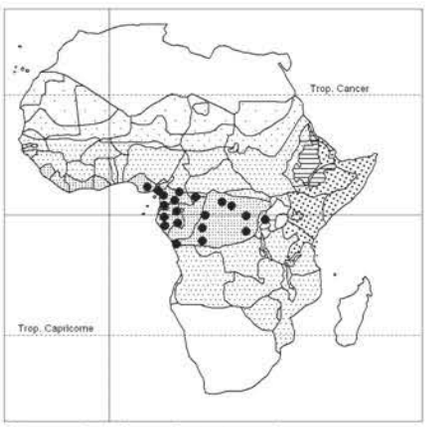
Strombosia zenkeri



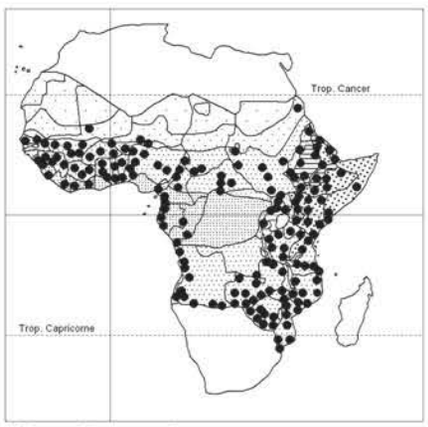
Strombosiopsis nana



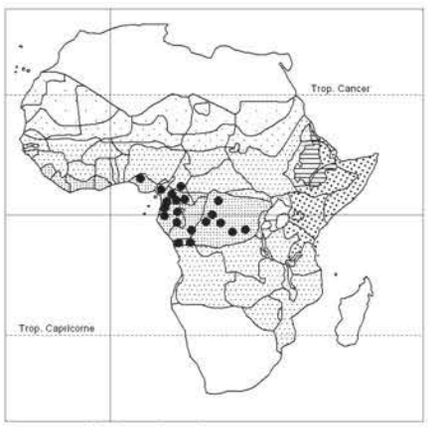
Strombosiopsis sereinii



Strombosiopsis tetrandra



Ximenia americana



Pentadiplandra brazzeana

STROMBOSIA

PLANT OF UNCERTAIN STATUS:

Strombosia sp. 1 sensu Cheek & al., Pl. Kupe: 355, 2004 and sensu Harvey & al., Pl. Bali Ngemba …: 115, + Fig. 6 p. 54, 2004. – Tree 6-20 m with stems and leaves similar to those of *S. scheffleri*, and fruit 1 cm Ø, turbinate, resembling *Diogoa.* – Forest, in Nigeria and Cameroon, 850-1430 m alt. – "Probably a new and threatened species".

SYNONYMS:

Strombosia cyanescens Mildbr., nom. nud. = **Strombosia nigropunctata**

glaucescens Engl. = **S. pustulata** var. **pustulata**

var. *lucida* J. Léonard = **S. pustulata** var.

grandifolia auctt., non Hook. f. = **S. scheffleri**

klaineana Pierre, error. = **S. grandifolia**

majuscula S. Moore = **Diogoa zenkeri**

mannii Engl. = **Strombosia zenkeri**

minor Engl. = **S. scheffleri**

retivenia S. Moore = **Diogoa zenkeri**

toroensis S. Moore = **Strombosia scheffleri**

STROMBOSIOPSIS / *3*

Tropical African genus.

Resembling species of *Strombosia,* but flowers 4-merous.

Strombosiopsis nana Breteler – Icon.: Kew Bull. 56: 752, 2001; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 329, 2006 (partial).

Shrub or treelet to 3 m tall, glabrous; branchlets green, ± compressed-winged; leaves with articulated or winged petioles, with drip tip, drying yellowish; flowers few (to 6) in axillary fascicles, creamy white, petals thick, 3,5-4 mm long; fruit red with narrow yellow stripes, smooth, 2 × 1,5 cm, without widened calyx.

Rain-forest; 0-100 m alt.

First identified as an "aberrant" *S. tetrandra* (herb. Wageningen); another gathering mixed with *Strombosia pustulata* (syn.: *S. glaucescens).*

[**S. pentamera** Q. Luke, ined., in Annontated checklist Shimba Hills, Kenya (J. E. Afric. Nat. Hist. 94: 60, 2005).]

Tree 15 m; bole straight; flowers cream-green, 5-merous!

Ecology not specified; <400 m alt.

Not mapped.

S. sereinii Breteler – Icon.: Adansonia, Sér. 3, 23: 304, 2001.

Tree to ± 20 m, glabrous; bole to 40 cm Ø; young branchlets slightly compressed, becoming (sub-)terete, green; flowers to 35 in subaxillary fascicles; petals thick, pale green to cream, 6 mm long; fruit pale green with paler stripes, ± smooth, c. 3 cm Ø, with strongly widened calyx rim (only tip of fruit visible).

Rain-forest; c. 400 m alt.

STROMBOSIOPSIS

S. tetrandra Engl., incl. var. *congolensis* (De Wild. & Th. Durand) De Wild. – Icon.: Engler in Notizbl. Kön. Bot. Gart. Mus. Berlin 5, Appendix 21: 6, 1909; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 18, 1935; Fl. Trop. E. Afr., Olacac.: 12, 1968; Fl. Gabon 20: 155, 1973; Wilks & Issembé, Guide prat. ident. arbres Guinée Equat.: 395, 2000; Michaud in Mém. Inst. Fond. Afr. Noire 75: 267, 1966 (partial).

syn.: *S. congolensis* De Wild. & Th. Durand

Shrub, treelet or tree 4-20-30 m, glabrous, often low-branching; bole erect (0,15-)0,3-1,2 m Ø, irregularly and deeply fluted at base; crown dense, large; bark dark red to brown, exuding red sap when slashed; branchlets angular or narrowly winged; inflorescence axillary, on short shoots, with many (6-25) flowers; petals cream, 4-5 mm long; calyx distinctly lobed, also in fruit; drupe green to purplish, pear-shaped, 2,5-3,5 × 2-3 cm, embedded in the accrescent calyx.

Primary forest on well-drained soils or in forest subject to flooding; rain-forest; shady humid woods; forest gallery; 1-1200 m alt.

Very variable in growth form and size of leaves.

An important local medicinal plant.

Leaves resembling those of *Diogoa* but more leathery.

SYNONYMS:

Strombosiopsis buxifolia S. Moore = **Diospyros hoyleana** F. White subsp. **hoyleana** *(Ebenaceae)*

congolensis De Wild. & Th. Durand = **Strombosiopsis tetrandra**

klaineana Pierre = **Strombosia grandifolia**

majuscula S. Moore = **Diogoa zenkeri**

rigida Engl., ms. = **Strombosia pustulata**

sp. sensu St. Aubin. For. Gabon 1963 = **Engomegoma gordonii**

zenkeri Engl. = **Diogoa zenkeri**

XIMENIA / *1*

Seven species in the World's tropics and subtropics of rather close affinity (Sleumer, Fl. Neotrop. Monogr. 38: 89, 19 84). Root parasitic.

Ximenia americana L. – Wild Olive or Lime, Seaside Plum, False Sandalwood. – Icon.: Aubréville, Fl. Forest. Soud. -Guin.: 350 pl. 73 figs. 4-6, 1950; Fl. W. Trop. Afr., ed. 2, 1/2: 646, 1958; Fl. Zambes. 2/1: 331, 1963; Fl. Gabon 20: 109, 1973; Keay, Trees Nigeria: 312, 1989; Beentje, Kenya trees, shrubs & lianas: 350, 1994; Fl. Ethiopia 3: 357, 1989; Thulin, Fl. Somal. 2: 121, 1999; B. Curtis & C. Mannheimer, Tree atlas Namibia 72-73, 2005; Roodt, Shell field guide 1, trees & shrubs Okavango Delta: 64, 1998. – All of var. **americana.** – Hawthorne & Jongkind, Woody pl. west. Afric. forests: 325, 326, 2006.

Shrub or treelet 3-8 m tall, usually with sharp straight axillary spines 6-12 mm long, sometimes bearing leaves, or the lateral shoots ending in a spine, sometimes unarmed; with the habit of a lemon or a Tangerine orange (Welwitsch); bark grey or brown to almost black, flaking off in small rectangular patches; slash reddish; leaves small (2-8 × 1-4 cm), paper-thin or semi-succulent, alternate or clustered on spur shoots; flowers cream, fragrant, axillary, on spur shoots or on spines in small heads, petals villous within; fruit yellow, plum-like (like *Ziziphus jujuba),* edible. Seed with c. 60% oil.

Savanna; forest thickets. – See below under the varieties.

Very variable in leaf texture.

Bioko/Fernando Poo; Botswana, Namibia, Caprivi Strip, S. Africa, Swaziland; Madagascar (var. **caffra**).

A pantropical species with many local forms of doubtful taxonomic significance (Sleumer 1984: 90-91, with list of synonyms). Var. **americana** also in tropical and subtropical Asia through to Australia and in the Americas from Florida and the West Indies through to S Brazil – C Argentina). Var. **argentinensis** DeFilipps in Paraguay-Argentina.

Comprises 2 vars. in our area.

– Var. **americana** [syn.: *X. americana* L. var. *microphylla* Welw. ex Oliv., var. *sphaerica* Chiov., var. *inermis* Hochst. and var. *oxyprena* Chiov.; *X. rogersii* Burtt Davy; *X. laurina* Del.; *X. spinosa* Salisb.].

Leaves and branches glabrous; flowers in pedunculate umbellate racemes.

Acacia, Acacia-Balanites woodland; *Combretum-Terminalia* wooded grassland; dry lowland woodland; rocky hillslopes; riverine and coastal formations; 1-2100 m alt.

Occurs over the whole range of the species.

– Var. **caffra** (Sond.) Engl. [bas.: *X. caffra* Sond.; syn.: *X. caffra* Sond. var. *natalensis* Sond.; *X. americana* L. var. *tomentosa* Engl., nom.; *X. caffra* Sond. var. *longipedicellata* Cavaco & Keraudren and var. *glabra* Cavaco & Keraudren; *X. madagascariensis* Cavaco & Keraudren; *X. perrieri* Cavaco & Keraudren (the taxa cited from Madagascar were put in synonymy under *"X. caffra* var. *natalensis"* by De Filipps in Bol. Soc. Brot. Sér. 2, 44: 73, 1970)]. – Icon.: Fl. Zambes. 2(1): 330, 1963; Troupin, Fl. Rwanda 1: 175, 1978; Fl. Ethiopia 3: 357, 1989; Roodt, o.c.: 66; Heide-Jørgensen, Parasitic flow. pl.: 27, 2008.

– All sub nom. *X. caffra* var. *caffra.* – Fl. Madag. & Comores 59: 13, 1955 (cf. synonyms above).

Leaves and branches glabrous to tomentose; flowers solitary or in clusters without a common peduncle.

Dry lowland woodland, wooded grassland; coastal bushland; alluvial *Acacia* woodland and bushland; *Euphorbia* woodland; riverine bushland; 0-2000 m alt.

Hairiness very variable. Var. *natalensis* described as having young leaves glabrous above, glabrous or hairy below, and branchlets glabrous, sparsely puberulous, or rarely pubescent; and petals glabrous on outer surface (± pubescent in var. *caffra).* In e. g. Ethiopia var. *natalensis* is recorded from lower altitude (400-1300 m) than var. *caffra* (1200-1750 m), but not so in e. g. Somalia. – Intermediates are reported from Somalia (Thulin, Fl. Somal. 2: 127, 1999) and these "best included under var. *natalensis"* (fide Cuccuini, l. c.).

Occurring over the whole African range of the species. Also in Madagascar.

All parts used in local medicine. Wood resembling that of *Santalum album* L. – Not cultivated.

Note: *Ximenia americana,* Angola, cited by Exell in J. Bot. 65, Suppl. Polypet.: 70-71, 1927: specimens Gossweiler 2239 (River Cuchi) and 2682 (Dongo, Cuelai, Ganguellas) belong to *Olax gossweileri.*

SPECIES OF UNCERTAIN STATUS:

Ximenia gabonensis Baillon ex Laness. Described by J. L. de Lanesssan in his "Les plantes utiles des colonies françaises": 834, 1886.

According to Villiers (Fl. Gabon 20: 108, 1973) it is a shrub with alternate leaves without stipules; flowers in axillary clusters; petals absent; stamens 8-10, free; fruit a yellow drupe.

No type cited.

Vernacular names indicated: elozy, zégué.

Common on the edge of the Gabon estuary.

Not cited by A. Walker & R. Sillans, Pl. utiles Gabon: 319, 1961, under *Ximenia,* but vernacular names are similar for *X. americana,* and also for lemon.

SYNONYMS:

Ximenia americana L.

var. *inermis* Hochst. = **Ximenia americana** var. **americana**

var. *microphylla* Oliv. = **X. americana** var. **americana**

var. *natalensis* Sond. = **X. americana** var. **caffra**

var. *oxyprena* Chiov. = **X. americana** var. **americana**

var. *sphaerica* Chiov. = **X. americana** var. **americana**

var. *tomentosa* Engl. = **X. americana** var. **caffra**

americana sensu Exell 1927 p.p. (Gossweiler) = **Olax gossweileri**

caffra Sond. = **Ximenia americana** var. **caffra**

var. *longipedicellata* Cavaco & Keraudren = **X. americana** var. **caffra**

var. *natalensis* Sond. = **X. americana** var. **caffra**

laurina Del. = **X. americana** var. **americana**

madagascariensis Cavaco & Keraudren = **X. americana** var. **caffra**

perrieri Cavaco & Keraudren = **X. americana** var. **caffra**

rogersii Burtt Davy = **X. americana** var. **americana**

spinosa Salisb. = **X. americana** var. **americana**

PENTADIPLANDRACEAE / *1* g. / *1* sp.

PENTADIPLANDRA / *1*

Monospecific. First placed in *Tiliaceae*, then in *Capparaceae*.

BAYER, C. (2000). On the identity of Cotylonychia Stapf (Sterculiaceae). *Kew Bull* 55: 499-500.

Pentadiplandra brazzeana Baill. – Icon.: Bot. Jahrb. Syst. 24: pl. 3, 1987 (sub nom. *Cercopetalum dasyanthum);* Pax & K. Hoffmann in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 17b: 206, 1936; Fl. W. Trop. Afr., ed. 2, 1(2): 650, 1958; Fl. Gabon 20: 165, 1973.

syn.: *P. brazzeana* Baill. var *longeacuminata* (De Wild.) Pax & K. Hoffm.; *P. dasyanthum* (Gilg) Exell, incl. var. *longeacuminatum* De Wild.; *P. gossweileri* Exell; *Cercopetalum dasyanthum* Gilg; *Cotylonychia chevalieri* Stapf *(Sterculiaceae).* – All of var. **brazzeana**.

Sarmentous shrub or liane 3-20 m tall with glabrous branchlets; stem 2-12 cm Ø; leaves alternate, glabrous, obovate, 8-12 × 3-4 cm, venation reticulate and elevated on both sides; flowers dioecious, conspicuous, in short racemes; petals white spotted

red or bluish towards apex; stamens (male flowers) 10-13 on a short androgynophore; fruit a round red berry, 3 cm Ø, with flavour of horse-radish, edible.

In a variety of habitats: bush savanna; primary firm-ground forest with e. g. *Scorodophleus;* secondary forests; open places in forest; forest edges; riversides; old cultivations; c. 5-1600 m alt.

Comprises 2 vars.: – var. **brazzeana**; – var. **valida** Pellegr. ex Villiers with ± elliptic leaves and smaller flowers (Gabon).

OPILIACEAE / *4* g. / *9* spp.

Formerly included in *Olacaceae.* – A tropical family of 10 genera, 33 species.

For one species, fruit unknown and known only from the type *(Rhopalopilia hallei).*

HEIDE-JØRGENSEN, H. S. (2008). – See under *Olacaceae* p. 168.

HIEPKO, P. (2008). *Opiliaceae Species Plantarum: Flora of the World* 12: 1-71. Conservatoire & Jardin Botaniques, Genève.

MALÉCOT, V. & D. L. NICKRENT (2008). – See under *Olacaceae* p. 168.

OPILIA / *2*

syn.: *Groutia* Guill. & Perr.

Genus of 2 species.

Opilia amentacea Roxb., incl. var. *tomentella* Oliv.; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 324, 2006. – Icon.: Guillemin & Perrottet, in Fl. Seneg. Tent. 1: pl. 22, 1831 (sub nom. *Groutia celtidifolia*); Thonner, Blütenpfl. Afr.: pl. 36, 1908; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: fig. 21 G-J (sub nom. *O. tomentella*) and 21 K *(O. celtidifolia),* 1935; Aubréville, Fl. forest. soud.-guin.: 350 pl. 73 figs. 8-9, 1950; Hiepko in Willdenowia 12: 165, 1982 (excl. fruit); Beentje, Kenya trees, shrubs & lianas: 351, 1994; Fl. Gabon 20: 171, 1973 and Fl. Cameroun 15: 171, 1973 (sub nom. *O. celtidifolia*); Akoegninou & al., Fl. analyt. Bénin: 840, 2006 (Wagen. Univ. Pap. 06); Heide-Jørgensen, o.c.: 31; Hiepko, Opil., Spec. Pl.: Fl. World: 25, 2008.

syn.: Enum. 2: 160, 1993; *Groutia celtidifolia* Guill. & Perr.; *Opilia angiensis* De Wild.; *O. ruwenzoriensis* De Wild.; *O. parviflora* Volkens ex A. Peter, nom. nud.; *O. javanica* Miq. – For full synonymy (Asia), see Hiepko (1982): 163, and (2008): 23-24. *O. senegalensis* Baill. nom. illegit. superfl.

Loosely climbing evergreen shrub or liane 2-15(-30) m tall, rarely an erect shrub or small tree, branching from near the base; branches always unarmed; young branches green, sometimes reddish, glabrous to tomentellous, mostly with branched hairs; bark grey to dark brown, smooth or fissured with anastomising corky lenticels; leaves ovate to elliptic, glabrous to ± tomentellous, 5-12(-16) × 2-6 cm, acute or rounded at apex; inflorescence a raceme to 5 cm long, axillary (rarely on older branches or trunk), first cone-like, later catkin-like, covered with caducous ± pubescent bracts; flowers small, cream to yellowish green, fragrant, numerous, appearing with mature leaves; fruit a drupe, yellow to orange, 2-3 cm long.

In a wide range of habitats, in drier or higher rainfall areas of Africa, but often riverine; coastal bushland; *Acacia* woodland; wooded grassland, tall grass savanna, fringing forest; riparian scrub along temporary streams; dry forest (close to savanna); in rocky parts of barrancos (Angola); light rain-forest; climbing in *Tamarindus* (Imatong Mts, Sudan); in tangle on termite mounds;

an undergrowth component of the *Opilio amentacea-Stereospermetum kunthiani* association in teak plantations on shallow soils in Benin (C. J. Ganglo in J. Bot. Soc. Bot. France 16: 71-81, 2001); 0-2400 m alt.

Very variable in shape, size, texture and pubescence of leaves, and in indumentum of branches. Characters are grading: In N and E parts of range (as in Malesia) usually glabrous, leaf-apex acute; in SE part, tomentellous and leaf-apex obtuse; in E C part intermediates with stout inflorescences with brown hairs but branches ± glabrous and leaves lanceolate (map in Hiepko 1982: p. 167). Four morphological "informal" groups with ± separate geographical ranges are distinguished by Hiepko.

S Madagascar; India, Sri Lanka, Burma, Thailand, Indochina, Malesia to the Solomon Isl., N Australia [map in Hiepko 1982: p. 168, and Fl. Males. 1, 10(1): 47, 1984, and Opil., Spec. Pl., Fl. World 2008: 60].

Inflorescences sometimes galled. – Probably a root-parasite (haustoria found on roots in Togo).

O. campestris Engl. – Icon.: Engler in Bot. Jahrb. Syst. 43: 174, 1909; Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 39, 1935; Fl. Ethiopia 3: 358-359, 1989 (vars. included); Thulin, Fl. Somal. 2: 129, 1999; B. Curtis & C. Mannheimer, Tree Atlas Namibia: 70-71, 2005. – Icon.: Hiepko, Opil., Spec. Pl.: Fl. World: 28, 29, 2008.

syn.: *Opilia* sp. sensu Exell & Mendonça, Consp. Fl. Angol. 1(2): 339, 1951, quoad specim. Gossweiler 9188, 9197, 10079 (of var. **campestris**).

Deciduous shrub or small tree, sometimes scandent, to 5 m tall; branches often with spines (shortshoots); young branches mostly puberulous; bark grey-brown to blackish; leaves elliptic to broadly ovate, 1-5 × 0,6-3 cm, hairy when young, becoming glabrous; inflorescence like *O. amentacea* but shorter; flowers appearing before leaves; drupe white-green to purple, beaked when young, c. 1 cm long, edible.

Dry deciduous bushland, wooded grassland, usually associated with *Commiphora;* on granite and limestone slopes; often on termite mounds; 1-1500 m alt.

Namibia (var. **campestris**).

Comprises 3 vars.: – var. **campestris** (leaves broadly ovate, flowers in small groups) with disjunct distribution (E and SW parts of range); – var. **glabra** Hiepko (with glabrous pedicels) in Angola (only type locality, Moçamedes); – var. **strobilifera** (Hutch. & E. A. Bruce) Hiepko (leaves ± elliptic, flowers solitary) in Ethiopia-Somalia (above 1000 m). – Maps in Hiepko (2008): 60-61.

SYNONYMS:

Opilia afzelii Engl. = **Urobotrya congolana** subsp.

angiensis De Wild. = **Opilia amentacea**

angolensis Exell & Mendonça = **Opilia campestris** var. **campestris**

angustifolia (Stapf) Engl. = **Urobotrya congolana** subsp. **afzelii**

bruneelii De Wild. = **U. sparsiflora** subsp.

celtidifolia (Guill. & Perr.) Endl. ex Walp., incl. var. *sphaerocarpa* Chiov. and var. *tomentella* (Oliv.) G. Ll. Lucas = **Opilia amentacea**

congolana Baill. = **Urobotrya**

javanica Miq. = **Opilia amentacea**

latifolia (Stapf) Engl. = **Urobotrya congolana** subsp. **afzelii**

macrocarpa Pierre & Engl. = **Urobotrya congolana** subsp. **congolana**

mildbraedii Engl. = **Thecacoris lucida** *(Euphorbiaceae)*

minutiflora (Stapf) Engl. = **Urobotrya congolana** subsp. **congolana**

obovata A. Peter = **Embelia** sp. ? *(Myrsinaceae)*

parviflora Volkens ex A. Peter, nom. nud. = **Opilia amentacea**

ruwenzoriensis De Wild. = **Opilia amentacea**

sadebeckii Engl. = **Pentarhopalopilia umbellulata**

senegalensis Baill. = **Opilia amentacea**

sp. sensu Consp. Fl. Angol. 1: 339, p. p. = **Opilia campestris** var. **campestris**

sparsiflora Engl. = **Urobotrya sparsiflora**

stapfiana (Hutch. & Dalziel) Sleumer = **Urobotrya congolana** subsp. **afzelii**

strobilifera Hutch. & E. A. Bruce = **Opilia campestris** var.

tomentella (Oliv.) Engl. = **Opilia amentacea**

trinervia (Stapf) Engl. = **Urobotrya congolana** subsp. **afzelii**

umbellulata Baill. = **Pentarhopalopilia umbellulata** var. *marquesii* Engl. = **P. marquesii**

PENTARHOPALOPILIA / *2*

bas.: *Rhopalopilia* Pierre sect. *Pentarhopalopilia* Engl.

Genus of 4 species, 2 in Africa, 2 in Madagascar. Flowers 5-merous, hypogynous, in (sub-)umbellate inflorescences.

Pentarhopalopilia marquesii (Engl.) Hiepko – Icon.: Engler in Bot. Jahrb. Syst. 43: 174, 1909, and Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 39, 1935 (sub nom. *Rhopalopilia marquesii* and *R. soyauxii);* Fl. Gabon 20: 177, 1973; Hiepko in Bot. Jahrb. Syst. 108: 281, 1987 (partial); Hiepko, Opil., Spec. Pl.: Fl. World: 31, 2008.

syn.: Enum. 2: 161, 1993; *Opilia umbellulata* Baill. var. *marquesii* Engl.

Scandent shrub or liane to 5 m tall, rarely erect shrub; young branches slender, densely fulvous-pilose with hairs curved downwards; leaves chartaceous to ± coriaceous, glabrescent; inflorescence puberulous, with caducous bracts, rachis 0,7-1,5 cm long; flowers yellowish green; drupe ± ellipsoid, pale orange, 1,2 × 0,8 cm.

(Muteshi and mavunda) thickets and forest; riverine forest, moist river valleys; 0-1200 m alt.

Not in Gabon.

P. umbellulata (Baill.) Hiepko – Icon.: Fl. Trop. E. Afr., Opiliaceae: 6, 1968 (sub nom. *Rhopalopilia umbellulata);* Hiepko in Bot. Jahrb. Syst. 108: 281, 283, 1987; Beentje, Kenya trees, shrubs & lianas: 352, 1994; Hiepko (2008): 31.

syn.: *Opilia umbellulata* Baill. s. str., excl. var. *marquesii* Engl. *(= P. marquesii); O. sadebeckii* Engl.

Scandent shrub or liane, heliophilous, to 10 m tall, rarely erect shrub; young branches greenish, glabrous; bark with longitudinal striations (= anastomosing lenticels); adult form with stem base c. 1,5 cm Ø with 2 whorls of leafless branches (stolons) creeping on the soil for a distance before finding support for climbing (fide Hiepko, o.c.: 282); leaves coriaceous, glabrous, yellowish-green, glossy above; inflorescence puberulous, bracts caducous, rachis 1-2(-3) cm long; flowers greenish white, fragrant; drupe ± round, golden yellow (-orange), c. 1 cm Ø.

Coastal bushland on coral; *Brachystegia* woodland; dry evergreen forest; locally common; 0-850 m alt.

Root parasite (roots with haustoria).

Not in Madagascar [= **P. madagascariensis** (Cavaco & Keraudren) Hiepko].

RHOPALOPILIA / *3*

African genus.

Flowers 4-merous, perigynous, in racemes or subumbellate inflorescences.

Rhopalopilia altescandens Mildbr. ex Sleumer – Icon.: Fl. Gabon 20: 179, 1973.

Heliophilous glabrous liane to >6 m tall; stem at base 1-2 cm Ø; bark chestnut brown; inflorescence subumbellate, rachis <5 mm long; flowers greenish; drupe ± ovoid, c. 1,5 cm Ø, resting on the thickened cupula.

Rain-forest, riverine or swampy or seasonally flooded forests; 0-650 m alt.

R. hallei Villiers – Icon.: Fl. Gabon 20: 175, 1973; Hiepko in Bot. Jahrb. Syst. 108: 275, 1987 (photo. type).

Shrub 2-2,5 m tall; twigs densely pubescent, yellowish brown, hairs curved upwards; leaves small (1,8-5 × 1,2-1,7 cm), glabrous above, glabrescent beneath but nerves and margins hairy; inflorescence a raceme, brownish pubescent, rachis 1,5 cm long; flowers yellowish-green, pubescent outside (first ones to open are found in upper half of raceme, fide Hiepko, o.c.: 274; cf. **R. pallens** var. **pallens**); fruit unknown.

On the Bioudou River (Gabon).

Known only from the type collected in 1963.

R. pallens Pierre – Icon.: Flore Gabon 20: 177, 1973; Hiepko, Opil., Spec. Pl.: Fl. World: 36, 2008 (var. **pallens**); – Engler in Bot. Jahrb. Syst. 43: 176, 1909, and Sleumer in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 40, 1935 (sub nom. *R. poggei);* Louis & Léonard in Fl. Congo belge 1: 285, 1948, the latter of var. **glabriflora**.

Shrub or small tree, sometimes scandent, (1-)3-5(-15) m tall; twigs densely pubescent with yellowish-brown hairs curved upwards; leaves glabrous above, glabrescent beneath, elliptic to ovate, 4-15(-22) × (1,5-)2-6(-8) cm; inflorescence a raceme, flower-bearing part swollen, club-like, rachis c. 1 cm long (apical flowers open first, fide Hiepko, o.c.: 277; cf. **R. hallei**); drupe ellipsoid, c. 1,5 × 0,8 cm, resting on the thickened cupula.

Rain-forest, riverine forest, secondary forests, in understorey; 0-900 m alt.

Variable in shape of leaves, and in hairiness (see varieties).

Comprises 2 vars.: – var. **pallens** (syn.: *R. pallens* Pierre var. *angustifolia* De Wild.) with all parts of plant yellowish-puberulous; – var. **glabriflora** J. Léonard (syn.: *R. poggei* Engl., excl. var. *bequaertii* De Wild. = **R. altescandens**) with inflorescence, flower and fruit glabrous, in Zaire (map in Hiepko, o.c.: 278).

RHOPALOPILIA

SYNONYMS:

Rhopalopilia bequaertii (De Wild.) J. Léonard = **Rhopalopilia altescandens**

marquesii (Engl.) Engl. = **Pentarhopalopilia**

pallens Pierre var. *angustifolia* De Wild. = **Rhopalopilia pallens** var. **pallens**

poggei Engl. = **R. pallens** var. **glabriflora** var. *bequaertii* De Wild. = **R. altescandens**

soyauxii Engl. = **Pentarhopalopilia marquesii**

ubanghensis Engl. = ? **Urobotrya sparsiflora** subsp. **sparsiflora**

umbellulata (Baill.) Engl. = **Pentarhopalopilia**

verdickii De Wild. = **P. marquesii**

UROBOTRYA / *2*

syn.: *Opilia* subgen. *Urobotrya* (Stapf) Engl.

Genus of 7 species, 2 in Africa, 5 in tropical SE Asia.

Flowers 5-merous, in racemes; tepals free, recurved; stamens exceeding perianth.

Urobotrya congolana (Baill.) Hiepko – Icon.: Fl. Cameroun 15: 171, 1973 and Fl. Gabon 20: 171, 1973 (sub nom. *Opilia congolana;* both of subsp. **congolana**); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 327, 2006; Hiepko, Opil., Sp. Plant.: Fl. World 12: 14, 15, 2008 (also maps p. 58-59).

syn.: *Opilia macrocarpa* Pierre & Engl.; Enum. 2: 161, 1993.

Shrub or small tree, sometimes scandent, 1-5 m tall; young branches and leaves glabrous; leaves elliptic to ovate, yellow-green, with conspicuous pustulate spots when dried; rachis of inflorescence 17-30(-42) cm long; flowers green, in >15 cm long pendulous racemes; filaments of stamens white; drupe yellow, ellipsoidal to subglobose, 1,5-2 cm Ø.

Rain-forest; dry and riverine forests, secondary forests; in understorey; 0-1200 m alt.

Variable in shape, size and venation of leaves, and in shape of fruit.

Bioko/Fernando Poo.

Comprises 2 subspp.: – subsp. **congolana** with obovate leaves and *ellipsoidal fruit*, in E part of range; – subsp. **afzelii** (Engl.) Hiepko [syn.: *U. angustifolia* Stapf; *Opilia angustifolia* (Stapf) Engl.; *O. latifolia* (Stapf) Engl.; *Urobotrya latifolia* Stapf; *U. trinervia* Stapf; *Opilia trinervia* (Stapf) Engl.; *Urobotrya stapfiana* Hutch. & Dalziel, nom. superfl.; *Opilia stapfiana* Hutch. & Dalziel) Sleumer]; with narrower leaves with strongly developed basal side-nerves, and with *globose* fruit, in W part of range (disjunct species).

U. sparsiflora (Engl.) Hiepko – Icon.: Louis & Léonard in Fl. Congo belge 1: 281, 1948 (subsp. **bruneelii**).

(Scandent) shrub 1-3 m tall with densely puberulous twigs; leaves glabrous above, sparsely hairy to glabrescent beneath; rachis of inflorescence 7-22 cm long; flowers green, filaments of stamens white; drupe ellipsoidal, red to orange, c. 1,5 × 0,8 cm.

Swamp forest, seasonally inundated riverine forest; sometimes secondary forest; in understorey; 0-470 m alt.

Comprises 2 subspp.: – subsp. **sparsiflora**, with short inflorescence rachis and *solitary flowers;* – subsp. **bruneelii** De Wild. with longer rachis and *flowers in groups of 3-4,* in central Zaire (map in Hiepko, Bot. Jahrb. Syst. 107: 147, 1985; Hiepko 2008: 59).

UROBOTRYA

SYNONYMS:

Urobotrya afzelii (Engl.) Stapf ex Hutch. & Dalziel = **Urobotrya congolana** subsp.

angustifolia Stapf = **U. congolana** subsp. **afzelii**

latifolia Stapf = **U. congolana** subsp. **afzelii**

minutiflora Stapf = **U. congolana** subsp. **congolana**

stapfiana Hutch. & Dalziel = **U. congolana** subsp. **afzelii**

trinervia Stapf = **U. congolana** subsp. **afzelii**

MEDUSANDRACEAE / *2* g. /*8* spp.

Endemic to tropical Africa; here including *Soyauxia,* first placed in *Passifloraceae,* then in *Flacourtiaceae;* but due to the structure of the ovary, Brenan referred it to a new order *(Medusandrales)* with a new family *(Medusandraceae).* Recently it was transferred to *Perisdiscaceae,* a tropical S. American family (fide Cheek in Cheek & al., Pl. Kupe, etc., Cameroon: 332, 359, 2004).

SOLTIS, D. E. & al. (2007). Monophyly and relatiohsips of the enigmatic family Peridiscaceae. *Taxon* 56: 65-73 *[= Soyauxia].*

For one species *(Soyauxia glabrecens)* fruit unknown?

MEDUSANDRA / *2*

Medusandra mpomiana Letouzey & Satabié

Tree 10-20 m, glabrous, sometimes multistemmed from the base (regrowth); trunk 20-60 cm Ø at base, short, sometimes fluted or distorted; branches bowed, drooping; young branchlets and buds puberulous, soon glabrescent; leaves elliptic, 24 × 10 cm, with 2(-3) pairs of lateral nerves, stipules caducous, petiole 2-6 cm long, swollen at base and apex; flowers white, fragrant, 5-merous in short axillary spikes (1,5 cm long), sepals accrescent, reflexed; capsule round, c. 2 cm Ø, 3-valved, 1-seeded.

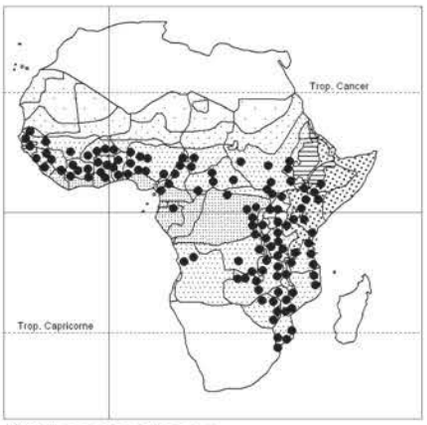
(Primary) forest on slopes of plateau; abandoned plantations of *Elaeis* and *Albizia* in forest area; abandoned cultivations in former *Terminalia glaucescens* savanna, with new growth of *Lophira alata, Pycnanthus angolensis;* common and abundant; 420-1200 m alt.

M. richardsiana Brenan – Icon.: Brenan in Kew Bull. 7: 230, 232, 1952.

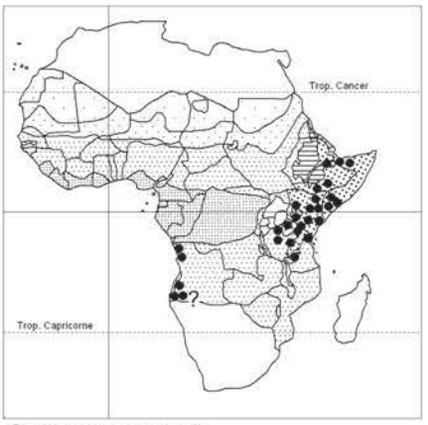
Tree 9-18 m, puberulous, sometimes with numerous shoots from base; bole c. 25 cm Ø, 0,9-1,5 m in girth at breast-height, sometimes fluted at base; slash pinkish-brown with slow exudation of pale yellow-brown watery latex; bark smooth, patched green-brown and grey with fine horizontal ridges (fused lenticels); leaves ± elliptic, 10-30 × 5-14 cm, with 8 pairs of lateral nerves, (sub-)coriaceous, deep green; new leaves pinkish-red; flowers white, numerous in conspicuous pendulous spikes 3-15 cm long; capsule ± round, 3-valved, 1-seeded, eaten by parrots and baboons.

Closed high forest and at forest margins; lowland evergreen forest, old secondary forest; cassava farm; pioneer in disturbed forest, but threatened by clearance of forest for farming, road-building, logging (fide Cheek, o.c.: 166); (50-)200-600 m alt.

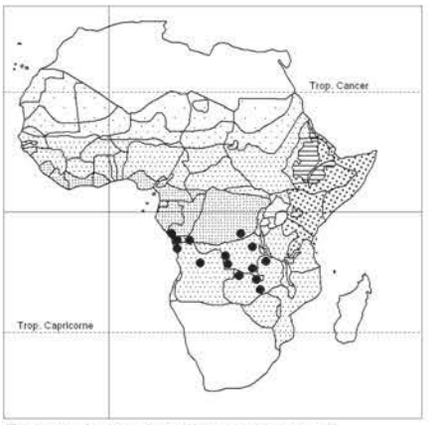
Endemic to SW Cameroon.



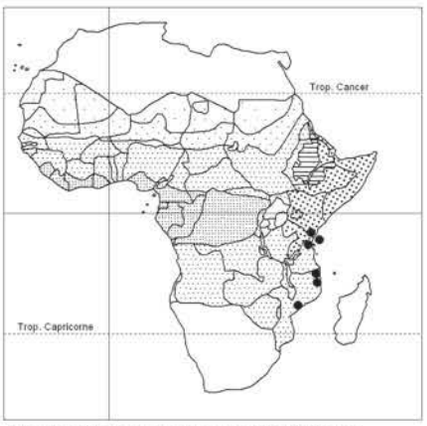
Opilia amentacea



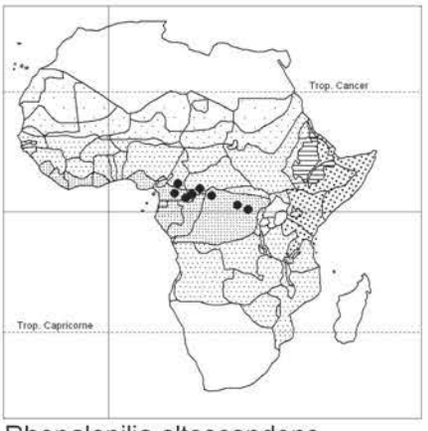
Opilia campestris



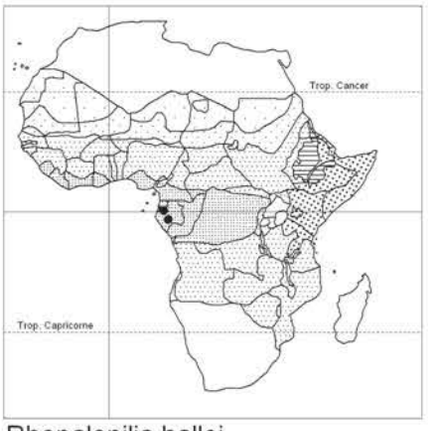
Pentarhopalopilia marquesii



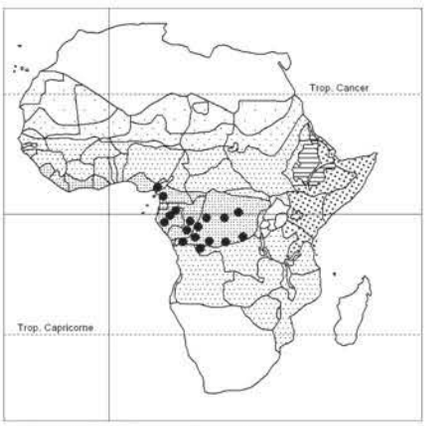
Pentarhopalopilia umbellulata



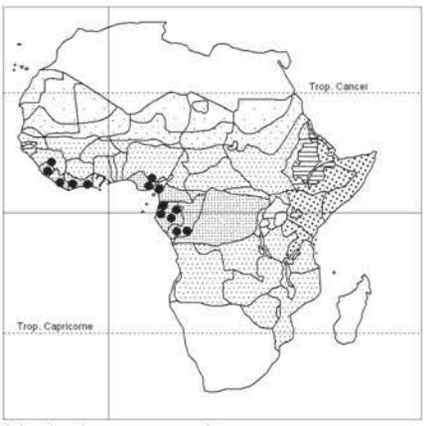
Rhopalopilia altescandens



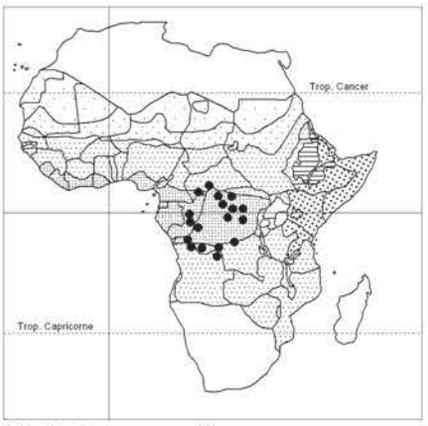
Rhopalopilia hallei



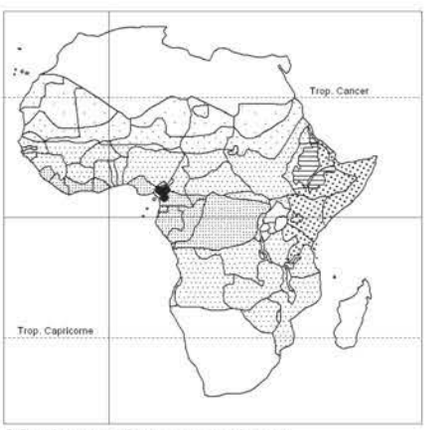
Rhopalopilia pallens



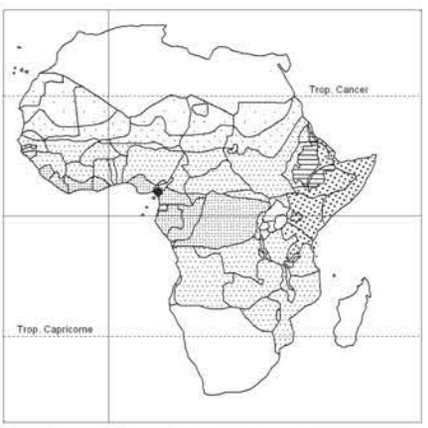
Urobotrya congolana



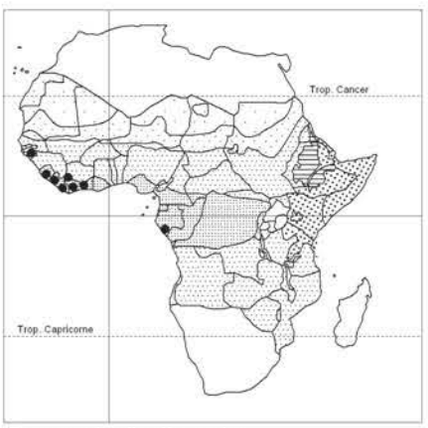
Urobotrya sparsiflora



Medusandra mpomiana



Medusandra richardsiana



Soyauxia floribunda

SOYAUXIA / *6*

(Peridiscaceae; cf. remark above under the family).

African genus. Species difficult to distinguish in the absence of flowers. – Vegetatively resembling certain *Euphorbiaceae.* Three yet undescribed species are reported by Soltis & al., o.c.: 66 (Cheek unpubl. data).

Soyauxia floribunda Hutch. – Icon.: Brenan in Kew Bull. 8: 509, 1953 (partial); Berhaut, Fl. ill. Sénégal 6: 274, 1979; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 145, 2006.

syn.: *S. gabonensis* sensu A. Chev., Explor. Bot. Afr. occ. franç. 1: 288, 1920, non Oliv.

Shrub or slender tree 2-9-10 m tall; stems very flexible (used for fishing nets); branchlets closely pubescent; leaves oblong-elliptic, 8-27 × 3-8 cm, glabrous beneath when mature, with 12-16 pairs of lateral nerves; inflorescence a not continuous spike, 12 cm long; sepals glabrous outside except at base, petals white, stamens bluish; sepals cupular in fruit; capsule oblong, c. 1,5-2 cm long, seeds black, rod-like, 15 mm long, 3-4 mm Ø.

Rain-forest, occasionally in semi-deciduous forest, in understorey; conspicuous in forest re-growth; 480-700 m alt.

Very close to *S. velutina.*

Twigs used as chew-sticks.

S. gabonensis Oliv., non sensu A. Chev. *(= S. floribunda);* Walker & Sillans, Pl. utiles Gabon: 346, 1961.

syn.: *S. bipindensis* Gilg ex Hutch. & Dalziel; *S. laxiflora* Gilg ex Hutch., nom.; ? *S. ledermannii* Sleumer

Shrub or tree 3-15 m tall, brown-puberulent; branchlets shortly pubescent; leaves oblong-elliptic, c. 15 × c. 6 cm, long-acuminate, with c. 12 pairs of lateral nerves, stipules persistent; spikes axillary, 10 cm long, with scattered white flowers; sepals densely pilose-tomentose outside, glabrous towards margins, cupular in fruit; capsule oblong, < 8 mm Ø.

Rain-forest, forest; 1-200 m alt.

S. glabrescens Engl.

Tree 6-8 m; branchlets and young leaves shortly strigose-pilose; leaves subcoriaceous, oblong, 10-15 × 5 cm, with 12 pairs of lateral nerves; flowering spikes 10 cm long, simple, axillary, shortly rusty-pilose, with scattered white flowers; sepals outside glabrous except the hairy margins; ovary c. 2 mm Ø; fruit unknown.

Forest ?; 30-480 m alt.

Similar to *S. gabonensis* but leaves thicker, inflorescence with shorter hairs, sepals outside glabrous.

S. grandifolia – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 145, 2006 (partial).

(Shrub or) tree of spreading habit, 15-25 m tall; bole crooked, c. 30 cm in girth; bark greenish-brown, thin, smooth; branchlets puberulous, *glabrescent;* leaves elongate-oblong, leathery, glabrous, 12-32 × 4-11 cm, with 10-20 pairs of lateral nerves; flowers white, slightly fragrant in very dense, continuous, velvety catkin-like racemes 6-12 cm long; sepals rusty tomentellous, spreading in fruit; stamens cream, styles purple; capsule inflated, 3-angled, red, shiny, 2,5-3,5 cm long; seed trigonous, 2 cm Ø.

SOYAUXIA GRANDIFOLIA

Wet and upland evergreen forests.

Twigs used as chew-sticks. Monkeys eat the ripe fruit ("monkey pea" fide Burkill, Useful pl. W. Trop. Afr. 4: 73, 1997).

S. talbotii Bak. f.

Tree 5 m, or erect shrub, shortly pubescent; branchlets soon glabrescent; leaves oblong-elliptic, 15 × 4 cm, acumen acute 1,5 cm, with 15 pairs of lateral nerves; stipules caducous; flowers white with dark very small anthers, scattered, in clustered (4-5) spikes on axillary branches; sepals green with yellow indumentum, cupular in fruit; capsule ovoid, 3-valved, 8 mm long.

Forest; c. 300 m alt.

S. velutina Hutch. & Dalziel – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 145, 2006 (partial).

syn.: *S. laxiflora* sensu A. Chev., Explor. Bot. Afr. occ. franç. 1: 288, 1920, non Gilg ex Hutch.

Small tree or sometimes scandent shrub, 3-11 m tall; stem to c. 10 cm Ø; young branchlets with long spreading hairs; leaves ovate-oblong-elliptic, *long-acuminate,* 8-20 × 3-7 cm, with 10-15 pairs of lateral nerves; stipules as long as leaf petiole, persistent on young branchlets, then caducous; flowers white, scattered, easily recognized, resembling those of *Syzygium* but in axillary spikes (not terminal panicles); spikes rusty-pubescent, sepals outside densely pilose to the margins, cupular in fruit, persistent; capsule oblong < 8 mm long.

Evergreen rain-forest, valley bottoms, often by water.

Very close to *S. floribunda.*

Probably also in Ghana.

SYNONYMS:

Soyauxia bipindensis Gilg ex Hutch. & Dalziel = **Soyauxia gabonensis**

gabonensis sensu A. Chev. 1920, non Oliv. = **S. floribunda**

laxiflora Gilg ex Hutch., nom. = **S. gabonensis**

laxiflora sensu A. Chev. 1920 = **S. velutina**

ledermannii Sleumer = **S.** ? **gabonensis**

OCTOKNEMACEAE / *1* g. / *7* spp.

Tropical African family; one genus.

MALÉCOT, V. & D. L. NICKRENT (2008). – See under *Olacaceae* p. 168.

OCTOKNEMA / *7*

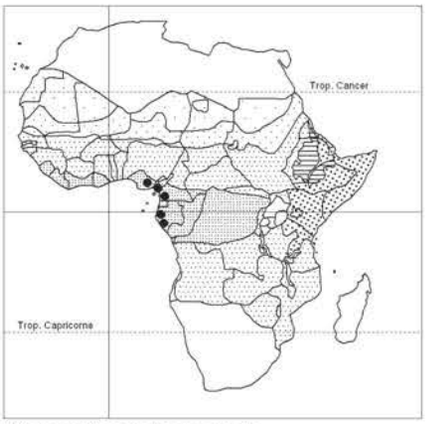
Often included in *Olacaceae.*

Poorly known and rarely collected: no male inflorescences and no male flowers in 3 species; female inflorescences unknown in 1 species; female flowers unknown in 2 species; 2 species known only from the type.

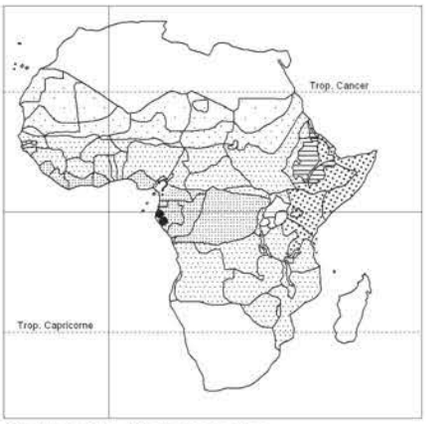
Octoknema affinis Pierre – Icon.: A. Chevalier; For. Bois Gabon: 141, 1917; Fl. Gabon 20: 189, 1973.

syn.: *O. aruwimiensis* Mildbr.; *O. winkleri* Engl.

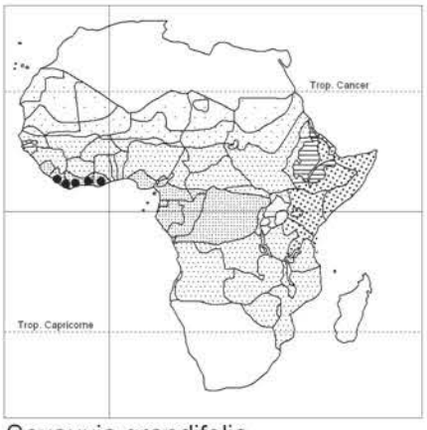
Dioecious tree, low-branching, 20-25 m, sometimes shrub 2-6 m tall; bole cylindrical, c. 50 cm Ø; crown dense; bark greyish, flaking; indumentum of appressed white scale-like stellate hairs;



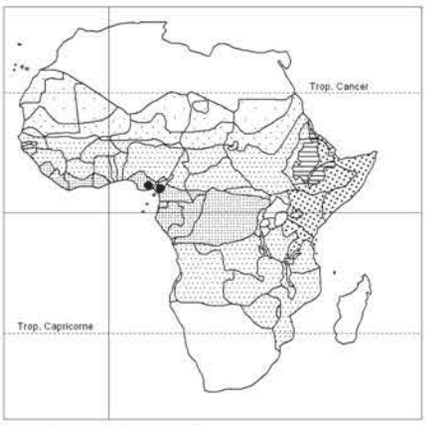
Soyauxia gabonensis



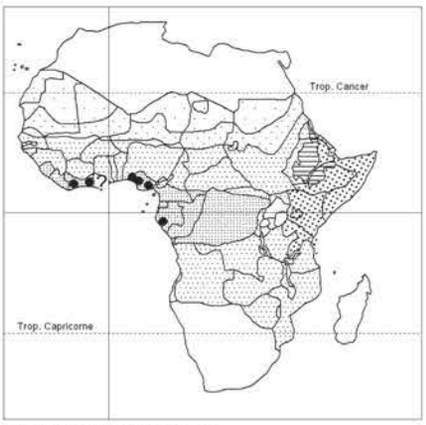
Soyauxia glabrescens



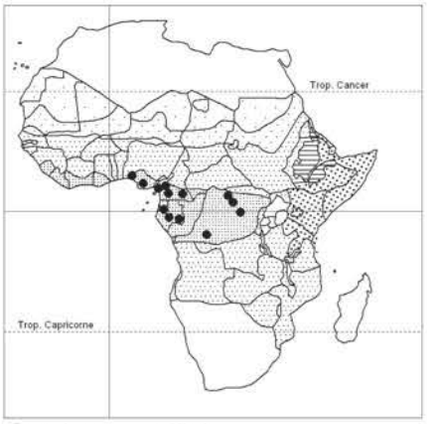
Soyauxia grandifolia



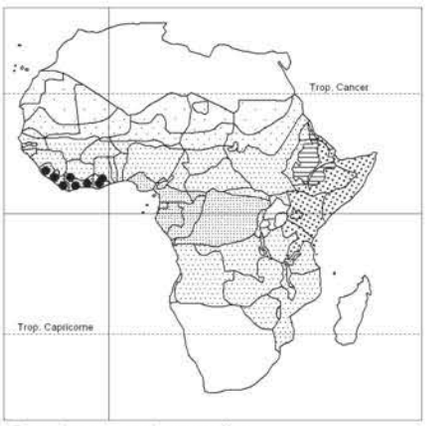
Soyauxia talbotii



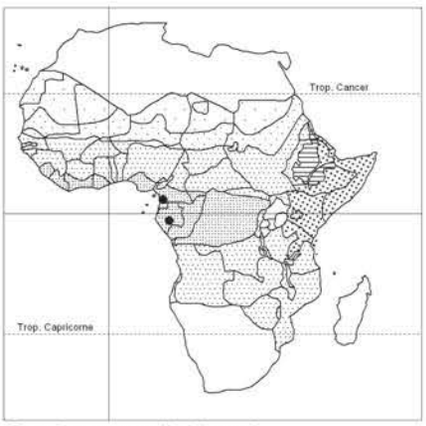
Soyauxia velutina



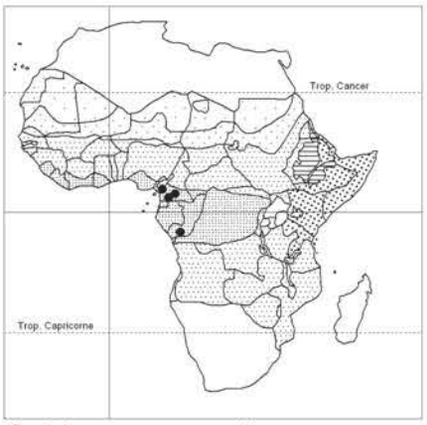
Octoknema affinis



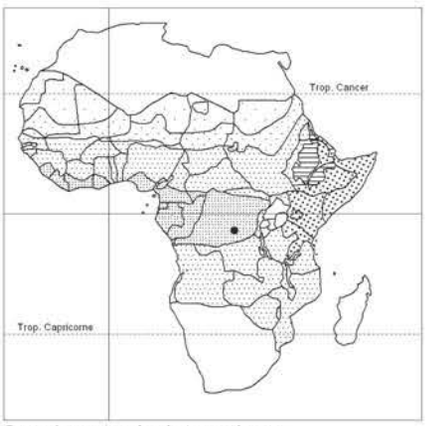
Octoknema borealis



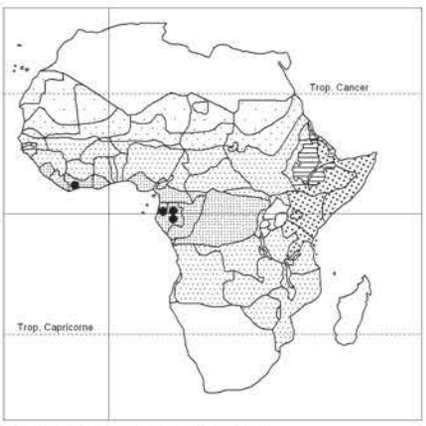
Octoknema dinklagei



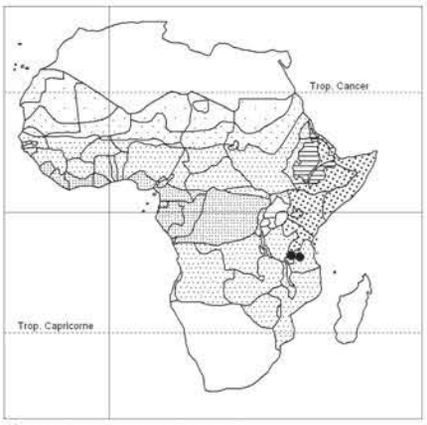
Octoknema genovefae



Octoknema hulstaertiana



Octoknema klaineana



Octoknema orientalis

young branchlets densely hairy; branches and leaves glabrous or sparsely pubescent; leaves oblong-elliptic(-obovate), 12-34 × 5-12 cm, yellowish green, glossy; male inflorescence 2,5-9 cm long, flowers yellowish or pinkish, sepals with stellate hairs outside, petals with simple hairs inside; female inflorescence 0,5-2,5 cm long, petals greenish, stellate-hairy, sepals ciliate; drupe ovoid, stellate-hairy, 1,5-3 cm long, orange.

Forest, near rivers; in savanna areas only in gallery forest; 1-1100 m alt.

The scurf-like stellate hairs resemble those of a *Coula (Olacaceae),* but the venation of the leaves different (in *Coula* nerves parallel, in *Octoknema affinis* the ultimate veins form an irregular network; cf. Keay, Trees Nigeria: 318, 1989).

O. borealis Hutch. & Dalziel – Icon.: Adam, Fl. descr. Mts Nimba 2: 770, 1971.

syn.: *O. affinis* sensu A. Chevalier, Explor. bot. Afr. occ. franç. 1: 125, 1920.

Dioecious tree 20-30 m; bole long, c. 50 cm Ø, 1,8 m in girth, with low buttresses; bark pale, yellowish, pitted, flaking; wood smelling unpleasantly when fresh; indumentum of bushy stellate hairs; branchlets, leaves and inflorescences scurfy puberulous; leaves obovate-oblong, 8-30 × 3-11 cm, with 6-9 pairs of main lateral nerves, petiole swollen towards the top; flowers yellowish green in spike-like racemes, male ones 5-8 cm long, crowded, female ones shorter, few-flowered; drupe ± round, red, c. 1,5 cm Ø, capped by the persistent calyx lobes.

Evergreen moist high-forest; common; 1-550 m alt.

The tree attracts bees in which they make their nests.

O. dinklagei Engl. – Icon.: Fl. Gabon 20: 191, 1973.

Tall dioecious shrub with yellow bark; type of indumentum as in *O. affinis;* young branchlets yellow-pubescent, glabrescent; leaves glabrous above, sparsely pubescent beneath (midrib), elliptic-lanceolate, 15-20 × 6-8 cm, with 7 pairs of lateral veins; male inflorescence and flower, female flower unknown; female inflorescence spike-like; drupe ellipsoidal, 2 × 1,5 cm, glabrous.

On dry forest ground; c. 500 m alt.

Known only from the type collected in 1891.

Similar to *O. affinis.*

O. genovefae Villiers – Icon.: Fl. Gabon 20: 183, 1973.

Shrub, dioecious, 2 m tall with straight stem; crown spreading umbrella-like; bark pale yellow, longitudinally ridged, somewhat warty; type of indumentum as in *O. borealis;* young branchlets densely dark brown pubescent; leaves oblong-elliptic, 14-26 × 5-11 cm, with 8-11 pairs of secondary nerves, sparsely pubescent and blackish-green above, densely pubescent and brownish-reddish green beneath, base of blade peltate; male flowers in small fascicles in a spike-like pendent inflorescence 30 cm long, densely pubescent; female inflorescence 2 cm long; drupe ellipsoidal, pubescent, red.

Forest.

O. hulstaertiana Germain

Tree, dioecious, 12 m; trunk 10-12 cm Ø; branchlets, petioles and peduncles densely stellate-hairy; leaves oblong-elliptic, 8-14 × 3-6 cm, glabrous but for some hairs on midrib beneath, with 6 pairs of lateral veins; male and female inflorescences and flowers unknown; drupe ovoid, c. 2,5 cm long, orange, stellate-hairy.

Primary plateau forest, in understorey; common (Zaire).

Known only from the type collected in 1952.

Differs from *A. affinis* by its ecology (shade-loving, not riverine) and by its fruit and seed morphology.

O. klaineana Pierre – Icon.: Fl. Gabon 20: 185, 1973; J. Hutchinson, Families flower pl., ed. 3: 413, 1973 (sub nom. *O. gabonensis);* Mildbraed in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 43, 1935 (partial).

syn.: *O. gabonensis* Pierre, nom. nud.

Dioecious tree or shrub 12 m tall; branches grey or yellowish, slightly longitudinally ridged, yellow or rusty-hairy; type of indumentum as in *O. borealis;* leaves elliptic, 9-27 × 5-12 cm, glabrous above, densely hairy beneath, with 9 pairs of secondary nerves, petiole pubescent; male flowers yellow in fascicles in dense spike-like pubescent inflorescences 5-11 cm long; female inflorescence 2,5 cm long; petal margins warty, hairy inside; drupe ovoid, c. 2 cm long.

Forest; c. 800 m alt.

In Ivory Coast ? (Aké Assi in Boissiera 58: 26, 2002).

O. orientalis Mildbr. – Icon.: Mildbraed in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 44, 1935.

Dioecious tree 20-30 m; young branchlets densely hairy, sometimes glabrescent; type of indumentum as in *O. affinis;* leaves elliptic-oblong, 12-21 × 5-10 cm, almost glabrous and shiny above, ± pubescent beneath, with conspicuous reticulate tertiary veins on both sides, petiole jointed at base of blade; male inflorescence and flowers unknown; female flowers brownish-yellow, 3-5 in axillary spikes; receptacle and outside of petals hairy; drupe oblong, 1,5 × 0,8 cm, pubescent, with persistent perianth segments.

Upland rain-forest, mist forest; 1000-1200 m alt.

Like most species in the genus poorly known; further material required.

* * *

Octoknema sp. nov., sensu Gosline in Cheek & al., Pl. Kupe…, Cameroon: 354, 2004.

Tree 4-8 m, similar to *O. affinis,* but indumentum scurfy-brown stellate-hairy, and with smaller leaves (10-19 cm long) and strongly winged fruit.

Forest; 800-1400 m alt.

Known only from Bakossi Mts., SW Cameroon.

Not mapped.

SYNONYMS:

Octoknema affinis sensu A. Chev., 1920, non Pierre = **Octoknema borealis**

aruwimiensis Mildbr. = **O. affinis**

gabonensis Pierre, nom. nud. = **O. klaineana**

okoubaka Aubrév. & Pellegr. = **Okoubaka aubrevillei** *(Santalaceae)*

winkleri Engl. = **Octoknema affinis**

OKOUBAKA – See **Santalaceae**

LORANTHACEAE / *19* g. / *226* spp.

(excl. *Viscaceae).*

A family of 77 genera and c. 950 species, from the tropics to temperate regions: c. 28% in Africa 90% of which endemic (incl. the Arabian Penninsula).

Hemiparasitic shrubs, generally evergreen, on branches of other dicotyledons. Sometimes they mimic the host on which they grow: shape, texture and colour of leaves, but sometimes also the bark. In Africa mostly epiphytic, with a modified woody root system, haustoria, which are variable in form. Floral features provide the primary basis for classification; pollination mechanisms mostly (in Africa) with spectacular explosive opening of the flowers (bird-pollinated). Fruit a berry.

Host range very variable: large aggressive species can parasitise more than 50 taxa of trees and shrubs: in Africa 70% occur on a wide range of species in a number of unrelated families; 12% predominantly on trees of one family; 18% almost exclusively on one genus, sometimes on only one to few species of that genus (Polhill & Wiens 1998).

Certain *Loranthaceae* are epiparasites on *Viscum (Viscaceae): Agelanthus subulatus* causing great damage to *V. engleri.*

Many *Viscum* species *(Viscaceae)* are epiparasites on *Loranthaceae*, e.g. *V. loranthicola* on various parasitic hosts, *V. goetzei* (on *Englerina); V. bagshawei* on *Phragmanthera, Tapinanthus; V. fischeri* on *Phragmanthera*, *Tapinanthus; V. rotundifolia* on *Tapinanthus.*

* * *

Several species are insufficiently known: in one species (= <1%) no open flower known; in 56 (+2?) no fruit seen (= c. 25%); in 2 species only unripe fruit known (= < 1%); for 2 species no ecology recorded (= < 1%); host not always cited (c. 5 species); 9 species are known only from the type (= 4%); 2 further species known from few collections.

* * *

The following treatment of the family is based on Polhill & Wien's monograph (1998), and the list provided by these authors in our Enumeration 2: 162-184, 1992 (including a full list of synonyms).

* * *

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LORANTHACEAE

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ACTINANTHELLA / *1*

Two species, one of which *[A. wyliei* (Sprague) Wiens] in S. Africa (C Natal). Leaves alternate; corolla 5-lobed, lobes long.

Actinanthella menyharthii (Engl. & Schinz ex Schinz) Balle – Icon.: Polhill & Wiens 1998: 99; Fl. Zambes. 9/3: 128, 2006.

Small much-branched shrub with a single haustorial attachment; twigs densely hairy; hairs short, stiff, spreading, forked; flowers 1-2, yellow-green; berry red.

Hot dry valleys, on *Erythroxylum, Boscia, Olea,* mangroves and a variety of other hosts; 20-1400 m alt.

AGELANTHUS/ *54*

The largest genus in Africa (59 species in Africa and the Arabian Peninsula). Mostly with a single haustorial connection, rarely with subcortical runners. Leaves alternate to opposite. Flowers mostly in heads or umbels. Corolla 5-lobed, conspiculously colour-banded, with short erect lobes (difference from *Tapinanthus).* Many species on a wide range of hosts. – *Agelanthus subulatus* epiparasite on *Viscum engleri (Viscaceae).*

A few species are poorly known (rarely collected, or rare). The fruit is unknown in 19 species (+ 1?) (= c. 37%) and in another one only the unripe fruit is recorded.

For one species no ecology is reported and in 2 species no host is cited. One species *(A. rondensis)* is known only from the type.

Agelanthus atrocoronatus Polh. & Wiens 1998: 179. – Icon.: l. c. (colour photo.).

Shrub to 1 m with short lateral branches bearing flowers; branchlets glabrous to minutely puberulous; hairs short, stiff, spreading; leaves sub-opposite; corolla tube red, lobes yellow with brown tips; *corolla bud with cylindrical apical swelling;* fruit unknown.

Edges of forests and deciduous woodland, on various hosts; flowering in rain; 1650-1900 m alt.

Similar to *A. scassellatii* (with yellow corolla tube and no crowned corolla bud).

Known only from Iringa District (S Tanzania).

A. bipartitus Balle ex Polh. & Wiens, Novon 7: 274, 1997. – Icon.: o.c.: 275; Fl. Trop. E. Afr. Loranth.: 47, 1999; details.

Small spreading shrub to 1 m; tips of branchlets scurfy, soon thickened, grey, glabrescent, lenticellate; leaves alternate; corolla tube red, lobes short, erect, yellow, dark-tipped; fruit unknown.

Montane forest, edges of montane rain-forest; on various hosts; 1500-2250 m alt.

Similar to *A. elegantulus* (occurring further north) but calyx split around the base by the expanding corolla base and retained as a dried ring around the corolla tube.

A. brunneus (Engl.) Balle & N. Hallé p.p. – Icon.: Polhill & Wiens 1998: 156 (colour photograph flowers); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 563, 2008.

Erect or ascending shrub; stems c. 1 m long, glabrous, sometimes farinose around axils; branchlets angled; leaves alternate to opposite and ternate; corolla pink or sometimes greenish-white, with coloured bands near base of lobes; lobes short, erect.

Evergreen forest, swamp and riverine forests; farm bush; on a wide range of hosts; "growing in masses as if forming thickets on the branches of Leguminous and other trees" (Welwitsch, Angola); also on crop plants, such as avocado, cacao; *Pycnanthus angolensis;* 1-1800 m alt.

Can be confused with *A. djurensis* (with blunt, not acuminate leaves, and with base of mature flowers not obviously swollen).

A. combreticola (Lebrun & Toussaint) Polh. & Wiens

Much-branched shrub; branchlets stout, shortly hairy; hairs red-brown, branched; leaves ± opposite; corolla lemon-yellow; lobes erect, short, upper half expanded, keeled outside; fruit unknown.

Wooded grassland, on *Combretum, Terminalia;* 1600 m alt.

A. copaiferae (Sprague) Polh. & Wiens

Branchlets ± angled, later terete, glabrous, grey, lenticellate; leaves alternate; corolla with short linear lobes; fruit unknown.

Ecology? Originally found on a Caesalpinoid species identified as *Copaifera.*

Known only from the Loanda region (Angola).

More material need confirm distinctiveness.

A. deltae (Bak. & Sprague) Polh. & Wiens

Branchlets grey, glabrous, minutely papillate; leaves opposite to alternate; corolla pink with rather long linear lobes, ultimately reflexed, yellow inside.

Along the lower reaches of Zambezi R.; on *Ficus.*

A. dichrous (Danser) Polh. & Wiens

Spreading shrub to 1 m; branchlets slightly compressed, densely puberulous, with very short branched hairs; leaves subopposite; corolla yellow-orange, rather small with short erect lobes.

Forest on firm ground and with *Gilbertiodendron dewevrei;* on various hosts (e.g. *Persea americana, Bridelia grandis* at 20-25 m above the ground), incl. other *Loranthaceae* as an epiparasite (fide Polhill & Wiens 1998: 182); c. 700 m alt. (Cameroon).

A. djurensis (Engl.) Polh. & Wiens

syn.: Enum. 2: 163, 1992; *excl.: Loranthus crataevae* Sprague; *Tapinanthus crataevae* (Sprague) Danser; *Loranthus toroensis* Sprague; *Tapinanthus toroensis* (Sprague) Danser; *Loranthus demeusei* sensu auct., non Engl. (Robyns, Fl. Spermat. Parc Natl. Albert 1: 103, 1948) [all = *Agelanthus toroensis].*

Glabrous shrub with stems 0,5-2 m long; young branchlets subangular on upper part of internode, terete below, later terete overall; leaves mostly ± opposite; corolla deep crimson or wine-red without marked swelling at base (cf. *A. brunneus);* lobes short, erect.

Evergreen forest; forest gallery, on swampy ground; Atlantic forest with *Caesalpiniaceae;* degraded secondary forest; flooded forest; on a variety of hosts (e. g. *Theobroma cacao,* cultivated shrubs, *Paullinia pinnata,* in Cameroon); 200-3000 m alt. (950-1800 m in E. Africa).

Specimens with young flowers can be confused with *A. brunneus* (but with different coloured mature flowers, and occurring in areas with less seasonal rainfall). Also similar to *A. toroensis* (in E part of range) which has a more cupular bract and longer calyx 3 mm, not 1-2 mm).

A. dodoneifolius (DC.) Polh. & Wiens; Boussim & al., Loranthaceae Burkina Faso: 55, 2002. – Icon.: Polhill & Wiens 1998: 162 (colour photo.).; Akoegninou & al., Fl. analyt. Bénin: 759, 2006.

syn.: Enum. 2: 163, 1992; but *Tapinanthus dodoneifolius* (DC.) Danser *excl.* subsp. *glaucoviridis* Jones *(= A. glaucoviridis).*

Well-branched glabrous, glaucous shrub with spreading, pendent branches to 1,5 m long; branchlets ± 3-angled or flattened, soon terete; leaves opposite-alternate or ternate; corolla variable in length, white at base, flushed wine-red above with marked basal swelling; lobes erect, long.

Wooded grassland, savanna; on a variety of hosts (e.g. *Acacia, Diospyros mespiliformis, Ormocarpum bibracteatum, Terminalia mollis, Bauhinia thonningii,* in Cameroon; on *Butyrospermum (Vitellaria)* in Burkina Faso, Uganda); 300-1600 m alt.

DEENI, Y. Y. & N. M. SADIQ (2002). Antimicrobial properties and phytochemical constituents of the leaves of African mistletoe (Tapinanthus dodoneifolius (DC) Danser) (Loranthaceae): an ethnomedicinal plant of Hausaland, Northern Nigeria. *J. Etnopharmacol.* 83: 235-240.

LAMIEN, N. & al. (2005). Mistletoe impact on Shea tree (Vitellaria paradoxa C. F. Gaertn.) flowering and fruiting behaviour in savanna area from Burkina Faso. *Environm. & Experim. Bot.* 55: 142-148.

Ethiopia ?

A. elegantulus (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens 1998: 164 (colour photo.).

syn.: Enum. 2: 163, 1992; and *Loranthus rendelii* Engl. nomen.

Small spreading, rather compact glabrous shrub, to 1 m tall; branchlets ± compressed, soon terete; leaves alternate, brownish to yellow-green; corolla tube red, lobes yellow with red tips, short, erect.

Montane forest, upland dry evergreen forest; on a wide variety of hosts; 1500-2400 m alt.

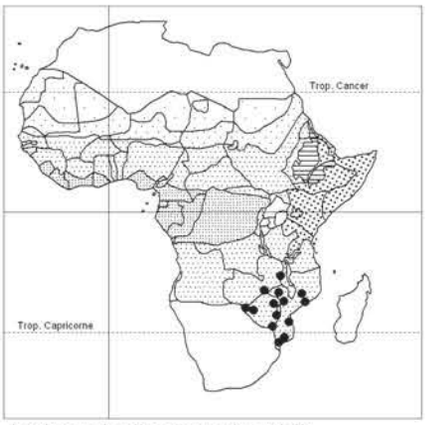
Similar to *A. sansibarensis* but more delicate; they grow together in E. Usambaras (Tanzania).

A. entebbensis (Sprague) Polh. & Wiens

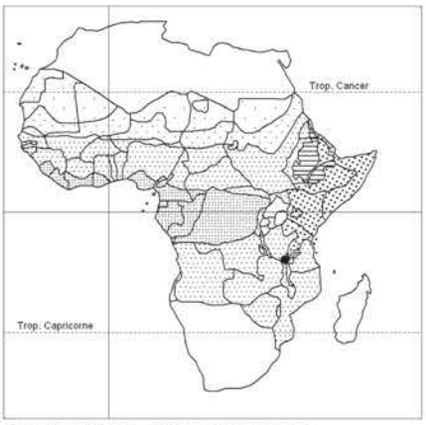
Stems spreading to > 1 m; branchlets ± flattened, pubescent, gradually glabrescent; hairs spreading, the longer ones branched, red-brown, shedding first; leaves alternate to opposite; corolla red, banded yellow, with thick basal swelling; lobes erect, rather long; fruit unknown.

Forest edges, often on *Ficus*; wooded grassland, often on *Combretum;* 1100-2100 m alt.

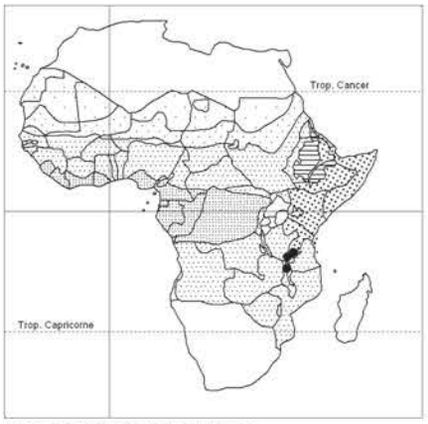
More material needed. Is perhaps only a form of *A. keilii* (fide Polhill & Wiens 1998: 173); also closely related to *A. musozensis.*



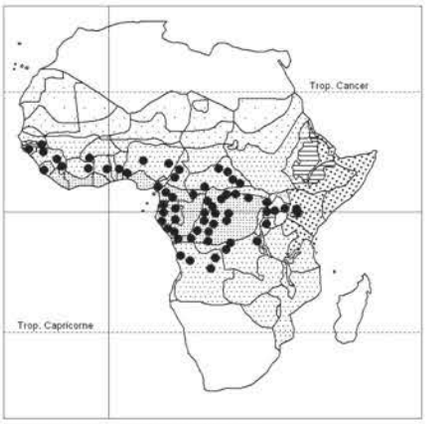
Actinanthella menyharthii



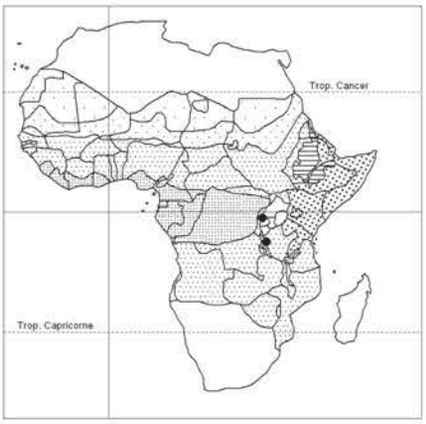
Agelanthus atrocoronatus



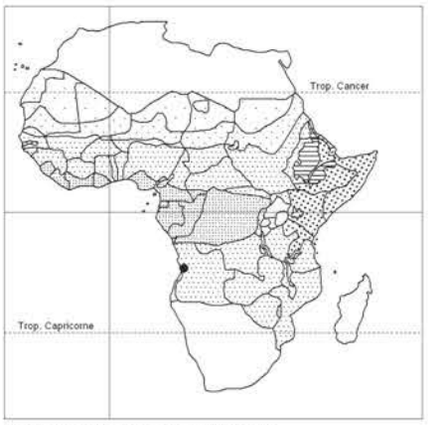
Agelanthus bipartitus



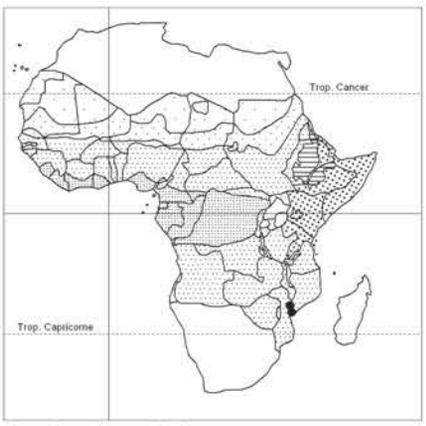
Agelanthus brunneus



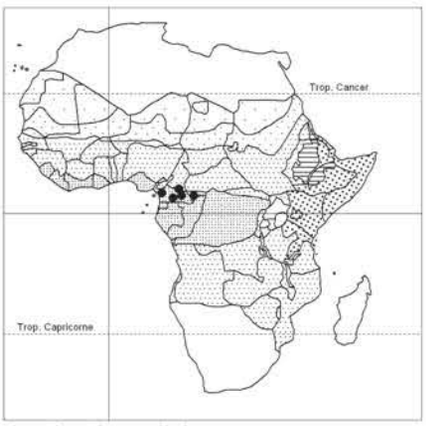
Agelanthus combreticola



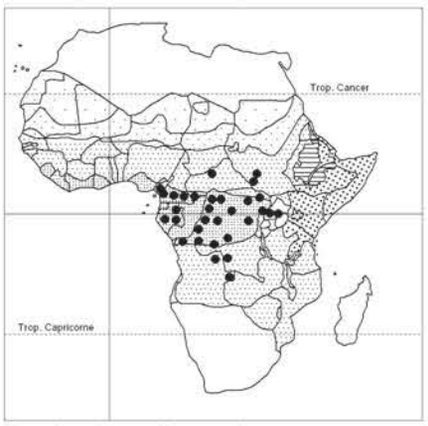
Agelanthus copaiferae



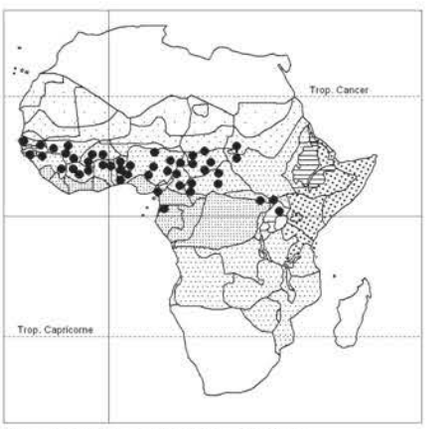
Agelanthus deltae



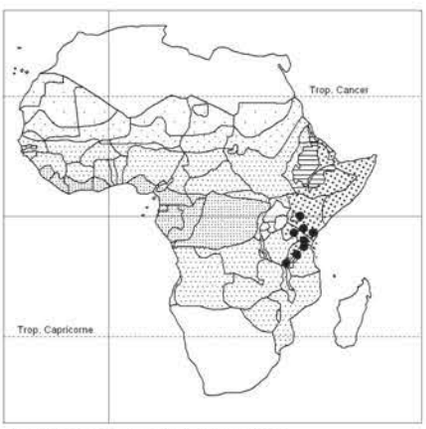
Agelanthus dichrous



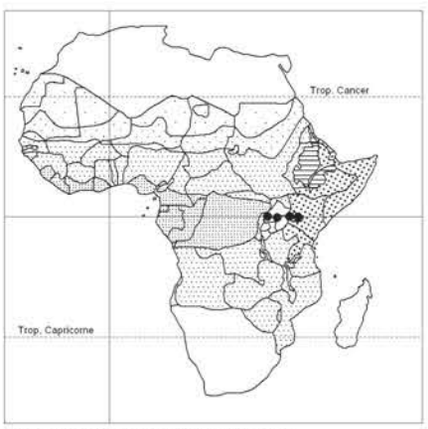
Agelanthus djurensis



Agelanthus dodoneifolius



Agelanthus elegantulus



Agelanthus entebbensis

A. falcifolius (Sprague) Polh. & Wiens

Robust glabrous shrub; branchlets slightly 4-angled, later terete, grey; leaves alternate to opposite; corolla greenish at base, yellow or orange-yellow higher up; lobes red, erect to ± spreading, long.

Brachystegia woodland; generally on *Brachystegia;* 1200-1400 m alt. (Zaire, Haut-Katanga).

Sparsely collected.

A. flammeus Polh. & Wiens – Icon.: Polhill & Wiens 1998: 144, 170 (colour photo.); Heide-Jørgensen, Parasit. flow. pl.: 69, 2008.

Clump-forming shrub, 1-2 m Ø; twigs compressed, glabrous-minutely puberulous when young; leaves sub-opposite; corolla flame-red, orange-banded around vents; lobes erect, short.

Deciduous woodland to forest edges, generally on *Ficus;* locally common; 600-1650 m alt.

Range overlapping that of *A. nyasicus,* which probably occurs in drier sites.

Similar to *A. prunifolius;* also resembling *A. nyasicus* in dried state.

A. fuellebornii (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens 1998: 167 (colour photo.).

Well-branched glabrous shrub to 1 m; branchlets slightly compressed, soon terete, later densely lenticellate; leaves alternate, *bluish-green,* broad (4-13 cm long, 2-7 cm wide); corolla red; lobes yellow, erect long.

Brachystegia woodland, along rivers and lakes in higher rainfall areas; evergreen forest; edges of montane rain-forest; on various hosts, e.g. *Protea, Combretum, Dombeya, Flacourtia, Cordia, Maytenus, Trichilia, Brachystegia;* 450-2100(-2500) m alt. – Flowering in the rains.

Variable in development of the corolla basal swelling.

Often confused with *A. sansibarensis* but distinguished by its glaucous leaves (in the field).

A. glaucoviridis (Engl.) Polh. & Wiens

Glabrous shrub; branchlets compressed, becoming terete; leaves ± opposite; corolla grey-violet, long (to 7,8 cm), with not obviously swollen base; lobes erect, long.

Forest; 50-400 m alt.

Closely related to *A. dodoneifolius.*

Only few collections known.

A. glomeratus (Engl.) Pohl. & Wiens

Glabrous greyish, elegant shrub, much-branched, youngest parts with minute glandular papillae; branchlets slightly compressed, then 4-angled, becoming terete, smooth; leaves blue-green, alternate, opposite or ternate; corolla rose-pink, sometimes with a grey band at top, then white, with a pink or red tip; lobes erect, short.

Forest, woodland in higher rainfall areas; on a variety of hosts (e.g. *Gardenia, Parinari, Combretum, Acacia);* highlands, Angola.

Similar to *A. brunneus* but distinguished by the glaucous leaves.

A. gracilis (Tölken & Wiens) Polh. & Wiens – Icon.: Polhill & Wiens 1998: 149 (colour photo.).

bas.: *Tapinanthus gracilis* Tölken & Wiens

syn.: *Loranthus natalitius* Meisn. var. *minor* J. M. Wood, excl. typo, basionym *L. zeyheri* var. *minor* Harv.; *L. minor* (Harv.) Sprague, excl. basionym; *Tapinanthus minor* (Sprague) Danser, nom. illegit.

Shrub 0,5-1 m tall; branchlets slightly compressed, puberulous, glabrescent, soon greyish-brown corky; leaves opposite or alternate on long shoots, crowded and smaller at base of short shoots bearing flowers at tips; corolla white, yellow or red, orange- or yellow-banded below tip; lobes erect, rather long.

Dune formations; on *Celastraceae,* and in S. Africa on a wide variety of hosts (e.g. *Acacia, Acalypha, Berchemia, Dombeya, Maytenus, Olea, Zanthoxylum),* also epiparasitic on *Viscum;* 30-1150 m alt. (S. Africa).

S. Africa (Transvaal – Swaziland – Natal).

A. guineensis Polh. & Wiens

Glabrous shrub with apparently terete twigs; leaves ± opposite, probably glaucous; corolla pinkish violet; mature fruit unknown.

Highlands of Guinée, on orange trees.

Only 2 specimens known (Guinée & Mali) that have formerly been named *Tapinanthus sessilifolius.* There is a resemblance, but flowers different (fide Polhill & Wiens 1998: 159).

A. heteromorphus (A. Rich.) Polh. & Wiens – Icon.: Polhill & Wiens 1998: 176 (colour photo.); Fl. Cameroon 23: 49, 1982.

Large spreading, pendent shrub to 2(-4) m; shoots slightly flattened, tomentose; hairs branched, of variable length, brownish; leaves subopposite; corolla (orange-)yellow, greenish towards the conspicuously swollen base; lobes rather long, erect; ? ripe fruit green.

Broad-leaved deciduous woodland, wooded grassland; on *Combretum, Terminalia,* less often on Caesalpinioids (W Africa); 500-1900 m alt.

Disjunct species. – Sudan?

The type of *Loranthus scassellatii* Chiov. var. *glabrescens* Pichi-Serm. with only immature buds, seems to be a subglabrous form, but mature material needed for confirmation (fide Gilbert in Fl. Ethiop. 3: 373, 1989).

A. igneus (Danser) Pohl. & Wiens

Well-branched shrub with relatively short lateral branches; branchlets compressed at first with scurfy puberulence, soon terete, brown turning grey, fissured, lenticellate; leaves (sub-)opposite; corolla rather small, deep orange to pinkish or fiery red; lobes short; fruit unknown.

Brachystegia woodland (SE Tanzania); riverine forest, coastal bushland; on *Grewia, Combretum;* ?-200-800 m alt.

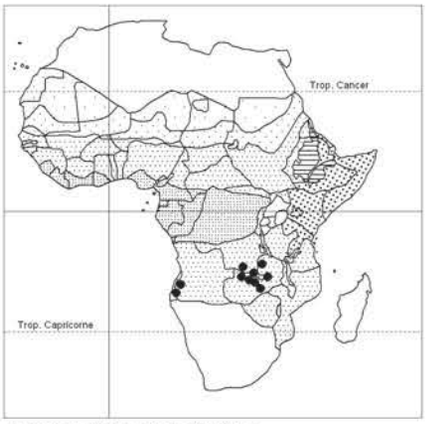
Close to *A. scassellatii* and *A. transvaalensis*, but easily recognized by the lack of dictinct keels on back of corolla-lobes.

A. irangensis (Engl.) Polh. & Wiens

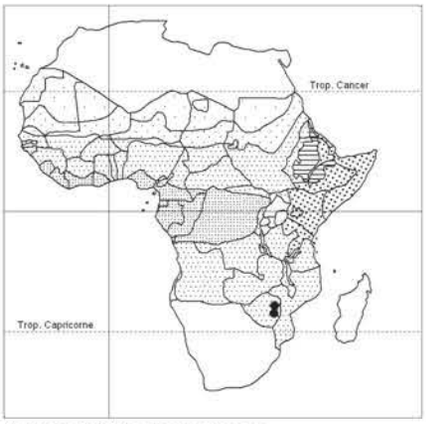
Robust shrub, spectacular in flower; branchlets soon terete, ± tomentellous; leaves alternate to subopposite; corolla tube (orange-)red, banded green at top; lobes long, yellow with red-maroon tips; fruit unknown.

Deciduous bushland and thicket; on *Balanites, Boscia;* 1000-1650 m alt.

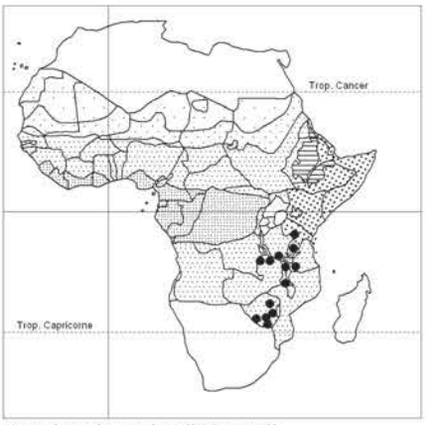
Rarely collected. Known only from E. Rift Valley region.



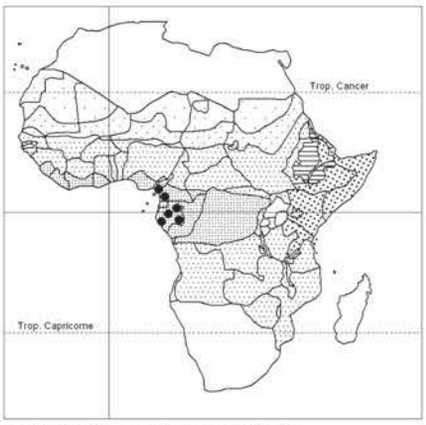
Agelanthus falcifolius



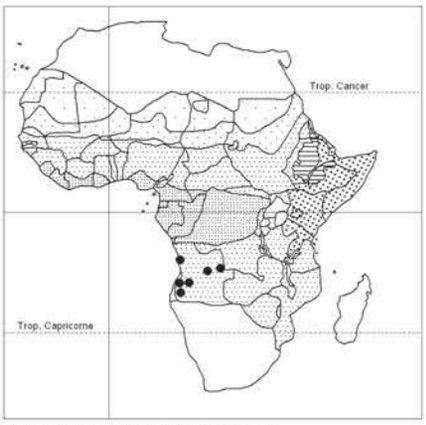
Agelanthus flammeus



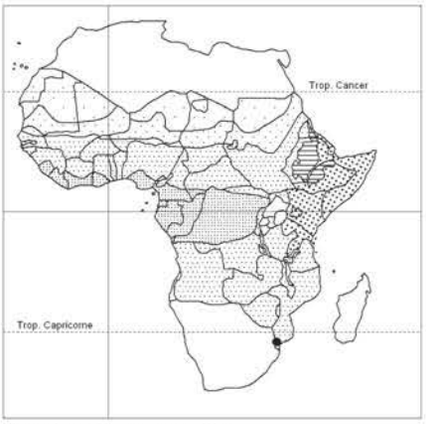
Agelanthus fuellebornii



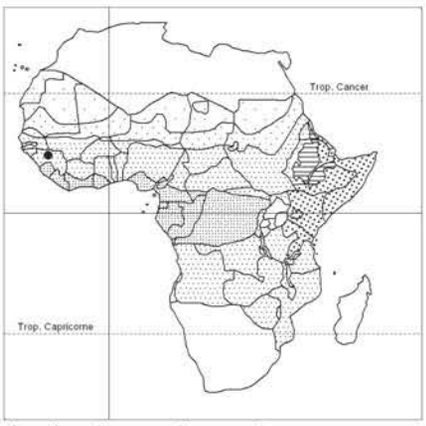
Agelanthus glaucoviridis



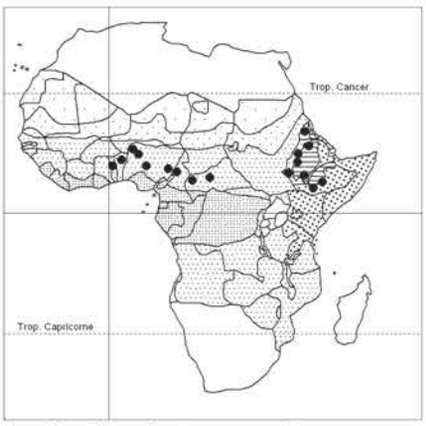
Agelanthus glomeratus



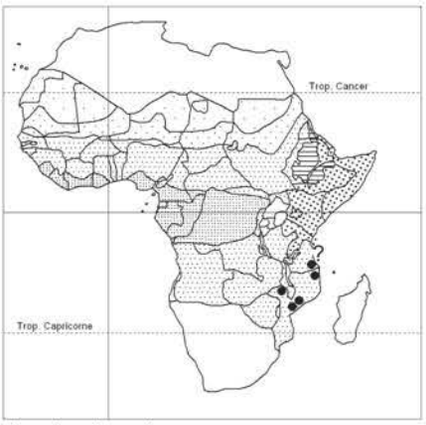
Agelanthus gracilis



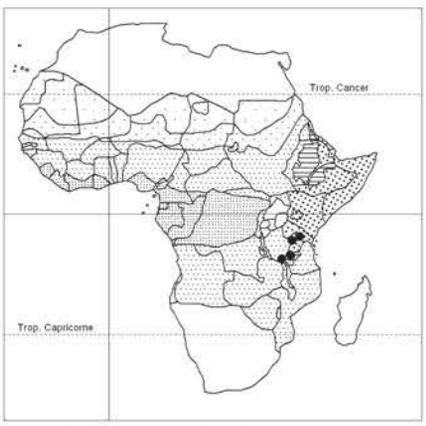
Agelanthus guineensis



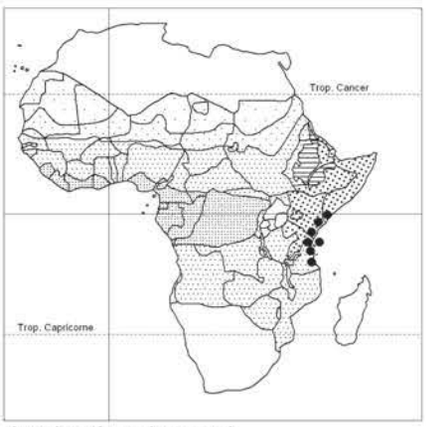
Agelanthus heteromorphus



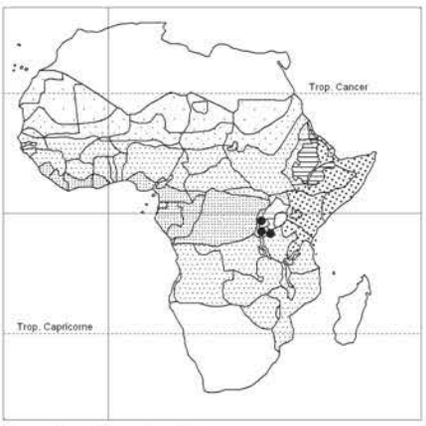
Agelanthus igneus



Agelanthus irangensis



Agelanthus kayseri



Agelanthus keilii

A. kayseri (Engl.). Polh. & Wiens – Icon.: Polhill & Wiens 1998: 140.

Shrub to ± 1 m, glabrous; branchlets slightly compressed, then ± 4-angular; leaves opposite to alternate; corolla small, pink; lobes long, erect, green, keeled; fruit with persistent calyx.

Coastal bushland and riverine associations, mangroves; extending inland along rivers; on *Salvadora, Dobera* or mangroves; generally below 125 m alt. (-1000 m) (a specimen from Uluguru Mts, 2000 m, may be mislabelled, and records from W. Usambara Mts. perhaps misidentified, fide Polhill & Wiens, Loranthaceae, Fl. Trop. E. Afr.: 50, 1999).

Resembling a *Salvadoraceae* on which it often grows.

A. keilii (Engl. & K. Krause) Polh. & Wiens

Shrub with slightly flattened puberulous branchlets, soon glabrescent; leaves subopposite; flowers on short lateral branches; corolla dull yellow to red; lobes short, erect, keeled; fruit unknown.

Forest edges, wooded grassland; on *Ficus, Bridelia, Combretum;* 1000-1450 m alt.

A. entebbensis is perhaps a synonym.

A. krausei (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 140, 159 (colour photo.).

Shrub to c. 1 m; branchlets compressed to 4-angular, then terete, papillose-puberulous only around axils, densely lenticellate; leaves alternate to opposite or ternate, coriaceous, variable (4-12-15 cm long, 1,5-2,5-7 cm wide); corolla yellow or pale orange, banded green and red below vents, red-tipped; fruit unknown.

Montane forest; on *Mimulopsis;* 1150-2400 m alt.

Intermediates *A. krausei – A. pennatulus* occur in the Uluguru Mts.

A member of the *A. brunneus* complex.

Does not seem to occur in the Usambara Mts. (Tanzania).

A. lancifolius Polh. & Wiens

Shrub with rather long flowering branchlets, compressed at first, brown pubescent; leaves (sub-)opposite, thin; corolla red or crimson, yellow-banded around vents; lobes erect, rather short; fruit unknown.

Wetter evergreen forest on mountains; on *Syzygium, Trimeria, Choristylis;* 1180-1950 m alt.

Few collections known.

Similar to *A. prunifolius, A. flammeus* and *A. nyasicus* by its thin, elongate leaves.

A. longipes (Bak. & Sprague) Polh. & Wiens

Stems glabrous, spreading, pendent, to 1 m, often with rather short lateral branches; branchlets first slightly compressed, soon terete; leaves (sub-)opposite, variable in size (3-11 cm long, 2-6,5 cm wide); corolla rather short, tube pink, often darker lined, head yellow or green in bud; lobes green inside, erect, long.

Coastal dry evergreen forest and associated bushland; 30-650 m alt.

Flowering during rains.

A. lugardii (N. E. Br.) Polh. & Wiens – Icon.: Heide-Jørgensen, Parasit. flow. pl.: 402, 2008.

syn.: Enum. 2: 164, 1992; and *Loranthus breyeri* Bremek.

Shrub to c. 1 m; branchlets terete, hispidulous; leaves alternate, clustered at older nodes; corolla rather short, green or grey; lobes yellow-green, ± erect, long.

In the Limpopo drainage basin and coastal region; generally on *Acacia;* 120-1220 m alt. (S. Africa).

S. Africa, Botswana.

A. microphyllus Polh. & Wiens

Glabrous shrub; branches spreading; tangled, to c. 1 m; leaves subopposite to alternate on long shoots, in tufts on very short shoots; flowers from leaf-tufts, with grey to purplish grey tube; lobes yellow (and red) on claws, erect, rather long.

Deciduous bushland; on *Acacia;* 30-1500 m alt.

Related to *A. natalitius* and *A. gracilis,* but with more condensed short shoots.

Rarely collected. Flowering during the rains.

A. molleri (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 174 (colour photo.);

Much-branched shrub to 1 m; branchlets slightly flattened at first, densely hairy; hairs short, spreading, longer ones branched, red-brown, shed first; leaves crowded on rather short lateral shoots, (sub-)opposite, dull green to slightly glaucous; corolla greenish-white, orange-red around vents, with greenish tip; lobes erect, rather long; fruit crowned by persistent calyx.

Wooded grassland; mixed or miombo woodland extending up to forest edges; wide-spread in the Zambezi region; generally on *Combretum*, less often on *Ficus,* sometimes on *Acacia;* 500-1700 m alt. (E. Africa).

Botswana

Flowering during the rains.

A. musozensis (Rendle) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 176 (colour photo.); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 263, 2008.

syn.: Enum. 2: 164, 1992; and *Loranthus blantyreanus* Engl. var. *oblongifolius* (Balle) Balle

Spreading, pendent shrub to 2 m; branchlets slightly flattened, velvety with very short spreading branched hairs; leaves subopposite; flowers on relatively short lateral branches, pale orange-yellow, yellow-banded around vents, sometimes greenish at base, densely hairy; lobes erect, long.

Forest edges to wooded grassland, bushland, often on rock outcrops; exclusively on *Ficus*; 1100-1900 m alt.

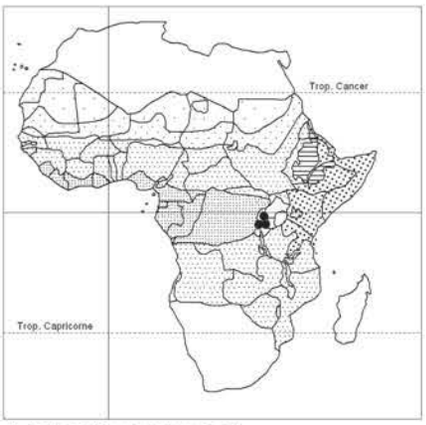
Very close to *A. heteromorphus* but with distinctly cupular calyx.

A. myrsinifolius (Engl. & K. Krause) Polh. & Wiens – Icon.: Fischer & Killmann, o.c.: 561.

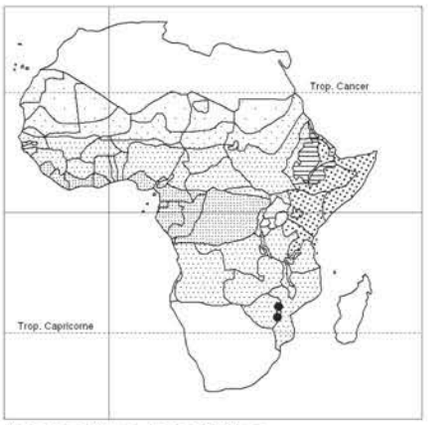
syn.: Enum. 2: 164, 1992; and *Loranthus myrsinifolius* Engl. & K. Krause var. *humbertii* Balle; *Tapinanthus kinetii* Balle, nom.

Intricately branched shrub to 1 m; branchlets rough, densely *verruculose*, slightly 4-angled, becoming terete, glabrous; leaves *small* (0,5-2,5-3,5 cm long, 0,4-1,5 cm wide), *crowded,* (sub-)opposite, thickly coriaceous; corolla tube red, lobes rather long, yellow over vents, tips dark purple.

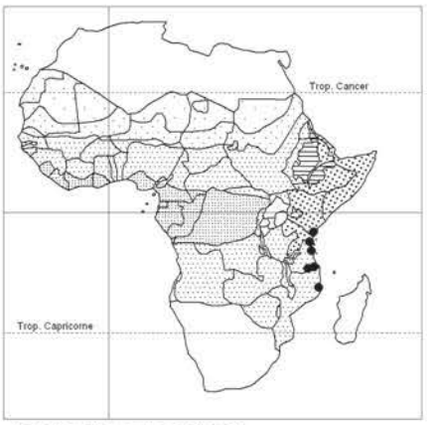
Montane or swamp forests and ericaceous zone; on *Myrsine, Erica johnstonii;* 1900-3300 m alt.



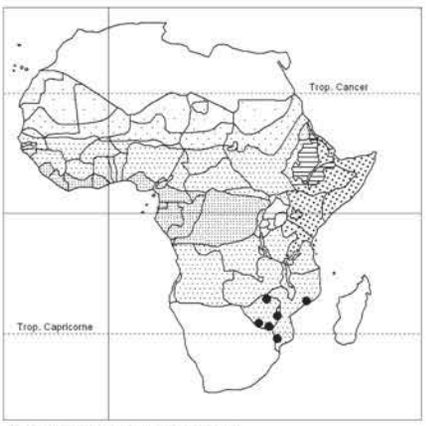
Agelanthus krausei



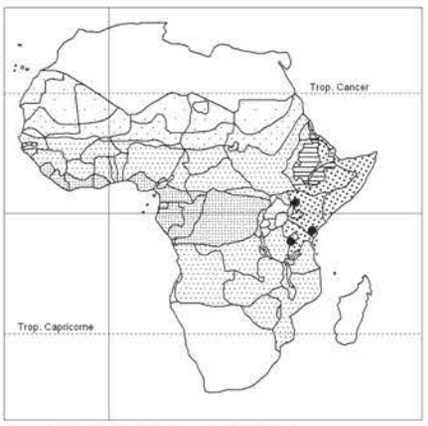
Agelanthus lancifolius



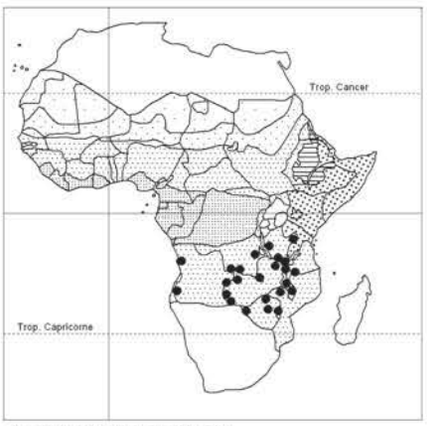
Agelanthus longipes



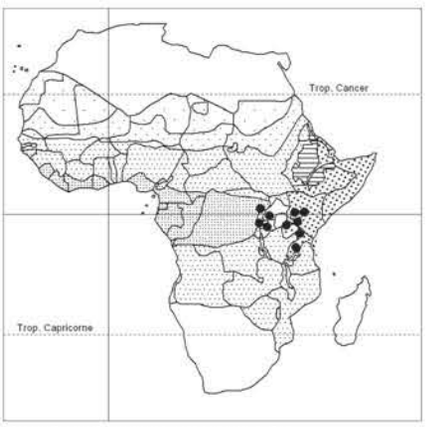
Agelanthus lugardii



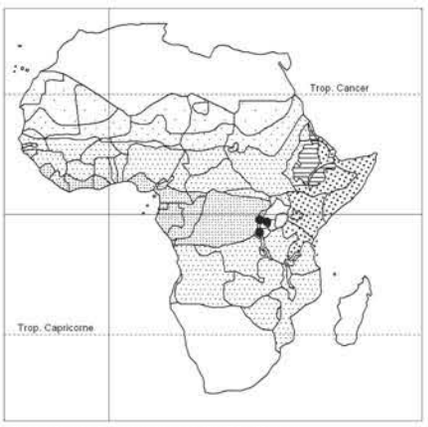
Agelanthus microphyllus



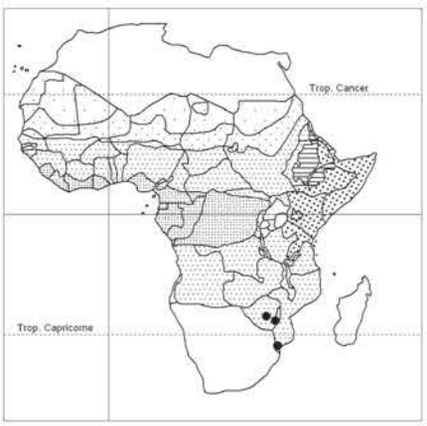
Agelanthus molleri



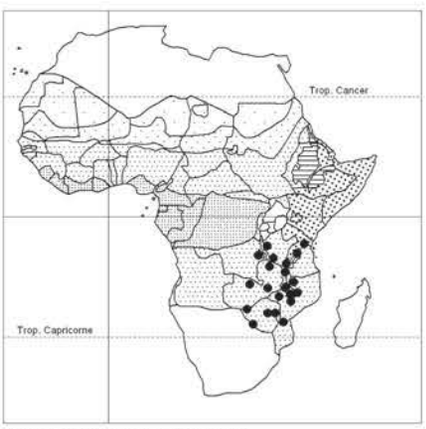
Agelanthus musozensis



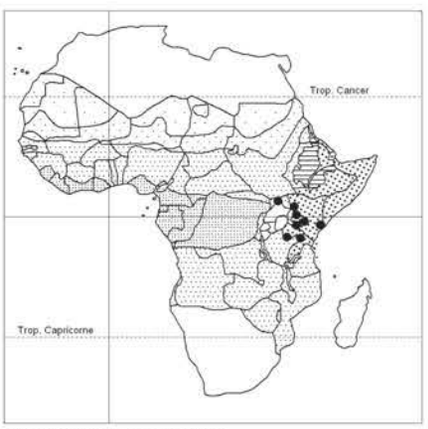
Agelanthus myrsinifolius



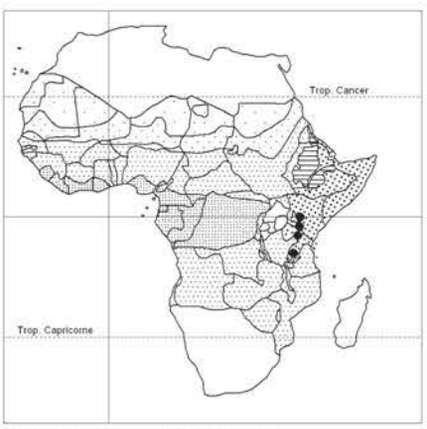
Agelanthus natalitius



Agelanthus nyasicus



Agelanthus oehleri



Agelanthus pennatulus

A. natalitius (Meisn.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 148 (colour photo. flowers, fruits, seeds); Flora Zambes. 9/3: 146, 2006 (subsp. **natalitius**).

Shrub to > 1 m; branchlets slightly compressed at first, glabrous (subsp. **natalitius**) to densely hispidulous with short spreading hairs (subsp. **zeyheri**); leaves opposite to alternate, grey green to glaucous, on long shoots, crowded and smaller at base and tips of short shoots, *deciduous* (in winter), flowers at end of short shoots (1-9 cm), corolla long (5-8 cm), grey or white, lobes banded yellow or orange, erect, long.

Mixed woodland and bushland; generally on *Acacia* sometimes on *Combretum;* up to 600 m alt. (subsp. **natalitius**); 300-1400 m (subsp. **zeyheri**).

Local forms ± hairy exist. Intergrading between the subspecies recorded from S. Africa.

S. Africa, Swaziland, Botswana.

Comprises 2 subspp.:

– subsp. **natalitius** [syn.: Enum. 2: 164, 1992, under the species; and *Loranthus moorei* Sprague; *Tapinanthus moorei* (Sprague) Danser];
– subsp. **zeyheri** (Harv.) Polh. & Wiens [syn.: Enum. l. c.; and *Acranthemum zeyheri* (Harv.) Tieghem; *Loranthus zeyheri* Harv. var. *minor* Harv.; *Tapinanthus minor* (Harv.) Danser].

Related to *A. microphyllus.*

A. nyasicus (Bak. & Sprague) Polh. & Wiens – Icon.: Polhill in F. White & al., Evergr. For. Fl. Malawi: 348, 2001.

Bushy shrub to 1,5 m, glabrous except (rarely) on inflorescences and youngest twigs; lateral branches short; branchlets stout, brown to grey, pruinose, compressed at first, soon terete; leaves mostly subopposite, more alternate on long shoots, smaller and more rounded ones clustered at base of lateral shoots; corolla orange to pale flame-red, yellow-banded around vents; lobes erect, long, keeled; fruit red, 10-12 mm long, 7-8 mm Ø.

Edges of montane forest, riverine forest, generally higher-rainfall *Brachystegia* woodland, but in drier sites in S part of range; commonly on *Ficus, Bridelia*, various legumes, and other hosts; 600-1900 m alt.

Specimens from the Tanzania-Zambia border are exceptional: with puberulous peduncles and pedicels.

E Botswana.

A. oehleri (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 167 (colour photo.).; A. Peter, Fl. Deutsch-Afr. 2(1), Descr.: tab. 19/1, 1932, sub nom. *Loranthus obovatus.*

syn.: Enum. 2: 164, 1992; and *Loranthus obovatus* Peter 1932, non Blume 1825, nom. illegit.; *Tapinanthus obovatus* Danser 1934.

Shrublet with short stems, 5-50 cm long, simple or with short flowering branches, ultimately more bushy, often connected by subcortical runners; branchlets glabrous, slightly flattened, soon terete; leaves alternate, often reddish flushed; corolla red with lobes yellow over vents, lobes erect, rather long.

Deciduous and coastal bushland; *Loudetia arundinacea* grassland with scattered trees, on *Maytenus* (Imatong Mts.); on a wide range of hosts, commonly *Commiphora, Euphorbia*, also smaller ± succulent shrubs (e.g. *Kleinia, Plectranthus, Ipomoea);* 20-2100 m alt.

Close to *A. sansibarensis*; but *A. oehleri* occurring in drier habitats, and with a smaller bushy habit and subsidiary plants often growing from subcortical runners.

A. pennatulus (Sprague) Polh. & Wiens

Shrub to c. 1 m; branchlets glabrous, lenticellate, slightly compressed to 4-angular, then terete; leaves alternate to opposite, rounded, variable in size (4-10 × 2,5-6 cm); corolla tube yellow-orange, banded green and orange-red at top; lobes erect, rather long, pinkish white over vents, with red tips; fruit unknown.

Montane moist and upland dry evergreen forest; on *Olea, Strombosia,* various *Rutaceae;* 1650-2400 m alt.

A member of the *A. brunneus* complex. Specimens from Uluguru Mts. (Tanzania) seem to be intermediate between *A. pennatulus* and *A. krausei.*

A. pilosus Polh. & Wiens – Icon.: Polhill & Wiens in Novon 7: 275, 1997; and iidem (1998): 181 (colour photo.).

Spreading densely hairy shrub to 2 m; branchlets with smaller leaves near their base; hairs short *and* long wispy (2 mm); leaves subopposite; flowers on short lateral branches, yellow to orange with red tips, conspicuously hairy; lobes erect, short, keeled.

Montane and riverine forest, forest patches; higher rain-fall *Brachystegia* woodland; on *Bridelia micrantha,* also *Ficus sur,* and various forest margin and woodland species; 1050-1900 m alt.

Related to coastal E.- and S. African *Agelanthus* species; distinguished from *A. pungu* in Malawi, by the hairiness, green leaves and keeled corolla lobes.

A. platyphyllus (Hochst. ex A. Rich.) Balle – Icon.: Polhill & Wiens in Fl. Trop. E. Afr., Loranthaceae: 45, 1999; iidem (1998): 147 (colour photo.).

syn.: Enum. 2: 165, 1992; and *Loranthus amoenus* Del. in exsicc. et Tieghem 1895, nomen.

Glabrous shrub with spreading and pendent stems to c. 1 m, older ones longitudinally fissured; leaves opposite to alternate, variable in size (4,5-14 × 2,5-6 cm), blue-green when young; corolla brilliant red to orange-red, not swollen at base; *lobes longer than tube,* erect, coherent.

Broadleaved deciduous woodland, wooded grassland; ± always on *Combretum, Terminalia;* 900-1800 m alt. – Flowering in dry season.

A. polygonifolius (Engl.) Polh. & Wiens

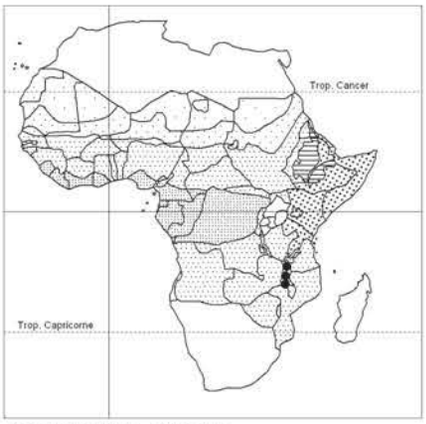
Glabrous shrub; branchlets slightly flattened; leaves (sub-)opposite; corolla yellow, strongly 5-ribbed; apical *swelling of bud strongly 5-winged;* lobes erect, short; fruit unknown.

Ecology not recorded. From the middle reaches of the Congo R.

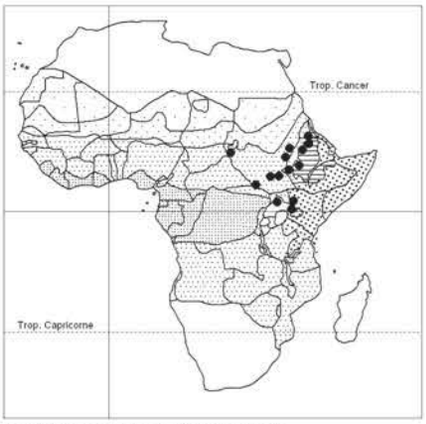
Known only from the type (collected ante 1900) ?

A. pungu (De Wild.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 145, 180 (colour photo.); Fl. Zambes. 9/3: 157, 2006; Heide-Jørgensen, Parasit. flow. pl.: 70, 2008.

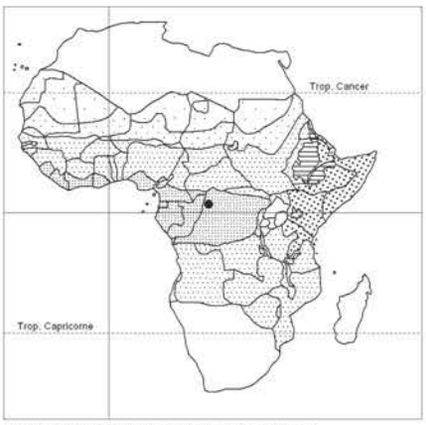
Rounded shrub to 1,5 m, more pendulous with age; branchlets first compressed, soon terete, densely *pubescent* with *short spreading hairs;* leaves (sub-)opposite, glabrous, *grey-green to blue-green,* variable in size (4-10 × 1-5,5 cm); flowers on shoots of varying length, yellow (-green), banded yellow or orange on



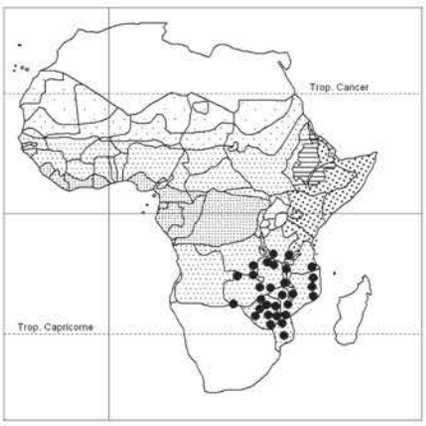
Agelanthus pilosus



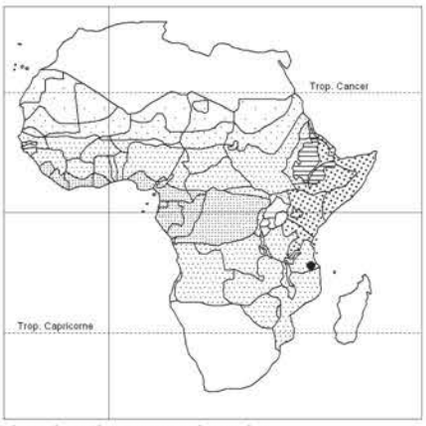
Agelanthus platyphyllus



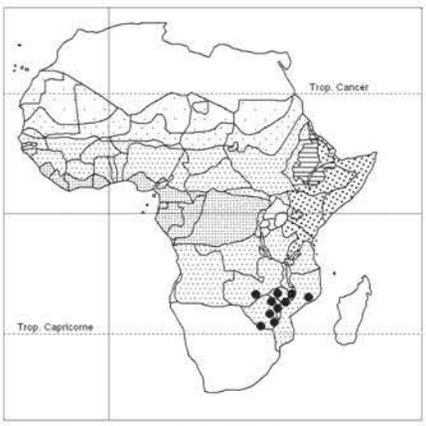
Agelanthus polygonifolius



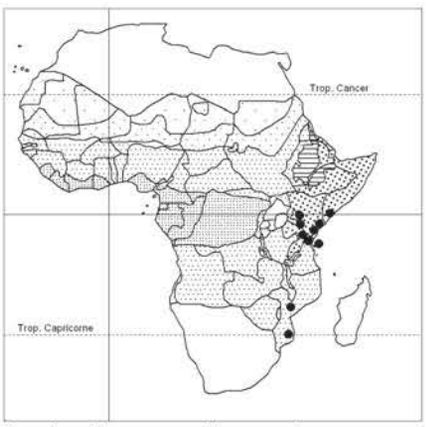
Agelanthus pungu



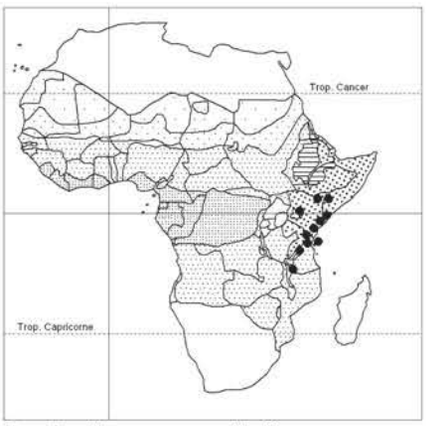
Agelanthus rondensis



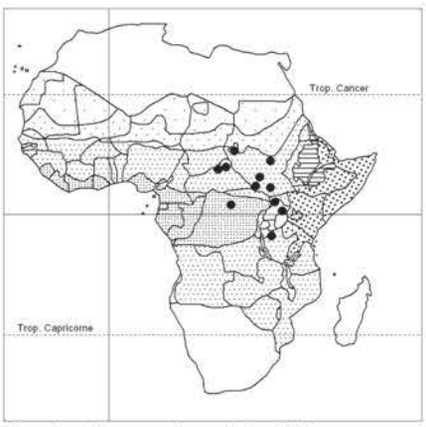
Agelanthus sambesiacus



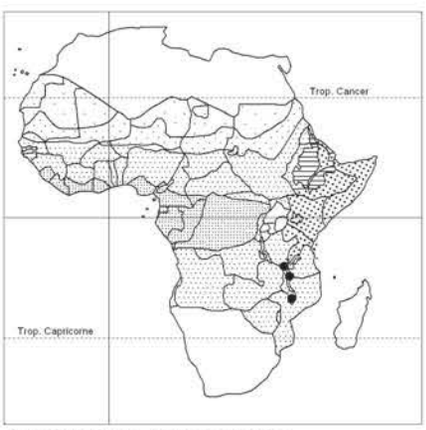
Agelanthus sansibarensis



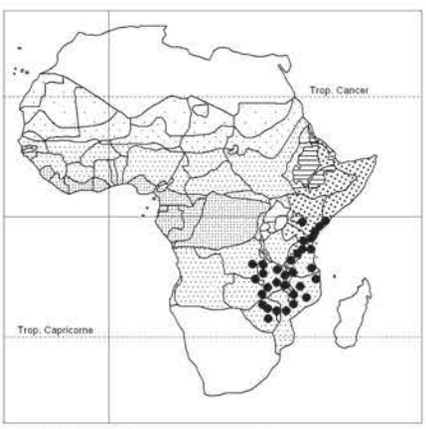
Agelanthus scassellatii



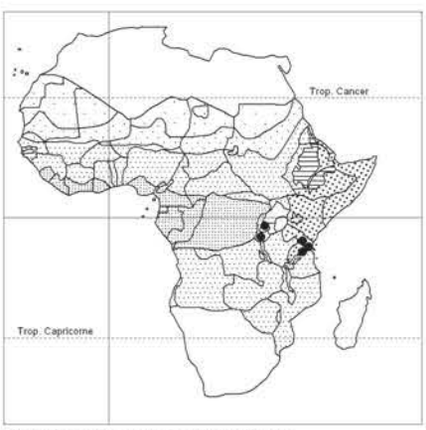
Agelanthus schweinfurthii



Agelanthus songeensis



Agelanthus subulatus



Agelanthus tanganyikae

lobes, lobes erect, small.

Brachystegia woodland, wooded grassland, extending to forest edges and down rivers to mixed deciduous *Acacia-Commiphora* bushland; on a wide range of hosts, also epiparasite on other *Loranthaceae* species; 150-2100 m alt.

Very variable in shape of leaves.

Caprivi Strip, NE S. Africa.

A. rondensis (Engl.) Polh. & Wiens

Glabrous diminutive plant with angular, densely lenticellate branchlets; leaves (sub-) opposite, coriaceous; corolla short, yellow on basal swelling, otherwise purplish red; lobes erect, rather long; fruit unknown.

In dense brushwood on the E slopes of the Rondo plateau (Tanzania); host unknown.

Known only from the type (Busse 2554) collected in 1903.

A. sakarensis (Engl.) Polh. & Wiens = **A. tanganyikae**

A. sambesiacus (Engl. & Schinz) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 145; Fl. Zambes. 9/3: 157, 2006.

Glabrous shrub c. 0,5 m with compressed twigs; leaves (sub-) opposite, coriaceous, very variable in length (4-14 × 0,4-1,2 cm); corolla orange-yellow with ribbed apical swelling; lobes erect, rather long, keeled; fruit unknown?

Dry deciduous woodland and bushland, in valleys and scarps of rivers; often on *Commiphora;* 200-1150 m alt.

NE S. Africa.

A. sansibarensis (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 142, 166 (colour photo. subsp. **sansibarensis**); A. Peter, Fl. Deutsch-Ostafr. 2(1), Descr., 1932: tab. 15/2, sub nom. *Loranthus tricolor.*

Spreading glabrous shrub to 1 m, with well-developed haustorial attachment, rarely with subcortical runners; branchlets slightly compressed, soon terete, densely lenticellate; leaves mostly alternate, leathery, variable in size (5-13 × 3-8-11 cm); corolla tube red, lobes yellow over vents with dark red tips; lobes erect, short (subsp. **sansibarensis**) or longer (subsp. **montanus**).

Coastal bushland, mangrove swamps; riverine associations extending inland to montane and dry hilltop mist-forest in E Africa (e. g. W. Usambaras); 0-1950 m alt. (subsp. **sansibarensis**). – Montane forest (C Kenya, N Tanzania); 1800-2500 m alt. (subsp. **montanus**). – On a wide range of hosts.

Comprises 2 subspp.:

– subsp. **sansibarensis** [syn. in Enum. 2: 165, 1992; *excl. Loranthus thorei* K. Krause, *Tapinanthus thorei* (K. Krause) Danser]; – subsp. **montanus** Polh. & Wiens [syn.: *Loranthus thorei* K. Krause, *Tapinanthus thorei* (K. Krause) Danser].

A. scassellatii (Chiov.) Polh. & Wiens, excl. var. *glabrescens* Pichi-Serm. *(= ? A. heteromorphus)* – Icon.: Polhill & Wiens (1998): 144, 178 (colour photo.).

Spreading shrub to 1 m; branchlets slightly compressed, soon terete, densely lenticellate, ± puberulous on youngest parts; leaves subopposite; flowers on relatively short lateral branches, orange to red, yellow(-green) at base with thick swelling; lobes erect, keeled.

Coastal and deciduous bushland, forest margins, riverine associations and extending to hilltop mist-forest and montane forest; often on *Terminalia* (Somalia) and on various hosts; 0-2300 m alt.

Related to *A. igneus.*

A. schweinfurthii (Engl.) Polh. & Wiens

Well-branched shrub; branchlets ± compressed, densely pubescent with short stiff spreading hairs, older ones glabrescent, grey, cracked; leaves opposite and subopposite; corolla greenish yellow to orange-red; lobes rather long, erect; fruit unknown.

Riverine forest, wooded grassland and bushland; on various hosts, incl. *Combretum, Ficus;* 1100-1500 m alt. (E. Africa).

A. songeensis Balle ex Polh. & Wiens

Large *beautiful* spreading, pendulous shrub; branchlets stout, slightly flattened, velvety with longer hairs reddish-brown, branched and falling first; leaves opposite and subopposite, deep green, variable in size (7-17 cm long, 3-12 cm wide); flowers on relatively short lateral branches, reddish on bulbous base, then orange-vermilion, banded orange-yellow at base of lobes with red tips; lobes erect, rather long, slightly crested; fruit unknown.

Deciduous woodland, wooded grassland; on *Piliostigma* (SE Tanzania), and *Combretum;* 500-1200 m alt.

Can be confused with a *Phragmanthera.*

Related to *A. terminaliae, A. musozensis, A. heteromorphus.*

A. subulatus (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 139, 150 (colour photo.).; iidem, Fl. Trop. E. Afr., Loranth.: 47, 1999; Heide-Jørgensen, Parasit. flow. pl.: 70, 402, 2008.

Glabrous *attractive* spreading shrub to 1-2 m, often with very short lateral branches; branchlets flattened, later terete or 4-angled to ± winged; leaves (sub-)opposite, thinly leathery, sometimes ± glaucous; with leafy spurred bracts around the 8-16-flowered umbels; corolla pink or orange; lobes erect, rather long.

(Coastal) bushland, (submontane) forest, *(Brachystegia)* woodland, wooded grassland; on *Combretum, Syzygium guineense,* and a variety of other families, e. g. legumes, cultivated trees, also epiparasite on other mistletoes, e.g. *Viscum engleri,* causing damage or ? death to the latter; 10-2300 m alt.

Easily recognized species but also variable. Physiological races adapted to different hosts seem to exist. Variable in: outline of branchlets (angled-winged), size and development of spurs on bracts, insertion and shape of leaves.

A. tanganyikae (Engl.) Polh. & Wiens

syn.: Enum. 2: 165, 1992; and *Loranthus sakarensis* Engl.; *Tapinanthus sakarensis* (Engl.) Danser; *Agelanthus sakarensis* (Engl.) Polh. & Wiens

Glabrous shrub; twigs slightly compressed, later terete; leaves alternate to opposite; corolla long, red, yellow to orange over vents, with blackish red tips; lobes erect; fruit unknown.

Riverine and montane forest; on various hosts but also a pest of coffee; 900-2400 m alt.

A. terminaliae (Engl. & Gilg) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 145; Germishuizen & al., in Fl. Pl. Afr. 53: 20-24, pl. 2085, 1994.

syn.: Enum. 2: 165, 1992; and *Loranthus villosiflorus* sensu auct., non Engl. s. str. (e. g. Hiern, Catalogue Welwitsch: 935, 1900, p.p. quoad Welwitsch 4891, 4892).

Bushy handsome shrub to c. 1 m tall; spreading by haustoria-bearing surface runners; branchlets slightly flattened, velvety with short spreading hairs, the longer ones rusty brown, branched, shed first; leaves (sub-)opposite, smaller ones at base of lateral shoots, coriaceous, densely pubescent; flowers on relatively short lateral branches, yellow-green below, orange above, rusty-brown downy; lobes erect, rather long.

Woodland, forest edges, "great Parinari forest" (Welwitsch); on *Parinari* (Angola), *Entada, Combretaceae* (commonly); 900-1400 m alt.

NE Nambia, Caprivi Strip.

Close to *A. heteromorphus* (of which it has been treated as a synonym), and to *A. musozensis;* also related to *A. songeensis.*

A. toroensis (Sprague) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 158 (colour photo.).

bas.: *Loranthus toroensis* Sprague

syn.: *L. crataevae* Sprague; *Tapinanthus crataevae* (Sprague) Danser; *Loranthus demeusei* sensu auct., non Engl.: Robyns, Fl. Spermatophytes Parc Natl. Albert 1: 103, 1948.

Glabrous shrub; young branchlets subangular, later terete; leaves opposite or ternate, ± sessile; bract and calyx deeply cupular; corolla wine-red, yellow to orange over vents; lobes erect; fruit unknown.

Wooded grassland, forest edges; on *Newtonia, Tabernaemontana, Acacia, Capparis, Crataeva, Dombeya, Rhus,* sometimes in tea plantations; 600-2400 m alt.

Close to *A. djurensis* but bract and calyx cupular.

A. transvaalensis (Sprague) Polh. & Wiens

Bushy glabrous shrub 0,6-1 m; twigs compressed; leaves subopposite, coriaceous, shiny light green; corolla rather short, yellow(-green) sometimes flushed reddish, apical swelling ribbed; lobes erect, keeled.

Coastal forest edges and bushland; on a wide range of hosts, also epiparasite on *Viscum*; 60-840 m alt. (S. Africa).

NE S. Africa, Swaziland.

Closely related to *A. igneus.*

A. uhehensis (Engl.) Polh. & Wiens – Icon.: Balle in Fl. Cameroun 23: p. 49, pl. 11: 1-4, 1982 (sub nom. *Tapinanthus platyphyllus).*

Stems spreading to 1,5 m long; branchlets scurfy-tomentellous with small much-branched red-brown hairs; leaves opposite to alternate, thinly coriaceous (4-13 cm long, 0,5-5 cm wide); corolla orange, scurfy puberulous; lobes erect, slightly keeled.

Forest edges; commonly on *Bridelia;* 1800-2000 m alt.

Known only from the Southern Highlands of Tanzania.

Easily confused with a *Phragmanthera* but berries red (not blue to blue-green). May be overlooked.

A. unyorensis (Sprague) Polh. & Wiens

syn.: Enum. 2: 165, 1992; and *Tapinanthus platyphyllus* sensu auct., non (Hochst. ex A. Rich.) Danser, e. g. Balle in Fl. Cameroun, l. c.

Glabrous shrub with spreading, pendent branches; leaves opposite to alternate, thinly coriaceous, glossy; corolla rather long, pinkish red to mauve, with yellow to orange band around vents, not swollen at base; lobes erect, ± coherent, long; fruit white.

Rain-forest; on various hosts; 900-1200 m alt.

A. validus Polh. & Wiens

syn.: *Loranthus buchwaldii* Sprague, nom.; *Tapinanthus irangensis* (Engl.) Danser var. *glaber* Balle, nom.

Glabrous plant forming large clumps with longer branches pendent; branchlets slightly compressed to angled, soon terete, ± lenticellate; leaves alternate; corolla red, yellow on lobes around vents, tip darker red, slightly swollen at base; lobes long; only young fruits known.

Wetter and drier montane forests; on various hosts incl. *Catha, Maytenus, Scolopia;* 1700-1950 m alt.

Known only from W. Usambara Mts. (Tanzania).

Few collections known.

A. villosiflorus (Engl.) Polh. & Wiens

Shrub with villous branchlets, longer hairs to 1 mm, branched, red-brown and shed first; leaves subopposite, somewhat glaucous, with smaller ones crowded at base of lateral shoots; flowers on relatively short lateral branches, small, reddish orange, clothed with spreading reddish brown hairs; lobes erect, small; fruit unknown (although searched for by Welwitsch).

In the Monino forests, very rare, on *Ficus* (Welwitsch); on *Ficus, Brachystegia* and other trees.

Collected rarely since Welwitsch (mid-18th century).

A. zizyphifolius (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 154; and 140, 155 (subsp. **vittatus**); in Fl. Trop. E. Afr., Loranth.: 47, 1999 (subsp. **vittatus**); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 563, 2008.

Shrub 0,4-c. 1 m; branchlets slightly compressed to 4-angular, then terete, glabrous to red-brown tomentose; leaves alternate to subopposite, densely set, leathery to thick and brittle, dull yellowish green; corolla rather short, pink below, sometimes green-banded at top of tube, whitish over vents, with red tips; lobes erect, rather long; fruit with persistent calyx. Variable in pubescence (hairy branchlets and leaves in subsp. **zizyphifolius**, glabrous in subsp. **vittatus**).

Edges of upland dry evergreen forest and associated bushland, *Tarchonanthus* associations (Rift Valley and its flanks); extending into deciduous bushland, woodland and riverine communities nearby, and also into *Combretum* woodland and bushland; commonly on *Rhus,* but also on *Acacia, Grewia, Combretum, Pericopsis, Parinari* and various other hosts; 900-2700 m alt. (subsp. **zizyphifolius**). – Montane forest, riverine forest, wooded grassland and woodlands nearby; on various hosts, incl. *Ficus*, commonly on *Syzygium* (S. Tanzania), *Diplorhynchus* (N Zimbabwe); 500-2200 m alt. (subsp. **vittatus**).

Comprises 2 subspp.: – subsp. **zizyphifolius** [syn.: Enum. 2: 166, 1992]; – subsp. **vittatus** (Engl.) Polh. & Wiens [syn.: l. c.; and *Loranthus glomeratus* Engl. var. *grandiflorus* Balle p. p. (Burundi, Becquet 917); but *excl. Loranthus obovatus* Peter; *Tapinanthus obovatus* (Peter) Danser *(= A. oehleri)];* in W and S part of range.

SYNONYMS (cf. also Enum. 2: 174-184, 1992):

Agelanthus sakarensis (Engl.) Polh. & Wiens = **Agelanthus tanganyikae**

scassellatii (Chiov.) Polh. & Wiens = ? **A. heteromorphus**

BERHAUTIA / *1*

A poorly known single species; isolated genus of uncertain affinity.

Berhautia senegalensis Balle – Icon.: Polhill & Wiens (1998): 118.

Small shrub with a single haustorial attachment; stems numerous, much-branched, pendent; branchlets grey-tomentose with longer, branched emergent hairs (0,5-1 mm); leaves alternate-subopposite; corolla pink, pubescent; lobes long; fruit pear-shaped.

Wooded grassland; only on *Combretum.*

Known only from Gambia R. basin.

EMELIANTHE / *1*

Monotypic.

Emelianthe panganensis (Engl.) Danser – Icon.: Polhill & Wiens (1998): 97 (colour photo. subsp. **commiphorae**).

Glabrous shrub 0,5-2 m with a single haustorial attachment; branches smooth, grey, youngest sometimes purple-brown; leaves deciduous, alternate, but also crowded on short shoots of leafless branches; corolla pinkish red, S-shaped with long narrow tube and 4 winged long reflexing lobes. Leaves produced at flowering time (subsp. **panganensis**) or after flowering time (subsp. **commiphorae**).

Deciduous and coastal bushland; on *Adansonia, Euphorbia, Sterculia;* 0-1250 m alt. (subsp. **panganensis**). – Coastal and deciduous bushland, wooded grassland; generally on *Commiphora,* less often on *Boswellia, Lannea, Sterculia* or other hosts; 0-1700 m alt. (subsp. **commiphorae**).

Comprises 2 subspp.:

– subsp. **panganensis**; less conspicuous and more difficult to collect than subsp. **commiphorae** Wiens & Polh. (icon.: Polhill & Wiens, Fl. Trop. E. Afr., Loranth.: 14, 1999, from Fl. Eth. 3: 365, 1989), more commonly encountered, and with smaller bright green (not glaucous), markedly crinkled leaves, after the flowers. In S Ethiopia perhaps more common than records suggest. – The geographical ranges of the 2 subspp. overlap.

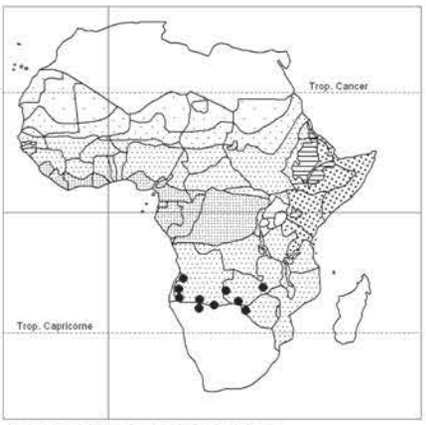
ENGLERINA / *26*

In tropical Africa. Differs from *Agelanthus* by the 4-merous flowers. Shrubs with a single haustorial attachment. Leaves (sub-)opposite. Fruit with persistent calyx, red. Twenty species on a wide range of hosts, the others restricted. – Certain species are epiparastized by *Viscum (V. goetzei, V. loranthicola; Viscaceae).*

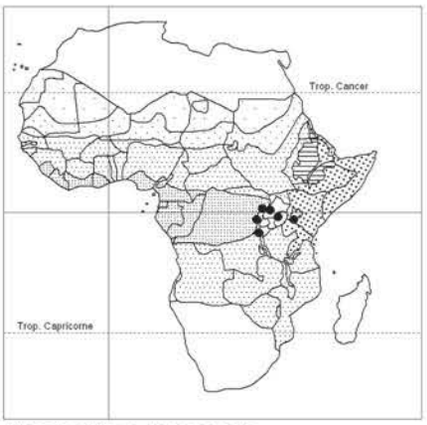
For *E. cordata* no open flower known (only buds), and in 7 species (= 28%) the fruit is unknown.

Englerina collinsii Polhill & Q. Luke, J. E. Afric. Nat. Hist. 97: 103, 2008. – Icon.: ibid.: 105.

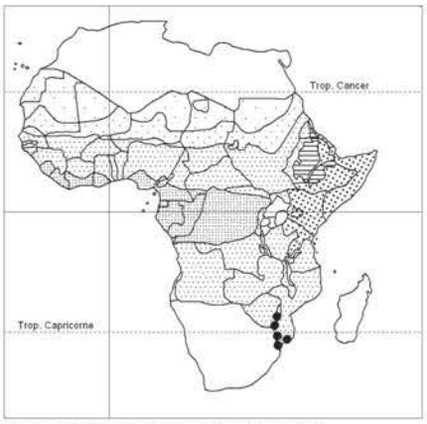
syn.: *E. heckmanniana* (Engl.) Pohl. & Wiens var. *cordata* Balle, nom. in sched.; *E. heckmanniana* sensu Polhill & Wiens 1998 p.p. quoad specim. Gilbert 5406, Gillett



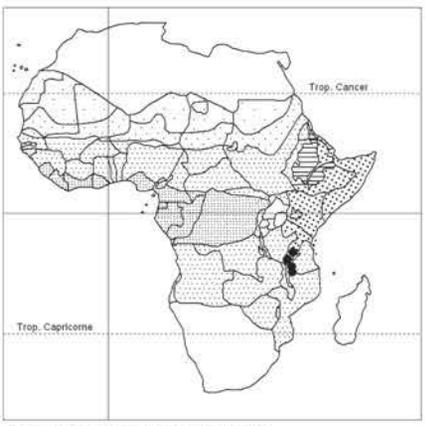
Agelanthus terminaliae



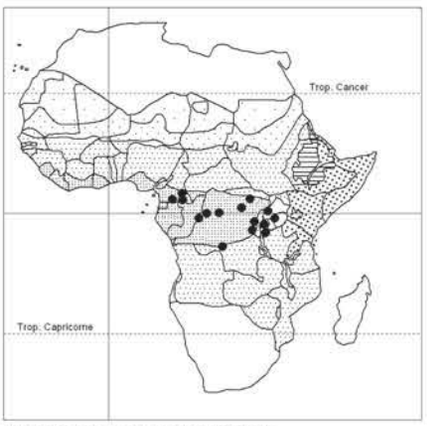
Agelanthus toroensis



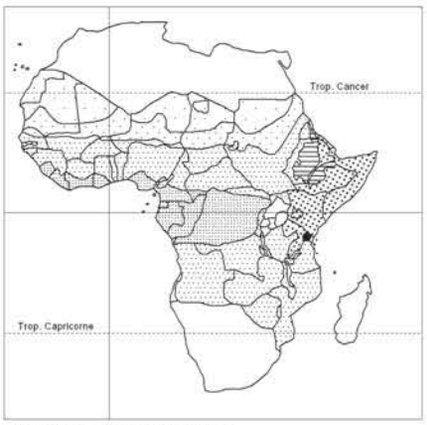
Agelanthus transvaalensis



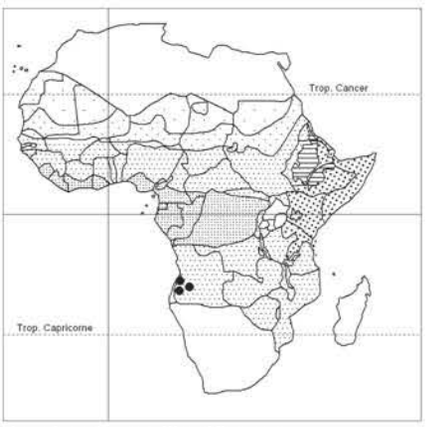
Agelanthus uhehensis



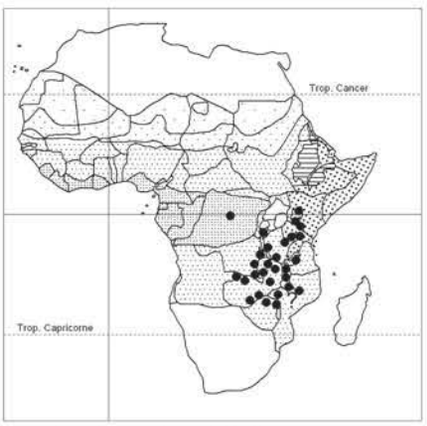
Agelanthus unyorensis



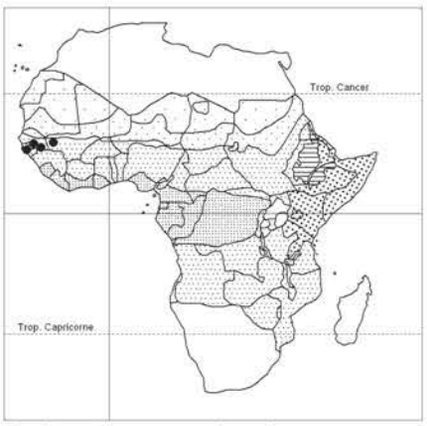
Agelanthus validus



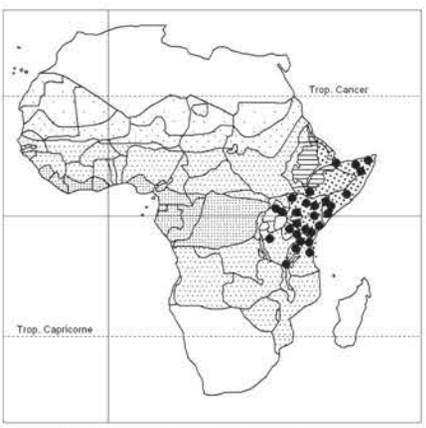
Agelanthus villosiflorus



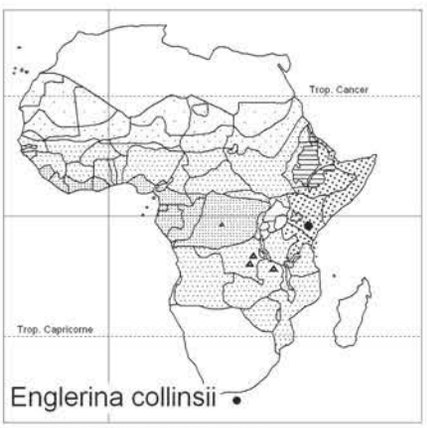
Agelanthus zizyphifolius



Berhautia senegalensis

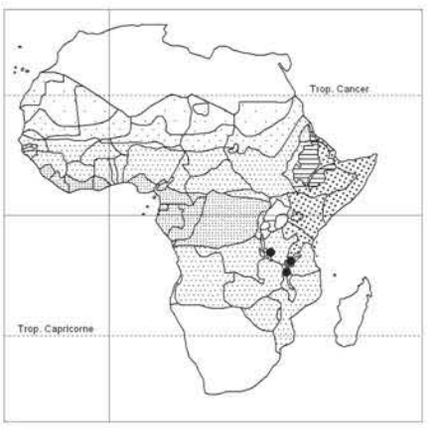


Emelianthe panganensis



Englerina collinsii ●

Englerina concinna ▲



Englerina cordata

18619, Joanna in Bally 7402, non (Engl.) Polhill & Wiens s. str.

Spreading shrub c. 0,5 m wide; twigs terete, densely and persistenly pubescent with white spreading hairs; leaves subsessile, thin, ovate-cordate, thinly pubescent (beneath); flowers on short branchlets 5-15 cm long; corolla *dark red,* covered in white to red spreading hairs, with short V-slit, tube constricted above basal swelling; *lobes* linear-spathulate, *erect* but ± *incurved* in upper expanded part. – Distinctive.

On "massive granitic gneiss outcrops", on rocky hillsides with large reddish boulders arising from the basement peneplain with *Acacia-Boscia-Maerua-Commiphora-Grewia-Bauhinia taitensis* mixed woodland and dry bushland, also *with Ficus, Combretum, Cussonia, Croton scheffleri, Euphorbia, Melia volkensii, Lannea alata, L. schweinfuthii,* etc.; reported on *Ochna* sp., *Coptosperma graveolens;* 600-1000 m alt.

Previously included in *E. heckmanniana* (with yellow flowers, recurved lobes!). – Probably near *E. drummondii,* but also resembling *Oliverella hildebrandtii.*

Only 4 collections from 3 locations known. Probably endangered by extending agriculture.

E. concinna Polh. & Wiens

Small shrub; flowering branchlets short (5-25 cm); twigs slightly compressed, scurfy puberulous with short brownish (spreading) hairs; leaves thin, smaller towards base of flowering branchlets, grading to bud-scales; flowers on rather short spreading branchlets, 5-25 cm long; corolla small, yellow, lobes long, orange, reflexed; fruit grey.

Thicket, woodland, around Lakes Mweru and Tanganyika; on *Combretum, Brachystegia;* 1050-1500 m alt.

Resembling *E. drummondii,* but corolla tube not noticeably swollen above vents in bud, and corolla smaller (1,3-1,6 cm, not 1,7-2,2 cm).

E. cordata Polhill & Wiens

Small glabrous shrub; twigs slightly compressed; leaves sessile, thin, glaucous, purple-flushed when young; flowers on short spreading branchlets; corolla-buds reddish with darker tip, open flowers unknown; fruit white below, pink above.

Riverine forest (near Chisanga Falls, N Malawi); montane forest; on *Garcinia, Rapanea,* and various other hosts; 1800-2200 m alt.

Similar to *E. inaequilatera* but leaves cordate, sessile.

E. drummondii Balle ex Polh. & Wiens – Icon.: Polhill & Wiens (1998): 122, and Fl. Trop. E. Afr., Loranth.: 35, 1999.

syn.: *Loranthus* sp. C sensu Agnew, Upl. Kenya Wild Flow. (1974): 332, p.p. quoad specim. ex "MAC"; *Englerina* sp. A sensu Polhill & Wiens in Agnew & Agnew, Upl. Kenya Wild Flow., ed. 2: 156 (1994).

Small shrub; twigs subterete to slightly 4-angular; scurfy puberulous, soon glabrescent; leaves thin, smaller towards base of flowering branchlets, grading to bud scales; flowers on short spreading branchlets, 5-20 cm long; corolla yellow-orange with V-slit extending ± to base; lobes reflexed or revolute.

Dry evergreen forest, hilltop mist forest and nearby wooded grassland; associated with *Juniperus* forest; host not recorded; 1000-1950 m alt.

Similar to *E. ramulosa* (coastal species).

E. gabonensis (Engl.) Balle, excl. subsp. *subquadrangularis* (De Wild.) Balle *(= E. subquadrangularis).* – Icon.: Polhill & Wiens (1998): 121 (colour photo. of red-flowering form from Gabon), 122.

syn.: Enum. 2: 166, 1992.

Bushy glabrous shrub with stems to 2 m, sometimes pendent; twigs slightly compressed; leaves ± fleshy, dull green; corolla long, yellow to orange (red in Gabon), with V-slit < half-way.

Forest; on various shrubs and trees; 2-2800 m alt.

E. heckmanniana (Engl.) Polh. & Wiens, p.p. excl. specim. Gilbert 5406, Gillett 18619, Joanna in Bally 7402 *(= E. collinsii).* – Icon.: Polhill & Wiens (1998): 135 (colour photo. subsp. **polytricha**).

Small shrub; twigs slightly compressed, hispidulous to tomentellous with short and very short spreading hairs; flowering branchlets short, spreading, 5-15 cm long; leaves scabridulous-pubescent, smaller towards base of flowering branchlets; corolla yellow to orange, green at vents, with V-slit to halfway; lobes reflexed to revolute; fruit unknown.

Deciduous bushland and thicket on the Iringa Plateau (Tanzania) with its scarps and fringes; on various hosts (e. g. *Combretum, Grewia);* 950-1550 m alt. (subsp. **heckmanniana**). – Edges of upland dry evergreen forest and associated *Tarchonanthus* bushland; deciduous bushland; on various hosts (e. g. *Grewia, Combretum, Acacia, Cordia, Teclea, Euclea, Commiphora);* 700-2300 m alt. (subsp. **polytricha**; along the Great Rift Valley).

Comprises 2 subspp.: – subsp. **heckmanniana**; – subsp. **polytricha** Polh. & Wiens (plant more densely hairy). An intermediate form is recorded from where they meet (foot of Iringa scarp).

E. holstii (Engl.) Tiegh., incl. var. *angustifolius* Engl., nom. – Icon.: Polhill & Wiens (1998): 122, 132 (colour photo.)

Shrub with slender branches to c. 1 m; twigs compressed, sparsely scurfy pubescent to brownish tomentellous; leaves thin, fresh green with red midrib; corolla small, pink to red on tube with deep V-slit; lobes white to cream, red-tipped, recurved to revolute, linear.

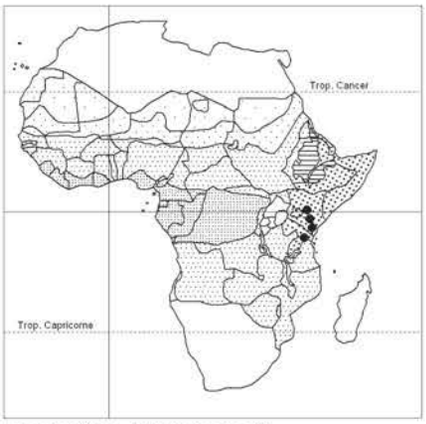
Montane forest, abundant at forest edges; on various hosts, becoming a pest of plantations and orchards; 1200-2100 m alt. (only in W. Usambaras).

E. inaequilatera (Engl.) Gilli – Icon.: Polhill & Wiens (1998): 11, 128 (colour photo.); Flora Zambes. 9/3: 138, 2006; Heide-Jørgensen, Parasit. flow. pl.: 44, 2008.

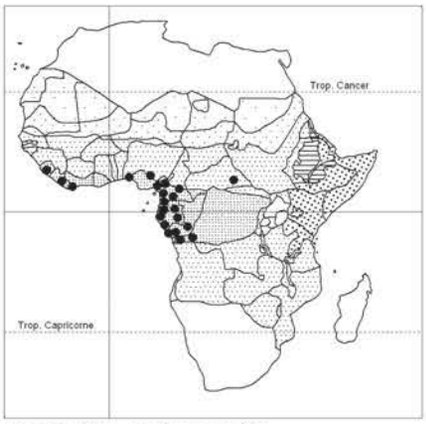
Shrub with spreading stems to c. 1 m; twigs slightly compressed, scurfy pubescent to glabrous; leaves thin, dull pale green, often coppery reddish when young; corolla yellow to red, with V-slit to the base; lobes erect, long.

Montane rain-forest and abundant at edges, extending down to drier forest and forest-woodland transition zones; on a wide range of hosts (e. g. *Dodonaea* ! in forest; *Protea, Buddleja, Rhamnus, Jasminum* in transition zone; exceptionally on *Vernonia* and then simulating the host in leaf-shape; abundant on *Tecomaria* in Malawi bushland); 700-2700 m alt.

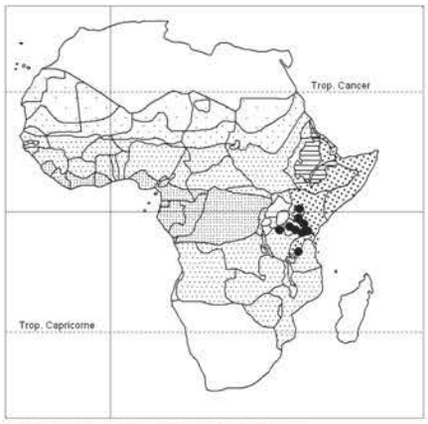
Very variable; divergence linked with e. g. habitat: size and growth form of plants, size, shape and colour of leaves; colour of unripe fruit (green or white); form of indumentum on twigs; colour of flowers. Local races are distinctive and host caterpillars of different butterflies (Lycaenids).



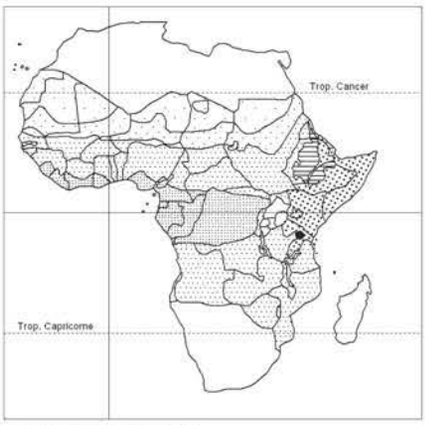
Englerina drummondii



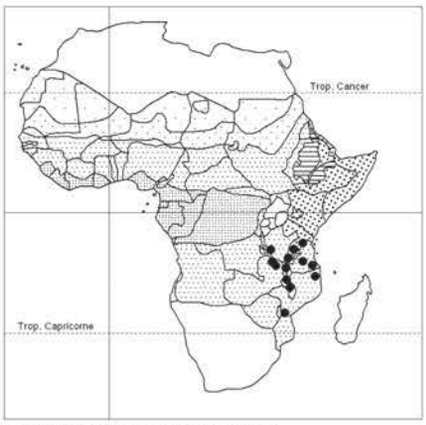
Englerina gabonensis



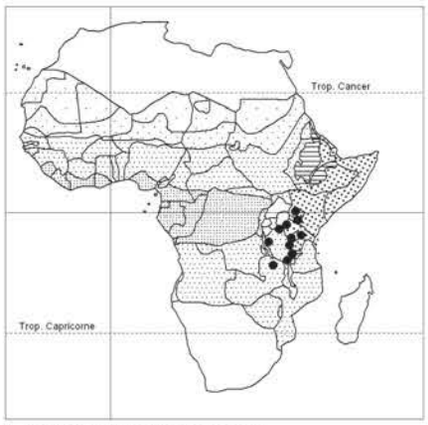
Englerina heckmanniana



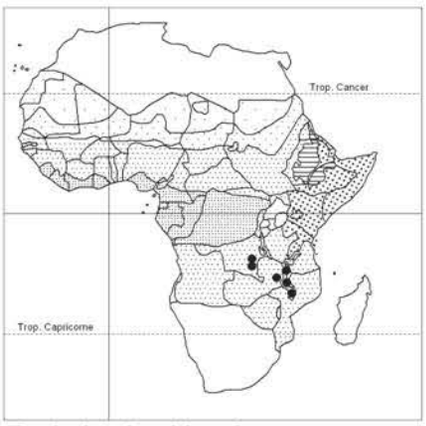
Englerina holstii



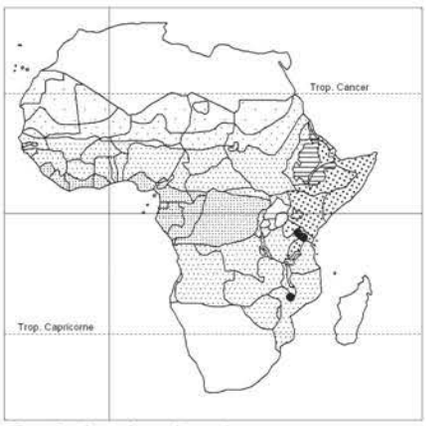
Englerina inaequilatera



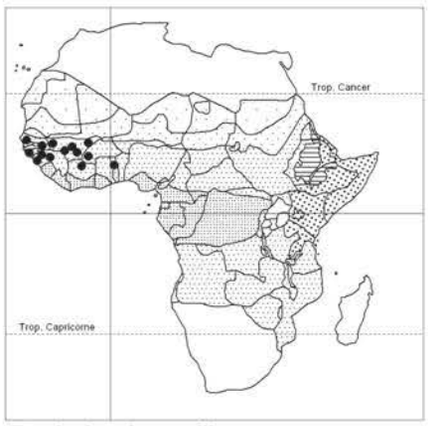
Englerina kagehensis



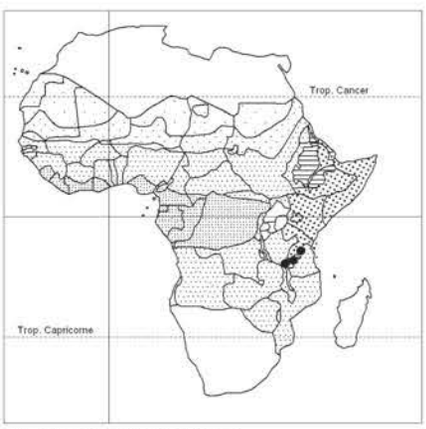
Englerina kapiriensis



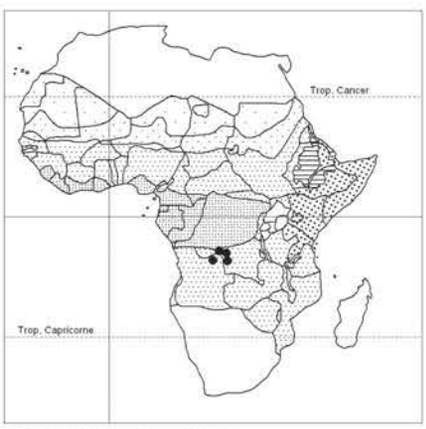
Englerina kwaiensis



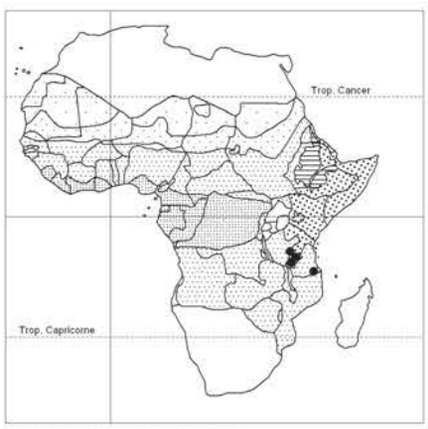
Englerina lecardii



Englerina longiflora



Englerina luluensis



Englerina macilenta

E. kagehensis (Engl.) Polh. & Wiens

syn.: Enum. 2: 166, 1992; and *Loranthus* sp. B sensu Agnew, Upl. Kenya Wild Fl.: 332 (1974).

Small shrub; twigs subterete to slightly compressed, hispidulous with short and very short spreading hairs; leaves dark green, thinly coriaceous, smaller towards base of flowering branches, grading to bud-scales; flowering branchlets short, 5-20(-30) cm long; corolla small, (greenish) white or grey with pink tips, with V-slit to base; lobes reflexed to loosely revolute. Flowering during the rains.

Deciduous bushland, thicket, riverine fringes, wooded grassland; rarely in *Brachystegia* woodland; on *Combretum, Grewia,* also various legumes; 850-1750 m alt.

E. kapiriensis (Balle) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 131 (colour photo.).

Glabrous to hispidulous plant 0,7 m with slightly compressed twigs, mostly pendulous; leaves coriaceous, ± glaucous, linear; corolla yellow, rather small, with V-slit down to calyx; lobes erect, becoming reflexed.

Brachystegia woodland; and associated riverine forest; usually on *Brachystegia;* 1200-2000 m alt.

Similar to *E. oedostemon* in flower structure.

E. kwaiensis (Engl.) Polh. & Wiens

Glabrous plant with spreading stems to c. 1 m; twigs slightly compressed, soon thickened; leaves coriaceous, dark green above, paler beneath; inflorescences reduced, crowded at older thickened nodes; corolla orange to red, with a short V-slit; lobes erect; fruit unknown.

Rain-forest; on various hosts, characteristic of understorey trees and shrubs (when on *Dasylepsis integra* showing similarity to leaf-form of host); ? -1200-1800 m alt.

Insufficiently known species. Similar to a number of *Englerina* species from W. Africa; to *E. longiflora,* but also to some *Agelanthus* spp. *(A. sansibarensis, A. elegantulus);* but stamens and style different.

E. lecardii (Engl.) Balle – Icon.: Boussim & al., Loranth. Burkina Faso: 63, 2002. B. Dembélé & al., Plantes parasites des cultures et des essences forestières du Sahel: Fig. 64, 1994 (photo.).

Glabrous bushy plant forming dense tufts; branches pendent, 60-80 cm long; twigs slightly compressed; flowers small, yellow or orange, marked red below vents, with V-slit to halfway; lobes erect, slightly keeled, long.

Wooded grassland (with *Combretum);* commonly on *Combretum.*

E. longiflora Polh. & Wiens

Glabrous shrub to c. 1 m; twigs slightly compressed; leaves coriaceous, dark green; corolla red or orange, with a short V-slit; lobes erect; fruit unknown.

Evergreen montane forest; on *Psychotria, Rawsonia, Lasianthus;* 1150-1600 m alt.

Very similar to *E. kwaiensis,* but flowers borne on distinct peduncles. Also with affinity to *E. gabonensis* in W. Africa.

E. luluensis (Engl.) Polh. & Wiens

Glabrous plant; twigs slightly angular; corolla small, red, with V-slit to > halfway or to base; lobes erect, long; fruit unknown.

Along tributaries of Kasai River; host not recorded.

Imperfectly known species.

E. macilenta Polh. & Wiens

Small rounded shrub to 0,5 m; twigs subterete, glabrous or with very short spreading glandular hairs; leaves thinly coriaceous, slightly smaller towards base of flowering branches which are short, spreading; corolla small, white to yellow tipped red, with V-slit to middle; lobes reflexed to revolute; fruit unknown. Flowering during rains.

Mixed deciduous bushland; host not recorded; 600-1050 m alt.

Known from very few specimens.

E. muerensis (Engl.) Polh. & Wiens

Shrub with spreading to pendulous branches; twigs slightly compressed, brownish tomentellous, glabrescent; leaves thinly coriaceous; corolla rather small, orange, with V-slit to the base; lobes erect. Flowering in dry season.

Brachystegia and mixed woodland; on *Brachystegia, Combretum,* also epiparasite on other *Loranthaceae;* 350-1000 m alt.

Close to *E. inaequailatera,* but with rusty indumentum.

E. ochroleuca (Engl. & K. Krause) Balle

Plant with subcylindrical, brown-velvety pubescent twigs, glabrescent; leaves thin to ± coriaceous; corolla yellow, marked orange, red over vents, with V-slit to halfway; lobes erect; fruit unknown.

Wooded grassland; on *Combretum.*

E. oedostemon (Danser) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 130 (colour photo.); Fl. Zambes. 9/3: 138, 2006; Heide-Jørgensen, Parasit. flow. pl.: 71, 2008.

syn.: Enum. 2: 166, 1992; and *Englerina umtaliensis* Balle, nom.

Stems spreading, to c. 1 m; twigs slightly compressed, glabrous or rarely with short spreading glandular evanescent hairs at base of young shoots; leaves thin, reddish-brown to dark green; corolla small, orange or orange-yellow, sometimes reddish towards apex, with V-slit down to calyx; lobes reflexed; filaments green with upper part tightly coiled, fused with petals (peculiar arrangement).

Evergreen forest and nearby woodland or bushland; abundant in forest-scrub patches in montane grassland; locally common; 1000-1860 m alt.

Growing in the same area as *E. swynnertonii,* also with tightly coiled free filament part.

E. parviflora (Tiegh.) Balle – Icon.: Polhill & Wiens (1998): 122.

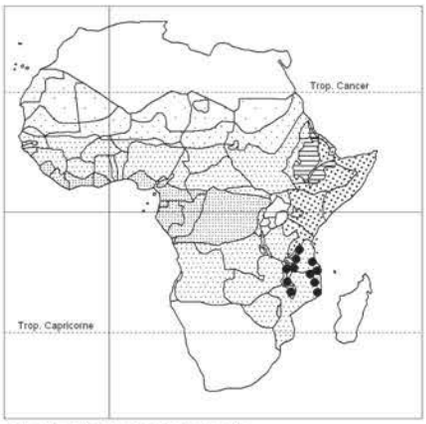
Glabrous plant; twigs slightly compressed; corolla small, red, with V-slit to > halfway; lobes erect or sporadically spreading.

Forest regions; edge of degraded rain-forest; savanna.

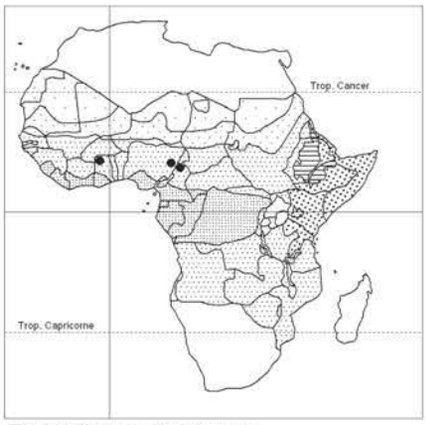
E. ramulosa (Sprague) Polh. & Wiens

Small shrub; twigs subterete to slightly 4-angular, with short spreading hairs, glabrescent, sometimes glabrous; leaves thin, smaller towards base of flowering branchlets, grading to bud scales; flowering branchlets short, spreading; corolla small, yellow, reddish at vents, with V-slit ± down to base; lobes reflexed to revolute, linear.

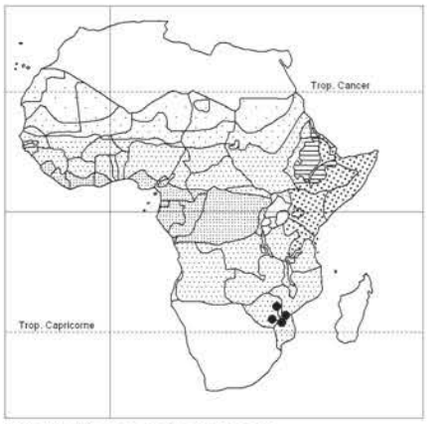
Coastal bushland; on various hosts; 0-60 m alt.



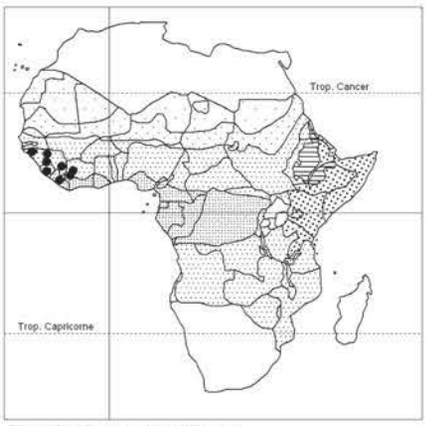
Englerina muerensis



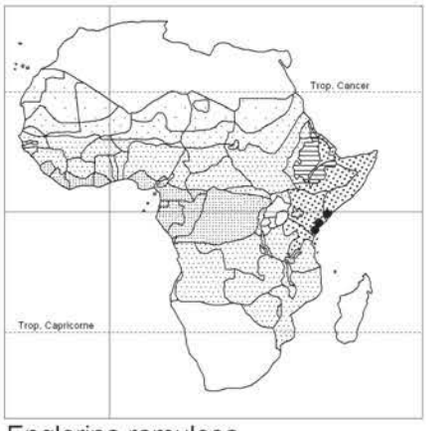
Englerina ochroleuca



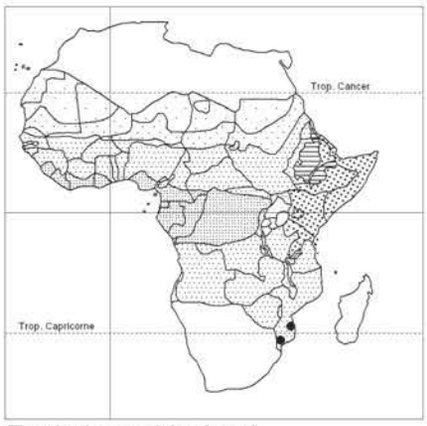
Englerina oedostemon



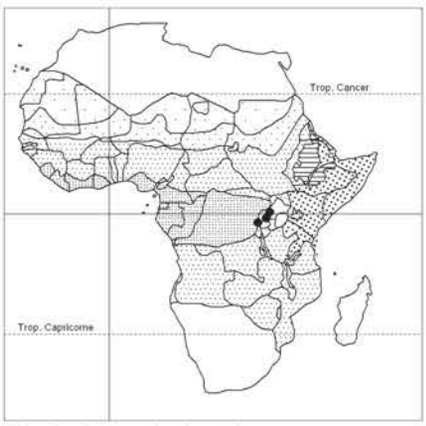
Englerina parviflora



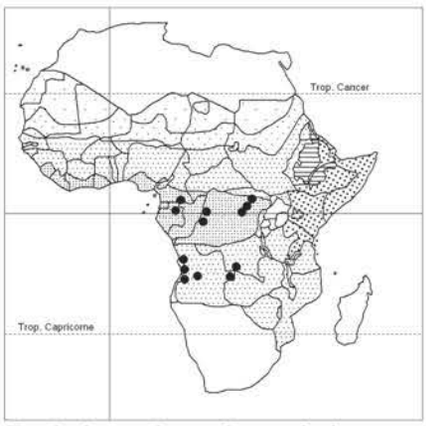
Englerina ramulosa



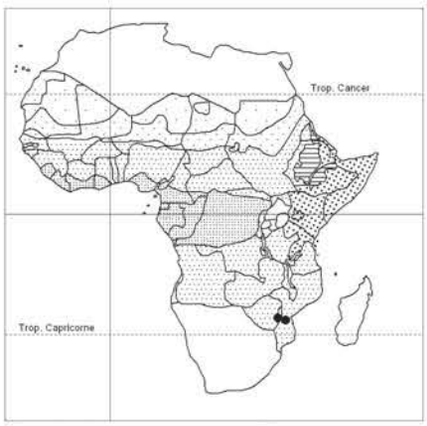
Englerina schlechteri



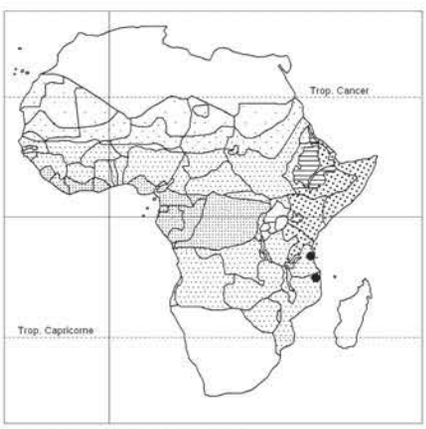
Englerina schubotziana



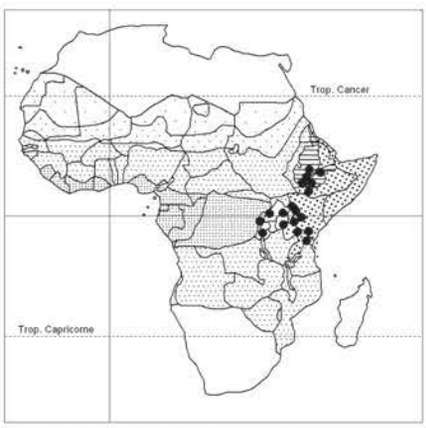
Englerina subquadrangularis



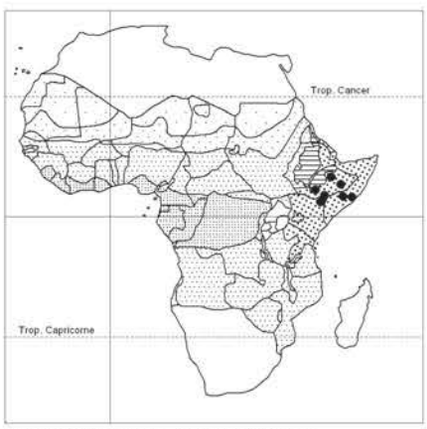
Englerina swynnertonii



Englerina triplinervia



Englerina woodfordioides



Erianthemum aethiopicum

E. schlechteri (Engl.) Polh. & Wiens

Small shrub; twigs compressed, scurfy puberulous with some short spreading hairs; leaves coriaceous, sessile, small; corolla small, red, with V-slit to halfway; lobes erect.

Wooded grassland; on *Strychnos;* c. 30 m alt.

Vulnerable, fide Golding, South. Afric. Pl. Red Data Lists: 51 (2002); Mozambique.

E. schubotziana (Engl. & K. Krause) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 126 (colour photo.).

Twigs slightly compressed, usually scurfy puberulous with some short spreading hairs, glabrescent; leaves thin, yellow-green; corolla small, (yellow-)orange, with V-slit ± to base; lobes erect-spreading, ± as long as tube; fruit unknown.

Bamboo forest, forest edges, and along rivers; also wooded grassland; on various hosts (e. g. *Hippocrateaceae, Ochnaceae, Capparidaceae);* 1150-2350 m alt.

Close to *E. woodfordioides* but recognized in the field by flowers not so obviously blackish inside.

E. subquadrangularis (De Wild.) Polh. & Wiens

Pendent glabrous plant; twigs 4-angled; corolla deep pink with long V-slit; lobes fiery red.

Forest; riverine forest; on various hosts (e. g. *Hymenocardia, Combretum* in Zaire); 500-1400 m alt.

Resembling *E. gabonensis* (and has been considered as a subspecies of it), but buds obtuse to ± acuminate at apex.

E. swynnertonii (Sprague) Polh. & Wiens

Twigs glabrous, slightly compressed; corolla small, bright orange to flame-red with V-slit halfway; lobes erect. Flowering in the wet season.

Forest; on *Canthium, Allophylus;* c. 600-1200 m alt.

Known only from Chirinda Forest (border Zimbabwe-Mozambique).

E. triplinervia (Bak. & Sprague) Polh. & Wiens – Icon.: A. Peter, Fl. Deutsch-Ostafr. 2(1), Descr., 1932: tab. 20/1, sub nom. *Loranthus brachyanthus.*

Small shrub to c. 45 cm; twigs slightly compressed, glabrous, lenticellate; leaves ± sessile, chartaceous, yellow-green; flowering branches numerous, short (7-20 cm), straight, obliquely spreading; corolla very small (9-12 mm), yellow with orange tip and blackish streaks at vents, with V-slit to base; lobes erect.

Coastal mixed bushland; on various hosts, including *Croton;* 0-400 m alt.

Known only locally (around Dar es Salaam, Tanzania; and Nampula, N Mozambique). Very characteristic.

E. woodfordioides (Schweinf.) M. G. Gilbert (the combination by Balle = nom. invalid.), incl. var. *adolfi-friderici* (Engl. & K. Krause) Balle, nom. invalid. and var. *umbelliflora* (De Wild.) Balle, nom. invalid., both non rite publ.); incl. var. *minor* Chiov., and var. *subintergridisca* Balle, nom. invalid. and var. *crenatidisca* Balle,

nom. invalid. – Icon.: Polhill & Wiens (1998): 126, 127 (colour photos.); and Fl. Trop. E. Africa, Loranth.: 29, 1999; A. Peter, Fl. Deutsch-Ostafr. 2(1), Descr.: tab. 18/3, 1932, sub nom. *Loranthus brachyphyllus;* ibid.: tab. 19/2a, sub nom. *L. longifolius;* ibid.: tab. 20/2, sub nom. *L. eucalyptoides;* Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 561, 2008.

syn.: Enum. 2: 167, 1992.

Shrub with spreading to drooping branches to c. 1 m; twigs slightly compressed, glabrous; leaf-petiole narrowly winged, blade thin, coppery red when young, later fresh-green often with red veins; corolla small, blue-grey with black inside of tube, and V-slit to base; lobes red; fruit translucent red with orange seed.

Margins of wetter montane forests, particularly common in thickets (former forest clearance); montane and riverine forest and associated woodland and wooded grassland; on various hosts (commonly on *Maesa lanceolata* in Ethiopia); 1250-3000 m alt.

Variable in size and colour of flowers (smaller, with pinkish or even yellow lobes occur on lower altitude in SW Ethiopia, in W. Rift populations, and around Mt. Kenya – E Aberdares). – Luxuriant forms present on Meru and Kilimanjaro.

Not on Ruwenzori (SW Uganda).

Easily recognized by the grey corolla-tube with blackish inside (cf. *E. schubotziana).*

SYNONYMS (see Enum. 2: 175, 1992):

Englerina cf. *gabonensis* sensu White & Abernethy 1996 = **Globimetula dinklagei**

heckmanniana sensu Polhill & Wiens 1998 p.p., non (Engl.) Polhill & Wiens s. str. = **Englerina collinsii**

heckmanniana (Engl.) Polhill & Wiens var. *cordata* Balle, nom. = **E. collinsii**

umtaliensis Balle, nom. = **E. oedostemon**

ERIANTHEMUM / *16*

Shrubs with a single haustorial attachment. Leaves opposite to partly alternate. Corolla 5-lobed, radial (no V-slit). Fruit with persistent calyx. Pollination by sunbirds; these seeking nectar insert their beaks through a fenestra, which causes the flower to open and the anthers coil up explosively, and a puff of pollen is thus deposited on the birds' heads.

Most species grow on a wide range of hosts.

Several species are imperfectly known: in 5 species (= 31%) no fruit has been seen, for 1 species the ecology is not recorded, and one species *(E. rotundifolium)* is known only from the type gathering.

Erianthemum aethiopicum Balle ex Wiens & Polh. – Icon.: Polhill & Wiens (1998): 245 (colour photo.).; Thulin, Fl. Somal. 2: 142, 1999.

Twigs tomentose with white stellate and short dendritic hairs, glabrescent; leaves (sub-) opposite, soon clustered on short shoots, often sparse at flowering time; corolla yellow(-green); fruit blue-green. Flowering with the rains.

Loewia-Caesalpinia bushland (Somalia), *Acacia-Commiphora* bushland or woodland; deciduous bushland (Kenya); on *Boswellia rivae, Loewia, Cordyla* (Somalia); *Commiphora, Acacia,* rarely *Ipomoea donaldsonii* (Ethiopia); *Commiphora*

(Kenya); 200-1300 m alt.

E. alveatum (Sprague) Danser

Small shrub; twigs tomentose with stellate and dendritic ± fulvous hairs, soon glabrescent; leaves opposite to alternate, soon clustered on short shoots; corolla green and apricot, densely silky villous; fruit unknown.

Coastal bushland and *(Brachystegia)* woodland and wooded grassland; on *Brachystegia, Terminalia;* 0-300 m alt.

E. commiphorae (Engl.) Danser – Icon.: Polhill & Wiens (1998): 235, 244 (colour photos.).

Stems well branched, to 1 m long; twigs tomentose with stellate and sometimes some short dendritic hairs, glabrescent; leaves (sub-)opposite, soon clustered on short shoots; corolla greenish yellow to pale orange; fruit blue.

Deciduous bushland; on various hosts (e. g. *Acacia, Commiphora, Euphorbia, Lannea);* 700-1800 m alt.

E. dregei (Eckl. & Zeyh.) Tiegh. – Icon.: Fl. Pl. Africa 53: pl. 2084 and p. 19, 1994; Polhill & Wiens (1998): 5, 235, 238 (colour photo.), and Fl. Trop. E. Afr., Loranth.: 97, 1999; Polhill in F. White & al., Evergr. For. Fl. Malawi: 348, 2001; A. Peter, Fl. Deutsch-Afr. 2(1), 1932, Descr.: tab. 13/2, sub nom. *Loranthus linguiformis;* Fl. Zambes. 9/3: 181, 2006; Heide-Jørgensen, Parasit. flow. pl.: 73, 403, 2008.

syn.: Enum. 2: 167, 1992; and *Loranthus oblongifolius* E. Mey. ex Drège nom. nud., non A. Rich; *Erianthemum hirsutiflorum* (Klotzsch) Balle, nom.; *Loranthus sodenii* Engl.; *L. dregei* var. *curvifolius* Engl. (? mistake for fa. *subcuneifolius* Engl.); and corrections: *Loranthus linguiformis* Peter, *Erianthemum linguliforme* (Peter) Danser (not "liguliformis" cited in Enum. 2, l. c.).

Shrubby plant with stout, roughly fissured, well branched, spreading to pendent stems to 1,5-2 m; twigs tomentellous with white-brownish stellate and shortly dendritic hairs, glabrescent; leaves opposite to alternate, well spaced except at base of new shoots; corolla pale (yellowish) green flushed orange to pink, densely silky villous; fruit orange-red.

Margins of evergreen forest; (coastal) bushland, *(Brachystegia)* woodland, wooded grassland, disturbed places; on a wide range of hosts; 0-2650 m alt. (0-1600 m, Somalia; 1350-2000 m, Ethiopia).

Variable species: coastal (= lowland) populations with smaller flowers and bracts and more elongate leaves; those of the E highlands with ± foliaceous bracts and shorter leaves; those of the W areas with less leafy bracts and variably shaped leaves.

S. Africa, Swaziland.

Some forms approaching *E. schelei* occur from S. Africa to the Usambaras and Kenya coast. Also similar to and approaching *E. taborense* in the W *Brachystegia* woodlands. Hybrids have not been noted.

The only widespread species in the genus.

E. lanatum Wiens & Polh.

Twigs tomentose with cream or buff stellate, dendritic and longer wispy hairs, soon glabrescent; leaves felty stellate-tomentose, opposite, soon clustered on short shoots; corolla pale green or cream, silky villous; fruit unknown.

Brachystegia woodland; on *Erythrina, Uapaca,* legumes, incl. *Brachystegia;* 1300-1950 m alt.

E. lindense (Sprague) Danser

Stems to c. 1 m; twigs tomentose with stellate and some short dendritic ± fulvous hairs, glabrescent; leaves opposite, becoming clustered at older nodes; corolla pale green, flushed orange to pink, densely silky villous except at base; fruit deep pink.

Brachystegia woodland, riverine and coastal formations; on various hosts; 300-1100 m alt.

Closely related to *E. nyikense* and replacing it towards NE. Confused with *E. dregei.*

E. melanocarpum (Balle) Wiens & Polh.

Twigs tomentose with yellowish-brownish stellate and dendritic hairs; leaves (sub-)opposite, densely pubescent beneath; flowers in *spikes;* corolla pale, densely covered with short and longer little-branched dendritic hairs.

Only specific in the genus with irregularly whorled flowers in spikes (not in heads).

Ecology not recorded; described from a lemon tree.

E. ngamicum (Sprague) Danser – Icon.: Polhill & Wiens (1998): 235, 241 (colour photo.); Fl. Zambes. 9/3: 181, 2006; Heide-Jørgensen, Parasit. flow. pl.: 35, 43, 2008.

Stems to c. 1 m; twigs tomentose with whitish to pale brown stellate and short dendritic hairs, glabrescent; leaves stellate-pubescent, opposite to alternate, soon clustered on short shoots; corolla greenish yellow, densely silky villous; fruit red.

Acacia, mopane and mixed woodland and wooded grassland, in the drainage basin of the Limpopo and across the Kalahari, also coastal; on a wide range of hosts, commonly *Combretaceae,* legumes; 30-1500 m alt. (S. Africa).

Botswana, NE Namibia, S. Africa, Swaziland.

Often confused with *E. dregei* with similar flowers but *E. ngamicum* with flowers emerging from a tuft of smaller hairy leaves.

E. nyikense (Sprague) Danser – Icon.: Polhill & Wiens (1998): 242 (colour photo.).

Stems spreading, to c. 1 m, much branched; twigs tomentose with stellate and ± dendritic ± fulvous hairs, glabrescent; leaves densely stellate-pubescent, (sub-)opposite, soon clustered on short shoots; corolla greenish, flushed yellow-orange, densely silky villous; fruit with long calyx (10 mm), pinkish red.

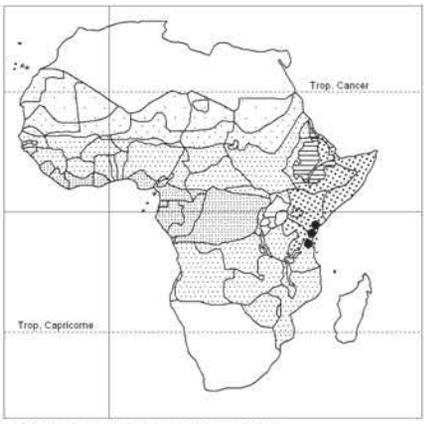
Montane forest edges; along rivers; higher-rainfall woodland; on various hosts (e. g. *Maprounea, Syzygium, Tecomaria);* 350-1600 m alt. – Rarely collected.

Similar to the more southerly *E. ngamicum,* but bracts forming a leafy involucre.

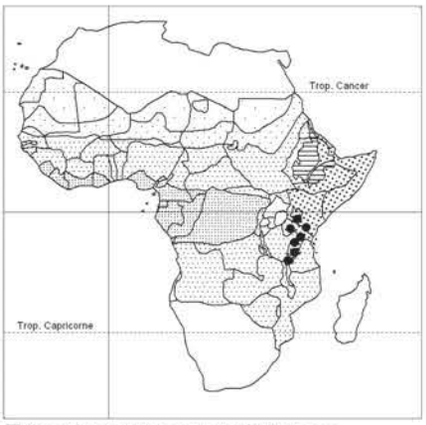
E. occultum (Sprague) Danser

Stems spreading, to c. 50 cm; twigs white stellate-tomentose, soon glabrescent; leaves (sub-)opposite, stellate pubescent, soon clustered on short shoots; corolla yellow flushed orange to red; fruit unknown.

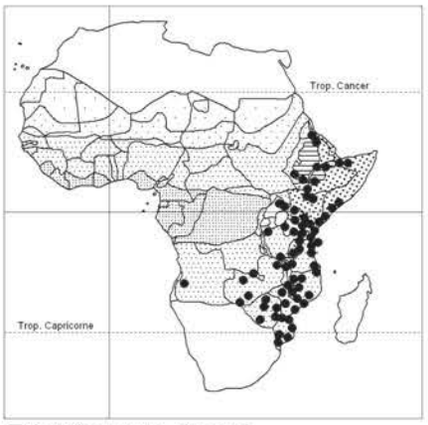
Deciduous bushland; only on *Commiphora;* 150-1100 m alt.



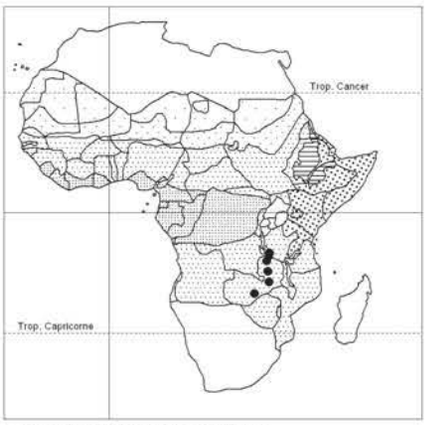
Erianthemum alveatum



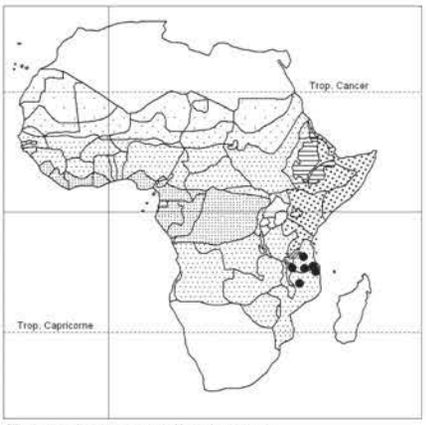
Erianthemum commiphorae



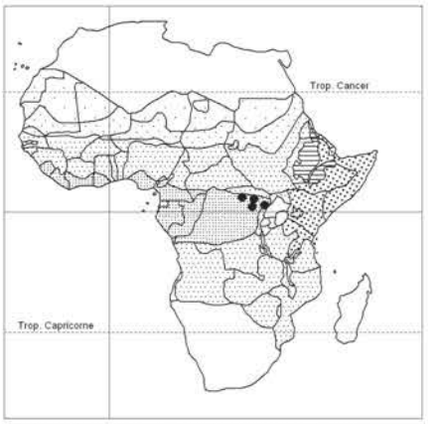
Erianthemum dregei



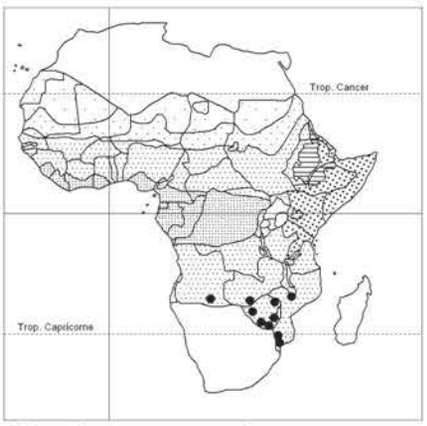
Erianthemum lanatum



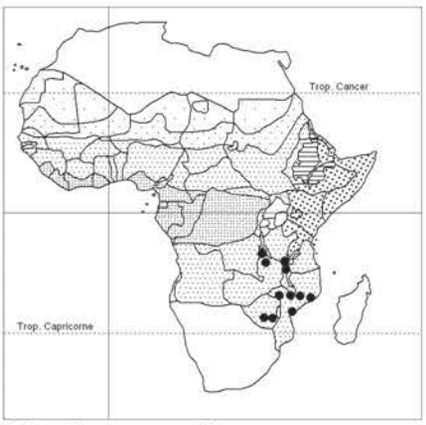
Erianthemum lindense



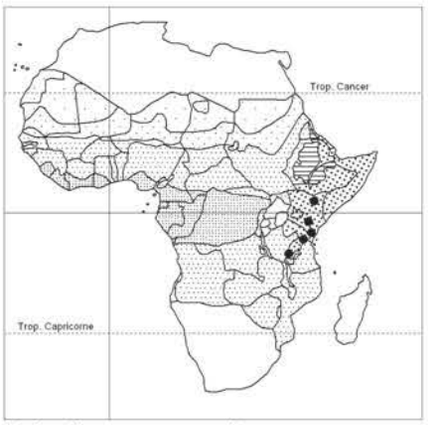
Erianthemum melanocarpum



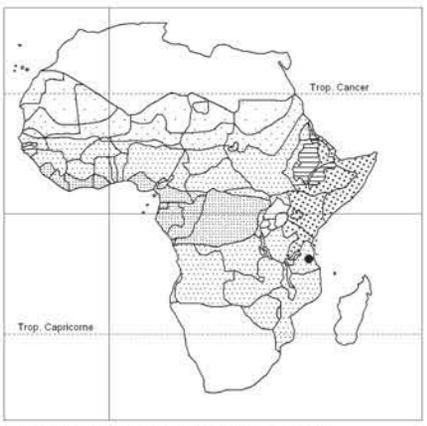
Erianthemum ngamicum



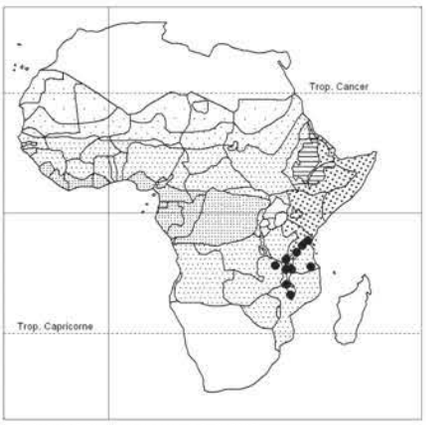
Erianthemum nyikense



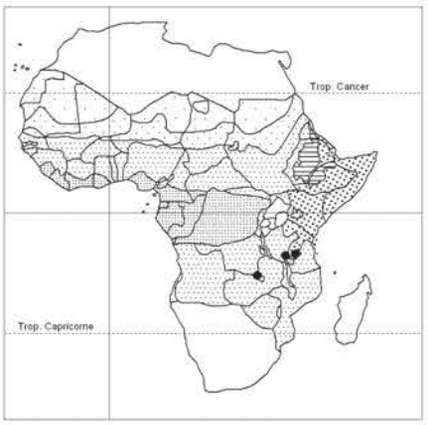
Erianthemum occultum



Erianthemum rotundifolium



Erianthemum schelei



Erianthemum schmitzii

E. rotundifolium Wiens & Polh.

syn.: *E.* sp. nov. sensu Vollesen, Opera Bot. 59: 64, 1980.

Twigs tomentose with ± fulvous stellate and shortly dendritic hairs, soon glabrescent; leaves opposite, round, sessile, glabrous, glaucous, clustered on short shoots; corolla orange, silky villous, green at base and on lobes; fruit unknown.

Brachystegia woodland; on *Brachystegia;* 500 m alt.

Known only from the type collected in 1977.

Very distinctive for its leaves.

E. schelei (Engl.) Tiegh. – Icon.: Polhill & Wiens (1998): 236 (colour photo.).

Stems spreading or pendent, much branched, to c. 1 m; twigs tomentose with fulvous stellate and shortly dendritic hairs, glabrescent; leaves in well-spaced pairs, glabrous, fulvous stellate-tomentellous beneath; corolla orange, white silky villous, lobes pale green.

Montane and riverine forests (along Lake Malawi); also plantations; on a wide range of hosts (e. g. *Pouteria/Aningeria);* 900-1950 m alt.

Very similar to *E. dregei;* in the W & S Ulugurus aberrant forms with ± foliaceous bracts.

E. schmitzii Balle ex Wiens & Polh.

Stems to 1 m long; twigs tomentose with stellate and short dendritic hairs, soon glabrescent; leaves stellate-tomentose, soon glabrescent, opposite and also crowded on short shoots; corolla orange with green base and lobes, silky villous.

Brachystegia woodland in higher rainfall areas, edges of montane forest; on *Brachystegia, Julbernardia;* 1800-1900 m alt.

E. taborense (Engl.) Tiegh.

Stems spreading to pendent, to 1,5-2 m long; twig soon thickening to 5-8 mm Ø, tomentellous with white to yellowish stellate and very shortly dendritic hairs, glabrescent; leaves (sub-)opposite, well spaced, stellate-puberulous, tardily glabrescent; corolla pale greenish yellow flushing pale orange, *densely covered with long silky pale yellow hairs* masking the tube constriction. Flowering in dry season.

Brachystegia woodland (N of the Zambezi); on various hosts, commonly *Combretum,* various legumes; 800-1900 m alt. (E. Africa).

Very similar to *E. dregei* (and sometimes ranked as a variety of it), but flowering later (dry season) than *E. dregei* where the ranges overlap. Obvious hybrids not reported.

E. virescens (N. E. Br.) Wiens & Polh., incl. var. *glabrescentilobi* Balle, nom. – Icon.: Polhill & Wiens (1998): 235, 240 (colour photo. fruit); Fl. Zambes. 9/3: 181, 2006.

Stems spreading, to 1 m; twigs tomentose with coarse stellate and often dendritic hairs, glabrescent; leaves opposite to alternate, stellate-pubescent, soon clustered on short shoots; corolla greenish yellow, sometimes tinged orange; fruit blue-green. Flowering at beginnings of the rains.

Mopane woodland (Zambezi drainage basin); on *Colophospermum* (S Malawi-Zambia-S. Africa), and various hosts (Zimbabwe-Mozambique border) e. g. *Citrus, Jacaranda, Melia, Prunus, Psidium guajava);* 200-1500 m alt.

N Botswana, S. Africa.

Very distinctive, resembling *E. ngamicum* but with pedicellate flowers, short calyx and dendritic corolla hairs.

E. viticolum Balle ex Wiens & Polh.

Twigs tomentose with whitish-yellowish dendritic hairs, tardily glabrescent; leaves (sub-)opposite, *sessile,* stellate-pubescent; corolla cream-yellowish, covered with mostly long ± spreading subsimple hairs; fruit unknown.

Riverine woodland; on *Vitex.*

Very distinctive, with sessile leaves and very short calyx (1 mm).

SYNONYMS (see also Enum. 2):

Erianthemum hirsutiflorum Balle, nom. = **Erianthemum dregei**

linguiforme (Peter) Danser = **E. dregei**

sp. nov. sensu Vollesen 1980 = **E. rotundifolium**

GLOBIMETULA / *13*

Plants usually with a single haustorial attachment, but sometimes scandent with numerous secondary haustoria. Leaves opposite, subopposite or ternate. Corolla pink or red, 5-merous, different from *Tapinanthus* by its pollination mechanism: the apical swelling of the flower-bud changes colour; petals curl back to expose the fertile column; stamens flick inwards scattering pollen explosively.

All but one species on a wide range of hosts.

Globimetula anguliflora (Engl.) Danser – Icon.: Polhill & Wiens (1998): 213 (colour photos.); Fl. Zambes. 9/3: 170, 2006.

syn.: *G. globosa* Balle, nom.

Twigs glabrous, terete or elliptic in section; bark smooth, grey, becoming *powdery;* leaves (sub-)opposite, leathery or ± fleshy, dull green; corolla red, apical swelling green, lobes green inside.

Deciduous woodland in higher rainfall areas (6°-16° S); wooded mountainous places (Angola); commonly on *Uapaca,* but also on *Brachystegia, Cryptosepalum* and other legumes, more rarely on *Faurea, Combretum, Parinari;* 900-1600 m alt. (E. Africa).

Resembling *G. braunii* but calyx longer (1,5-2 mm, not 0,5-0,7 mm) and older branches powdery.

G. assiana (Balle) Wiens & Polh. – Icon.: Polhill & Wiens (1998): 210 (detail).

Twigs flattened; leaves (sub-)opposite, triangular, coriaceous; corolla bright pink below, grey-green above.

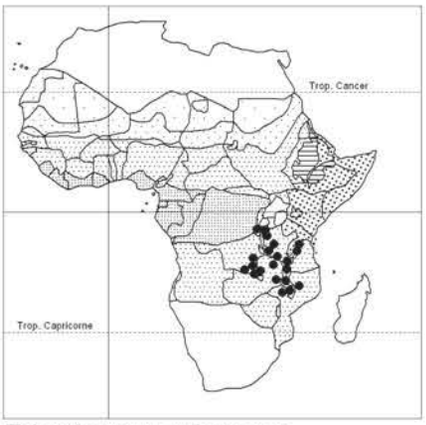
Resembling *G. dinklagei* (and has been treated as a subspecies of it) but leaves and corolla colours different.

Forests; dense secondary forest; on various hosts; 0-1200 m alt.

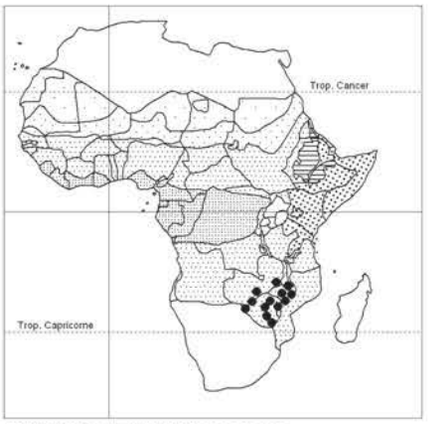
G. braunii (Engl.) Danser, excl. var. *mweroensis* (Baker) Balle, nom. (= *G. mweroensis).* – Icon.: Polhill & Wiens (1998): 210, 211 (colour photo.).; and Fl. Trop. E. Afr., Loranth.: 81, 1999; Akoegninou & al., Fl. analyt. Bénin: 760, 2006.

syn.: Enum. 2: 168, 1992; and *Globimetula unguiformis* (Engl.) Tiegh.; *G. zenkeri* (Engl.) Tiegh.; *Loranthus braunii* Engl. var. *grandifolius* Balle, nom.

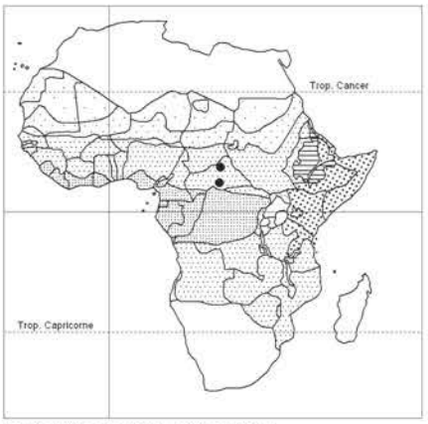
Bushy or lianiform plant to 4 m long; twigs glabrous, terete or elliptic in section; leaves (sub-)opposite or sometimes ternate (in Zaire), fleshy, reddish when young; corolla red or pink, with very short calyx (cf. under *G. anguliflora).*



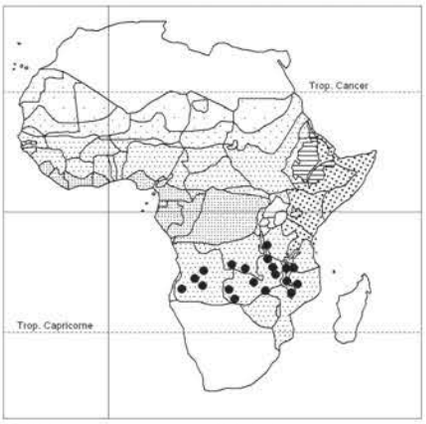
Erianthemum taborense



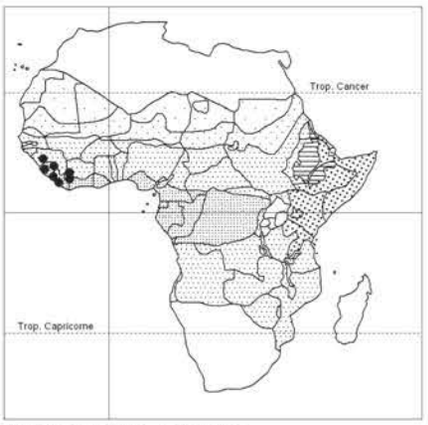
Erianthemum virescens



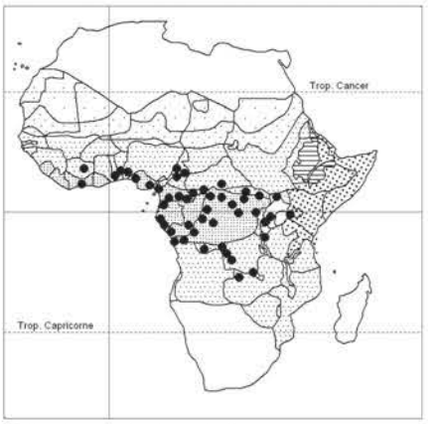
Erianthemum viticolum



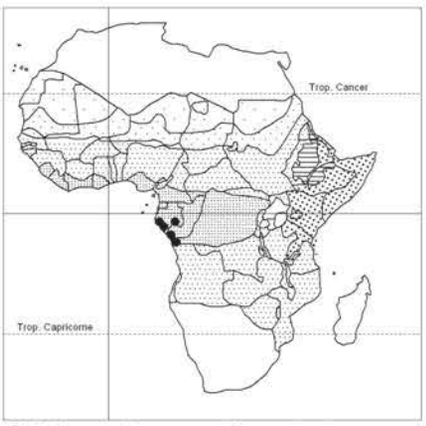
Globimetula anguliflora



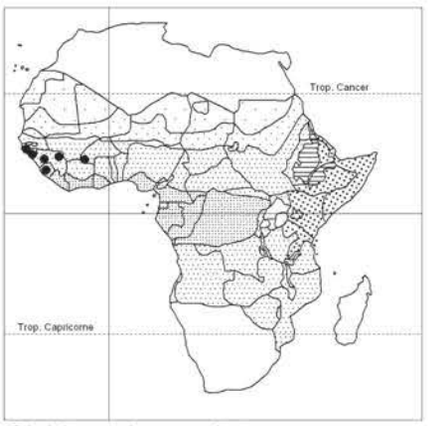
Globimetula assiana



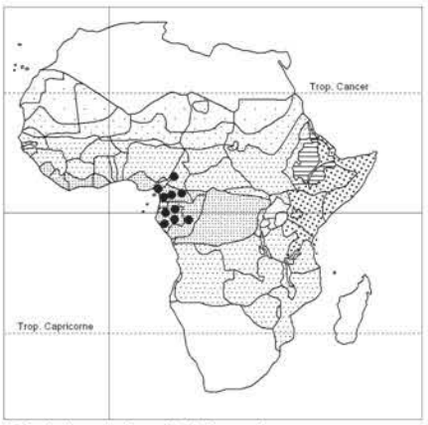
Globimetula braunii



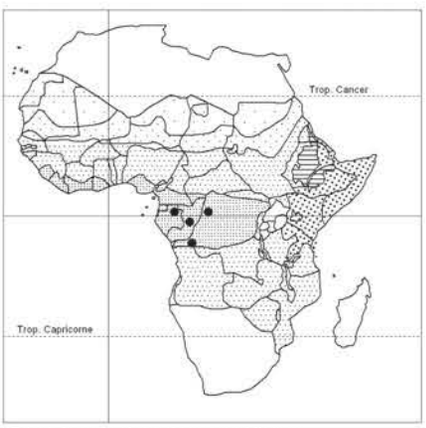
Globimetula cornutibracteata



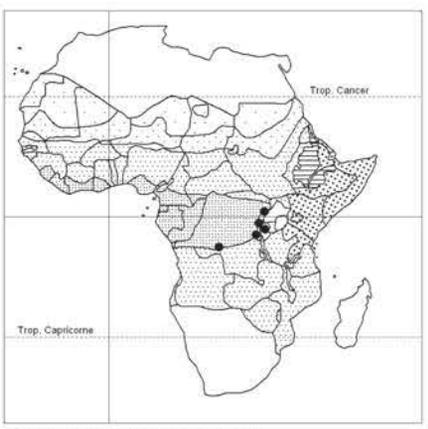
Globimetula cupulata



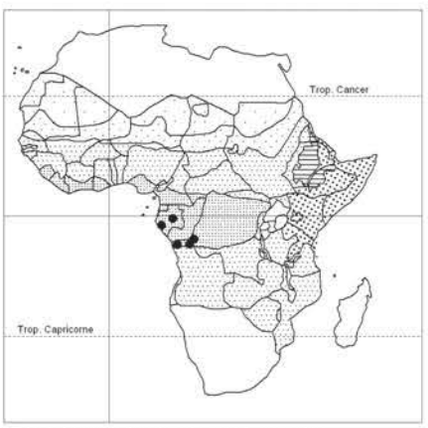
Globimetula dinklagei



Globimetula elegantiflora



Globimetula kivuensis



Globimetula mayombensis

Evergreen and riverine forest, often at edges or clearings nearby; upland rain-forest with *Albizia, Macaranga, Croton, Ocotea,* in disturbed place on edge; in plantation of (and *on*) *Coffea, Hevea, Theobroma, Citrus;* on a large variety of hosts and prone to invade plantations; 1050-1900 m alt. (E. Africa).

The most widespread species in the genus, more variable than and often confused with other species (cf. *G. anguliflora, G. kivuensis).* Local races occur, with some specialization of host range.

G. cornutibracteata Balle ex Wiens & Polh. – Icon.: Polhill & Wiens (1998): 210 (detail).

Twigs compressed when young; leaves (sub-)opposite, lanceolate, thinly coriaceous; corolla white on lower half, red-purple above; *bract-cup with a spur* 1-1,5 mm long.

On *Uapaca, Eugenia;* 40-70 m alt. (Gabon).

Similar to *G. dinklagei* in leaves and flowers, but bract spurred.

G. cupulata (DC.) Danser – Icon.: Polhill & Wiens (1998): 210; Dembélé & al., Pl. parasites … Sahel: fig. 65, 1994.

bas.: *Loranthus cupulatus* DC., p.p. (protologue based on a mixture with *Phragmanthera rufescens).*

syn.: *Elytranthe cupulata* (DC.) G. Don p.p.

Bush with flattened glabrous twigs, scurfy-papillose in youngest parts; leaves (sub-)opposite, coriaceous, reddish when young; corolla pinkish red with green head.

Coast and lowland savanna vegetation in high rainfall areas; commonly on *Parinari excelsa, Neocarya macrophylla* (extensively in Senegal, Guinea-Bissau), *Morinda germinata* (Sierra Leone), commonly on cultivated *Ceiba pentandra* (Guinea).

G. dinklagei (Engl.) Danser – Icon.: Polhill & Wiens (1998): 210 (detail), 217 (colour photo.).

syn.: Enum. 2: 168, 1992; and *Loranthus bipindensis* Engl. nom.; *Globimetula elegantiflora* sensu auct. non (Balle) Balle s. str. (Balle in Fl. Camer. 23, Loranth.: 18, 1982 quoad specim. cit. et tab. 3/12-18); *Englerina* cf. *gabonensis* sensu White & Abernethy, Guide Végét. Rés. Lopé: 65, 1996.

Bushy plant; twigs compressed when very young; leaves (sub-)opposite, sometimes red-veined, coppery red when young, membranous to thinly coriaceous, ovate-lanceolate; corolla green or white below, red above.

Rain-forest margins, regrowth; plantations; 0-1000 m alt; on various hosts, also crop plants, abundantly on *Thebroma cacao;* 0-1200 m alt.

G. elegantiflora (Balle) Balle, p.p. quoad specim. ex Zaire.

Glabrous plant; twigs compressed when very young; leaves ternate, discolorous, shiny grey-green above, dull brownish green beneath, thinly coriaceous; corolla red(-purple) below, pale green above.

Forest (only Congo basin, Eala region to Congo); on *Gaertnera paniculata, Ouratea purpurea;* 975 m alt. (Gabon).

Not in Cameroon *(G. dinklagei).*

G. kivuensis (Balle) Wiens & Polh. – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 565, 2008.

Glabrous plant; twigs compressed or 4-ribbed; leaves (sub-) opposite or ternate, purplish when young, thinly coriaceous; corolla pink.

Upland and montane forest margins; also plantation (of *Mimosa* in Zaire); on various hosts; (e.g. *Acacia decurrens, Erythrina abyssinica, Ficus, Millettia, Neoboutonia, Trema guineensis);* 1350-2300 m alt.

Similar to *G. braunii* but flowers with longer calyx (1-1,5 mm, not 0,5-0,7 mm) and leaves narrow, pointed, thinly textured.

G. mayombensis (De Wild.) Danser

syn.: Enum. 2: 168, 1992; and *Loranthus mayombensis* De Wild. var. *acutifolius* Balle

Twigs slightly compressed, glabrous; leaves (sub-)opposite, softly fleshy, purplish when young, bluntly pointed to rounded, not acuminate as in *G. cupulatus;* corolla wine-red.

Forest; on various hosts (e.g. *Pachylobus edulis).*

G. mweroensis (Bak.) Danser ("moeroensis") – Icon.: Polhill & Wiens (1998): 210 (detail), 214 (colour photos.); Flora Zambes. 9/3: 170, 2006; Heide-Jørgensen, Parasit. flow. pl.: 67, 2008.

syn.: *Loranthus braunii* sensu auct., non Engl.: Balle in Fl. Congo Belge …, 1: 369, 1948, quoad specim. ex Shaba; *Globimetula braunii* (Engl.) Danser var. *mweroensis* (Bak.) Balle, nom.

Twigs terete, glabrous or scurfy on youngest parts; bark grey, becoming powdery; leaves ternate, rarely opposite, leathery or ± fleshy, yellowish green; corolla crimson red. – Flowering from late rains well into dry season.

Deciduous woodland; most often on *Ficus, Faurea, Protea,* also on *Brachystegia, Cryptosepalum,* other legumes, etc., also on introduced trees; 950-1800 m alt.

Lianiform specimen with lateral haustorial suckers has been collected in Zaire, Shaba (fide Polhill & Wiens l. c.). Another one with up to 1300 flowers.

Similar to and sometimes difficult to separate from *G. braunii* (but leaves and shape and colour of flower buds different).

G. oreophila (Oliv.) Danser

Bush to c. 1,5 m Ø; twigs glabrous, compressed; leaves (sub-) opposite, fleshy, dull pale green with ± red nerves, youngest ones flushed red; corolla red(-purple).

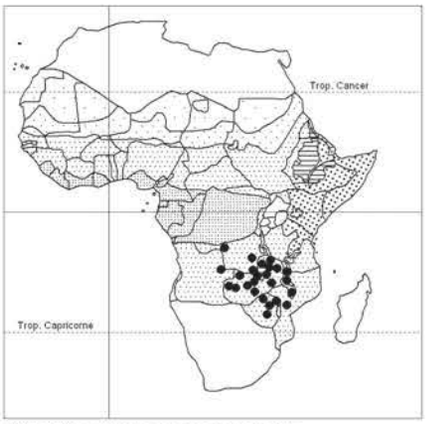
Montane forest margins, forest path; forest-grassland transition; light forest, forest gallery; bushland; on various hosts (e. g. *Maesa lanceolata, Agauria salicifolia, Acacia, Hypericum* (often in bushland), *Ficus, Cola verticillata, Adenocarpus);* 1200-2700 m alt.

The range of *G. braunii* (up to c. 1800 m) extends up in the lower range of *G. oreophila,* but the specific differences seems to be maintained (shape of leaves and flowers). Flowering times also mostly different.

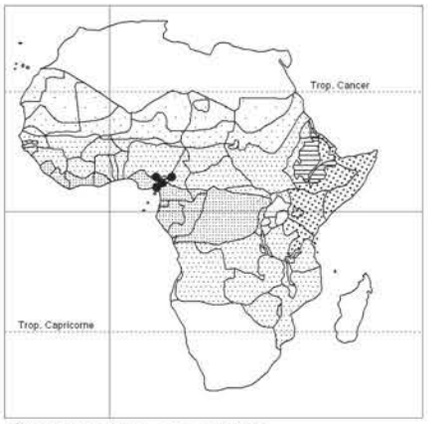
G. pachyclada (Sprague) Danser – Icon.: Polhill & Wiens (1998): 210 (detail), 215 (colour photo.).; and Fl. Trop. E. Afr., Loranth.: 81, 1999.

Twigs terete or elliptical in section; glabrous; bark grey-brown, not peeling; leaves (sub-)opposite, thick, fleshy, yellow-green, tinged reddish when young; corolla bright deep pink, exceptionally *large;* fruit mauvish, *large.* Easily recognized.

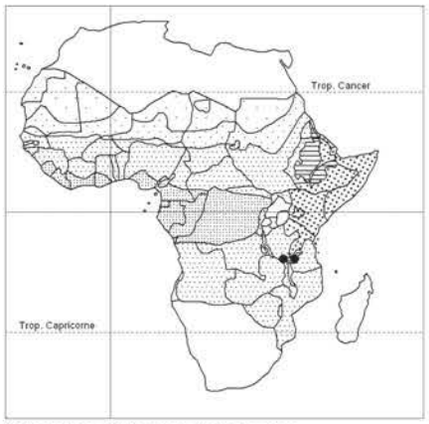
Brachystegia-Uapaca woodland; on *Uapaca;* 1300-2200 m alt.



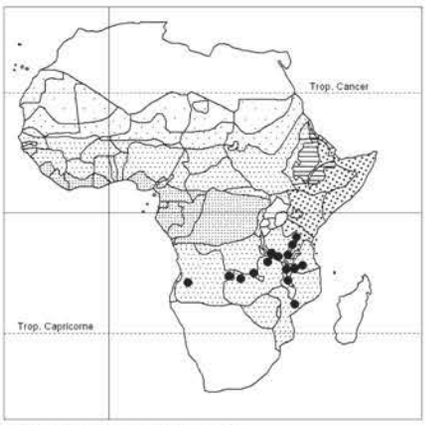
Globimetula mweroensis



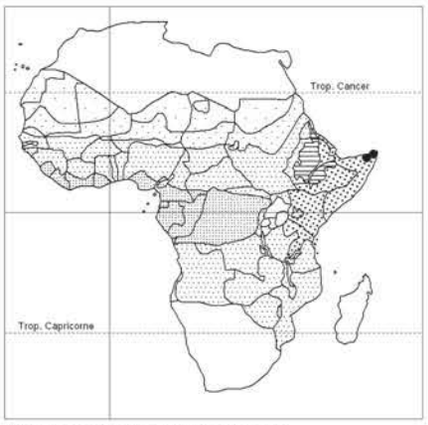
Globimetula oreophila



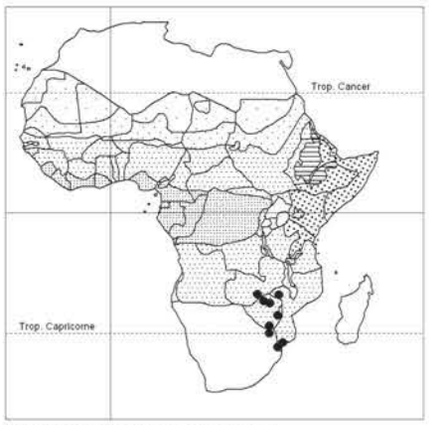
Globimetula pachyclada



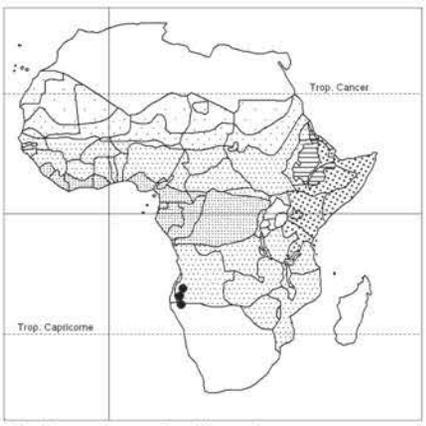
Globimetula rubripes



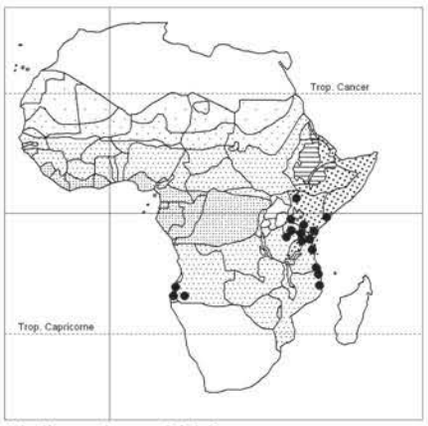
Helixanthera flabellifolia



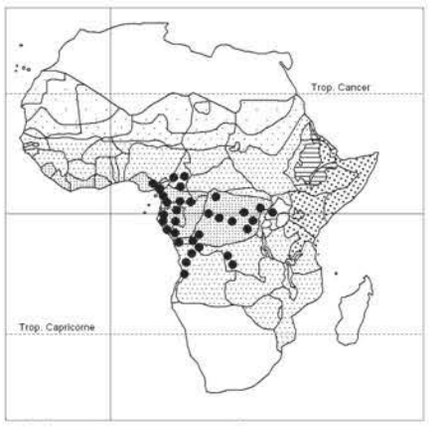
Helixanthera garciana



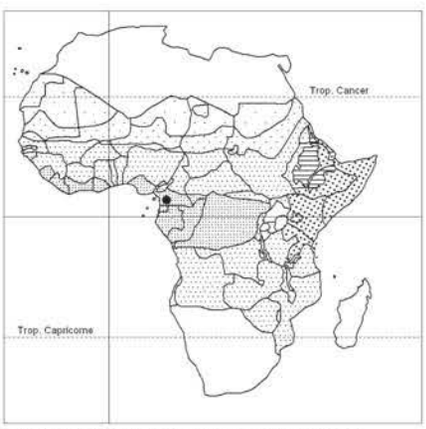
Helixanthera huillensis



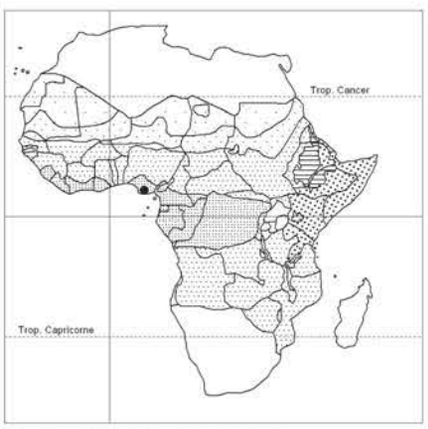
Helixanthera kirkii



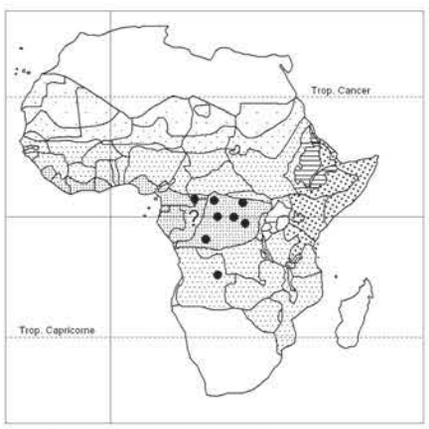
Helixanthera mannii



Helixanthera periclymenoides



Helixanthera spathulata



Helixanthera subalata

G. rubripes (Engl. & K. Krause) Danser – Icon.: Polhill & Wiens (1998): 210 (detail), 215 (colour photo.).; and Fl. Trop. E. Afr., Loranth.: 81, 1999 (detail); Fl. Zambes. 9/3: 170, 2006.

syn.: *G. bullockii* Balle, nom.

Twigs terete or elliptic in section, glabrous or scurfy on youngest parts; bark grey, rarely powdery; leaves (sub-)opposite, leathery or ± fleshy, glaucous, ± red flushed when young; corolla red or pink at base, white or grey above, lobes green.

Deciduous woodland in higher rainfall areas; generally on *Brachystegia* or other legumes (e. g. *Acacia, Pterocarpus),* also on *Parinari;* 600-1650 m alt.

"Anomalous" forms in Angola, with powdery bark and sometimes winged heads to the corolla buds.

SYNONYMS (see also Enum. 2: 175, 1992):

Globimetula braunii (Engl.) Danser var. *mweroensis* Balle, nom. = **Globimetula mweroensis**

bullockii Balle, nom. = **G. rubripes**

elegantiflora sensu Balle 1982 = **G. dinklagei**

globosa Balle, nom. = **G. anguliflora**

unguiformis (Engl.) Tiegh. = **G. braunii**

zenkeri (Engl.) Tiegh. = **G. braunii**

HELIXANTHERA / *12*

C. 45 species, most of which in tropical Asia. Small shrubs from a single haustorial attachment in Africa. Leaves opposite to alternate.

Host range variable (in Africa): 4 spp. on various hosts, 4 limited, 4 very restricted.

Only genus in Africa adapted to insect pollination, but 2 species with flower modifications suggesting an attraction to sunbirds *(H. flabellifolia, H. thomsonii).*

A few species are poorly known: no fruit seen in 3 species (= 25%), no host is recorded for one species, and 2 species (= c. 16%) are known only by the type.

Helixanthera flabellifolia Balle ex Polh. & Wiens

Stems c. 60 cm, short stiff spreading-hairy on youngest parts; branches soon thickened to 4-7 mm Ø, purple-grey with sheen of white (detaching epidermis); leaves fleshy, minutely glandular hairy, mostly alternate on long shoots, many soon crowded on short shoots; *corolla glandular hairy,* bright yellow to red; fruit unknown.

Deciduous bushland; on *Boswellia;* 100-1020 m alt.

H. thomsonii also collected in the same mountain range of NE Somalia ("Al Madu").

H. garciana (Engl.) Danser – Icon.: Polhill & Wiens (1998): 85 (colour photo.).

syn.: Enum. 2: 168, 1992; and *Loranthus messinensis* N. E. Br.; *Helixanthera messinensis* (N. E. Br.) Danser

Shrub with stems to c. 60 cm; branchlets soon thickening to 3-8 mm Ø, reddish brown turning grey; leaves (sub-)opposite, thickly succulent with glandular-hairy petiole; corolla orange-red, short; berry bright red, c. 1 cm Ø.

Wooded grassland (drainage basins of the Limpopo, Sabi, lower Zambezi); on *Sclerocarya, Commiphora;* 200-1300 m alt.

NE S. Africa.

H. huillensis (Engl.) Danser

Branchlets greenish turning grey, thickening to 3-6 mm Ø; leaves (sub-)opposite, somewhat fleshy with glandular-hairy petiole; corolla short, purplish, thickened and keeled below insertion of filaments.

Plateau (Huila, Angola); on *Croton,* perhaps *Sclerocarya* (fragmentary material).

H. kirkii (Oliv.) Danser – Icon.: Polhill & Wiens (1998): 81, 84 (colour photo.); Fl. Zambes. 9/3: 121, 2006.

syn.: Enum. 2: 168, 1992; and *Acrostachys kirkii* (Oliv.) Tiegh.; *Loranthus kirkii* Oliv. var. *ciliatus* Engl. and var. *populifolius* Engl.

Stems laxly branched, to c. 60 cm; branchlets thickening to 3-5 mm Ø, greenish turning reddish brown to grey; leaves mostly (sub-)opposite, sometimes one alternating with pairs, slightly fleshy, with glandular-hairy petiole; racemes long with small 40-100 flowers; fruit red turning black.

Coastal bushland; inland in dry bushland and woodland; on *Cordia* and *Markhamia* (coastal), *Grewia, Combretum* and various hosts; up to c. 200 m alt.

Disjunct species.

Variable in flower colour (orange and green in Somalia), dull reddish along E African coast, bright yellow or orange inland. Angolan populations with more pointed leaves.

H. mannii (Oliv.) Danser – Icon.: Polhill & Wiens (1998): 81, 82 (colour photo.).; and Fl. Trop. E. Afr., Loranth.: 6, 1999.

syn.: Enum. 2: 168, 1992; and *H. ternata* (Tiegh.) Danser (correction for Balle).

Bushy, variable plant, compactly branched, or with spreading, pendent branches to c. 1 m long; branchlets 1-3 mm Ø, reddish to purple brown; leaves (sub-)opposite, rarely ternate, chartaceous; corolla rather small, white to pinkish.

Forest, often on margins, or riverine; *Gilbertiodendron dewevrei* forest; rain-forest; grass savanna; plantations; on various hosts (e. g. *Irvingia gabonensis, Ficus, Hymenocardia, Lasiodiscus, Millettia, Thecacoris);* on fruit trees, e. g. *Citrus,* cacao, avocado *(Persea);* also on other *Loranthaceae* (e. g. *Phragmanthera talbotiorum);* 0-1400 m alt.

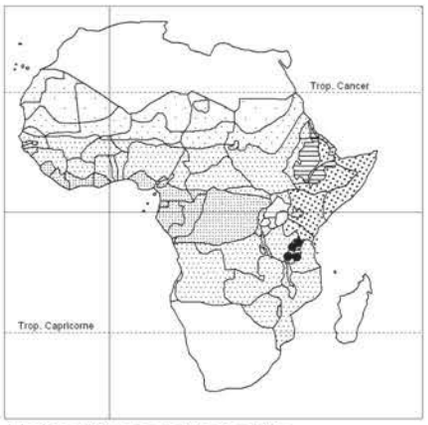
Very variable (cf. extensive synonymy) in size and ornamentation of petals, size of stamens, texture and shape of leaves; sometimes variation seems to be ecotypic (e. g. small-flowered forms having thicker leaves and from more exposed situations); in ornamentation of fruit (in Gabon with lines of pimples, and not smooth); also variable in habit.

S. Tomé.

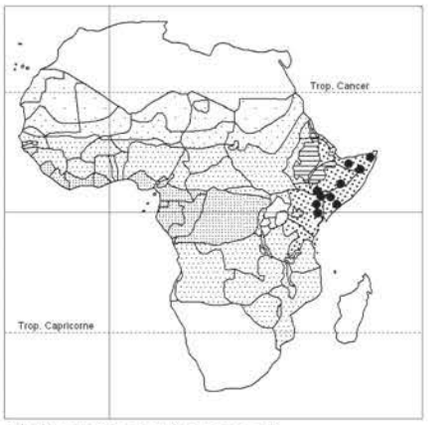
ENGONE OBIANG, N. L. & al. (2006). Germination et developpement de la plantule d'Helixanthera mannii (Oliv.) Danser (Loranthaceae) sur cacaoyer (Theobroma cacao L.) au Gabon. *Rev. Cytol. Biol. Véget., Botaniste* 29: 13-21 [anatomy photos. pp. 16, 18, 20].

H. periclymenoides (Engl. & K. Krause) Balle

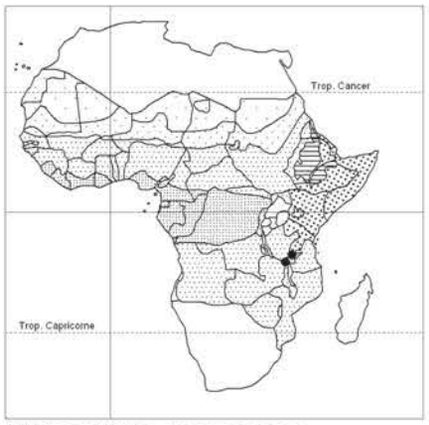
Branchlets to c. 35 cm long, terete, soon thickened to 5-10 mm Ø; leaves (sub-)opposite, sessile, coriaceous, glossy above; flowers 12-18, spirally arranged on swollen head of the peduncle; corolla red; fruit unknown. Distinctive species.



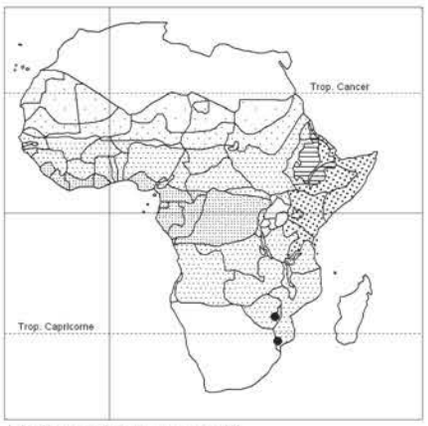
Helixanthera tetrapartita



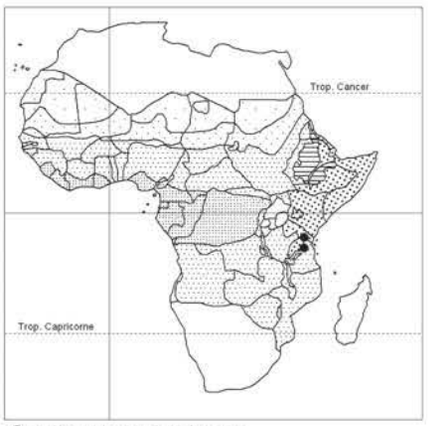
Helixanthera thomsonii



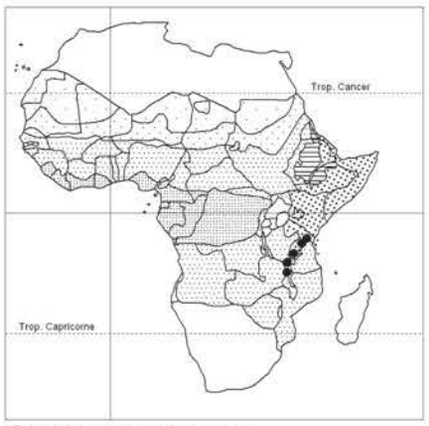
Helixanthera verruculosa



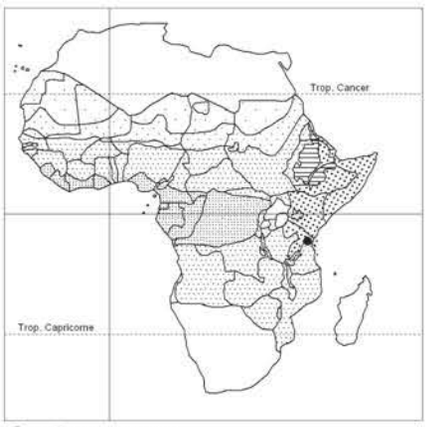
Helixanthera woodii



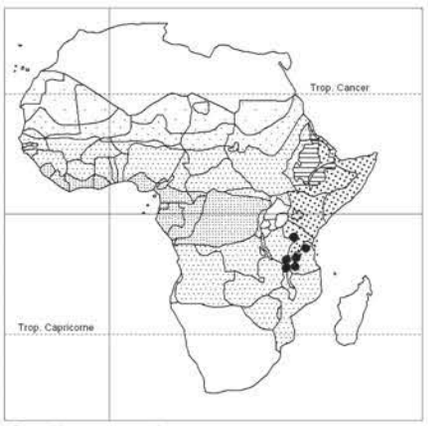
Oedina brevispicata



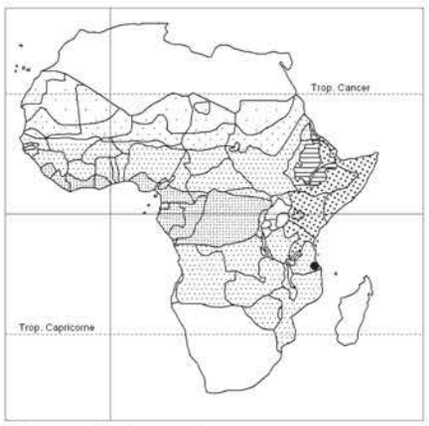
Oedina congdoniana



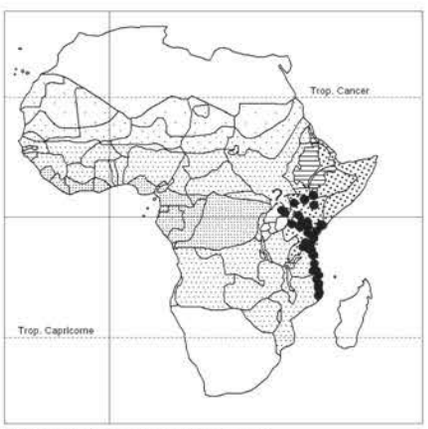
Oedina erecta



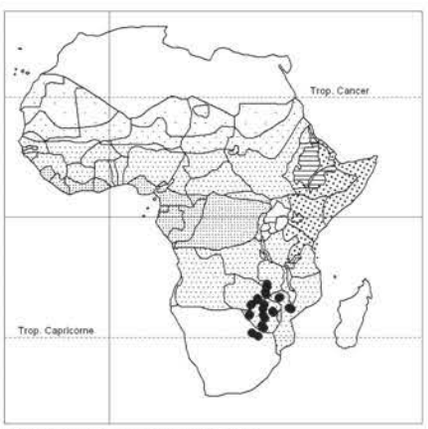
Oedina pendens



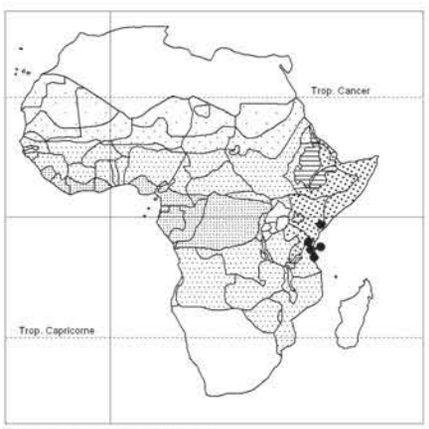
Oliverella bussei



Oliverella hildebrandtii



Oliverella rubroviridis



Oncella ambigua

Island in waterfall, in light forest; host not recorded.

Known only from the type collected in 1907. Considerable research for the species was made in 1984, but without result (fide Polhill & Wiens: 80, 1998).

H. spathulata Wiens & Polh.

syn.: *H. mannii* sensu auct., non (Oliv.) Danser: Balle in Fl. W. Trop. Afr., Ed. 2, 1(2): 659, 1958, quoad specim. ex Nigeria.

Branchlets soon thickening to 2-3 mm Ø, pale yellow drying red-brown; leaves opposite, chartaceous, pale yellow; *bracts* at base of peduncle hard, *conspicuous* at old nodes; *petals 4,* white, *spathulate;* fruit unknown.

Forest; on *Cleistanthus ripicola.*

Known only from the type (Onochie in FHI 33216).

Similarity (inflorescence bracts) with Asiatic *Chiridium* species (but with 5-7 red petals).

H. subalata (De Wild.) Wiens & Polh.

Shrub with stems to 2 m long; branchlets 4-angular, (orange-)yellow; leaves (sub-)opposite, only slightly coriaceous, yellow-green when young, midrib orange-yellow; flowers at top of peduncle; petals (orange-)yellow outside, red inside.

Dry primary forest; *Gilbertiodendron dewevrei* forest; generally on *Gilbertiodendron, Scorodophloeus,* also on *Pseudospondias.*

H. tetrapartita (E. A. Bruce, "tetraparitus") Wiens & Polh.

Stems to c. 50 cm long; branchlets soon thickening to 3-5 mm Ø, red-brown turning grey; leaves ± fleshy, (sub-)opposite, but often crowded below inflorescence, petiole groove glandular-hairy; petals red or yellow.

Deciduous mixed bushland and woodland, at interface *Brachystegia/Acacia-Commiphora* associations; on *Commiphora;* 950-1700 m alt. (only in upper Ruaha drainage basin, S Tanzania).

H. thomsonii (Sprague) Danser – Icon.: Polhill & Wiens (1998): 86 (colour photo.).

Stems to c. 50 cm long; branches soon thickening to 4-10 mm Ø, red-brown to purple, becoming silvery (epidermis detaching), then grey; leaves alternate, mostly crowded on short shoots, fleshy; racemes 1-sided; petals glabrous, pale greenish yellow, looped near middle.

Deciduous woodland dominated by the host plants *(Commiphora, Lannea;* Ethiopia); deciduous bushland; on various hosts (e. g. spp. cited above, *Boswellia);* 10-1400 m alt.

Yemen.

H. verruculosa Wiens & Polh.

Stems well-branched, to 80 cm long; branchlets thickening to 3-5 mm Ø, greenish turning red-brown to grey; leaves (sub-)opposite, thin, dark green when mature; racemes 30-50-flowered; petals (orange-)yellow, short; fruit verruculose, later smooth.

Upland rain-forest; on various hosts, but commonly *Maesa;* 1450-1900 m alt.

Related to *H. mannii, H. woodii,* but differs by the yellow flowers (not pink or white) and warty fruits (cf. *H. mannii* in Gabon, with lines of pimples on fruit).

H. woodii (Schltr. & K. Krause) Danser

bas.: *Loranthus woodii* Schltr. & K. Krause

syn.: *L. subcylindricus* Sprague; *Helixanthera subcylindrica* (Sprague) Danser; *Acrostachys sandersonii* Tiegh.; *Loranthus sandersonii* Harv. ex Benth. & Hook. f.

Shrub with much branched stems to 0,6 mm long; branchlets 1-3 mm Ø, green; leaves (sub-)opposite, chartaceous; raceme bract dorsally umbonate or spurred; corolla short, white to pink; berry scarlet.

Coastal and midland forests; on various hosts (e. g. *Burchellia, Chrysophyllum, Ochna, Tarenna);* 20-1500 m alt. (S. Africa). Noted as rare.

S. Africa.

Similar to *H. mannii.*

SYNONYMS (see also Enum. 2: 175, 1992):

Helixanthera mannii sensu auct., non (Oliv.) Danser, F.W.T.A., Nigeria = **Helixanthera spathulata**

messinensis (N. E. Br.) Danser = **H. garciana**

subcylindrica (Sprague) Danser = **H. woodii**

ternata (Tiegh.) Danser = **H. mannii**

(LORANTHUS)

SYNONYMS (see also Enum. 2: 175-180, 1992):

Loranthus acaciaedetinentis Dinter = **Plicosepalus kalachariensis**

albizziae De Wild. var. *rogersii* Sprague = **Phragmanthera cornetii**

amoenus Del., nom. = **Agelanthus platyphyllus**

arabicus Defl. = **Plicosepalus acaciae**

belvisii sensu Hiern, non DC. = **Tapinanthus mechowii**

bipindensis Engl., nom. = **Globimetula dinklagei**

blantyreanus Engl. var. *oblongifolius* (Balle) Balle = **Agelanthus musozensis**

braunii sensu Balle 1948, non Engl. = **Globimetula mweroensis**

breyeri Bremek. = **Agelanthus lugardii**

buchneri sensu Engl. 1894 p.p., non Engl. s. str. = **Tapinanthus glaucophyllus**

buchwaldii Sprague, nom. = **Agelanthus validus**

conradsii Sprague, nom. = **Tapinanthus buvumae**

crataevae Sprague = **Agelanthus toroensis**

cupulatus DC. p.p. = **Globimetula cupulata**

demeusei auct., non Engl. = **Agelanthus toroensis**

dinteri Schinz = **Plicosepalus kalachariensis**
elegantissimus Schinz = **Oncocalyx welwitschii**
englerianus K. Krause & Dinter = **O. welwitschii**
glomeratus Engl. var. *grandiflorus* Balle p.p. = **Agelanthus zizyphifolius** subsp. **vittatus**
hildebrandtii Engl. var. *glabrescens* Engl., nom. = **Oliverella bussei**
holstii sensu Peter p.p. = **Englerina macilenta**
karibibensisi Engl. = **Oncocalyx welwitschii**
kisantuensis De Wild. & T. Dur. var. *erectilobi* Balle = **Tapinanthus erectotruncatus**
laetus R. Br., nom. = **Plicosepalus acaciae**
lamborayi De Wild. = **Tapinanthus constrictiflorus**
linguiformis Peter = **Erianthemum dregei**
mayombensis De Wild. var. *acutifolius* Balle = **Globimetula mayombensis**
mechowii sensu auctt., non Engl. = **Tapinanthus malacophyllus**
messinensis N. E. Br. = **Helixanthera garciana**
meyeri C. Presl, nom. nud. = **Tapinanthus oleifolius**
var. *inachabensis* Engl. = **T. oleifolius**
minor (Harv.) Sprague, excl. bas. *Tapinanthus minor* (Sprague) Danser = **Agelanthus gracilis**
moorei Sprague = **Agelanthus natalitius** subsp. **natalitius**
myrsinifolius Engl. & K. Krause var. *humbertii* Balle = **Agelanthus myrsinifolius**
natalitius Meisn. var. *minor* J. M. Wood, excl. bas. *L. zeyheri* var. *minor* Harv. = **Agelanthus gracilis**
oblongifolius E. Mey. ex Drège, nom. nud., non A. Rich. = **Erianthemum dregei**
obovatus Peter 1932, non Blume 1825 = **Agelanthus oehleri**
ogowensis sensu Balle p. min. p., non Engl. = **Tapinanthus erectotruncatus**
oleifolius (J. C. Wendl.) Cham. & Schltdl. var. *forbesii* Sprague = **T. forbesii**
oleifolius var. *luteus* Neusser = **T. oleifolius**
redingii De Wild. = **Phragmanthera batangae**
regularis Schweinf. = **P. regularis**
regularis Steud. ex Sprague var. *pilosus* (Pax) Cufod. = **P. regularis**
remotus sensu Brenan p.p., non Bak. & Sprague = **Vanwykia rubella**
rendelii Engl., nom. = **Agelanthus elegantulus**
rufescens sensu auctt., non DC. = **Phragmanthera usuiensis** subsp. **usuiensis**
sakarensis Engl. = **Agelanthus tanganyikae**
sandersonii Harv. ex Benth. & Hook. f. = **Helixanthera woodii**
sessilifolius sensu Hiern, non P. Beauv. = **Tapinanthus glaucophyllus**
sodenii Engl. = **Erianthemum dregei**
sp. B sensu Agnew 1974 = **Englerina kagehensis**
sp. C sensu Agnew 1974, 1994 = **E. drummondii**
splendens N. E. Br. = **Plicosepalus kalachariensis**
subcylindricus Sprague = **Helixanthera woodii**
thorei K. Krause = **Agelanthus sansibarensis** subsp. **montanus**
toroensis Sprague = **Agelanthus toroensis**
usuiensis Oliv. var. *longipilosus* Engl. & K. Krause = **Phragmanthera cornetii**
venustus Fenzl, nom. = **Plicosepalus acaciae**
villosiflorus sensu auct., non Engl. s. str. = **Agelanthus terminaliae**
winkleri Engl. = **Tapinanthus globiferus**
woodii Schltr. & K. Krause = **Helixanthera woodii**
zeyheri Harv. var. *minor* Harv. = **Agelanthus natalitius** subsp. **zeyheri**

OEDINA / *4*

African genus with restricted distribution range. Shrubs from a single haustorial attachment and with opposite leaves. Flowers are opened by probing vents above a rather short corolla-tube. Opening of flower weakly explosive; pollen is propelled in one direction towards the pollinator: Opening variously at vents or by pinching the tip of the mature bud.

All species on a wide range of hosts.

In two species (= 50%) no fruit seen. One species known from only 2 gatherings.

Oedina brevispicata Polh. & Weins – Icon.: Polhill & Wiens (1998): 226.

Shrub to c. 1 m, well branched; twigs tomentellous, soon glabrescent; hairs stellate and small rusty dendritic; leaves thinly coriaceous inconspicuously stellate-pubescent beneath, soon glabrescent; corolla orange, stellate-pubescent, without V-slit in tube; fruit unknown.

Montane forest; 1400-1900 m alt.

Known from only 2 collections (type in 1933, 1972) from W. Usambara Mts. and Uluguru Mts.

Similar to *O. erecta* (flowers sessile, longer, and twigs rusty hairy not glabrescent).

O. congdoniana Polh. & Wiens – Icon.: Polhill & Wiens (1998): 226, 229 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 88, 1999; Novon 7: 275, 1997; Fl. Zambes. 9/3: 176, 2006.

Spreading well-branched shrub to c. 1 m; twigs rusty tomentose with short dendritic hairs; leaves thinly coriaceous, reddish green above, rusty tomentellous beneath; corolla dull yellow, rusty-brown-hairy, with a short V-slit; fruit unknown.

Montane forest; evergreen forest; edge of forest patch at top of steep gully; 1500-2200 m alt.

Similar to *O. erecta* (flowers sessile, longer, in short spikes, not racemes, and with tubular calyx, not saucer-shaped).

O. erecta (Engl.) Tiegh. – Icon.: Polhill & Wiens in Novon 7: 275, 1997; Mistletoes of Africa: 226, 228 (colour photo. habit); Fl. Trop. E. Afr., Loranth.: 88, 1999.

Well-branched shrub 1-2 m; twigs soon terete, rusty tomentose with short dendritic hairs; leaves coriaceous, tomentose beneath with pale sessile stellate hairs and conspicuous rusty dendritic hairs; flowers sessile; corolla orange-yellow, rather short, rusty tomentose, with erect or spreading lobes; fruit bluish green, hairy.

Edges of drier montane forest; commonly in heath zone above forest with *Agauria, Erica (Phillipia);* 1600-2300 m alt.

Known only from W. Usambara Mts.

O. pendens (Engl. & K. Krause) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 226, 227 (colour photo.); Fl. Trop. E. Afr. Loranth.: 88, 1999; Polhill in F. White & al., Evergr. For. Fl. Malawi: 348, 2001; Fl. Zambes. 9/3: 176, 2006.

Shrub with spreading, tangled branches, to >2m; youngest parts with fine short dendritic hairs, soon glabrescent; leaves occasionally clustered on short shoots; flowers with *pedicel* and *short calyx* (<1 mm long); corolla long, tube orange, fiery red above, puberulous, glabrescent, tube not split; lobes coiling, breaking off; fruit blue-green.

Montane rain-forest; evergreen forest; conspicuous at forest edges; on various hosts, notably *Bridelia* and other forest margin species; 1350-2300 m alt. (E. Africa).

OLIVERELLA / *3*

E. African genus.

Small shrubs with a single haustorial attachment. Flowers different from those of *Oncocalyx* by corolla-lobes joined above and inrolled when the flower opens (not joined for less than half length). Fruit red with persistent calyx.

All species on a wide range of hosts.

One species poorly known.

Oliverella bussei (Sprague) Polh. & Wiens

syn.: *Loranthus hildebrandtii* Engl. var. *glabrescens* Engl. nom.

Branchlets and other parts of plant puberulous, soon glabrescent; leaves opposite, thinly coriaceous; corolla pink.

Coastal bushland, wooded grassland; 0-200 m alt.

Little known species from around Lindi (SE Tanzania), and perhaps only a local variant of *O. hildebrandtii* (fide Polhill & Wiens, Fl. Trop. E. Afr., Loranth.: 25, 1999).

O. hildebrandtii (Engl.) Tiegh. – Icon.: Polhill & Wiens (1998): 115, 116 (colour photos.); Fl. Trop. E. Afr., Loranth.: 24, 1999; Fl. Zambes. 9/3: 134, 2006.

All parts densely whitish pilose, old stems brown; leaves opposite to alternate, thinly coriaceous, green to grey-green; corolla tube yellow, greenish or white; lobes free in lower third, red, upper joined parts grey outside and red inside.

Deciduous and coastal bushland, rock outcrops; dense *Acacia* bushland with much *Dracaena ellenbeckii* (Ethiopia); usually on *Grewia,* but also various hosts in *Combretaceae, Euphorbiaceae, Leguminosae;* 0-1800 m alt.

O. bussei is perhaps only a local glabrescent variant.

Possibly in S Sudan: Schweinfurth 2858 in fruit (Moslo) needs confirmation.

O. rubroviridis Tiegh. – Icon.: Polhill & Wiens (1998): 114, 115 (colour photo.); Fl. Zambes. 9/3: 134, 2006.

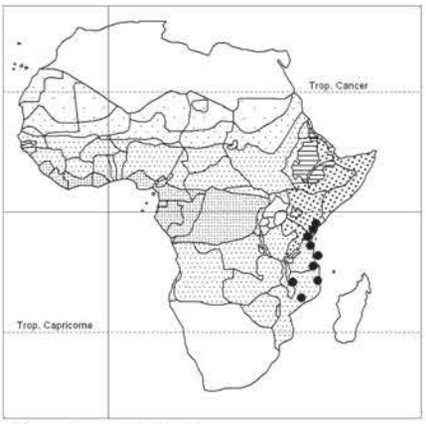
syn.: Enum. 2: 169, 1992; and *Loranthus rubroviridis* Oliv. var. *bechuanica* Sprague

Shrub c. 1 m, with velvety-pubescent branchlets; leaves opposite to alternate, thinly coriaceous, green or grey-green; corolla-tube short (2-3 mm, not 4-5 mm), green, with tongues projecting in between lobes at top.

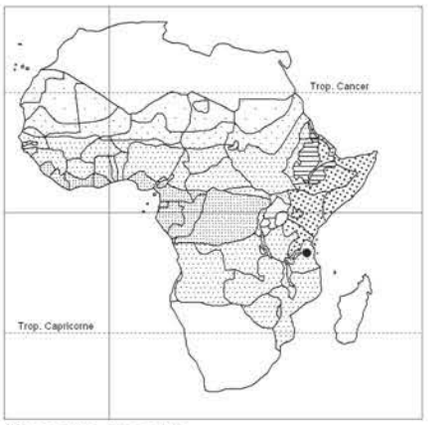
Deciduous bushland, mixed woodland (middle tributaries and reaches of Zambezi R.); usually on *Combretum, Grewia, Acacia* or other legumes; 250-1350 m alt.

Botswana.

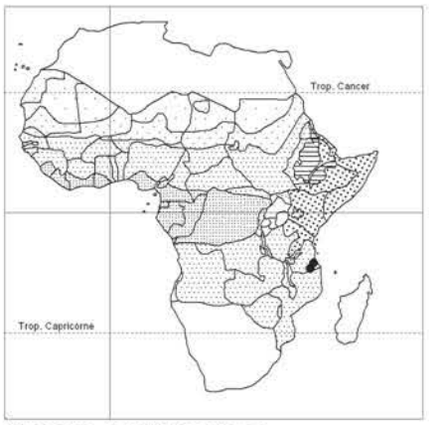
SYNONYMS (see Enum. 2: 180, 1992).



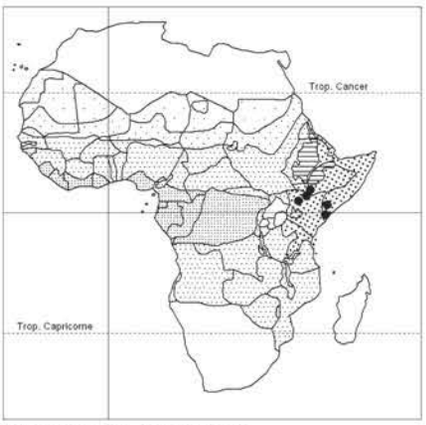
Oncella curviramea



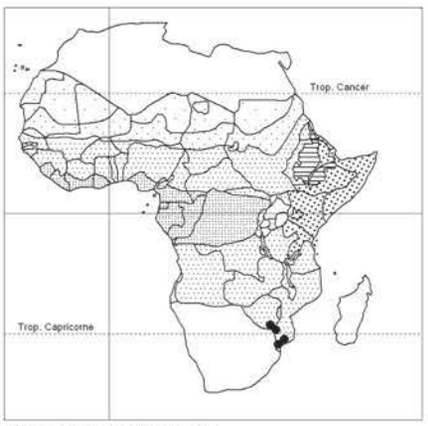
Oncella gracilis



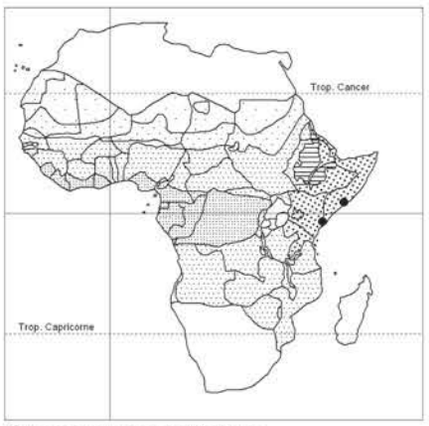
Oncella schliebeniana



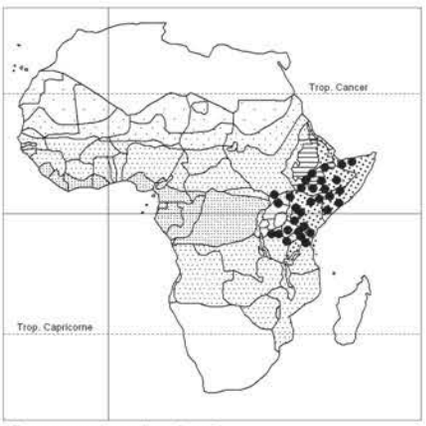
Oncocalyx angularis



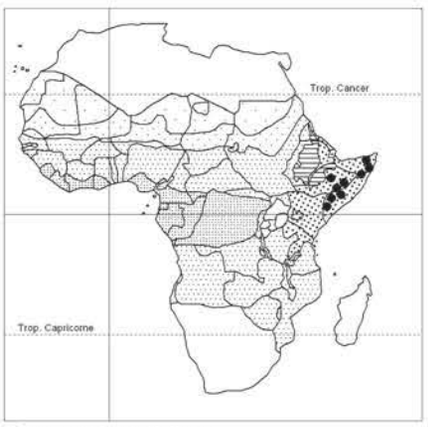
Oncocalyx bolusii



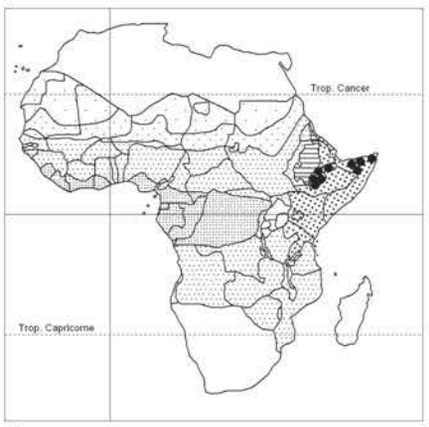
Oncocalyx cordifolius



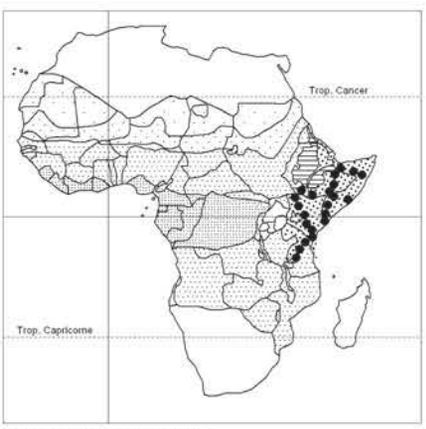
Oncocalyx fischeri



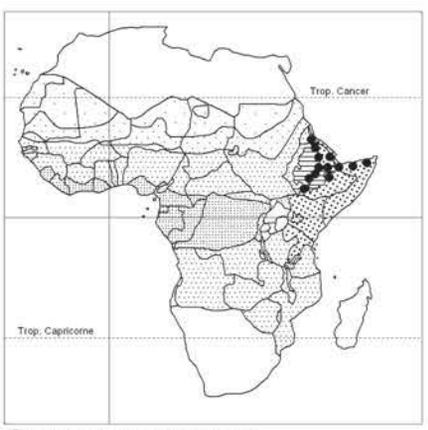
Oncocalyx ghikae



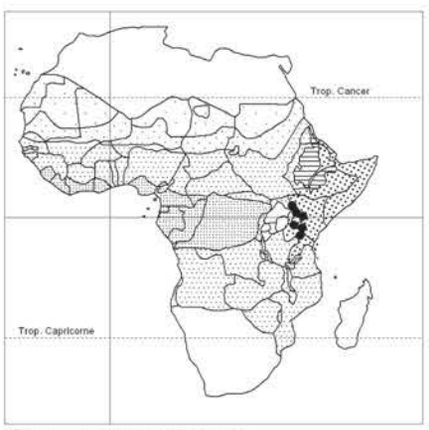
Oncocalyx glabratus



Oncocalyx kelleri



Oncocalyx schimperi



Oncocalyx sulfureus

ONCELLA / *4*

E African genus.

Small shrubs from a single haustorial attachment. Leaves opposite. *Corolla* joined halfway, 5-lobed, radial, *with a dark glandular patch at base of each lobe;* weakly explosive at anthesis. Anthers very small. Opening mechanism as in *Oedina.*

Most species on a wide range of hosts. Plants with restricted distribution, and partly poorly known; in 2 species (= 50%) no fruit seen.

Oncella ambigua (Engl.) Tiegh. – Icon.: Polhill & Wiens (1998): 232 (colour photo.).

Shrub to c. 1 m; twigs stellate-puberulous, soon glabrescent; leaves pale (yellow) green; racemes 12-24-flowered; flowers apricot-yellow to orange, inconspicuously puberulous; fruit red turning black.

Coastal bushland, riverine forest; on a wide variety of hosts (e. g. *Antidesma, Grewia, Securinega, Trichilia);* 0-300 m alt.

Range of *O. curviramea* overlapping in the Dar es Salaam area and at foothills of the Usambaras.

O. curviramea (Engl.) Danser – Icon.: Polhill & Wiens (1998): 231, 233 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 92, 1999; Fl. Zambes. 9/3: 177, 2006.

Shrub 0,5-2,5 m, becoming pendent; twigs stellate-puberulous, soon glabrescent; leaves ± sessile (pedicel 0,5-1 mm, not 2-4 mm as in *O. ambigua);* racemes 16-40-flowered; corolla pinkish with densely grey-white puberulous tips to buds; fruit pink to white.

Coastal forest and bushland, extending up rivers to montane forest (Usambaras; cf. *O. ambigua);* on various hosts, incl. *Combretum;* 0-2050 m alt.

O. gracilis Balle ex Polh. & Wiens – Icon.: Polhill & Wiens (1998): 231, 233 (colour photo.).

Much-branched shrub to 0,5 m; twigs stellate-puberulous, soon glabrescent; leaves small (1,5-4 cm × 1-2,5 cm), thinly coriaceous, dull green; racemes 2-8-flowered; corolla pinkish red; fruit unknown.

Montane forest margins; 1700-1800 m alt. (only from Uluguru Mts.).

Similar to *O. curviramea* but more delicate, and flowers less hairy.

O. schliebeniana Polh. & Wiens

Small shrub; branchlets short, spreading; twigs soon terete, tomentellous, with short rusty dendritic hairs, soon glabrescent; leaves thinly coriaceous, rusty tomentellous beneath, soon glabrescent; corolla long (c. 4 cm), orange red to carmin, lobes spreading at anthesis 1,5 times as long as tube; anthers long (2-3 mm, not 1,2-1,8 mm as in the other species); fruit unknown.

Coastal bushland and thicket; on *Hymenocardia;* 150-850 m alt.

Resembling an *Oedina* by the elongate anthers with a small connective, but general appearance more like an *Oncella.*

Known only from the Rondo Plateau and Lake Lutamba (SE Tanzania).

SYNONYMS (see Enum. 2: 180, 1992).

ONCOCALYX / *11*

13 species in E and S Africa – Arabia.

Small shrubs with a single haustorial attachment. Leaves mostly alternate. Corolla with short tube opening by a V-slit often nearly down to the calyx. Pollination by birds splitting the corolla-tube and thus releasing the tension of the filaments. Pollen is then projected on the bird's head.

Most species on a wide range of hosts.

No fruit seen in one species *(O. angularis).*

Oncocalyx angularis M. G. Gilbert – Icon.: Polhill & Wiens (1998): 110 (colour photo.).

Glabrous shrub with *erect*, *angular* twigs, keeled below nodes; leaves fleshy; calyx tubular; corolla yellow at base of lobes, green below and above, V-slit to calyx, lobes *erect* after anthesis; fruit unknown.

(Dry to very dry) deciduous bushland; on various hosts, incl. *Euphorbia;* 50-1500 m alt.

Very similar to *O. glabratus* in vegetative features but twigs erect and umbels sessile. Corolla as in *O. ghikae* but more slender and longer (2,8-3,3 cm long, not 2,3-3,3 cm).

O. bolusii (Sprague) Wiens & Polh. – Icon.: Polhill & Wiens (1998): 103, 105 (colour photo.); Fl. Zambes. 9/3: 130, 2006.

Glabrous shrub to 0,5 m from a massive haustorial attachment; twigs ± compressed to angular; leaves leathery; flowers clustered at older nodes and also in axils of leafy shoots; calyx <1 mm; corolla greenish white with red flush on tube and upper parts of (erect) lobes; V-slit to halfway down the tube; berry red, slightly warted.

Bushveld, coastal and inland; mangrove swamps; open woodland; on various hosts (e. g. *Cassine, Berchemia* in S. Africa); 5-460 m alt. (S. Africa).

NE S. Africa.

Variable in texture and shape of leaves and in flower colouration.

O. cordifolius Wiens & Polh. – Icon.: Polhill & Wiens (1998): 111 (colour photo.).

Glabrous shrub with angular to ± winged twigs; leaves fleshy, glaucous, sessile, cordate; calyx tubular; corolla yellow fading ± orange; lobes erect after anthesis.

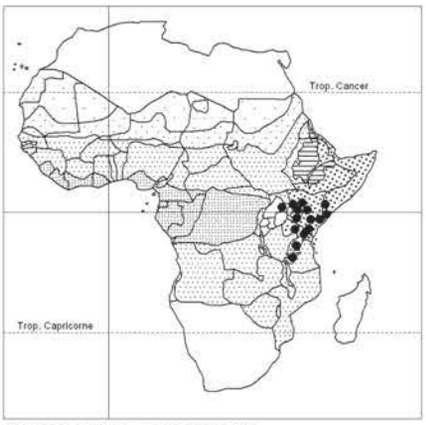
Coastal bushland; on various hosts *(Dobera* in Somalia); near sea-level.

Distinctive by its leaves but flowers similar to those of *O. kelleri* but bract and calyx without papillae.

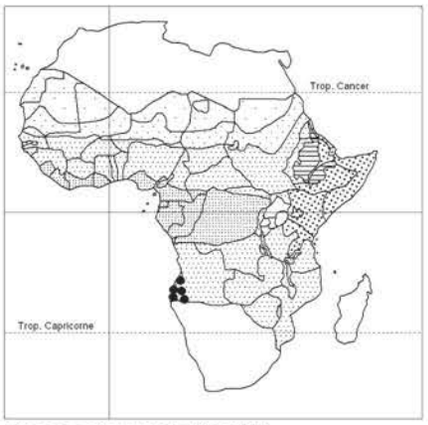
O. fischeri (Engl.) M. G. Gilbert – Icon.: Polhill & Wiens (1998): 103, 106 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 17, 1999.

Twigs terete, ± glabrous to densely stiff spreading-hairy; leaves thinly leathery, grey-green to ± glaucous; calyx tubular; corolla yellow fading orange (-red); lobes recurving and twisted-coiled after anthesis; fruit verrucose.

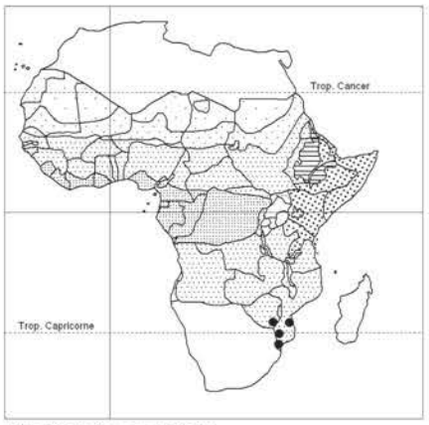
Deciduous (higher rainfall) bushland; dry evergreen forest and woodland, often along or near watercourses in mixed riverine associations; edges of upland dry evergreen forest; mist forest; on a wide range of hosts (e. g. *Maytenus senegalensis, Flueggea virosa, Ximenia, Balanites aegyptiaca, Acacia, Grewia, Cordia);* 30-2100 m alt. – Epiparasitized by *Viscum chyuluensis* (Chyulu Hills, 1300-1900 m alt).



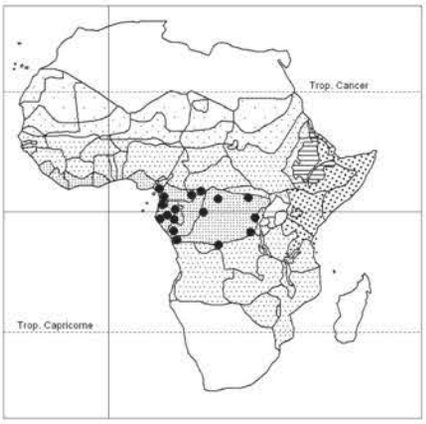
Oncocalyx ugogensis



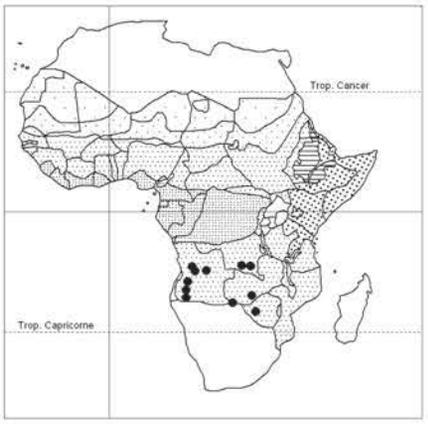
Oncocalyx welwitschii



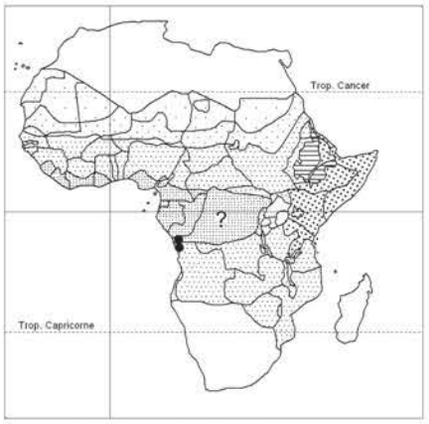
Pedistylis galpinii



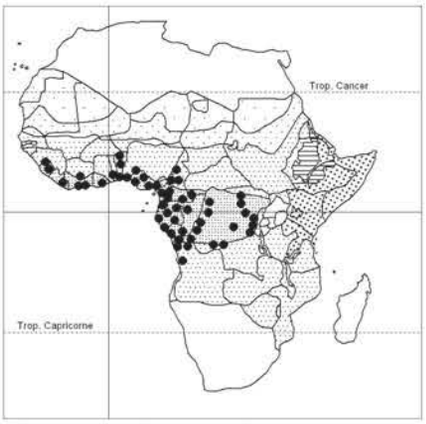
Phragmanthera batangae



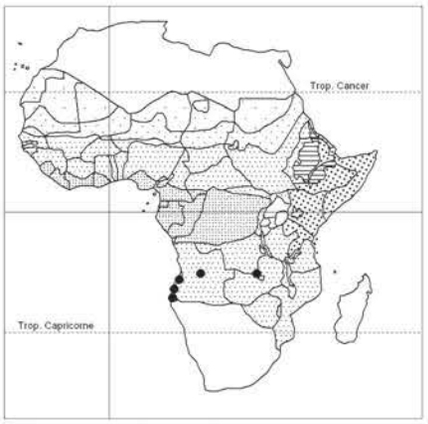
Phragmanthera baumii



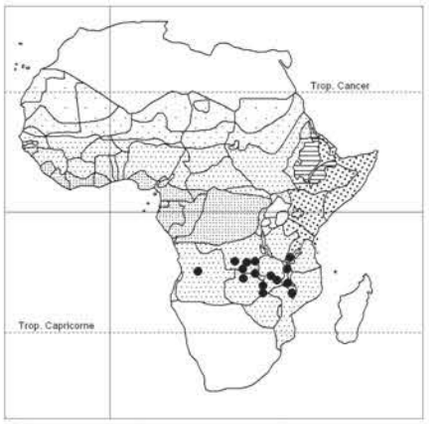
Phragmanthera brieyi



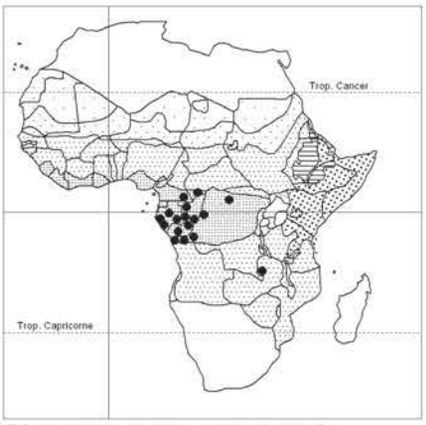
Phragmanthera capitata



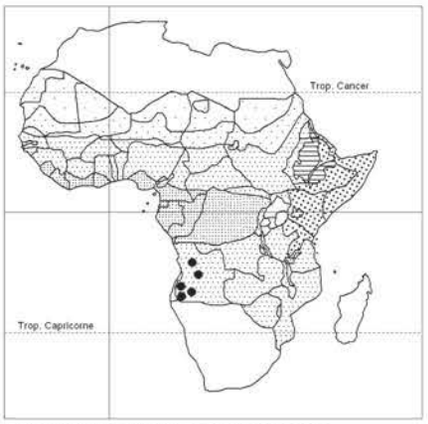
Phragmanthera cinerea



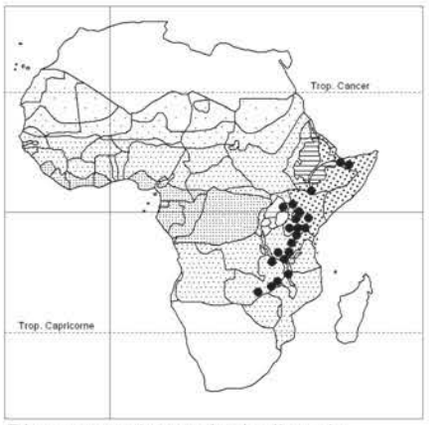
Phragmanthera cornetii



Phragmanthera crassicaulis



Phragmanthera dombeyae



Phragmanthera dschallensis

PHRAGMANTHERA

Variable in hairiness, shape of leaves, flower colouration (southern outlyers red-flowered). Ethiopian material falls into 2 morphological groups not distinct southwards.

Cut for stock, sought after by antelope, also camels.

O. ghikae (Volkens & Schweinf.) M. G. Gilbert

Twigs terete, papillate to shortly spreading hairy; primary leaves soon falling, and flowers surrounded by tufts of small ± sessile leaves (covered with thick grey short spreading hairs) on short shoots; calyx tubular, ciliate, red; corolla white; lobes pink to red on upper part, erect after anthesis.

Deciduous bushland; along water course in open *Acacia-Commiphora* bushland (E Ethiopia); on *Acacia, Albizia, Cordia; Ziziphus* (Ethiopia); to 400 m alt.

Variable in hairiness (in NE Somalia less hairy).

O. glabratus (Engl.) M. G. Gilbert

Glabrous parasitic shrub (in Ethiopia also described as erect terrestrials shrubs 1 m and 1,6 m tall, respectively, perhaps growing on roots of another plant, fide Gilbert in Fl. Ethiop. 3: 369, 1989); twigs terete, becoming ± 4-angular; leaves ± fleshy and glaucous, ultimately crowded on short shoots; corolla small, (greenish) yellow fading orange, split to the tubular calyx; lobes reflexed after anthesis.

Edges of dry montane forest, in bushland, on scarps, gorges, plateaux with riverine or succulent associations; *Acacia-Commiphora* bushland up to *Euclea-Rhus* bushland; on various hosts (e. g. *Catha edulis, Dodonea, Maytenus, Olea europaea* subsp. *africana, Rhus, Ximenia americana, Euphorbia, Jatropha, Carissa, Sideroxylon);* also on cultivated *Citrus* in plantations; 200-2150 m alt.

Grazed by all stock, and persisting only in ± inaccessible places.

Saudi Arabia (Asir).

O. kelleri (Engl.) M. G. Gilbert – Icon.: Polhill & Wiens (1998): 110 (colour photos.).

Twigs slightly compressed, soon terete, obscurely ridged, glabrous to shortly spreading hairy, soon grey with conspicuous small raised dark lenticels; leaves ± glabrous, dull pale green, fleshy; calyx tubular; corolla orange-yellow, sometimes suffused red; lobes erect after anthesis.

Acacia-Commiphora bushland, deciduous bushland, commonly riverine; mostly on *Capparaceae,* especially *Boscia minimifolia,* also on *Acacia, Dobera, Salvadora;* 10-1330 m alt.

Distinctive for the papillose calyx (needs a good hand lens).

O. schimperi (Hochst. ex A. Rich.) M. G. Gilbert – Icon.: Polhill & Wiens (1998): 103, 108 (colour photos.); Thulin, Fl. Somal. 2: 137, 1999; S. Chaudhary, Loranthaceae, in Fl. Kingd. Saudi Arabia ill. 2/1: 260, 2001.

Twigs terete, usually densely pubescent, later smooth, grey, lenticels *not* conspicuous (cf. *O. kelleri);* leaves leathery, olive-green to ± glaucous, ultimately crowded on short shoots; calyx tubular; corolla small, yellow, sometimes green or red at base, with V-slit to calyx; lobes erect after anthesis.

Dry montane forest and margins, and associated bushland and woodland on scarps (mostly of the Rift Valley) and plateaux; deciduous and evergreen bushland; on a wide range of hosts (e. g. *Acacia, Balanites, Cadia, Dobera, Euclea, Grewia, Maytenus, Stereospermum, Tamarix, Ziziphus);* 600-2400 m alt.

PHRAGMANTHERA

Size of flowers variable: NE populations with smaller flowers *(Loranthus schimperi* Hochst. ex A. Rich. var. *parviflorus* Hutch. & E. A. Bruce).

Yemen, Oman, Saudi Arabia (Ghazanfar, Fl. Sultan. Oman 2: 73, 2007).

O. sulfureus (Engl.) Wiens & Polh. *("sulphureus")* – Icon.: Polhill & Wiens (1998): 103, 104 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 17, 1999.

Glabrous shrub; twigs compressed to ± angular; leaves leathery, alternate and clustered on short shoots; calyx 0,5 mm; corolla swollen at base, (greenish) yellow, lobes red at tip, keeled, erect after anthesis; fruit slightly verrucose.

Upland dry evergreen forest and associated bushland or wooded grassland, forest edges; often on shrubs and small trees (e. g. *Euclea, Rhus, Dovyalis, Pittosporum, Grewia;* 1700-3000 m alt.

Little specialised species with nearest relatives in S. Africa.

O. ugogensis (Engl.) Wiens & Polh. – Icon.: Polhill & Wiens (1998): 108 (colour photos.).

Glabrous shrub; stems angular, twigs soon terete; leaves coriaceous, very glaucous, alternate and clustered on short shoots; calyx tubular, 5-6 mm; corolla (greenish) yellow, rarely red and yellow, tube with a ring of small hairy appendages inside.

Deciduous bushland (in the Great Rift Valley); on a wide range of hosts (e. g. *Acacia, Grewia, Terminalia, Capparaceae;* also *Cordia, Commiphora, Balanites, Ziziphus);* 15-1450 m alt.

O. welwitschii (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 103 (flower).

syn.: Enum. 2: 170, 1992; and *Loranthus elegantissimus* Schinz; *Tapinanthus elegantissimus* (Schinz) Danser; *Loranthus karibibensis* Engl.; *L. englerianus* K. Krause & Dinter; *Tapinanthus englerianus* (K. Krause & Dinter) Danser; *Oncocalyx welwitschii* Tiegh., nom. invalid.

Glabrous shrub to c. 1 m, but sometimes with minute papilla-like hairs on youngest shoots, petioles and on margins of bracts and calyx; leaves coriaceous, alternate to opposite; calyx 1 mm; corolla small, yellow with green band at base of lobes, with deep split, lobes erect or slightly bent at anthesis.

Dry bushland; on various hosts (e. g. *Acacia, Boscia, Combretum, Euphorbia, Tamarix;* 320-2000 m alt. (Namibia).

Namibia.

SYNONYMS:

Oncocalyx rhamnifolius (Engl.) Tiegh. = **Spragueanella**

welwitschii Tiegh., nom. = **Oncocalyx welwitschii** (Engl.) Polh. & Wiens

PEDISTYLIS / *1*

Monotypic.

Haustorial connections enlarged, up to 1 m in older plants. Plants spreading by haustoria-bearing runners.

Differs from *Emelianthe* in pollination mechanism; it is assumed that the flowers do not open explosively: filaments are neither coiled nor inflexed after flower opening (fide Germishuizen & al. in Fl. Pl. Afr. 53: 6, 1994).

Pedistylis galpinii (Schinz ex Sprague) Wiens – Icon.: Polhill & Wiens (1998): 98 (colour photo.); Fl. Pl. Afr. 53: pl. 2082, 1994 ; Fl. Zambes. 9/3: 127, 2006; Heide-Jørgensen, Parasit. flow. pl.: 69, 2008.

Large glabrous shrub > 2 m tall; stems stout, woody, grey; young branches often densely lenticellate; leaves coriaceous with a slightly waxy bloom, (sub-)opposite, a few clustered on the old swollen nodes; corolla yellow, tube expanding upwards, without unilateral slit; lobes reflexed, as long as tube; berry yellow-green, later red.

Lowveld, coastal associations; on various hosts (e. g. *Sclerocarya, Ficus, Brachystegia, Heteropyxis, Trichilia, Acacia, Dichrostachys, Combretum, Terminalia);* 0-900 m alt.

Swaziland, NE S. Africa.

PHRAGMANTHERA / *34*

34 species in tropical Africa and Arabia.

Often large pendent shrubs with a single haustorial attachment. Corolla 5-lobed with tube longer than lobes and V-slit to about halfway the tube. Flower structure mimics *Agelanthus* and the flowers are bird-pollinated.

Most species on a wide range of hosts, 2 with limited and 2 with very limited ranges. Some species becoming pests of plantation crops in places. – Certain species are epiparasitized by *Viscum (V. bagshawei, V. fischeri, V. loranthicola; Viscaceae).*

Several species are incompletely known: in 8 species (= c. 23%) no fruit seen, and in further 2 species no mature fruit (= c. 30% in all); 2 species (= c. 6%) known only from the type; host not always recorded.

Phragmanthera batangae (Engl.) Balle – Icon.: Polhill & Wiens (1998): 253 (colour photo.).

syn.: Enum. 2: 170, 1992; and *Loranthus redingii* De Wild.; *Tapinanthus redingii* (De Wild.) Danser; *Phragmanthera redingii* (De Wild.) Balle

Stems spreading to 1-1,5 m; branchlets scurfy with pale scales with reddish-brown dendritic hairs, ± glabrescent; leaves red-brown hairy beneath, soon glabrescent; flowers rather small, yellow, lepidote-puberulous, glabrescent; fruit blue-green *(P. irebuensis* fide Balle, Fl. Congo Belge 1: 356, 1948). Fruit not seen by Polhill & Wiens.

Firm-ground forest; high forest; anthropogenic savanna; on various hosts incl. fruit trees (e. g. *Melia azedarach, Malpighia glabra, Fernandoa adolfi-friderici, Xylopia aethiopica, Persea americana, Coffea);* 800-1700 m alt. (Cameroon).

Resembling *P. capitata* but leaves narrower and flowers smaller (2,2-3,8 cm long, not 4-6 cm).

P. baumii (Engl. & Gilg) Polh. & Wiens

Spreading shrub; branchlets tomentellous with short red-brown dendritic hairs, tardily glabrescent; leaves coriaceous, glaucous, soon discolorous, densely pale lepidote and finely stellate hairy above, underneath similar but also with fine gradually shed covering of short red-brown dendritic hairs; corolla pale yellow to orange, puberulous with brown scales and small stellate hairs; mature fruit unknown.

Plateau woodland; mixed woodland; on *Erythrophleum africanum* on Kalahari sand; described on a *Parinarium* sp. (Angola); 900-1600 m alt.

Namibia/Caprivi Strip.

Very few collections known.

P. brieyi (De Wild.) Polh. & Wiens

Much-branched shrub; youngest parts of branchlets densely pale lepidote, the very youngest with small yellow-brown dendritic hairs, soon glabrescent, remaining pale; leaves initially covered with pale to yellow-brown stellate and very short dendritic hairs especially beneath; corolla orange-yellow, puberulous with minute stellate hairs, glabrescent; fruit unknown.

Forest (lower and middle part of the Congo basin); host?

P. capitata (Spreng.) Balle – Icon.: Polhill & Wiens (1998): 248, 252 (colour photo.). F. Thonner, Flow. Pl. Africa: t. 34, 1908 (t. 34 opposite p. 171 in reprint 1962: sub nom. *Loranthus capitatus).*

syn.: Enum. 2: 170, 1992; and *Tapinanthus hexasepalus* (Tiegh.) Danser; *T. xanthanthus* Danser; but excl. *T. redingii* (De Wild.) Danser, *Phragmanthera redingii* (De Wild.) Balle, *Loranthus redingii* De Wild. *(= Phragmanthera batangae).*

Woody shrub with pendent branches to 2 m, often with ants' nests (stems hollowed out); branchlets densely lepidote, with small reddish dendritic hairs, variously glabrescent; leaves thinly coriaceous, glossy above, densely silvery-white to greyish lepidote beneath, with some short reddish dendritic hairs, variously glabrescent; corolla long (4-6 cm), yellow to orange with red tip, sparsely lepidote; fruit blue-green.

Forests, forest margins and nearby woodlands in higher rainfall areas, forest gallery, secondary jungle, bush savanna; on a wide range of hosts (e. g. *Globimetula oreophila, Alchornea floribunda, Ceiba pentandra, Erythrophleum ivorense, E. suaveolens, Croton, Annona senegalensis, Afrosersalisia cerasifera, Olax subscorpioides, Flacourtia, Nauclea latifolia, Pycnanthus angolensis,* Legumes), incl. garden trees and plantation crops (e. g. avocado, *Cola, Ficus, Citrus,* cacao, *Hevea, Coffea),* becoming a serious pest (host often killed); 0-2000 m alt.

Variable in shape, in type of indumentum, length of petiole and corolla, shape and size of leaves (cf. above, *P. batangae).*

Bioko / Fernando Poo.

ENGONE OBIANG, N. L. & G. SALLÉ (2006). Faut-il éradiquer Phragmanthera capitata, parasite des hévéas en Afrique. *Compt. Rend. Acad. Sci. Paris-Biologies* 329/3: 185-195.

DIBONG, S. D. & al. (2007). Germination, fixation et régénération de Phragmanthera capitata sur les espèces hôtes du jardin case de Ndogbong (Douala). *In:* ACHOUNDONG, G., ed., *Abstracts. XVIIIth AETFAT Congress 26 February – 2 March 2007 Yaoundé, Cameroon:* 189. L'Herbier National du Cameroun, Yaoundé.

P. cinerea (Engl.) Balle

Densely branched (sub)shrub to 0,5-1m; branchlets whitish-greyish tomentellous with stellate and short fine branched hairs, gradually glabrescent; leaves ± fleshy, brittle, pale green, white stellate-puberulous on both surfaces, ultimately glabrescent, clustered only at older nodes; corolla pink or red, white stellate-puberulous.

Coastal and deciduous bushland in W part of range; on various hosts (e. g. *Casuarina, Tamarix, Combretum, Cordia);* principally on *Pericopsis* and on *Citrus* in plantations from Haut-Katanga (Zaire).

N Namibia.

Confused with *P. dombeyae*, but *P. cinerea* occurs in hotter drier places.

P. cornetii (Dewèvre) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 261 (colour photo.).

Shrub with branches 1-2 m long, the longer ones pendent; branchlets tomentose with red-brown dendritic hairs, tardily glabrescent; leaves coriaceous, variable (8-20 cm long, 3,5-9 cm wide), finely felty hair when young with grey and red-brown stellate hairs and some short dendritic hairs medially beneath, glabrescent; umbels confluent around older nodes mostly below current leaves, sessile; corolla reddish on head of bud, coloured by red-brown tomentum; fruit reddish tomentellous.

Brachystegia woodland; generally on *Uapaca;* 900-1800 m alt.

Resembling *P. usuiensis* occurring in forests in the same region, but style enlarged in upper part, corolla-lobes broader (1,5-2 mm, not 1,5 mm) and more *rufous*-hairy.

P. crassicaulis (Engl.) – Icon.: Polhill & Wiens (1998): 266, 267 (colour photos.).

Shrub with pendent branches to 2 m long; branchlets soon thickening, early glabrescent, smooth, shiny; leaves petiolate, brownish-violet to blue-green at first, later dark bronze-green, coriaceous, early glabrescent; corolla small, yellow with orange or red base and tip, or wholly red.

Rain-forest, secondary forest (common along the R. Congo); swamp forest; plantations; on various hosts (e. g. *Syzygium macrocarpum, Hymenocardia ulmoides, H. acida, Discoglypremna caloneura, Copaifera, Memecylon, Leguminosae, Rubiaceae;* also on *Citrus,* cacao; 1-700 m alt.

P. dombeyae (K. Krause & Dinter) Polh. & Wiens

syn.: Enum 2: 170, 1992; and *P. cinerea* sensu auctt., non (Engl.) Balle (Balle in Mitt. Bot. Staatssamml. München 7: 165, 1968, p.p. and in Merxmüller, Fl. Südwestafr. 22: 6, 1969, p.p.; Wiens & Tölken in Fl. S. Afr. 10/1: 21, 1979, p.p.).

Shrub with radiating branches to 1,2 m; branchlets soon stout, tomentose with white to fulvous dendritic hairs, the longer brown hairs soon falling to leave a scurf of pale stellate hairs; leaves ± coriaceous, stellate puberulous on both surfaces, mostly crowded on short shoots; corolla yellow, greenish below, orange on lobe-tips, covered with red-brown dendritic hairs; fruit unknown.

Montane or riverine forest, forested highlands (Monino forests); on *Dodonaea viscosa, Combretum* sp.

Confused with *P. cinerea* but with fulvous distinctly dendritic hairs (not irregularly branched white), with sessile flower umbels among clustered leaves). The two species grow together around Otavi (Namibia).

N Namibia.

P. dschallensis (Engl.) M. G. Gilbert – Icon.: Polhill & Wiens (1998): 248, 261 (colour photo.); Thulin, Fl. Somal. 2: 143, 1999; Fl. Zambes. 9/3: 190, 2006.

Robust shrub with mostly pendent branches 0,7-2 m; branchlets tomentellous with short red-brown dendritic hairs, soon falling to leave covering of grey stellate hairs and scales, glabrescent; leaves grey-green leathery with minute grey stellate hairs and evanescent red-brown dendritic hairs, glabrescent, clustered on short shoots; corolla long, orange-red with red filament-lines, with floccose indumentum of densely verticillate hairs; fruit blue-green.

Open *Acacia* woodland in moderate to low rainfall areas; bushland, wooded grassland; riverine associations; nearly always on *Acacia;* 750-2000 m alt.

Disjunction N Somalia – midlands of Uganda, Kenya.

Similar to *P. regularis,* but leaves narrowly oblong (not ovate) and corolla with spreading laxly verticillate hairs.

ROXBURGH, L. & S. W. NICOLSON (2008). Differential dispersal and survival of an African mistletoe: does host size matter? *Pl. Ecol.* 195: 21-31 [answer: no, but mistletoes survive better on taller hosts].

P. edouardii (Balle) Polh. & Wiens – Icon.: Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 264, 2008.

syn.: *P. edouardii* (Balle) Balle comb. non rite publ. (1982).

Branchlets reddish brown, tomentellous, with short dendritic hairs; leaves coriaceous, soon glabrescent, covered beneath with scales, reddish dendritic hairs; corolla pink to orange or orange-red, with scattered reddish scales and small stellate hairs, without basal swelling.

Montane forest (flanks of W. Rift Valley); 1750-2300 m alt.

P. eminii (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 251, 272 (colour photos.); and Fl. Trop. E. Afr., Loranth.: 113, 1999 ; Fl. Zambes. 9/3: 194, 2006.

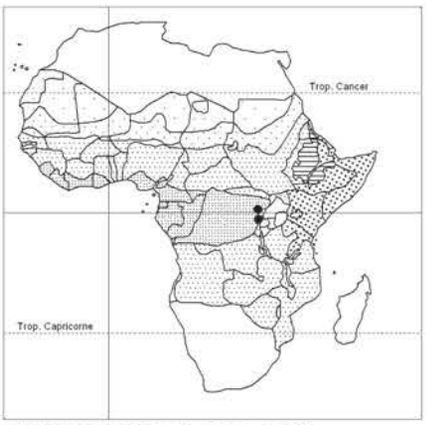
Shrub much branched with radiating branches to 60 cm; branchlets tomentose with buff dendritic hairs on youngest parts, and shorter paler, more persistent hairs; leaves tomentose with stellate and shortly dendritic hairs, variously glabrescent above, persistenly hairy beneath; flowers progressively produced in axils; corolla pale green, red on claws of lobes, with shorter hairs and longer reddish subsimple hairs; fruit blue-green.

Plateau woodland, riverine associations, gallery forest, savanna; plantations; on various hosts (e. g. *Morus indica, Populus canescens, P. deltoides, Nerium, Citrus,* in Zaire); 500-1900 m alt.

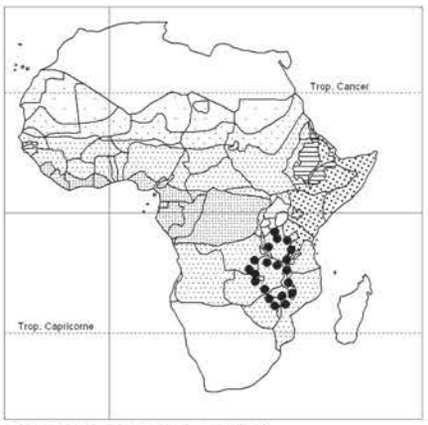
Variable, but distinctive species: varies in shape and indumentum of leaves and in indumentum of corolla.

P. engleri (Hiern) Polh. & Wiens

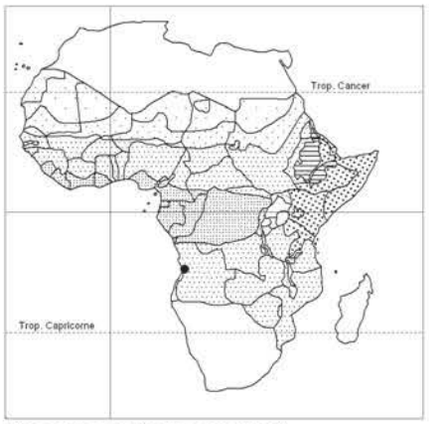
Robust shrub with nearly straight, patent or spreading branches 0,6-2 m long; branchlets red-brown tomentellous with dendritic hairs, soon glabrescent; leaves ± sessile, dark or slightly glaucous green, glossy, coriaceous, stellate puberulous, early glabrescent above, ± persistently stellate-hairy beneath, also with short red-brown dendritic hairs medially; corolla blood-red, brown stellate-tomentellous; fruit red-brown tomentellous.



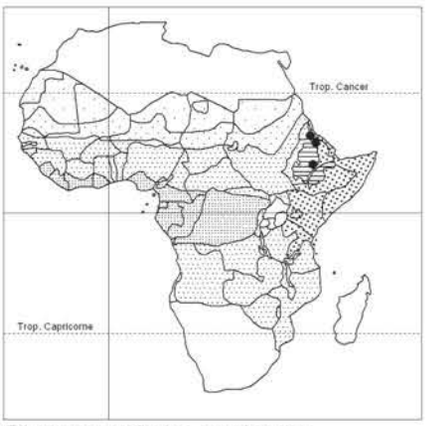
Phragmanthera edouardii



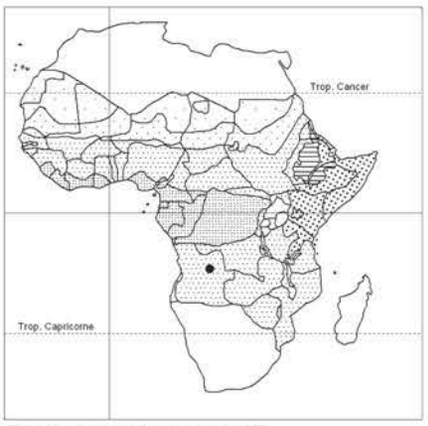
Phragmanthera eminii



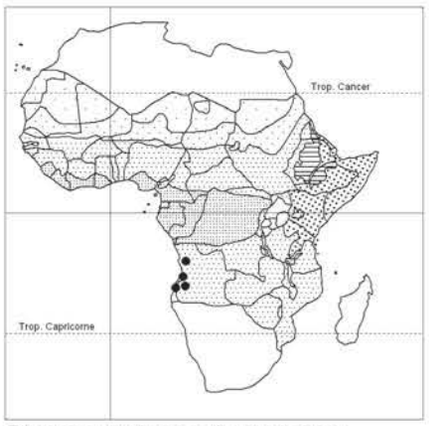
Phragmanthera engleri



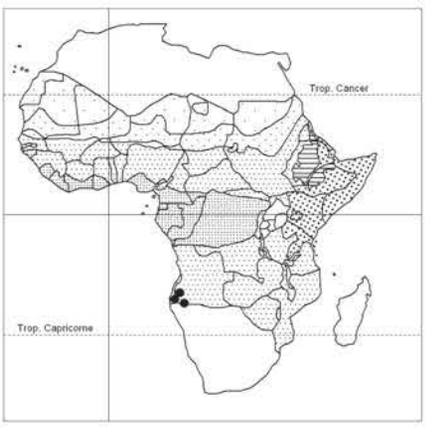
Phragmanthera erythraea



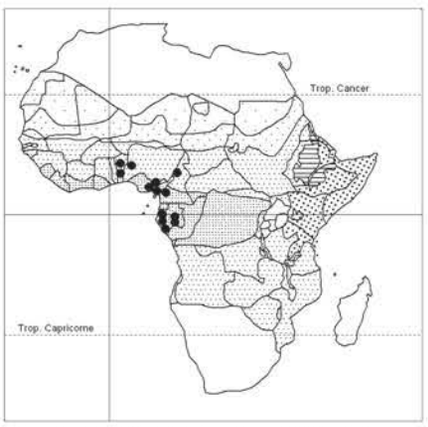
Phragmanthera exellii



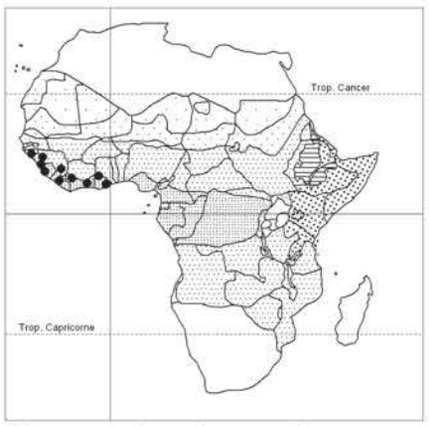
Phragmanthera glaucocarpa



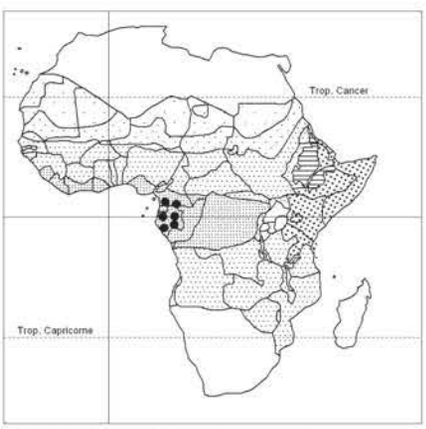
Phragmanthera guerichii



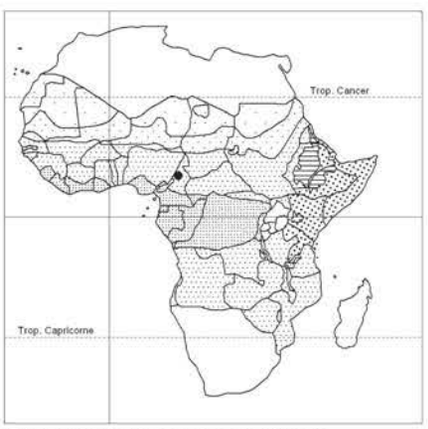
Phragmanthera kamerunensis



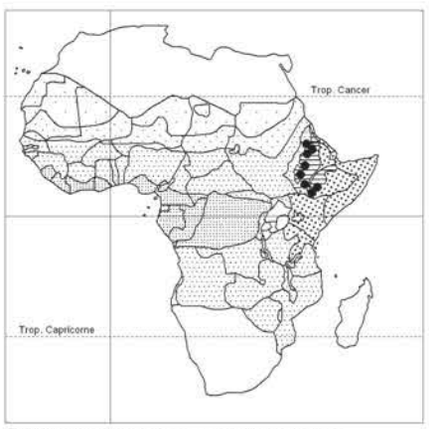
Phragmanthera leonensis



Phragmanthera longiflora



Phragmanthera luteovittata



Phragmanthera macrosolen

"In the little woods of the praesidium; rather rare" (Welwitsch,

Angola: Pungo Andongo); on *Sapotaceae.*

P. erythraea (Sprague) M. G. Gilbert – Icon.: Fl. Ethiop. 3: 367, 1989 (detail).

Robust shrub; branchlets with youngest internodes and axils tomentose with short red-brown dendritic hairs, soon scurfy with grey stellate hairs, glabrescent; leaves grey-green, coriaceous, covered in minute white-grey stellate hairs, glabrescent especially above; corolla with brown floccose indumentum of densely verticillate hairs; fruit unknown.

Dry habitats (drier than its nearest relatives), "but very few details of the exact habitat are available" (Fl. Ethiop., l.c.); on various hosts (e. g. *Nuxia, Rumex ellenbeckii, Steganotaenia);* 1150-2200 m alt.

Closely related to *P. regularis,* but with a short tomentum on a more slender corolla, leaves (to 10 × 5 cm, not 10-18 × 6-11 cm).

P. exellii Balle ex Polh. & Wiens

Well-branched shrub with short internodes; branchlets with persistent scurf of pale scales, with very short brown evanescent dendritic hairs; leaves coriaceous, densely covered with pale brown-centred scales beneath; corolla rather large, tomentellous with short red-brown dendritic hairs; style broadened upwards to shoulders; fruit unknown.

Subxerophytic forest; on *Burkea africana.*

Known only from the type (Exell & Mendonça 961).

Similar to *P. longiflora* but flower smaller (c. 5 cm long, not 5,5-8 cm) and more hairy and with style not markedly papillate.

P. glaucocarpa (Peyr.) Balle – Icon.: Engler & Krause in Bot. Jahrb. Syst. 45: 284, 1910.

Shrub to 1 m; branchlets densely long tomentose with yellow-brown dendritic hairs, variably glabrescent; leaves thinly coriaceous, small, tomentose at first, becoming stellate puberulous above, more persistently and densely beneath, tardily glabrescent, soon clustered at nodes of older stems; umbels in leaf clusters; corolla greenish-yellowish outside, red inside, densely covered with stellate, dendritic and long subsimple hairs; fruits hairy, tinged, blue (-green).

Plateau regions; river banks, extending to coastal forest; plantations; commonly on *Croton*, also various hosts (e. g. *Dichrostachys platycarpa, Tamarix orientalis;* a pest on *Citrus);* 0-2000 m alt.

N Nambia (here meeting *P. dombeyae* and *P. cinerea* at Otavi).

P. guerichii (Engl.) Balle

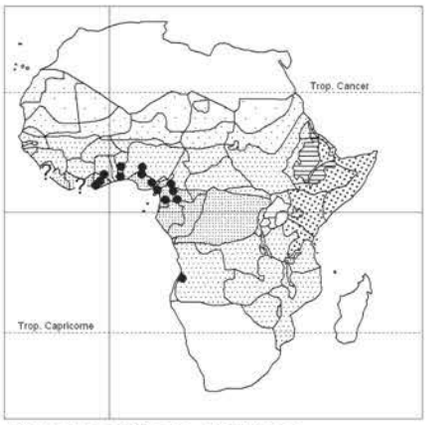
Shrub to 1 m with thick stems, reddish brown, only youngest parts pale tomentose, then scurfy with stellate hairs; leaves whitish tomentose, becoming pubescent with stellate and dendritic hairs on both surfaces, fascicled on swollen nodes; flowers in leaf clusters; corolla long, green, tomentose with stellate and fine wispy dendritic hairs; fruit stellate-pubescent.

Deciduous bushland; on *Commiphora, Euphorbia.*

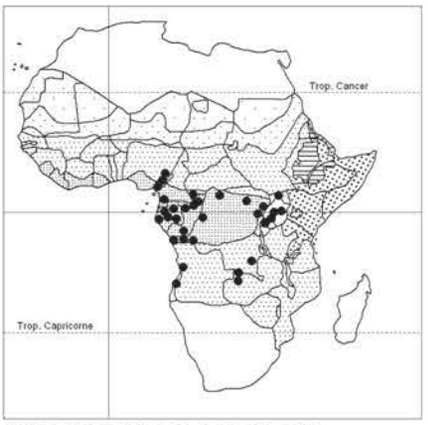
Namibia.

P. kamerunensis (Engl.) Balle

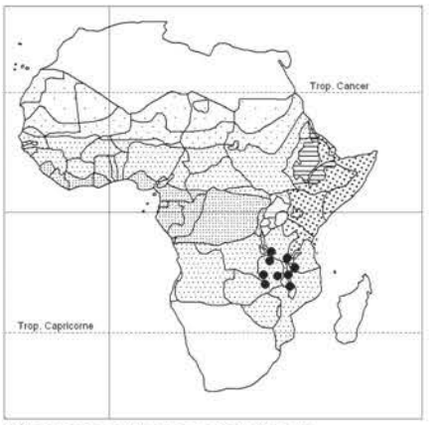
Spectacular massive shrub; branchlets scurfy with scales and



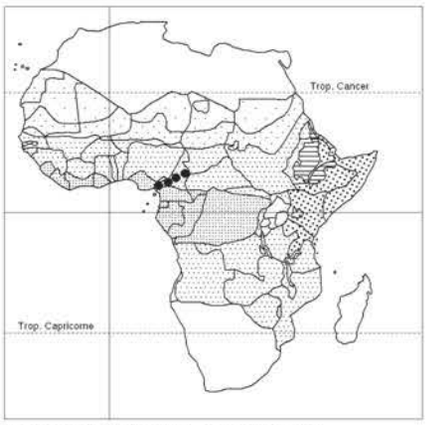
Phragmanthera nigritana



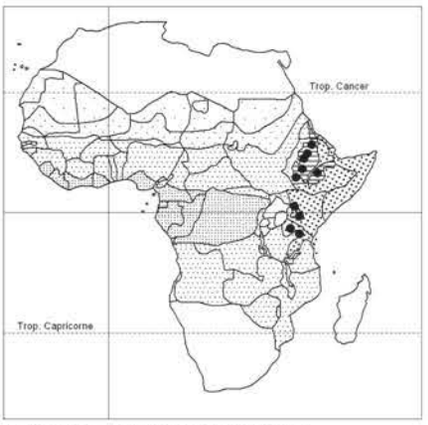
Phragmanthera polycrypta



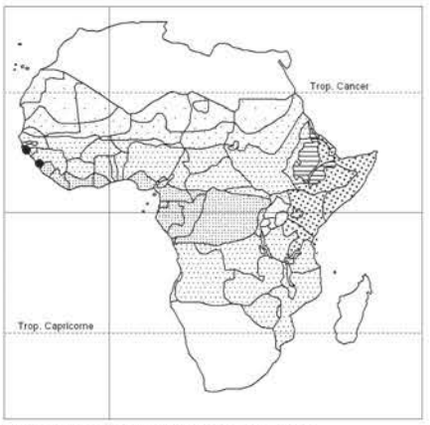
Phragmanthera proteicola



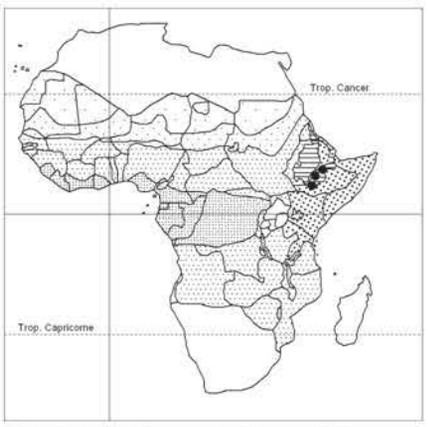
Phragmanthera raynaliana



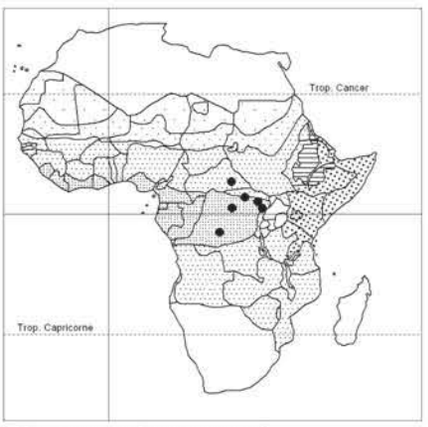
Phragmanthera regularis



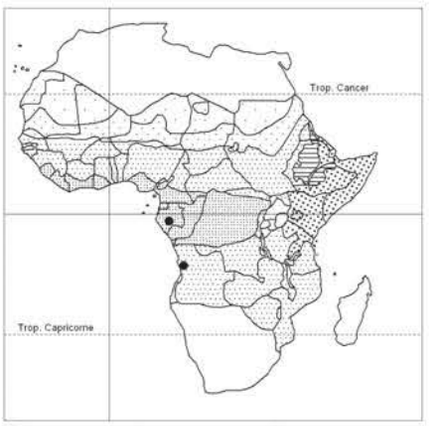
Phragmanthera rufescens



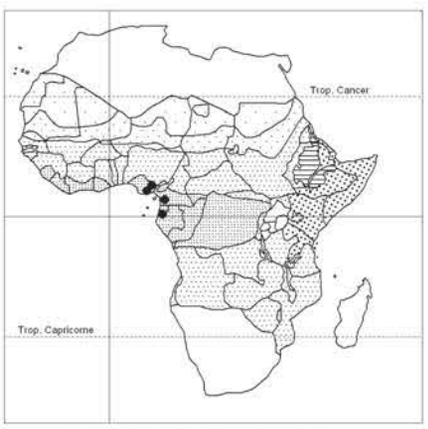
Phragmanthera sarertaensis



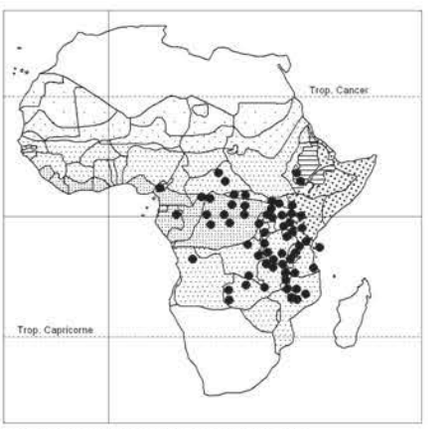
Phragmanthera seretii



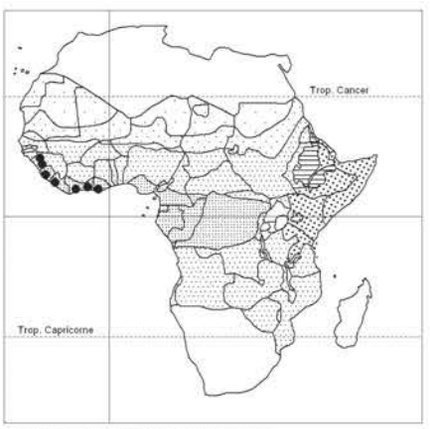
Phragmanthera sterculiae



Phragmanthera talbotiorum



Phragmanthera usuiensis



Phragmanthera vignei

very short evanescent red-brown dendritic hairs, glabrescent; leaves dark green, glossy above, coriaceous, slightly decurrent into petiole, at first covered with off-white scales and some small reddish dendritic hairs, variously glabrescent; corolla long (6,5-11,5 cm), yellow tinged orange(-red) above, scurfy with golden-brown scales and small stellate hairs.

Forest to woodland in higher rainfall areas, near gallery forest; on various hosts (e. g. *Albizia adianthifolia);* 30-500 m alt.

P. leonensis (Sprague) Balle – Icon.: Polhill & Wiens (1998): 251.

Shrub with mostly pendent branches to 1,5 m; branchlets tomentellous with red-brown dendritic hairs, tardily glabrescent; leaves coriaceous, discolorous, glabrous above, tomentellous beneath with stellate hairs and very short brown dendritic hairs; corolla probably red, red-brown tomentose, with globular basal swelling; fruit tomentellous.

Forest, riverine forest, secondary jungle, wooded grassland, mangrove; on various hosts (e. g. *Pachystela brevipes, Combretum, Cola nitida, Rhizophora racemosa, Sarcocephalus diderichii, Sapotaceae;* also cacao in Cameroon).

Related to *P. nigritana* (treated as a variety of this by Balle) but with shorter hairs on branchlets and flowers, smaller bracts and pedicellate flowers.

P. longiflora (Balle) Polh. & Wiens

Branchlets tomentellous with brown dendritic hairs, tardily glabrescent; leaves coriaceous, covered with very short densely branched dendritic hairs, soon glabrescent; corolla long (5,5-8 cm) yellow-brown tomentellous with mostly stellate and very short few-branched dendritic hairs; basal swelling scarcely developed; fruit unknown.

Forest; on *Distemonanthus benthamianus* (Cameroon); 40-200 m alt.

Very few collections known.

Formerly treated as a subspecies of *P. rufescens.*

P. luteovittata (Engl. & K. Krause) Polh. & Wiens

syn.: Enum. 2: 171, 1992; and *P. polycrypta* auct. non (F. Didr.) Balle "var. *luteovittata* (Engl. & K. Krause) Balle" in Fl. Cameroun 23: 40, fig. 10/7-9 p.43, 1982.

Shrub with pendent stems 60-70 cm; branchlets tomentellous with short yellow-brown dendritic hairs, tardily glabrescent; leaves coriaceous, shiny dark green, tomentellous, soon glabrescent; corolla red at base, green above, covered with short dendritic hairs; fruit unknown.

Scrubby riverine forest (Mbabo plateau); 1420 m alt.

Known only from the type collected in 1909.

P. macrosolen (Steud. ex A. Rich.) M. G. Gilbert (cited as of Balle in Enum. 2: 171, 1992).

Shrub with pendent branches 1-3 m; branchlets scurfy with red-brown scales and stubby dendritic hairs; leaves coriaceous, mid-green above, paler rather glaucous beneath, with scales and stellate hairs, and short dendritic hairs medially beneath, glabrescent; corolla long (5-7 cm), yellow to orange-red covered with red-brown scales. Conspicuous.

Open forest, forest edges, more often wooded grassland and woodland in higher rainfall areas; mostly on *Acacia* or *Albizia,* rarely other hosts in vicinity; (1100-)1350-2500 m alt.

P. nigritana (Hook. f. ex Benth.) Balle, excl. var. *obovata* Balle *(= P. vignei ?)* and subsp. *leonensis* (Sprague) Balle *(= P. leonensis).* – Icon.: Polhill & Wiens (1998): 251.

Shrub with mostly pendent branches to 2 m; all parts tomentose with red-brown dendritic hairs, often with longer subsimple hairs 1-2 mm long, tardily glabrescent; leaves coriaceous, discolorous, soon glabrescent and glossy above, persistently yellow-brown pubescent beneath with long-armed stellate hairs and shortly dendritic hairs; corolla apparently yellow with red markings, densely hirsute; fruit lanate-tomentose. Flowering after main rains.

Forest, secondary jungle, riverine forest and adjacent woodland; on various hosts (e. g. *Morinda lucida, Melia, Phyllanthus discoideus*; also cacao in E Cameroon); to c. 700 m alt. (Cameroon).

Not in Ivory Coast *(= P. leonensis, P. vignei).* Sierre Leone?

P. polycrypta (F. Didr.) Balle, excl. "var. *luteovittata* (Engl. & K. Krause) Balle *"(= P. luteovittata)"* and subsp. *raynaliana* Balle *(= P. raynaliana).* – Icon.: Polhill & Wiens (1998): 248, 265 (colour photos. subsp. **polycrypta**).

Shrub with mostly pendent branches 1-2 m; branchlets tomentellous with short rusty brown dendritic hairs; leaves coriaceous, discolorous, sometimes dark bluish green above, soon glabrescent and glossy, persistently tomentellous beneath with pale stellate hairs and short red-brown dendritic hairs; corolla yellow, often orange or red on tube and tip of lobes, ± covered with small stellate to shortly dendritic hairs; fruit tomentellous.

Forest, upland rain-forest with *Albizia, Macaranga, Croton, Ocotea;* forest clearing, riverine forest, secondary forest; grassland; on various hosts (e. g. *Ilex mitis, Olea capensis* subsp. *hochstetteri, Eugenia, Ochna afzelii, Gnidia glauca, Trichilia heudelotii, Pseudospondias microcarpa);* 550-2500 m alt.

Bioko / Fernando Poo.

Comprises 2 subspp.: – subsp. **polycrypta** (syn.: Enum. 2: 171, 1992) with hairy corolla; – subsp. **subglabriflora** Polh. & Wiens (icon.: Polhill & Wiens 1998: 248, detail) with subglabrous corolla, in C & NE parts of range. Both occur in Gabon.

P. proteicola (Engl.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 251, 273 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 113, 1999; Fl. Zambes. 9/3: 194, 2006.

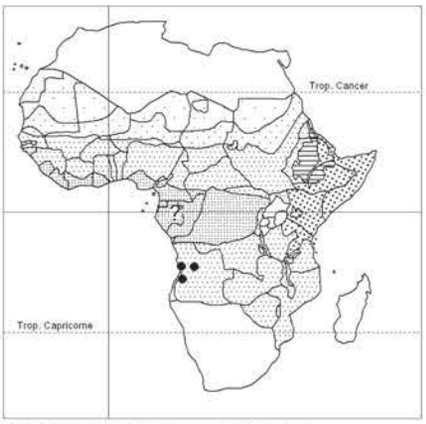
Shrub much branched, with radiating branches to c. 1 m long; branchlets soon stout, tomentose, with longer orange-tawny dendritic-subsimple hairs 1-4 mm long on youngest parts; leaves and leafy bracts crowded towards end of branches; lamina softly coriaceous, covered with inconspicuous greyish stellate and shortly dendritic hairs above, pale tomentellous beneath; corolla long (4,5-6 cm), red at least on the claw of lobes inside, otherwise cream to greenish, tomentellous; fruit villous.

Brachystegia woodland in higher rainfall areas, often on scarps and rocky hills, descending along rivers; forest edges; on *Ochna, Faurea, Protea;* 900-2500 m alt.

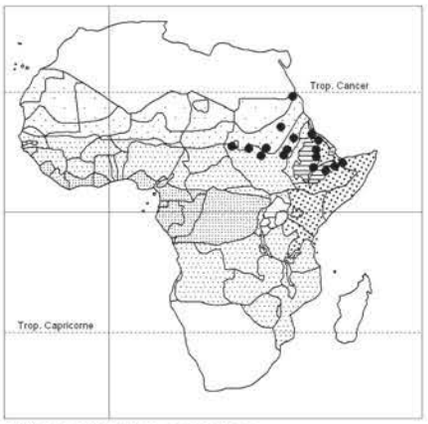
Closely related to and be confused with *P. eminii* but with ± sessile flowers, leafy bracts, more crowded and elongate leaves.

P. raynaliana (Balle) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 265 (colour photo.).

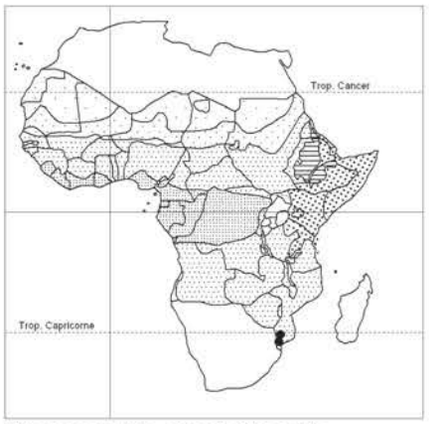
Shrub with pendulous branches 1,5-2 m long; branchlets tomentose to floccose with dendritic hairs, longer ones yellow-brown; leaves coriaceous, dark green, pale beneath, soon glabrescent above, usually persistently tomentellous beneath with pale stellate hairs; umbels mostly crowded at older nodes; corolla ± golden yellow; fruit unknown.



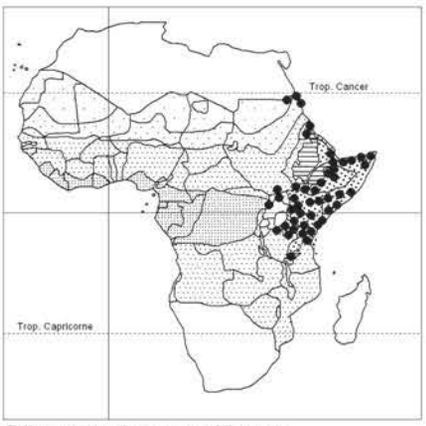
Phragmanthera zygiarum



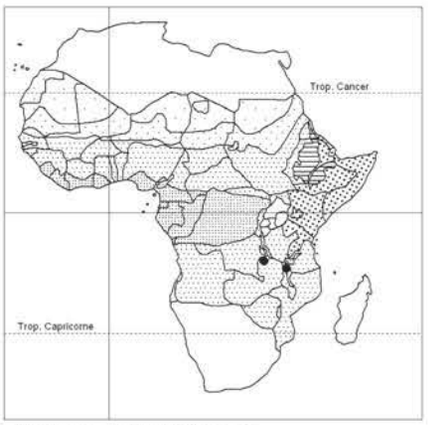
Plicosepalus acaciae



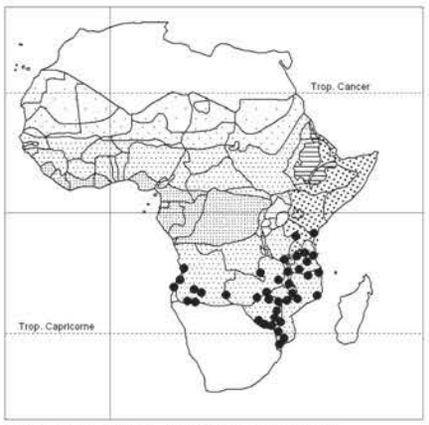
Plicosepalus amplexicaulis



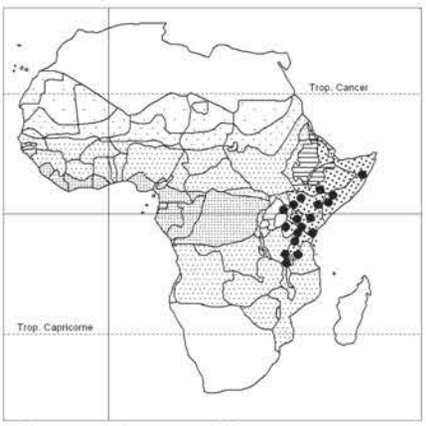
Plicosepalus curviflorus



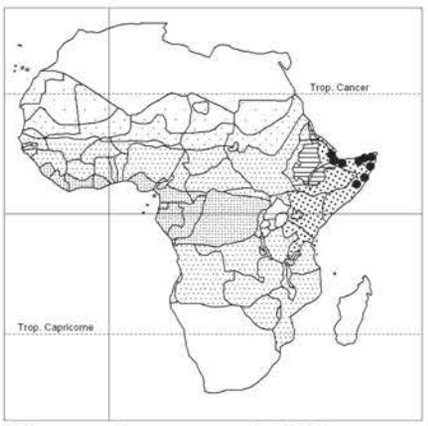
Plicosepalus foliosus



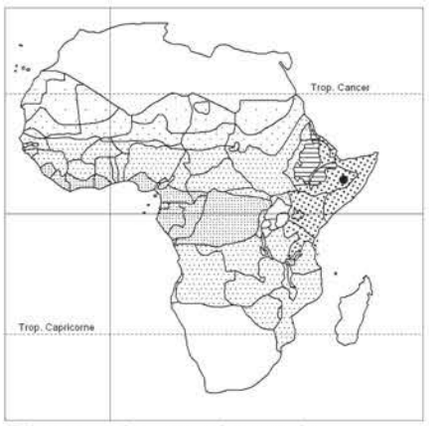
Plicosepalus kalachariensis



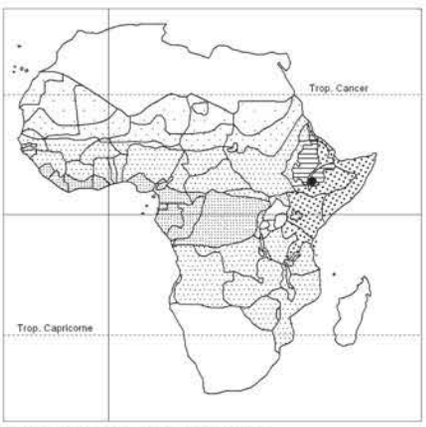
Plicosepalus meridianus



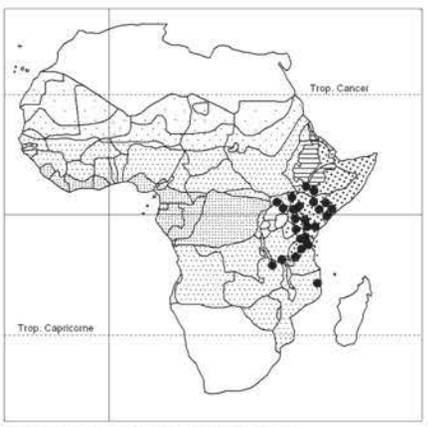
Plicosepalus nummulariifolius



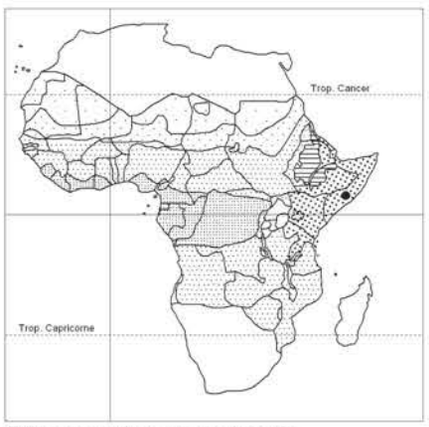
Plicosepalus ogadenensis



Plicosepalus robustus



Plicosepalus sagittifolius



Plicosepalus somalensis

Wooded grassland, forest edges and gallery, secondary associations; on various hosts (e. g. *Bridelia, Annona, Terminalia mollis, Syzygium guineense);* 1000-1650 m alt.

Closely related to *P. polycrypta* (and described as a subspecies by Balle) and intergrading with the latter in Bamenda Highlands (Cameroon), where *P. raynaliana* replaces *P. polycrypta* in the foothills.

P. regularis (Schweinf.) M. G. Gilbert [not (Steud. ex Sprague) Balle as cited in Enum. 2: 171, 1992], excl. var. *usuiensis* (Oliv.) Blundell (= *P. usuiensis).* – Icon.: Polhill & Wiens (1998): 263 (colour photo.); Heide-Jorgensen, Parasit. flow. pl.: 72, 2008.

bas.: *Loranthus regularis* Schweinf. in Bull. Herb. Boiss. 4, App. 2: 148, 1896.

syn.: Enum. 2: l.c.; and *Tapinanthus regularis* (Schweinf.) Danser; *Septimetula regularis* (Steud. ex Engl.) Tiegh., non rite publ.; *Loranthus regularis* Steud. ex Sprague var. *pilosus* (Pax) Cufod.

Robust shrub with pendent branches, 1-2 m long; branchlets tomentose with red-brown dendritic hairs, tardily glabrescent; leaves coriaceous, variable in size (8-20 cm long, 3,5-9 cm wide), felty tomentose when young with grey and red-brown stellate hairs; umbels confluent around older nodes; corolla orange-yellow with brownish tomentum; fruit bluish with brown tomentum, with prominent persistent calyx.

Upland dry evergreen forest, dry *Juniperus* forest, and associated woodland; wooded grassland; on various hosts, but commonly on *Croton macrostachys, Ficus, Rhus, Bersama, Syzygium;* also on *Juniperus;* 1050-2800 m alt. – Sometimes dominating canopy of host tree (Ethiopia).

Yemen and Saudi Arabia (perhaps a distinct species).

In E. Africa the range of *P. regularis* and *P. usuiensis* overlap.

P. rufescens (DC.) Balle, s. str., and excl. subsp. *longiflora* Balle *(= P. longiflora)* and subsp. *usuiensis* (Oliv.) Balle *(= P. usuiensis).*

Branchlets scurfy with scales and very short evanescent red-brown dendritic hairs, glabrescent; leaves coriaceous, soon glabrescent above, scurfy beneath; corolla (orange-) yellow, densely covered with reddish ± sessile stipitate scales; fruit unknown.

Coastal bushland, riverine forest near the coast.

Only in S Senegal (Casamance) and Guinée.

Epithet widely used (not s. str.) for a group of species incl. *P. kamerunensis, P. seretii, P. macrosolen,* also for *P. regularis* (sensu A. Rich., Tent. Fl. Abyss. 1: 339, 1848).

P. sarertaensis (Hutch. & E. A. Bruce) M. G. Gilbert – Icon.: Polhill & Wiens (1998): 262 (colour photo.).

Robust shrub with spreading branches, longer ones pendent, 0,8-4 m long; branchlets tomentellous with stellate and brown very shortly dendritic hairs; leaves dull green, paler beneath, scurfy with minute stellate hairs and some brown dendritic hairs above, ultimately glabrescent; corolla (yellowish-)orange with dense covering of sessile scales and short 2-3 verticillate scale-like hairs; fruit rather rapidly glabrescent (fide Fl. Ethiop. 3: 367, 1989); fruit not seen by Polhill & Wiens, 1998.

Montane forest, upland wooded grassland; on various hosts (e. g. *Acacia, Buddleja, Rapanea);* 1800-2650 m alt.

Similar to *P. regularis* but with more prominently lenticellate stems, narrower leaves (11-17 × 3,6-7 cm, not 10-18 × 6-11 cm) and more densely scaly corolla. Differs from *P. macrosolen* by

sessile inflorescence.

Replaces *P. regularis* E of the Ethiop. Rift Valley.

P. seretii (De Wild.) Balle

Robust shrub; branchlets tomentellous on youngest internodes with pale scales and short red-brown dendritic hairs, soon glabrescent; leaves coriaceous, when young with scales and very small brown evanescent dendritic hairs, soon glabrescent; umbels confluent on older nodes; corolla long (4,5-6 cm), tube pale salmon, lobes orange, thinly pale- and reddish scaly, glabrescent.

Forest, edge of riverine forest; a pest in plantations; on various hosts, incl. crops (e. g. *Macaranga spinosa, Hevea, Citrus, Persea).*

Poorly known.

P. sterculiae (Hiern) Polh. & Wiens

Shrub with spreading branches 1,5-2 m long; branchlets covered with whitish scales and small stellate hairs; leaves mostly ternate, coriaceous, covered at first with pale scales and stellate hairs; corolla yellow with whitish scales and small stellate to slightly dendritic hairs.

Wooded slopes by rivers; on *Sterculia* and other deciduous trees, also *Acacia,* "usually clothing with its dense mass the topmost branches of their heads" (Welwitsch, Angola).

Easily recognized from e. g. *P. rufescens* by the pale corolla indumentum (as in *P. brieyi)* and a tendency to ternate leaves.

P. talbotiorum (Sprague) Balle

Shrub with pendent branches to 1 m long; branchlets dark purple tomentellous with short dendritic hairs on first internodes, soon glabrescent; leaves mid-green above, paler beneath, coriaceous, early glabrescent except on midvein of both surfaces; corolla dark red tomentose, yellow on lobes inside.

Lowland forest, secondary vegetation after cultivation (around the Gulf of Guinea); on *Irvingia gabonensis* and other trees, cultivated fruit trees.

P. usuiensis (Oliv.) M. G. Gilbert – Icon.: Polhill & Wiens (1998): 248, 260 (colour photos.; of subsp. **usuiensis**); and in Fl. Trop. E. Afr., Loranth.: 107, 1999; Polhill in F. White & al., Evergr. For. Fl. Malawi: 348, 2001; Fl. Zambes. 9/3: 190, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 565, 2008.

bas.: *Loranthus usuiensis* Oliv., excl. var. *longipilosus* Engl. & K. Krause (= *P. cornetii).*

syn.: Enum. 2: 172, 1992; and *Loranthus rufescens* sensu Balle in Fl. Congo Belge 1: 367, 1948, and Agnew Upl. Kenya Wild Fl.: 330, 1974; *Phragmanthera regularis* (Schweinf.) M. G. Gilbert var. *usuiensis* (Oliv.) Blundell ("usuriensis"), non rite publ.; *Loranthus albizziae* De Wild., excl. var. *rogersii* Sprague *(= P. cornetii)* – all of subsp. **usuiensis**.

Shrub with spreading to pendent branches 1-2 m long; branchlets tomentose with short white to brown dendritic hairs on youngest internodes, soon glabrescent with only grey stellate hairs and scales, then glabrous; leaves coriaceous dark green, paler beneath, variable in size (5-22 cm long, 2-11 cm wide), soon glabrescent; inflorescences of sessile many-flowered clusters; corolla yellow to orange, brownish pubescent-tomentellous with stellate and short dendritic hairs, variously glabrescent; fruit *blue-green.*

(Montane) forests and adjacent woodland; open forest with *Olea, Vepris, Rhus* (S Sudan); on a wide range of hosts incl. many cultivated trees (e. g. *Prunus africana, Acacia, Albizia lebbek, Treculia africana, Bridelia, Ficus, Funtumia, Myrica, Markhamia, Vitex, Nuxia, Rhus incana, R. glaucescens, Manihot, Coffea);* near sea-level-3000 m alt.

Variable species in shape of leaves and development of indumentum.

Comprises 2 subspp.: – subsp. **usuiensis**; – subsp. **sigensis** (Engl.) Polh. & Wiens with glabrescent twigs and early glabrescent corolla (and only appressed subsimple hairs), in E part of range (E Tanzania-Malawi-N Mozambique).

Closely related to *P. regularis*, but with narrower leaves and more slender corolla with distinct apical swelling and yellowish ± floccose indumentum.

P. vignei Balle

syn.: ? *P. nigritana* (Hook. f. ex Benth.) Balle var. *obovata* Balle

Robust shrub with stout branchlets, first internodes tomentose with reddish-brown dendritic hairs, soon glabrescent; leaves coriaceous, early glabrescent; lamina decurrent on to petiole; bract exceeding calyx, often with foliaceous limb; corolla densely villous with brown subsimple hairs 3-4 mm long; lobes reflexed; fruit villous.

Forest; host?; lowland-1600 m alt. – Widespread but apparently rare.

Very few collections known.

Similar to *P. nigritana* but branchlets and leaves persistently hairy beneath.

P. zygiarum (Hiern) Polh. & Wiens

Shrub with rambling, patent, tuberculate branches 0,6-1 m long with pale scales and very short red-brown dendritic hairs, glabrescent; leaves fleshy-coriaceous, slightly glaucous with scales and small stellate hairs, soon glabrescent; corolla pinkish green to scarlet, glabrous, without basal swelling; mature fruit unknown.

Forest, also by river banks; on *Albizia.*

Material from Gabon doubtful (perhaps a new species; fide Sosef & al., Check-list pl. vascul. Gabon: 259, 2006).

SYNONYMS (see also Enum. 2: 180-181, 1992):

Phragmanthera cinerea sensu auctt., p.p., non (Engl.) Balle = **Phragmanthera dombeyae**

edouardii (Balle) Balle, nom. = **P. edouardii** (Balle) Polh. & Wiens

nigritana (Hook. f. ex Benth.) Balle var. *obovata* Balle = ? **P. vignei**

polycrytpa (F. Didr.) Balle subsp. *raynaliana* Balle = **P. raynaliana**

polycrypta auct. "var. *luteovittata* (Engl. & K. Krause) Balle" = **P. luteovittata**

redingii (De Wild.) Balle = **P. batangae**

regularis (Schweinf.) M. G. Gilbert var. *usuiensis* (Oliv.) Blundell = **P. usuiensis**

rufescens (DC.) Balle subsp. *longiflora* Balle = **P. longiflora**

subsp. *usuiensis* (Oliv.) Balle = **P. usuiensis**

PLICOSEPALUS / *11*

12 species (one in Namibia-NW S. Africa) from the Middle East-Arabia-Africa *(P. curviflorus).* Habit very variable: stems from a few cm high to several m long, spreading by haustoria-bearing surface runners (only genus as such in Africa).

Easily recognized by the *corolla* (with our without tube): curved or *S-shaped in bud;* and the petals having 2 rows of oblique folds below the filament-insertion. Flowers bird-pollinated: a small slit opens on upper side of mature bud. The inside surfaces of the petals face outwards, forming a distinct pair of lips of contrasting colour, probably a signal to sunbirds. Friction between petal-folds and the beak/tongue of the bird probably causes vibrations in the stamens; thus dusting the pollen on the bird's forehead (fide Polhill & Wiens, 1998: 87). – Fruit red or yellow.

Hosts mostly limited to legumes and *Burseraceae.* Only one species on a wide range of hosts *(P. acaciae).*

A few species incompletely known; in 3 species (= c. 27%) no fruit seen, 2 species (= c. 18%) are known only from the type, and another species known only from 2 collections *(P. somalensis).*

Plicosepalus acaciae (Zucc.) Wiens & Polh. – Icon.: Polhill & Wiens (1998): 89, 93 (colour photo.); Boulos, Fl. Egypt 1: 23, 1999; S. Chaudhary, Loranthaceae, in Fl. Kingd. Saudi Arabia ill. 2/1: 257, 2001; Heide-Jørgensen, Parasit. flow. pl.: 68, 2008.

syn.: Enum. 2: 172, 1992; and *Loranthus laetus* R. Br., nom.; *Tapinostemma gibbosulum* (A. Rich.) Tiegh.; *Loranthus venustus* Fenzl, nom.; *Tapinostemma venustum* Tiegh., nom.; *Loranthus arabicus* Defl.; *Tapinostemma arabicum* (Defl.) Tiegh.

Glabrous shrub to 80 cm; stems woody; leaves (sub-)opposite, slightly glaucous, leathery, a few clustered on older nodes; corolla with short tube, usually bright red, upper part recurved.

Deciduous bushland; from very dry *Acacia* bushland to deciduous *Combretum* woodland; on a wide range of hosts (e. g. *Acacia* but often a minor host, *Combretum, Terminalia, Ozoroa, Dobera, Melia azedarach);* 50-2200 m alt.

Along the Red Sea and the Dead Sea; SE Egypt; Yemen, Oman, Saudi Arabia (Ghazanfar, Fl. Sultan. Oman 2:73, 2007).

P. amplexicaulis Wiens – Icon.: Fl. Zambes. 9/3: 124, 2006; Heide-Jørgensen, Parasit. flow. pl.: 68, 2008.

Shrub c. 1 m tall with buff to brown branches; leaves sessile, light grey-green, 3-nerved, narrowly oblong; corolla basally ± S-shaped and dull white, distal part bright red, without tube.

Lowveld vegetation; on *Acacia.*

E S. Africa, Swaziland on the coast.

Distinguished from *P. kalachariensis* by the amplexicaule sagittate leaves and the white base of the corolla.

P. curviflorus (Benth. ex Oliv.) Tiegh. – Icon.: Polhill & Wiens (1998): 5 (colour photo. habit), 89; Thulin, Fl. Somal. 2: 133, 1999; Boulos, Fl. Egypt 1: 23, 1999; S. Chaudhary, Loranthaceae, in Fl. Kingd. Saudi Arabia ill. 2/1: 258, 2001; Heide-Jørgensen, Parasit. flow. pl.: 24, 403, 2008.

Glabrous shrub to c. 80 cm tall; stems spreading, slender, sparsely lenticellate; leaves ± linear, on normal long shoots and on short shoots similar; corolla without tube, basally red or yellow, rarely white or orange, S-shaped.

Acacia-Commiphora bushland/woodland; *Acacia* woodland; rocky savanna; upland rain-forest with *Albizia, Macaranga, Croton, Ocotea* (Imatong Mts.); on *Acacia* (e. g. *A. asak, A. mellifera*), rarely on *Albizia* (Imatong); 30-2300 m alt.

Variable in habit, and in leaf shape and texture, and in flower colour; with distinct forms in places (e. g. in Kenya Highlands: robust form with very leafy floriferous short shoots and yellow petals red at base or tip).

Coastal S Egypt; Arabian Peninsula, Middle East.

Providing useful forage for livestock (Somalia).

Intergrading ± with *P. sagittifolius* in E. Africa, but leaves always cuneate, with short petiole.

Similar to *P. kalachariensis,* but flowers and fruits smaller.

P. foliosus Wiens & Polh. – Icon.: Polhill & Wiens (1998): 91 (colour photo. habit).

Leaves glaucous, broadly elliptic to circular, mostly on short shoots, but not markedly heteromorphic; umbels terminal on leafy shoots; corolla basally ± S-shaped, without tube, yellow turning red-orange; fruit unknown.

Woodland; on *Brachystegia;* 1650-1800 m alt.

Similar to *P. kalachariensis,* but inflorescences from tips of short shoots with short and broad leaves.

P. kalachariensis (Schinz) Danser – Icon.: Polhill & Wiens (1998): 91 (colour photo.); V. Roodt, Shell field guide ser. 2, Common wild fl. Okavango delta: 108, 1998; Fl. Zambes. 9/3: 124, 2006; Heide-Jørgensen, o.c.: 66.

syn.: Enum. 2: 172, 1998; and *Loranthus dinteri* Schinz; *L. splendens* N. E. Br.; *L. acaciaedetinentis* Dinter; *Plicosepalus acaciaedetinentis* (Dinter) Danser; *P. curviflorus* (Oliv.) Tiegh. var. *kalachariensis* (Schinz) Balle, nom. and Vollesen in Op. Bot. 59: 64, 1980, nom. invalid.; *P. curviflorus* sensu Balle in Fl. S. W. Afr. 22: 8, 1969.

Shrub 0,3-2,5 m tall; leaves variably narrowly oblong to ± ovate (2-12 cm long, 0,4-5,5 cm wide), light green to glaucous, sometimes ± sagittate; corolla without tube, pink to red-orange, basally ± S-shaped, distal part recurving; berry red, urceolate.

Mixed woodland, *Acacia* and *Brachystegia* woodlands; usually on legumes (e. g. *Acacia, Brachystegia, Julbernardia, Dichrostachys, Burkea*), rarely on non-legumes (e. g. *Acokanthera, Canthium, Commiphora);* 0-1850 m alt.

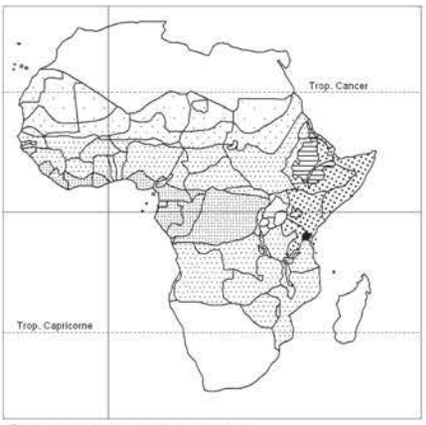
Namibia, Botswana, Swaziland, NE S. Africa.

Similar to *P. curviflorus,* but flowers (petals 4-5 cm long, not 2,5-3,5 cm) and fruits (12-15 mm long, 7-8 mm Ø, not 9-12 mm, 7 mm Ø) larger. Where the ranges meet (Tanzania) the ecology is slightly different: *P. kalachariensis* in *Brachystegia* woodland, but intermediate populations known (Iringa).

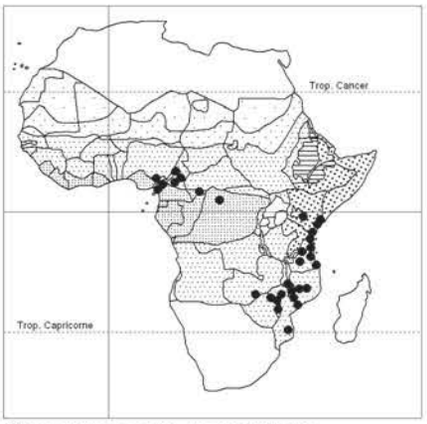
P. meridianus – Icon.: Polhill & Wiens (1998): 89, 94 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 10, 1999; Thulin, Fl. Somal. 2: 134, 1999.

Stems short or none, leaves and inflorescences sometimes borne directly on cushion-like haustoria produced from slender runners; less often also with long shoots with alternate leaves, but mostly leaves in tufts on haustoria; leaves narrowly elliptic (4 × 2 cm), fleshy, obscurely veined; corolla long (4,5-6,7 cm), tube long, obscurely S-shaped, pink with greenish or blue-green lobes.

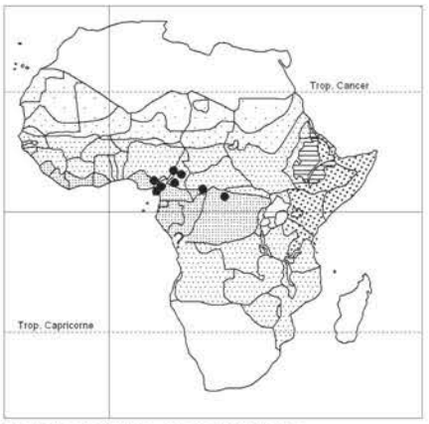
Deciduous bushland, *Acacia-Commiphora-Jatropha rivae* bushland (S Ethiopia); generally on *Commiphora,* sometimes on *Acacia;* 100-1550 m alt.



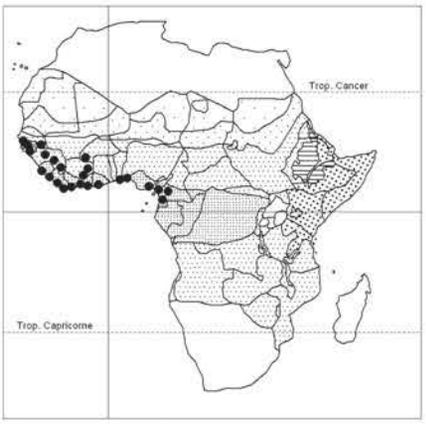
Spragueanella curta



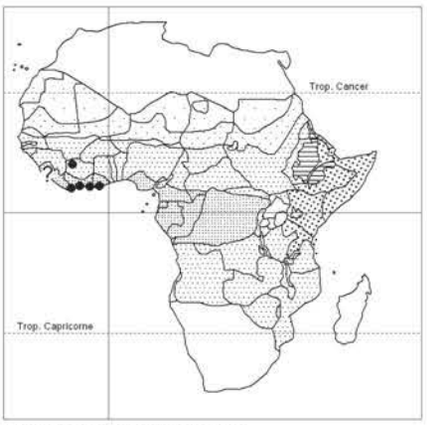
Spragueanella rhamnifolia



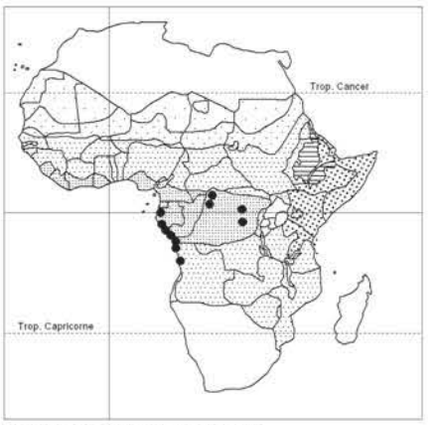
Tapinanthus apodanthus



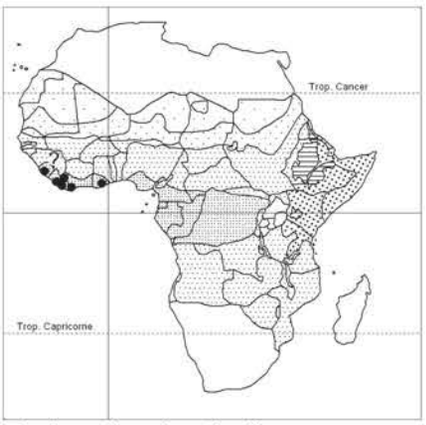
Tapinanthus bangwensis



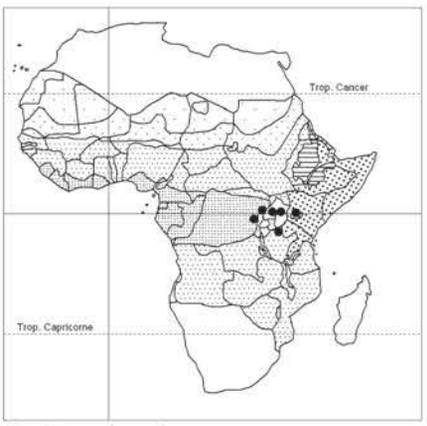
Tapinanthus belvisii



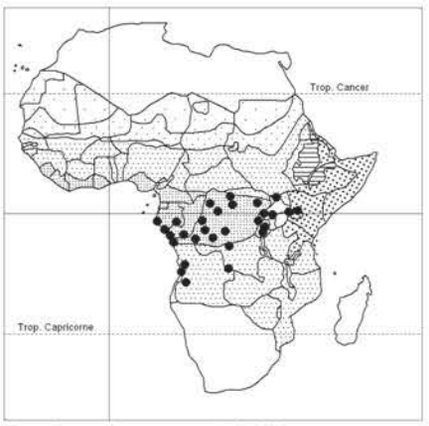
Tapinanthus buchneri



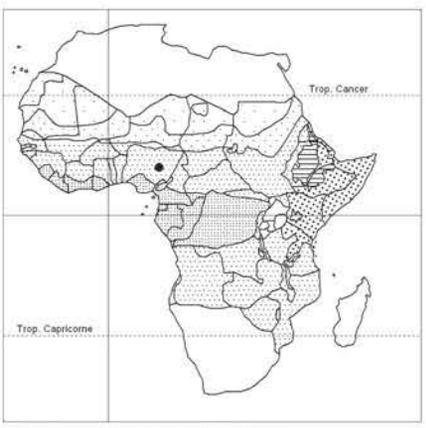
Tapinanthus buntingii



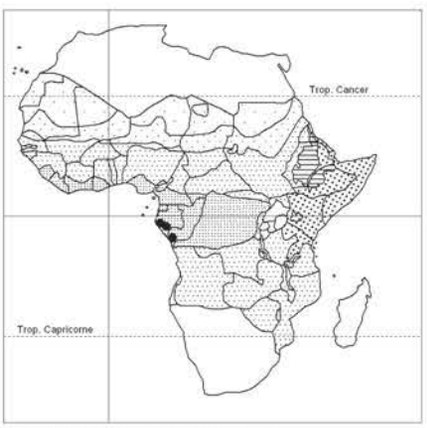
Tapinanthus buvumae



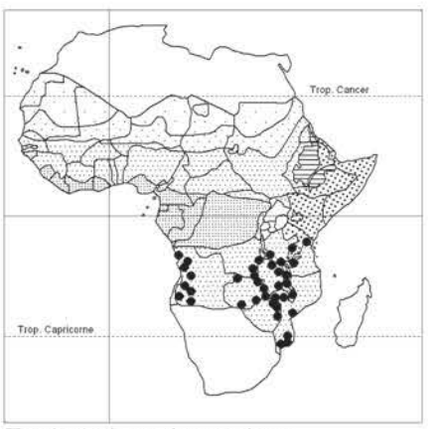
Tapinanthus constrictiflorus



Tapinanthus cordifolius



Tapinanthus coronatus



Tapinanthus dependens

Similar to *P. ogadenensis* which differs by its corolla dull glaucous purple (bloom), lobes with subulate appendages on the tips, and distinct spur on the back of bracts.

The runners have been likened to roots of epiphytic orchids (fide Polhill & Wiens).

P. nummulariifolius (Franch.) Wiens & Polh. – Icon.: Polhill & Wiens (1998): 89 (flower).

Shrub with slightly heteromorphic fleshy, glaucous, cordate leaves, those on long shoots sessile, amplexicaul, the smaller ones on many short shoots are shortly petiolate and cuneate or rounded at base; corolla greenish turning pink or red, with short oblique tube and recurved and looped lobes (in upper part).

Deciduous bushland; on *Acacia, Caesalpinia, Boswellia, Commiphora;* 10-1750 m alt.

P. ogadenensis M. G. Gilbert

Glabrous plant with stems to 5 mm Ø, grey, striate, creeping over host and producing new haustoria at intervals; leaves very fleshy, glaucous, 2,6 × 0,6 cm; inflorescences 1-flowered, from short-shoot; corolla slightly curved, long (4,5-6,5 cm), dull purple with grey bloom, with tube, lobes reflexed; fruit glaucous pink.

Medium dense *Acacia-Commiphora-Lannea* bushland; on *Commiphora, Lannea;* c. 500 m alt.

Known only from the type.

Similar to *P. meridianus* in habit and corolla form.

P. robustus Wiens & Polh. – Icon.: Polhill & Wiens (1998): 89 (flower).

Similar to *P. acaciae* (cf. this species) but branches stouter; leaves opposite to alternate, coriaceous, strap-shaped, slightly curved, mostly crowded on knob-like short shoots; corolla golden-yellow, curved, with short tube, lobe-tips recurved; fruit unknown.

Wooded grassland; on *Acacia;* c. 1600 m alt.

Known only from the type.

P. sagittifolius (Engl.) Danser – Icon.: Polhill & Wiens (1998): 90 (colour photo.).

Shrub with heteromorphic leaves, those on long shoots sessile, sagittate at base, those on short shoots petiolate, ± orbicular; umbels on short shoots leafy at base; corolla yellow, ageing orange-red, without tube, basal part slightly S-shaped, distal part of petals recurving, twisted.

Deciduous bushland, *Acacia-Commiphora* bushland/woodland, *Acacia* woodland, coastal bushland; mostly on *Acacia mellifera* (Ethiopia) and other *Acacia* species, rarely on *Albizia, Commiphora;* 30-2300 m alt; berry red.

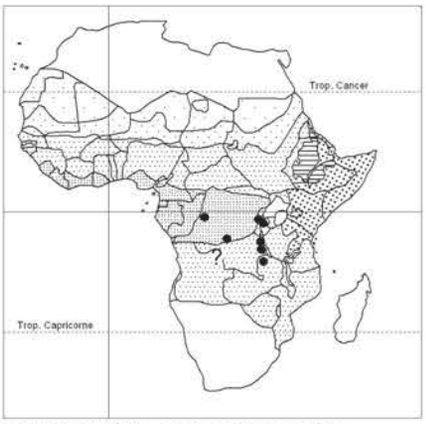
Variable in size and shape of leaves (0,8-4,5-6 cm long, 0,5-3 cm wide).

Closely related to *P. curviflorus;* similarity between the two is evident especially along the Rift, perhaps as a result of secondary introgression (fide Polhill & Wiens, 1998: 90). In Ethiopia the boundary falls in central Sidamo.

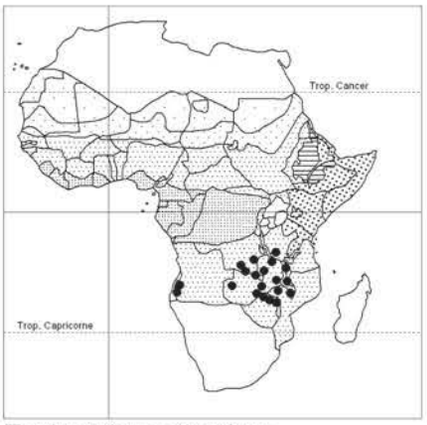
TAPINANTHUS

P. somalensis Wiens & Polh.

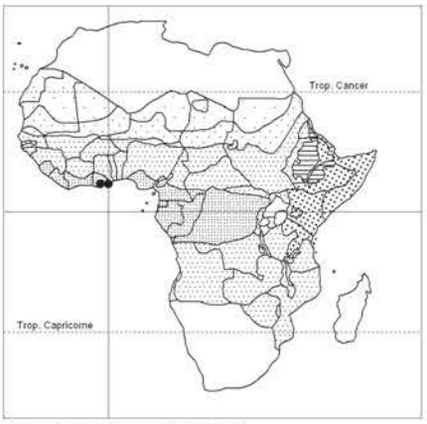
Stems short, slender, puberulous, arising from thin (2 mm Ø) appressed, frequently attached surface runners; leaves alternate to distally subopposite, subsessile, narrowly oblong, slightly glaucous, *covered* in very short *stiff spreading hairs;* umbels 1-flowered, axillary; corolla deep pinkish red or basal third white and upper part green, tube short slightly oblique, lobes distally recurved and looped; fruit unknown.



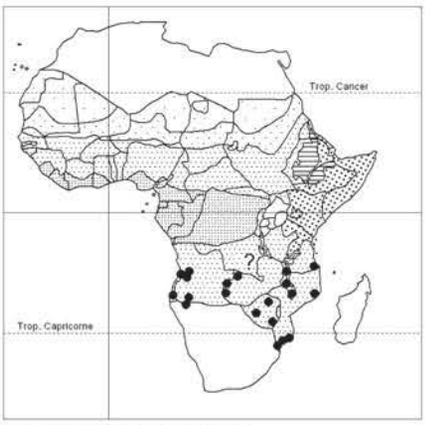
Tapinanthus erectotruncatus



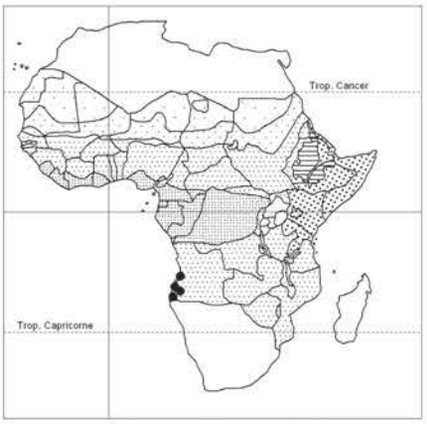
Tapinanthus erianthus



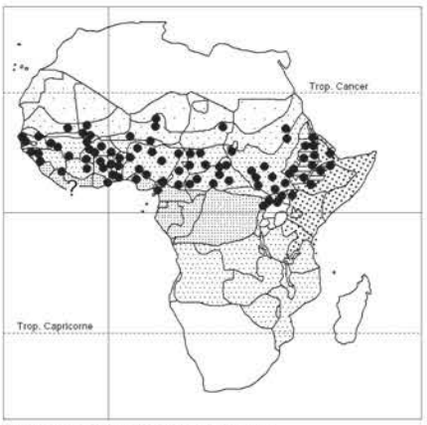
Tapinanthus farmari



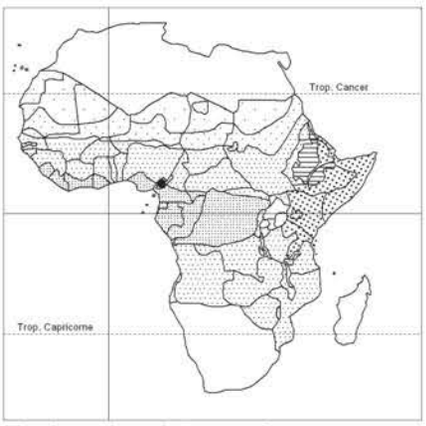
Tapinanthus forbesii



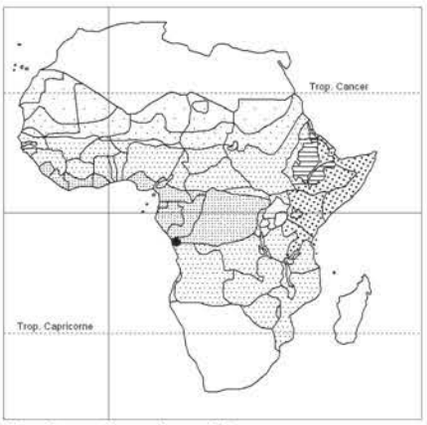
Tapinanthus glaucophyllus



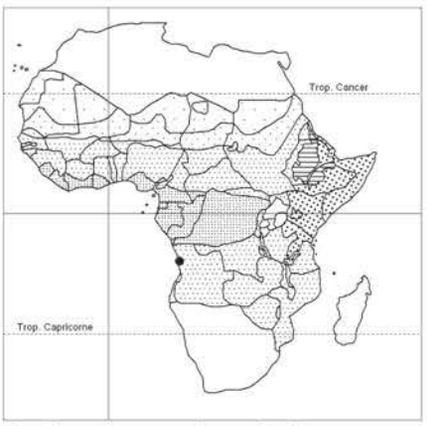
Tapinanthus globiferus



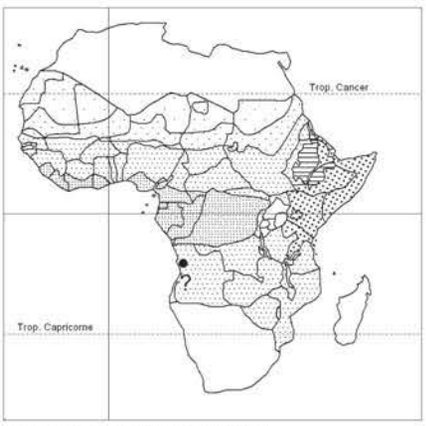
Tapinanthus letouzeyi



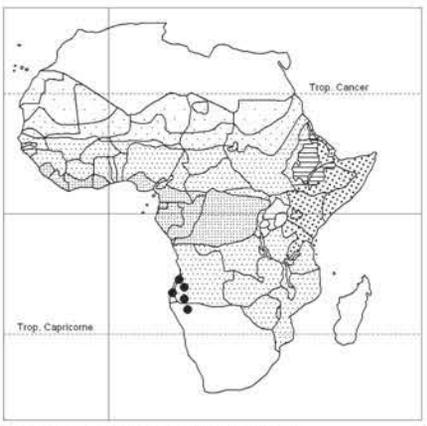
Tapinanthus longiflorus



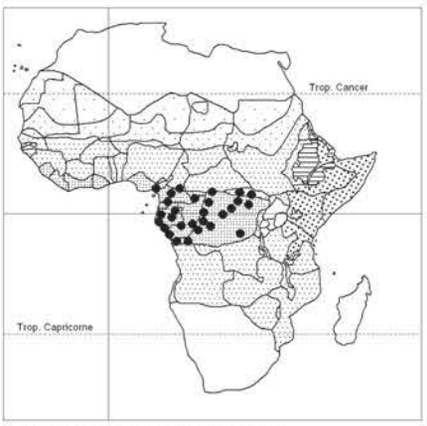
Tapinanthus malacophyllus



Tapinanthus mechowii



Tapinanthus mollissimus



Tapinanthus ogowensis

Deciduous bushland on rolling sandhills; on *Cordyla somalensis;* 220 m alt.

Only 2 collections known (Kuchar 17675, 17316).

Similar to *P. nummulariifolius* but with slender runners and minutely hairy leaves.

SYNONYMS:

Plicosepalus acaciaedetinentis (Dinter) Danser = **Plicosepalus kalachariensis**

curviflorus (Oliv.) Tiegh. var. *kalachariensis* (Schinz) Balle, nom. = **P. kalachariensis**

curviflorus sensu Balle 1969 = **P. kalachariensis**

faurotii (Franch.) Tiegh. = **P. curviflorus**

SPRAGUEANELLA / *2*

An E African genus.

Small shrubs with a single haustorial connection.

Corolla 5-merous with a short tube, straight or bent in bud, without a V-split, otherwise resembling *Oncocalyx.*

On a wide range of hosts.

Fruits not known (2 species).

Spragueanella curta Wiens & Polh.

Stems much branched; twigs subangular; leaves coriaceous, ± opposite; flowers with shortly tubercular calyx and straight or slightly bent bud; corolla-tube narrow, 3 mm long, corolla 1,2-1,3 cm long, dull red; filaments linear, uniform; fruit unknown.

Upland evergreen forest; on *Drypetes, Podocarpus,* introduced *Acacia;* 1800-1950 m alt. – Flowering in the rains.

Known from very few collections, only from W. Usambara Mts. (Tanzania).

S. rhamnifolia (Engl.) Balle – Icon.: Polhill & Wiens (1998): 112, 113 (colour photo.); Fl. Trop. E. Afr., Loranth.: 22, 1999; Fl. Zambes. 9/3: 131, 2006.

syn.: Enum. 2: 172, 1992; and ? *Loranthus rhamnifolius* Engl. fa. *grandifolius* Engl., nom.; *Oncocalyx rhamnifolius* (Engl.) Tiegh., nom. invalid.

Robust shrub with well branched stems to 1 m; twigs subangular, soon densely lenticellate; leaves ± opposite, slightly yellow-green, thinly coriaceous; calyx saucer-shaped, 0,5-1 mm long; corolla-tube flask-shaped, bent in bud at right-angles above basal swelling, red at base, then greenish-yellow or white, shading to pink or red above; filaments filiform below, thickened and involute above; fruit unknown.

Coastal forest; inland along rivers, in dryer mist forest on hilltops; wooded grassland in higher rainfall areas; on various hosts (e. g. *Manilkara mochisia, Sideroxylon inerme);* 0-1500 m alt. – Flowering in the dry season.

Variable in flower colour: inland SC Africa populations usually yellow to orange with green, not red, base.

TAPINANTHUS / *29*

30 species in Africa, one extending to N Yemen.

With a single haustorial connection.

Leaves opposite. Flowers 5-merous, corolla-tube much longer than lobes, opening with a V-split; bud with apical swelling that darkens and often secretes nectar, a signal to birds to peck it and release a spray of pollen from relatively small anthers, the corolla-lobes usually reflexing. Bud-head often with wings and appendages.

Most species on a wide range of hosts. – Certain species epiparasitized by *Viscum (V. bagshawei, V. fischeri, V. loranthicola, V. rotundifolium; Viscaceae).*

A few taxa are insufficiently known: in 4 (+1?) species (= c. 14%) no fruit seen; 1 species (*T. longiflorus*) is known only from the type.

Tapinanthus apodanthus (Sprague) Danser – Icon.: Polhill & Wiens (1998): 201 (colour photo.).

Glabrous shrub with stems to > 1 m long from a massive vice-like haustorium; leaves coriaceous, ovate-oblong to subcircular; calyx cupular; bud-head ± angular, corolla robust, red, lobes very short, reflexed; fruit red.

Forest, often riverine; riverine forest with *Uapaca*; on various hosts (e. g. *Pittosporum, Zyzygium guineense);* 1-1400 m alt.

Similar to *T. globiferus, T. bangwensis,* but more robust.

T. bangwensis (Engl. & K. Krause) Danser; Boussim & al., Loranthaceae Burkina Faso, in Ann. Bot. Afrique Ouest 2: 57, 2002. – Icon.: Polhill & Wiens (1998): 184; Akoegninou & al., Fl. analyt. Bénin: 761, 2006; Heide-Jørgensen, Parasit. flow. pl.: 71, 2008.

syn.: Enum. 2: 172, 1992; ? *Tapinanthus thonningii* (Schumach. & Thonn.) Danser (correction for *T. thonningii* Danser); and *excl. Loranthus winkleri* Engl. *(= T. globiferus).*

Glabrous woody shrub with spreading and drooping stems to 2 m, from a large haustorium; leaves coriaceous, ± elliptic; calyx saucer-shaped; corolla-tube pink-dull red; bud-head dark, only slightly angled and ribbed; fruit with persistent calyx.

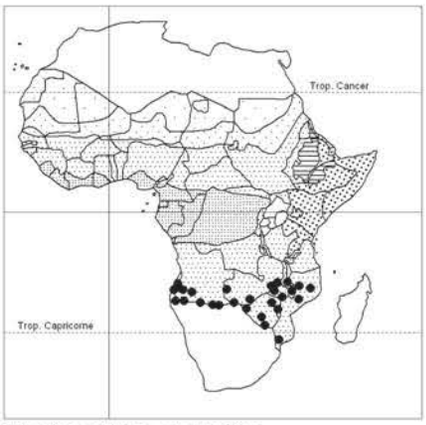
Forests, extending into coastal and riverine associations; also plantations and parks in towns, becoming a pest in places; on various hosts incl. crop trees (e. g. *Irvingia, Erythroxylum coca, Acacia, Citrus, Annona, Ceiba pentandra, Bombax costatum, Persea, Theobroma, Coffea, Cola, Psidium guajava);* to 1000 m alt. (Cameroon).

Bioko / Fernando Poo.

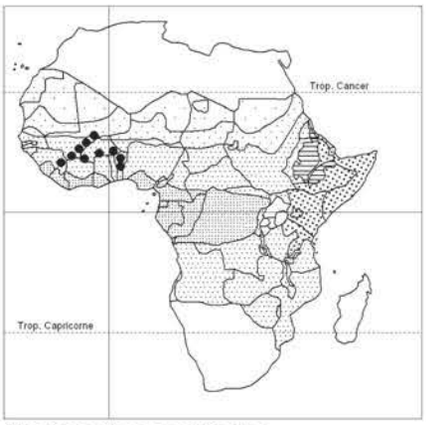
Closely related to *T. globiferus,* but bud-heads dark (not white or greenish), only slightly ribbed (not ribbed–narrowly winged), and leaves broad, green (not narrow-broad, glaucous-green).

T. belvisii (DC.) Danser – Icon.: Polhill & Wiens (1998): 204 (colour photo.); Palisot de Beauvois, Fl. Oware & Benin: t. 64, 1808 (sub nom. *Loranthus lanceolatus).*

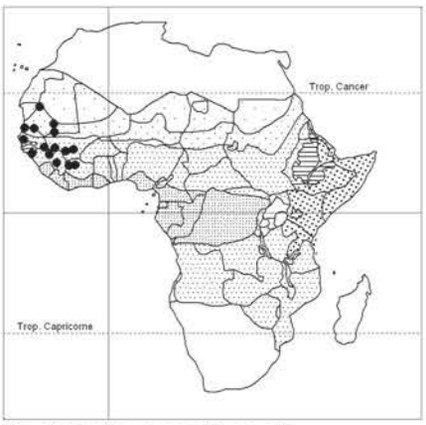
Stems 0,4-1 m long from a small haustorium; branchlets velutinous; leaves coriaceous, glabrous, dull mid-green, ± red flushed, ovate, petiolate; corolla-tube puberulous red, greenish yellow-whitish above, with a dark-coloured band at top, apex of bud green, lobes reflexed.



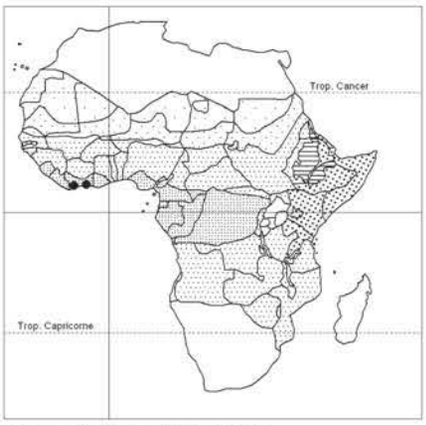
Tapinanthus oleifolius



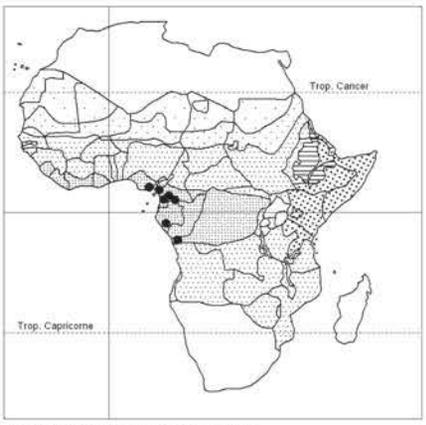
Tapinanthus ophiodes



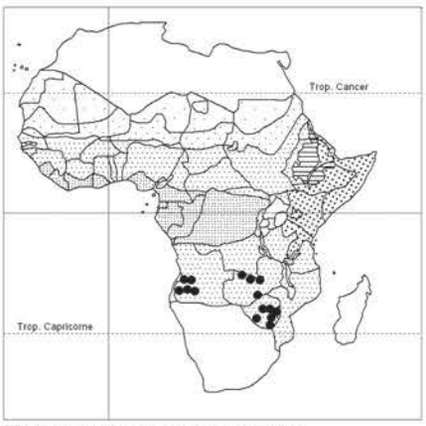
Tapinanthus pentagonia



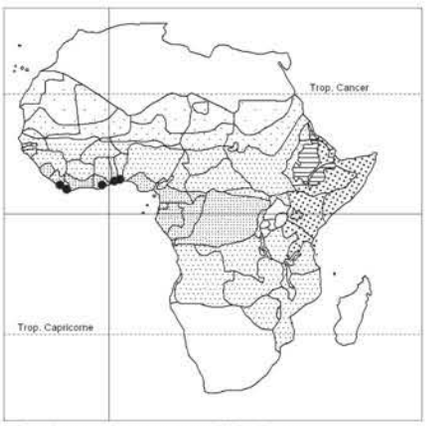
Tapinanthus praetexta



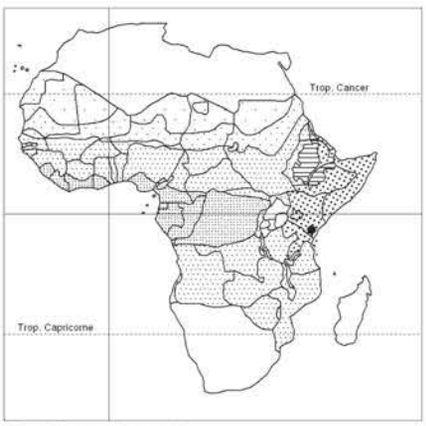
Tapinanthus preussii



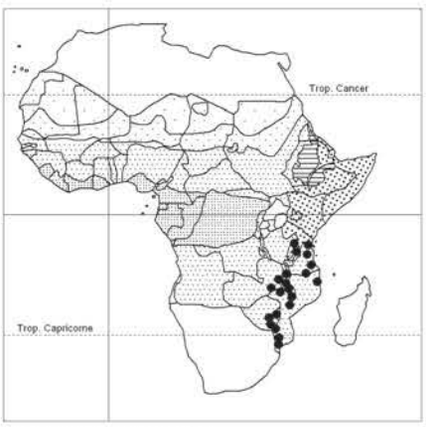
Tapinanthus quequensis



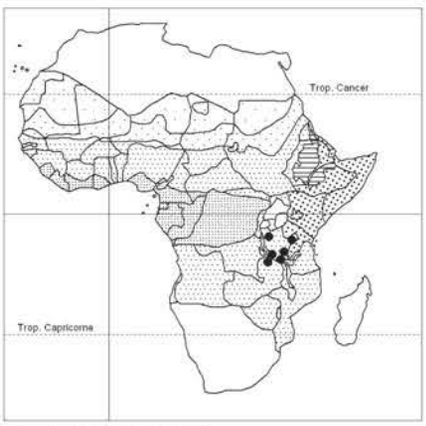
Tapinanthus sessilifolius



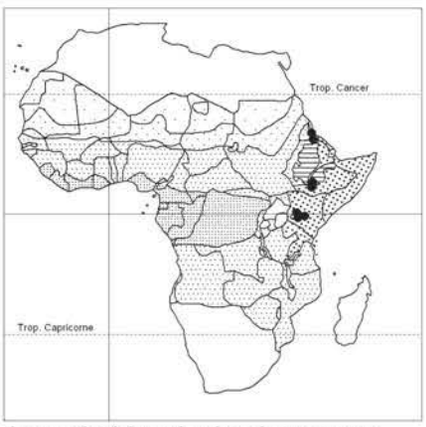
Taxillus wiensii



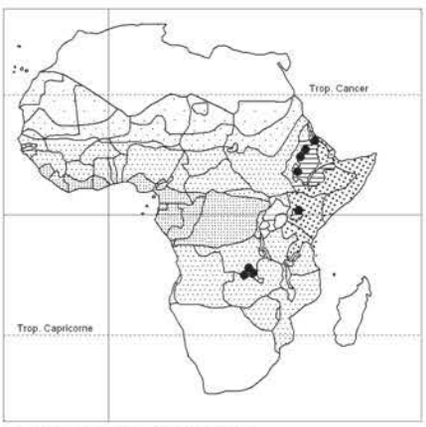
Vanwykia remota



Vanwykia rubella



Arceuthobium juniperi-procerae



Korthalsella japonica

Coastal bushland, forest edges; along rivers inland; on various hosts, also cultivated trees (e. g. *Ficus, Psidium, Citrus, Carica papaya, Prunus).*

Record from Sierre Leone ancient.

Resembling *T. farmari* (cf. below).

T. buchneri (Engl.) Danser

Shrub to 2 m; twigs minutely velvety-puberulous; leaves coriaceous, green to glaucous, ovate (3-25 cm long, 1,5-18 cm wide), glabrous, petiolate; corolla-tube variable in length (3-5 cm), (orange-)red, speckled white-yellow, puberulous; lobes reflexed; appendages of bud-heads confluent into a lobed rim around depressed apex.

Coastal and riverine formations (middle reaches of Congo Riv.); mangrove swamps; on various hosts (e. g. *Rhizophora);* 5-10 m alt. (Gabon).

T. buntingii (Sprague) Danser

Robust glabrous shrub from a massive haustorium; leaves occasionally ternate, petiolate, coriaceous, dark green, flushed red when young, elliptic to subcircular; umbels crowded at older nodes; corolla tube long, (brownish-)green with orange-red band at top, lobes erect, rose-pink.

Forest along the coast; also plantations (becoming a pest); on various hosts, incl. crop trees (e. g. *Mimusops, Cassia sieberiana).*

T. buvumae (Rendle) Danser – Icon.: Polhill & Wiens (1998): 192 (colour photo.).

syn.: Enum. 2: 173, 1992; and *Loranthus conradsii* Sprague, nom.

Shrub with stems to 1,5 m long; branchlets velutinous, gradually glabrescent; leaves petiolate, blade cuneate to rounded at base (6-14 × 1,5-8 cm), glabrous; corolla-tube puberulous, dull pink-reddish purple, with whitish(-greenish) spots on upper half; lobes reflexed; bud-heads grey-green with darker angles or winged.

Wooded grassland; secondary forests, marshes, lava flows (E Zaire); plantations; on various hosts, commonly *Combretum* or *Grewia,* also *Turraea robusta, Erythrina, Ficus, Coffea, Asteraceae;* 900-1900 m alt.

T. constrictiflorus, a forest species, occurs in the same area, but with glabrous corolla and acuminate leaves.

T. constrictiflorus (Engl.) Danser – Icon.: Polhill & Wiens (1998): 190 (colour photo.); Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 565, 2008.

syn.: Enum. 2: 173, 1992; and *Loranthus lamborayi* De Wild.; *Tapinanthus lamborayi* (De Wild.) Danser (not synonym of *T. globiferus).*

Glabrous shrub with slightly compressed twigs at first; leaves petiolate, coriaceous, green to slightly glaucous, lanceolate-ovate, acuminate; corolla-tube pink to crimson; lobes reflexed; bud-heads green-blue green, angled to ribbed.

Evergreen forest, *Erica* forest; plantations; on various hosts (e. g. *Trichilia volkensii, Erica, Ficus, Citrus);* 2-2300 m alt.

Variable species, especially with respect to shape of the flower buds (with or without bosses on head). Extreme forms on N & E sides of Lake Victoria, resemble *T. buvumae* with acuminate leaves.

T. cordifolius Polh. & Wiens

syn.: *T. sessilifolius* sensu Balle in Fl. W. Trop. Afr., Ed. 2, 1(2): 663, 1958, p.p. (specim. ex Nigeria), non (P. Beauv.) Tiegh.

Shrub well branched, glabrous, with spreading branches; leaves sessile, coriaceous, glaucous, ± lanceolate-ovate, cordate; corolla-tube pink, lobes reflexed; bud-heads darkening, angular to ribbed.

Wooded grassland, common on the Bauchi Plateau (Nigeria); on various hosts; 850-1250 m alt.

Close to *T. globiferus* but leaves sessile, cordate. Also resembling *T. sessilifolius* in it leaves. The pink corolla and bud-head without a crown of points.

T. coronatus (Tiegh.) Danser – Icon.: Polhill & Wiens (1998): 199.

Robust shrub with minutely velutinous branchlets, glabrescent; leaves sessile, thinly coriaceous, glabrous, broadly cordiform, amplexicaul at base; corolla tube long (4,5-4,8 – ? 7 cm), reddish purple to brown, densely spotted whitish, minutely velutinous, lobes reflexed; bud-heads crowned by a crateriform rim of appendages; fruit unknown?

Forest; host?

Similar to *T. buchneri* (further south), but different by the sessile large leaves.

T. dependens (Engl.) Danser – Icon.: Polhill & Wiens (1998): 184, 192 (colour photo); Fl. Zambes. 9/3: 165, 2006; Heide-Jørgensen, Parasit. flow. pl.: 71, 2008.

Shrub with spreading-pendent stems 1-3 m long, glabrous, iron-grey, densely lenticellate; leaves petiolate, coriaceous, dull green, lanceolate, sometimes glandular-hairy at first; corolla-tube pink to crimson, often spotted white, lobes green, reflexed; bud-heads greenish white, then darkening.

Variable in habit (some with long pendent stems), shape of leaves (especially when on *Brachystegia),* colour of flowers.

Brachystegia and mixed woodland; nearly always on *Brachystegia, Julbernardia;* a local form in S part of Tanzania on *Lannea schimperi,* adapted to fire (with many shoots arising from the swollen branches of the host, and all ascend); rarely on other hosts (e. g. *Citrus,* Angola); near coast-1800 m alt.

Plants growing on *Uapaca:* confusion possible with *T. forbesii,* a closely related species with shorter calyx (1-1,5 mm long, not 2-4 mm).

T. erectotruncatus Balle ex Polh. & Wiens

syn.: *Loranthus kisantuensis* De Wild. & T. Dur. var. *erectilobi* Balle; *L. ogowensis* sensu Balle in Fl. Congo Belge 1: 336, 1948, pro min. parte, non Engl.

Large glabrous shrub with robust stems; leaves thinly coriaceous, somewhat glaucous; umbels many, crowded at older nodes; corolla tube 3,5-4 cm long, dull greyish white turning pink, lobes erect; bud-heads pale turning brown-blackish, with 5 appendages; fruit verruculose.

Wooded grassland, riverine and marsh-side formations (along W. Rift Valley); on *Ficus,* etc.

Probably also in N Angola (eventual confusion with *T. ogowensis;* a specimen from Lunda, Dondo, Gossweiler 13679).

Close to *T. ogowensis* (formerly included in it), which has longer corolla tube (4,5-5,2 cm), larger bud-head appendages and green leaves.

T. erianthus (Sprague) Danser – Icon.: Polhill & Wiens (1998): 184; Fl. Zambes. 9/3: 165, 2006.

Shrub with spreading stems to c. 1 m; twigs velvety puberulent, sometimes with longer spreading hairs; leaves ± sessile, coriaceous, grey-green to glaucous, ovate; corolla-tube dull to dark red, lobes green, spreading; bud-heads darkening, velvety puberulous-pilose, slightly angular; fruit pubescent.

Upland and riverine forest, forest edges, extending into *Brachystegia* woodland; also plantations, gardens (common in gardens of Elisabethville, Haut-Katanga, Zaire); on various hosts (e. g. *Rhus, Cassine aethiopica, Duranta repens, Eucalyptus, Citrus);* 900-2200 m alt.

Similar to *T. quequensis;* ranges overlap in W Zambia where field comparisons would be needed for separation.

T. farmari (Sprague) Danser – Icon.: Polhill & Wiens (1998): 186, 205 (colour photo.).

Bushy shrub with spreading stems to c. 1 m; branchlets glabrous to velutinous; leaves petiolate, coriaceous, green, lanceolate-ovate; corolla-tube bright red, paler and greenish above, whitish inside; bud-heads green, darkening greyish, depressed at apex, with a crown of 5 spreading points < 1 mm long, lobes reflexed.

Coastal bushland, wooded grassland; disturbed places, also in cultivations as a pest; on various hosts (e. g. *Dalbergia ecastophyllum,* cacao commonly).

Similar to *T. belvisii,* but with smaller flowers, very small points on bud-heads and longer leaf petiole (5-15 mm, not 3-7 mm). *T. belvisii* occurs in more humid areas, to the West.

T. forbesii (Sprague) Wiens – Icon.: Polhill & Wiens (1998): 185, 194 (colour photo.).

bas.: *Loranthus oleifolius* (J. C. Wendl.) Cham. & Schltdl. var. *forbesii* Sprague

Shrub with spreading stems to 1-1,5 m, generally glabrous; lateral branches short; leaves coriaceous, green-slightly glaucous, ovate-elliptic; corolla-tube dull red, sometimes with white spots, lobes reflexed; bud-heads green turning greyish black; calyx short.

Deciduous coastal bushland, thicket, dry mixed woodland; lowveld; on a wide range of hosts (e. g. commonly *Acacia, Combretum, Sterculia;* a form on *Uapaca* occurs in a belt Malawi-SE Zaire-SE Tanzania); up to 1750 m alt.

Close to *T. dependens* but with shorter calyx (1,5 mm, not 2-4 mm) and red (not pink) flowers.

Can be confused with *T. oleifolius* but different by lack of indumentum. Ranges overlap, but they rarely grow together.

NE-most S. Africa.

T. glaucophyllus (Engl.) Danser

syn.: *Loranthus buchneri* sensu Engler in Bot. Jahrb. Syst. 20: 114, 1894, p.p. quoad Welwitsch 4854, non Engl. s. str.; *L. sessilifolius* sensu Hiern, Catal. Welwitsch 1/4: 932, 1900, non P. Beauv.

Shrub with stems probably to 1 m long; twigs glabrous or minutely papillate; leaves sessile, ovate, thinly coriaceous, glaucous; corolla-tube purplish red with green head, velvety puberulous; bud-heads rounded, not crowned; lobes reflexed; fruit with persistent calyx, puberulous.

Coastal and plateau woodland and bushland, sandy thickets; on various hosts (e. g. *Petalidium glandulosum, Eugenia, Parinari).*

Very similar to *T. erianthus,* but glabrous (not velvety hairy).

T. globiferus (A. Rich.) Tiegh., incl. subsp. *bornuensis* (Sprague) Balle, but *excl.* subsp. *apodanthus* (Sprague) Balle *(= T. apodanthus),* subsp. *bangwensis* (Engl. & K. Krause) Balle *(= T. bangwensis)* and subsp. *letouzeyi* Balle *(= T. letouzeyi).* – Icon.: Polhill & Wiens (1998): 202; Boussim & al. Loranth. Burkina Faso: 64, 2002; Boussim & al. in Bois Forêts Trop. 238: 49, 1993; B. Dembélé & al., Pl. parasites cultures et essences forest. Au Sahel: Figs. 69-70, 1994; S. Chaudhary, Loranthaceae, in Fl. Kingd. Saudi Arabia ill. 2/1: 261, 2001; Heide-Jørgensen, Parasit. flow. pl.: 48, 71, 2008.

syn.: Enum. 2: 173, 1992; and *Loranthus winkleri* Engl.; *Tapinanthus pentagonia* sensu auctt. (e. g. Balle & Hallé in Adansonia, N. S. 1: 245, 1961, p.p.), non (DC.) Tiegh.; but *excl. Loranthus lamborayi* De Wild., *Tapinanthus lamborayi* (De Wild.) Danser *(= T. constrictiflorus).*

Shrub to 2 m Ø, with spreading-pendulous stems, glabrous except for ciliolate bracts and calyx; leaves petiolate, coriaceous, green to glaucous; corolla-tube shining (pink to red), rarely white apart from filament-lines, lobes reflexed; bud-heads angled, ribbed-narrowly winged. Corolla often parasitized in Ethiopia causing malformed growth.

Wooded grassland; "brousse tigrée"; fringing forest; bush savanna, in dry country; bare rocky mountain slope with *Boswellia papyrifera, Terminalia brownii, Lannea fulva, Euphorbia magnicapsula, Xerophyta simulans,* etc.; montane and submontane forests and thicket, forest near stream; forest gallery; on a wide range of hosts, incl. cultivated trees and shrubs [e. g. *Lannea fulva, Butyrospermum (Vitellaria) paradoxum* to 95% in Burkina Faso, *Rhus, Acacia etbaica, A. senegal, A. asak, Vernonia, Annona, Bridelia, Persea, Theobroma, Coffea, Citrus,* kola, guavas, etc.); 540-3000 m alt.

Variable in shape and colour (glaucous or not) of leaves, shape of flower bud heads, colour of flowers (see Polhill & Wiens, 1998: 202); "typical" features of the species break down in S, SE and E parts of the range. The variation seems clinal between wet and dry areas.

Yemen, Saudi Arabia.

IBRAHIMA, A. & al. (2006). Vascular epiphytes and parasitic plants on Vitellaria paradoxa Gaertn. (Sapotaceae) in the Sudano-Guinean savannas of Ngaoundere, Cameroon. *Selbyana* 27: 72-78.

LAMIEN, N. & al. (2005). Mistletoe impact on Shea tree (Vitellaria paradoxa C. F. Gaertn.) flowering and fruiting behaviour in savanna area from Burkina Faso. *Environm. & Experim. Bot.* 55: 142-148.

T. letouzeyi (Balle) Polh. & Wiens

Glabrous shrub with stems c. 1 m long; leaves petiolate, thinly coriaceous, green, paler beneath, flushed red-violet when young, ± reddish on nerves beneath; corolla-tube red, calyx tubular, lobes reflexed; fruit unknown. – A striking species.

Edges of montane forest and associated bushland, wooded grassland with *Terminalia glaucescens;* on various hosts (e. g. *Entada abyssinica, Combretum molle,* often *Gnidia glauca);* 1300-2500 m alt.

Known only from Bamenda Highlands (Cameroon). Red Data listed.

T. longiflorus Polh. & Wiens

Glabrous shrub; leaves coriaceous, green; corolla-tube orange or ? dark red spotted dull yellow, lobes reflexed; bud-heads darkening, angled, truncate, crowned by 5 triangular points arising from back of lobes; fruit unknown.

Wooded grassland; on *Hymenocardia acida.*

Similar to *T. constrictiflorus* but corolla-tube longer (c. 4,5 cm, not 2,5-4 cm) and with crown of points on top.

Known only from the type (Angola: Cabinda; Monteiro & al. 236).

T. malacophyllus (Engl. & K. Krause) Danser

syn.: Enum. 2: 173, 1992; and *Loranthus mechowii* sensu auctt. (e. g. Engler in Bot. Jahrb. Syst. 20: 118, 1894, p.p.; Hiern in Cat. Welwitsch 1/4: 934, 1900), non Engl.

Shrub with spreading stems to c. 1 m long; twigs soon thickened, velvety puberulous; leaves sessile, somewhat coriaceous, pale green to glaucous, elliptic-ovate; umbels mostly crowded at older nodes; corolla-tube carmine red, velvety puberulous, lobes reflexed; calyx short (c. 1 mm), persistent. – Conspicuously flowering in the dry season.

In rather elevated hilly places; on *Adansonia digitata* (only in NW Angola: Luanda region).

Similar to *T. mechowii,* but with puberulous leaves (both surfaces) and shorter calyx.

T. mechowii (Engl.) Tiegh.

syn.: Enum. 2: 173, 1992; and *Loranthus belvisii* sensu Hiern, Cat. Welwitsch 1/4: 934, 1900), non DC.

Shrublet with stems to c. 1 m long; twigs velvety tomentose to subglabrous; leaves sessile, thinly coriaceous, somewhat glaucous, ovate-oblong; umbels mostly crowded at older nodes; corolla-tube (purplish) red, puberulous, lobes reflexed; calyx cupular, flared, 1,5-2 mm (cf. *T. malacophyllus);* fruit unknown.

Woodland, forest margins in elevated situations; mainly on *Ficus;* perhaps *Brachystegia?*

Similar to *T. malacophyllus,* but leaves variously glabrous at least on veins beneath; and calyx longer.

T. mollissimus (Engl.) Danser

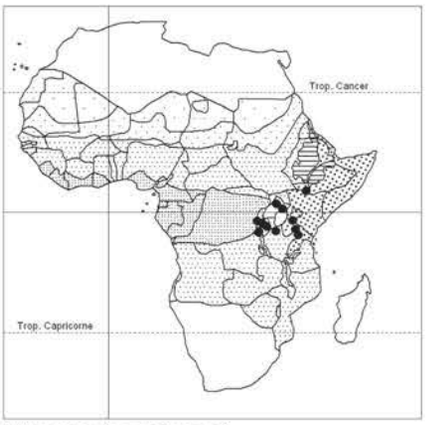
Shrub to c. 1,5 m, with short lateral branches; twigs persistently velvety-tomentose; leaves sessile, coriaceous, densely hairy-felty on both surfaces; corolla-tube orange-yellow to red or rose-purple, finely puberulous-pilose, lobes reflexed; bud-heads slightly angular; fruit unknown.

Woodland, bushland; on various hosts (e.g. *Ficus, Sapotaceae).*

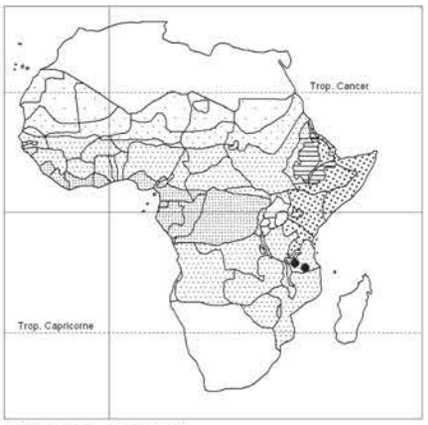
N Namibia.

T. ogowensis (Engl.) Danser incl. var. *batesii* (S. Moore & Sprague) Balle – Icon.: Polhill & Wiens (1998): 184, 188 (colour photo.); White & Abernethy, Guide véget. Rés. Lopé Gabon: p. 65 fig. f, 1996 (sub nom. *Phragmanthera* sp.); Balle in Fl. Congo Belge 1: 337, 1948.

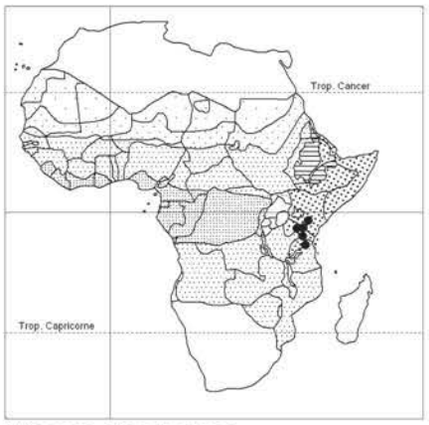
Glabrous shrub from a massive haustorium, with arching, pendent branches to 2 m long, often hollowed by ants; leaves well spaced, petiolate, reddish violet when young, later dark green, slightly coriaceous; umbels many, crowded at older nodes; corolla-tube long (4,5-5,2 cm), (greenish) white, becoming pink-flushed on lower part, with green head in bud, inside red, lobes erect; bud-heads crowned by 5 erect points. Spectacular plant.



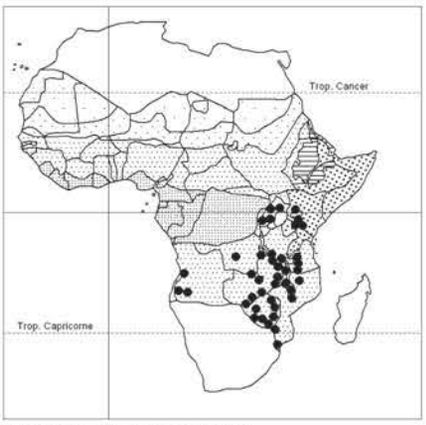
Viscum bagshawei



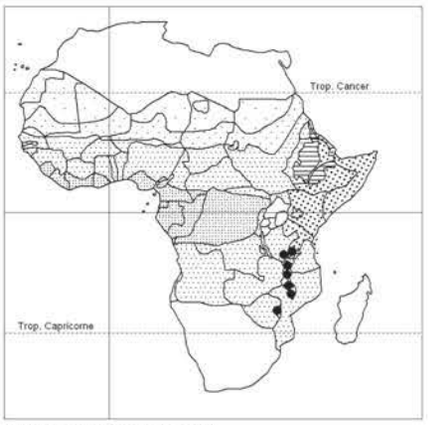
Viscum calvinii



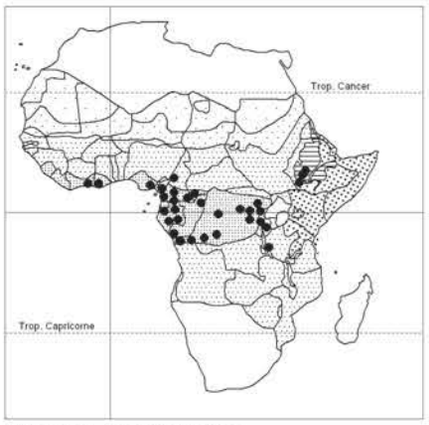
Viscum chyuluense



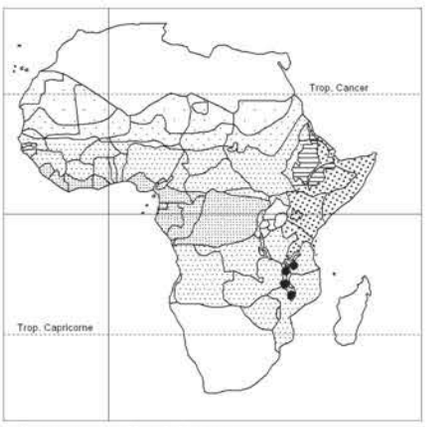
Viscum combreticola



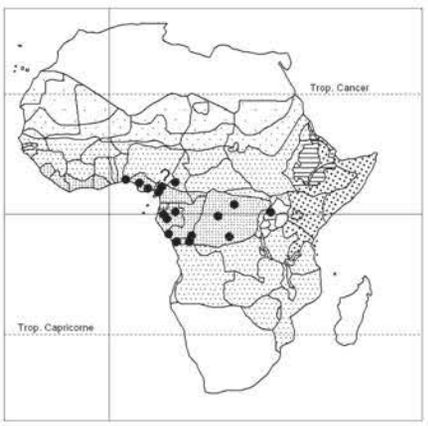
Viscum congdonii



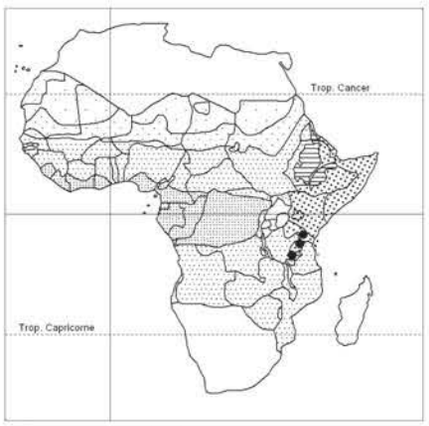
Viscum congolense



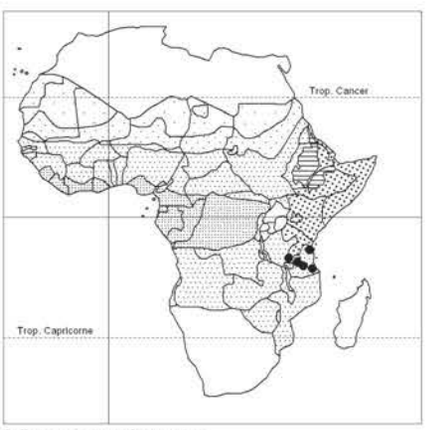
Viscum cylindricum



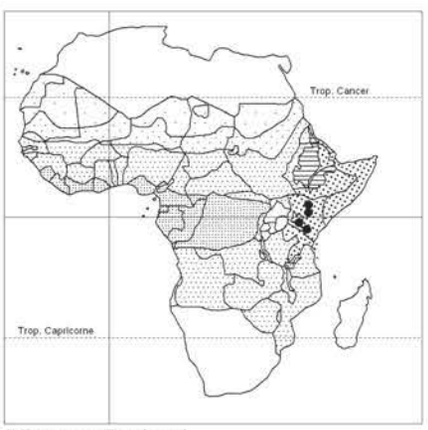
Viscum decurrens



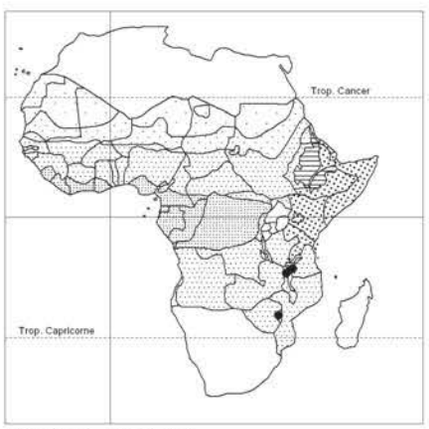
Viscum engleri



Viscum exiguum



Viscum fischeri



Viscum goetzei

Forest; secondary mixed terra firma and *Gilbertiodendron dewevrei* and riparian forests, forest gallery, regrowth, also crop plantations; on various hosts, incl. crops (e. g. *Pentaclethra, Tetrapleura, Oubanguia, Triumfetta, Allophylus, Albizia* spp., *Alchornea cordata, Pseudospondias microcarpa, Celtis gomphophylla, Ficus; Hevea, Musa, Citrus* spp., *Coffea, Theobroma, Persea, Cinnamomum,* guava); 10-500 m alt.

Somewhat variable: flowers minutely papillate in W part of range, elsewhere glabrous.

Also in N Angola (Lunda: Dondo) ?; (cf. under *T. erectotruncatus).*

Differs from *T. erectotruncatus* by longer flower tube (4,5-5,2 cm, not 3,5-4 cm), and leaves green (not ± glaucous).

T. oleifolius (J.C. Wendl.) Danser – Icon.: Polhill & Wiens (1998): 185 (details), 193 (colour photo.); V. Roodt, Shell field guide ser. 2, Common wild fl. Okavango Delta: 108, 1998; Heide-Jørgensen, Parasit. flow. pl.: 402, 2008.

syn.: Enum. 2: 174, 1992; and *Loranthus meyeri* C. Presl, nom. nud.; *L. meyeri* var. *inachabensis* Engl., nom. invalid.; *L. oleifolius* (J. C. Wendl.) Cham. & Schltdl. var. *luteus* Neusser

Shrub to c. 1,5 m tall with spreading puberulous stems, glabrescent, grey to brownish, densely but inconspicuously lenticellate; leaves petiolate, coriaceous, dull green to glaucous, lanceolate-ovate, generally glabrous; corolla-tube red with white spots, and with large basal swelling, head of buds (yellow- or greenish-) white, puberulent, lobes reflexed; bud-heads somewhat angular or ribbed.

Sandy places by river, river banks (Angola); dry mixed woodland, wooded grassland; widespread in drier areas; on a wide range of hosts (e. g. commonly *Acacia* and *Combretum*, also *Aloe, Diospyros, Maytenus, Melianthus, Parkinsonia, Rhus, Terminalia, Ziziphus, Citrus);* 70-1950 m alt. (S. Africa).

Namibia, Caprivi Strip, Botswana, S. Africa.

T. ophiodes (Sprague) Danser; Lamien & al. (2005) in Environm. & Experim. Bot. 55: 142-148 (see under *T. globiferus).* – Icon.: Boussim & al., Tapinanthus au Burkina Faso, in Bois Forêts Trop. 238: 49, 1993 (colour photos.); Boussim & al., Loranth. du Burkina Faso et leurs hôtes, in Ann. Bot. Afrique Ouest 2: 64, 2002; Dembélé & al., Pl. parasites cultures & essences forest. Sahel: Figs. 66-67, 1994 (colour photos.).

Rounded shrub with stems to c. 1 m long, glabrous or with minute puberulence on youngest parts; leaves pedicellate, thinly coriaceous, pale green, slightly glaucous, ovate-elliptic, acuminate; umbels in axils and clustered at older nodes; corolla-tube short (2-2,4 cm), purple-black or dark-red, upper part often cream to orange, lobes reflexed; fruit ovoid-globose, 7-11 mm long, 6-17 mm Ø, with persistent calyx (not seen by Polhill & Wiens, 1998: 203).

Wooded grassland, in the tree crowns (shade plant), often in humid places; on a wide range of hosts, but commonly on *Butyrospermum paradoxum*, also *Balanites aegyptiaca, Ceiba pentandra, Cordia, Casuarina, Bauhinia rufescens, Cassia siamea, C. sieberiana, Detarium senegalensis, Combretum* spp., *Guiera senegalensis, Terminalia* spp., *Jatropha curcas, Azadiracta indica, Eucalyptus, Psidium guajava, Ziziphus, Parinari, Gardenia* spp., *Nauclea latifolia, Citrus, Vitellaria paradoxa;* also on other *Loranthaceae* (e. g. *Englerina lecardii, Tapinanthus globiferus).*

T. pentagonia (DC.) Tiegh., incl. var. *senegalensis* (De Wild.) Balle, nom. non rite publ., and var. *guineensis* Balle, nom. invalid. – Icon.: Dembélé & al., Pl. parasites cultures et essences forest. au Sahel: Fig. 68, 1994 (photo.).

Glabrous shrub with spreading stems to c. 1 m long; leaves occasionally ternate, petiolate, coriaceous, glaucous; corolla-tube short (2,5-3 cm), dull red, whitish above, lobes reflexed; bud-heads winged.

Wooded grassland; on various hosts, commonly *Acacia* and *Combretum,* also *Butyrospermum paradoxum* in places; crop, shade and ornamental trees; from near sea-level – ?

Variable in shape and size of leaves.

The name *T. pentagonia* has been applied to several taxa with less marked wings on corolla bud-heads. (e. g. *T. globiferus* with which confusions have been made).

T. praetexta Polh. & Wiens – Icon.: Polhill & Wiens (1998): 186; Balle & Hallé, in Adansonia, N. S. 1: 246, 1962.

syn.: *T. sessilifolius* (P. Beauv.) Tiegh. var. *glaber* Balle in Balle & Hallé, o.c., nom. non rite publ. (type not indicated).

Elegant shrub with slender stems 30-70 cm long, glabrous except for *glandular ciliolae around edges of leaves, on bracts and calyx;* leaves ± sessile, thinly coriaceous, dark green; corolla-tube short (2-2,4 cm) yellow-green at base, mostly pink, lobes reflexed; bud-heads purple-brown, slightly ribbed.

Forest; host? (only know from the Banco and Adiopodoumé Forests, SE Ivory Coast).

Similar to *T. sessilifolius,* but with glandular ciliolae.

T. preussii (Engl.) Tiegh. – Icon.: Polhill & Wiens (1998): 189 (colour photo.).

Glabrous robust shrub; leaves coriaceous, ovate-broadly elliptic; corolla-tube long (5,5-6,2 cm), greyish-reddish, lobes reflexed or not; bud-heads green, conspicuously winged.

Lowland forest ("Buschwald"), edge of primary forest along river; on *Ficus asperifolia* and other low trees; 5-10 m alt. (Gabon).

Resembling *T. buntingii* in habit, but corolla bud-heads smaller, winged, and lobes variably reflexing.

T. quequensis (Weim.) Polh. & Wiens – Icon.: Polhill & Wiens (1998): 185 (details), 195 (colour photo.); Heide-Jørgensen, Parasit. flow. pl.: 402, 2008.

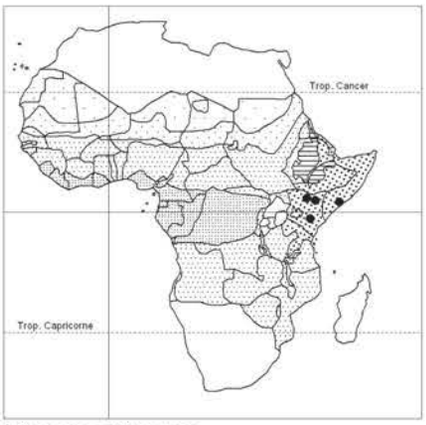
Shrub with spreading stems 0,2-1,5 m long; twigs puberulent, sometimes with longer hairs on youngest parts; leaves sometimes clustered at older nodes, ± sessile, coriaceous, glabrous, dull green-glaucous; corolla-tube dull red to purple, base (large swelling) and lobes light green, pilose to villous with spreading hairs, lobes reflexed.

Mixed woodland, bushland, along rivers; on various hosts, commonly *Acacia, Dichrostachys, Combretum,* but also *Euclea, Ochna, Rhus, Peltophorum;* 365-1525 m alt. (S. Africa).

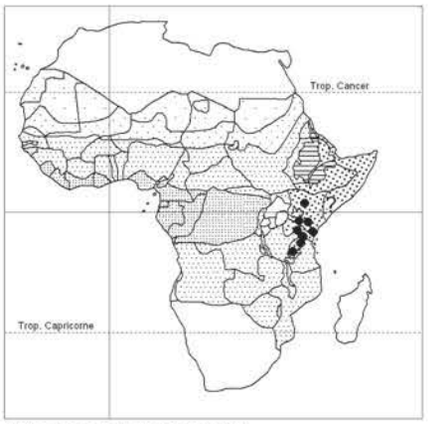
Variable in type of indumentum, hairiness and colour of corolla; variation seems ± clinal. In W Zambia/Shaba (Zaire) distinction nearly impossible between *T. quequensis* and *T. erianthus.*

NE S. Africa.

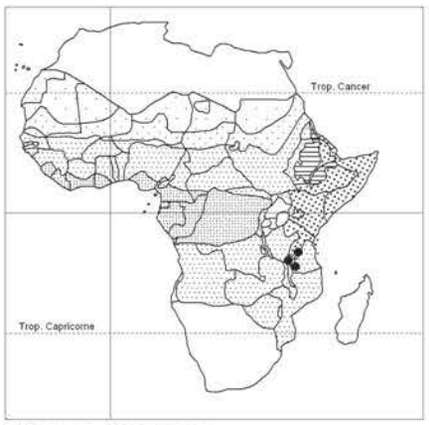
Similar to *T. oleifolius* but differs by longer hairs on corolla, darker corolla-tube; and also grows at higher altitudes. Also resembling *T. erianthus* (cf. above).



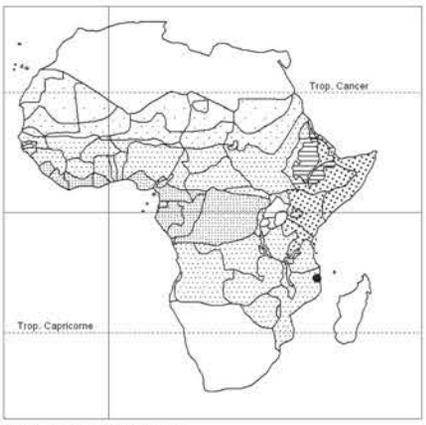
Viscum griseum



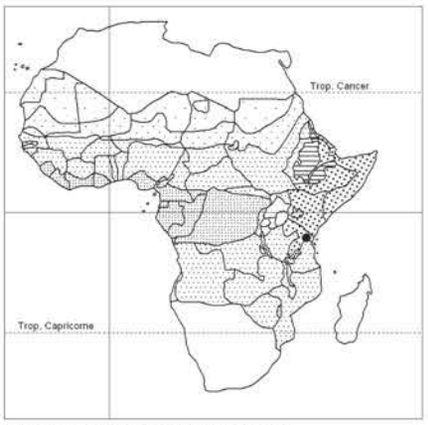
Viscum hildebrandtii



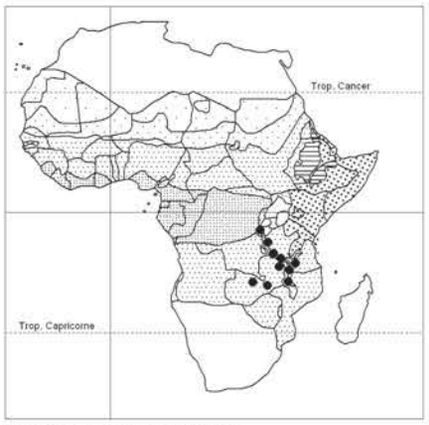
Viscum iringense



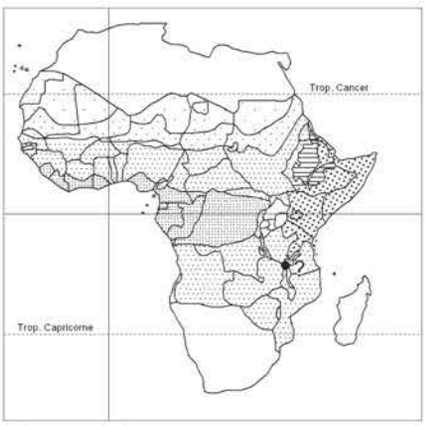
Viscum littorum



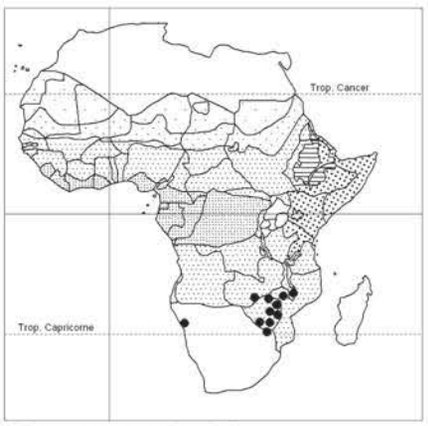
Viscum longiarticulatum



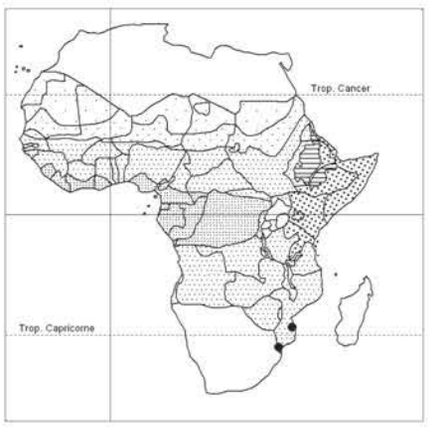
Viscum loranthicola



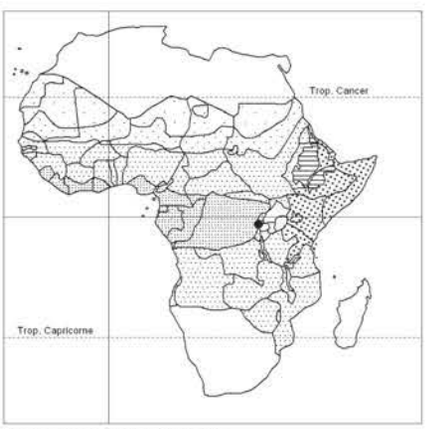
Viscum luisengense



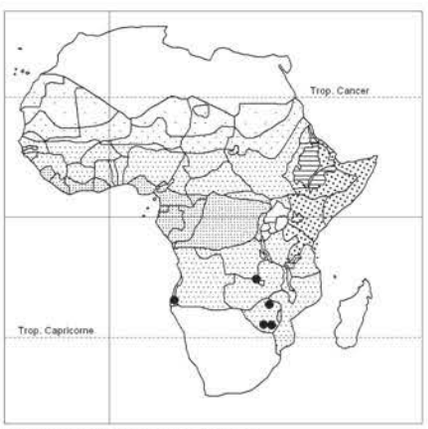
Viscum menyharthii



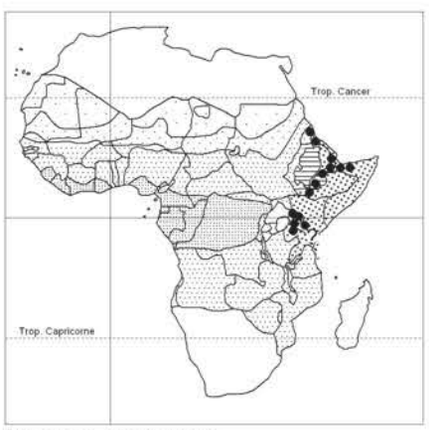
Viscum obovatum



Viscum petiolatum



Viscum rotundifolium



Viscum schimperi

T. sessilifolius (P. Beauv.) Tiegh., excl. var. *glaber* Balle *(= T. praetexta).* – Icon.: Palisot de Beauvois, Fl. Oware & Benin 2: pl. 63, 1808 (lectotype).

Shrub with spreading branches to c. 1 m long; branchlets glabrous to velutinous, leaves sessile, coriaceous, green-slightly glaucous, glabrous, ovate to lanceolate; corolla-tube red, usually with a dark band at top, lobes reflexed; bud-heads green, turning black, with a crown of 5 points.

Coastal bushland, wooded grassland, mangrove associations; locally common (Togo); on various hosts, incl. cultivated shrubs and trees (e. g. *Canarium, Pithecellobium dulce, Nerium oleander).*

The name *T. sessilifolius* has been used in a broad sense, and then includes other taxa (e. g. *T. praetexta, T. cordifolius).*

Disjunction Ivory Coast-Togo.

SYNONYMS (cf. Enum. 2: 181-184, 1992):

Tapinanthus crataevae (Sprague) Danser = **Agelanthus toroensis**

dodonaeifolius (DC.) Danser subsp. *glaucoviridis* Jones = **A. glaucoviridis**

elegantissimus (Schinz) Danser = **Oncocalyx welwitschii**

englerianus (K. Krause & Dinter) Danser = **O. welwitschii**

gracilis Tölken & Wiens = **Agelanthus gracilis**

hexasepalus (Tiegh.) Danser = **Phragmanthera capitata**

irangensis (Engl.) Danser var. *glaber* Balle, nom. = **Agelanthus validus**

kinetii Balle, nom. = **A. myrsinifolius**

lamborayi (De Wild.) Danser = **Tapinanthus constrictiflorus**

minor (Harv.) Danser = **Agelanthus natalitius** subsp. **zeyheri**

moorei (Sprague) Danser = **A. natalitius** subsp. **natalitius**

obovatus Danser 1934 = **A. oehleri**

pentagonia sensu auctt., non (DC.) Tiegh. = **Tapinanthus globiferus**

platyphyllus sensu auct., non (Hochst. ex A. Rich.) Danser = **Agelanthus uhehensis**

redingii (De Wild.) Danser = **Phragmanthera batangae**

regularis (Schweinf.) Danser = **Phragmanthera regularis**

sakarensis (Engl.) Danser = **Agelanthus tanganyikae**

sessilifolius sensu Balle, non (P. Beauv.) Tiegh. p.p. (Nigeria) = **Tapinanthus cordifolius**

sessilifolius (P. Beauv.) Tiegh. var. *glaber* Balle = **T. praetexta**

thonningii (Schumach. & Thonn.) Danser = **Tapinanthus** ? **bangwensis**

thorei (K. Krause) Danser = **Agelanthus sansibarensis** subsp. **montanus**

toroensis (Sprague) Danser = **A. toroensis**

xanthanthus Danser = **Phragmanthera capitata**

TAXILLUS / *1*

A tropical Asiatic genus of c. 35 species, one in Africa.

Taxillus wiensii Polh. – Icon.: Polhill & Wiens (1998): 219, 220 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 83, 1999.

Shrub with stems to c. 50 cm long "from an extensive untidy system of surface runners bearing numerous haustorial connections"; twigs terete, tomentellous with brownish dendritic hairs, soon glabrescent; leaves (sub-)opposite, ± sessile, coriaceous, 2-3,5 cm long, 1-2 cm wide; flowers 5-merous, 3 cm long with a V-split, dull purple, lobes green, erect white stellate-pubescent; fruit red, 7 mm long, 5 mm Ø.

Dry evergreen coastal forest; on *Cynometra webberi;* 100-150 m alt.

A species similar to taxa occurring in Sri Lanka; discovered only in 1972 and despite several visits to the type locality (Kenya: Arabuko-Sokoke Forest) it has never been found flowering more than sporadically. Pollination biology not known: either the flowers open sporadically or by birds manipulating the buds (fide Polhill & Wiens, o.c.).

VANWYKIA / *2*

2 species in SE-Africa. Closely related to *Taxillus.*

With stout haustoria bearing surface runners.

On a limited range of hosts.

Flowers 5-merous; anthers grouped in a column around the pistil; corolla (weakly or) non-explosive; the swollen bud may be squeezed by sunbirds or the lobes may separate spontaneously in a V-slit.

Vanwykia remota (Baker & Spague) Wiens – Icon.: Polhill & Wiens (1998): 221, 222 (colour photo.); and Fl. Trop. E. Afr., Loranth.: 84, 1999; Germishuizen & al., in Fl. Pl. Afr. 53: 2-5, pl. 2081, 1994; Fl. Zambes. 9/3: 173, 2006; Heide-Jørgensen, Parasit. flow. pl.: 73, 2008.

Shrub with stout stems to 1-1,5 m long, becoming pendent; bark greyish, peeling off in small strips; twigs white-tomentose; leaves (sub-)opposite or occasionally alternate or clustered on short shoots, elliptic-ovate to subcircular; corolla yellow-green, white-tomentose.

Deciduous woodland; coastal bushland; wooded grassland; riverine forest; often on *Ficus* but also other hosts, e.g. *Combretum,* legumes; 200-1400 m alt. (Tanzania). – East of the Rift.

NE S. Africa.

V. rubella Polh. & Wiens

syn.: *Loranthus remotus* sensu Brenan, Check-lists Forest Trees & Shrubs Brit. Empire 5, Tanganyika Terr. 2: 288, 1949, p.p., non Baker & Sprague

Stems forming clumps to c. 1 m; twigs red-brown-tomentellous; leaves (sub-)opposite, linear-lanceolate; corolla cream turning salmon-pink, with red-brown to purple hairs 2 mm long.

Deciduous woodland; on *Brachystegia* and other legumes; 1000-1800 m alt. (Tanzania). – West of the Rift.

VISCACEAE / *3* g. / *32* spp.

Formerly united with *Loranthaceae.* 47 species in Africa (out of c. 450 spp. worldwide). Now included in *Santalaceae* according to the APG (Angiosperm Phylogeny Group) system (1998, 2002).

Aerial hemiparasites of other dicotyledons, rarely monocotyledons or gymnosperms, monoecious or dioecious. Flowers minute, unisexual.

* * *

POLHILL, R. & D. WIENS (1998). *Mistletoes of Africa.* The Royal Botanic Gardens, Kew (p. 275-307).

The following compilation is based on this work.

* * *

A few species (all in *Viscum)* insufficiently known: no male flower in 2 species (= c. 6%; *V. calvinii, V. littorum)* and no female flower in 1 sp. (= c. 3%; *V. calvinii);* no ripe fruit in 4 species (= >12%). Two species (= c. 6%; *V. littorum, V. petiolatum)* are known only from the type.

ARCEUTHOBIUM / *1*

Primarily a north temperate genus of 42 species, but with some species in the Neotropics and two in Africa.

HAWKSWORTH, F. G. & D. WIENS (1996). *Dwarf mistletoes: biology, pathology, and systematics.* (USDA Agric. Handbook 709) Washington, D. C. XIV + 410 pp. (vide p. 177, 260-263, 376).

NICKRENT, D. L. & al. (2004). A phylogeny of all species of Arceuthobium (Viscaceae) using nuclear and chloroplast DNA sequences. *Amer. J. Bot.* 91: 125-138.

Arceuthobium juniperi-procerae Chiov. – Icon.: Polhill & Wiens (1998): 276; and Fl. Trop. E. Afr., Viscac.: 2, 1999; Hawksworth & Wiens (1996): 261, 262 (photos).

Dioecious shrublet 5-10(-14) cm tall with ±herbaceous yellow-green, ±glaucous or not, stems with opposite 4-angled branches; forming systematic infections along young stems of *Juniperus procera,* old stems dropping off as infection progresses along host stems which become swollen, distorted; leaves reduced to opposite scales.

Upland *dry* evergreen forest in dry areas; often common in places; only on *Juniperus;* 1950-3000 m alt. – Sometimes looking like witches' brooms on host branches.

Closely related to *A. oxycedri* (DC.) M. Bieb. of N. Africa, Mediterranean region of Europe, Middle East, Himalayas of India and China.

Perhaps often overlooked because of its resemblance to the host. Distribution poorly known. In Kenya not yet found in the Cherangani Hills and on Mt. Elgon. It might also occur in Tanzania and Uganda; perhaps also in Yemen.

KORTHALSELLA / *1*

Genus of c. 15 species widespread in the Old World, one in Africa. Poorly known and in need of further study.

Korthalsella japonica (Thunb.) Engl., incl. var. *gaudichaudii* (Tiegh.) Danser and var. *richardii* (Tiegh.) Danser (no valid combinations; in Bull. Jard. Bot. Buitenzorg, Sér. 3, 14: 138-141, 1937). – Icon.: Polhill & Wiens (1998): 278 (habit); and Fl. Trop. E. Afr., Viscac.: 4, 1999; Danser, o.c.: 137.

syn.: Enum. 2: 184, 1992; and *Viscum opuntia* Thunb., nom. superfl. pro *V. opuntioides* L. 1753; *Bifaria abyssinica* Tiegh.

Erect shrublet 5-15 cm tall, densely branched (collateral branches arising from the nodes), slightly woody at base, monoecious; lateral branches strongly flattened, dilated at nodes, glabrous; leafless.

Riverine forest?; in Africa only recorded on *Syzygium;* 1800-2200 m alt.

Very variable. The varieties recognized by Danser are distinguished by taller stems (10-15 cm) and wider internodes (3-5 mm) in Ethiopia and E Zaire (= var. *gaudichaudii,* or by shorter and narrower stems (< 10 cm long, < 2 mm wide) in C Kenya. In need of further study.

Madagascar, Indian Ocean Islands, Sri Lanka east to Japan-Australia; widespread. Danser (1937) recognized 5 vars. for the whole area.

Rarely collected (probably overlooked).

VISCUM / *30*

C. 100 species in the tropics of Africa-Madagascar-Asia, with extensions into north temperate zones (Europe, Asia), also into S. Africa and Australia. Most species in Africa (45), and Madagascar (further 30).

Stems green, glabrous, brittle, articulated, with opposite leaves; flowers unisexual. With simple haustorium.

Most African species (27) on a wide range of hosts, but many (11) with a very limited host range. – Certain species epiparasites on *Loranthaceae,* e.g. on *Englerina (Viscum goetzei, V. loranthicola),* on *Oncocalyx fischeri (V. chyuluense),* on *Phragmanthera (V. bagshawei, V. fischeri, V. loranthicola),* on *Tapinanthus (V. bagshawei, V. fischeri, V. loranthicola, V. rotundifolium). V. loranthicola* parasitizing *Loranthaceae* in general.

Viscum engleri is epiparasitized by *Agelanthus subulatus (Loranthaceae)* that causes great damage to the parasite-host.

* * *

BÜSSING, A., Ed. (2000). *Mistletoe: The genus Viscum.* (Medicinal and Aromatic Plants – Industrial Profiles 16) Harwood Academic Publishers, Amsterdam. XV+ 265 pp.

KIRKUP, D. W. (2000). Viscum in the context of its family, Viscaceae, and its diversity in Africa. *In:* BÜSSING, A., *o.c.:* 7-29.

Viscum bagshawei Rendle – Icon.: Polhill & Wiens (1998): 294 (colour photo.), 295 (details); and Fl. Trop. E. Afr., Viscac.: 15, 1999.

Leafless monoecious shrub with stems 40-100 cm long, often pendulous; staminate flowers often uncommon; anthers forming a central synandrium; fruit orange, smooth.

Acacia woodland, wooded grassland, in higher rainfall areas; widespread; on *Acacia*, rarely also on *Loranthaceae (Phragmanthera, Tapinanthus);* 950-2100 m alt.

Often confused with *V. hildebrandtii* (and treated as such, e.g. by Balle in Fl. Congo belge 1: 379-380, 1948, excl. specim. ex Katanga! = *V. combreticola),* a dioecious species without central anther synandrium. Resembling *V. iringense* in habit, monoecious but with tuberculed fruits and distribution not overlapping.

V. calvinii Polh. & Wiens – Icon.: Polhill & Wiens (1998): 305; Kirkup & al. (2000): 23.

Leafless, dioecious, erect, open shrub 30-50 cm tall, with stout rounded branches 3-4 mm Ø; male and female flowers unknown; fruit carmin red (unique in Africa).

Brachystegia woodland; on *Brachystegia, Pericopsis;* 600-900 m alt.

Distinctive; known only from 3 collections; difficult to detect and probably overlooked.

A member of the *V. menyharthii* group.

V. chyuluense Polh. & Wiens – Icon.: Polhill & Wiens (1998): 297.

Leafless dioecious erect shrub c. 30 cm tall; distal branches rounded to slightly compressed, 2 mm Ø; fruit orange, smooth.

Edges of upland dry evergreen forest, mist forest and associated wooded grassland; on *Loranthaceae,* particularly *Oncocalyx fischeri* (host restricted to the Chyulu Hills); 1300-1900 m alt.

In habit similar to *V. tenue, V. gracile,* but stems larger, stigma capitate, fruit more ellipsoid.

A member of the *V. menyharthii* group.

V. combreticola Engl. – Icon.: Polhill & Wiens (1998): 302, 303 (colour photo. fruits); Kirkup & al. (2000): 25; Fl. Zambes. 9/3: 199, 2006; Burrows & Willis, Pl. Nyika Plateau: 284, 2005; Heide-Jørgensen, Parasit. flow. pl.: 129, 134, 2008.

syn.: Enum. 2: 184, 1992; and *V. hildebrandtii* sensu Balle, Fl. Congo belge 1: 379-380, 1948, pro min. p. quoad specim. ex Katanga.

Leafless dioecious shrub 1-2 m tall, with older stems pendulous, yellowish green; distal branches 4-6 mm Ø, flattened, strongly ribbed, rounded with age; fruit orange, tuberculate when young, but smooth when ripe.

Mixed woodland, Miombo, riverine formations; on a wide range of hosts, commonly *Combretum,* various legumes incl. *Brachystegia;* widespread; 425-2100 m alt.

Variable, but without geographical patterns of variation.

NE S. Africa, Botswana.

Similar in habit to *V. shirense, V. cylindricum* (difficult to distinguish on sterile material). Male inflorescences and fruits needed for separation.

A member of the *V. shirense* group.

V. congdonii Polh. & Wiens – Icon.: Polhill & Wiens in Novon

7: 278, 1997; in (1998): 295, 302; and Fl. Trop. E. Afr., Viscac.:

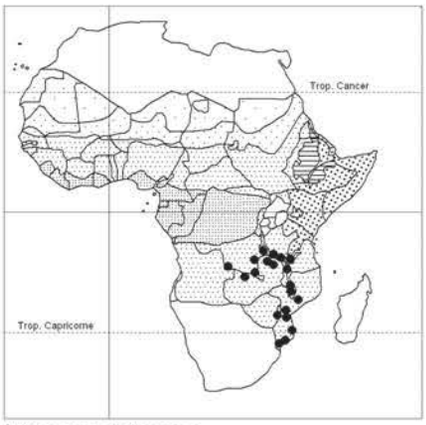
20, 1999; Kirkup & al. (2000): 25; Polhill in F. White & al.,

Evergreen for. fl. Malawi: 594, 2001.

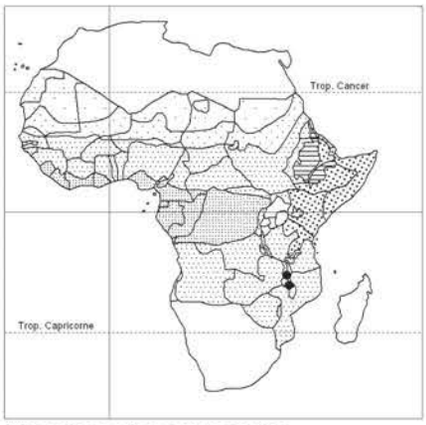
Leafless, dioecious, large but delicate shrub, older plants form-

ing long pendulous masses to 2 m; distal branches flattened, nar-

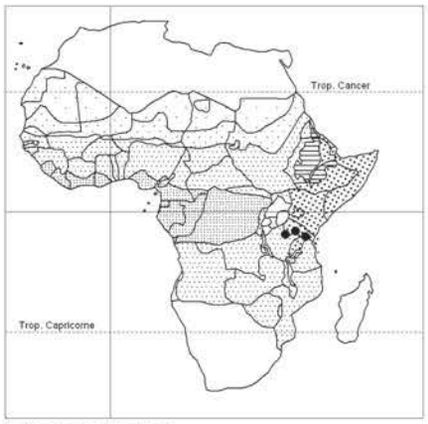
rowed (internodes), 1-2 mm Ø; fruit orange, smooth.



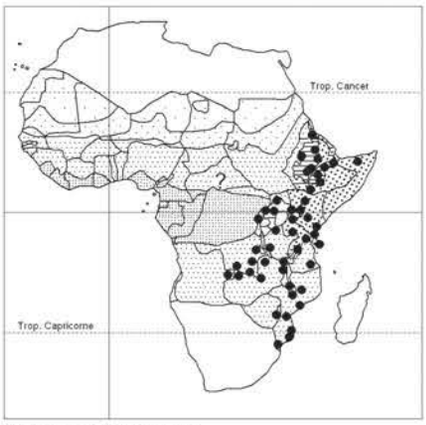
Viscum shirense



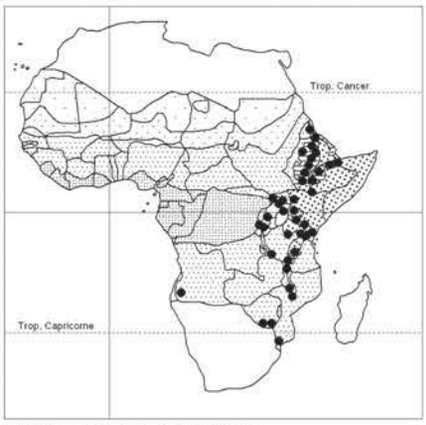
Viscum subverrucosum



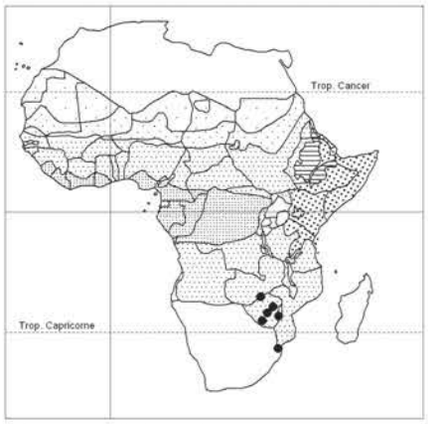
Viscum tenue



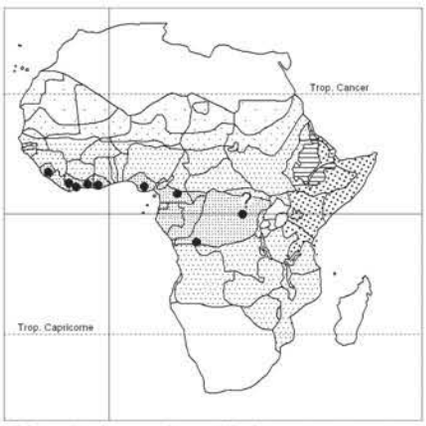
Viscum triflorum



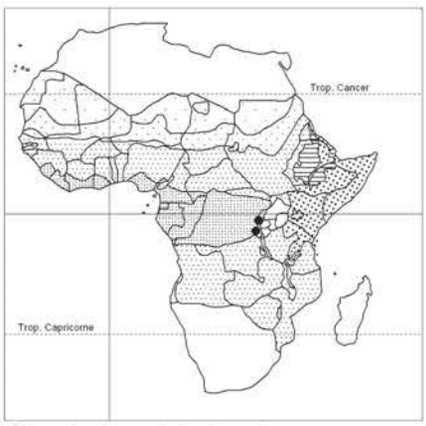
Viscum tuberculatum



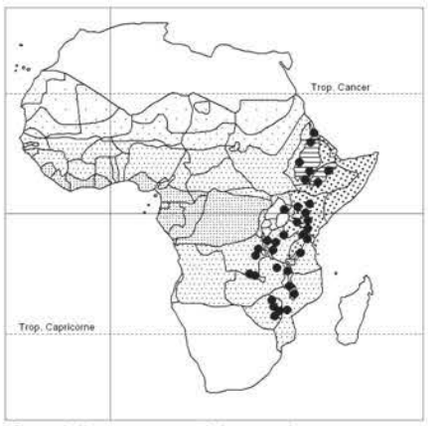
Viscum verrucosum



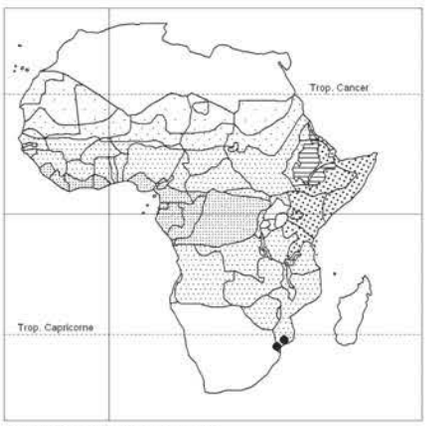
Okoubaka aubrevillei



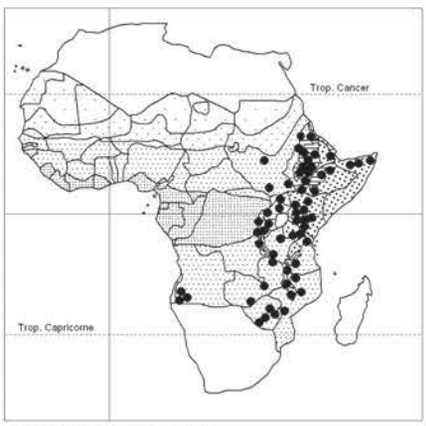
Okoubaka michelsonii



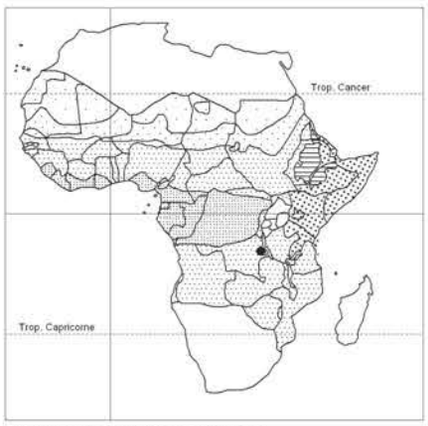
Osyridicarpos schimperianus



Osyris compressa



Osyris lanceolata



Thesium aellenianum

Montane evergreen rain-forests and adjacent woodland; forest margins; plateau near stream; on *Toddalia, Allophylus, Bridelia brideliifolia, Sapium ellipticum;* 900-2350 m alt.

Similar to *V. goetzei* (a small erect shrub with a totally different haustorial system, and an obligate epiparasite on *Englerina, Loranthaceae);* also resembling *V. shirense* but internodes narrower (1-2 mm, not 2-4 mm) and fruits larger (4 mm, not 1-1,5 mm high).

A member of the *V. shirense* group.

V. congolense De Wild., incl. var. *chevalieri* Balle; Fl. Tshopo (RD Congo), Taxonomania 25: 37, 2008. – Icon.: Polhill & Wiens (1998): 283, 284; Kirkup & al. (2000): 16.

Leafy dioecious globose shrub to 50 cm tall; distal branches 2-4 mm Ø, rounded-somewhat angled, nodes often dilated; leaves very variable, elliptic-oblong (4-6-10 × 2-4 cm); fruit greenish white, smooth.

Humid forest; riverine or secondary forests, forest gallery; also on crop plantations; usually on large trees (Ethiopia), on a wide range of hosts (e.g. *Albizia grandibracteata, A. gummifera, Croton macrostachyus, Mimusops kummel, Syzygium, Pachystela brevipes, Alstonia, Anthocleista djalonensis, Desbordesia glaucescens, Symphonia globulifera, Combretodendron africanus, Funtumia elastica, Polyalthia suaveolens, Pterygopodium oxyphyllum, Scorodophloeus zenkeri, Strychnos, Hevea, Erythroxylum);* 1-2200 m alt. – Sometimes difficult to detect on the host trees.

Distinctive species; part of a closely related group (with *V. fischeri, V. luisengense).* Sex-determination particular.

Disjunct species (records from Ivory Coast-Ghana described as var. *chevalieri,* with longer pedicels).

Record from Ethiopia-Sidamo: Negde, doubtful. – Record from Tanzania (T4) recent.

V. cylindricum Polh. & Wiens – Icon.: Polhill & Wiens in Novon 7: 278, 1997; and Mistletoes Africa: 302, 1998; Kirkup & al. (2000): 25; Polhill in F. White & al., Evergr. for. fl. Malawi: 594, 2001.

Leafless dioecious large pendulous shrub 1-2 m long; distal branches strongly flattened, tape-like, 2-4 mm wide.

Montane rain-forest, extending (in Malawi) down into higher-rainfall *Brachystegia* woodland; edge of mixed *Widdringtonia* forest; on various hosts (e.g. *Brachystegia, Croton, Ochna, Vitex);* 1500-2200 m alt.

In vegetative features similar to *V. combreticola, V. shirense,* but staminate flowers borne singly and fruit cylindrical. – A member of the *V. shirense* group.

V. decurrens (Engl.) Bak. & Sprague; Fl. Tshopo (RD Congo), Taxonomania 25: 37, 2008. – Icon.: Polhill & Wiens (1998): 292; Fl. Trop. E. Afr., Viscac.: 8, 1999; Kirkup & al. (2000): 23.

Leafy monoecious (but dichasia typically unisexual) erect shrub to 50 cm tall, densely branched; distal branches distinctly flattened, 2 mm wide; leaves obovate, without a well-defined petiole (cuneate); fruit stipitate, smooth, pale white.

Forest (Congolian), mostly coastal and riverine; specific on *Symphonia globulifera* throughout its range (unusual!); near sea-level-c. 1800 m alt.

Little collected, but apparently more common than herbarium material suggests.

Distinctive species without obvious relatives, perhaps affinities with *V. petiolatum* or *V. triflorum.*

V. engleri Tiegh. – Icon.: Polhill & Wiens (1998): 304 (colour photos. incl. habit in large tree), 305; Fl. Trop. E. Afr., Viscac.: 20, 1999; Kirkup & al. (2000): 23.

Leafless dioecious shrub forming spectacular hanging masses 2 m long and more; distal branches strongly flattened, tape-like, 5-8 mm wide; fruit ellipsoid, smooth, orange.

Upland evergreen forest (only known from W. Usambaras & Nguru Mts, Mahenge & Mufindi highlands, Tanzania); on various hosts (e.g. *Alangium, Albizia* spp., *Ficus, Macaranga, Euphorbia)* incl. exotic crops *(Citrus, Prunus);* 1000-1800 m alt.

One of the largest *Viscum* in Africa (with *V. combreticola, V. grandicaule).*

Parasitized by *Loranthaceae Agelanthus subulatus*, which causes damage and ? death to *V. engleri.*

Related to ? or convergence with, *V. anceps* E. Mey. ex Sprague (S. Africa), a smaller plant which has tuberculate fruits.

A member of the *V. shirense* group. – **V. grandicaule** Polh. & Wiens from Annobon is similar.

V. exiguum Polh. & Wiens, nom. nov., Fl. Zambes. 9/3: 203, 2006. – Icon.: Polhill & Wiens (1998): 226 (details); Fl. Trop. E. Afr., Viscac.: 15, 1999.

syn.: *V. gracile* Polh. & Wiens 1998, nom. illegit., non DC. 1830 *(= Dendrophtora pendula* Krug & Urb., Cuba); *V. tenue* Sprague in Fl. Trop. Afr. 6 (1): 409, 1911, p. min. parte quoad specim. Kirk, non Engl.

Leafless dioecious shrub, c. ? 50 cm tall; distal branches delicate, thin, rounded, < 1 mm Ø; fruit small, sessile, smooth, orange (probably not mature).

Forest edges, woodland, wooded grassland, coastal bushland; on *Sideroxylon inerme, Bequaertiodendron;* 0-1750 m alt.

Similar to *V. littorum* (coastal Mozambique), but with thin rounded branchlets, and to *V. tenue* (montane, N Tanzania) which has compressed branchlets.

A member of the *V. menyharthii* group.

V. fischeri Engl. – Icon.: Polhill & Wiens (1998): 283, 284; Fl. Trop. E. Afr., Viscac.: 8, 1999; Kirkup & al. (2000): 16.

Leafy dioecious, deep green, often pendulous shrub 1-2 m long; distal branches rounded, generally ribbed when young, 2 mm Ø; leaves very variable, elongate to oblong, petiolate; fruit ovoid, smooth, yellow-dull orange.

Upland drier evergreen forest and associated woodland (only Kenya highlands); on various hosts, commonly *Croton*, also *Acacia, Diospyros, Euclea, Heteromorpha, Macaranga, Neoboutonia, Teclea;* also epiparasite on *Loranthaceae: Phragmanthera, Tapinanthus;* 1500-2300 m alt.

Related to *V. congolense, V. luisengense,* sharing a unique sex-determining system (see Polhill& Wiens, 1998: 72, 284; and Fl. Trop. E. Afr., Viscac.: 10, 1999).

V. goetzei Engl. – Icon.: Polhill & Wiens (1998): 295, 302; Fl. Trop. E. Afr., Viscac.: 20, 1999; Kirkup & al. (2000): 25; Polhill in F. White & al. Evergr. for. fl. Malawi: 594, 2001.

Leafless dioecious erect shrub 0,3-0,5 m tall; distal branches flattened, narrowed, 1-2 mm wide; flowers solitary, sessile; fruit ovoid, smooth, orange, pedicellate.

Evergreen forest (highest montane and adjoining highlands), pockets of forest near *Juniperus* forest; epiparasite on *Loranthaceae Englerina,* obligate, the latter parasitizing *Myrica;* 1500-2350 m alt.

Resembling *V. congdonii,* growing at the same locality.

Type collection from 1899 (Goetze; Tanzania: Njombe Distr., Lipanye Ridge); re-collected there only in 1986, and then in 1988.

A member of the *V. shirense* group.

V. griseum Polh. & Wiens – Icon.: Polhill & Wiens (1998): 300; and in Thulin. Fl. Somal. 2: 145, 1999; Fl. Trop. E. Afr., Viscac.: 15, 1999.

Leafless dioecious much-branched pale grey shrub 0,3-0,5 m tall; distal branches rounded, 2 mm Ø, tapering to 1 mm Ø; mature fruit unknown (when young pedicellate, green, drying purple, tubercled).

Acacia bushland on coastal dunes; deciduous bushland; on *Acacia, Combretum;* near sea-level-750 m alt.

Extremely difficult to detect among the host branches, and thus probably overlooked.

Resembling *V. hildebrandtii,* but smaller and grey and with tuberculate fruits. Grey colour of young shoots unique in African *Viscum* spp., caused by minute tuberculae, covering the surface of all new growth, incl. fruit.

A member of the *V. menyharthii* group.

V. hildebrandtii Engl. – Icon.: Polhill & Wiens (1998): 295 (fruit); Fl. Trop. E. Afr., Viscac.: 15, 1999 (idem).

Leafless dioecious coarse shrub, usually pendulous, yellow-green, >2 m long; distal branches rounded, 2-3 mm Ø; fruit pedicellate, smooth (at all stages of development), orange.

Deciduous bushland, *Acacia* woodland; on *Acacia;* 600-1950 m alt.

Similar to and easily confused with *V. bagshawei* (also on *Acacia),* but fruit pedicellate. Dried material resembling *V. griseum.* In the Mkomazi area (Tanzania, T3) range overlapping that of *V. chyuluense*, but *V. hildebrandtii* distinct for its pedicellate fruit.

Also in S Somalia fide Fl. Trop. E. Afr., Viscac.: 18, 1999, but not cited in Thulin, Fl. Somal. 2.

A member of the *V. menyharthii* group.

Not in Zaire *(= V. bagshawei).*

V. iringense Polh. & Wiens – Icon.: Polhill & Wiens (1998): 295 (fruit); Fl. Trop. E. Afr., Viscac.: 15, 1999 (idem).

syn.: *V. verrucosum* sensu auctt., non Harv., e.g. Engler in Bot. Jahrb. Syst. 28: 385, 1900; Sprague in Fl. Trop. Afr. 6 (1): 409, 1911; *V. bagshawei* sensu Brenan, Check-list For. Trees & Shrubs Brit. Emp. 5, Tang. Terr. 2: 292, 1949, p.p., non Rendle

Leafless monoecious shrub to 1 m long, often pendulous with age; distal branches ± rounded, 1-2 mm Ø; fruit pedicellate, moderately tubercled when young, ± nearly smooth when ripe, orange.

Deciduous woodland and bushland; on *Acacia;* 100-1700 m alt.

Close to *V. bagshawei,* but fruit tuberculate and without (distinct) style.

A member of the *V. bagshawei* group.

V. littorum Polh. & Wiens – Icon.: Polhill & Wiens (1998): 296 (details).

Leafless dioecious small shrub to ? 0,5 m tall, branchlets sometimes verticillate; primary stems rounded, distal branches 1-2 mm Ø, but ultimate branchlets flattened; staminate flower unknown; mature fruit unknown (when young pedicellate, smooth).

Coastal; on mangrove *(Sonneratia).*

Known only from the type collected in 1967. Vulnerable, fide Golding, South. Afric. Pl. Red Data Lists: 52, 2002. Could be expected in adjoining coastal Tanzania.

Resembling *V. exiguum.*

A member of the *V. menyharthii* group.

V. longiarticulatum Engl. – Icon.: Polhill & Wiens (1998): 292 (detail); Fl. Trop. E. Afr., Viscac.: 8, 1999; Kirkup & al. (2000): 23 (detail); Peter, Fl. Deutsch-Ostafr. 2 in Feddes Repert. Spec. Nov., Beih. 40 (2/1): pl. 18/2, 1932.

syn.: *V. melanocarpum* Peter; *V. decurrens* sensu auctt., non (Engl.) Bak. & Sprague [e.g. Peter, Fl. Deutsch-Ostafrika 2 (2) in Feddes Repert. Spec. Nov., Beih. 40 (2/2): 180, 1932; Brenan, Check-list For. Trees & Shrubs Brit. Emp. 5, Tang. Terr. 2: 293, 1949].

Leafy dioecious shrub with erect stems at first, then pendent, to 1 m long; distal branches distinctly flattened, 2-3 mm wide; leaves (sometimes deciduous) at only some nodes, obovate, ± falcate, petiole indistinct (cuneate); mature fruit unknown (densely tuberculate, sessile, turbinate when young).

Rain-forest; dry evergreen forest, at edges and in canopy; on various hosts (e.g. *Albizia, Parinarium holstii);* 300-1950 m alt.

Difficult, if not impossible, to collect in places; thus rarely collected.

A distinct, isolated species. With *V. decurrens* the only African species with flattened stems *and* leaves. Herbarium material often leafless, but with leaf scars, is collected in drier forests: the plant may be deciduous.

Known only from the W & E Usambaras (NE Tanzania), E. African basement-complex mountains.

V. loranthicola Polh. & Wiens – Icon.: Polhill & Wiens in Novon 7: 278, 1997; and in Mistletoes Africa: 11 (colour photo.), 297, 1998.

Leafless monoecious erect, small, densely branched shrub 0,1-0,3 m tall; distal branches rounded to slightly compressed on youngest growth, 1-2 mm Ø; anthers of staminate flowers (uncommon or rare) forming a central synandrium, tepals yellow; fruits sessile, smooth orange.

Brachystegia woodland, less commonly *Acacia* woodland; forest patch; edges of evergreen forest; epiparasite, only on *Loranthaceae (Englerina, Erianthemum, Globimetula, Phragmanthera, Plicosepalus, Tapinanthus);* 1300-1750 m alt. (Tanzania).

Life history very poorly known. Seems related to *V. iringense, V. bagshawei,* but smaller and being an epiparasite. – A member of the *V. bagshawei* group.

V. luisengense Polh. & Wiens – Icon.: Polhill & Wiens (1998): 283, 284 (details); Fl. Trop. E. Afr., Viscac.: 8, 1999 (idem); Kirkup & al. (2000): 16 (idem).

Leafy dioecious ± erect, dark green shrub, c. 50 cm tall, sometimes pendulous with age; distal branches rounded, often ridged, 2 mm Ø; leaves elliptic-ovate, subsessile; fruit subsessile, densely and minutely tuberculate, dull pinkish brown.

High elevation evergreen forest, near stream; host not cited, but plants often difficult to distinguish; 1700-1850 m alt.

Known only from a population at Mufindi (Tanzania, T7).

A member of the *V. congolense* group (with *V. congolense, V. fischeri)* and seeming to be outlier relict in E Africa. Sex-determination particular (cf. under *V. fischeri).* – Seems also related to the temperate *V. album* L.

One species with male flowers only, from Songea District, seems related but may represent an undescribed species (Congdon 147); fide Polhill& Wiens, Fl. Trop. E. Afr., Viscac.: 11, 1999.

V. menyharthii *("menyhartii")* Engl. & Schinz – Icon.: Polhill& Wiens (1998): 293 (colour photos.); Norlindh & Weimarck in Bot. Not. 1936: 21, 25, 1936 (sub nom. *V. subcylindricum);* Fl. Zambes. 9/3: 199, 2006 (partial); Heide-Jørgensen, Parasit. flow. pl.: 135, 2008.

syn.: Enum. 2: 185, 1992.

Leafless dioecious erect shrub 0,5-1 m tall, becoming pendulous; distal branches rounded with often elongated internodes 40-60 cm long, 2-3 mm Ø; fruit sessile, tuberculate, orange.

Woodland, stony woodland, riverine formations; mainly on *Ficus,* but also *Combretum, Syzygium* (flowering in dry season); 155-c.1600 m alt.

NE S. Africa; disjunct in NW Namibia.

Perhaps related to *V. calvinii*, but seems to be isolated, without close relatives.

V. obovatum Harv. – Icon.: Polhill & Wiens (1998): 292 (colour photo.); Fl. Zambes 9/3: 199, 2006 (partial).

syn.: *V. pulchellum* Sprague

Leafy monoecious shrub <0,5 m tall, forming dense rounded clusters; distal branches rounded, internodes short (8-15-20 mm), 2 mm Ø, with often conspicuously swollen nodes; leaves obovate-rounded; fruit sessile, warty when young, less so when ripe, dull orange.

Coastal and riverine forest and forest remnants; swamps; drier bushland inland; on various hosts (e.g. *Dichrostachys, Galpinia, Maytenus, Mimusops, Ochna);* 3-610 m alt (S. Africa).

E S. Africa (coastal), Swaziland.

Can be confused with *V. tuberculatum,* but leaves and fruit smaller; separated by different chromosome numbers. – A member of the *V. tuberculatum* group.

V. petiolatum Polh. & Wiens – Icon.: Polhill & Wiens (1998): 297 (details).

Leafy monoecious, deep green shrub c. 0,5 m tall; older branches rounded; younger distal branches strongly ribbed, somewhat angular, 2 mm wide; leaves ovate, ± falcate, petioled; mature fruit unknown.

High elevation evergreen forest; host not cited; 2250 m alt.

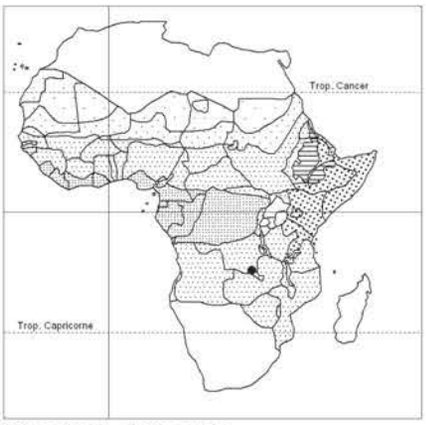
Known only from the type (Wiens & Wiens 4449; in the 1980s?).

Seems related to *V. decurrens* (with flattened branches), and to *V. triflorum.*

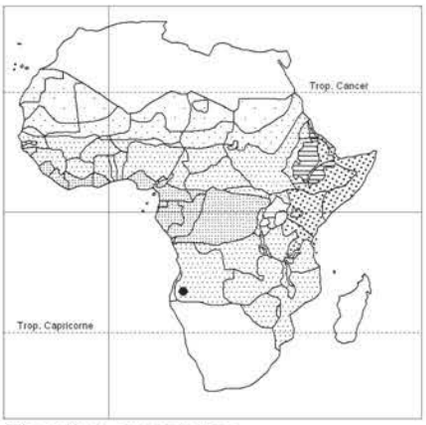
V. rotundifolium L. f. – Icon.: Polhill & Wiens (1998): 286 (colour photo.); Fl. Zambes. 9/3: 198, 2006 (partial).

syn.: *V. glaucum* Eckl. & Zeyh.; *V. thymifolium* C. Presl; *V. tricostatum* E. Mey. ex Harv.; *V. macowanii* Engl.; *V. bosciae-foetidae* Dinter, nom. nud.; *V. ziziphi-mucronati* Dinter, nom. provis.

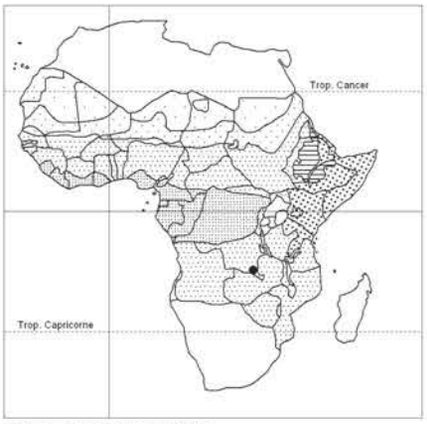
Leafy monoecious densely branched shrub, light pale green, glaucous, <0,5 m tall, forming small rounded clusters; distal branches rounded, 6-ribbed, 1-1,5 mm Ø; leaves very variable (elliptic-oblong to ovate-suborbicular), sessile, often glaucous; fruit pedicellate, smooth, orange.



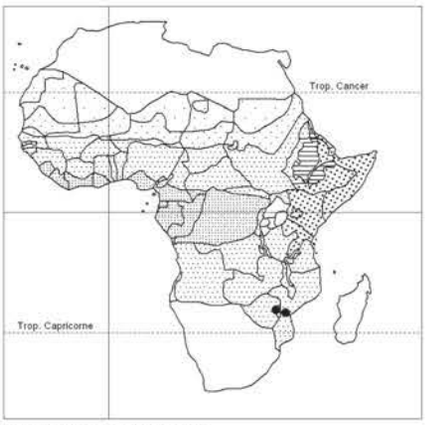
Thesium amicorum



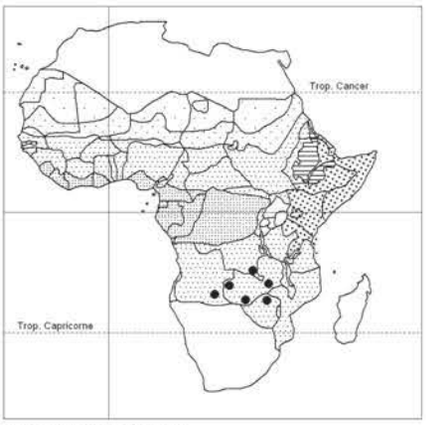
Thesium angolense



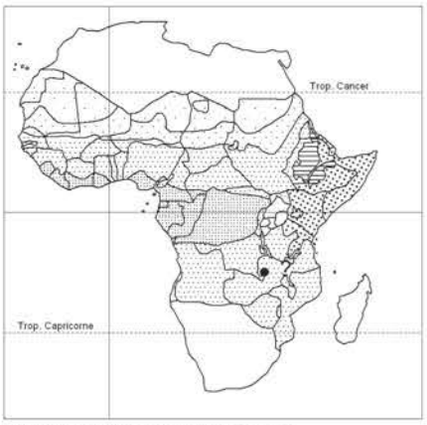
Thesium annuum



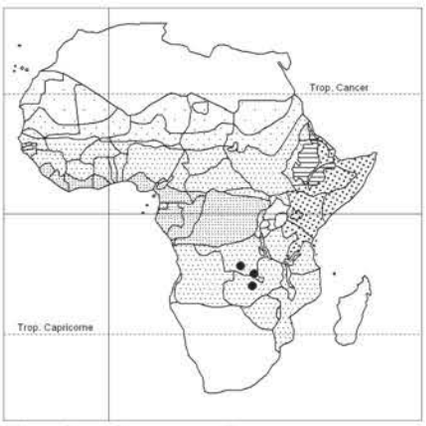
Thesium asterias



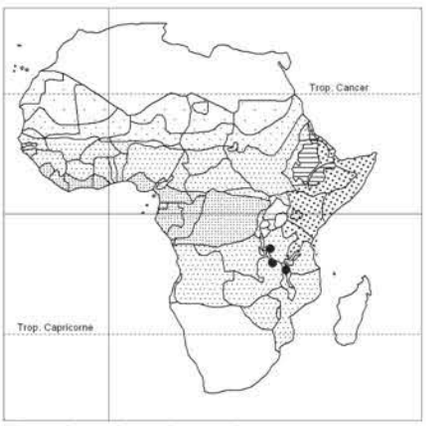
Thesium atrum



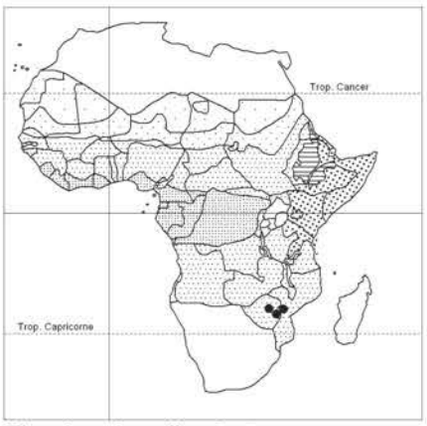
Thesium bangweolense



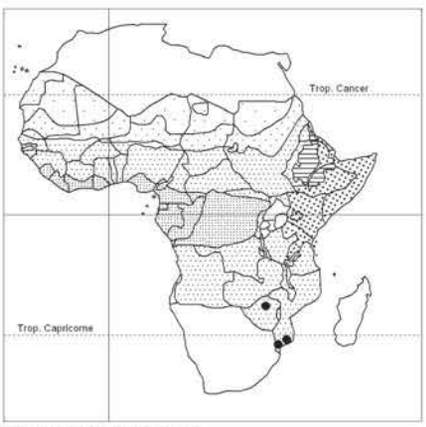
Thesium bequaertii



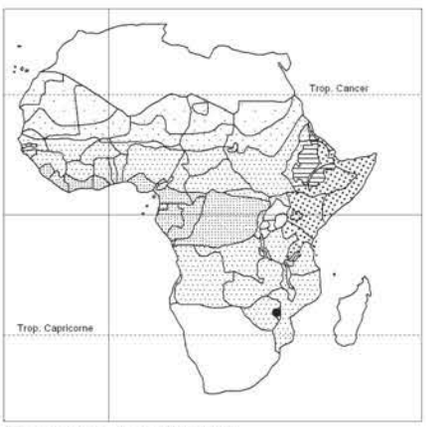
Thesium brachyanthum



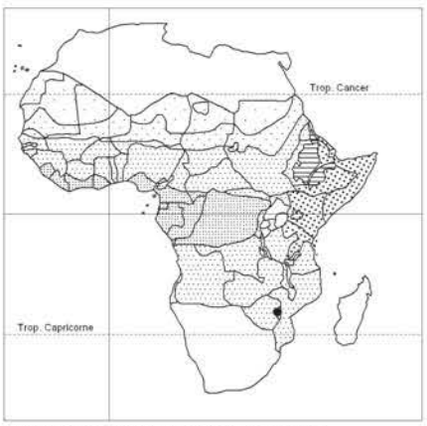
Thesium brevibarbatum



Thesium breyeri



Thesium bundiense



Thesium chimanimaniense

THESIUM CHIMANIMANIENSE

Dry shrubland; mixed woodland and bushland; on a very wide range of hosts (e.g. *Acacia, Boscia, Carissa, Ehretia, Euclea, Grewia, Maytenus, Olea, Passerina, Rhamnus, Rhigozum, Rhus, Salix),* also epiparasite on *Tapinanthus (Loranthaceae)* and *Viscum;* 10-1950 m alt. (S. Africa).

Extremely variable.

The most widespread *Viscum* in southern Africa. Namibia, Botswana, S. Africa, Swaziland. – Could be expected in S Mozambique. – Also in S Haut-Katanga (Zaire): Elisabethville (fide Balle in Fl. Congo Belge 1: 375-376, 1948).

With *V. schaeferi* Engl. & K. Krause (S. Africa) and *V. pauciflorum* L. f. (Namibia, S. Africa) forming a closely related group, often with confusion between species.

V. schimperi Engl. – Icon.: Polhill & Wiens (1998): 300; in Thulin, Fl. Somal. 2: 145, 1999; Fl. Trop. E. Afr., Viscac.: 20, 1999; S. Chaudhary, Viscaceae, in Fl. Kingd. Saudi Arabia ill. 2/1: 265, 2001.

syn.: *Aspidixia semiplana* Tiegh., nom. nud.; *Viscum semiplanum* Engl.

Leafless monoecious, densely branched, erect shrub to 0,5 m tall, often globose; branches tend to spread patently from branch of host; distal branches flattened, 2-3 mm wide, when older becoming rounded; staminate flowers (borne singly) soon falling and often apparently rare, or absent; fruit pedicellate, smooth, orange.

Acacia woodland; edges of dry montane forest; deciduous or evergreen bushland; upland dry evergreen forest; on various hosts (e.g. *Acacia* spp., *Vepris glomerata, Rhus, Scutia, Haplocoelum);* 1300-2300 m alt. – Along Rift Valley, mostly on the E side.

Rather distinct species of the *V. bagshawei* group by i.e. its smaller size, and anthers at base of tepals (not in a central synandrium). It is one of the 2 known tetraploids (n = 28) in *Viscum (+ V. bagshawei),* polyploidy being rare in mistletoes.

A specimen from coastal Kenya (Kwale District) is perhaps a new species (fide Fl. Trop. E. Afr., Visc.: 23, 1999).

Saudi Arabia (Wadi Wijj, Taif-Najan; on *Acacia,* 2061 m alt., fide M. A. Rahman & al. in Bangladesh J. Pl. Taxon. 9/1: 39, 2002), Yemen (Hadramout, 14°37'N, 48°36'E, steep rocky slopes, on *Acacia,* 1240 m alt., fide N. Kilian & al. in Willdenowia 32: 263, 2002).

V. shirense Sprague – Icon.: Polhill & Wiens (1998): 297; Fl. Trop. E. Afr., Viscac.: 20, 1999.

syn.: *Aspidixia junodii* Tiegh., nom. nud.; *Viscum junodii ("junodi")* Engl., nom. nud.; *V. junodii* Engl. ex Sprague; *V. anceps* sensu Engl. in Bot. Jahrb. Syst. 30: 305, 1901, non Sprague

Leafless dioecious shrub with mostly pendulous branches <0,5->1 m long; distal branches flattened, 2-3(-4) mm wide; fruit pedicellate, smooth, orange.

Very variable species, in: size, length and width of internodes, size of fruit; with a certain geographical pattern.

Coastal and riverine forest; river banks; woodland in higher rainfall areas, edges of montane forest; on various hosts (e.g. *Gardenia, Prunus africana, Albizia),* commonly *Bridelia* at higher altitudes; near sea-level (Mozambique)-900-1750 m alt.

Related to *V. congdonii* but differs by narrower ultimate internodes and smaller fruits.

THESIUM DISSITUM

V. subverrucosum Polh. & Wiens

Leafless dioecious erect pale yellow-green shrub >0,5 m tall; distal branches rounded, often densely and verticillately branched; fruit pedicellate, with few or scattered tubercles when young, nearly absent at maturity, dull orange.

Mixed woodland; on *Acacia;* 1300-1650 m alt.

Very similar to *V. verrucosum,* but more robust and fruits only lightly warty to smooth. – A member of the *V. menyharthii* group.

Insufficiently known for re-assessment of taxonomic status.

V. tenue Engl.

syn.: ? *V. tenue* fa. *leucocraspedum* Peter

Leafless dioecious, medium green shrub c. 0,5 m tall, sometimes pendulous; distal branches rounded, 1 mm Ø, delicately tapered to <1 mm Ø; fruit (sub-)sessile, orange-red.

Montane dry evergreen forest, extending into wetter forests and associated woodland; on various hosts *(Podocarpus, Ritchiea, Teclea, Scutia, Acacia);* 1300-1900 m alt.

Related to *V. chyuluense* (epiparasite from drier country) and *V. gracile*, also members of the *V. menyharthii* group.

Known only from Mbulu Range, Mt. Meru, W. Usambaras (Tanzania).

V. triflorum DC., incl. subsp. *nervosum* (Hochst. ex A. Rich.) M. G. Gilbert (retained as such in Fl. Eth. 3: 376, 1989). – Icon.: Polhill & Wiens (1998): 282; Fl. Trop. E. Afr., Viscac.: 8, 1999; in Thulin, Fl. Somal. 2: 144, 1999; Kirkup & al. (2000): 16; F. White & al., Evergreen For. Fl. Malawi: 594, 2001; S. Chaudhary, Viscaceae, in Fl. Kingd. Saudi Arabia ill. 2/1: 265, 2001; Fl. Zambes. 9/3: 199, 2006; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 745, 2008.

syn.: Enum. 2: 185, 1992; and *V. minutiflorum* Engl. & K. Krause (correction); *V. spathulatum* Tiegh. ex Lecomte

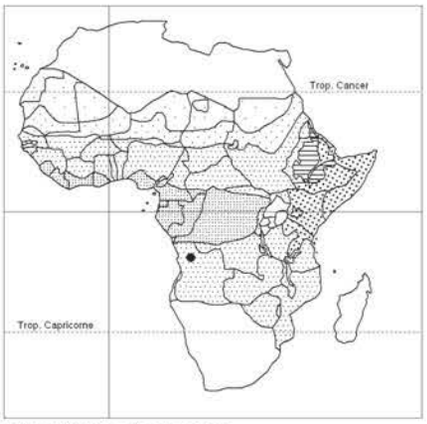
Small leafy monoecious, yellow-green shrub forming globose clusters 30-50 cm tall; distal branches when young slightly flattened, delicate, 6-ribbed, 1-1,5 mm wide, older ones rounded; leaves variable, relatively thin, ± sessile, with often crisped margin; dichasia with both sexes, the central flower male; fruit smooth, white, with pubescent tepals (unusual feature).

Montane and (dry) riverine forest, montane forest margins and associated bushland and woodland; evergreen forests of all types; fringes of coastal forest; on a wide range of hosts (e.g. *Rhus, Croton macrostachyus, Buxus, Tamarix, Maytenus acuminata, Euphorbia abyssinica, Coffea, Olea);* near sea-level-2350 m alt. – Scattered but locally common in E part of Africa.

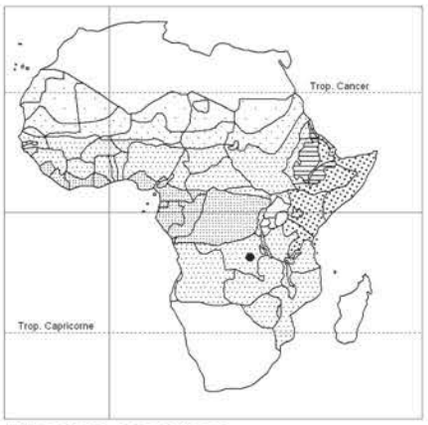
Variable in shape of leaves; but a distinctive species.

São Tomé; E S. Africa, Swaziland; Indian Ocean islands (Comores, Mascarenes, Seychelles). – The African material has been distinguished as subspecies *nervosum* (also in Saudi Arabia). – With an unusual disjunct distribution.

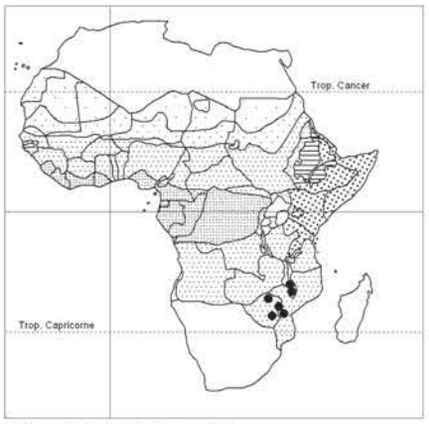
Perhaps closely related to *V. tuberculatum* but with smooth white fruits. – With *V. petiolatum* forming the *V. triflorum* group. – Related to species occurring in Madagascar.



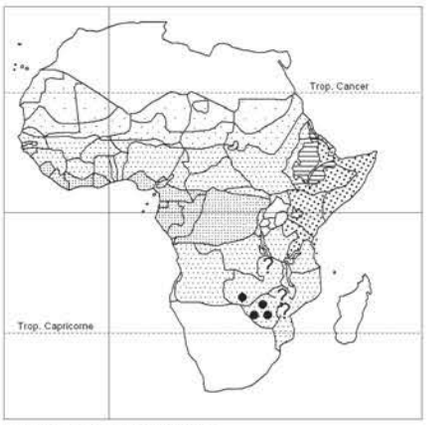
Thesium cinereum



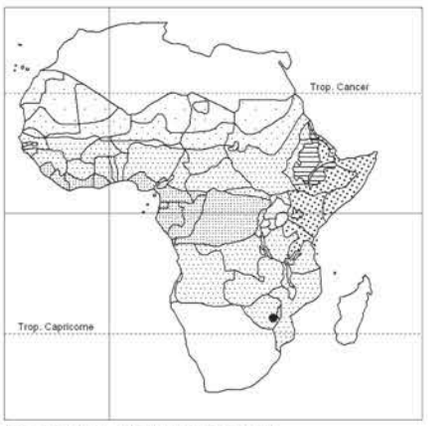
Thesium crassipes



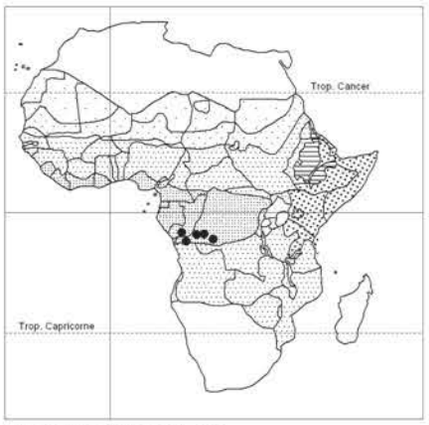
Thesium cymosum



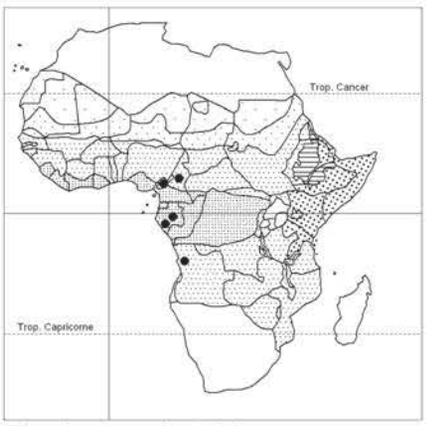
Thesium dissitum



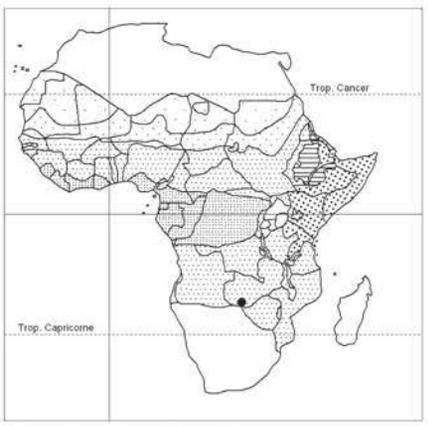
Thesium dolichomeres



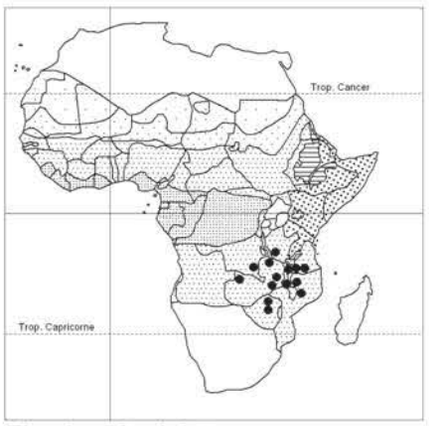
Thesium doloense



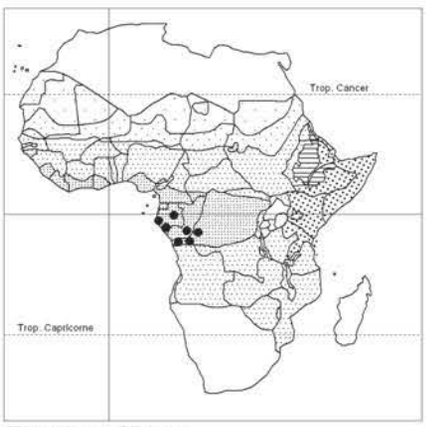
Thesium equisetoides



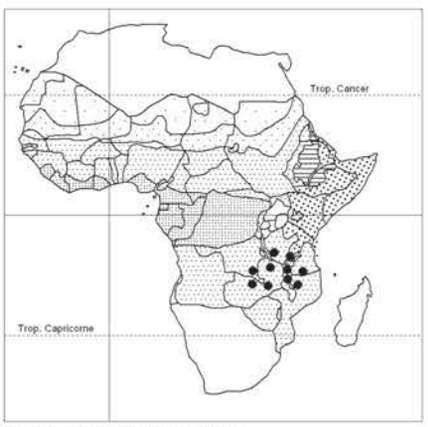
Thesium fanshawei



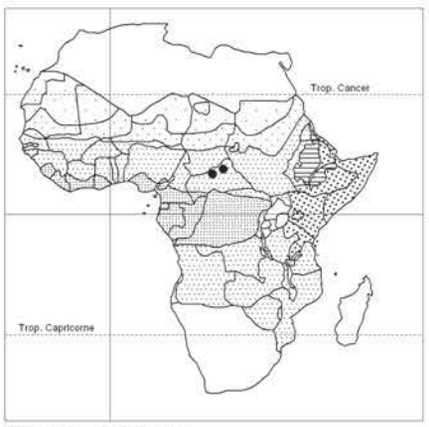
Thesium fastigiatum



Thesium filipes



Thesium fimbriatum



Thesium fulvum

V. tuberculatum A. Rich., incl. fa. *obovatifolium* Schweinf. and fa. *obovato-oblongifolium* Schweinf. – Icon.: Polhill & Wiens (1998): 291 (colour photo.); Fl. Trop. E. Afr., Viscac.: 8, 1999; in Thulin, Fl. Somal. 2: 144, 1999; F. White & al., Evergreen For. Fl. Malawi: 594. 2001; Fl; Zambes. 9/3: 199, 2006 (partial); Heide-Jørgensen, Parasit. flow. pl.: 133, 327, 2008.

syn.: Enum. 2: 185, 1992; and *V. stuhlmannii* Engl.; *V. spragueanum* Burtt Davy

Leafy monoecious, densely branched globose shrub to 0,5(-1) m tall, pale yellow to dark green; distal branches rounded, usually ribbed, 1-2,5 mm Ø; leaves very variable, rather fleshy, spathulate-cuneate, margins often slightly yellowish or minutely whitish crenulate; c. 2/3 of flowers pistillate at younger internodes, older nodes mostly with only pistillate ones; fruit sessile, densely warty when young, ± smooth at maturity, orange.

Dry woodland; dry montane forest remnants and associated evergreen bushland, often at edges; mountain wooded grassland; on a wide range of hosts (e.g. *Croton macrostachyus, Rhus, Maytenus, Nuxia congesta, Olea europaea* subsp. *africana, Flacourtia indica, Cassine aethiopica, Buxus, Acokanthera, Tarchonanthus, Terminalia, Allophylus, Ficus, Gymnosporia senegalensis);* (0-)1200-2500 m alt. – Widely distributed and common in a broad belt following the Rift Valleys with outlying populations in SW Angola, NE Nambia.

Variable in shape and size of leaves, in sex-distribution of dichasia (bisexual dichasia found in Malawi, Zimbabwe, Angola).

NE Namibia, NE S. Africa. Disjunction. – In Zaire?

A distinctive species. With *V. obovatum* forming the *V. tuberculatum* group.

V. verrucosum Harv. – Icon.: Fl. Zambes. 9/3: 199, 2006.

Leafless dioecious, densely and intricately branched shrub 0,5-1 m tall, often pale green; distal branches rounded, 1-2 mm Ø; fruit pedicellate, densely warty when young, faintly tuberculed to ± smooth at maturity, pale yellow-orange. – Flowering in dry season.

Mixed woodland and bushland; mainly on *Acacia,* but also *Combretum;* 60-1600 m alt.

N & E S. Africa, Botswana, Swaziland; WC Namibia – disjunct.

Related to *V. subverrucosum,* with mostly ± smooth fruit.

A member of the *V. menyharthii* group.

* * *

Viscum grandicaule Polh. & Wiens, a very large, leafless monoecious shrub with broad flattened branches occurs in Annobon (Pagalu) off Gabon, parasitizing *Ficus.* Resembling *V. engleri.*

SYNONYMS (see also Enum. 2: 185, 1992):

Viscum anceps sensu Engl. 1901, non Sprague = **Viscum shirense**

bagshawei sensu Brenan 1949 p.p., non Rendle = **V. iringense**

bosciae-foetidae Dinter, nom. nud. = **V. rotundifolium**

decurrens sensu auctt., non (Engl.) Bak. & Sprague = **V. longiarticulatum**

glaucum Eckl. & Zeyh. = **V. rotundifolium**

gracile Polh. & Wiens, non DC. = **V. exiguum**

hildebrandtii sensu Balle p.p. (ex Katanga) = **V. combreticola**

junodii Tiegh., nom. nud. = **V. shirense**

junodii Engl. ex Sprague = **V. shirense**

macowanii Engl. = **V. rotundifolium**

melanocarpum Peter = **V. longiarticulatum**

minutiflorum Engl. & K. Krause = **V. triflorum**

pulchellum Sprague = **V. obovatum**

semiplanum Engl. = **V. schimperi**

spathulatum Tiegh. ex Lecomte = **V. triflorum**

spragueanum Burtt Davy = **V. tuberculatum**

stuhlmannii Engl. = **V. tuberculatum**

tenue Sprague in F.T.A. p.p. = **V. exiguum**

thymifolium C. Presl = **V. rotundifolium**

tricostatum E. Mey. ex Harv. = **V. rotundifolium**

verrucosum sensu auctt., non Harv. = **V. iringense**

ziziphi-mucronati Dinter, nom. = **V. rotundifolium**

SANTALACEAE / *4* g./ *92* spp.

Mostly hemi-parasites in Africa; flowers hermaphrodite or unisexual, with inferior ovary; seed solitary, surrounded by copious fleshy, oily or starchy endosperm.

The genus *Thesium,* in particular, poorly known and undercollected. Summary of our lack of knowledge:

– underground part unknown: 1 sp. *(T. dolichomenes);*

– base of plant unknown: 2 spp. *(T. lynesii, T. megalocarpum);*

– perianth colour unknown: 4 spp. (c. 4%);

– mature fruit unknown: 3 spp. (c. 3%);

– fruit unknown: 2 spp. (c. 2%);

– ecology unknown: 4 spp. (c. 4%);

– known only from the type: 22 (+6?) spp. (c. 24 + 6% = c. 30%);

– only 2 (or 3) collections known: 7 spp. (c. 7%).

DER, J. P. & D. L. NICKRENT (2008). A molecular phylogeny of Santalaceae (Santalales). *Syst. Bot.* 33: 107-116.

LAWALRÉE, A. (1991) [1992]. L'étude des Santalaceae de l'Afrique centrale. *Bull. Séances Acad. Roy. Sci. Outre-Mer* 37: 201-211.

MALÉCOT, V. & D. L. NICKRENT (2008). See under **Olacaceae**, p. 168.

OKOUBAKA / *2*

Formerly placed in *Octoknemaceae.*

Okoubaka aubrevillei Pellegr. & Normand – Icon.: Villiers in Fl. Cameroun 15, Octoknemaceae: 191, 1973; and Fl. Gabon 20: 191, 1973; Adam, Fl. descr. Mts Nimba 3: 1366, 1975; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 325, 2006.

syn.: *Octoknema okoubaka* Aubrév. & Pellegr. *(Octoknemaceae).*

Tree 25-30 m, monoecious, deciduous; bole cylindrical, free to 15-16 m height, 0,8 m Ø, to 3 m in girth; slightly buttressed or not; crown straight, bushy, with drooping branchlets, these pubescent (var. **aubrevillei**) to glabrescent or glabrous even when young (var. **glabrescentifolia** J. Léonard, in Zaire); bark brownish green; fruit 9 cm (var. **glabrescentifolia**) to 16 cm long (var. **aubrevillei**).

Closed-forest, trees usually scattered, sometimes gregarious (Ghana); in secondary formations with particular undergrowth of herbaceous monocots *(Hypselodelphys violacea, Sarcophrynium brachystachys, Thaumatococcus daniellii,* etc.) in association with *Myrianthus arboreus,* surrounding at 10 m distance the ordinary forest (fide Aké Assi in Boissiera 58: 116, 2002, Ivory Coast); firm-ground forest with *Scorodophloeus zenkeri* (Zaire).

Considered a mystery plant in Ivory Coast, and nobody would fell it. Said to kill trees around its growth place (vernacular meaning: okou = death, baka = tree). Not proven to be parasitic.

Comprises 2 vars.

O. michelsonii J. Léonard & Troupin

Tree to 18 m, deciduous, monoecious; bole cylindrical, straight, free to 10 m height, 0,5 m Ø; crown wide spreading; branchlets glabrous; young growth purple; bark yellowish brown; fruit ± 4 cm long.

Transition forests, trees scattered; 1100-1500 m alt.

OSYRIDICARPOS / *1*

Monotypic genus.

Osyridicarpos schimperianus (A. Rich.) A. DC. – Icon.: Polhill in Fl. Trop. E. Afr., Santal.: 22, 2005; Fl. Zambes. 9/3: 243, 2006; Burrows & Willis, Pl. Nyika Plateau: 258, 2005.

syn.: *O. natalensis* A. DC.; Enum. 2: 186, 1992.

Shrub, pendent, scrambling or climbing to 1-5 m long, with many ascending branches that are strongly ribbed, glabrous to coarsely hairy; leaves alternate, 3-nerved; fruit globose, indehiscent, with fleshy outer coat, topped by a c. 4 mm long persistent perianth.

Dry slopes with open scrub, evergreen scrub hedges; upland dry evergreen forest and associated bushland; less often in wetter forests, along rivers, deciduous bushland; forest margins and understorey; miombo woodland; termite mounds; rocky slopes; forest gallery; *Juniperus* forest; mountain slopes and plateaux; 900-2415 m alt.

Very variable in indumentum (glabrous plants in Malawi = *"O. kirkii"),* size of leaves (6-50 mm long, 2,5-15 mm wide) and perianth.

S. Africa, Swaziland.

LAWALREE, A. (1999). Osyridicarpos schimperianus (A. Rich.) A. DC. (Santalaceae) au Shaba (R. D. Congo). *Koninkl. Mus. Midden-Afrika Tervuren, België, Ann. Econ. Wetensch.* 25: 227-228.

Formerly confused with *Thesium triflorum* (with narrower, *sessile* leaves, 2-6 mm wide).

SYNONYMS:

Osyridicarpos kirkii Engl. = **Osyridicarpos schimperianus**
- *linearifolius* Engl., incl. var. *goetzei* Engl. = **Thesium triflorum**
- *mildbraedianus* T. C. E. Fries = **Osyridicarpos schimperianus**
- *natalensis* A. DC. = **O. schimperianus**
- *scandens* Engl. = **O. schimperianus**

OSYRIS / *2*

Osyris compressa (P. J. Bergius) A. DC.; Stauffer in Vierteljahrsschr. Naturf. Ges. Zürich 106: 390-393 (fig. 2), 1961; Hilliard in Edinb. J. Bot. 51: 391-392, 1994. – Icon.: Bergius Descr. Pl. Cap.: tab. I/1, 1767; Kidd, Wild Fl. Cape Penins.: pl. 22, 1950; Fl. Zambes. 9/3: 245, 2006.

bas.: *Colpoon compressus* P. J. Bergius

syn.: *Thesium colpoon* L. f., nom. illegit.; *Euonymus colpoon* Lam., nom. illegit.; *Fusanus compressus* (P. J. Bergius) Murray

Shrub or small tree 0,8-5 m tall, all parts glabrous, glaucous; leaves (sub-)opposite; all flowers hermaphrodite; fruit with fleshy red outer coat.

Scrub, forest on littoral dunes.

S. Africa (5-1980 m alt.).

Is "a non-specific root parasite of all plants within range" (P. A. Bean in S. Afric. J. Bot. 56: 669, 1990).

O. lanceolata Hochst. & Steud. (on herbarium labels, 1832); Curtis & Mannheimer, Tree Atlas Namibia 68-69, 2005). – Icon.: Thulin, Fl. Somal. 2: 146, 1999; Polhill in Fl. Trop. E. Afr., Santal.: 24, 2005; Peter, Fl. Deutsch-Ostafr. 2/1: tab. 14/1, 2 and 15/1 (sub nom. *O. densifolia, O. oblanceolata* and *O. laeta,* respectively); Chaudhary, Fl. Kingd. Saudi Arabia illustr. 2/1: 251, 2001 (sub nom. *O. quadripartita);* Fl. Zambes. 9/3: 245, 2006; Fennane & al., Fl. prat. Maroc 2: 202, 2007 *(O. quadripartita).*

syn.: *O. quadripartita* Salzm. ex Decne.; *O. wightiana* J. Graham; *O. quadrifida* Salzm. ex A. DC., nomen; *O. abyssinica* Hochst. ex A. Rich., incl. fa. *latifolia* Fiori, but excl. var. *speciosa* A. W. Hill [= *Osyris speciosa* (A. W. Hill) J. C. Manning & Goldblatt in S. Africa]; *O. arborea* Wall. ex A. DC.; *O. pendula* Balf. f.; *O. rigidissima* Engl.; *O. tenuifolia* Engl.; *O. parvifolia* Bak.; *O. urundiensis* De Wild.; *O. densifolia* Peter; *O. laeta* Peter; *O. oblanceolata* Peter; *O. compressa* auctt., non (Berg.) A. DC. (e. g. White & al., Evergreen For. Fl. Malawi: 520, 2001); *Fusanus alternifolia* Br. in Salt 1814, nom.

Shrub or small tree 1,2-9(-14) m tall, all parts glabrous; sometimes with pendent branches; trunk 60-90 cm in girth at base; bark coarsely furrowed, slash bright crimson; leaves alternate; flowers hermaphrodite (in axils of upper leaves) or male (axillary and terminal), plants androdioecious; fruit with fleshy red outer coat, edible.

Evergreen bushland or scrub, usually in rocky places, also where the original vegetation has been cleared; forest margins; grassland; rocky thickets with *Clutia benguelensis; Brachystegia* and *Juniperus, Podocarpus, Combretum* and *Dodonaea* woodlands; *Erica* and *Acacia nilotica, Commiphora* scrub, rocky slopes; degraded woodland and scrub; *Protea* grassland, in "fire island in grassland, wooded grassland"; upland dry evergreen forest, mist forest, with associated bushland and grassland, extending down rivers and marginally into deciduous woodland; (50-)900-2900 m alt.

THESIUM

Considerable variation in size and shape of leaves.

Europe (S half of Iberian Peninsula, Balearic Isl.); Morocco, Algeria; Tenerife (Canary Isl.); Namibia, S. Africa, Botswana, Swaziland; Socotra, tropical Arabia; Asia from India-Nepal to S China.

The species has sometimes been included in *O. compressa* (with opposite leaves and hermaphrodite flowers).

* * *

Osyris alba L. in N Africa, Mediterranean basin down to the Sahara.

SYNONYMS:

Osyris abyssinica Hochst. ex A. Rich., incl. fa. *latifolia* Fiori = **Osyris lanceolata**

var. *speciosa* A. W. Hill = **O. speciosa** (S. Africa)

angustifolia Baker = **Thesium triflorum**

arborea Wall. ex A. DC. = **Osyris lanceolata**

compressa auct., non (Berg.) A. DC. = **O. lanceolata**

densifolia Peter = **O. lanceolata**

laeta Peter = **O. lanceolata**

oblanceolata Peter = **O. lanceolata**

parvifolia Baker = **O. lanceolata**

pendula Balf. f. = **O. lanceolata**

quadrifida Salzm. ex A. DC. = **O. lanceolata**

quadripartita Decne. = **O. lanceolata**

rigidissima Engl. = **O. lanceolata**

tenuifolia Engl. = **O. lanceolata**

urundiensis De Wild. = **O. lanceolata**

wightiana J. Graham = **O. lanceolata**

THESIUM / *87*

The following treatment is principally based on O. M. Hillard's account for Flora Zambesiaca 9/3, 2006, and on Polhill's fascicle Santalaceae of Flora Tropical East Africa, 2005.

Shrubs or herbs, > 300 species, only in the Old World; c. 175 in southern Africa. Considered to be semiparasitic on a wide range of hosts, but local studies missing. Fruits adapted to dispersal by ants.

Taxonomically difficult genus, partly due to the sparsity of herbarium material. Many species poorly known; field work is badly needed, for studies of e.g. impact of fire on growth patterns, association with ants, hybridization.

Our lack of knowledge is summarized in the beginning of the family.

THESIUM LAETUM

Thesium aellenianum Lawalrée

Perennial herb to 40 cm tall, bright green when dried; rootstock to 2-3 mm Ø, erect; with many slender stems, to 1 mm Ø, ribbed-terete, branched in the upper half; branches long, bearing flowers; caulinary leaves few, scale-like, 1,75 × 0,7 mm, recurved towards the stem.

Plateau, rocky outcrop; 1920 m alt.

Known only from the type.

Close to *T. microphyllum,* but rootstock erect, thicker, leaves shorter, and flowers often in clusters (not solitary).

T. amicorum Lawalrée

Annual herb to 70 cm tall, green when dried; root small, slender, branched; stem simple, erect, slender, to 2(-2,2) mm Ø at base, terete, ribbed, glabrous or sometimes with few short hairs at base, upper part of stem branched and bearing flowers; branches to 30 cm long, slender, erect, often longer than main stem, occasionally branched, glabrous, with flowers on lower parts; leaves glabrous, (sub-)opposite, linear, to 10 mm long.

Humid and grassy steppe; 1650-1710 m alt.

Resembling *T. microphyllum* but annual and with single stem, and with shorter fruit crown (2,25 mm, not 3-3,25 mm).

T. angolense Pilger

Small subshrub with numerous slender, glabrous, erect, much-branched, striate stems c. 15 cm tall; leaves many, subulate, spreading, 1 cm long, with white tips; fruit globose with prominent longitudinal ribs and reticulate cross veins.

Ecology unknown.

In habit similar to *T. squarrosum* L. f. from S. Africa, and to *T. equisetoides.*

Known only from the type collected in 1882.

T. annuum Lawalrée

Annual herb to 75 cm tall, glabrous, green when dried; root small, slender, little branched; stem simple, erect, slender, ribbed, to 2 (-2,5) mm Ø at base, slightly winged on lower part, upper part bearing flowers; branches erect, rebranched, to 40 cm long, slender, bearing flowers on upper parts; caulinary leaves few, scale-like, 2-2,5 × 0,5-1 mm, recurved towards the stem, pointed; fruit with 10 longitudinal ribs.

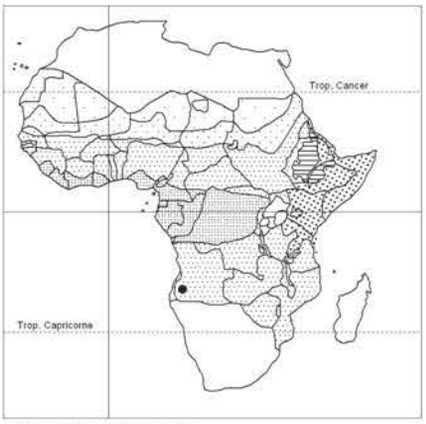
Plateau with dry, light-bushy steppe on sand.

Related to *T. subaphyllum,* but fruit larger, not reticulate between the veins (but irregularly warty).

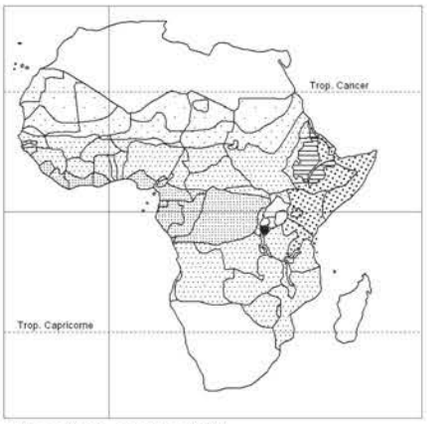
Known only from the type.

T. asterias A. W. Hill – Icon.: Bull. Misc. Inf. Kew 1915: fig. 9 opposite to p. 9, 1915 (flower); Hilliard in Fl. Zambes. 9/3: 237, 2006 (partial).

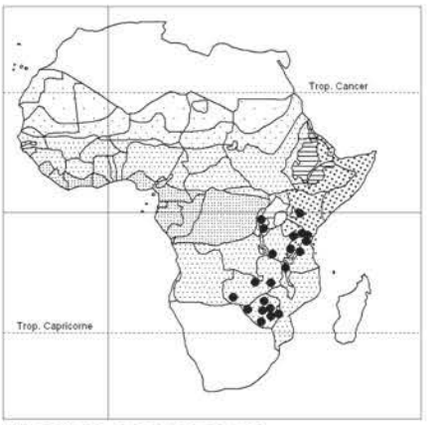
Perennial herb with small woody caudex; stems few, tufted from the crown, 20-40(-60) cm tall, simple below, virgately branched above, leafy, ribbed, ribs terminating in midribs of leaves and bracts; leaves 1,5-3 cm long, linear, smaller upwards, midrib raised above and below; flower buds long, pointed; perianth segments very long (c. 2,5 mm) and tube short (0,4-0,8 mm) with prominent glands, segments bearded at the apex; (easily



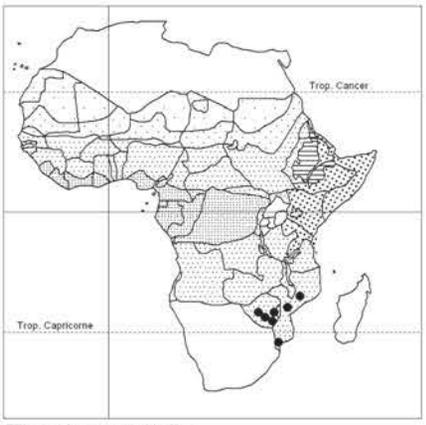
Thesium fuscum



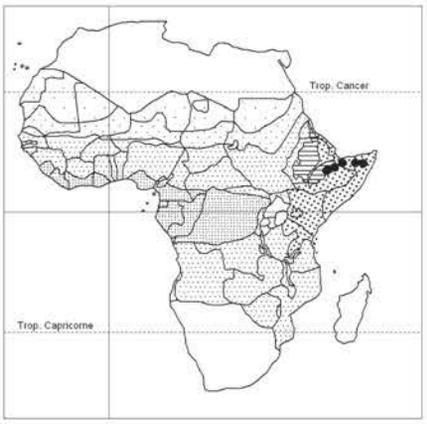
Thesium germainii



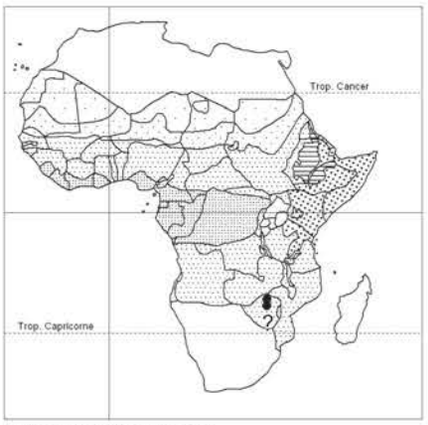
Thesium goetzeanum



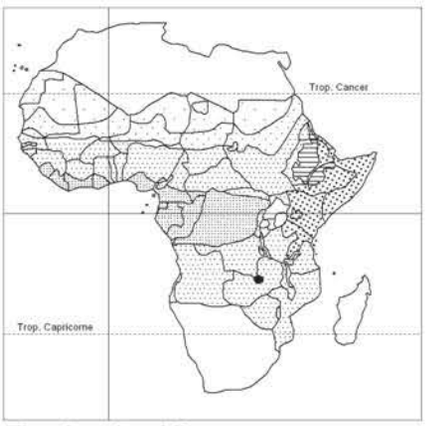
Thesium gracile



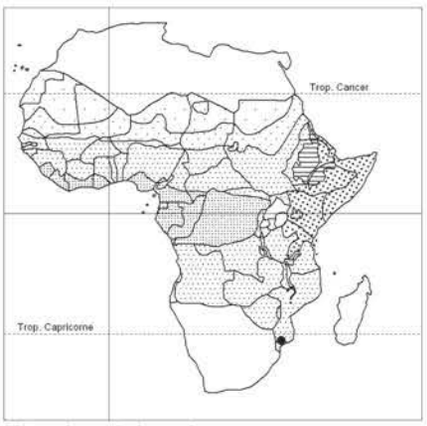
Thesium hararense



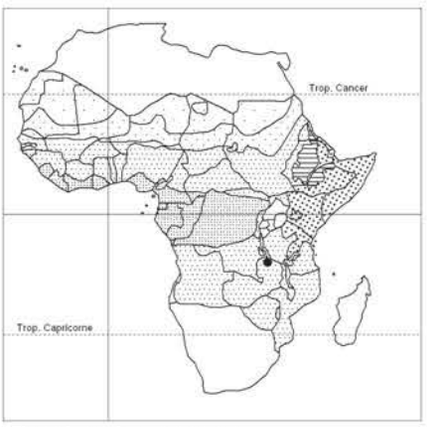
Thesium helodes



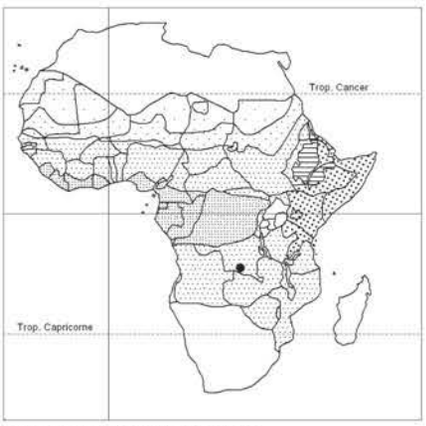
Thesium hockii



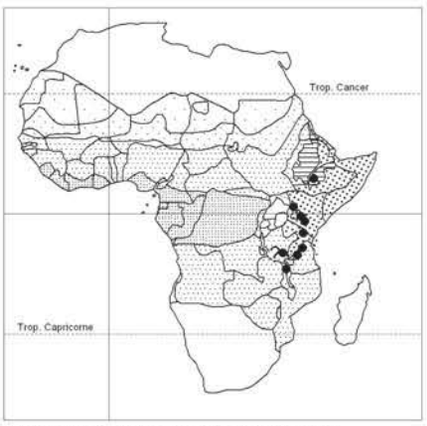
Thesium inhambanense



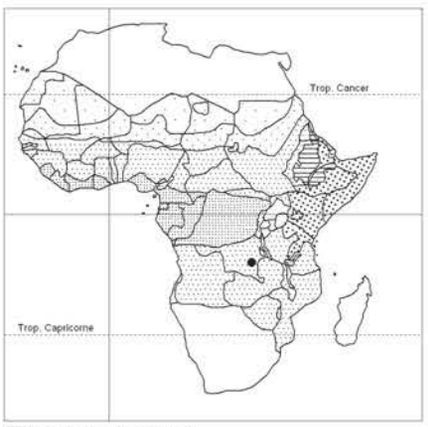
Thesium inonoense



Thesium katangense



Thesium kilimandscharicum



Thesium laetum

recognized species); stigma sessile.

Grassland; 1900-2140 m alt.

S. Africa, Swaziland.

T. atrum A. W. Hill

syn.: *T. quarrei* Robyns & Lawalrée

Perennial herb with woody caudex c. 15-25 mm Ø, crowned with many short closely scaly shoots elongating into stems 15-45 cm tall, 1,5-5 mm Ø at base, erect (or decumbent or ascending); plant black when dry; stems fastigiately branched from or near the base; branches racemose-cymose, ascending at angle of 45° or sometimes 90°, minutely ciliolate to glabrous, shallowly ribbed by decurrent scales; leaves scale-like, thick, 1,2-4 × 0,8-1,2 mm, margins ciliolate; flowers solitary terminating scaly or nude shoots.

Mixed woodland on Kalahari sand, sandy grassland; dry savanna; copper deposits; 900-1400 m alt. – Parasitic on, i.a., *Fimbristylis complanata, Alloteropsis semialata* var. *ecklonii, Tristachya* sp., *Ocimum hockii* (Zaire, fide Lawalrée, Bull. Séances Acad. Roy. Sci. Outre-Mer 37: 205-206, 1992).

Type from Angola (Gossweiler 2713), Luassinga R. (not Suassingua; fide Hilliard in Fl. Zambes. 9/3, 2006).

Collected at few localities with long distances between them, indicating that the species has a wide distribution (fide Hilliard, l.c.).

T. bangweolense R. E. Fries – Icon.: in Wiss. Ergebn. Schwed. Rhod.-Kongo-Exped. 1: 22, 1914 (flower); Fl. Zambes. 9/3: 225, 2006.

Perennial herb with short stout woody caudex c. 12 mm Ø crowned with many very short closely scaly shoots elongating into slender erect stems to 35 cm tall; stems simple to well branched near base, ± virgately branched above, shallowly ribbed by decurrent scales, closely bracteate near base; branches sharply ascending; plant yellowish-green when dried; leaves reduced to sharply ascending scales, 2,4 × 1,6 mm, thick, margins membranous, minutely ciliate; flowers solitary, sessile at tips of very short scaly brachyblasts arranged in long slender spike-like inflorescences accounting for most of the stem's length; *bracts ± 6 forming an involucre below the flower.*

Tall grass in wet meadows.

Poorly known species.

Known with certainty only from the type collected in 1911. A collection from N Malawi uncertain (flower too young).

T. bequaertii Robyns & Lawalrée

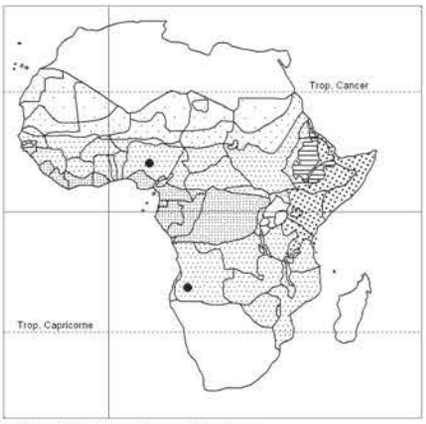
Perennial herb with a woody caudex to 15 mm Ø, crowned with many short closely scaly shoots 20-30 cm tall, 1,25-1,8 mm Ø at base; plant drying reddish-brown; shoots erect, spreading or prostrate, ± ribbed by decurrent scales, fastigiately branched; branches irregularly cymose, 5-12 cm long, ascending at angle of 45°; leaves reduced to scales 1-2 mm long, thick, margins minutely erose-ciliolate; flowers solitary at tips of nude peduncles; bracts 5, c. 1 mm long, forming an involucre below the flower.

Rocky savanna, woodland; c. 1200 m alt. (Zambia).

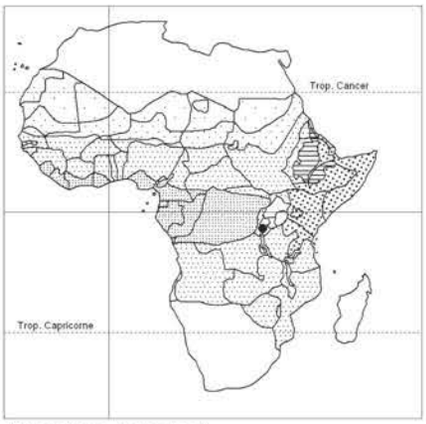
Perhaps only a form of *T. unyikense* (fide Hilliard in Fl. Zambes. 9/3: 230, 2006), but branches laxer, longer, producing more flowers (9-15, not 5). An intermediate specimen from Zambia (Kitwe) known (Fanshawe 11023).

Reported parasitic on roots of *Asteraceae (Melanthera brownii)* and *Poaceae (Hyparrhenia cymbaria)* in Zaire (Lawalrée 1991: 205).

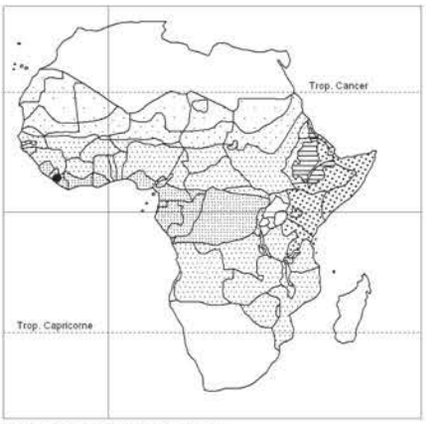
Known from very few collections.



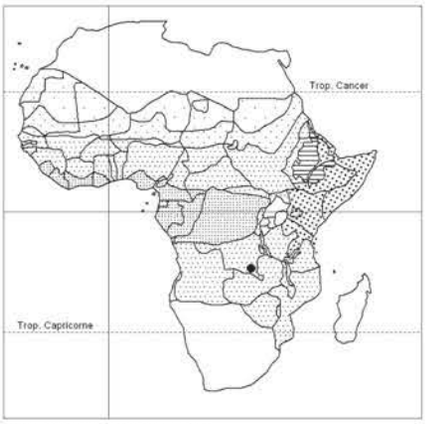
Thesium leucanthum



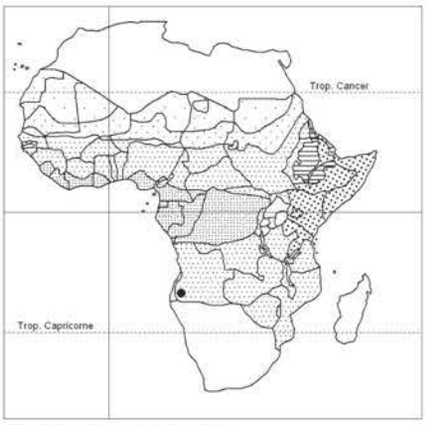
Thesium lewallei



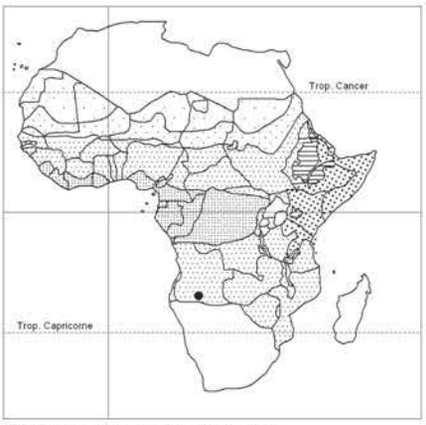
Thesium libericum



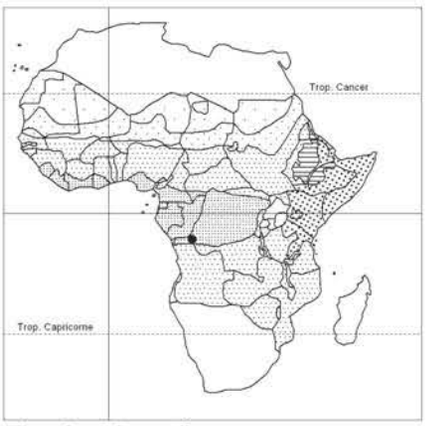
Thesium lisowskii



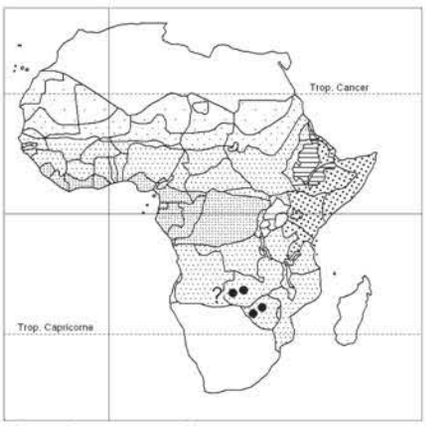
Thesium lopollense



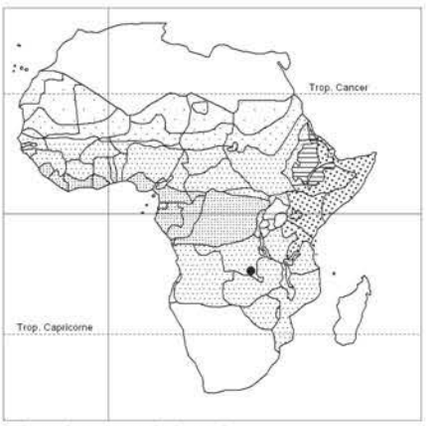
Thesium lycopodioides



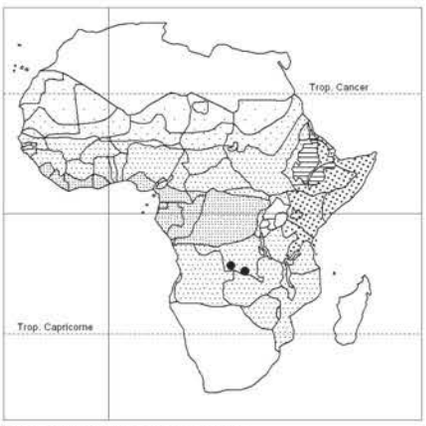
Thesium lynesii



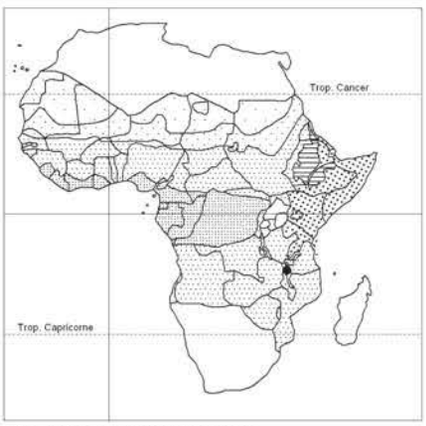
Thesium magnifructum



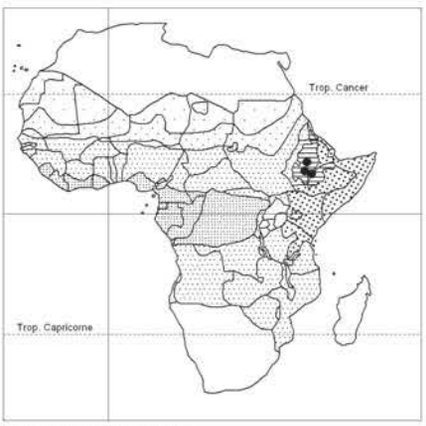
Thesium malaissei



Thesium manikense



Thesium masukense



Thesium matteii

T. brachyanthum Bak. – Icon.: Fl. Zambes. 9/3 : 219, 2006 (partial).

Annual herb with a small taproot; stem to 30-60 cm tall, virgately branched above, nearly leafless, ribbed (not winged), ribs terminating in midribs of scale leaves and bracts; leaves only 2 developed near base of stem, 15 mm long, 0,5 mm wide; scale leaves closely appressed, 1,5-3 × 1-1,5 mm, with strong midrib beneath; fruit bright red-brown, strongly ribbed and reticulate.

Seasonally inundated *Loudetia* grassland on dark grey sandy loam; 1550 m alt. (Tanzania).

In habit similar to the sympatric *T. subaphyllum* but stems not winged and bracts larger and stouter, fruit different.

Distinctive but poorly known species.

T. brevibarbatum Pilger (holotype B destroyed, fragments at K).

Perennial herb with a small thick woody ± stoloniferous caudex; stems many tufted from the crown, 7-20 cm tall, well branched from the base, shallowly ribbed, leafy; leaves ascending, 5-13 mm long, 0,6-1,2 mm wide, those at base of stem often reduced, thick, margins pale; bracts leaf-like, adnate to part of pedicel; stems flowering when very short but these shoots later overtopped by further growth; perianth colour unknown. Plant mauvish-grey when dry.

Miombo woodland, grassy steppe; 900-1700 m alt.

Closely related to *T. gracile.*

T. breyeri N. E. Br. – Icon.: Fl. Zambes. 9/3 : 214, 2006 (partial).

Perennial herb with tufted stems to 1 m long, sprawling, decumbent or ? sometimes erect, leafy, strongly ribbed to ± winged, ribs terminating in midribs of leaves and bracts; leaves ascending or spreading, 12-45 mm long, 0,8-2,1 mm wide, very acute, keeled dorsally; bracts adnate to entire length of pedicel.

Sandy grassland; cultivated areas near the sea; rocky places at higher altitudes; ecology little known; up to 800 m alt. (Mozambique).

S. Africa (900-1300 m alt.).

Near *T. cymosum* (stoloniferous!) but leaves and pedicels longer.

T. bundiense Hilliard – Icon.: Fl. Zambes. 9/3 : 237, 2006.

Perennial herb with stems in small tufts 15-25 cm tall arising from woody stolons 0,3-0,5 mm Ø; plants glaucous but drying black; stems erect, simple below, ± virgately branched above, leafy, ribbed, ribs terminating in midribs of leaves and bracts; leaves linear, 7-15 × 0,8-1,5 mm, sharply ascending, with cartilaginous margins; bracts 10-20 mm long, adnate to entire length of pedicel; perianth colour unknown, with conspicuous external glands on tube; flowering axis often terminating in a long leafy sterile shoot (not in a flower).

On upper plain, in grasslands on schist soils; among quartzite rocks by stream; locally common; c. 1620-1624 m alt.

Known from only 2 collections both made in 1957 (Chimanimani Mts.).

T. chimanimaniense Brenan – Icon.: Fl. Zambes. 9/3 : 219, 2006 (partial).

Bushy perennial herb, dark red-brown when dry; stems erect, 0,5-1 m tall, < 2 mm Ø at base, simple below, virgately branched above, branches sharply ascending, very weakly ribbed by decurrent leaves, sparsely leafy; leaves linear, 7-14 × 1 mm, rapidly becoming smaller upwards, midrib invisible; bracts leaf-like.

Open grassland, or among rocks, of quartzite area; from c. 1500-1700 m alt. (in the Chimanimani Mts. only).

Allied to, and resembling *T. dolichomeres* in habit, foliage, form of flowers (but the latter larger in *T. dolichomeres* with lobes fringed with long hairs).

T. cinereum A. W. Hill

Perennial herb densely ashen-grey hairy; rootstock much branched; stems procumbent, rounded, grooved, 15-30 cm long, crowned with filiform axillary branches or peduncles; branches leafless, terminated by a flower and often bearing leafy branches from the axils of bracteoles, secondary leafy branches in the bract-axils also occur; leaves subulate, acute, 2-5 mm long; bracts linear-lanceolate, c. 0,3 mm broad at base; perianth green, densely hairy; fruit with conspicuous vertical and transverse reticulations.

Ecology not recorded but plant growing in company of perennial *Leguminosae.*

Allied to *T. thamnus,* but more delicate-looking.

Known only from the type ? (Gossweiler 1115).

T. crassipes Robyns & Lawalrée

Perennial herb drying grayish-green; rootstock erect, to 2 cm Ø, woody, branched; stems several, erect, slender, to 26 cm tall, 1,5 mm Ø at the subwoody base, angular, glabrous, branched above; branches ascending, to 7 cm long, rebranched; leaves few on main stem, linear, 3-4 × 0,7 mm, glabrous on lower surface, but margins ciliate.

Grassy savanna in elevated area.

Known ? only from the type collected in 1948.

Resembling *T. nutans* (but leaves in the latter sparsely hairy on lower surface).

T. cymosum A. W. Hill – Icon.: Fl. Zambes. 9/3 : 214, 2006 (partial).

syn.: *T. fenarium* A. W. Hill

Perennial herb with woody stolons and many tufted stems 12-30 cm tall, erect, well-branched from base, leafy, strongly ribbed by vascular strands terminating in midribs of leaves and bracts; lowermost leaves reduced to appressed scales, higher up developed, linear, often incurved, 3-8 × 0,4-1,2 mm, smaller upwards and passing into bracts; flowers either (= often) solitary or in 3-flowered cymules in the axis of each bract, arranged racemosely (despite the epithet), the whole inflorescence often forming a well-branched panicle, often overtopped by younger growth; fruit pallid, strongly ribbed and reticulate.

Grassland (in the Shire Highlands and nearby heights; Malawi-Zimbabwe-Mozambique); 600-2300 m alt.

S. Africa.

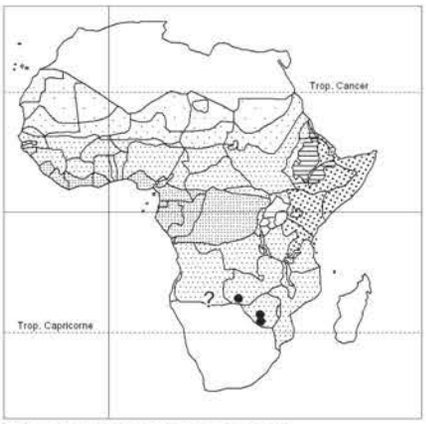
Closely allied to the South African species *T. costatum* A. W. Hill, *T. exile,* N. E. Br. (also Swaziland), which are possibly conspecific (fide Hilliard, Fl. Zambes. 9/3).

Resembling *T. panganense* (Tanzania) vegetatively.

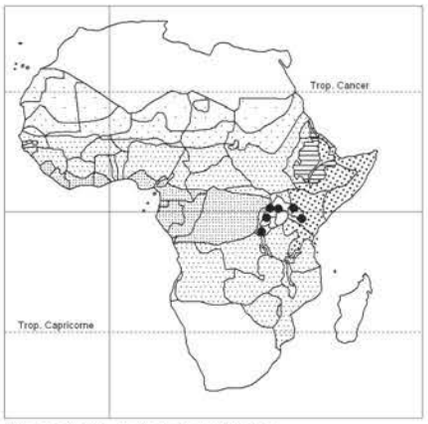
Name sometimes misused for *T. goetzeanum.*

T. dissitum N. E. Br.

Perennial herb with a woody taproot to c. 1 cm Ø at the crown; stems several, tufted from this crown, 15-45 cm tall, erect or ? sometimes spreading, branched from the base, leafy, ribbed by decurrent leaves; branches ascending; leaves ascending-spreading,



Thesium megalocarpum



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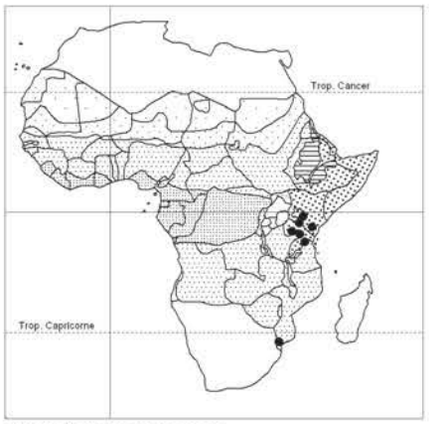
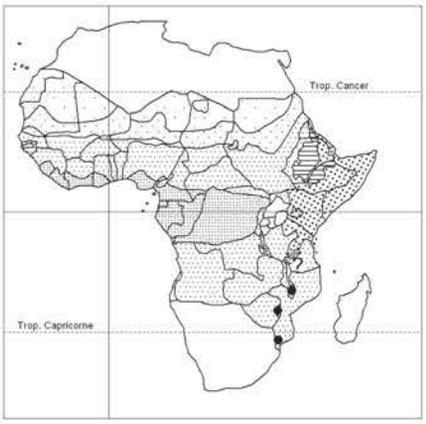
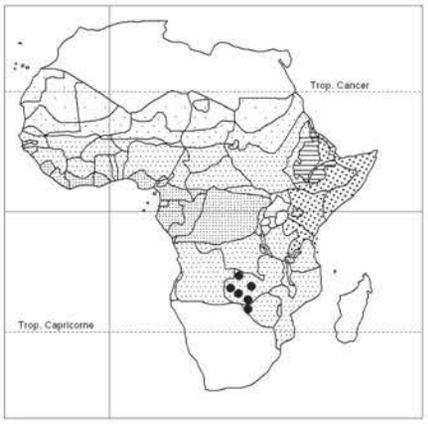


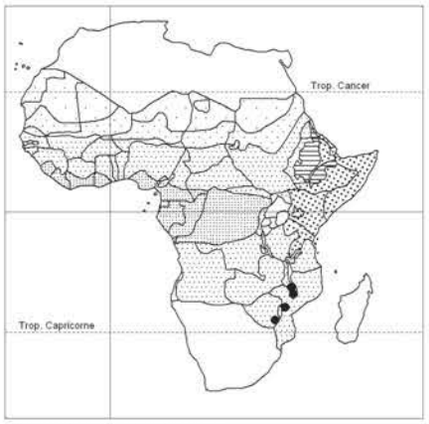
Thesium mukense



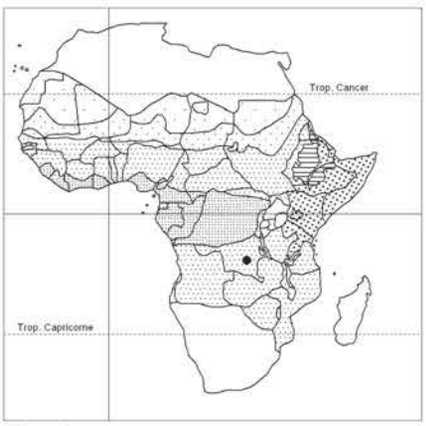
Thesium multiramulosum



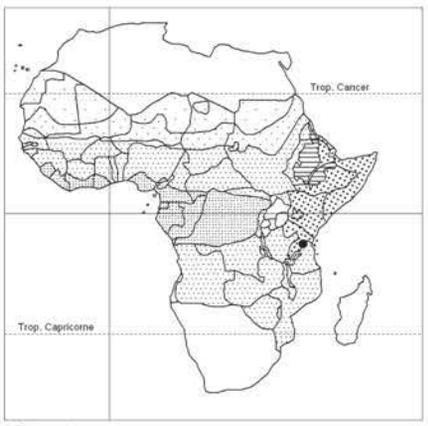
Thesium myriocladum



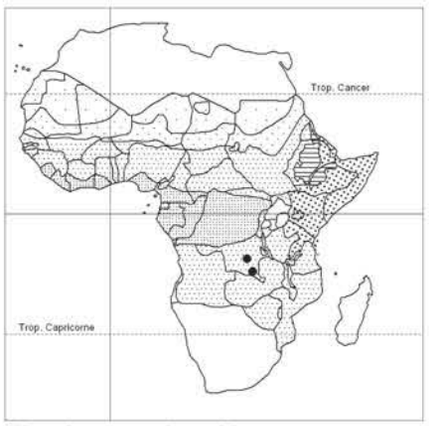
Thesium nigricans



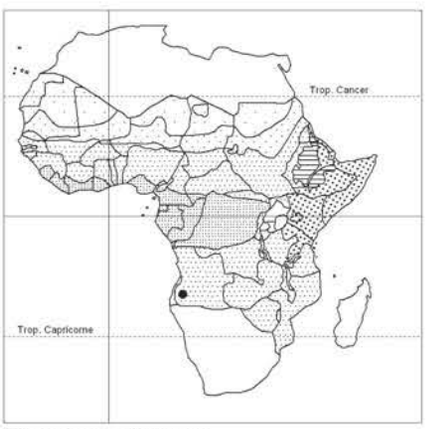
Thesium nutans



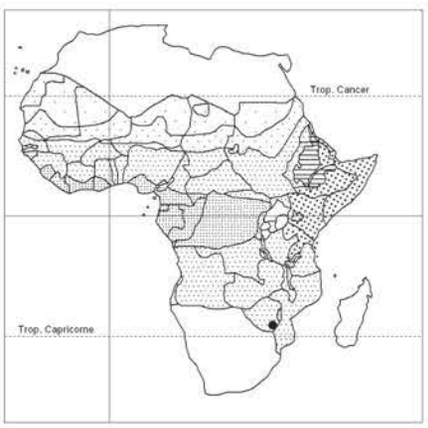
Thesium panganense



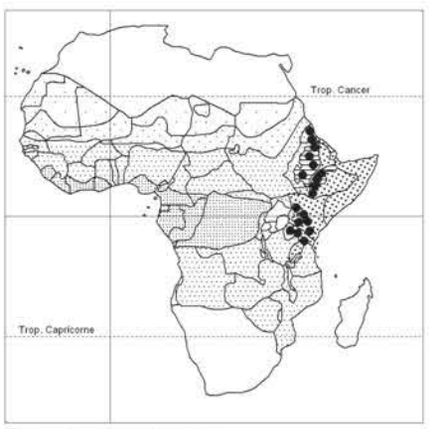
Thesium pawlowskianum



Thesium pilosum



Thesium pygmaeum



Thesium radicans

linear, 15-45 × 0,8-1,3 mm, shorter upwards; bracts 8-23 × 0,5-1,2 mm, leaflike, sometimes adnate to entire pedicel; fruit light brown, strongly ribbed and reticulate.

Miombo and other, mixed woodlands; 900-1400 m alt.

Botswana.

Seems to be very close to *T. mukense* (but with woody stolons). – Poorly known species and more material needed.

Name sometimes misused for *T. goetzeanum.*

T. dolichomeres Brenan – Icon.: Fl. Zambes. 9/3: 219, 2006 (partial).

Perennial herb with erect stems 0,6-1,5 m tall, c. 3 mm Ø at base, simple below, virgately branched above, very weakly ribbed, sparsely leafy; branches rather sharply ascending; underground parts unknown; plant drying dark red-brown or blackish; *leaves sparse,* ascending, linear, 2,5-23 × 0,8-1 mm, rapidly smaller upwards, acicular, elliptic in section, midrib invisible; inflorescence a *large spreading lax panicle* of exceptionally large dull-yellow flowers (tube 1-1,8 mm long, lobes 1,5-2 mm long) with fringed lobes; fruit light red-brown, with lightly raised ribs and reticulations. Distinctive species.

Brachystegia tamarindoides woodland, scrub, dry rocky schists; quartzite crags; 1300-1675 m alt. (only in the Chimanimani Mts.).

Allied to and resembling *T. chimanimaniense* but flowers larger and with fringed lobes.

T. doloense Pilger

Rhizomatous herb with slender erect subterete sulcate stems 20-40 cm tall, unbranched below; branches scarcely or little rebranched, spreading or erect-spreading, 2,5-5 cm long, bearing short strongly curved side twigs ending in a flower; plant drying black; leaves 6-9 mm long, linear-subulate; fruit with thick longitudinal ribs, but little prominent.

Grassy savannas, on sand, rather common (Kinshasa environs).

Resembling *T. fanshawei,* but branchlets ascending at angle of 45° (not at right angles) to the stem; also involucral bracts lanceolate-cuspidate 1,8-2 × 0,6-0,7 mm (not ovate-cuspidate, 1,3 × 0,8 mm) and flowers smaller (perianth tube 0,25 mm long, not 0,7-0,8 mm).

T. equisetoides Welw. ex Hiern

Perennial dwarf shrub, minutely puberulous or nearly glabrous with a thick woody rootstock; much-branched from the base, with tufts of ± prostrate stems, slender, whip-like, branched, with the habit of an *Equisetum* to c. 38 cm long, 2 mm Ø; leaves of the main stems linear, fleshy, 16 × 0,5 mm, curved; leaves of the branches small, subulate; flowers (yellow) at the ends of elongated slender branches, with involucre of 5 subulate acuminate bracteoles (not ciliate); fruit ovoid, 3 mm long, with prominent ribs (10) and reticulations.

Sandy wooded places near river banks; savanna; c. 800 m alt. (Cameroon).

S. Africa (1300-1700 m alt.).

T. fanshawei Hilliard

Perennial herb with a woody caudex (only fragment present on the type) crowned with very short closely scaly shoots giving rise to several stems c. 30 cm long, 3,3 mm Ø base, probably prostrate; plant fuscous when dry; shoots simple below, soon fastigiately well branched, ultimate branches spreading at right angles to axes, each branch articulated to a small cushion, young parts ± ribbed (decurrent leaves); all stems laxly leafy; leaves at base of stem scale-like, those subtending branches linear, 6-10 × 1 mm, spreading to ascending, often incurved, thick, glabrous; flowers (greeny-white) solitary, terminating shoots, with involucre of 5-6 bracts; mature fruit unknown.

Woodland.

Specimens (Fanshawe 5784) were distributed as *T. fastigiatum*. Probably allied to *T. doloense* which differs by branchlets at 45° angle and differently shaped involucral bracts and smaller flowers. Also similar to *T. atrum* (drying black and with all upper leaves reduced to bracts).

Known only from the type collected in 1960.

T. fastigiatum A. W. Hill – Icon.: Fl. Zambes. 9/3: 225, 2006; Polhill in Fl. Trop. E. Afr., Santal.: 4, 2006 (details); Burrows & Willis, Pl. Nyika Plateau: 258, 2005.

syn.: *T. tamariscinum* A. W. Hill; *T. luembense* Robyns & Lawalrée; *T. wittei* De Wild. & Staner p.p.

Perennial herb with a woody, irregularly shaped rootstock 1-4 cm Ø, crowned with many very short closely scaly vegetative buds which elongate into stems 20-60 cm tall, 1-3 mm Ø at base and pale brown, green above; stems fastigiately well branched ± from the base, erect or decumbent; branches irregularly racemose-cymose, ascending at angle of 45°, sometimes filiform to 20-30 cm long, minutely scabridulous to glabrous, shallowly ribbed (decurrent scale leaves); leaves usually scale-like, those at base 1,5-2,5 mm long, those subtending primary branches 2,5-7 × 0,6-1,6 mm; flowers (green) mostly on a scaly shoot initially branching racemosely, irregularly cymose thereafter; fruit strongly ribbed and reticulate. Plant drying grey-green to pale fuscous.

Brachystegia woodland, scrub, upland grassland; on eroded or bare ground on slopes, on loam, sand or gravel or rocky soils; 450-2200 m alt.

Plants with developed leaves (to 11 mm long) occur over the range of the species. Field observations needed!

Belongs to a very characteristic group of species with the flowers subtended by an involucre of bracts (so also *T. unyikense, T. thamnus).*

Not in Somalia *(= T. hararense;* cf. Kuchar, Pl. Somalia).

T. filipes A. W. Hill

Perennial wiry herb drying blackish-brown, with a vertical woody rhizome crowned by tufts of stems, erect, filiform, simple and subwoody at base, ± quadrangular, striate, branched only on upper part, 40-75 cm tall, c. 2 mm Ø at base; leaves scale-like, distant, c. 1,5 mm long; flowers yellow, in terminal spikes 10-25 cm long, with 1 bract and 2 bracteoles with margins membranous and fimbriate; perianth lobes linear, acute, 2-3 mm long, with small swellings between the lobes, tube 0,5 mm long.

Open humid places in savanna, particularly on sand; sandy banks; swamp; temporarily flooded grassy associations; c. 700 m alt. (Zaire).

Flowers similar to those of *T. stuhlmannii*. Resembling *T. libericum* – they are perhaps conspecific (fide Lawalrée in Fl. Gabon 21: 65, 1973).

Range similar to that of *T. doloense.*

T. fimbriatum A. W. Hill 1910, non A. W. Hill 1915 (= *T. brachystylum* A. W. Hill 1920, in S. Africa). – Icon.: Fl. Zambes. 9/3: 219, 2006 (partial); Polhill in Fl. Trop. E. Afr., Santal.: 4, 2005 (details).

syn.: *T. shabense* Lawalrée

Perennial herb appearing annual with a taproot thickening at crown, slightly branching and producing slender rhizomes; stems 1-several, erect to virgately branched, pale to dull green, sometimes tinged orange-bronze, ribbed, 25-85 cm tall, 3-4 mm Ø at base; branches sharply ascending, flowering branches later extended into scaly tips; leaves scale-like, closely appressed, 0,5-2 × 0,4-1,6 mm, increasing in size upwards, distant below, more crowded upwards; flowers with 1 bract and 2 bracteoles or with an involucre of 3-5 bracteoles; perianth greenish yellow, with 5 tooth-like glands alternating with the lobes (fringed with long white hairs); fruit strongly ribbed, reticulations few, obscure.

Wet grassland, swampy areas, moist dambos; less often in drier areas in grassland, wooded grassland on sandy loams; 250-1900 m alt.

Member of a difficult group (with ovate acuminate bracts, clusters of sessile flowers, and tooth-like glands alternating with perianth lobes) which needs further study and also field observations (differences in branching depending on the age of the plant). *T. fimbriatum* is close to *T. stuhlmannii* but occurs further S and in wetter habitats. Also near *T. schliebenii* (with larger flowers and longer hood of perianth lobes), sympatric (fide Hilliard in Fl. Zambes. 9/3).

The type sheet of *T. fimbriatum* (Whyte 321: 4 specimens) segregated by Hill into one specimen as *T. fimbriatum,* the 3 others assigned to *T. stuhlmannii* (NW Tanzania, Bukoba Distr., Itolio).

T. fulvum A. W. Hill

Perennial (?) suffrutex, all parts dark-brown, short-hairy; stems erect, grooved, 25-38 cm tall, lateral branches 2-10 cm long; leaves ± distant, ovate-lanceolate near the base, (sub-)acute on upper part, c. 2 mm long; flowers green, terminal on naked axillary peduncles, flowering branches often borne in axils of bracteoles; bracteoles forming an involucre; perianth c. 1,25 mm long, lobes 0,75 mm long, linear, edges inflexed, hairy on outside; fruit globose, hairy, c. 1,5 mm Ø, conspicuously ribbed and reticulate.

In his description Hill (Bull. Misc. Inf. Kew 1910: 185) only cites the type Chevalier 7627 (collected in 1903). From the same locality and dates A. Chevalier also indicates his n° 7608. From another locality (Cercle de Gribingui, 7° lat. N, 550 m alt., open bush, "brousse", between Fort Crampel and la Moyenne-Koddo, 1902) he also indicates a *Thesium* sp., which could belong to the same species). All these specimens have "green flowers" and are parasites on *Poaceae* (Chevalier, Etude de la flore de l'Afrique centrale française 1: 265, 1913).

Very similar to *T. viride* (with leaves and perianth-lobes with ciliate margins; glabrous in *T. fulvum).*

T. fuscum A. W. Hill

Subshrub with erect, minutely pilose, reddish brown, cylindrical stems c. 30 cm tall, much branched above, branches slightly grooved; leaves subulate, acute, c. 2 mm long, minutely pilose dorsally; flowers borne on short branched compact axillary branches covered with pilose imbricating broadly ovate acuminate bracts and bracteoles; perianth 3 mm long, hairy outside, lobes 1,5 mm long, hooded, glabrous, margins inflexed; fruit globose, minutely pilose, orange-brown when young, ribs well marked and reticulate.

Ecology unknown.

Known only from the type (Gossweiler 4209B).

T. germainii Robyns & Lawalrée

Perennial herb drying olive-green; rootstock to 4 cm Ø, woody, branched, from where arise several erect stems to 21 cm tall, 1,5-2 mm Ø at the subwoody base, subterete, striate, glabrous, branched; branches ascending, c. 10 cm long, leafy, rebranched, terminating in a flower; caulinary leaves sparse, 2 mm long, 1,2 mm broad, margins ciliolate; flowers terminal, sessile, subtended by 4-5 bracteoles; flower tube 0,7 mm long, lobes 1 mm long, 0,3-0,4 mm broad with inflexed margins; fruit c. 2,5 mm long, to 1,8 mm Ø, with 10 ribs, reticulate.

Wooded savanna.

Related to *T. lopollense.*

Known only from the type collected in 1955 (Burundi; Germain 8615).

T. goetzeanum Engl. – Icon.: Polhill in Fl. Trop. E. Afr., Santal.: 4, 2005 (details); Fl. Zambes. 9/3: 236, 2006 (partial); Troupin, Fl. Rwanda 1: 178, 1978 (sub nom. *T. caespitosum).*

syn.: *T. schweinfurthii* Engl. var. *laxum* Engl.; *T. rogersii* A. W. Hill; *T. rhodesiacum* Pilger, nomen; *T. caespitosum* Robyns & Lawalrée; *T. cymosum* sensu Vollesen, Op. Bot. 59: 63, 1980, non A. W. Hill; *T. dissitum* sensu Vollesen, l.c., non N. E. Br.

Perennial ± glaucous herb with a thick woody caudex sometimes with rhizomes, and crowned with a tuft of stems, sparingly to well branched, leafy, strongly ribbed, 10-120 cm tall, ribs extended into midribs of leaves and bracts; leaves at base of stem scale-like, glaucous, thick, those on stem linear, 6-20 × 1-1,5 mm, passing into smaller bracts upwards; flowers usually solitary, greenish, in each bract axil, racemosely arranged; bracts leaf-like, broad with minutely scabridulous margins, adnate to the pedicel up to the bracteoles; external glands of perianth tube conspicuous; lobes 1,2-2 mm long densely white-bearded from apex; fruit c. 3 mm long, yellowish or ± reddish-buff, strongly ribbed, reticulations weak. Plant often mauvish-grey when dry.

Grassland, often in areas subject to fires; open grassy woodland; on a variety of soils incl. serpentine; 250-2350 m alt.

Variable in habit: stems short, sparingly branched after fire, taller and well branched when unburnt. Also variable in length of bracts.

Botswana, S. Africa.

Closely related to *T. schweinfurthii, T. mukense,* but distinguished by the more cymose structure of the inflorescences.

T. gracile A. W. Hill

syn.: *T. palliolatum* A. W. Hill

Perennial herb with a thick woody caudex to 5 cm Ø and woody stolons to 1 cm Ø; crowned by many tufted stems 15-40 cm tall, leafy, strongly ribbed, ribs terminating in midrib of leaves and bracts, paniculately branched above; leaves linear, ascending, 10-35 × 0,5-1,5 mm, smaller upwards and passing into bracts, thick, minutely scabridulous or smooth, the ones at base shorter, broader; flowers yellowish in cymules with the bract adnate to lower part of penduncle (leaves cymules); external glands of tube conspicuous, lobes white-bearded from apex; fruit light red-brown, ribs and reticulations prominent but not strongly raised. Plant mauvish-grey when dry, like *T. goetzeanum* and the related and sympatric *T. brevibarbatum.*

Grassland, open grassy woodland; 50-1220 m alt.

S. Africa.

T. hararense A. G. Miller – Icon.: Thulin, Fl. Somal. 2: 147, 1999.

Perennial herb to slender shrub with a woody base, glabrous (occasionally scabrous); stems several, ascending, much branched above, 10-30 cm tall; leaves linear, terete or flattened, 5-30 mm long, the upper ones smaller, scale-like; inflorescence of many spikes 2-3 cm long; bracts and bracteoles shorter than flower and fruit; flowers greenish-brown outside, whitish inside; lobes hooded, densely villous within; fruit conspicuously ribbed and reticulate.

Open grassland and open rocky places on limestone slopes; 1350-2200 m alt. – Parasitic on *Poaceae*.

A record of *T. fastigiatum* from Somalia is *T. hararense.*

Resembling *T. viride* but inflorescence and leaves different.

T. helodes Hilliard

Perennial herb with slender rhizomes c. 1 mm Ø and few distant very short scaly vegetative buds developing into stems 15-30 cm tall, c. 1 mm Ø, erect, distantly leafy, simple to sparingly virgately branched above, ribbed by decurrent leaves; leaves scale-like, 1-2 × 0,4-0,8 mm, thick, closely appressed; flowers few to many in long lax spikes, rarely a filiform scaly shoot developing below a flower and much overtopping it; bracteoles 2, often larger than bract, erose-ciliate; perianth "white", external glands conspicuous, lobes hooded, margins erose fimbriate, inflexed; fruit light reddish-brown, strongly ribbed and reticulate.

Marshes; c. 1370 m alt.

May occur also in S part of Zimbabwe. A sterile specimen exists from near Fort Victoria (Masvingo).

Distinctive by its slender stolons and "leafless" stems.

Resembling *T. singulare.*

T. hockii Robyns & Lawalrée

Perennial herb drying glaucous green; rhizome and stems woody; stems erect to 20 cm tall, 2 mm Ø, slender, zigzag, glabrous, branched, ribbed; branches erect, filiform, to 3 cm long, leafy, rebranched, terminating in a flower; leaves on stems scale-like, appressed, lanceolate, 2,5-3,5 mm long, ciliolate, the lower ones imbricate; flowers terminal, sessile, subtended by an involucre of 5 ciliolate bracteoles; flower tube 0,6 mm long, lobes 1 mm long with inflexed margins; fruit ribbed and reticulate. Flowers often galled.

Ecology unknown.

Related to *T. myriocladum* (drying fuscous to dark red-brown and with branchlets at angle of 90°); also near *T. katangense.*

Known only from the type collected in 1911.

T. inhambanense Hilliard

Perennial herb with woody caudex, drying black; stems many in tuft from caudex crown, 20-35 cm tall, virgately branched from the base, leafy, strongly ribbed, ribs terminating in midribs of leaves and bracts; leaves linear, 25-50 × 1,2-1,8 mm, ascending, becoming smaller upwards; flowers in dichasial cymules racemosely arranged at branchlet tips; bracts linear, leaf-like, adnate to base of peduncle; flower colour unknown; tube 0,6-1 mm long, lobes 1-1,4 mm long, very acute, densely white-bearded from apex; fruit globose, light red-brown, ribbed and reticulate.

Area cleared of trees in clayey sand; locally common; 30 m alt.

Known only from the type collected in 1935; but a specimen from S Malawi (Hall-Martin 794, K) collected in mopane savanna, c. 140 m alt., flowerless and fruitless, may be the same species.

Related to *T. gracile* (drying mauvish-grey).

T. inonoense Hilliard – Icon.: Fl. Zambes. 9/3: 219, 2006 (partial).

Annual (?) herb with solitary stem 30-40 cm tall, c. 1,5 mm Ø at base, simple below, virgately branched above, branches sharply ascending, distantly leafy, strongly ribbed, ribs terminating in midribs of scale-leaves and bracts; all leaves scale-like, lanceolate, acuminate, closely appressed, c. 1 × 0,5 mm; flowers sessile in axil of each bract on short branchlets arranged along lax spike-like inflorescences; pedicel absent; flowers cream, tube 0,3-0,6 mm long, external glands absent or inconspicuous, lobes 1,2-1,6 mm long, hooded, margins inflexed, sparsely fringed below; fruit globose, 1,5 mm Ø, buff-coloured, ribbed and reticulate.

Steep bank above stream among tall grass on yellow soil.

Known only from the type collected in 1955, first determined as *T. bangweolense* (a perennial herb with stout caudex).

Related to *T. fimbriatum* but differs in smaller floral bracts, perianth and fruit, and sparsely (not densely) fringed perianth lobes.

T. katangense Robyns & Lawalrée

Perennial herb drying bright green, with a rhizome giving rise to several erect stems 13 cm tall, to 2 mm Ø at base, slender, subwoody at base, glabrous, sulcate-striate, fastigiately branched above; sterile branches slender to 7 cm long, simple; leaves on stems scale-like, erect, lanceolate, long-acuminate, to 5 mm long, margins ciliolate; flowers solitary at apex of leafy branchlets 3 mm long, subtended by 4-6 bracteoles forming an involucre; flower tube 1,5 mm long, lobes 1,8 mm long; fruit 3,5 mm long, strongly ribbed and reticulate.

"Steppe" (Biano Plateau).

Related to *T. hockii, T. ussanguense, T. robynsii.*

Known only from the type collected in 1948.

T. kilimandscharicum Engl., incl. fa. *decumbens* Engl. and fa. *erectum* Engl. 1895 (or var. *erectum* Engl. 1891?).

syn.: *T. ulugurense* Engl.; *T. rungwense* Engl.

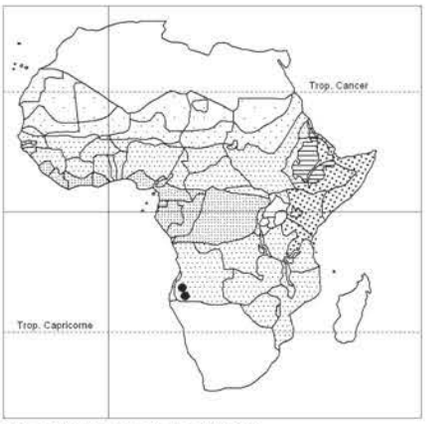
Annual or short-lived perennial ericoid-like herb or undershrub, often ± yellowish-green with a taproot, crowned by stems prostrate to tufted, densely leafy, much branched from base, broadly ribbed by decurrent leaves, and distinctively channeled between the leaves, 9-40 cm long; leaves linear, flattened, keeled, 5-20 × c. 1 mm, ascending-recurved to spreading; inflorescence of 1-5-flowered axillary branches, hidden by leaves; bracts and bracteoles leaf-like; flowers white, glabrous within, 4-merous, lobes 0,5-1 mm long, hooded; fruit pale orange (dry), c. 1,25 mm long, indistinctly longitudinally nerved. Easily recognized.

Montane and burnt upland grassland; *Erica arborea* scrub, *Philippia* woodland, afroalpine zone, on peaty and stony or rocky ground; 2200-4200 m alt.

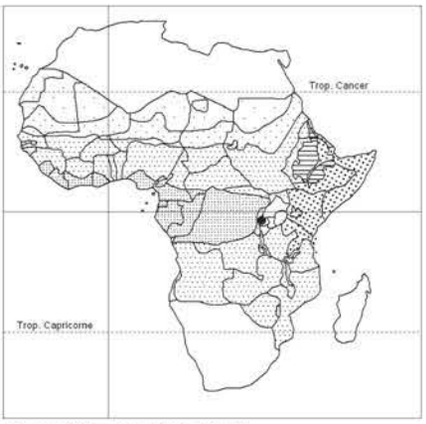
Closely allied to *T. nigricans* (perennial!) with similar ribbed stems, leaf characters and inflorescence, but flowers of *T. nigricans* 5-merous and with longer tube and style.

T. laetum Robyns & Lawalrée

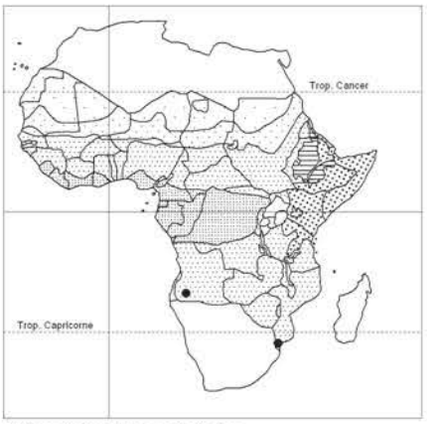
Perennial herb drying light green; with a woody rhizome and several erect slender stems to 17 cm tall, 1,5-2 mm Ø at base, subwoody below, sulcate-striate, glabrous, simple below, branched above; branches ascending, forming inflorescences; leaves scale-like, erect, lanceolate, 3,5 × 1,5 mm with minutely ciliolate margins; flowers sessile subtended by 5 bracteoles forming an involucre, 5-merous, with tube 1 mm long and lobes 1,4 mm long with inflexed margins; fruit unknown.



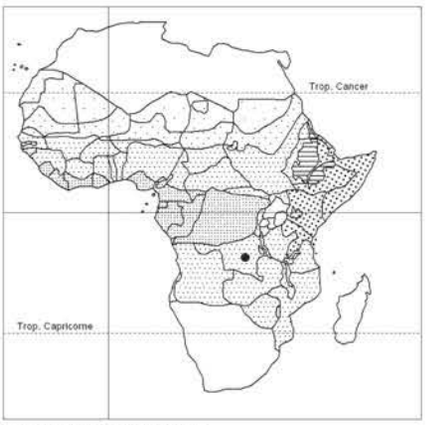
Thesium rectangulum



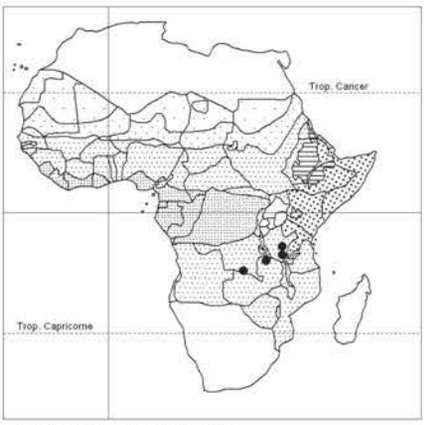
Thesium reekmansii



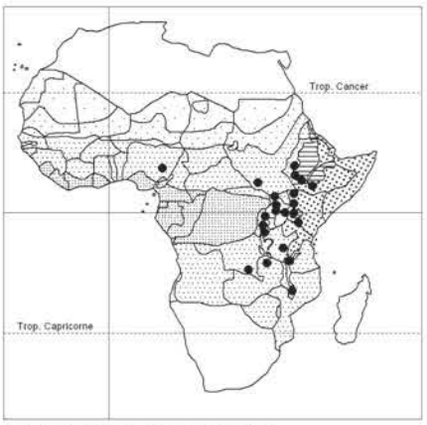
Thesium resedoides



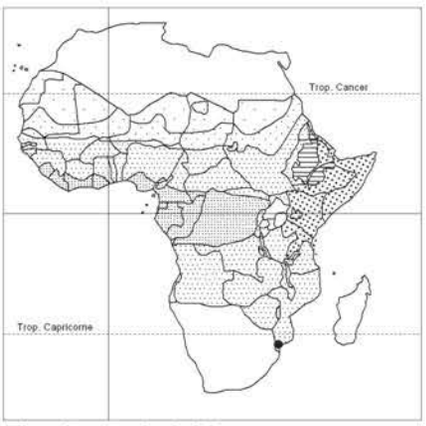
Thesium robynsii



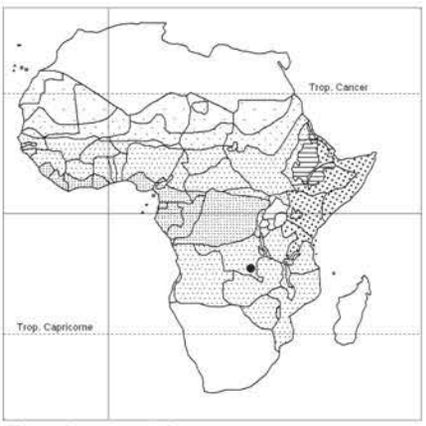
Thesium schliebenii



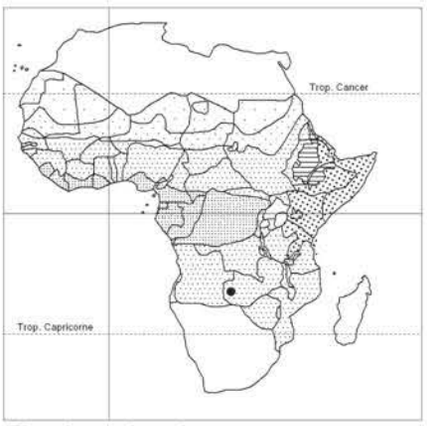
Thesium schweinfurthii



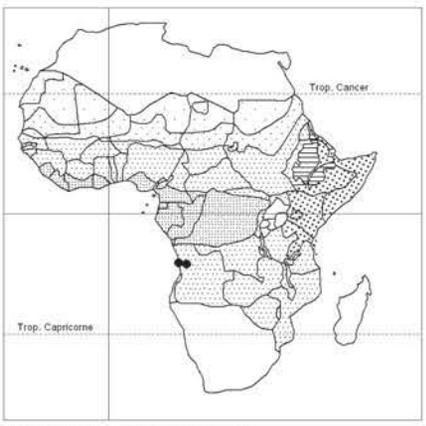
Thesium scirpioides



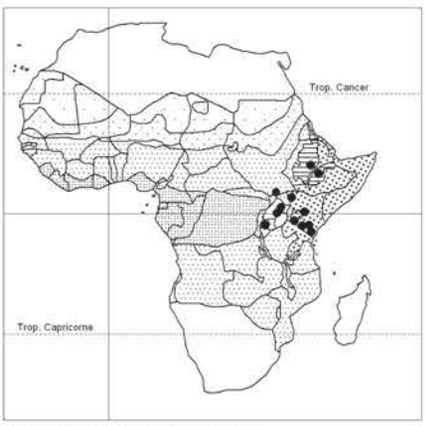
Thesium setulosum



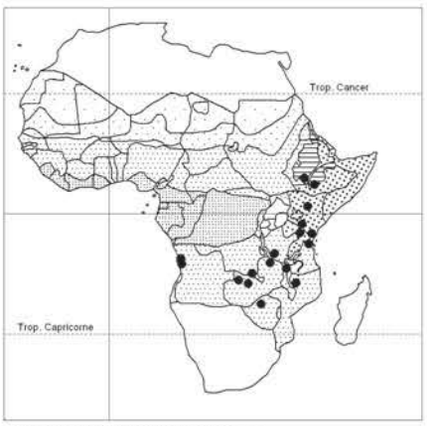
Thesium singulare



Thesium strigulosum



Thesium stuhlmannii



Thesium subaphyllum

Open forest on edge of plateau (Kundelungu).

Known only from the type collected in 1948.

Related to *T. bequaertii.*

T. leucanthum Gilg

Low subshrub with erect stems to 30 cm tall arising from a thick root; stems much branched above; branchlets erect, very smooth with deep longitudinal grooves; leaves very few, scale-like; 1 × 0,5 mm; bracts and bracteoles few, lanceolate, 2-3 mm long; flowers yellow, towards the apices of slender branches, in short spikes c. 1 cm long; lobes 4, c. 5 mm long.

Swampy ground; 1300 m alt. (Angola).

Related to *T. stuhlmannii.*

T. lewallei Lawalrée

Perennial herb drying dark green; rhizome erect, thick, woody; stems erect, tufted, to > 35 cm tall, 2 mm Ø at base, slender, little branched, subterete and ribbed, minutely papillose-scabrous; lower leaves dense, to 5 mm long, 1 mm wide, scale-like, scarious; leaves on middle and upper parts few, to 35 mm long, 0,75 mm wide, pale; inflorescences to 17 cm long, lax, with many flowers; bracts 10 × 0,75 mm, with whitish margins; bracteoles 2, linear; flowers sessile, 5-merous, tube 1,25 mm long, lobe 2 mm long, with ciliate margins; fruit 2,5-2,75 × 2-2,25 mm, light brown (dry), ribbed and reticulate.

Recently burnt savanna; wooded savanna; savanna with *Entada, Combretum* or with *Protea,* recently burnt; (very) common; 900-1000 m alt.

Very close to *T. ussanguense* but with more slender stems, longer and narrower leaves.

T. libericum Hepper & Keay

Perennial herb drying chestnut brown with a woody rootstock and erect tufted stems to 40 cm tall, 1 mm Ø at base, longitudinally grooved, sparsely branched; leaves scale-like, < 1 mm long; flowers whitish, in axillary clusters or solitary; bracts and bracteoles several, linear-lanceolate, 1-2 mm long; flower tube 1 mm long, lobes 4(-5), linear, 1,5-2 mm long, hairy inside; fruit globular, irregularly ribbed.

Coastal savanna; locally common.

Very similar to *T. filipes,* and perhaps conspecific.

T. lisowskii Lawalrée

Annual herb to 50 cm tall, glabrous, drying green; root small, slender, branched; stem simple, erect, slender, to 1,2 mm Ø at base, terete, ribbed, branched in upper half; branches to 25 cm long, erect; leaves on stem scale-like, 1,2 mm long, appressed; flowering spikes terminal; bracts 2 × 1 mm, ovate, acute; bracteoles 2, 1,5-2 × 1 mm, with pale margins and somewhat fimbriate; flowers axillary, sessile, 5-merous, tube 0,6 mm long, lobes 0,7 mm long with inflexed ciliate margins; fruit subglobose, 2-2,2 mm Ø, ribbed and reticulate, greyish-green when dry.

Pool in the steppe; humid steppe with *Lentibulariaceae* and on river sides; dry steppe on the edges of lateritic hardpan; 1500-1680 m alt.

Related to *T. vimineum.*

T. lopollense Hiern p.p. (specimens nos. 1-4 on the sheet of the holotype at BM, fide Hilliard in Fl. Zambes. 9/3).

Perennial herb with a thick woody rootstock, drying green; stems numerous, spreading, distinctly hairy at base, 5-20 cm tall, much branched from the base; branches short, stiff, angular, leafy at least on upper part; leaves scale-like, (lanceolate-)subulate, acute, thick, distant, margins curved inwards, decurrent at base; flowers solitary, terminating the branches of short axillary leafy shoots; bracteoles 4-5, ciliolate, forming a small involucre; perianth lobes 5, hooded, fleshy, ± glabrous; fruit ovoid, c. 2,5 mm Ø, ribbed and reticulate.

In pastures among low bushes, *Euphorbiaceae* (cf. *Clutia benguelensis), Gnidia, Ascolepis.*

Closely allied to *T. myriocladum.*

Known only from the type gatherings (December 1859, January 1860).

Reported from Botswana by Burgoyne in Germishuizen & Meyer, Pl. South. Africa: annot. checklist, Stelitzia 14: 857, 2003, but not cited by Hilliard in Fl. Zambes. 9/3. This record is perhaps *T. myriocladum.*

T. lycopodioides Gilg

Low subshrub with prostrate branches c. 30 cm long, very much divaricately branched, densely hispid-pilose; leaves few on elongated branches, very densely placed on short floriferous branches, narrowly imbricate, (linear-) lanceolate, c. 1,5 mm long, slightly decurrent, glabrous above, densely hispid-pilose below; flowers solitary at apices of branches, almost entirely covered by numerous imbricated leaves; flowers white, c. 2-2,2 mm long, lobes c. 0,7 mm long, dorsally hispid-pilose; fruit unknown.

At edge of wood on stony ground; 1300 m alt.

Very close to *T. strigulosum* from which it can be distinguished by the short densely leafy branches and by the shorter and less distant leaves on the main stems. But an intermediate specimen is known (Gossweiler 1113). The two are perhaps conspecific.

Known only from the type collected in 1900.

T. lynesii Roberts & Lawalrée

Probably perennial herb drying yellowish green, glabrous, base unknown; stems probably tufted from the base, 20-25 cm tall, branched, slender; branches erect, filiform, 15-16 cm long, rebranched, ultimate branchlets 1-4 mm long, each terminated by a flower; leaves linear-subulate, thick, curved, 1-3 cm long; flowers subtended by 4-5 bracteoles forming an involucre, 5-merous; tube 0,4 mm long, black when dry; lobes 0,8 mm long, yellowish when dry, with inflexed papillose margins; fruit ovoid, 2 mm long, ribbed, inconspicuously reticulate, glabrous.

Savanna, rare or occasional.

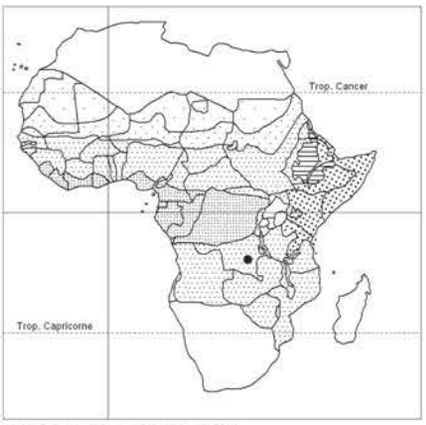
Known only from the type collected in 1933.

Close to *T. equisetoides* but differs by glabrous erect stems with long leaves, very short flowering shoots and very small anthers (0,15 mm long).

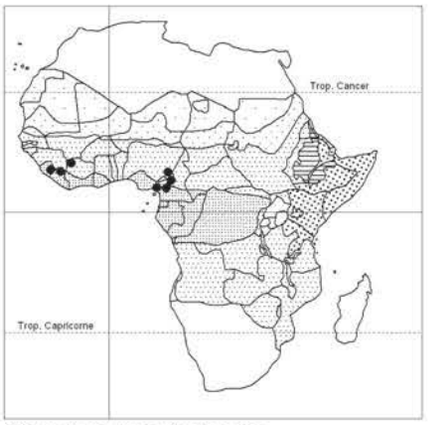
T. magnifructum Hillard – Icon.: Fl. Zambes. 9/3: 225, 2006.

syn.: *T.* sp. (De Winter 3728) sensu Merxm. Prodr. Fl. Sudwestafrika 21: 5, 1969.

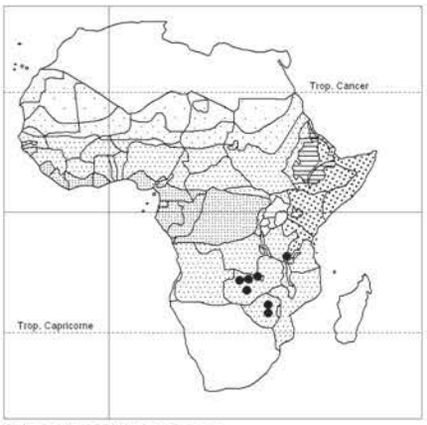
Perennial herb with a woody taproot (no caudex) c. 3-8 mm Ø at crown; stems many, erect, decumbent or ascending, 15-40 cm long, 1,5-5 mm Ø at base, fastigiately much branched from base; branches ascending at angle of 45°, slightly ribbed (decurrent



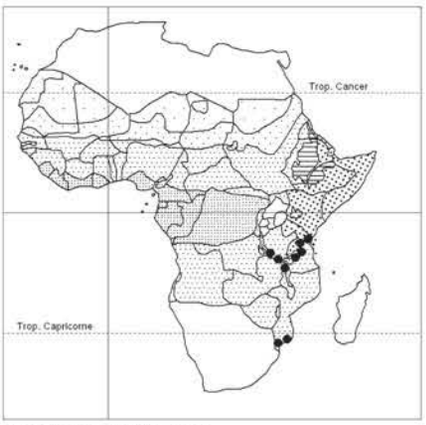
Thesium symoensii



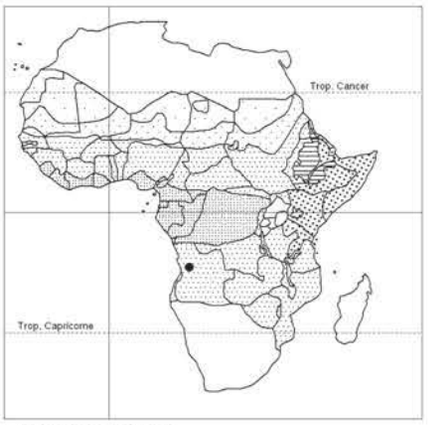
Thesium tenuissimum



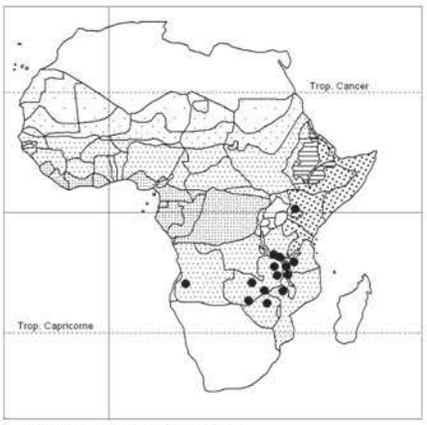
Thesium thamnus



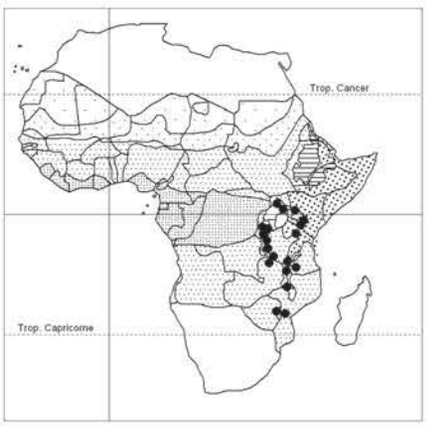
Thesium triflorum



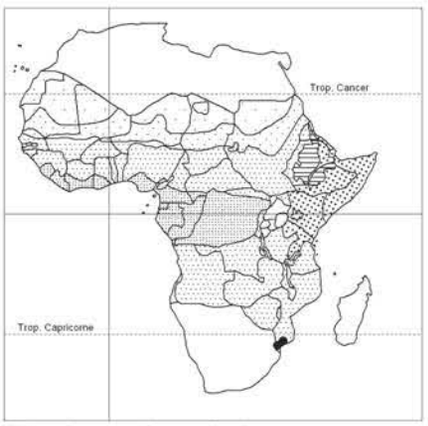
Thesium triste



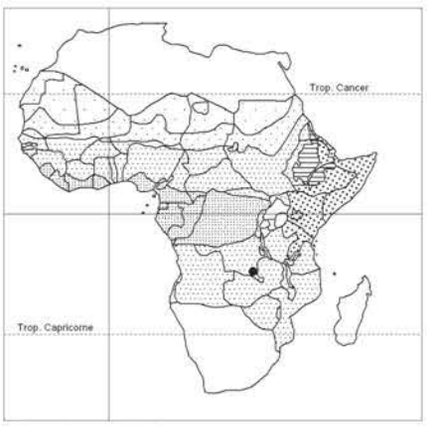
Thesium unyikense



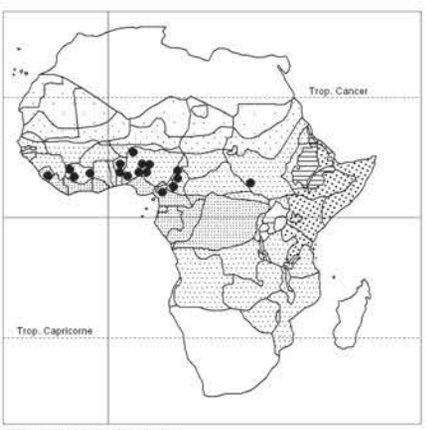
Thesium ussanguense



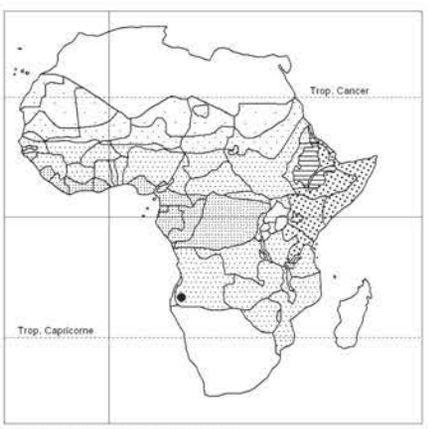
Thesium vahrmeijeri



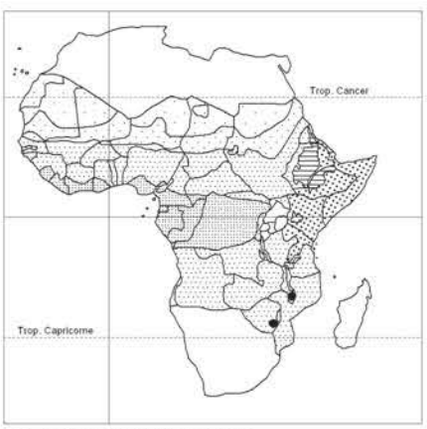
Thesium vimineum



Thesium viride



Thesium welwitschii



Thesium whyteanum

leaves), leafy, minutely scabridulous or not; leaves linear, 5-16 × 0,8-1 mm, adaxial surface ± flat, abaxial surface rounded, glabrous, upper ones scale-like; flowers solitary at tips of ebracteate peduncles 15 mm long, racemously to cymosely arranged, sometimes in very lax, irregular monochasial cymes; bracts 4-5, narrowly elliptic, glabrous, free, forming an involucre; perianth pale creamy yellow, tube 0,6-0,8 mm long, lobes 0,8-1,2 mm long with hood 0,25-0,3 mm, margins inflexed; fruit 3,2-4 mm long, grey-green, strongly ribbed and reticulate. Plant drying grey- or yellowish green.

Woodland and grassland on sand; marshes; 900-1300 m alt.

Caprivi Strip (misidentified as *T. utile* A. W. Hill), Namibia (Runtu on the Okavango R.) N Botswana. Probably also in E Angola.

T. malaissei Lawalrée

Perennial herb drying green; rootstock erect or oblique, thick, woody; stems several, to 40 cm tall, 2 mm Ø at base, simple or little branched, costate-angular, glabrous; branches erect, to 20 cm long; lower leaves on stems scale-like, ± ovate, c. 1,5 mm long; leaves on stems distant, linear, 13 × 1,2 mm, glabrous; flowering spikes to 16 cm long; flowers solitary in axil of each bract, 5-merous; tube 2,5 mm long; lobes linear, 3,5 mm long, margins inflexed, ciliate; fruit ellipsoid, 3-3,5 mm long, ribbed and reticulate.

Edges and centre of dambo, rather common; 1000 m alt.

Very close to *T. ussanguense, T. robynsii,* but bracteoles ovate and perianth lobes not very much longer than tube.

Known only from the type collected in 1968.

T. manikense Robyns & Lawalrée

Rhizomatous herb drying olive-green, glabrous all over; stems 20-30 cm tall, branched; leaves linear-lanceolate, 4-5 mm long, appressed; flowers pedicellate, in axillary and terminal cymules, 5-merous; tube 0,8-1 mm long, lobes 1,5-1,7 mm long, obtuse, with inflexed, papillose margins, stamens attached to lobes by a tuft of hairs; fruit ellipsoid, c. 3 mm long, ribbed and conspicuously reticulate.

Dambos; periodically inundated meadows and subject to fire.

Known only ? from the type collected in 1911.

T. masukense Bak.

Annual ?, with erect, distantly leafy stems c. 30 cm tall, 2-3 mm Ø at base, simple below, soon virgately branched, strongly ribbed (vascular strands terminating in scale leaves and bracts); branches sharply ascending; leaves scale-like, 1-1,5 × 0,8-1 mm, increasing in size upwards, passing into floral bracts, closely appressed, acuminate; flowers sessile in axil of each bract, crowded on short simple or branched spikes, the uppermost twigs forming long many-flowered spikes, all spikes forming a panicle; bracts 2,5 × 1,5 mm, keeled, with membranous erose-ciliate margins; flower colour unknown; tube 0,4-0,5 mm long without external glands; lobes (4-)5, 0,8-0,9 × 0,4 mm, with slightly inflexed margins; fruit c. 1,5-1,75 mm long, buff-coloured to light reddish-brown, strongly ribbed and reticulate.

Open *Brachystegia* woodland; 1980-2100 m alt.

Known only from 2 collections (type collected in 1896, the second one in 1975).

Similar to *T. fimbriatum,* but perianth much smaller and lobes nearly glabrous. Suspected by Hilliard (Fl. Zambes. 9/3: 222, 2006) to be a cleistogamous form of that species.

T. mattei Chiov.

Plant with creeping stems, simple or little branched, 7-17(-30) cm long; leaves scale-like, ovate, ±appressed, 1-2(-3) × 0,5 mm; flowers greenish-yellow or white, 5-merous, in axils of leaves or few-flowered terminal spikes, 2,5(-3,5) mm long; lobes c. 2 mm long, hooded, glabrous within; fruit ovoid, 2(-2,5) mm long, 5-ribbed, *persistent perianth equalling nut in length.*

Wet pasture in valley; upland grassland; 2000-3050 m alt.

T. megalocarpum A. W. Hill – Icon.: Fl. Zambes. 9/3: 237, 2006 (partial).

syn.: *T. megalocarpum* sensu Roessler in Merxmüller, Prodr. Fl. SW Afrika 21: 4, 1969, p.p., excl. syn. *T. dinteri* A. W. Hill, a distinct species, and specim. Dinter 544 *(= T. resedoides); T. burchellii* A. W. Hill

Perennial herb or subshrub, glaucous or pale green (even when dry), basal part not seen, with numerous, probably tufted stems (from a caudex?), 0,25-1 m tall, 5-8 mm Ø at base, much branched from below, woody, grooved, ±quadrangular above, glabrous to minutely papillose, leafy; leaves ascending, linear, 7-35 × 0,8-1,2 mm long, passing into bracts; flowers 1-4 racemosely arranged at tips of closely leafy twigs; bracts leaf-like, adnate to the short pedicel; flowers perhaps greenish, tube 0,8-1,4 mm long with obscure external glands; lobes 1,2-1,5 × 0,6-1 mm, white-bearded from apex; fruit 3-4 × 3-4 mm, light brown, conspicuously ribbed and reticulate, with a prominent stipe.

Woodland, scrubby grassland, in shallow sand on rocky quartsite ridges or deep Kalahari sand; 900-1300 m alt.

According to Hilliard (l.c.) *T. dinteri* A. W. Hill is a distinct species (S. Africa, Namibia).

Botswana, Namibia, S. Africa.

T. microphyllum Robyns & Lawalrée – Icon.: Agnew & Agnew, Upl. Kenya wild fl., Ed. 2: pl. 58, 1994 (sub nom. *T.* sp. C).

syn.: *T.* sp. C sensu Agnew & Agnew, o.c.: 159; *T. ussanguense* sensu Agnew of Ed. 1: 336, 1974, non Engl.

Perennial herb drying green with a slender rootstock, bearing 1-several stems at apex and later scattered along slender lateral rhizomes; stems green, erect, slender, simple to virgately branched, 6-35 cm tall, 1-1,5 mm Ø at base, ribbed (ribs extending into midribs of scales and bracts); leaves scale-like, ovate, 1-3 × 0,7-1,2 mm; flowers solitary in axil of each bract, sessile, arranged in spikes usually *low down on the plant;* perianth yellow-green; *tube* 1,5-2,5 mm *long,* with linear glands; lobes 2-2,8 mm long with a small hood, margins inflexed, fimbriate near apex inside or along the margins; fruit buff to light brown, 2,5-3 mm Ø, strongly ribbed and reticulate.

Related to *T. brachyanthum.*

Burnt upland grassland, short grassland subject to burning, by lakes, swamps or in depressions, on sandy or clay soils; 1050-1800 m alt.

T. mukense A. W. Hill 1910, excl. specim. Buchanan 45 *(= T. whyteanum).* Lectotype: Kässner 943.

syn.: *T.* sp. A sensu Agnew, Upl. Kenya wild fl.: 337, 1974, pro min. parte quoad "NAN"; Agnew & Agnew, Ed. 2: 159, 1994, p.p.; *T. schweinfurthii* sensu Agnew & Agnew, o.c.: 159, pro maj. parte, non Engl.

Perennial herb *lacking a caudex* (cf. *T. schweinfurthii, T. resedoides)* but *only with woody stolons* 3-4 mm Ø; stems yellow- to grey-green in small tufts, 10-30 cm tall, erect, much branched from below, leafy, shallowly ribbed (decurrent leaves); leaves fleshy, ascending, linear, rather curved, 10-45 mm long, shorter upwards, passing into bracts, with cartilaginous margins; flowers green or orange-buff outside, white inside, solitary in axil of each bract, racemosely arranged at tips of branchlets; bracts adnate to pedicel, leaflike, 5-17 mm long; perianth tube 0,6-1 mm long, with inconspicuous external glands; lobes 1,2-1,7 mm long, white-bearded; fruit light yellowish brown to red-brown, ± globose, 3-3,5 mm Ø, strongly ribbed and reticulate.

Upland grassland, wooded grassland, seasonally flooded grassland, dune forest, sandy grassland; areas subject to burning or erosion; on loam, clay or lava ash; descending to lower altitudes along rivers; (300-)1100-2500 m alt.

Confused with *T. schweinfurthii, T. resedoides,* both however, with a woody rootstock; also different in aspect of inflorescence, size of anthers, shape of bracts. Also very close to *T. dissitum* (but with woody taproot!).

T. schweinfurthii is essentially located W of the Great Rift Valley, *T. mukense* to the east. Both occur around Ngong Hills (Kenya, Masai D., K6).

NE S. Africa.

Not in Malawi *(= T. whyteanum):* the syntype of *T. mukense,* Buchanan 45, from Mt. Mulanje, destroyed in Berlin, with a duplicate in Edinburgh.

T. multiramulosum Pilger

syn.: *T. pottiae* N. E. Br.; *T. "pattiae"* sphalm. in Binns, Herbac. Fl. Malawi: 94, 1968.

Perennial herb with a woody caudex, crowned with 1 or few stems to 1 m tall, c. 5 mm Ø at base, simple below and virgately branched above, or branching from the base after fire; stems ribbed (ribs terminating in midribs of leaves and bracts), nude or with few scattered reduced or scale-like leaves below; leaves distant above, linear, 7-25 mm long, passing into bracts, flat ventrally, rounded dorsally; flowers yellowish-green at branchlet tips, the whole forming a lax, loosely panicled spreading inflorescence; bracts and bracteoles (2) very small; flower tube 1-1,2 mm long, external glands inconspicuous; lobes 1,4-1,6 mm long, densely white-bearded from apex; fruit c. 3,5 mm Ø, light yellowish brown, strongly ribbed and reticulate.

Grassland, wooded grassland; 200-1400 m alt.

S. Africa.

Also in Tanzania ? (not cited by Polhill in Fl. Trop. E. Afr., Santalaceae, 2005).

T. myriocladum Baker

Perennial herb with a small woody caudex to 20 mm Ø; at crown with many very short, closely scaly shoots to 30 cm long, 1,5-2,5 mm Ø at base; sometimes with woody stolons to 6 mm Ø; plant drying fuscous to dark red-brown; stems erect or decumbent, simple below, soon fastigiately much-branched, branches irregularly cymose, ascending at angle of 45°, ultimate branchlets often at 90°, shallowly ribbed (decurrent leaf scales); leaves scale-like, lanceolate, 2,5-6 mm long, cuspidate, thick, margins smooth to minutely ciliolate; flowers yellow-green to white, in irregular cymes, with very short primary penduncles, soon overtopped by longer scaly shoots giving rise to innumerable short peduncles. These very short peduncles crowded along the main stems distinguish the species from *T. fastigiatum.* Flower tube 0,5-1 mm long, external glands obscure; lobes 0,8-1,5 mm long, margins inflexed; fruit 2-3 mm Ø, red-brown, strongly ribbed and reticulate.

Grassland, woodland; margins of dambos near river, but also tolerating dry conditions; 900-1500 m alt.

Botswana, just S of Caprivi Strip.

Closely related to *T. lopollense* (with slightly larger fruits).

T. nigricans Rendle – Icon.: Fl. Zambes. 9/3: 214, 2006.

syn.: *T. scabridulum* A. W. Hill

Perennial herb with small woody caudex crowned with few to many stems 0,3-1 m long, decumbent or straggling, much-branched, leafy, grooved (decurrent leaves), in dry state ribs blackish-dark red-brown, channels paler, the plant drying black-dark red-brown; branches slender, spreading; leaves linear, ± scabridulous, ascending-recurved to spreading, 7-20 mm long, smaller upwards and passing into linear bracts 3-12 mm long with cartilaginous margins, deltoid in section; flowers yellow-green to whitish, solitary in axils of bracts, racemously arranged at branchlet tips, the inflorescence forming a profusely branched panicle; perianth lobes 5 and/or 4, glabrous; fruit 1,8-2,5 mm Ø, brown, weakly ribbed and reticulate.

Rocky montane scrub and forest patches; miombo woodland; locally common; 1200-2500 m alt.

Closely related to *T. kilimandscharicum* (both with grooved stems and similar leaf characters and inflorescence; but *T. nigricans* perennial, not annual, and drying black).

T. nutans Robyns & Lawalrée

Perennial herb drying grayish-green, with a woody rootstock crowned with many erect stems to 30 cm tall, 1,5-2 mm Ø at base, slender, weakly sulcate-striate, with flowering branches from below; leaves scale-like, erect, ovate, sparsely hairy on lower surface, 2,5 mm long, with ciliolate margins; flowers 5-merous, white, in axils of bracts, shortly stipitate; bracteoles 5 forming an involucre; tube 0,8 mm long, lobes c. 1 mm long, with inflexed margins;

fruit 3 mm long, 2,2 mm wide, ribbed and reticulate.

Wooded savanna, along the road, growing together with *T. bequaertii* and *T. ussanguense,* very local; 1600 m alt.

Related to *T. bequaertii.* Similar to *T. setulosum, T. crassipes.*

Known only from the type collected in 1948.

T. panganense Polhill, Fl. Trop. E. Africa, Santalaceae: 9, 2005. – Icon.: o.c.: 10.

Perennial herb with thickened taproot forked at apex to form a rootstock, and covered with small cone-like scale-bearing vegetative buds; it also produces rhizomes with further buds; stems numerous in tufts, erect, dull green, 13-20 cm tall, bearing scale-like leaves at base grading into linear leaves 5-20 mm long, minutely scabridulous along margins; stems strongly ribbed (ribs running into midrib of leaves and bracts); flowers buff-coloured, small, in cymes, the upper part of plant conspicuously floriferous; fruit reddish brown, ±globose, c. 2-2,5 mm Ø, ribbed and moderately reticulate.

Scattered tree grassland, after burning; c. 100 m alt.

Close to *T. pallidum* A. DC. (S. Africa-Swaziland-Lesotho). Also similar to *T. cymosum.*

In E. Africa the only other species with dichasial cymes is *T. triflorum.*

Known only from the type collected in 1955.

T. pawlowskianum Lawalrée

Perennial plant with an erect woody rhizome 1,5-2 cm Ø; stems numerous, slender, 25 cm tall, with ± woody base 2,5 mm Ø, ribbed-angular, minutely setose on lower part, subglabrous above; old stems sharp to the touch; leaves few, ascending, linear-subulate, 10 × 1 mm, ciliolate; inflorescences axillary, 1-3-flowered; flowers sessile, 5-merous, white, with 5 bracteoles forming an involucre, 2,5 mm long, 0,5-0,7 mm wide; fruit ellipsoid, 2,5-2,75 mm long, ribbed and reticulate.

Sandy plateau (Manika) with burnt grassy savanna; non-forested hill with malachite outcrops; c. 1600 m alt.

Related to *T. setulosum.*

Known from only 2 collections (type collected in 1953, the second one in 1957).

T. pilosum A. W. Hill

Perennial dwarf subshrub with a woody rootstock; stems erect, simple or branched near the base, 6-10 cm tall, densely pilose; leaves few on elongated branches, ovate-lanceolate, 4-5 mm long, hairy on lower surface and margins; flowers subsessile in axils of bracts; bracteoles linear, 3 mm long, forming an involucre; perianth hairy outside, 2,5 mm long, lobes 1,75 mm long, hooded, margins slightly inflexed; only immature fruit known.

Ecology not recorded.

Very close to *T. lycopodioides* and *T. strigulosum,* but leaves longer and perianth lobes narrow and hooded.

Known only from the type (Gossweiler 4209C).

T. pygmaeum Hilliard – Icon.: Fl. Zambes. 9/3: 214, 2006.

Perennial herb with small woody caudex crowned with many stems, decumbent or erect, 10-15 cm long, much-branched, leafy, not ribbed, sometimes scabridulous; plant drying blackish; leaves linear, 7-14 mm long, thick and fleshy, dorsally rounded, smaller upwards and passing into bracts; flowers solitary in axils of bracts, 1-5 racemously arranged at branchlet tips; the whole inflo-

rescence a profusely branched panicle; flower colour unknown, external glands conspicuous, lobes glabrous; fruit c. 2 mm Ø, red-brown, ribbed and weakly reticulate.

Quartzide outcrops; 1460-1640 m alt.

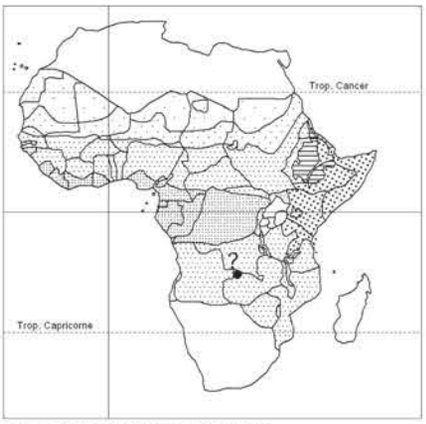
Known only from the Chimanimani Mts (probably endemic), environs of the Bundi R. (2 collections: type in 1966, the other one in 1957).

Allied to *T. nigricans* but plant lower, stems lacking ribs, flowers smaller (tube 0,4-0,6 mm, not 0,7-1mm; lobes 0,6 × 0,4-0,6 mm, not 1-1,5 × 0,7-0,8 mm).

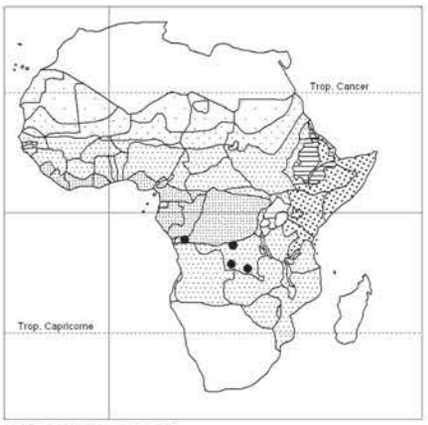
T. radicans Hochst. ex A. Rich. – Icon.: Peter in Fl. Deutsch-Ostafr. 2/1: pl. 16/2, 1932 (sub nom. *T. prostratum).*

syn.: *T. prostratum* Peter; *T.* sp. B sensu Agnew, Upl. Kenya wild fl.: 238, 1974; *T. wightianum* Wight var. *radicans* (Hochst. ex A. Rich.) DC.

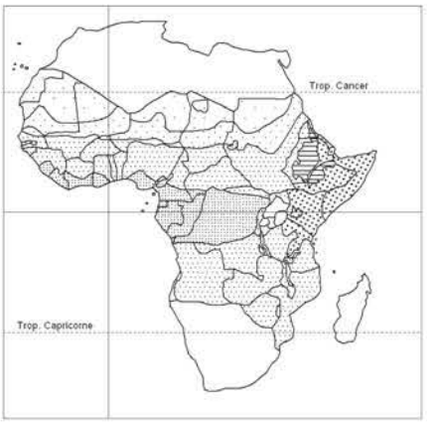
Perennial prostrate bright green herb, with creeping rhizomatous stems, ±1 mm Ø, forming mats; stems slender, erect, 3-10 cm tall, with leafy creeping branches to 30 cm long, bearing further short erect flowering branches; leaves flattened, linear, green, 10-20 mm long, acute; flowers greenish outside, white and densely villous inside, either singly in axils of leaves or on 1-3-flowered axillary branches; bracts and bracteoles leaflike, shorter than the *orange to bright red and fleshy fruit* c. 2-3 mm Ø, with weak venation.

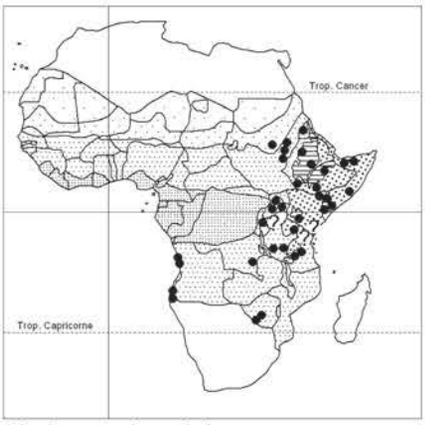


Thesium wilczekianum

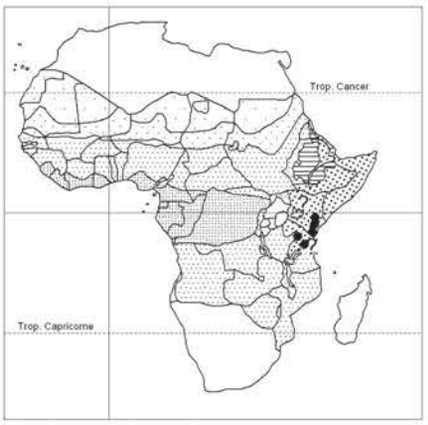


Thesium wittei

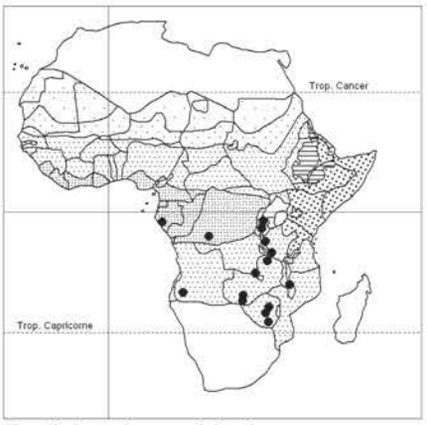




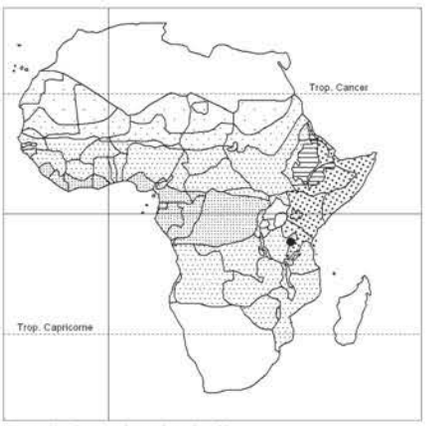
Hydnora abyssinica



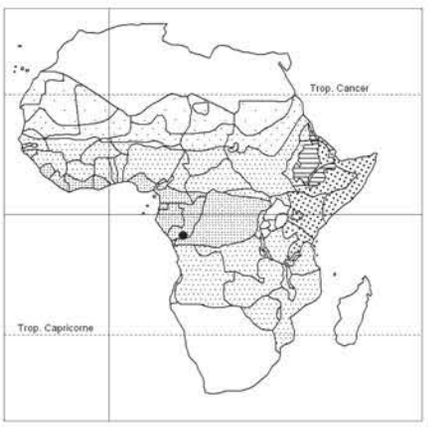
Hydnora sinandevu



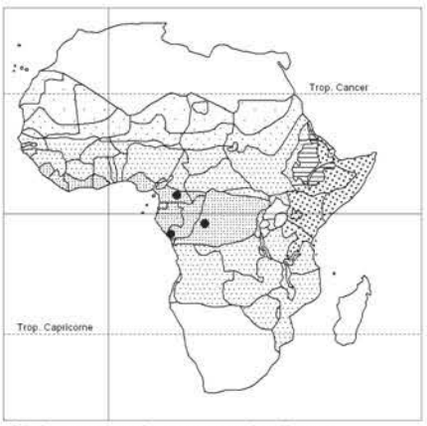
Berlinianche aethiopica



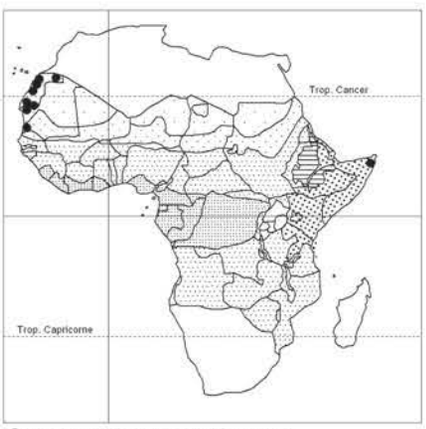
Berlinianche holtzii



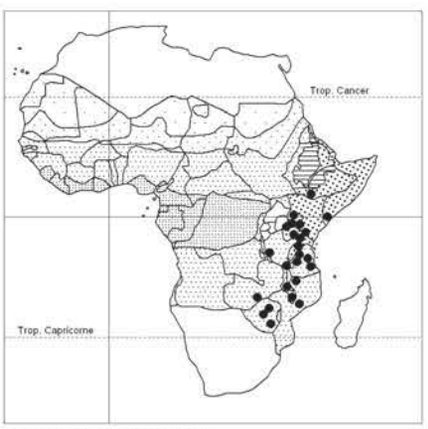
Balanophora abbreviata



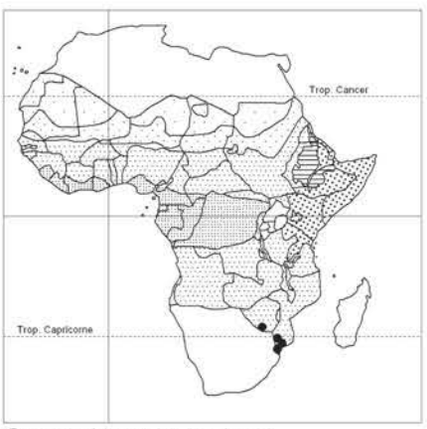
Chlamydophytum aphyllum



Cynomorium coccineum



Sarcophyte piriei



Sarcophyte sanguinea

Grazed pasture, upland (short) grassland, rock crevices; 1350-3200 m alt. (in Kenya particularly common around Naivasha).

Not in Somalia *(= T. hararense).*

Yemen, Saudi Arabia.

T. rectangulum Welw. ex Hiern

Annual, strictly erect, glaucescent, wiry herb c. 30-45 cm tall, branched like a broom; branches acutely angular or ± winged (decurrent leaves); leaves of main stem linear, thick, 2-3 cm long, acute, leaves on branches smaller, appressed; flowers whitish, terminal and sessile in axil of bracts, 5-merous; fruit globose, c. 2 mm Ø, prominently 5-ribbed, other 5 ribs and reticulation weak.

Thickets, hilly hot places; also wooded meadows; not plentiful, or sparingly; c. 1350 m alt.

T. reekmansii Lawalrée

Perennial glabrous herb drying greyish-green; rhizome to 3 mm Ø, apparently horizontal; stems many, tufted, to 30 cm tall, 1,5 mm Ø at base; leaves few, scale-like, 1-2 mm long, appressed; flowering spikes terminal, lax, 7 cm long, many-flowered; bracts 1,5-3 mm long, ovate, acute with membranous, ± fimbriate margins; bracteoles 2; flowers yellowish, sessile, axillary, 4(-5) -merous; tube c. 0,6 mm long, lobes c. 2,2 mm long, linear, with inflexed ciliate margins; fruit ellipsoid, c. 1,5 mm long, brownish, weakly reticulate.

Afroalpine meadow; 2500 m alt.

Very close to *T. tenuissimum*, but tepals much longer and fruit only faintly reticulate. Geographical distributions very different.

T. resedoides A. W. Hill

syn.: *T. burkei* A. W. Hill; *T. dumale* N. E. Br.; *T. welwitschii* sensu Baum in Warburg, Kunene-Zambesi Exp.: 230, 1903, non Hiern

Perennial herb with a woody taproot to c. 15 mm Ø at crown and with woody stolons c. 10 mm Ø; habit twiggy; stems many, tufted from the crown, erect or sprawling, 9-40 cm long, much branched from below, leafy, shallowly ribbed (decurrent leaves and bracts); leaves spreading or ascending, often up- or down-curved, linear, 8-20(-30) mm long, smaller upwards and passing into linear bracts 3,2-8 mm long, markedly apiculate, adnate to pedicel; bracteoles 2, resembling the bracts; inflorescences short, racemose, terminating all the twiglets, forming a large, branched panicle; flowers greenish outside, white-bearded inside; fruit 2,5-3 mm Ø, yellowish-brown, ribbed and reticulate.

By river on sandy ground between quartz rocks; woodland, grassland; up to 1150 m alt.

Variable in colour when drying: in W part of range plants getting greenish or light fuscous, in SE part dark fuscous; size of fruit equally varying: larger in the latter area.

Botswana, Namibia (Dinter 5440 cited by Roessler in Merxmüller Prodr. Fl. SW. Africa, fam. 21: 4, 1969, as *T. megalocarpum),* S. Africa, Swaziland.

T. robynsii Lawalrée

syn.: *T. ussanguense* sensu Lawalrée, Bull. Soc. Roy. Bot. Belg. 83: 51, 1950, non Engl.

Perennial herb drying green, with thick woody caudex crowned with tufts of robust, erect stems 15-40 cm tall, 1,5-3 mm Ø at base; stems simple or little branched, strongly grooved, glabrous; branches erect, to 15 cm long; lower leaves scale-like, densely

set at base of stems; leaves higher up few, linear, curved outwards, acute-mucronate, 5-12 mm long, with whitish, finely denticulate margins; flowering spikes terminal, 7-20 cm long, bracts 10 mm long; bracteoles 7 mm long, longer than flowers, these axillary, 5-merous, white, c. 6,5 mm long; lobes 3-4 mm long with inflexed ciliate margins; external glands small; fruit brownish, c. 3,5 mm long, ribbed and reticulate.

Wooded savanna, along road; c. 1600 m alt.

Flowers of the type gathering (Robyns 3651) galled, galls to 12 mm long, 5 mm Ø, characterized by an extended, swollen fleshy tube (7 mm long); the gall with several small cavaties. Similar galls are described by N. E. Brown on *T. resedoides* [fide Lawalrée l.c. (1950) and in Bull. Jard. Bot. Brux. 31: 520, 1961].

Related to *T. ussanguense, T. malaissei.*

Known only from type ?, collected in 1948.

T. schliebenii Pilger

syn.: *T. schaijesii* Lawalrée

Perennial herb with narrow woody rhizomes to 5 cm long; several stems arising from each rhizome, the whole forming a many-stemmed tuft 23-60 cm tall; stems 1-2,5 mm Ø at base, simple to laxly branched, flowering branches sharply ascending, extending into sterile tips; stems strongly ribbed (ribs terminating in midribs of scale leaves and bracts); leaves scale-like, closely appressed, 1-2,5 mm long, increasing in size upwards, midrib strongly raised on adaxial surface; flowers subtended by a bract and 2 similar bracteoles or an involucre with 3-5 bracts; perianth greenish white or yellow, lobes 3-3,6 mm long, tapered to a long hood, margins inflexed, densely white-bearded in lower part; fruit buff-coloured – pale brown, globose, c. 2 mm Ø, very strongly ribbed, weakly reticulate.

Wet grassland, swamps, swampy ground in long grass, dambo; 1500-2000 m alt.

Very close to *T. fimbriatum* but perianth lobes with a longer hood.

Known from very few gatherings (type collected in 1931, others in 1957, 1986).

T. schweinfurthii Engl., incl. var. *djurense* Engl., but excl. var. *laxum* Engl. *(= T. goetzeanum).* – Icon.: Agnew & Agnew, Upl. Kenya wild fl.: pl. 58, 1994 (sub nom. *T.* sp. A); Bull. Jard. Bot. Bruxelles 31: 515, 1961 (detail, sub nom. *T. schmitzii).*

syn.: *T. sphaerocarpum* Robyns & Lawalrée; *T. schmitzii* Robyns & Lawalrée; *T.* sp. A sensu Agnew, Upl. Kenya wild fl.: 337, 1974, p.p.; *T.* sp. A p. maj. p., sensu Agnew & Agnew, ditto, ed. 2: 159, pl. 58, 1994 (cf. under *T. mukense); T. urundiense* Robyns & Lawalrée

Perennial herb with a leafy aspect; with a narrow, elongate, woody rootstock, sometimes forked at apex, and shortly rhizomatous; stems many, tufted from the crown, sprawling with age, much branched from base, 10-40 cm tall, leafy, weakly ribbed (decurrent leaves); leaves linear (but at base scale-like), 10-20 mm long with evident midrib and cartilaginous smooth margins; flowers green, solitary at axils of bracts, 1-5 laxly arranged at tips of branchlets, bracts adnate to pedicel, long, leaf-like; perianth lobes white-bearded inside; external glands inconspicuous; fruit c. 2,5 mm Ø, pale yellowish- or reddish-brown, strongly ribbed and reticulate.

Upland grassland; wooded and seasonally flooded grassland; wet marshy grassland; *Brachystegia* woodland; dambos; mixed bushland; sometimes after fires or in disturbed places; on loam or clay; grassland and cleared ground in *Juniperus* and

Combretum woodland; *Loudetia arundinacea* grassland on very shallow soil; forest clearings; evergreen bushland; 762-2300 m alt. – Parasitic on *Cyperaceae, Setaria angustifolia, Tristachya* sp., *Brachiaria brizantha, Imperata cylindrica* (Haut-Katanga, fide Lawalrée 1992).

Variable plant with wide distribution: size of bracts smaller, flowers up to 7 per raceme, more branched rootstock extending as short thick rhizomes found in populations on the Rift Valley floor in Kenya (Naivasha Distr.) fide Polhill (Fl. Trop. E. Afr.). This material approaches *T. mukense* (both species occurring around Ngong Hills), *T. schweinfurthii* essentially W of Great Rift Valley.

Under-collected species.

Grazed by stock (Masai area, Kenya; fide Burkill, Useful pl. W. trop. Afr., ed. 2, 5: 5-6, 2000).

T. scirpioides A. W. Hill – Icon.: Fl. Zambes. 9/3: 237, 2006 (partial).

Perennial herb with a small woody many-headed rootstock, crowned with 1-several stems, shallowly ribbed, ± minutely pustulate, to c. 45 cm tall, 1,2-2 mm Ø at base, simple at base, soon virgately branched; leaves distant, scale-like, linear-lanceolate, 2,5 mm long, thick, erect, closely appressed to stem, with membranous, erose-ciliate margins; bracts ovate, acute, c. 2 mm long; flowers green outside, dense white-bearded inside, external glands obscure; fruit c. 3,5 mm Ø, light red-brown, weakly sculptured.

Grassland.

S. Africa, Swaziland (1200-1650 m alt.).

T. setulosum Robyns & Lawalrée

Perennial herb drying greyish green, with an erect woody branched stoloniferous rootstock 1,5 cm Ø; stems many, ± erect, slender, ± angular, to 15 cm tall, with base minutely setose 2-2,5 mm Ø; leaves distant, ascending, ovate, acute, scale-like, 2,5-3 mm long with ciliolate margins, glabrescent on both surfaces; inflorescences axillary of 1-2 sessile flowers subtended by 5 bracteoles forming an involucre; flowers 5-merous, green, lobes c. 1,4 mm long, hooded, margins inflexed and papillose; fruit ellipsoid, 3-3,5 mm long, glabrous, ribbed and reticulate, green.

Allied to *T. thamnus*, that is however not stoloniferous and has a thick woody caudex.

Forming dense tufts in natural grassland; 1700 m alt.

Known only from the type collected in 1950.

T. singulare Hilliard – Icon.: Fl. Zambes. 9/3: 219, 2006 (partial).

Perennial herb drying buff-coloured to greenish; rootstock woody, c. 1,5 cm Ø, with short scaly vegetative buds at crown and with short stout *woody stolons* to 4 mm Ø *bearing distant scaly buds* eventually producing erect loosely tufted flowering stems; stems very slender < 1,3 mm Ø, simple below, little branched above, branches sharply ascending, finely striate, distantly leafy; leaves scale-like, lanceolate, acuminate, 1-2 mm long, midrib conspicuous at base of adaxial surface; flowers solitary, terminal, soon overlapped by a branch arising from the axil of a scale-leaf just below the floral bract, forming a cyme often terminating in a long slender sterile shoot; flowers white, external glands conspicuous, lobes 2,7-3 mm long, weakly erose-fimbriate; fruit c. 2,5 mm Ø, pallid, strongly ribbed and reticulate.

Seasonally damp grassland.

Similar to *T. bangweolense, T. myriocladum, T. fastigiatum, T. atrum, T. fanshawei, T. unyikense, T. bequaertii, T. thamnus,* in having stolons that bear a few crowded, very short, densely scaly vegetative buds. Also similar to *T. katangense.*

Known only from the type collected in 1965.

T. strigulosum Welw. ex Hiern

Perennial herb covered with rough short rigid hairs throughout; rootstock woody, many-headed; stems prostrate or ascending, 15-25 cm long, wiry, subterete, branched mostly in lower part; branches slender, shortly flagelliform; leaves subulate, acute, c. 1,7-2 mm long, minutely pilose on lower surface; flowers sessile in the axils of bracts shorter than the flowers, together forming long, narrow terminal spikes; bracteoles forming an involucre; perianth yellowish, lobes 5, glabrous within; only immature fruit known.

Rocky thickets, river banks.

Similar to *T. lycopodioides, T. pilosum.*

Known only from 2 ? gatherings (type collected in 1857).

T. stuhlmannii Engl.

Perennial herb with a swollen taproot, sometimes branched at top to produce densely packed tufts of rigid stems, much branched throughout, green or orange-green, 10-60 cm tall; occasionally forming rhizomes bearing more stems; stems with strong ribs extending into midribs of scales and bracts; leaves scale-like, acute, 1-2 mm long, appressed to stem; bracts and bracteoles shorter than flower and fruit; flowers white, sessile, 1-2 in each bract, crowded on compact short shoots; lobes 5, glabrous within, 1-1,5 mm long; fruit buff to pale brown, dull green, ellipsoid, 1,2-2 mm long, ribbed but weakly reticulate.

Short grassland subject to fire; sometimes in rocky places; lava ash; *Themeda* grassland on basalt hill; on wall of caldera on pumice; road bank in montane grassland; 1050-2750 m alt.

Similar to *T. fimbriatum* but perianth lobes glabrous and with small glands not forming teeth between lobes. Ecology different, *T. stuhlmannii* occurs in drier burnt grassland.

Material cited from Malawi (specim. Whyte 321 in Fl. Trop. Afr. 6/1: 422, 1913) belongs to *T. fimbriatum* fide Hilliard in Fl. Zambes. 9/3).

T. subaphyllum Engl.

syn.: *T. andongense* Hiern

Annual herb with a small taproot, or perennial with a very small woody rootstock; stem 0,3-1 m tall, (grey-)green, solitary, erect, nearly leafless, simple below, virgately branched above, ribbed; ribs winglike and terminating in midribs of bracts; developed leaves only 2 near base of stem, opposite, linear, 20-30 mm long; stem leaves alternate, scale-like, appressed, lanceolate, 1-1,5 mm long; bracteoles 2, similar to but smaller than bracts; flowers yellowish, white inside and glabrous at lobe tips, external glands lacking, 5-merous, in spikes; fruit globose, yellowish green, c. 2,5 mm Ø, ribbed and conspicuously reticulate, persistent perianth 1/3 as long as nut.

Dodonaea-Combretum-Terminalia and other woodlands; forest edges, roadsides; grassland; sometimes after fires; variably on rocks, limestone, sand, lava ash; 60-2250 m alt. – Parasitic on *Poaceae* (Haut-Katanga).

Seems to vary in life form: apparently annual in E part of range; in Angola showing signs of perennation (fide Hilliard, Fl. Zambes. 9/3).

SARCOPHYTE

T. symoensii Lawalrée

Annual herb to 40 cm tall, glabrous, drying dark green, with a small taproot; stem single, erect, slender, ribbed, to 1,2 mm Ø at base, branched in the upper half; basal leaves 2, opposite, elongate; stem leaves alternate, scale-like, c. 1,5 mm long, appressed; flowers in terminal spikes, bracts 1,5 mm long, bracteoles 2 c. 2 mm long, perianth 5-merous, lobes with inflexed margins, hooded, subglabrous; fruit when dry greenish to brown, strongly ribbed and reticulate, 1,8 mm long, persistent perianth 1,2-1,5 mm long.

Humid steppe; 1800 m alt.

Known only from the type (Lisowski, Malaisse & Symoens 4276).

Closely related to *T. vimineum* but fruit different.

T. tenuissimum Hook. f.

Perennial herb, glabrous, *Ephedra*-like with a woody rootstock; stems numerous, tufted, slender, erect or spreading, 10-30(40) cm tall, 2 mm Ø, much branched, grooved; leaves scale-like, distant, 1-2,5 mm long, ovate, acute; inflorescences terminal; flowers several or solitary in axils of scale bracts, bracts and brateoles (2) keeled, the latter longer than bracts, but all shorter than flowers; perianth lobes 4(-5), glabrous outside, rarely sparsely villous inside, with inflexed and ciliate margins, hooded; fruit ±globose; c. 1,5 mm Ø, with well marked ribs.

Montane grassland, on (rocky) mountain summits; *Loudetia* pasture; often after fires; on lava, volcanic ash; 1200-3600 m alt.

Plants often attacked by *Puccinia thesiicola* Jorstad (Ark. Bot., Sér. 2, 3: 591, 1956).

Bioko / Fernando Poo.

T. thamnus Robyns & Lawalrée

syn.: *T. unyikense* Engl. var. *puberulum* R. E. Fries

Perennial herb with a woody, irregularly shaped rootstock, 1-3 cm Ø, with many short scaly straw-coloured, ciliate buds eventually elongating into stems; plant drying grey-green or ± fuscous; stems numerous, grey-green, tufted, ascending-erect, well-branched, floriferous from the base, 10-30 cm tall; branches ascending at angle of 45°, short; *lower part of stem, leaves* and *bracts* with *conspicuous stiff spreading hairs,* appearing glandular, 0,1-0,5 mm long; leaves scale-like, lanceolate, 2-7 mm long, ciliate, hairy outside; flowers first solitary at tips of nude 2-20 mm long peduncles, often 2 from one axil, later overtopped by 1-2 branches arising just below the terminal flower, these branching again, and producing a nude peduncle terminating in a flower or a sterile scaly shoot; bracts 4-5, forming an involucre below the flower, ciliate and hairy outside; perianth white inside, external glands obscure, lobes 5(-6), margins inflexed and erose, hooded; fruit buff-pale brown, 2,8-3,5 mm long, strongly ribbed and reticulate.

Grassland on margins of dambos; chipya woodland; open woodland on laterite soil; grassland subject to burning; also on Great Dyke (Zimbabwe); 1250-1900 m alt.

Distinguished from *T. unyikense, T. fastigiatum* by the conspicuous hairs. Related to *T. cinereum* (a more delicate plant with linear bracts), and to *T. setulosum* (a stoloniferous plant lacking a thick woody rootstock). Nearest relative seems to be *T. unyikense* (with longer perianth tube, 0,8-1,2 mm, not 0,5-1 mm long). Also resembling *T. strigulosum* (with shorter leaves) and *T. lycopodioides* (a taller plant with longer branches).

THONNINGIA

T. triflorum Thunb. ex L. f. – Icon.: Fl. Zambes. 9/3: 212, 2006; Vierteljahsschr. Naturf. Ges. 106/4: 403, 1961 (details).

syn.: *Osyridicarpos linearifolius* Engl., incl. var. *goetzei* Engl.; *Osyrius angustifolia* Baker; ? *Thesium scandens* E. Mey. ex A. W. Hill

Climbing or straggling (if unsupported), sometimes erect shrub 1-6 m in height with slender stems rough with leaf scars below, much branched above, leafy; branches ribbed (vascular strands terminating in midribs of leaves and bracts), grading into extensive leafy panicles; leaves well developed, spaced, linear to oblong, vary variable in size, mostly 10-60 × 2-6 mm (narrower in Fl. Zambes. area), smaller on younger shoots, 3-nerved; flowers in dichasial cymes, further arranged in panicles; bracts often leaf-like; flowers greenish yellow (sometimes white within), lobes with flat glabrous margins; fruit orange to red, ±globose, 3-5 mm Ø, with thin *fleshy* epicarp and bony endocarp, 5 main *veins* visible but *not raised.*

Edges of wet and dry montane forest; heath scrub; on mountains in evergreen forest; thickets; deciduous woodland; coastal in S Mozambique (and S. Africa); (0-)1500-2200 m alt.

Very different from other *Thesium* species; the generic position needs investigation (discussed by Stauffer in Vierteljahsschr. Naturforsch. Ges. Zürich 106/4: 400-406, 1961, and by Hilliard in Fl. Zambes. 9/3: 211, 2006).

S. Africa, Swaziland. – Disjunct distribution.

T. triste A. W. Hill

Perennial shrublet with a woody rootstock; stems erect, wiry, glabrous, covered at base with densely imbricate scale-leaves, deeply grooved, green, 17-30 cm long, bearing short axillary inflorescences; leaves ovate, spreading, 4-6 mm long; flowers singly on naked axillary penduncles with slightly adnate bracts; bracteoles 3-4, forming an involucre; flowers green outside, white inside, lobes glabrous, slightly hooded; fruit unknown.

Forest.

Known only from the type (Gossweiler 1114).

Similar to *T. viride,* but glabrous, and leaves ovate-lanceolate, and flowers larger. Also resembling *T. unyikense* but margins of leaves membranous, not ciliate.

T. unyikense Engl., excl. var. *puberulum* R. E. Fries *(= T. thamnus).* – Icon.: Polhill in Fl. Trop. E. Afr., Santal.: 4, 2005 (details); Fl. Zambes. 9/3: 225, 2006; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 58, 1994.

syn.: *T. tetragonum* A. W. Hill

Perennial herb with a woody, thickly disk-shaped rootstock 2-4 cm Ø, and with numerous short scaly vegetative buds at crown elongating into stems; plants drying grey-green; stems numerous, grey-green, erect or decumbent, 5-40 cm long, 1,25-2,5 (-4) mm Ø, soon fastigiately branched (may flower at 8 cm height after fires); branches irregularly cymose, ascending at angle of 45°, rarely >5 cm long; ribs low, broad (decurrent scale-leaves), often minutely pustulate; leaves scale-like, 1,5-3 mm long below, these subtending branches 1,5-6 mm long, cuspidate, thick, margins membranous, ciliolate; flowers solitary at tips of nude peduncles 4-30 mm long, often 2 penduncles from same axil, later overtopped by 1(-2) branches arising just below a flower, branching repeating again and again; bracts c. 5, forming an involucre with ciliolate margins; flowers green outside, white (-cream) inside, external glands whitish; lobes with inflexed, ±erose margins, hooded; fruit buff to pale brown, strongly ribbed and reticulate, 2,5-3 mm Ø.

Upland grassland, woodland, scrub; damp places in *Brachystegia* woodland, by streams, dambo edges, or on drier ground; 950-2300 m alt.

Variable in size of flowers: tube 0,6-1,2 mm long, lobes 1-1,8 mm long.

T. bequaertii is very similar and may be only a form of *T. unyikense* (fide Hilliard in Fl. Zambes.), and intermediates between them seem to occur.

Together with e.g. *T. fastigiatum* and the more hairy *T. thamnus* forming a group of species subtended by an involucre of bracts. *T. unyikense* and *T. fastigiatum* not always very distinct in inflorescence characters inW Tanzania (Ufipa Distr.).

T. ussanguense Engl. – Icon.: Fl. Zambes. 9/3: 219, 2006 (partial); Polhill in Fl. Trop. E. Afr., Santal.: 4, 2005 (detail); Peter in Fl. Deutsch-Ostafr. 2/1: pl. 16/1, 1932 (sub nom. *T. scoparium).*

syn.: *T. scoparium* Peter; *T. passerinioides* Robyns & Lawalrée

Perennial herb with a short woody rootstock, thickened at crown, to 4 cm Ø, often forked and stoloniferous; crown with many conspicuous densely scaly vegetative buds elongating into flowering stems 10-30 cm tall, simple to sparingly branched; *stems tufted,* closely leafy, branches sharply ascending, strongly ribbed, ribs terminating in midribs of leaves and bracts; lowermost leaves scale-like, lanceolate-subulate, 4-8 mm long; cauline leaves (grey-)green, sharply ascending, ±linear, 5-15 mm long, strongly keeled on abaxial surface; the *whole stem often floriferous,* flowers many in long crowded spikes (often with a long leafy sterile tip), solitary, sessile in axil of each bract; bracts leaflike, 4,5-11 mm long, and 2 similar bracteoles; perianth pale green-creamy yellow outside, white inside; lobes long (2-4,5 mm), heavily fringed (long white hairs); anthers with long filaments; fruit 3-3,5 mm long, pallid, moderately sculptured.

Grassland with *Parinari,* after fires; wooded grassland with *Loudetia simplex;* also ruderal; often in rocky places; 1000-2440 m alt.

Related to *T. katangense, T. robynsii, T. malaissei.*

T. vahrmeijeri Brenan

Herb apparently annual with prostrate to suberect stem 15-60 cm long, much branched from the base; stem weakly ribbed (ribs terminating in midrib of leaves and bracts), laxly leafy; leaves spreading, linear, 5-12(-20) mm long, passing into bracts, linear, 4-5,5 mm long, with smooth margins; flowers 2-4 in lax racemes terminating each twiglet; bracteoles 2; flowers probably greenish, small, lobes densely white-bearded from apex; fruit 3 mm long, yellowish-buff to red-brown, strongly ribbed and reticulate, with long stipe (1,5-2 mm).

Sandy grassland near the sea.

S. Africa (50-500 m alt.).

T. vimineum Robyns & Lawalrée

Perennial herb drying bright green; rootstock slender, crowned with many erect slender stems 3-10 grouped together, to 60 cm tall, subwoody at base and 1 mm Ø; stems glabrous, ribbed, grayish-green, simple or branched in upper part; leaves scale-like, few, appressed, ovate-lanceolate, 1-1,5 mm long, with slightly papillose-ciliolate margins, keeled and decurrent; flowering spikes terminal, lax, 10-12 cm long; bracts ovate, acute, 2,2 mm long; bracteoles 2; flowers axillary, 5-merous, green,

4-5 mm long; lobes 2,6-2,8 mm long, hooded, margins inflexed, ciliate at base; fruit globose, c. 1,5 mm Ø, light green, with 20 longitudinal ribs.

Humid natural meadow; well-drained natural meadow on sand; 1700 m alt.

Close to *T. schliebenii, T. lisowskii.*

Known from only 2 gatherings? (type collected in 1954, the other one in 1950).

T. viride A. W. Hill – Icon.: Hepper, Fl. W. Trop. Afr., ed. 2, 1/2: 666, 1958; Akoegninou & al., Fl. analyt. Bénin: 916, 2006.

Perennial herb with a woody rootstock crowned with tufts of greyish-green grooved stems 30-45 cm tall, 2 mm Ø, ciliate or glabrous below, ± scabrid above; leaves scale-like, distant, linear, 4 mm long, appressed; flowers on short lateral branches and axillary, subtended by (4-)5 bracteoles forming an involucre; perianth with (4-)5 lobes with inflexed margins, hooded, scabrid-pubescent outside, glabrous inside; fruit ellipsoid, 3 mm long, glabrous, ribbed and reticulate.

Savanna subject to fires; dry bush; in rocky places; 800-1750 m alt.

T. welwitschii Hiern

Perennial undershrub, glabrous or nearly so, with a horizontal rhizome from which arise numerous crowded (sub-)erect virgate, wiry stems c. 30 cm tall; stems simple below, much branched towards apex, ribbed, angular (by decurrent leaves); leaves linear, flattened, appressed, 6-16 mm long; inflorescence paniculate, terminal, composed of small axillary cymes, bracteoles shorter than flowers; perianth lobes c. 2 mm long, hooded, margins and apex hairy; fruit c. 3 mm Ø, ribbed and reticulate.

Sandy wooded thickets, together with *Gnidia* sp., *Thunbergia angolensis;* rare in places.

Similar to *T. brevibarbatum* but glabrous.

Known only from type collected in 1859.

T. whyteanum Rendle

syn.: *T. mukense* A. W. Hill p.p., quoad specim. Buchanan 45.

Subshrub, glabrous, spindly, with a woody stoloniferous rootstock; stems 1-several, 0,3-0,6(-3) m tall, ribbed, virgately branched only in the upper part where they are densely clad in erect acicular leaves; leaves sharply ascending, 8-45 mm long, passing upwards into smaller bracts; inflorescences long, crowded, bracteate, bracts leaf-like; flowers mostly in dichasial cymules (rarely solitary) arranged at tips of branchlets; perianth lobes (yellowish green?) 1,2-1,7 mm long, white-bearded inside from apex, the tube with 5 bulging angles; fruit 2,5-3 mm Ø, yellowish buff to light red-brown, with 5 raised ribs, the other 5 and reticulations weak.

Short or long and rough grassland, sometimes in rocky sites with *Xerophyta,* and heaths; scrubby forest margins; 1600-2400 m alt.

Variation in habit between the two different mountain populations (cf. Hilliard in Fl. Zambes. 9/3: 239, 2006).

Apparently endemic to Chimanimani Mts. and Mt. Mulanje.

T. whyteanum cited by Burrows & Willis, Pl. Nyika Plateau: 259, 2005 from Nyika National Park, N Malawi (Patel 1999), seems to be an erroneous record.

T. wilczekianum Lawalrée – Icon.: Flora Zambes. 9/3: 219, 2006 (partial).

Perennial herb drying green with a small erect rootstock to 5 mm Ø; stems in small tufts (4-7), slender, simple to sparingly virgately branched above, 45-70 cm tall, 1-2,5 mm Ø at base, strongly ribbed (ribs terminating in midribs of leaves), distantly leafy; branches sharply ascending; leaves scale-like c. 1,5-2 mm long, increasing in size upwards passing into lanceolate floral bracts 2,5-3 mm long, keeled on abaxial surface; inflorescences looking like spikes made up of very short densely crowded groups of flowers; perianth brownish orange outside, cream-coloured inside, with 5 conspicuous white tooth-like glands alternating with lobes; lobes 2,1-2,6 mm long, densely white-fimbriate, hooded, with inflexed hairy margins; fruit red-brown (immature?), c. 2-2,5 mm Ø, conspicuously ribbed, weakly reticulate.

Boggy grassland; on ancient anthill in dark soil; 1200-1450 m alt.

T. wittei De Wild. & Staner p.p. (cf. *T. fastigiatum).*

Perennial herb drying black with an erect woody thick rootstock crowned with tufts of slender erect stems 20-40 cm tall, 2-3 mm Ø at base, glabrous, ribbed, fastigiately branched; branches to 30 cm long with short twiglets terminating in a flower; leaves linear, thick, glabrous, 3-6 mm long; flowers sessile, subtended by 4-6 bracteoles forming an involucre, 5-merous, 2-3 mm long; lobes 0,8-1,4 mm long, hooded, with inflexed papillose margins; fruit ovoid, 2,2-2,5 mm long, ribbed and reticulate, glabrous.

Savanna on sandy soil; plain with short grass and occasional shrubs; humid area on sandy plateau.

Close to *T. doloense,* but type of ramification different, leaves shorter (in *T. doloense* 6-12 mm long, not 3-6 mm), flowers larger (in *T. doloense,* 1,5-2,4 mm long) but stamens shorter, and fruit ovoid and larger (in *T. doloense* globose, 1,5-2 mm Ø).

SYNONYMS:

Thesium andongense Hiern = **Thesium subaphyllum**

burchellii A. W. Hill = **T. megalocarpum**

burkei A. W. Hill = **T. resedoides**

caespitosum Robyns & Lawalrée = **T. goetzeanum**

colpoon L. f. = **Osyris compressa**

cymosum sensu Vollesen 1980, non A. W. Hill = **Thesium goetzeanum**

dissitum sensu Vollensen 1980, non N. E. Br. = **T. goetzeanum**

dumale N. E. Br. = **T. resedoides**

fastigiatum in herb., non A. W. Hill = **T. fanshawei**

fenarium A. W. Hill = **T. cymosum**

fimbriatum A. W. Hill 1915, non 1910 = **T. brachystylum** A. W. Hill (S. Africa)

luembense Robyns & Lawalrée = **T. fastigiatum**

mukense A. W. Hill p.p. = **T. whyteanum**

palliolatum A. W. Hill = **T. gracile**

passerinioides Robyns & Lawalrée = **T. ussanguense**

"*pattiae*" sphalm. = **T. multiramulosum**

pottiae N. E. Br. = **T. multiramulosum**

prostratum Peter = **T. radicans**

quarrei Robyns & Lawalrée = **T. atrum**

rhodesiacum Pilger, nom. = **T. goetzeanum**

rogersii A. W. Hill = **T. goetzeanum**

rungwense Engl. = **T. kilimandscharicum**

scabridulum A. W. Hill = **T. nigricans**

scandens E. Mey. ex A. W. Hill = ? **T. triflorum**

schaijesii Lawalrée = **T. schliebenii**

schimperianum A. Rich. = **Osyridicarpos**

schmitzii Robyns & Lawalrée = **Thesium schweinfurthii**

schweinfurthii sensu Agnew & Agnew 1994 p.p., non Engl. = **T. mukense**

schweinfurthii Engl. var. *laxum* Engl. = **T. goetzeanum**

scoparium Peter = **T. ussanguense**

shabense Lawalrée = **T. fimbriatum**

sp. sensu Merxmüller, Prodr. Fl. SW-Afr. = **T. magnifructum**

sp. A sensu Agnew 1974 and 1994, p.p. = **T. mukense, T. schweinfurthii**

sp. B sensu Agnew 1974 = **T. radicans**

sp. C sensu Agnew & Agnew 1994 = **T. microphyllum**

sphaerocarpum Robyns & Lawalrée = **T. schweinfurthii**

tamariscinum A. W. Hill = **T. fastigiatum**

tetragonum A. W. Hill = **T. unyikense**

ulugurense Engl. = **T. kilimandscharicum**

unyikense Engl. var. *puberulum* R. E. Fr. = **T. thamnus**

urundiense Robyns & Lawalrée = **T schweinfurthii**

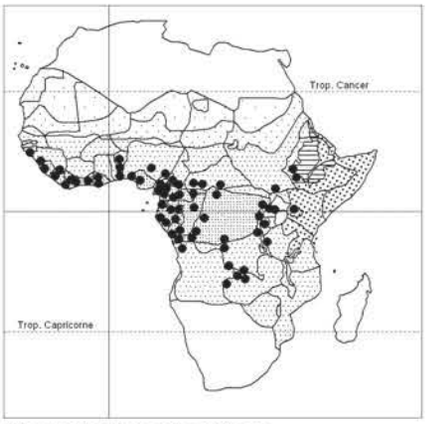
ussanguense sensu Lawalrée 1950, non Engl. = **T. robynsii**

ussanguense sensu Agnew 1974, non Engl. = **T. microphyllum**

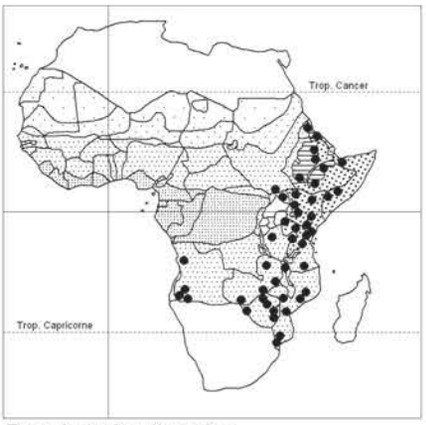
welwitschii sensu Baum, non Hiern = **T. resedoides**

wightianum Wight var. *radicans* (Hochst. ex A. Rich.) DC. = **T. radicans**

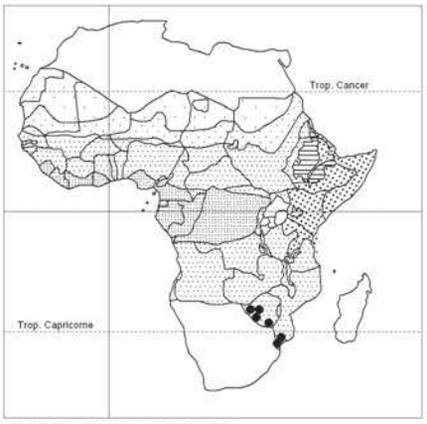
wittei De Wild. & Staner p.p. = **T. fastigiatum**



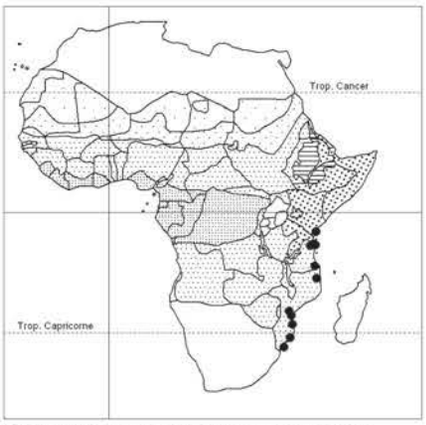
Thonningia sanguinea



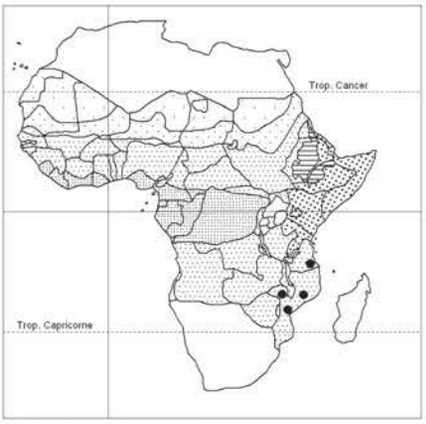
Berchemia discolor



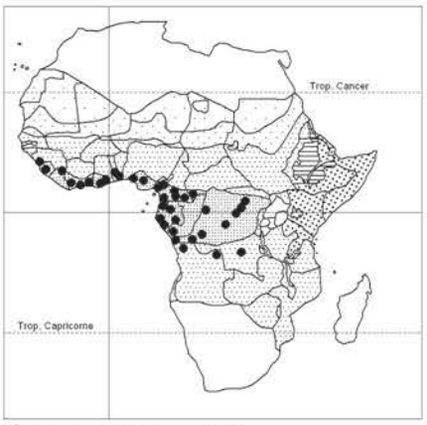
Berchemia zeyheri



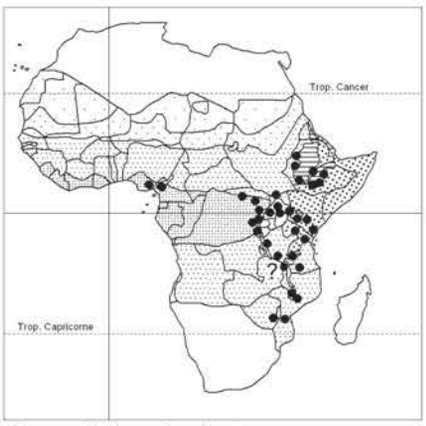
Colubrina asiatica var. asiatica



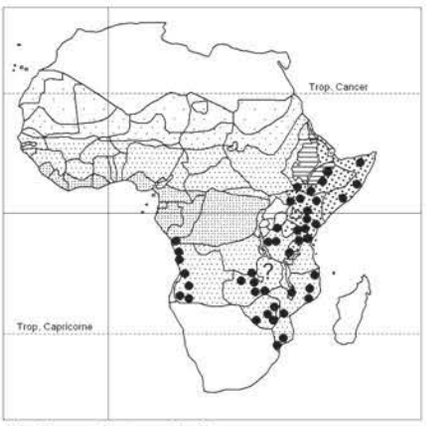
Gouania laxiflora



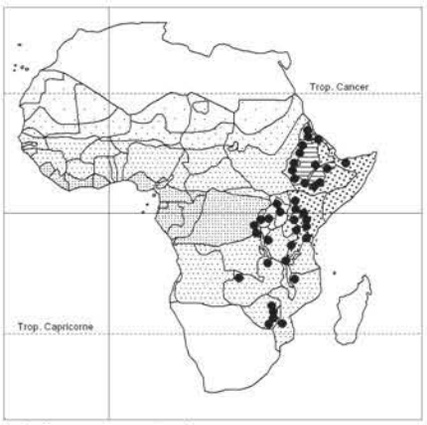
Gouania longipetala



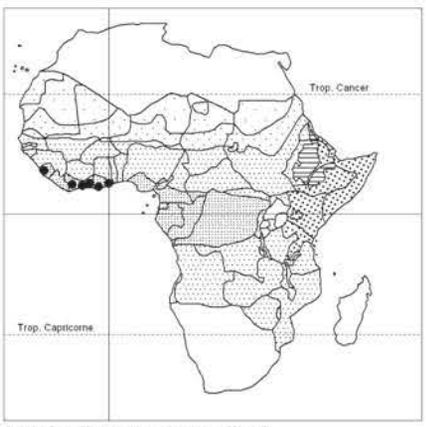
Gouania longispicata



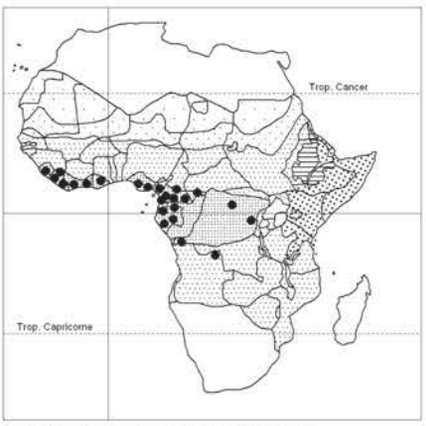
Helinus integrifolius



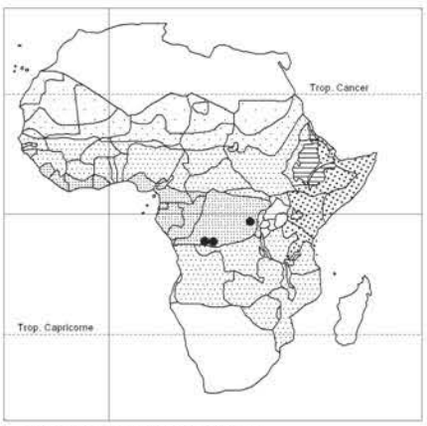
Helinus mystacinus



Lasiodiscus chevalieri



Lasiodiscus fasciculiflorus



Lasiodiscus gillardinii

HYDNORACEAE / *1* g./ *2* spp.

Formerly placed in *Cytinaceae,* together with *(Pilostyles =) Berlinianche (Rafflesiaceae).*

Nickrent & al. (2002) place this family with *Aristolochiaceae.*

Subterranean leafless holoparasites without chlorophyll on roots of shrubs and trees, essentially *Euphorbia* species (the hosts as well as morphological characters are treated in detail by Musselman & Visser in *Aliso* 12/2: 317-326, 1989). Only the flowers emerge above the soil; they have a fetid smell.

Plant bodies are fleshy and decay while drying; herbarium material is brittle, often poorly preserved, and fragmentary. Many types at Berlin were destroyed during World War II.

In the world's major herbaria the number of usable herbarium sheets are estimated at fewer than 100 (fide Musselman & Visser, l.c.), and distribution data are thus "very spotty". Field observations are few and incomplete and caution is to be taken "against taxonomic decisions".

Lack of knowledge *(Hydnora):* plant-body incomplete, fruit and seeds unknown in one species, seedlings not seen in the two species.

The genus *Hydnora* is mainly African; also in Madagascar and Arabia.

HYDNORA / *2*

syn.: *Aphyteia* L.

BLARER, A. (2004). *Molecular systematics of Rafflesiales and Hydnoraceae (Aristolochiaceae s.l.), and floral structure of Apodanthaceae (Rafflesiales).* Dissertation PhD, Mathematische-naturwissenschaftliche Fakultät Universität Zürich.

BOLIN, J. F. & al. (2009). Pollination biology of Hydnora africana Thunb. (Hydnoraceae) in Namibia: Brood-site with insect imprisonment. *Int. J. Pl. Sci.* 170: 157-163.

COE, M. (2003). Something is rotten in the State of Nature. *Veld & Flora* 89/3: 122-123 [with photo *Hydnora abyssinica* filled with carrion beetles, Kenya].

DOLD, T. & al. (2003). Fine fare, rare remedy. Hydnora africana: a most unusual and versatile parasitic plant. *Veld & Flora* 89: 12-14 [fine plate].

NICKRENT, D. L. & al. (2002). Molecular data place Hydnoraceae with Aristolochiaceae. *Amer. J. Bot*. 89: 1809-1817.

NYAFUONO, J. F. & al. (2002). Taxonomy and ethnobotany of Hydnora in Lake Mburo National Park (Uganda). *Israel J. Pl. Sci.* 48: 99-103.

RAHMAN, M. A. & al. (2002). Notes on succulent plant species of Saudi Arabia. *Bangladesh J. Pl. Taxon.* 9: 25-40 [cf. p. 39].

STRASSEN, H. ZUR (2000). Hydnora africana. *Mitt. Namibia Wiss. Ges.* 41 (7-9): 40-41.

TENNAKOON, K. U. & al. (2007). Structural attributes of the hypogeous holoparasite Hydnora triceps Drège & Meyer (Hydnoraceae). *Amer. J. Bot.* 94: 1439-1449.

Hydnora abyssinica A. Braun *in* Schweinf. (not *ex* Schweinf. or *ex* Decne.), incl. var. *quinquefida* Engl.; J. J. Monteiro, Angola and the River Congo, 2: 207-208, 1875. – Icon.: Welwitsch, Sert. angol. in Transact. Linn. Soc. 27: tab. 21, 1869; Fl. Pl. S. Afr. 6/21: pl. 207, 1926 (sub nom. *H. africana);* ibid. 11/43: pl. 428, 1931 (sub nom. *H. solmsiana);* Vaccaneo in Ann. Bot. (Torino-Roma) 20/3: 7, 10, tab. 12, 1934 (sub nom. *H. gigantea, H. johannis, H. bogosensis);* Thulin, Fl. Somal. 1: 30, 1993 (sub nom. *H. johannis);* Fl. Zambes. 9/2: 17, 1997; Fl. Trop. E. Afr., Hydnorac.: 2, 4, 2002; cf. also under synonyms (listed as species) in Enum. 2: 187, 1992; Fl. Eth. & Eritrea 2 (1): 57-58, 2000; Maundu, Tradit. food pl. Kenya: 143, 1999; V. Roodt, Shell field guide 2, Common wild fl. Okavango Delta: 80, 1998; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2(1): 270, 2001; Heide-Jørgensen, Parasitic flow. pl.: 236-238, 326, 2008.

syn.: *Hydnora africana* Thunb., incl. var. *longicollis* (Welw.) Hiern; *H. longicollis* Welw.; *H. bogosensis* Becc.; *H. cornii* Vaccaneo; *H. hanningtonii* Rendle; *H. johannis* Becc., incl. var. *quinquefida* (Engl.) Solms, var. *gigantea* (Chiov.) Vaccaneo and fa. *trimera* (Chiov.) Vaccaneo*; H. gigantea* Chiov., incl. var. *trimera* Chiov.; *H. michaelis* Peter; *H. ruspolii* Chiov.; *H. solmsiana* Dinter; *H. aethiopica* Decne.

Subterranean holoparasitic herb, fungus-like (Thunberg spoke of the plant as a fungus); plant-body rhizome-like, to 10 cm wide, irregular in shape, simple or with widely spreading horizontal branches, fleshy, brick-red inside, with sticky exudates; flowers directly from the "roots", partly subterranean; perianth fleshy; lobes (3-)4(-5) above ground, 5-25 cm long, patent in wet weather, otherwise connivent or connate at tip, with margins beset by a broad band of setae; fruit subterranean, inner pericarp mealy, white, sweet to taste, edible (collected by man, eaten by animals); seedlings unknown. – Flowering after the onset of the rains; flowers usually lasting for a few days; containing (dung) beetles (vide e.g. Musselman in Notes Roy. Bot. Gard. Edinb. 42: 26, 1984).

Dry *Acacia* woodland, wooded grassland or bushland; *Acacia, Acacia-Commiphora* scrub and grassland, also on termite mounds; usually on black cotton soil, clay and alluvium, also on rocky slopes; maritime sandy hills (Angola), plentiful; near sea-level-2100 m alt. – Recorded host plants (fide Musselman & Visser, o.c. 323): *Euphorbia* spp. (e.g. *E. caput-medusae, E. decussata, E. gregaria, E. gummifera, E. karroensis, E. lignosa, E. mauritanica), Acacia* spp. (e.g. *A. albida, A. cyanophylla, A. glaucophylla, A. karroo, A. nilotica, A. polyacantha* subsp. *campylacantha, A. seyal, A. tortilis), Albizzia lebbek, Delonix;* perhaps other leguminous trees, and probably *Commiphora* spp. – A report on *Kigelia africana* has been shown to be erroneous.

Variable in number of perianth lobes (usually 3-lobed flowers in S part of range and Angola), and in shape of rhizome branches. Distinctive plant in spite of variation.

S. Africa, Namibia, Botswana, Swaziland; Yemen (one collection known), Saudi Arabia (2 collections), S Oman (2 collections).

Cultivation experiments show that seeds will germinate as soon as the fruit turns red, but "it takes far less time… if the fruit is not removed for a month or two". Pot grown Euphorbias seem to be weakened (necroses of tissues), and the euphorbia should be > 15 cm tall and well rooted (Horwood in Euphorbia J. 1: 47, 1983). Seedlings and fruits have not been seen in cultivation (Musselman & Visser, l.c.).

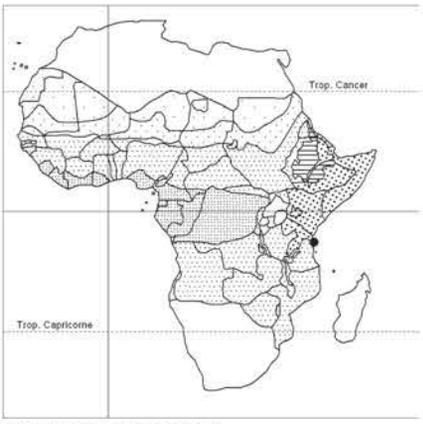
(**H. angolensis** Decne.)

Known only from a fruit presumably collected in Gabon. Taxonomic status unclear. – Not mapped.

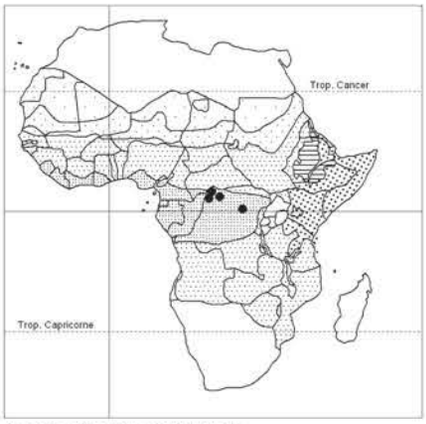
H. sinandevu Beentje & Q. Luke, Fl. Trop. E. Afr., Hydnoraceae: 5, 2002. – Icon: ibid.: 6 (photo.).

Subterranean holoparasitic herb on roots; plant body incompletely known; flowers partially below ground, with short pedicel (8 mm long); perianth coriaceous, 8-16 cm long; tube 5,3-9 cm long, 1,8-2,8 cm Ø; lobes 4, yellowish brown to red or yellow inside, 2,7-6,5 cm long, 0,9-2,9 cm wide, margins *glabrous* and homogeneous; fruit, seeds and seedlings unknown.

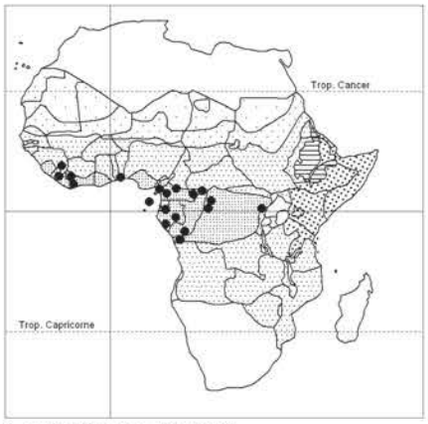
Scattered tree grassland, *Acacia-Commiphora* bushland, thicket or forest edge between forest and mangrove; near sea-level-450 (-1500?) m alt. – On roots of *Commiphora campestris* or *C. africana,* possibly on *Pterocarpus* or *Ostryoderris.*



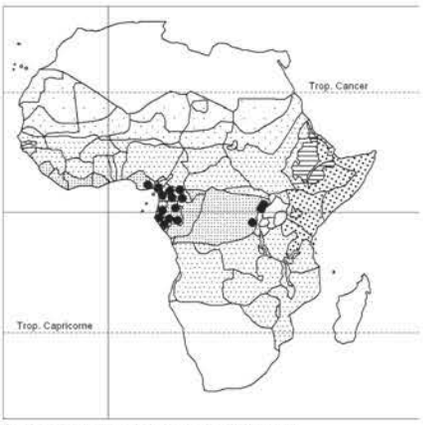
Lasiodiscus holtzii



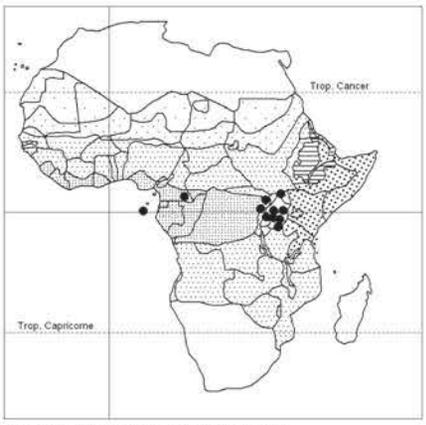
Lasiodiscus lebrunii



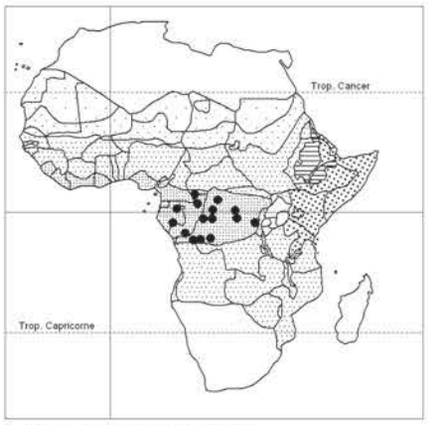
Lasiodiscus mannii



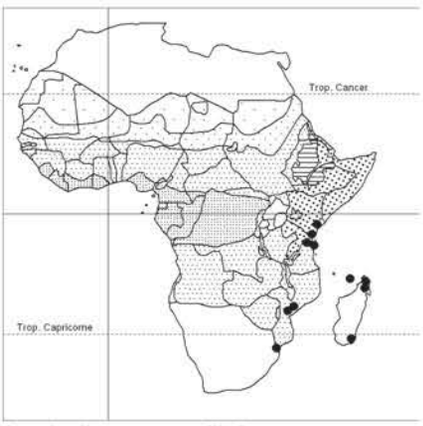
Lasiodiscus marmoratus



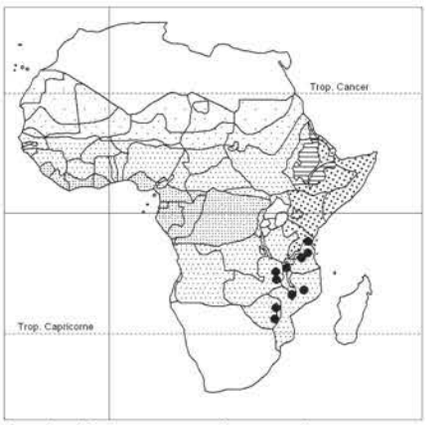
Lasiodiscus mildbraedii



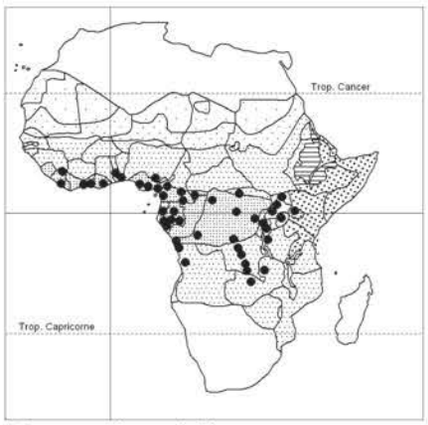
Lasiodiscus palustris



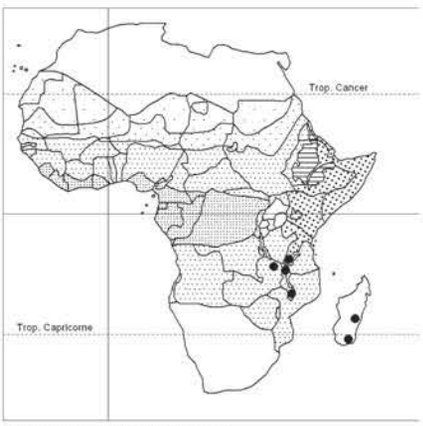
Lasiodiscus pervillei



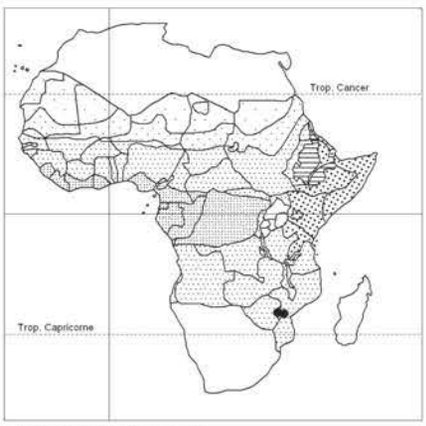
Lasiodiscus usambarensis



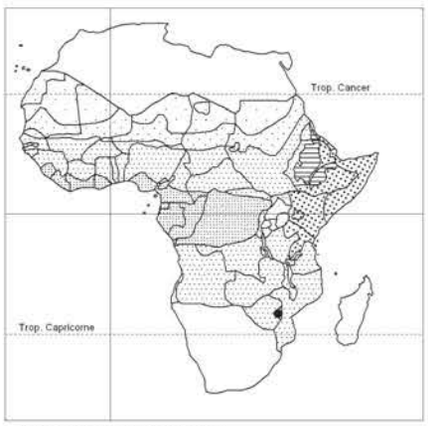
Maesopsis eminii



Phylica emirnensis



Phylica ericoides



Phylica paniculata

LASIODISCUS

The identity of specimens from N Kenya (Kailongol Mts.) and E Tanzania (Masai and Bagamoyo Districts) is uncertain, but they probably belong here (fide Beetje & Luke in Fl. Trop. E. Afr., Hydnorac.: 5-6, 2002).

RAFFLESIACEAE / *1* g./ *2* spp.

One genus in tropical Africa previously referred to *Pilostyles* and included in *Cytinaceae* together wth *Hydnora (Hydnoraceae)*. However, not related to *Hydnoraceae* according to Nickrent & al. (Amer. J. Bot. 89: 1809-1817, 2002). – Treated under *Apodanthaceae* by Heide-Jørgensen, Parasitic flow. pl.: 215-220, 2008.

Field studies are needed to clear up distribution of the sexes, and the features of the anthers.

One species known only from the (destroyed) type lacking female flowers and fruits.

BLARER, A. (2004). See under **Hydnoraceae/Hydnora**, p. 268.

BLARER, A. & al. (2004). Comparative floral structure and systematics in Apodanthaceae (Rafflesiales). *Pl. Syst. Evol.* 245: 119-142.

BERLINIANCHE / *2*

syn.: *Pilostyles* Guill. sect. *Berlinianche* Harms

Tropical African genus (a few collections have been confused with a rust fungus; see below).

Berlinianche aethiopica (Welw.) Vattimo-Gil; Meyer, in Haussknechtia 5: 11, 1990; Sosef & al., Check-list pl. vascul. Gabon: 331, 2006 (sub gen. *Pilostyles*). – Icon.: Trans. Linn. Soc. 27: pl. 22, 1869 (sub nom. *Pilostyles aethiopica)*; Fl. Zambes. 9/2: 15, 1997; Fl. Trop. E. Afr., Rafflesiac.: 3, 1998; Pl. Syst. Evol. 245: 121, 131-134, 2004; Heide-Jørgensen, o.c.: 7, 219, 304.

Small holoparasite, reduced, rootless; vegetative parts a thallus or mycelium-like system in roots and branches of the host; without chlorophyll; monoecious; only the flowers visible, 2-4 mm Ø, short-lived, emerging through the bark of smaller branches, unisexual, outer 3 tepals bract-like; male flowers with 11-12 tepals in 2 whorls (the inner one with 6), and with c. 30 anther thecae in 2 rows; female flower with a fleshy disk; berry globose with persistent perianth.

Brachystegia-Uapaca, Brachystegia-Julbernardia-Combretum-Steganotaenia woodland on grey stony soil; 30-40 m alt. (Gabon); 900-1800 m alt. – On *Leguminosae* tribe *Amherstieae.* Recorded on *Brachystegia, Isoberlinia, Julbernardia, Tetraberlinia.* Stated to be so common as to kill the host tree. Chimpanzees have been observed eating parasitized branches of *Julbernardia globiflora;* whole trees of *Brachystegia spiciformis* are recorded to be deformed, the branches becoming thick and pendulous (fide Verdcourt in Fl. Trop. E. Afr., Raffles.: 2, 1998).

In Angola the plant seems to be very rare, for during the sevent months Welwitsch was traversing the forests (Morro de Monino) daily, he found it only on a few trees ("Panda trees"); on certain trees he found only male flowers, on others female flowers that seemed to be rarer (fide Hiern, Welw. Afr. Pl. 1/4: 909, 1900).

Could turn up in W Ethiopia.

Distribution of the sexes unclear: one twig of the host may all be of one sex; it is generally supposed that female flowers are less common. Herbarium specimens with male flowers are apparently more common than female ones.

MAESOPSIS EMINII

B. holtzii (Engl.) Vattimo-Gil – Icon.: Engler in Bot. Jahrb. Syst. 46: 293, 1911, and in Engler & Drude, Veg. d. Erde 9, 3/1A (Pfl. W. Afr.): 114, 1915; Harms in Engler, Pfl.-fam. 16B: 273, 1935.

Similar to *B. aethiopica* but: male flowers with 8 (inner) tepals in 2 rows (3 in inner row), and anther thecae 10 in 1 row; female flower and fruit unknown.

Brachystegia woodland ("Myombowald"); c. 1350 m alt. – On *Julbernardia globiflora (Berlinia eminii).*

Known only from the (destroyed, B) type collected in 1907 (Holtz 1422), and the above-cited drawing.

Pilostyles sp. A, formerly filed as such in Herb. Kew.

Collections from Tanzania (Njombe District, Salala R., 1983, Nicholson, and Salala Mt., 1979, Leedal 5683, as well as Ulanga District, Uzungwa Mts., 1983, Lovett 225) reported growing on *Isolona (Annonaceae)* are a rust fungus **Aecidium isolonae** Gjaerum & D. A. Reid forming witches' brooms on host (Acta Mycol. Sin. Suppl. 1: 102, 1986; fide Verdcourt in Fl. Trop. E. Afr., Raffles.: 1, 1998). – Icon.: o.c.: 105-106.

GJAERUM, H. B. & D. A. REID (1986). Two new African rust species, Aecidium isolonae n. sp. and Uredo newtoniae n. sp. *Acta Mycol. Sinica,* Suppl. 1: 102-106.

BALANOPHORACEAE / *5* g./ *6* spp.

incl. *Cynomoriaceae* – In recent works these families are treated separately.

HANSEN, B. (1976). Pollen and stigma conditions in the Balanophoraceae s. lat. *Bot. Not.* 129: 341-345.

HEIDE-JØRGENSEN, H. S. (2008). Parasitic flowering plants: 207-210, 397 *[Cynomoriaceae]* and 240-259 *[Balanophoraceae].*

BALANOPHORA / *1*

A genus of 15 species distributed from tropical Africa (1 sp.), Madagasacar through to tropical and temperate Asia and Pacific Islands.

Balanophora abbreviata Blume – Icon.: B. Hansen in Dansk Bot. Ark. 28/1: 135, pl. 3 F & 7 D-F, (map p. 76), 1972.

syn.: *B. distans* (Tiegh.) Harms; *Balaniella distans* Tiegh.; *Balanophora alutacea* Jungh.; *Balaniella alutacea* (Jungh.) Tiegh.; *Balanophora insularis* Ridl.; *Acroblastrum insulare* (Ridl.) Setch.; *Balanophora micrantha* Warb.; *B. hildebrandtii* Reichb. f.; full synonymy in Hansen o.c.: 134-136.

Fleshy monoecious (inflorescences bisexual) herbaceous root parasite, yellowish-white, without chlorophyll, with underground tubers single or forming a dense mass branching from the base, to 5 cm Ø; single tuber obconical, 2,5 × 1,7 cm, ± warty; length of plant from fusion with host root to top of inflorescence (3-)5-10(-15) cm; leaves 3-7, distichous, imbricate, 1-2 × 0,7-1,5 cm; inflorescence with 10-20 male flowers with 4-5 sepals below in a zone 0,5-2 cm high; female flowers numerous, without perianth, above with club-shaped bracts ("spadicles"); fruit a minute 1-seeded achene.

Evergreen forest on *Ficus* sp. (Congo, known from only one place, coll. Sita s.n., 1966).

Madagascar, Comores, Indian and Indo-Chinese subcontinents, Malesia, Pacific Islands (Tahiti; from sea-level to 2250 m alt.); on a variety of hosts, incl. various *Ficus* spp.

CHLAMYDOPHYTUM / *1*

Monospecific African genus.

Chlamydophytum aphyllum Mildbr. – Icon.: Harms in Engler Nat. Pflanzenfam., ed. 2, 16 b: 317, 1935.

Fleshy dioecious herbaceous root parasite, yellowish to brown, without chlorophyll, with irregular cylindrical underground warty tuber; length of plant from fusion with host root to top of inflorescence 45 cm; inflorescence apparently ebracteate, sometimes a minute bract present subtending first-order branches in male plants; young inflorescence underground, completely enveloped by a coriaceous vulva, breaking through this and appearing above ground at anthesis and similar to a cauliflower; male inflorescence branched, 10-21 cm Ø, its axis 4-5 cm Ø; male flowers with (5-)6-8(-9) tepals; female inflorescence similar to male one, ebracteate, with 10-15 ± globular clusters (1,5 cm Ø) on each branch, each cluster composed of c. 100 naked flowers sunk in the receptacle.

Humid rain-forest on *Tessmannia (Caesalpiniaceae);* forest with legumes and forest clearing on white sands; along river.

Seems to be rare; (in 1991) only 4 collections known (type Mildbraed collected in 1914, Cameroun; Sita 2 in 1974, Congo; Jans in ? but cited in 1975, Zaire). Distances between the sites: Cameroon-S Congo = 1000 km, Cameroon-W Zaire = 1100 km, S Congo-W Zaire = 850 km fide Hallé in Adansonia, Sér. 2, 17: 254, 1978).

CYNOMORIUM / *1*

Often placed in a separate family, *Cynomoriaceae* with a single genus of one (or 2) species; the second species *C. songaricum* Rupr., confined to central Asia, was recognized only as a subspecies by Léonard (Bull. Jard. Bot. Natl. Belg. 56: 304, 1986): *C. coccineum* subsp. *songaricum* (Rupr.) J. Léonard (map by Jäger & al. in Flora 177: 79, 1985).

Here we follow a wide species concept (cf. Hansen in Bot. Jahrb. Syst. 106: 374, 1986).

Cynomorium coccineum L. – Icon.: Archives Mus. 10: pl. 24, 1858-1861; Lebrun & Stork, Enumération…2: 12, 1992; Jafri in Fl. Libya 17 (Cynomoriaceae): 3, 1977; Jeffrey in Fl. Iraq 4: 423, 1980; Thulin, Fl. Somal. 2: 149, 1999; Boulos, Fl. Egypt 2: 151, 2000 ; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 267, 2001; Daoud, Fl. Kuwait 1, revised: coul. pl. 70 (photo), 1985; Ali & Qaiser, Fl. Pakistan 208, Cynomoriaceae: 3, 2002; Heide-Jørgensen, Parasit. flow. pl.: 207-209, 2008.

Fleshy, club-shaped (fungus-like, described as a fungus from Malta, the General's Rock or Fungus Rock near Island Gozo, and illustrated as *Fungus typhoides liburnensis,* Tillandz, Icon. nov. in usum select. …, 1683), herbaceous dark red to purple holoparasite on roots, without chlorophyll, with underground rhizome-like scaly tubers that can reach 2 m depth; flowering stems above ground, often in rings, with many scale-like leaves, 10-30 cm tall, 2,5 cm Ø, terminating in a compact spike to 12 cm long, 4(-6) cm Ø, composed of numerous male (of 1 anther), female (1 carpel) and (fewer) bisexual flowers, all mixed on the same inflorescence; flowering during 2-3 weeks; flowers with perianth (4-5 segments) persistent on fruit; lower bracts flat, upper ones with a club-like tip, thick, juicy; fruit a nut.

On compacted sands, along roadsides (owing to the distribution of its hosts); salty marshes in the desert, saline sandy ground; coastal sands and dunes; from sea-level to ? m alt. (200 m in Iraq). – On a wide range of hosts, in particular *Chenopodiaceae,* also *Tamarix, Zygophyllum,* etc.

Plant with a wide distribution, from the Canary Isl., Lanzarote; through the Mediterranean coastal regions to Mongolia and China; reaching tropical Africa in Mauritania and Somalia; S Portugal, S & E Spain, Ibiza, Corsica (Ratino islet, Candollea 42: 53, 1987), islets N of Sardinia, NW Italy (Etruria, to 41° N lat.), Lampedusa, Sicily, Malta, Crete; Morocco, Algeria, Tunisia, Libya, Egypt with Sinai, Israel and Jordan (Lower Jordan and Arava Valleys, desert of Edom), Lebanon, Syria (Candollea 48: 86-87, 1993), Saudi Arabia, Kuwait, Qatar, United Arab Emirates (Sila-Djebel Dhanna, Jebel Ali, Al Ain); Iraq, Iran, Afghanistan, Turkmenistan, Uzbekistan, Kyrgyzstan, Kazakhstan, Mongolia; Pamir-Alai, Tien Shan; China (map for the Mediterranean in Svensk Bot. Tidskr. 85: 5, 1991; map general distribution in Heide-Jørgensen, o.c.: 207). – A fine example of a Mediterranean plant reaching tropical Africa.

The soft white inner part of the plant after removal of outer skin is edible, crispy, sweetish (Saudi Arabia); sheep and goats are reported to feed on the plant (Syria), and the thick underground tuber is said to be sought after by man in dry areas.

First record for Mauritania given by A. Chevalier (in Explor. Bot. Afrique Occid. Française 1: 550, 1920): M. Charles, s.l., 12 March 1910; then Lieut. G. Schmitt, different localities , 1911-1912. Later cited by Monod & Duchemin, Notes Africaines 51: 73, 1951 (cf. J.-P. Lebrun, Cat. pl. vasc. Mauritanie, in Boissiera 55: 157-158, 1998). – "The first notes on the plant by F G F Abela date to 1647 " and…"listed by name in the literature for the first time in 1697"…"in 1729…recognized as a parasitic flowering plant, and in 1749 named *C. cynomorium* by Linnaeus" (Heide-Jørgensen, o.c.: 209).

SARCOPHYTE / *2*

syn.: *Ichthyosma* Schltdl.

An East and South African genus.

Sarcophyte piriei Hutch. – Icon.: B. Hansen in Fl. Trop. E. Afr., Balanoph.: 2, 1993; Fl. Ethiopia 2/2: 381, 1995; Thulin, Fl. Somal. 2: 48, 1999; Fl. Zambes. 9/3: 248, 2006 (sub nom. *S. sanguinea* subsp. *piriei).*

syn.: *S. sanguinea* Sparrman subsp. *piriei* (Hutch.) B. Hansen; *S. sanguinea* sensu Engl. Pflanzenw. Ost. Afr. C: 168, 1895 et sensu Dyer, Fl. Trop. Afr. 6/1: 436, 1913, excl. descr. fem. inflor., refer. et syn., non Sparrman

Fleshy fungus-like herbaceous root-parasite, reddish, dioecious, with underground subspheroidal tuber 7-15 cm Ø, strongly polygonately furrowed; inflorescence breaking through surface of tuber, basally surrounded by a short 3-4-lobed sheath; stem bracteate below, 8-25 cm tall, to 5 cm Ø; inflorescence conspicuously branched, 5-10 cm Ø, branches 2-6 cm long, each subtended by a bract; male inflorescence to 40 cm tall, female ones to 25 cm tall or in globular masses at ground level; male flowers with tepals c. twice as long as stamens, pollen grains smooth; female flowers in clusters of c. 200, sunk in the common receptacle. With a *fruity smell.*

Riverine forest; woodland; on various trees, e.g. *Hyphaene, Commiphora, Faidherbia albida, Acacia stuhlmannii, A. xanthophloea, Newtonia, Ficus, Mimusops fruticosa; Acacia-Cadaba* vegetation on alluvial soil; 30-2000 m alt.

S. sanguinea Sparrman – Icon.: Linnaea 2: pl. 8, 1827 (sub nom. *Ichthyosma wehdemanni*); Trans. Linn. Soc. London 19: pl. 38, 1845; ibid. 22: pl. 1C, 1856 (details); Marloth, Fl. S. Africa 1: pls. 41, 42A, 1913; Harms in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 16b: 315, 1935; Fl. Pl. S. Afr. 5: pl. 176, 1925; Heide-Jørgensen o.c.: 257; Veld & Flora 89: 14, 2003.

syn.: *Ichthyosma wehdamanni* Steud.; *I. weinmannii* Harv.; *I. wiedemannii* Griff.

Similar to *S. piriei*, but: tepals c. 1,5 times as long as stamens, and pollen grains rugulose; with an *unpleasant smell "resembling putrid fish"*.

On *Acacia caffra, A. capensis, A. karroo, A. xanthophloea, Ekebergia.*

S. Africa.

THONNINGIA / *1*

A tropical African monotypic genus *[Thonningia malagasica* Fawcett = **Langsdorffia malagasica** (Fawcett) B. Hansen in Madagascar].

HOMÈS, J. L. A. (1960). Observations sur l'inflorescence de Thonningia Vahl (capitules bisexués). *Bull. Soc. Roy. Bot. Belgique* 92: 33-38.

MANGENOT, G. (1947). Sur l'organisation d'une Balanophoracée: Thonningia coccinea Vahl. *Compt. Rend. Hebd. Séances Acad. Sci.* 224: 587-589.

Thonningia sanguinea Vahl; Sosef & al., Check-list pl. vascul. Gabon: 82, 2006; Lejoly & al., Fl. Tshopo (RD Congo) in Taxonomania 25: 3, 2008. – Icon.: Trans. Linn. Soc. London 22: pl. 3, 1856; Harms in Engler, Nat. Pflanzenfam., ed. 2, 16 b: 338, 1935; Icon. Pl. African. 7: pl. 167, 1965; Andrews, Fl. Pl. Anglo-Eg. Sudan 2: 297, 1952; Berhaut, Fl. ill. Sénégal 2: 16, 1974; C. Parker & C. R. Riches, Parasitic Weeds of the World: 181, 1993; Fl. Cameroun 33: 47, 1991; Fl. Trop. E. Afr., Balanoph.: 4, 1993; Fl. Zambes. 9/3: 250, 2006; Akoegninou & al., Fl. analyt. Bénin: 424, 2006; Fl. Ethiop. 2/2: 382, 1995; Heide-Jørgensen, o.c.: 397; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 559, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 106, 2009.

syn.: Enum. 2: 188, 1992; *T. "coccinea"* sensu Mangenot, l.c., sphalm.

Herbaceous, (?) dioecious, obligate root-parasite, bright red, with a cylindrical branched rhizome-like tuber 10-15 cm below soil surface, 20 cm or more long, 0,6-0,8(-1,5 in swollen part) cm Ø; only the scaly flower-heads appear above ground, 5-20 cm tall from tuber, with scale-like bracts forming an involucre around the spadix; the imbricate flower-heads resembling a pineapple fruit or the trunk of the oil-palm; inflorescence c. 3 × 3,2-3,9 cm, male spadix depressed hemispherical, female spadix hemispherical; infrutescence dark red, fleshy.

Rain-forest, in shade, and adjacent woodland, common; rare in savanna; gallery forest; rain-forest with *Chrysophyllum albidum, Cola gigantea, Erythrophleum suaveolens, Alstonia boonei, Parinari excelsa, Milicia excelsa;* forest edge; plantations; 5-1700 m alt. – On various hosts, e.g. *Acacia mildbraedii, Baphia nitida, Pentaclethra eetveldeana, Antiaris africana, Bridelia micrantha, Funtumia africana, Myrianthus arboreus, Acalypha, Myrica* sp., *Mimulopsis;* also on plantation crops, e.g. *Hevea, Elaeis, Coffea,* cacao. – Infestation can cause loss of vigour in the host; heavy infestation on *Hevea* has been given as the cause of killed trees (fide Burkill, Useful Pl. W. Trop. Afr., ed. 2, 1: 247, 1985).

Polymorphic species (up to 5 species have been recognized).

Tubers are traded in local markets (used for flavouring, medicine, etc.).

SCUTIA MYRTINA

SYNONYMS:

Thonningia angolensis Hemsl. = **Thonningia sanguinea**

"coccinea" sphalm. = **T. sanguinea**

dubia Hemsl. = **T. sanguinea**

elegans Hemsl. = **T. sanguinea**

sessilis Lecomte = **T. sanguinea**

ugandensis Hemsl. = **T. sanguinea**

RHAMNACEAE / *12* g. / *39* spp.

A family of some 900 species, 50 genera; cosmopolitan, mainly in subtropical and tropical areas.

Some species are poorly known in our area, e.g. in the genus *Gouania.* Two species, viz. *Lasiodiscus holtzii* and *Rhamnus mildbraedii,* are known only from the type (= c. 5%), with fruits unknown.

RICHARDSON, J. E. & al. (2004). Historical biogeography of two cosmopolitan families of flowering plants: Annonaceae and Rhamnaceae. *Philos. Trans. Roy. Soc. London, Ser. B* 359: 1495-1508.

BERCHEMIA / *2*

Genus of 12 species (1 in W N. America, 2 in Africa one of which also in Madagascar, the others in S Asia).

Berchemia discolor (Klotzsch) Hemsl. – Icon.: Fl. Trop. E. Afr., Rhamnac.: 33, 1972; Beentje, Kenya trees, shrubs & lianas: 354, 1994; V. Roodt, Shell Field Guide 1, Okavango Delta: N° 449 p. 110, 1998; Schatz, Generic tree fl. Madag.: 309, 2001; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 405, 2001; Curtis & Mannheimer, Tree Atlas Namibia: 414, 2005; Thulin, Fl. Somal. 2: 153, 1999; Palmer & Pitman, Trees south. Afr. 2: 1394-1395, 1972; Coates Palgrave, Trees south. Afr., ed. 3: ill. 175, 2002.

bas.: *Scutia discolor* Klotzsch

syn.: *Adolia discolor* (Klotzsch) Kuntze; *Araliorhamnus punctulata* H. Perr.; *A. vaginata* H. Perr.

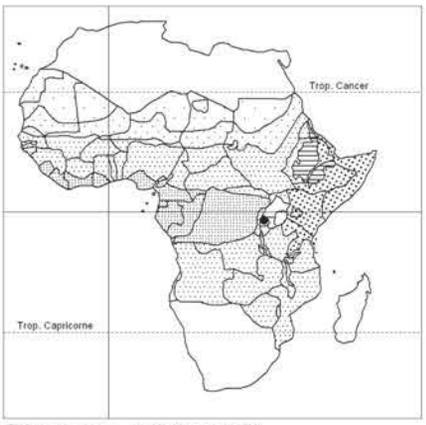
Shrub or tree 2-7-10-25 m tall with dense rounded crown; trunk to 50-70 Ø; wood very hard and heavy, yellow-brown; bark deeply checked and tending to shed in sheets; younger branches conspicuously lenticellate; branchlets 2-20 cm long, leafy, glabrous to densely pubescent with short spreading whitish hairs; leaves ± opposite, with prominent herringbone-like veining and marked difference in coulour of upper and lower surfaces; drupe yellow, edible.

Thickets; semi-desert grassland; dry bushland; widespread (less abundant but reaching its largest size in stream valleys or riverine forests); rocky ground; granitic inselbergs; *Acacia, Commiphora, Balanites* woodland and wooded grassland; *Acacia* woodland and bushland on alluvial soils; rocky hillsides; termite mounds; 0-2000 m alt.

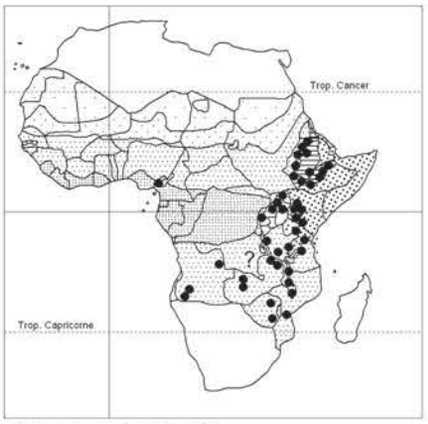
Very variable in pubescence.

Namibia, Caprivi Strip, Botswana, NE S. Africa; Madagascar; Yemen, Saudi Arabia.

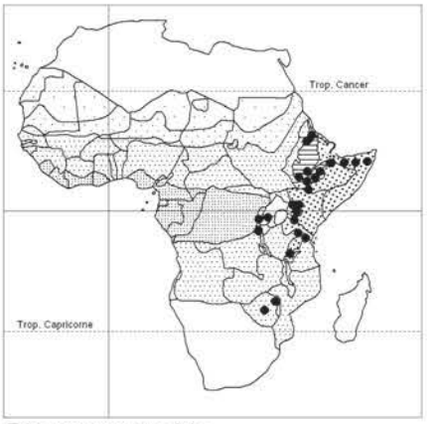
Somewhat resembling a *Bridelia* (with *alternate* ! leaves).



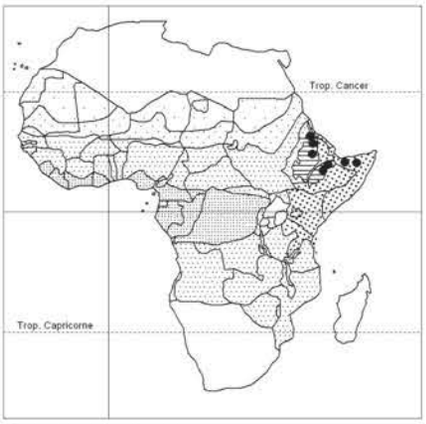
Rhamnus mildbraedii



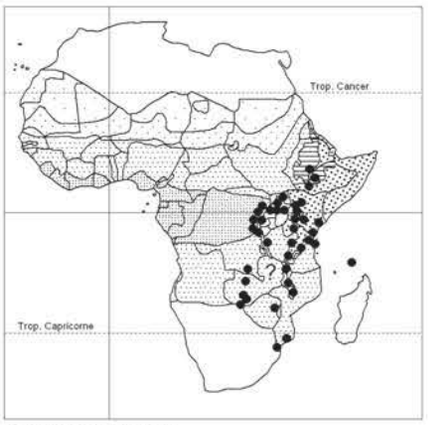
Rhamnus prinoides



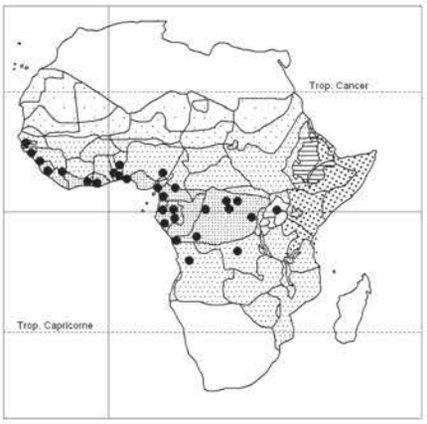
Rhamnus staddo



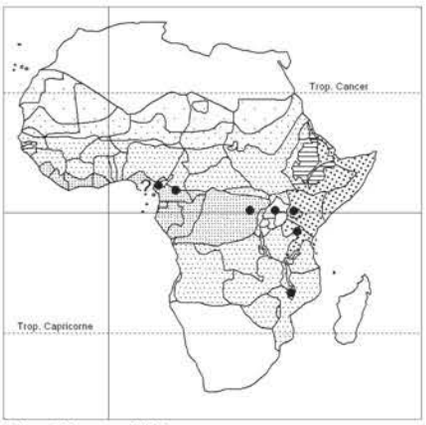
Sageretia thea



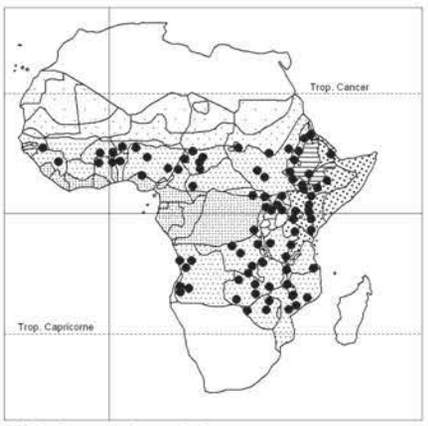
Scutia myrtina



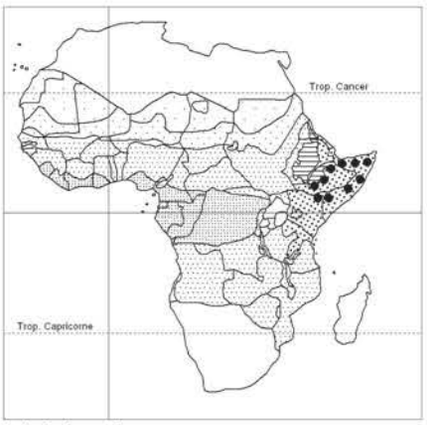
Ventilago africana



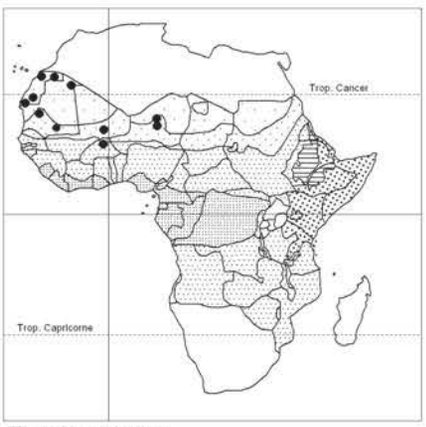
Ventilago diffusa



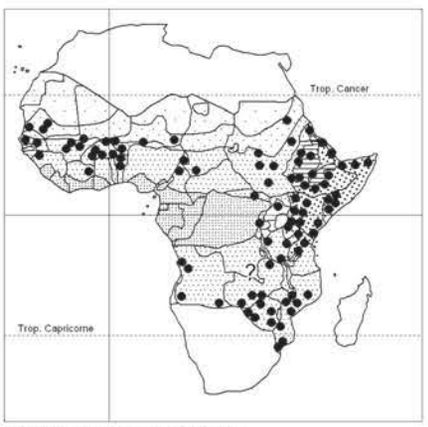
Ziziphus abyssinica



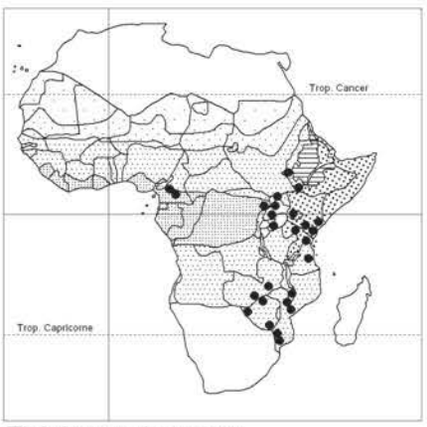
Ziziphus hamur



Ziziphus lotus



Ziziphus mucronata



Ziziphus pubescens

B. zeyheri (Sond.) Grubov; Coates Palgrave, Trees south. Afr., ed. 3: 669, 2002. – Red Ivory – Icon.: Sim, Forest fl. Port. E. Afr.: pl. 25A !, 1909 (sub gen. *Rhamnus);* Palmer & Pitman, Trees south. Afr. 2: 1397-1398, 1972.

bas.: *Rhamnus zeyheri* Sond.

syn.: *Phyllogeiton zeyheri* (Sond.) Suess.

Shrub or tree 6-12 m tall with rough grey bark; wood hard, pink to deep red; branches spreading; young branchlets puberulous, often purplish red; leaves smaller than in *B. discolor* (1,2-4 × 0,6-2,5 cm, not 5-11 × 3-6 cm); drupe yellow, edible.

Open woodland, termite mounds.

Botswana, Swaziland, S. Africa (60-1980 m alt.).

SYNONYMS:

Berchemia excavata Pierre = ? **Maesopsis eminii** subsp. **berchemioides**

yemensis Deflers = **Sageretia thea**

COLUBRINA / *1*

Pantropical, c. 31 species; especially in the Americas; 5 endemic in Madagascar (1 also in the Comoros) 4 in SE Asia; 1 in coastal tropical Africa; 1 in S. Africa *(C. nicholsonii* A. E. van Wyk & Shrire).

Colubrina asiatica (L.) Brongn. var. **asiatica**; Coates Palgrave, Trees south. Afr., ed. 3: 672, 2002. – Icon.: Fl. Zambes. 2/2: 431, 1966; Beentje, Kenya trees, shrubs & lianas: 355, 1994.

bas.: *Ceanothus asiaticus* L.

Climbing or sprawling or scandent evergreen unarmed shrub, or rarely tree to 5 m tall; branchlets often zig-zag; younger internodes with sparse antrorse, appressed golden silky hairs; leaves shiny above; capsule yellow-reddish brown, promptly dehiscent.

Always a strand plant from Kenya to Mozambique included Zanzibar I., Mafia I., Pemba I., Inhaca I.; sand dune; scrub; just above high tide level, 0-15m.

Madagascar, Seychelles; SE Asia (type from Sri Lanka); Australia (Queensland), oceanic islands as far as 140° E. longitude in the S Pacific; also in Hawaii.

Var. **subpubescens** (Pitard) M. C. Johnston is not littoral and occurs in Burma, Thailand, Laos, Cambodia, Vietnam, China (Yünnan) and Java (full map: Brittonia 23, 45, 1971). Also adventive to West Indies, Florida (earliest collection ca. 1860 in Jamaica).

"Seeds of *C. asiatica* float indefinitely", …(Carlquist, Brittonia 18: 327 and fig. 4 p. 323, 1966): dispersed by seawater.

GOUANIA / *3*

Revised by P. B. Phillipson & M. W. Callmander.

Pantropical genus of ca. 50 species (ca. 10 in America, 15 in Hawai, ca. 5 in Asia, 16 in Madagascar and other islands in the Indian Ocean, ca. 3 in Africa); figures corresponding to a study by Buerki & al.(in press) and not to those given by J. E. Richardson & al., 2004: 1505 (26 species in all). – Insufficiently known.

BUERKI, S., P. B. PHILLIPSON & M.W. CALLMANDER (in press). A taxonomic revision of Gouania Jacq. (Rhamnaceae) in Madagascar and the other islands of the western Indian Ocean (Comores, Mascareignes and Seychelles). *Ann. Miss. Bot. Gard.*

RICHARSON, J. E. & al. (2004). Historical biogeography of two cosmopolitan families of flowering plants: Annonaceae and Rhamnaceae. *Phil. Trans. R. Soc. London* B 359: 1495-1508.

Gouania laxiflora Tul.

syn.: *G. scandens* sensu R. B. Drummond, Fl. Zambes. 2/2: 435, 1966 p.p. excl. type et Fl. Trop. E. Afr., Rhamnaceae: 11, 1972; non *Retinaria scandens* Gaertn. (type from Mauritius) = *Gouania tiliifolia* Lam.; *G. mozambicensis* M. L. Green; *G. glandulosa* Boivin ex Tul. var. *longiloba* Perrier, nom. nud.; *G. lineata* Tul. var. *recurviloba* Perrier, nom. nud.; *G. leguatii* Guého – Icon.: Fl. Zambes. 2/2: 426, 1966 (sub nom. *G. scandens*).

Liane to 4 m long; branchlets sparsely pubescent, with coiled tendrils later becoming woody; leaves glabrescent beneath; inflorescene lax.

Coastal scrub and riverine vegetation (lakes, rivers); 200-275 m alt.

Comoro I. (Mayotte), Mascarenes (Rodrigues only), W Madagascar, Seychelles (Aldabra, Cosmoledo, Picard I.)

Fruit floating.

G. longipetala Hemsl. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 419, 420, 1939; Fl. W. Trop. Afr., ed. 2, 1/2: 671, 1958; Fl. Cameroun 33: 15, 1991; Akoegninou & al., Fl. analyt. Bénin: 864, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 679, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 364, 2009.

syn.: *G. klainei* Pierre, nom.

Climbing shrub or liane to 10 m tall, or reaching the top of trees; branches glabrous, terete (but young apex brown pubescent); tendrils curled at apex, hairy at first, woody, terminal and in leaf-axils; inflorescence spiciform, to 20 cm long; flowers white, fragrant; fruit with 3 short wings, dehiscent.

Dry closed forest, forest margins with *Combretum comosum*; forest regrowth; riverine forest; roadside vegetation; on *Phyllanthus discoideus* in savanna; secondary bush with *Neuropeltis acuminata*, *Secamone afzelii*, *Dracaena humilis*, *Entada scelerata*, *Agelaea sp.* …; forest margins with *Combretum comosum*; sometimes very common; 35-860 m alt. – Widespread in W and C Africa.

Bioko/Fernando Poo.

Twigs used as chew-sticks (Nigeria).

G. longispicata Engl.; Cheek & al., Pl. Mt. Oku: 156, 2000; Y. Harvey & al., Pl. Bali Ngemba: 119, 2004. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 422, 1939; Beentje, Kenya trees, shrubs & lianas: 355, 1994; White & al., Evergreen for. fl. Malawi: 444, 2001; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 433, 2008.

syn.: *G. seretii* De Wild. – *G. ulugurica* Gilli (Ann. Naturhist. Mus. Wien 74: pl. 5/1, 1970) is based on a sterile specimen from Morogoro, Tanzania: it lacks the characteristic woolly tomentum on lower leaf surface; another sterile specimen from Lushoto Distr. is similar; their status is uncertain, possibly a distinct species but perhaps only a variant of *G. longispicata,* fide Johnston, Fl. Trop. E. Afr., Rhamnaceae: 14, 1972.

Climbing or sprawling shrub or liane 8-20 m tall; branchlets and tendrils with longitudinal pubescent stripes of antrorse brownish hairs 0,2-0,3 mm long, glabrescent, very slightly zig-zag; flowers white, in dense erect racemes, ca. 10 cm long.

Forests, particularly at margins and in disturbed places, clearings; secondary forest; wooded grassland; savannas established after rain-forest; over *Acacia* in riverine thickets in the tall grass savanna; coffee plantations; among rocks and *Acacia;* rain-forest with *Albizia, Macaranga, Croton, Ocotea;* 300-2400 m alt.

* * *

Gouania pannigera Tul. recorded from Mozambique (Pflanzenw. Ost-Afr. C: 256, 1895 and Natürl. Pflanzenfam., ed. 2, 20d: 168, 1953, Suessenguth) is doubtful for this endemic Malagasy species; specimen cited (with densely hairy fruits) not traced.

SYNONYMS:

Gouania glandulosa Boivin ex Tul. var. *recurviloba* Perrier = **Gouania laxiflora**

integrifolia Lam. = **Helinus**

klainei Pierre, nom. = **Gouania longipetala**

leguatii Guého = **G. laxiflora**

lineata Tul. var. *recurviloba* Perrier = **G. laxiflora**

mozambicensis M. L. Green = **G. laxiflora**

scandens sensu R. B. Drummond p.p. excl. type = **G. laxiflora**

seretii De Wild. = **G. longispicata**

ulugurica Gilli = **G. longispicata**

HELINUS / *2*

A genus of 5 species (1 in NW India, 1 in Madagascar, 3 in Africa).

Helinus integrifolius (Lam.) Kuntze – Icon.: Bull. Jard. Bot. Etat., Brux. 15: 416, 1939; Consp. Fl. Angol. 2/1: pl. 6 p. 33, 1954.

bas.: *Gouania integrifolia* Lam.

syn.: *Willemetia scandens* Eckl. & Zeyh.; *Helinus arabicus* Jaub. & Spach; *H. ovatus* Sond., incl. var. *rotundifolius* Sond.; *Mystacinus arabicus* (Jaub. & Spach) Kuntze; ? *Helinus scandens* (Eckl. & Zeyh.) A. Rich. var. *parvifolius* Engl.

Liane or climbing much-branched shrub 0,5-6 m tall or more; young stems reddish; branches glabrescent to glabrous with axillary coiled glabrous tendrils; flowers (in umbels) and capsules glabrous.

Thickets in (wooded) grassland; forest margins; dry open woody vegetation of all sorts; usually on sand; *Acacia* and *Acacia-Commiphora* woodland and bushland; dry savannas; in rocky places; thickets along river banks; grassy thickets; 0-1700 m alt. – Widespread in dryer areas.

Namibia, Caprivi Strip, Botswana, S. Africa, Swaziland; Yemen (Kilian & al., Willdenowia 32: 258, 2002, and 34: 159-182, 2004), Socotra.

H. mystacinus (Ait.) Steud., incl. fa. *pilosiusculus* Radlk., fa. *tomentosus* Radlk. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 417, 1939; Beentje, Kenya trees, shrubs & lianas: 356, 1994.

bas.: *Rhamnus mystacinus* Ait.

syn.: *Mystacinus cirrhiferus* Raf., nom. superfl., illegit., ? *H. mystacinus* var. *somalensis* Engl.

Woody climber to 10 m tall or more, similar to the above but: branchlets ± densely pubescent with circinate villous tendrils; flowers pubescent; fruits glandular-tuberculate and hairy.

Wide variety of situations: probably commonest in wooded grassland, forest margins and secondary bushland; growing over bushes; also in sclerophyllous forests, wooded savannas; secondary formations, scrub, forest clearings, abandoned cultivations, forest gallery, fallows; 100-2600 m alt.

S. Africa.

LASIODISCUS / *11*

This account is based on E. Figueiredo, A revision of Lasiodiscus (Rhamnaceae) in Kew Bull. 50: 495-526, 1995 (see also our Enum. 4: 661, 1997); and maps in Distrib. Plant. African. 44: 1471-1485 (1999).

Twelve species recognised, one of which *(L. rozeirae* Exell) endemic to São Tomé and Principe.

Lasiodiscus chevalieri Hutch. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 675, 2006.

syn.: Enum. 4: 661, 1997; *L. mildbraedii* sensu F.W.T.A. ed. 2, 1/2: 671, 1958, quoad specim. Chevalier 19120, 22525, Thompson 51, Chipp 126, Vigne FHI 1793.

Shrub or tree 8-15 m tall; trunk 15 cm Ø, 0,6 m in girth; branchlets white, lenticellate, sparsely brown-hairy, glabrescent; crown spreading; leaves ± opposite, asymmetric at base, hairy beneath; flowers very numerous in large well-branched compound cymes, white, sweet-scented. Slash with strong toothpaste smell, reddish.

Locally abundant in deciduous, semi-evergreen, fringing or dry forests.

Sometimes maintained as var. *chevalieri* of *L. mannii* (e.g. Burkill, Useful pl. W. trop. Afr. 2: 484, 1997).

L. fasciculiflorus Engl. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 411, 1939; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 247, 1959; Mém. Mus. Natl. Hist. Nat., N.S., Séri. B, Bot. 22: 776, 1971; Fl. Cameroun 33: 11, 1991; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 675, 2006.

Shrub 2 m tall or tree 4,5-8-15 m; main stem straight, 10 cm Ø; bark green and brown; branching regular; branchlets ± conspicuously lenticellate, with appressed red-brown hairs when young; stipules 2-lobed; leaves symmetric; flowers in axillary clusters. Slash reddish, with strong smell of camphor. Resembling a *Rubiaceae* by the leaves and stipules.

Humid evergreen forest; ferrugineous quartzite; dryer forests; swamp- and riverine forests; wet sandy area; near watercourses, river banks; sometimes common; 1-1266 m alt.

Not in Bioko/Fernando Poo.

Sometimes not considered specifically distinct from *L. usambarensis.*

L. gillardinii Staner – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 409,

ZIZIPHUS

410, 1939.

Shrub or tree to 20 m tall with spherical crown; bole slender;

bark light grey; branchlets brown, with lenticels; leaves *3-nerved*

from base; stipules united on the lower sides of the branches, free

on upper side; inflorescences condensed, umbel-like.

Drier types of rain-forest; *Michelsonia* evergreen rain-forests;

ca. 700 m alt.

ZIZIPHUS

L. holtzii Engl.

Branching shrub; young branches terete, densely ferrugineous-tomentulose; older glabrescent fuscous; leaves small (8-11 × 3-4 cm); inflorescense few-flowered, paniculate, densely tomentulose; fruit unknown.

Apparently woodland; 100-200 m alt.

Only known from the type collected in 1903; a second specimen collected in 1982 by Hawthorne at the type locality may belong here. However, this specimen does not have open flowers or mature fruits; the leaves are small, but conspicuously dentate (like in *L. usambarensis).*

L. lebrunii Figueiredo

syn.: *L. mildbraedii* sensu Fl. Congo belge 9: 438, 1960 quoad specim. Lebrun 1787.

Shrub or tree to 8 m tall; branchlets dark brown or black with very conspicuous white lenticels, glabrous; stipules and leaves glabrous; flowers < 50 in compound cymes (cf. *L. chevalieri,* > 50 flowers).

Gallery forests.

Close to *L. chevalieri* (but species allopatric).

L. mannii Hook. f.; F.W.T.A., ed. 2, 1/2: 671, 1958 *excl.* specim. Talbot 3238, Onochie in Hb. Brenan 9439; Fl. Gabon 4: 63 1962 *excl.* syn. *L. chevalieri, L. mildbraedii;* Fl. Cameroun 33: 5, 1991 *excl*. syn. *L. chevalieri, L. mannii, L. mildbraedii* et Letouzey 5083. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 414, 1939; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 675, 2006.

syn.: Enum. 4: 661, 1997; *L. marmoratus* sensu Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 248, and pl. 218 p. 245, 1959, non C. H. Wright; *L. klainei* Pierre ex N. Hallé, Adansonia, Sér. 2, 2: 131, 1962, in syn. (nom. invalid.); ? *L. mannii* var. *tessmannii* Engl. & Drude (no specimens have been found).

Shrub or tree 3-6-10 m tall; bole 20 cm Ø, black; bark red stained; young branchlets with ± conspicuous (depending on the indumentum density) white lenticels, light grey, puberulous to hirsute or villous, with spreading red-brown hairs; leaves symmetric, c. 20 × 10 cm, puberulous beneath; stipules united on the lower side of the branchlets, free on upper side; inflorescence dichotomously branched, lax, long-pendunculate.

Rain-forests on well-drained soils, near watercourses; 450-900 m alt.

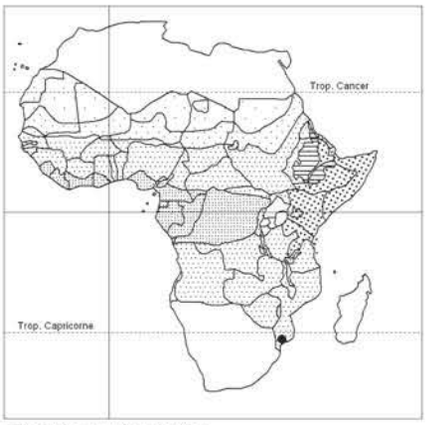
São Tomé, Principe.

L. marmoratus C. H. Wright

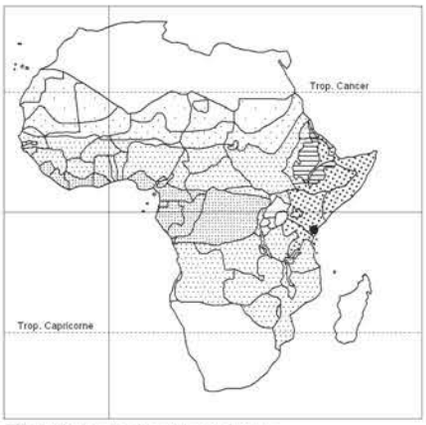
syn.: Enum. 4: 661, 1997; *L. mannii* sensu F.W.T.A., ed. 2, 1/2: 671, 1958 quoad specim. Brenan 9439, Talbot 3238; Fl. Congo belge 9: 438, 1960 quoad specim. Michelson 444.

Shrub or tree to 10 m tall; bole 8-20 cm Ø; bark smooth, pale grey; young branchlets with white lenticels conspicuous through the indumentum, tomentose to villous, with dark brown hairs 1,5-2,5 mm long; leaves symmetric, shiny bright or pale green above; stipules united on both sides of branchlets, densely straight-brown-hairy; flowers ± 100 in compound cymes or corymbs to 20 cm long.

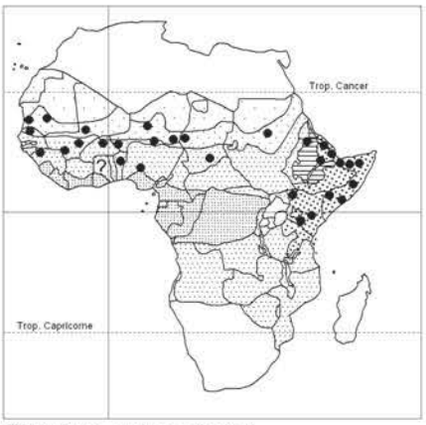
Primary or secondary evergreen rain-forests; usually on river banks or near watercourses; 250-1280 m alt.



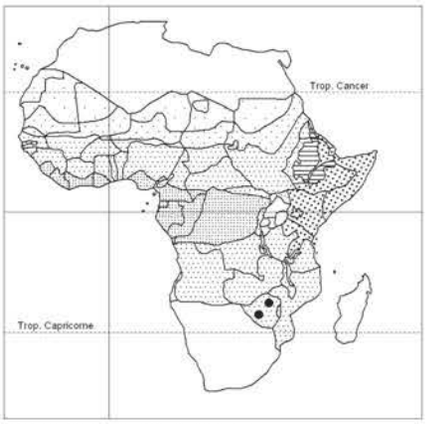
Ziziphus rivularis



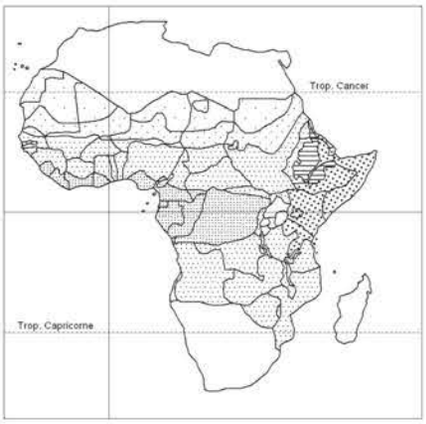
Ziziphus robertsoniana

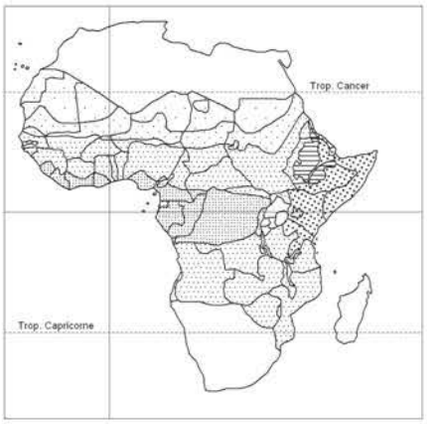


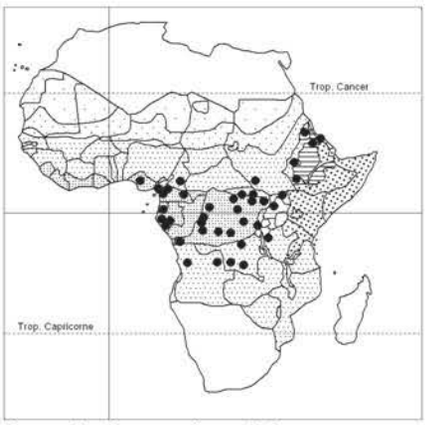
Ziziphus spina-christi var. microphylla



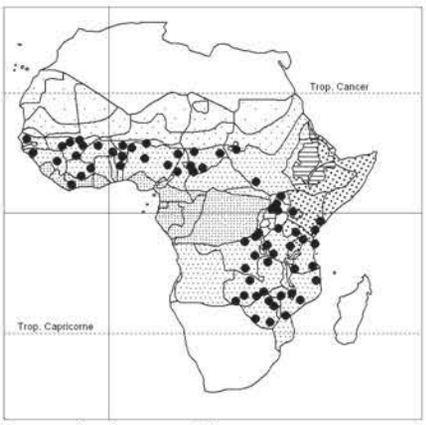
Ziziphus zeyheriana



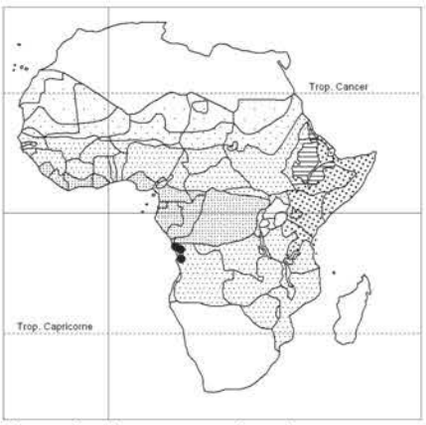




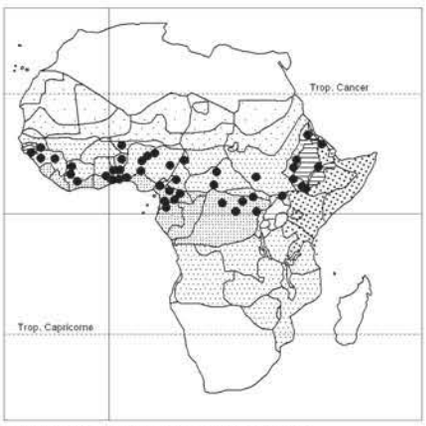
Ampelocissus abyssinica



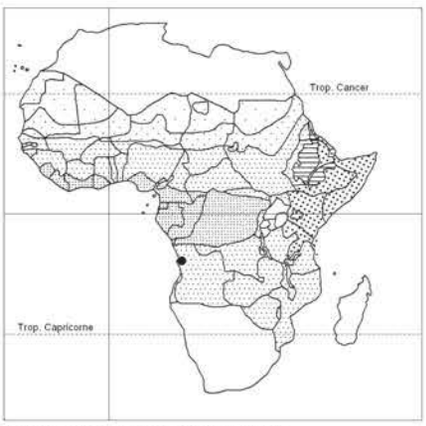
Ampelocissus africana



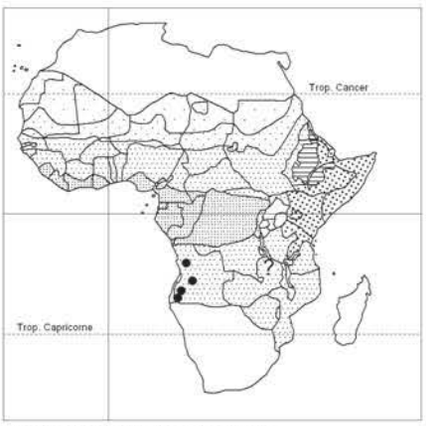
Ampelocissus angolensis



Ampelocissus bombycina



Ampelocissus concinna



Ampelocissus dissecta

L. mildbraedii Engl., Fl. Congo belge 9: 438, 1960 *excl.* specim. Seret 932, Lebrun 1787; Fl. Trop. E. Afr., Rhamn.: 6, 1972 *excl.* syn. *L. mildbraedii* var. *undulatus* Suess. *(= L. pervillei* subsp. *pervillei),* and subsp. *ferrugineus* (Verdc.) Faden *(= L. pervillei* subsp. *ferrugineus;* e.g., Beentje, Kenya trees, shrubs & lianas: 356, 1994). – Neotype: Willan 40. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 412, 1939.

syn.: *L. glabridiscus* in herb. (Brown 424, BM); *L. glabristipulatus* on a sketch by Mildbraed (2860, BM; dupl. B destroyed, UPS handwritten by Engler and crossed out by him and replaced by *L. mildbraedii).*

Shrub or tree 6-10-24 m tall; bole 20-30 cm Ø; bark dark grey, smooth or rough, flaking into small scales; branchlets with inconspicuous lenticels, glabrous or puberulous; leaves asymmetric at base, glabrous above, ± minutely puberulous beneath; stipules united on lower side of branchlets, free on upper side; inflorescence in corymbs, white with dark brown indumentum.

Evergreen or semi-evergreen rain-forests, forest gallery; frequent in *Cynometra alexandri* forests; woodland and dry forests; 850-1400 m alt.

São Tomé, Principe.

L. palustris Figueiredo

syn.: Enum. 4: 611, 1997; *L. mannii* sensu Fl. Congo belge 9: 437, 1960, excl. specim. Michelson 444; *L. marmoratus* sensu Fl. Gabon 4: 66, 1962 quoad specim. Le Testu 8910.

Shrub or tree 3-10-20 m tall; bole 8-25 cm Ø; bark smooth, brown; slash pink to red; young branchlets with conspicuous, creamy lenticels, subglabrous, puberulous or with appressed hairs to 1-1,5 mm long; stipules united on lower side of branchlets, free on upper side; flowers > 100 in scorpioid cymes c. 20 cm long, puberulous.

Swamp forests; wetter types of rain-forest; forest gallery, forest clearings, near watercourses; sometimes very abundant; 350-750 m alt.

L. pervillei Baill.

Shrub or tree, deciduous, 2-10 m tall; branchlets with lenticels conspicuous when young, glabrous or sparsely puberulous becoming glabrescent (subsp. **pervillei**) to densely rusty pubescent with spreading long hairs (subsp. **ferrugineus**); leaves small (7,5-17 × 2,5-7 cm), oblique at base, ± glabrous; stipules united on lower side of branchlets, free on upper side; inflorescence ± glabrous to densely pubescent, compound with 2 branches tending to umbels.

Comprises 2 subspp.:

– subsp. **pervillei;** Coates Palgrave, Trees south. Afr., ed. 3: 675, 2002. – Icon.: Grandidier, Hist. Madag. [Plantes], Atlas: pl. 290, 1894; Palmer & Pitman, Trees south. Afr. 2: 1410, 1972 (sub nom. *L. mildbraedii);* Schatz, Generic tree fl. Madag.: 310, 2001. – syn.: Enum. 4: 661, 1997; *L. mildbraedii* Engl. var. *undulatus* Suesseng.; *L. mildbraedii* R. B. Drummond, Fl. Zamb. 2 (2): 438, 1966 and *excl.* syn. *L. ferrugineus.*

Woodlands, evergreen coastal forests; rare in E. Africa; 5-300 m alt.

NE-most S. Africa; Madagascar;

– subsp. **ferrugineus** (Verdc.) Figueiredo – Icon.: Beentje, Kenya trees, shrubs & lianas: 356, 1994 (sub nom. *L. mildbraedii).* – bas.: *L. ferrugineus* Verdc.; syn.: *L. mildbraedii* Engl. subsp. *ferrugineus* (Verdc.) Faden

Evergreen and coastal forest; up to 430 m alt. (in N part of range).

L. usambarensis Engl., incl. var. *usambarensis, excl.* var. *gossweileri* Cavaco (= *L. fasciculiflorus);* Bull. Jard. Bot. Natl. Belg. 60: 81, 1990; Coates Palgrave, Trees south. Afr., ed. 3: 676, 2002. – Icon.: White & al., Evergreen for. fl. Malawi: 444, 2001.

Shrub or tree 2-10 m tall; bark smoothish black brown; branchlets with many lenticels, glabrous to puberulous, very fragrant when cut; leaves small (8-17 × 2,5-6 cm), symmetric, thin, glossy dark green above; stipules free, awl-shaped, finely hairy; flowers few in axillary clusters.

In undergrowth of evergreen rain-forest; mist forest; 800-2000 m alt.

Sometimes considered not distinct from *L. fasciculiflorus.*

SYNONYMS:

Lasiodiscus contumax N. Hallé = **Lasiodiscus fasciculiflorus**

ferrugineus Verd. = **L. pervillei** subsp.

glabridiscus in herb. = **L. mildbraedii**

glabristipulatus Engl., nom. = **L. mildbraedii**

klainei Pierre = **L. mannii**

mannii auctt., non Hook. f. ex Hemsl. p.p. = **L. marmoratus, L. chevalieri, L. palustris**

mannii Hook. f. var. *chevalieri* (Hutch.) N. Hallé = **L. chevalieri**

var. *tessmannii* Engl. = ? **L. mannii**

marmoratus sensu auctt. p.p., non C. H. Wright = **L. mannii**, **L. palustris**

mildbraedii auctt., p.p., non Engl. = **L. chevalieri**, **L. lebrunii**, **L. mannii**, **L. pervillei** subsp. **pervillei**

subsp. *ferrugineus* (Verdc.) Faden = **L. pervillei** subsp.

var. *undulatus* Suess. = **L. pervillei** subsp. **pervillei**

seretii De Wild. = **Iodes seretii** *(Icacinaceae)*

usambarensis Engl. var. *gossweileri* Cavaco = **Lasiodiscus fascicularis**

zenkeri Suess. = **L. mannii**

MAESOPSIS / *1*

syn.: *Karlea* Pierre

Monotypic, African.

Maesopsis eminii Engl. – Icon.: Engler in Engler & Drude, Veget. Erde 9.3, 2: 308, 1921; Fl. Trop. E. Afr., Rhamn.: 37, 1972; Bull. Jard. Bot. Etat, Brux. 15: 401, 1939; Fl. Cameroun 33: 41, 1991; Beentje, Kenya trees, shrubs & lianas: 357, 1994; Akoegninou & al., Fl. analyt. Bénin: 865, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 679, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 188, 2007; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 365, 2009.

Tree, deciduous, glabrous 5-15-25-42 m; bole cylindrical, straight, unbranched for 10-22 m, shortly and bluntly buttressed, 0,1-1 m Ø, 2,5 m in girth; bark silvery grey with vertically twisted furrows, thick; slash red and yellow, foul-smelling (or of "cold cooked chicken"); branchlets dark purple brown, smooth with tight lenticels; leaves alternate or opposite; drupe orange, 1-seeded, ca. 3 cm long.

Grassland; savanna; riverine forest; forest regrowth; secondary scrub; rain-forest; granitic soil; forest edges; also on dry ground; important pioneer species, extremely invasive, fast growing; sometimes common; 100-1650 m alt.

Bioko/Fernando Poo.

AMPELOCISSUS CONCINNA

Comprises 2 subspp.: – subsp. **eminii;** – subsp. **berchemioides** (Pierre) N. Hallé [syn.: *Maesopsis berchemioides* (Pierre) A. Chev.; ? *M. tessmannii* Engl.; ? *Berchemia excavata* Pierre, fide A. Chevalier, Les Végétaux utiles Afr. trop. franç., La Forêt & Bois du Gabon: 145, 1917].

Collected wild only once in Kenya, but widely cultivated there and elsewhere in Africa for timber. Introduction via Amani Bot. Gard., Tanzania, in 1912, fide Dawson & al., Biodivers. Conserv. 17: 1981, 2008. Now also introduced in Sumatra, Java, Borneo.

CORDEIRO, N. J. & al. (2004). Role of dispersal in the invasion of an exotic tree in an East African submontane forest. *J. Trop. Ecol.* 20: 449-457 [E. Usambaras, Tanzania, fruits consumed by hornbills, turacos, blue monkeys].

SYNONYM:

Maesopsis stuhlmanni Engl. = **Macaranga monandra** Müll. Arg. *(Euphorbiaceae)*

PHYLICA / *3*

Genus of c. 145 species, principally in S. Africa (142); also Madagascar and various islands: St Helena *(P. ramosissima* DC.), Tristan da Cunha, Gough, Nightingale, Inaccessible, New Amsterdam *(P. arborea* Thou.); Mauritius *(P. arborea* Thou.) Réunion *(P. nitida* Lam.).

FAY, M. & M. CHASE (2001). Dating phylogenies. *Kew Sci.* 19:1.

RICHARDSON, J. E. & al. (2001). Phylogenetic analysis of Phylica L. (Rhamnaceae) with an emphasis on island species: evidence from plastid trnL-F and nuclear internal transcribed spacer (ribosomal) DNA sequences. *Taxon* 50: 405-427.

Phylica emirnensis (Tul.) Pillans, incl. var. *nyasae* Pillans ex Verdc.; White & al., Evergreen for. fl. Malawi: 445, 2001. – Icon.: Fl. Zambes. 2/2: 433, 1966, sub nom. *P. tropica* Bak.

bas.: *Tylanthus emirnensis* Tul.

Shrub, ericoid, to 0,4-1,2-4 m tall with numerous stems from the base, these branched only sparingly (at the base of old inflorescences), the branches also stiffly erect, brownish with a dense pubescence of greyish antrorse hairs c. 0,2 mm long; leaves lanceolate with margins rolling back; flowers in terminal heads, white-hairy; capsule red, tardily dehiscent.

Rocks in grassland; rock outcrops on mountain tops; 1900-2600 m alt.

C Madagascar.

P. ericoides L. – Icon.: Mason, Western Cape sandveld flowers: pl. 63, n° 1, 1972.

Shrub to 1 m tall, much branched and compact; branchlets grey-pubescent, closely leafy; leaves needle-like, 5-8 mm long, margins closely revolute; flowers in small capitula, dense white-felted.

In cracks of rocks; > 2000 m alt.

S. Africa (coastal), with 5 vars. (cf. Strelitzia 14: 813-814, 2003).

AMPELOCISSUS LEONENSIS

P. paniculata Willd.; Coates Palgrave, Trees south Afr., ed. 3: 674, 2002. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 1404, 1406, 1972.

Much branched shrub or tree to 5-6 m tall; branchlets grey-tomentose; leaves crowded and overlapping, ericoid, 10 × 2 mm, dark green above, whitish downy-hairy beneath, margins rolled back; flowers sweetly scented, in branched panicles; capsule thickly woody, brownish black.

Rocky situations; stunted *Brachystegia spiciformis* woodland; > 1670 m alt.

S. Africa, Swaziland (100-2190 m alt.).

(PHYLLOGEITON)

Phyllogeiton discolor (Klotzsch) Herzog = **Berchemia** *zeyheri* (Sond.) Suess. = **Berchemia**

RHAMNUS / *3*

Genus of ca. 125 species (incl. *Frangula)* in tropical and temperate regions mainly of the N hemisphere (30 in tropical America, 3 in tropical and S. Africa, 11 in India).

BOLMGREN, K. & B. OXELMAN (2004). Generic limits in Rhamnus L. s.l. (Rhamnaceae) inferred from nuclear and chloroplast DNA sequence phylogenies. *Taxon* 53: 383-390.

Rhamnus mildbraedii Engl.

Subsarmentous wide shrub; branchlets horizontally spreading, slightly curved, 1,5-2 cm long, with short appressed hairs; fruit unknown.

Wooded gallery in *Acacia* formation and in adjoining swamp (Buganza, Rwanda: ± 1°55'S × 30°20'E), lac Muhazi; c. 1460 m alt.

Only known from the type collected in 1907 (lost).

Without relatives among the tropical African *Rhamnus* species.

R. prinoides L'Hér., incl. var. *acuminata* Kuntze, var. *obtusifolia* Kuntze – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 403, 1939; Flow. Pl. Afr. 51: pl. 2030, 1991; Beentje, Kenya trees, shrubs & lianas: 357, 1994; White & al., Evergreen for. fl. Malawi: 444, 2001; Coates Palgrave, Trees south. Afr., ed. 3: ill. 176, 2002; V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 260-263, 2002; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 323, 2008.

Shrub or tree 1-10(-15) m tall; branches sometimes scrambling or sprawling, year-old ones blackish, lenticellate, glabrate; youngest twigs usually minutely pubescent with dark spreading hairs; leaves dark green, glossy, alternate; flowers small, green, on slender stalks; berry purplish red, edible.

Hagenia abyssinica, *Gnidia glauca* woodland in ecotone between forest with *Podocarpus latifolius, Olea capensis, Syzygium guineense* and *Loudetia arundinacea* grassland; *Acacia abyssinica* woodland; *Hagenia* woodland; evergreen bushland and thickets; slopes; bamboo formations; forest edges and clearings; former cultivations; riverine forest; secondary forest; sclerophyllous forests; 700-3700 m alt.

S. Africa, Swaziland.

Also planted in hedges and gardens. Used in native beers.

Note on synonymy: *Rhamnus celtifolius* Thunb., founded on Drège pl. cap. n° 8261, is *R. prinoides* L'Hér. In his Bot. Bemerk. p. 37, 1844, C. Presl erroneously referred it to *Celtis rhamnifolia (Ulmaceae);* cf. Fl. Capens. 5/2/3: 519, 1920.

R. staddo A. Rich., incl. var. *deflersii* (Fiori) Engl., var. *espinosus* Engl., nom. nud.; Coates Palgrave, o.c.: 671; Beentje, o.c. 358. – Icon.: Fl. Zambes. 2/2: 429, 1966; Miller & Morris, Pl. Dhofar: 239, 1988.

Shrub or tree 0,5-7 m tall, rarely scandent; bark smooth, grey; year-old branches dark brown-grey, slender, glabrate; youngest twigs densely to less commonly sparsely hispidulous with grey hairs 0,1-0,2 mm long; short shoots (many-noded twigs) often produced late in the growing season; elongated twigs occasionally thorn-tipped; flowers solitary at nodes, but when on short-shoots appearing fascicled; berry red to purple.

Forest margins; evergreen bushland; wooded grassland; scrub-grassland; cultivated areas; termite mounds; granite hills; xerophyllous formations; open *Juniperus* forest; 1100-2950 m alt.

Yemen to Dhofar, Saudi Arabia (South Hijaz); Ghazanfar, Fl. Sultan. Oman: 96-97, 2007.

SYNONYMS:

Rhamnus capensis Thunb. = **Scutia myrtina**

circumscissa L. f. = **S. myrtina**

deflersii Fiori = **Rhamnus staddo**

holstii Engl. = **R. staddo**

infusionum Del. = **R. staddo**

jujuba L. = **Ziziphus mauritiana**

laetevirens Komarov = **Sageretia thea**

lotus L. = **Ziziphus lotus**

lucida Roxb. = **Scutia myrtina**

mauritiana Soyer-Willemet = **Ziziphus mauritiana**

myrtina Burm. f. = **Scutia**

mystacinus Ait. = **Helinus**

nabeca Forssk. = **Ziziphus spina-cristi**

paniculatus Thonn. ex Schumach. = **Dichapetalum madagascariense** (*Dichapetalaceae*)

pauciflora A. Rich. = **Rhamnus prinoides**

rhodesicus Suess. = **R. staddo**

sp. sensu Verdc. Bull. Jard. Bot. Etat, Brux. 27: 357, 1957 = **R. staddo**

spiciflorus A. Rich. = **Sageretia thea**

spina-christi L. = **Ziziphus**

thea Osbeck = **Sageretia**

tripartitus Ucria = **Rhus tripartitus** (Ucria) Grande *(Anacardiaceae)*

uhligii Engl. = **Rhamnus staddo**

zeyheri Sond. = **Berchemia**

zeyheri Spreng. ex Harv. in syn., nom. nud. = **Elaeodendron** *(Celastraceae)*

SAGERETIA / *1*

ca. 35 sp. mostly Asian; 2 spp. in N. America; 2 in tropical America from Mexico to Argentina; 1 sp. from Asia reaching NE Africa.

CHIOVENDA, E. (1912). Il genere Sageretia Brongn. in Africa. *Ann. Bot.* 10: 430-455.

Sageretia thea (Osbeck) M. C. Johnst., incl. var. *spiciflora* A. Rich. – Icon.: Boulos, Fl. Egypt 2: 85, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 402, 2001.

syn.: *S. theezans* (L.) Brongn., incl. var. *schweinfurthii* Chiov., var. *spiciflora* (A. Rich.) Chiov., var *hildebrandtii* (Engl.) Chiov.; *Rhamnus spiciflorus* A. Rich.; *Segeretia brandrethiana* Boiss. 1872, non Aitch. 1865; *Berchemia yemensis* Deflers; *S. spinosa* Wettst.; *Rhamnus laetevirens* Komarov; *Sageretia perpusilla* C. K. Schneider; *S. pycnophylla* C. K. Schneider; *S. brandrethiana* Aitch. var. *bornmuelleri* C. K. Schneider; *S. laetevirens* (Komarov) Gontsch.; *S. horrida* O. Schwarz; *S. yemensis* (Deflers) Grubov

Evergreen shrub, spiny, 1-3 m tall; branches stiff, slender, opposite, pubescent to glabrous or stiffly hairy; spines few to numerous; leaves small (1-2 × 0,5-1 cm), glabrous, shiny; flowers minute, yellow, in panicles of spikes; drupe blackish with 2-3 stones.

Dry *Combretum*, *Terminalia* woodland and bushland; dry *Juniperus* forest; scrub; mostly on granitic slopes but also on limestone; 1000-2500 m alt.

Highly polymorphic.

Wide disjunct distribution: Egypt (Sinai). Arabian Peninsula (Kilian, Willdenowia 32: 258-259, 2002; Hall & al., Edinb. J. Bot. 65: 134, 2008; Ghazanfar, Fl. Sultan. Oman: 97, 2007); Turkey, N Iraq, Iran, Afghanistan, Tadzhikistan, Uzbekistan, Pakistan, India, China, Taiwan, Japan.

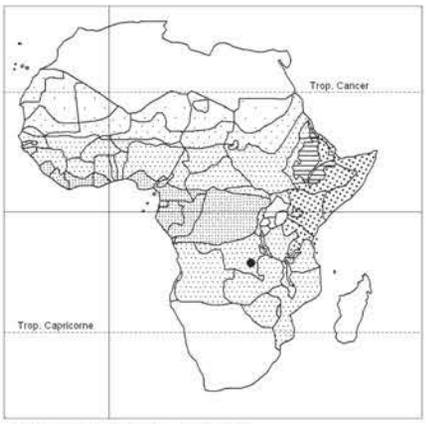
SCUTIA / *1*

Three species in S. America (incl. Galapagos), 1 in the Old World tropics.

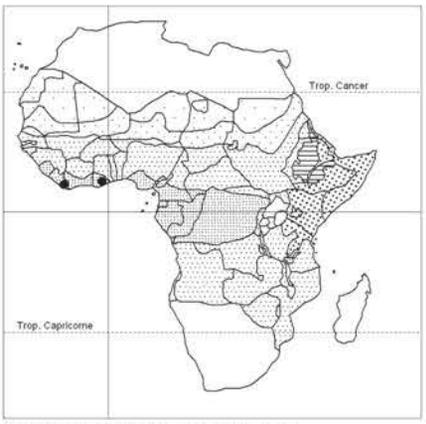
Scutia myrtina (Burm. f.) Kurz, incl. var. *oblongifolia* (Engl.) Evrard; Coates Palgrave, Trees south. Afr., ed. 3: 669-670, 2002. – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 405, 1939; Beentje, Kenya trees, shrubs & lianas: 358, 1994; White & al., Evergreen for. fl. Malawi: 442, 2001; Maundu & al., Tradit. food pl. Kenya: 207, 1999 (with map).

bas.: *Rhamnus myrtina* Burm. f.

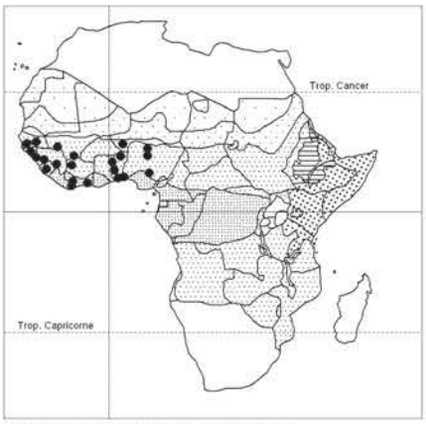
syn.: *R. capensis* Thunb.; *Ziziphus capensis* (Thunb.) Thunb. ex Poir.; *Rhamnus lucida* Roxb.; *Ceanothus capensis* (Thunb.) DC.; *Ceanothus circumscissus* (L. f.) Gaertn., incl.var. *pauciflorus* DC.; *Scutia commersonii* Brongn.; *S. capensis* (Thunb.) G. Don, incl. var. *parviflora* Eckl. & Zeyh.; *S. lucida* (Roxb.) G. Don; *S. indica* Brongn., incl.var. *pauciflora* (DC.) G. Don and var. *oblongifolia* Engl. and var. *grandispina* Engl.; *S. natalensis* Hochst. ex Krauss; *S. obcordata* Boivin ex Tul.; *S. capensis* fa. *obcordata* (Boiv. ex Tul.) Radlk.; *S. circumscissa* (L. f.) Radlk.; *S. buxifolia* Hutch. & M. B. Moss 1928, non Reiss. 1861; *S. hutchinsonii* Suess. – For other synonyms, see Bull. Torrey Bot. Club 101: 65-67, 1974.



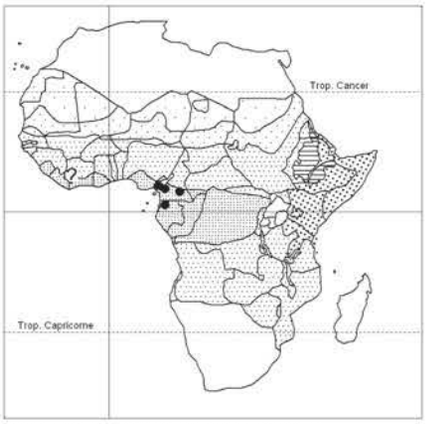
Ampelocissus edulis



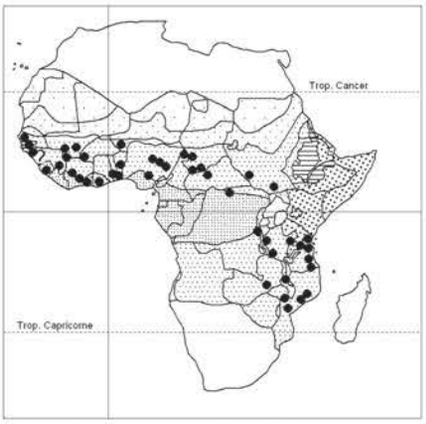
Ampelocissus gracilipes



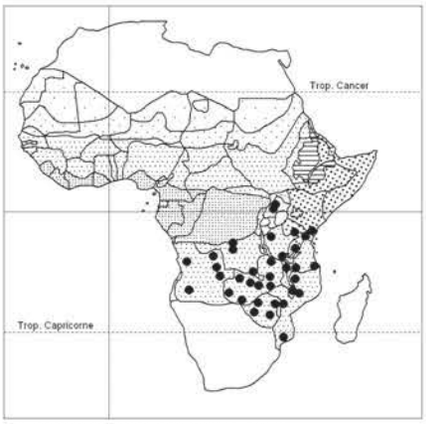
Ampelocissus leonensis



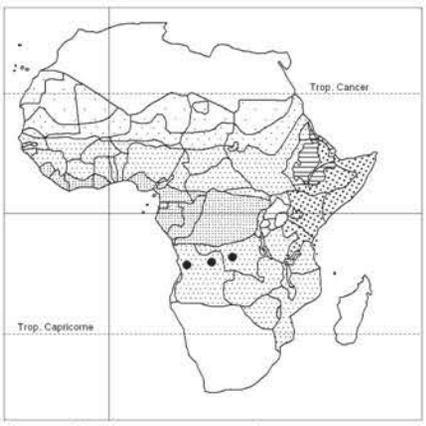
Ampelocissus macrocirrha



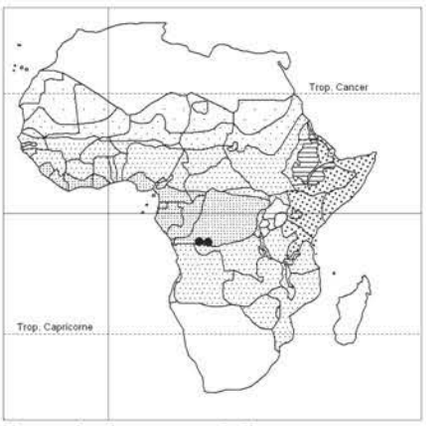
Ampelocissus multistriata



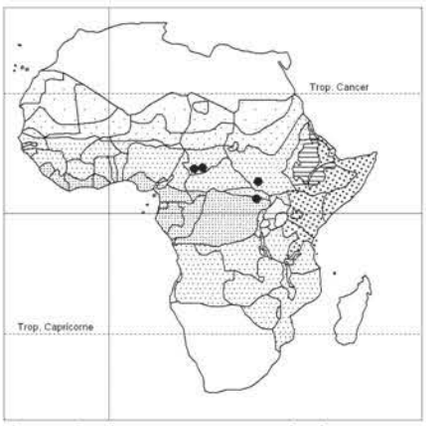
Ampelocissus obtusata



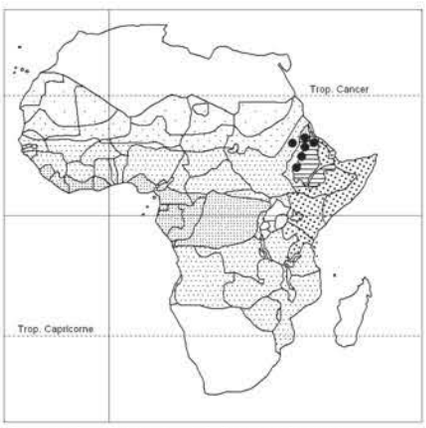
Ampelocissus poggei



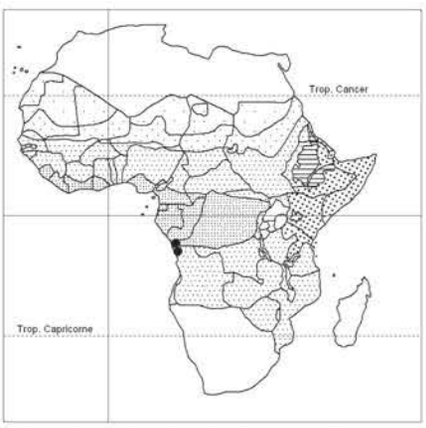
Ampelocissus sapinii



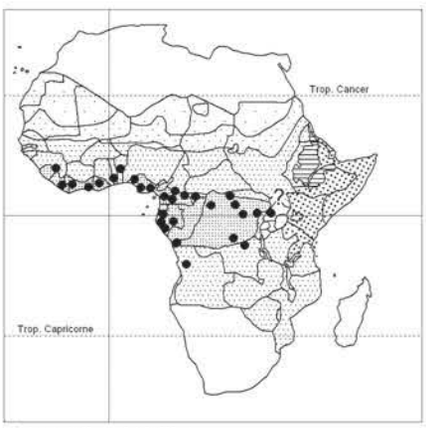
Ampelocissus sarcocephala



Ampelocissus schimperiana



Ampelocissus verschuerenii



Cayratia debilis

Shrub or tree 2-10 m tall; bole to 30 cm Ø; usually scandent and liane-like, climbing by means of the thorns; older trunks with thick, dark, corky, longitudinally cracked bark; younger herbage puberulent; branchlets angulate, usually emerging at right angles, numerous; branches usually opposite or nearly so; thorns prickle-like, recurved, axillary, solitary (but often 2 per node), 20-10-15 mm long; leaves shiny; flowers in condensed fascicles; drupe red-purplish black with 2(-3) stones.

In a wide range of situations: termite mounds in *Combretum* woodland, forest margins, bushland, thicket, grassland, wooded grassland, sclerophyllous formations, clearings in mesophyllous forests, wooded riverine formations along rivers and lakes, evergreen coastal scrub, evergreen forest; 0-2750 m alt.

S. Africa, Swaziland; Madagascar, Mascarene Is., Seychelles (native in Aldabra); Sri Lanka, India, Burma, Thailand, N Vietnam.

VENTILAGO / *2*

Ca. 30 species mainly in tropical Asia, also Polynesian Islands, Australia – Madagascar.

Ventilago africana Exell – Icon.: Bull. Jard. Bot. Etat, Brux. 15: 379, 1939; Fl. Gabon 4: 57, 1962; Akoegninou & al., Fl. analyt. Bénin: 865, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 679, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 366, 2009.

Liane, softly woody, evergreen, to 30 cm long, without tendrils; stems 15-20 cm Ø; young branches grey or brown, tomentose, behaving as tendrils; older branches glabrescent to glabrous, sometimes zig-zag, often divaricate; leaves alternate; inflorescence of small nodal glomerules on usually leafy branches, glabrous; fruit 4-6 cm long, with terminal wing 6-10 mm broad, glabrous.

In a wide variety of forest formations: forest especially in marshy areas; among mangroves; rain-forest; at the limit forest-savanna; regrowths; 300-1800 m alt.

Put in synonymy under *V. diffusa* by White & al., Evergreen for. fl. Malawi: 446, 2001.

V. diffusa (G. Don) Exell; Bull. Jard. Bot. Natl. Belg. 60: 81, 1990; Cable & Cheek, Pl. Mt. Cameroon: 101, 1998; Cheek & al., Pl. Kupe, … 366, 2004. – Icon.: Beentje, Kenya trees, shrubs & lianas: 359, 1994; White & al., Evergreen for. fl. Malawi: 444, 2001.

bas.: *Celastrus diffusus* G. Don

Liane to 35 m long or more; bark grey, smooth; branchlets at least when young densely pubescent with appressed brownish hairs ± 0,1 mm long; inflorescence branched, leafless, flowers pubescent with yellow hairs; fruit puberulent (not glabrous), 5-7 cm long, terminal wing 8-10 mm broad.

Rain- and riverine-forest; 650-1400 m alt. – Rare.

São Tomé.

Dowsett-Lemaire & White included *V. africana* under this species.

ZIZIPHUS / *9*

Ziziphus Mill. 1754, original spelling; the variant *Zizyphus* of later use (cf. J. Paclt in Taxon 48: 173-174, 1999, proposal to conserve this spelling and with feminine gender; Taxon 49: 806, 2000; also Kirkbride & al., Taxon 55: 1049-1050, 2006 referring to *Z. jujuba,* and also in Taxon 58: 283, 2009).

Genus occurring in temperate and tropical parts of the world, most common in dry areas: ca. 120 species ? (150 according to Richardson & al., Phil. Trans. Roy. Soc. Lond. B, 359: 1505, 2004; but only 86 according to Schatz, Generic tree flora of Madagascar: 311, 2001). Some species with edible fruit are cultivated and sometimes naturalized in disturbed areas.

Ziziphus abyssinica Hochst. ex A. Rich.; Beentje, Kenya trees, shrubs & lianas: 359, 1994; Coates Palgrave, Trees south. Afr., ed. 3: 666, 2002. – Icon.: Maundu & al., Traditional food pl. Kenya: 249, 1999 (with map); Akoegninou & al., Fl. analyt. Bénin: 866, 2006; Fl. Cameroun 33: 31, 1991.

syn.: *Z. jujuba* (L.) Gaertn. fa. *oblongifolia* Engl., var. *obliquifolia* Engl., var. *nemoralis* Sim, but *excl.* var. *aequilaterifolia* Engl., & Gilg and var. *nana* Engl., var. *stenocarpa* Kuntze and fa. *aequilaterifolia* Engl.; *Z. xylopyrus* Hochst. ex A. Rich. 1847 nom. in syn., non (Retz.) Willd. 1797 (India); Enum. 2: 190, 1992.

Shrub or tree with spreading crown and drooping branches, 2-3-6-13 m tall, armed; thorns curved; trunk to 25 cm Ø; bark grey, very deeply furrowed or fissured; branchlets densely rusty pubescent to tomentose, zig-zag; leaves tomentose to ± glabrous beneath, nerves markedly impressed above, base asymmetrical; flower buds rusty hairy; flowers strongly scented; drupe 2-3 cm Ø, shiny red(-brown), edible.

Savanna on various soils incl. sands; *Combretum, Terminalia* and *Acacia* woodland; wooded bushland; mixed wood and thickets along rivers; margins of primitive woods; *Loudetia arundinacea* grassland with scattered trees of *Terminalia laxiflora, T. brownii, Pterocarpus lucens, Combretum collinum, Vitex doniana* on rocky outcrop; edge of *Albizia zygia* woodland; 400-2200 m. alt. – Sometimes rather frequent.

Very variable.

Sometimes cultivated (live hedge).

Z. hamur Engl.

Shrub 1-6 m tall, strongly armed, and with long straggling arched and recurved branches; thorns straight, paired; bark apparently dark greyish; branchlets zig-zag, dark brownish, pubescent; leaves often fascicled at nodes, small (1-2 × 0,5-1,2 cm); drupe black, 7-10 mm Ø.

Acacia, Commiphora, Boswellia bushland on shallow, red to grey sandy soils overlying limestone; *Acacia* bushland on alluvial limestone and gypsum soils; riverine forest; semidesert scrub; 0-730 m alt.

Collected only twice in extreme NE Kenya.

Z. lotus (L.) Desf., incl. subsp. **saharae** Maire – Icon.: Boulos, Fl. Egypt 2: 85, 2000; Fennane & al., Fl. pratique Maroc 2: 238, 2007.

bas.: *Rhamnus lotus* L.

syn.: *Ziziphus nummularia* sensu Monod, Bull. Inst. Franç. Afrique Noire 16: 26, 1954; *Z. saharae* Batt. & Trabut, *sp. dubia* (Bull. Soc. Bot. France 53: XXXVI, 1907).

CAYRATIA DELICATULA

Deciduous thorny many-stemmed shrub 1-3 m tall, often forming thickets to 5 m Ø; branches flexuous, intricately branched, glabrous to hairy to white tomentose; stipular spines very sharp, one shorter and curved; leaves glabrous, small (1-2 × 0,5-1 cm), margins crenulate-glandular; drupe yellowish, 1 cm Ø, edible.

Rocky wadis; clayey grara; scree; sandy-muddy river sides; to 800 m alt.

Spain; Morocco, Algeria, Tunisia, Libya, Egypt (Sollum); Palestine (Arava Valley), Syria, Arabia, Socotra.

Subsp. **saharae** is very slightly distinct (leaves pubescent) from the typical *Z. lotus* (leaves glabrous); doubtful intermediates are known. *Z. hamur, Z. lotus* subsp. *saharae*, and *Z. leucodermis* (Bak.) O. Schwartz from Arabia, are perhaps not different on the species level. Field studies are required.

The mealy fruit of *Z. lotus* subsp. *lotus* was an important food for the poor in Ancient Greece: people subsisting on it were called *lotophagi,* lotus eaters. But in literature there can be confusion with *Z. spina-christi*; their distributions partly overlap (fide Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 488-489, 1997).

[**Z. mauritiana** Lam., incl var. *deserticola* A. Chev., var *muratiana* (Maire) A. Chev., var. *orthocantha* (DC.) A. Chev.]; Beentje, Kenya trees, shrubs & lianas: 359, 1994 (with map); Coates Palgrave, Trees south. Afr., ed. 3: 666, 2002; Akoegninou & al., Fl. analyt. Bénin: 866, 2006; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 489-491, 1997. – Icon.: Bull. Jard. Etat, Brux. 15: 399, 1939; Busson, Pl. aliment. Ouest afric.: 362, 1965; Maundu, Tradit. food pl. Kenya: 250 (with map); Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 408, 2001; Mendes Ferrão, Fruticult. trop. 3: 467-470, 2002; Fl. Cameroun 33: 33, 1991; Levasseur & al., Bois & Forêts Trop. 297/3: 61, 2008 (photo. of live hedge, Mali); Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 367, 2009.

syn.: *Rhamnus jujuba* L.; *R. mauritiana* Soyer-Willemet; *Ziziphus tomentosa* Poir.; *Z. rotunda* DC.; *Z. orthocantha* DC.; *Z. aucheri* Boiss.; *Z. jujuba* (L.) Gaertn., nom. illegit., incl. var. *stenocarpa* Kuntze and fa. *aequilaterifolia* Engl.

Shrub or tree 3-16(-20) m tall, armed with spinous stipules (one curved, one straight) or rarely unarmed; trunk to 45 cm Ø, 1,5 m in girth; bark greyish-dark brown, fissured; crown of densely tangled drooping branches; branchlets densely but minutely pubescent, zig-zag; leaves glabrous above, softly hairy beneath, ± white or brown; drupe cream, yellow to orange, red-brown, 1-2 cm Ø, edible.

Cultivated, not known to be indigenous to Africa; cultivations, disturbed areas near settlements, along roads; riverine bushland or woodland; widespread in the drier parts of tropical Africa; 1-1800 m alt.

Probably originally from the Middle East or the Indian subcontinent. This species has the greatest world dispersal in the genus, widespread in Arabia, India, Far East, Australia (fide Burkill, l.c.).

Multi-purpose tree: use of root, bark, wood, leaves, fruit. Also a shade tree or an ornamental.

Possible hybrids between *Z. mauritanica* and *Z. spina-christi* in Africa.

Not mapped.

The true **Z. jujuba** Miller 1768, nom. nov. based on *Z. zizyphus* L. 1753, is of long cultivation in the Mediterranean region, S & E Asia, for its edible fruit (cf. Taxon 55: 1049, 2006).

Z. mucronata Willd. – Buffalo-thorn. – Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 491-493, 1997; Akoegninou & al., Fl. analyt. Bénin: 866-867, 2006. – Icon.: Fl. Cameroun 33: 27, 1991 (subsp. **mucronata**); Beentje, Kenya trees, shrubs & lianas: 360, 1994; V. Roodt, Shell field guide ser. 1; Trees & shrubs Okavango Delta: 90, 1998; Maundu & al., Traditional food pl. Kenya: 252, 1999 (with map); V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 103-105, 2002; Coates Palgrave, Trees south. Afr., ed. 3: ill. 174, 2002; Curtis & Mannheimer, Tree Atlas Namibia: 412, 2005.

Shrub often straggling or subscandent, or tree 4-15-30 m tall, armed with spinous stipules or rarely unarmed, spines of a pair pointing in different directions; bark of bole dark grey, smooth to rough to corrugated, fissured into small rectangular pieces; young stems reddish brown, often zig-zag; leaves shiny green, glabrous or with short soft pale-brown woolly hairs beneath, base asymmetric; drupe yellow or red, 1-2 cm Ø, pulp mealy, thin.

Dry savannas; soils with fine gravel or rocky; termite mounds; depressions or near pond; deep red soil; sandy soil; muddy-sandy soil; *Acacia-Terminalia, Acacia-Balanites, Anogeissus-Boswellia* woodland and bushland; *Acacia* woodland on alluvial soils; dry riverine forest and thicket; common; 1-2100 m alt.

S. Africa, Namibia, Caprivi Strip, Botswana, Swaziland; Arabia (in Yemen threatened, fide M. Hall & al., Edinb. J. Bot. 65: 134, 2008); Madagascar.

Comprises 2 subspp.: – subsp. **mucronata**, incl. var. *pubescens* Sond., non *Z. pubescens* Oliv.; var. *glabrata* Sond. incl. fa. *subcordata* Kuntze and fa. *obliqua* Kuntze, var. *glauca* Schinz, var. *inermis* Engl., fa. *pubescens* (Sond.) Chiov. – syn.: *Z. bubaliana* Schult., nom. superfl., illegit.; *Z. baclei* DC.; *Z. adelensis* Del.; *Z. mitis* A. Rich.; plants nearly glabrous or with sparse pubescence on the nerves of leaves; – subsp. **rhodesica** R. B. Drummond (persistent coarse pale brown tomentum on the leaf-blades denser beneath); in S part of range; some plants of this subspecies very closely resemble *Z. abyssinica*; analysis in the field required.

Tree of many uses, also grown as a hedge.

Similar to *Z. spina-christi* and *Z. zeyheriana*.

Z. pubescens Oliv., incl. subsp. *glabra* R. B. Drummond; Coates Palgrave, Trees south Afr., ed. 3: 667, 2002.

Unarmed shrub (rarely climbing) or tree to 7-25 m tall; bole short to 0,4 m Ø; bark fairly rough to shallowly reticulately fissured, dark grey-brown, the youngest stems with a sericeous tomentum or with ascending to spreading yellow-brown hairs 0,3-0,4 mm long; drupe reddish-brown ca. 1 cm Ø.

Usually riparian in wooded grassland; dry semi-evergreen forest; ground-water, swamp forests; woodland with *Sclerocarya, Tamarindus,* etc.; coastal or sub-coastal forest; semi-deciduous forest; sometimes rather common; 1-1350 m alt.

Z. rivularis Codd; Coates Palgrave, Trees south. Afr., ed. 3: 667-668, 2002.

syn.: *Celtis polyclada* Peter *(Ulmaceae).*

Shrub or tree, unarmed, to 7 m tall; bark grey smooth; branchlets and innovations covered with a short, greyish tomentum of curled hairs; drupe dark brown, ca. 6 mm Ø.

Banks of streams and rocky watercourses.

S. Africa (N and E Transvaal), Swaziland (5-1100 m alt.).

CISSUS ALBIPORCATA

Z. robertsoniana Beentje; idem, Kenya trees, shrubs & lianas: 360, 1994.

Tree 6-16 m, unarmed; trunk straight; bark almost smooth with shallow vertical fissures; crown rounded; branchlets grey, lenticellate, the youngest minutely hairy; leaves glabrous; drupe ca. 1 cm Ø.

Moist semi-deciduous forest on coral rag or igneous intrusion; 10-160 m alt. – Rare and vulnerable (restricted to few localities).

The presence of domatia is most unusual within *Ziziphus* but also seen in *Z. mucronata* particularly in the eastern coastal regions of S. Africa. In Diani Forest (Kenya) both species occur.

The dark green leaves contrast with the bright lime-green young flush, the columnar sapling stage and the rounded crown of the mature tree would make the plant very suitable for coastal gardens and landscaping (fide Mrs Robertson who discovered it in 1983). Cultivated at Malindi.

Z. spina-christi (L.) Desf., incl. var. *inermis* DC., var. *longipes* Engl., var. *mitissima* Chiov.; Beentje, Kenya trees, shrubs & lianas: 361, 1994; Burkill, Useful pl. W. trop. Afr., ed. 2, 4: 493-496, 1997; Akoegninou & al., Fl. analyt. Bénin: 867, 2006. – Icon.: A. G. Miller & M. Morris, Pl. Dhofar: 242, 1988; Boulos, Fl. Egypt 2: 85, 2000; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 406, 2001.

bas.: *Rhamnus spina-christi* L.

syn.: *Ziziphus africana* P. Mill.; *Rhamnus nabeca* Forssk.; *Ziziphus nabeca* (Forssk.) Lam.; *Z. sphaerocarpa* Tul.

Comprises 2 vars.: [- var. **spina-christi**, a cultivar, spineless, anthropogenic, naturalised and widespread in drier parts of Africa, where it occurs in disturbed places, roadsides; also cultivated; south to NE S. Africa; 5-1300 m alt.];

– var. **microphylla** A. Rich. (syn.: Enum. 2: 190, 1992). Shrub forming impenetrable thickets 4-5 m tall, or tree, evergreen, with a distinct tortuous trunk to 10-18 m tall, 0,6 m Ø; occasionally prostrate; crown large, ± round, branches tangled; bark greyish; stipular spines ca. 1 cm long, unequal, the shorter one usually recurved, rarely unarmed; youngest branchlets minutely but rather densely pubescent, older ones whitish, glabrous, zig-zag; leaves 2-6 cm long, almost glabrous; drupe yellowish-brown ± 1 cm Ø.

Near water in dry areas, along semi-desert washes; valleys and water depressions on light silty soils in short grass savanna; 0-2400 m alt.

Probably spontaneous in the Near- and Middle East in the dry parts of Egypt and N tropical Africa (some of the populations occurring in wadis and riverbeds in Ethiopia are probably native; probably not in Cameroon). Cf. also Ghazanfar, Fl. Sultan. Oman 2: 98-99, 2007.

Cultivated for shade, fixing sand-dunes, timber, edible fruits; also medicinal. Cf. also above under *Z. lotus.*

ADZU, B. & al. (2001). Antinociceptive activity of *Zizyphus spina-christi* root bark extract. *Fitoterapia* 72: 344-350.

The relationship of var. **microphylla** to *Z. hamur* is in need of investigation.

CISSUS

Z. zeyheriana Sond.; Coates Palgrave, Trees south. Afr., ed. 3: 667, 2002. – Icon.: Fl. Zambes. 2/2: 421, 1966.

syn.: *Z. helvola* Sond.; *Z. jujuba* var. *nana* Engl. and var. *aequilaterifolia* Engl. & Gilg (in Conspect. Fl. Angol. 2: 29, 1956; type: Baum 190).

Shrublet to 60 cm tall; stems annual with characteristic spinescent stipules, 1 hooked, 1 straight; stems arising from a creeping rhizome; branchlets pubescent; drupe ca. 7 mm Ø.

Often on termite mounds in grassland and woodland; ± 1250-1500 m alt.

Botswana, S. Africa.

* * *

Ziziphus amphibia A. Chev., cited as a possible synonym under *Z. spina-christi* var. *microphylla,* from Mali is perhaps a good species, with a particular ecology; to compare with, e.g., *Eragrostis barteri* C. E. Hubbard (*Poaceae)* and *Maerua de-waillyi* Aubrév. & Pellegr. *(Capparidaceae).*

SYNONYMS:

Ziziphus abyssinica sensu auctt. s-afr. = **Ziziphus mucronata** subsp. **rhodesica**

adelensis Del. = **Z. mucronata** subsp. **mucronata**

africana P. Mill. = **Z. spina-christi**

amphibia A. Chev. = **Z.** ? **spina-christi** var. **microphylla,** or a good species

atacorensis A. Chev., incl. var. *oblongifolia* A. Chev. = **Z. abyssinica**

aucheri Boiss. = **Z. mauritiana**

baclei DC. = **Z. mucronata** subsp. **mucronata**

baguirmiae A. Chev., nom. subnud. = **Z. abyssinica**

bubaliana Schult. = **Z. mucronata** subsp. **mucronata**

espinosa Büttner = ? **Z. pubescens**

helvola Sond. = **Z. zeyheriana**

iroensis A. Chev. = **Z. spina-christi** var. **spina-christi**

jujuba (L.) Gaertn., incl. var. *stenocarpa* Kuntze and fa. *aequilaterifolia* Engl. = **Z. mauritiana**

jujuba var. *aequilaterifolia* Engl. & Gilg and var. *nana* Engl. = **Z. zeyheriana**

jujuba fa. *oblongifolia* Engl., var. *nemoralis* Sim, var. *obliquifolia* Engl. = **Z. abyssinica**

madecassus Perr. = **Z. mucronata** subsp. **mucronata**

mauritiana sensu Suess. in Engl. & Prantl, p.p., non Lam. = **Z. abyssinica**

mauritiana Lam. var. *abyssinica* (A. Rich.) Fiori = **Z. abyssinica**

mitis A. Rich. = **Z. mucronata** subsp. **mucronata**

muratiana Maire = **Z. mauritiana**

nabeca (Forssk.) Lam. = **Z. spina-christi**

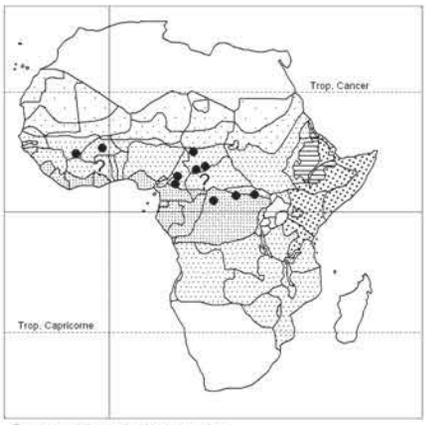
nummularia (Burm.) Wight & Arn. var. *saharae* (Maire) A. Chev. = **Z. lotus**

nummularia sensu Aubrév. 1950 = **Z. lotus**

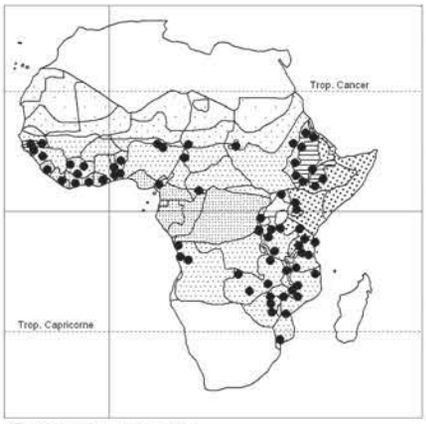
nummularia sensu Monod 1954 = **Z. lotus** subsp. **saharae**

orthacantha DC. = **Z. mauritiana**

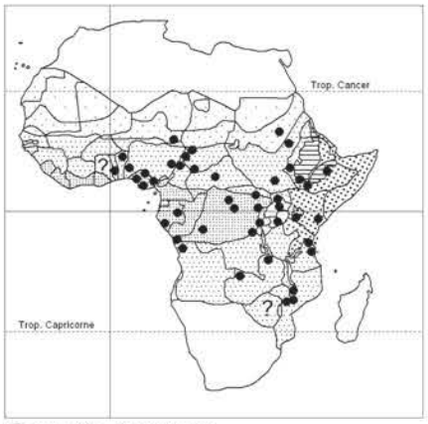
rotunda DC. = **Z. mauritiana**



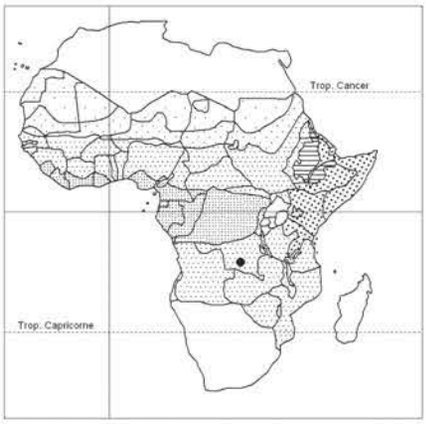
Cayratia delicatula



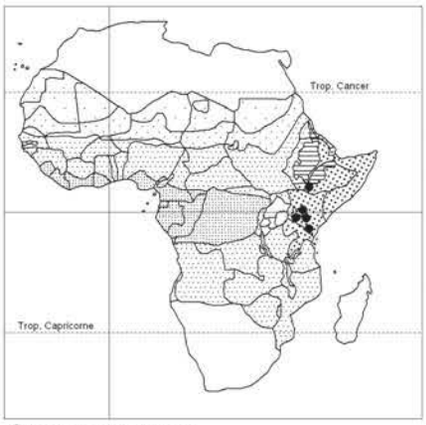
Cayratia gracilis



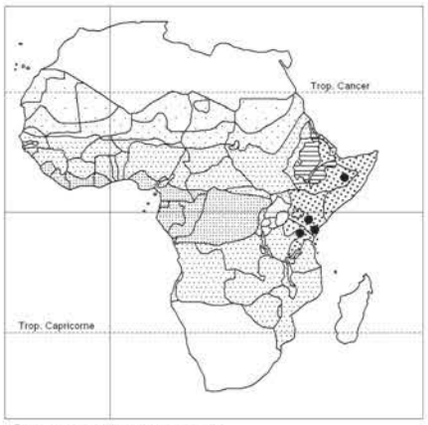
Cayratia ibuensis



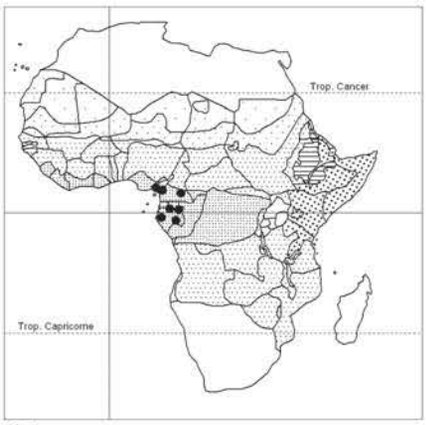
Cissus adamii



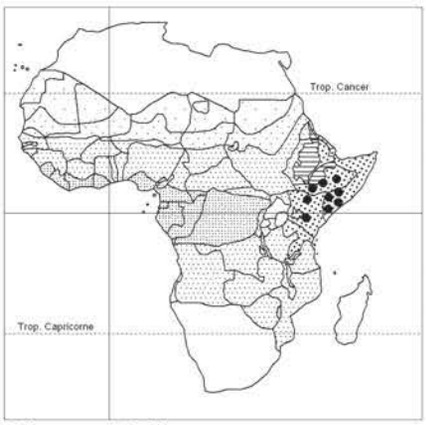
Cissus adeyana



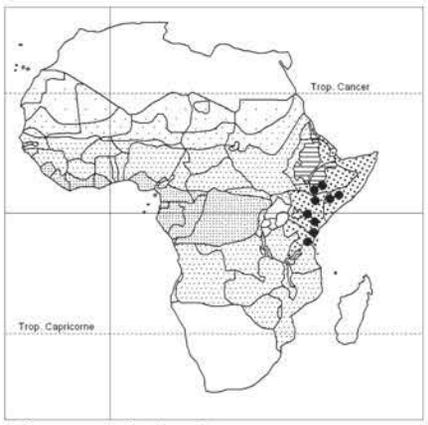
Cissus albiporcata



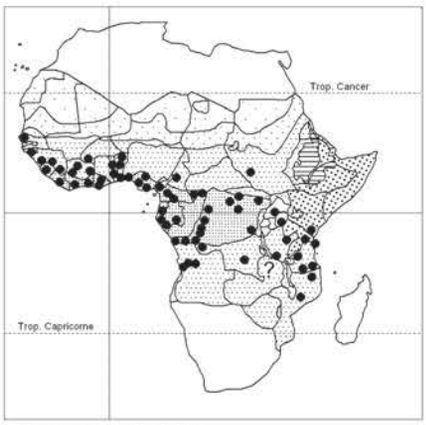
Cissus amoena



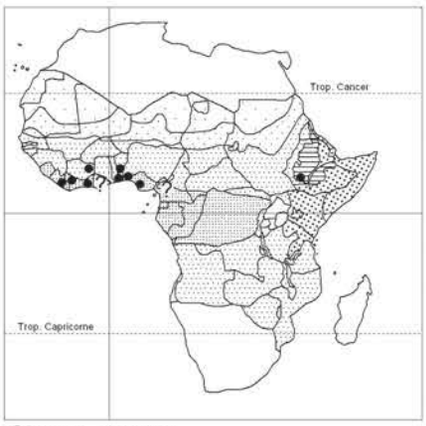
Cissus aphylla



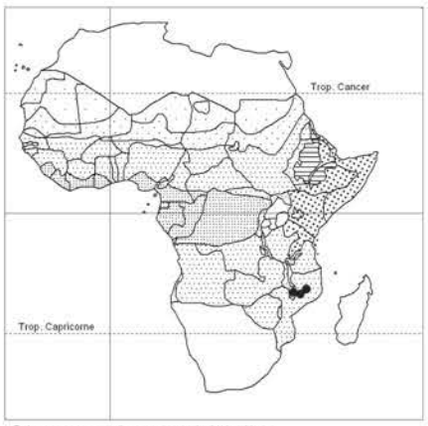
Cissus aphyllantha



Cissus aralioides



Cissus arguta



Cissus aristolochiifolia

CISSUS

saharae Batt. & Trabut = **Z. lotus** subsp.

sphaerocarpa Tul. = **Z. spina-christi**

spina-christi (L.) Desf. var. *mitissima* Chiov. = **Z. spina-christi** var. **spina-christi**

tomentosa Poir. = **Z. mauritiana**

xylopyrus Hochst. ex A. Rich. 1847 nom. in syn., non (Retz.) Willd. 1797 = **Z. abyssinica**

VITACEAE / *5* g. / *287* spp.

excl. *Leea (Leeaceae).*

Vitaceae Juss. 1789, nom. cons.

syn.: *Ampelidaceae* Lowe

The family consist of ca. 750 (or 900) species in 14 genera primarily distributed in tropical regions in Asia, Africa, Australia, tropical America and the Pacific Islands; few genera in temperate regions. *Cissus* and *Cyphostemma* are the largest genera, and *Vitis* the best known (Rossetto & al. 2007: 722, 2007).

"The subordinate taxa of Vitaceae are not easily delimited, although they are very easy to recognize as belonging to that family" (J. A. Lombardi, Systematics of Vitaceae in South America, *Canad. J. Bot*. 85: 712, 2007). – "Seeds are useful in distinguishing among extant genera of Vitaceae" "Chen & Manchester, *Amer. J. Bot*. 94: 1534, 2007).

* * *

Many species incompletely known in tropical Africa: 5 species without flowers and further 6 with incomplete flowers (in all = <4%); 35 + 5 ? fruit unknown (= c. 14%) and further 18 species with only unripe fruit (= c. 6%); for 15 + 1 ? (= >5%) no ecology recorded; 37 species (= <13%) are known only from the type(s).

GERRATH, J. M. & U. POSLUSZNY (2007a). Introduction to "Biology of the Vitaceae – a global perspective". *Canad. J. Bot.* 85/8: III-IV.

GERRATH, J. M. & U. POSLUSZNY (2007b). Shoot architecture in the Vitaceae. *Canad. J. Bot.* 85/8: 691-700.

INGROUILLE, M. J. & al. (2002). Systematics of Vitaceae from the viewpoint of plastid rbcL DNA sequence data. *Bot. J. Linn. Soc.* 138: 421-432.

PATIL, S. G. (2006). Inter-generic variations in the leaf characters of family Vitaceae and their taxonomic significance. *J. Econ. Taxon. Bot.* 30: 699-704.

ROSSETTO, M. & al. (2007). An updated estimate of intergeneric phytogenetic relationships in the Australian Vitaceae. *Canad. J. Bot.* 85/8: 722-730.

SOEJIMA, A. & J. WEN (2006). Phylogenetic analysis of the grape family (Vitaceae) based on three chloroplast markers. *Amer. J. Bot.* 93: 278-287.

VIVAS, N. (1997). Un aperçu général sur la famille des Vitacées (Rhamnales), leur répartition dans le monde et leur phylogénèse. *Bull. Soc. Linn. Bordeaux* 25 (1): 1-13.

WEN, J. (2007). Vitaceae. *In:* KUBITZKI, K., *The families and genera of vascular plants 9. Flowering plants – Eudicots: Berberidopsidales,* etc.: 467-479. Springer, Berlin & Heidelberg.

WEN, J. & al. (2007a) Phylogeny of Vitaceae based on the nuclear GAI1 gene sequences. *Canad. J. Bot.* 85/8: 731-745.

WEN, J. & al. (2007b). Erratum: Phylogeny of Vitaceae based on the nuclear GAI1 gene sequences. *Canad. J. Bot.* 85: 1018.

CISSUS

AMPELOCISSUS / *17*

Genus of 90-95 species in tropical regions: 4 (or 5) in central America and West Indies, 33 in tropical Africa, S. Africa and Madagascar, 52 in India, W China to Australia, 2 in NE Oceania.

A few African species insufficiently known: 2 + 2 ? spp. fruit unknown, 2 spp. without ecology, 1 sp. known only from the type.

CHEN, J. & S. R. MANCHESTER (2007). Seed morphology of modern and fossil Ampelocissus (Vitaceae) and implications for phytogeography. *Amer. J. Bot*. 94: 1534-1553.

Ampelocissus abyssinica (Hochst. ex A. Rich.) Planch. – Icon.: Fl. Trop. E. Afr., Vitaceae: 4, 1993; Engler, Pflanzenwelt Afr. 3/2: 319, 1921 (sub nom. *A. cavicaulis).*

bas.: *Vitis abyssinica* Hochst. ex A. Rich.

syn.: *V. cavicaulis* Bak. (kept separate by Descoings in Fl. Cameroun 13: 14, 1972, and Burkill, Useful pl. W. trop. Afr., ed. 2, 5: 288, 2000); *Cissus cussoniifolia* Planch.; *Ampelocissus cussoniifolia* (Planch.) Planch.; *A. calophylla* Gilg ex De Wild.

Climber with herbaceous stems to liane, stem to 0,8-1,2 cm Ø, 4-7 m long, often marked with deep blackish crimson spots, glabrous to sparsely pubescent, usually flowering when almost leafless; tendrils branched, borne on the peduncles; stems arising from a tuber with fleshy fusiform roots; leaves often purplish beneath, very variable, ± round or ovate-cordate in outline, 10-27 cm long, 10-32 cm wide, entire or more usually deeply 3-5-7-lobed, truncate or cordate at base, margin sparsely obtusely to acutely dentate, venation beneath pubescent to hispidulous but otherwise leaf ± glabrous; petiole 5-20 cm long, grooved; flowers in 10-20 cm long leaf-opposed panicles, axes densely pubescent; berries in large bunches.

Bamboo forest; light woodland; evergreen forest; ravines; scrub after cultivation; wooded savannas; forest gallery; 1-2500 m alt.

A. africana (Lour.) Merrill – Icon.: Bot. Jahrb. Syst. 46: 424, 429, 1911, and Engler, Pflanzenwelt Afr. 3/2: 319-320, 1921 (sub nom. *A. grantii);* Fl. Zambes. 2/2: 443, 1966; Adansonia, Sér. 2, 14: 660, 1974; Fl. Trop. E. Afr., Vitaceae: 4, 1993 (partial); Beentje, Kenya trees, shrubs & lianas: 361, 1994; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 387, 2006.

bas.: *Botria africana* Lour.

syn.: *Vitis mossambicensis* Klotzsch; *V. asarifolia* Bak.; *V. grantii* Bak. (kept separate by Akoegninou & al., Fl. analyt. Bénin: 998, 2006); incl. subsp. *gourmaensis* (A. Chev.) A. Chev.; *V. chantinii* Carrière; *Ampelocissus chantinii* (Carrière) Planch.; *A. asarifolia* (Bak.) Planch.; *A. mossambicensis* (Klotzsch) Planch.; *A. volkensii* Gilg; *A. schliebenii* Werderm. – All of var. **africana**.

Climber, trailer or liane 0,5-9 m long; branches often reddish, striate, to 5 mm Ø, entirely glabrous or *pubescent when young;* rootstock to 1,2 m long, described in one note as rather like cassava *(Manihot),* with red bark; leaves simple, ovate to ± round, 5-20 cm long, 5,5-25 cm wide, acute at apex, cordate at base, entire to shallowly to deeply 3-5-lobed, very variable, serrate or crenate, the lobes sometimes ± lobed or pinnatifid, glabrous to pubescent or cottony or sometimes quite velvety beneath; mature leaves with remnants of spider-web indumentum above; petiole 3-13 cm long; inflorescence lax to dense, 5-10 cm long, the ultimate cymes of flowers (red) subcapitate; calyx lobed; peduncles with tendrils; berry red to blackish, 1 cm Ø, edible.

Seasonally swampy grassland; coastal and other deciduous thickets; grassland with trees; *Sclerocarya* and *Brachystegia* woodland, riverine forest; old termite mounds; rocky hillsides; relict in cultivations; gravelly soils; sandy, sandy-clayey and clayey soil; banded vegetation on laterite; on dunes; sometimes under shade; forest regrowth; forest edges in dry forest; savanna; fallow land; 0-1800 (? 2160) m alt.

Very variable in hairiness: specimens ± glabrous to straggly cottony (cf. Fl. Trop. E. Afr., Vitaceae: 6, 1993).

Namibia, Caprivi Strip, Botswana.

Comprises 2 vars.: – var. **africana;** – var **migeodii** Verdc. with very discolorous leaves with arachnoid indumentum in S Tanzania (T8), ? Mozambique.

A. angolensis (Bak.) Planch., *excl*. var. *congoensis* Planch. et loc. Zaire.

bas.: *Vitis angolensis* Bak.

Stems climbing, slender, terete, naked; leaves with 5 distinctly stalked leaflets, the central one oblong, 7,5-15 cm long, 5-10 cm broad, rounded at base, apex acute, the edge sharply and irregularly inciso-dentate, texture membranous, firm but thin, the underside slightly downy on the veins when young, both surfaces glabrous when mature; petioles 5-10 cm long; tendrils copious, firm; cymes dense, compound.

Bushy places, along river; high or dense thickets; sometimes sporadic.

A. bombycina (Bak.) Planch.; Bull. Inst. Fondam. Afrique Noire, Sér. A, 43: 253, 1981; Dokosi, Herbs Ghana: 231, 1998. – Icon.: Fl. Congo belge 9: 559, 1960 (sub nom. *A. cinnamochroa);* Hawthorne & Jongkind, Woody pl. west. Afr. forests: 387, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 444, 2009.

bas.: *Vitis bombycina* Bak.

syn.: *Ampelocissus malchairii* De Wild.; *A. lecardii* sensu A. Chev., Explor. Bot.: 139, 1920, non Planch.

Erect, trailing or climbing herb 0,3-2 m tall; stems subwoody to 5-8 mm Ø; young stems reddish tomentose to woolly, becoming subglabrous; mature leaves reddish woolly or sparsely so; petiole 1,5-12,5 cm long; stem and petiole without gland-tipped hairs; (cf. *A. leonensis);* lamina cordiform to reniform in outline, entire to ± deeply 3-5-lobed, 6-25 × 6-23 cm, lobes dentate or denticulate; apex subacuminate to rounded; inflorescence a sparsely to densely reddish woolly compound cyme 1-6 cm long, with opposite divaricate branches, with tendrils; berries grape-like, edible, 1-1,5 cm Ø.

Pterocarpus and *Combretum-Terminalia* woodland and wooded grassland; gallery forest; often on black cotton soil or on rocky outcrops; granitic soil; forest edges; woodland with *Combretum collinum, C. molle, Annona senegalensis,* etc.; 600-2000 m alt.

Not in Tanzania *(= Cissus trothae;* cited by Brenan 1949).

A. concinna (Bak.) Planch.

bas.: *Vitis concinna* Bak.

Stems terete, slender, quite woody, climbing, slightly matted when young with cottony tomentum, for the rest glabrous; petiole 2,5-3,7 cm long, firm and slightly matted; leaflets 5, the petiolule of the terminal one more than 1,2 cm long, the central leaflet obovate-oblong 5-7,2 cm long by about half as broad, apex acute, base broadly rounded, edges faintly inciso-dentate; texture membranous, upper surface nearly or quite glabrous when mature, lower matted all over with

appressed, grey, slightly salmon-coloured, cottony tomentum; tendrils firm and copious; flowers in dense cymose heads ± 2,5 cm broad on firm woody peduncles to 2,5 cm long.

Rather rare at the borders of bushy woods with *Acacia.*

A. dissecta (Bak.) Planch.; Phiri, Checklist Zambian vascul. pl.: 102, 2005 (Sabonet Rep. 32).

bas.: *Vitis dissecta* Bak.

syn.: *V. platanifolia* Bak.; *V. heracleifolia* Bak.; *Ampelocissus platanifolia* (Bak.) Planch.; *A. heracleifolia* (Bak.) Planch.; *A. urenifolia* Planch.

Stems numerous, sub-erect, inclined or decumbent, sometimes climbing, arising from a woody rootstock, 0,9-1,8 m tall, deeply sulcate, slightly matted upwards with cottony tomentum; petiole 3,7-7,5 cm long, firm; leaflets 3-5, the lateral ones sessile or nearly so, the terminal one on a petiole ± 0,6 cm long, oblong or obovate in general outline, 15-20 cm long by about half as broad, pinnatifid nearly or quite half-way down to the midrib, the point blunt or subacute, the base cuneate, edges distinctly inciso-dentate; texture membranous, upper surface green, glabrous when mature, lower matted all over with appressed, grey or slightly salmon-coloured, cottony tomentum; flowers in congested cymes ± 2,5 cm broad, on firm woody slightly matted peduncles ± 2,5 cm long; tendrils rare or absent.

Grassy rocky thickets; bushy places, amongst gigantic rocks; sandy wooded situations; open rather dry and sandy woods with *Protea,* etc.; thinner parts of forest, amongst *Protea, Eugenia, Dodonaea, Parinari,* etc.; sparingly grassy sandy places; rather rare, sporadic; sandy-earthy woods with *Panda;* 1300-1700 m alt.

Intermediate specimens between *A. dissecta* and *A. obtusata* are known.

A. edulis (De Wild.) Gilg & M. Brandt – Icon.: Ann. Mus. Congo Belge, Bot., Sér. 4/1: pl. 41, 1902.

bas.: *Rhoicissus edulis* De Wild.

Herb with stems ± 1 mm Ø, cobwebby, with pale brownish hairs becoming glabrous; leaves digitate, 3-foliolate; petiole 3-3,5 cm long; central leaflet shortly petiolulate, obovate, attenuate at base, acute at apex, 5,5-7 cm long, 2,3-3 cm broad, the laterals sessile very asymmetrical, ± rhombic 4-6 × 2-3 cm; upper surface cobwebby, lower tomentose-ferrugineous, edges irregularly denticulate; cymes 9 cm long; fruit unknown.

Ecology unknown.

Only known from the type collected in 1899.

A. gracilipes Stapf – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 387, 2006.

Climber with softly woody stems to 12 mm Ø, pale brownish woolly-pilose on the young striate parts, minutely warty on older stems; leaves suborbicular or broadly ovate, or 3-5-lobed, acuminate at apex, cordate at base, 9-14 cm Ø, margins closely dentate; petiole 6-13 cm long; mature leaves without remnants of cobwebby indumentum; calyx with entire margins (in *A. africana* lobed); fruit, even unripe, edible.

Clearing in closed coastal forest.

A. leonensis (Hook. f.) Planch. – Icon.: Akoegninou & al., Fl. analyt. Bénin: 998, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. forests: 387, 2006; N'Dri Koffi (ed. Kasparek), Fl. Parc Natl. Taï (Côte d'Iv.): 314, 2000 (sub gen. *Cissus*).

bas.: *Cissus leonensis* Hook. f.

syn.: *Vitis leonensis* (Hook. f.) Bak. *(excl. specim.* Barter 1276); *V. salmonea* Bak.; *Ampelocissus salmonea* (Bak.) Planch.; *A. bakeri* Planch.; *Vitis gorgonobotrys* Webb

Climber, stout but subherbaceous, with a large hollow in the centre of the stem; stem terete, finely striate, clothed, with short grey down and fine, spreading, purple gland-tipped bristly hairs 2-3 mm long (not so in *A. bombycina);* petiole 5-15 cm long, firm, clothed like the stem; leaves rounded-cordate in general outline, 10-30 cm long and broad, 5-lobed from one-to-two-thirds of the way down, the base deeply cordate, the terminal lobe broad-spathulate, the sinuses rounded but very narrow, edges slightly denticulate, texture membranous, upper surface slightly downy when young becoming glabrous, the lower matted all over with fine greyish or salmon-coloured, cottony tomentum; tendrils long, firm, woody, with a peduncle 5-7 cm long, forked and with densely compound subcymose or paniculate lateral clusters of flowers; berry purple, edible, c. 6 mm Ø.

Forest gallery edges; savannas; dry dense forest; up to 800 m alt.

A. macrocirrha Gilg & M. Brandt – Icon.: Bot. Jahrb. Syst. 46: 424, 1911; Engler, Pflanzenwelt Afr. 3/2: 319, 1921.

Climber with stout woody glabrous stems and strong branched tendrils; leaves puberulous on nerves only beneath, not lobed, or only slightly 3-lobed (indentations 2-5 cm deep), suborbicular, deeply cordate at base, shortly acuminate, 17-22 cm long × 19-22 cm broad, margins distantly shortly dentate; petiole to 20 cm long, glabrous or nearly so; inflorescence a stout panicle 6-8 cm long × 5-8 cm broad, rarely to 18 × 16 cm, puberulous; young shoots also puberulous; fruit unknown ?

Rain-forest; open forest; along the coast or on more elevated places; 0-800 m alt.

Bioko/Fernando Poo.

Not in Flore du Cameroun; ? syn. or a form of *A. abyssinica* (cf. Cheek & al., Pl. Kupe…: 422, 2004). The species is indicated in Liberia by Adam (Mém. Mus. Natl. Hist. Nat., N. S., Sér. B, Bot. 22: 779, 1971) perhaps by confusion with *A. abyssinica;* specimen Adam 25752 needs further studies.

A. multistriata (Bak.) Planch.; Fl. Zambes. 2/2: 440, 1966; Adansonia, Sér. 2, 14: 661, 1974; Dokosi, Herbs Ghana: 232, 1998; Burkill, Useful pl. W. trop. Afr., ed. 2, 5: 288-289, 2000; White & al., Evergreen for. fl. Malawi: 596, 2001. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 385, 2006 (sub nom. *A. pentaphylla).*

bas.: *Vitis multistriata* Bak.

syn.: *V. pentaphylla* Guill. & Perr. 1832, non Thunb. 1784; *Ampelocissus pentaphylla* (Guill. & Perr.) Gilg & M. Brandt; *A. sarcantha* Gilg & M. Brandt; *A. leprieurii* Planch.; *A. longicuspis* Mildbr.

Herbaceous climber or liane with glabrous, finely striate cylindric hollow stems several meters long; root thickened, nearly tuberous; leaves digitately 3-5-foliolate, rarely simple and 5-lobed; leaflets narrowly obovate or elliptic, the terminal one largest, the outermost laterals often asymmetric, 5-22 cm long × 2-11 cm wide, acuminate at apex, cuneate at base, serrate or serrate-crenate, glabrous; petiole 6,5-13 cm long; panicle of cymes, rather lax much-branched; tendrils branching c. 1,5 cm below the rhachis; berry green, grape-like, c. 1 cm Ø.

Markhamia, Stereospermum, Commiphora, Panicum bushland on steep slopes; riverine and gallery forest; bamboo brakes; wooded savanna; savanna scrub; heavy soils; open forest on sandy to sandy-clayey soil; sometimes on fallows; forest regrowth and edges; rocky places; 125-900 m alt.

According to Hawthorne & Jongkind, o.c., may represent an extreme form of *A. africana.*

A. obtusata (Welw. ex Bak.) Planch.; Beentje, Kenya trees, shrubs & lianas: 361, 1994. – Icon.: Fl. Trop. E. Afr., Vitaceae: 4, 1993 (partial).

bas.: *Vitis obtusata* Welw. ex Bak.

syn.: *Ampelocissus aesculifolia* Gilg & M. Brandt; *Vitis arcuata* Welw. ex Bak.; *Ampelocissus arcuata* (Welw. ex Bak.) Planch.; *Vitis obtusata* var. *quercifolia* Rolfe; *Ampelocissus obtusata* var. *quercifolia* (Rolfe) Rolfe *excl. specim.* Marques 113 *(= A. poggei); A. quercifolia* (Rolfe) Gilg & M. Brandt; *A. brunneo-rubra* Gilg – All of subsp. **obtusata**.

Erect perennial liane 1-2 m tall arising from a deep thick woody rootstock, but often with some branches eventually twining or with scrambling or twining branches from the beginning but usually not exceeding 2-4,5 m; branches rather coarsely striate, at first densely ferruginous – or cinnamon-velvety or cottony, eventually greyish and finally glabrescent; leaves 3-5-foliolate, somewhat coriaceous; terminal leaflet obovate to narrowly obovate or broadly elliptic, 2-38 cm long × 0,7-28 cm wide, subacute to rounded at apex, cuneate at base; lateral leaflets ± smaller and ± asymmetric, broadly cuneate or subtruncate at base; all irregularly serrate or serrate-crenate, greyish- or cinnamon-villous above when young but later glabrescent, more densely hairy or cottony beneath; petiole 3,5-27 cm long, villous when young; cymes dense capitate-globose, heads simple or compound or sometimes only moderately dense; berries brown or red, c. 1,2 cm Ø, in dense round clusters.

Brachystegia woodland; grassland with scattered trees; rocky places; often on black cotton soils; *Julbernardia, Paramacrolobium, Erythrophleum, Scorodophloeus, Combretum schumannnii* mixed forests, chipya woodland, bushland, thickets; sisal plantations; riverine vegetation; wooded savannas; sandy-earthy thickets, at the borders of woods with *Panda;* sometimes sporadic; 60-2100 m alt.

Namibia, Botswana, S. Africa (Transvaal).

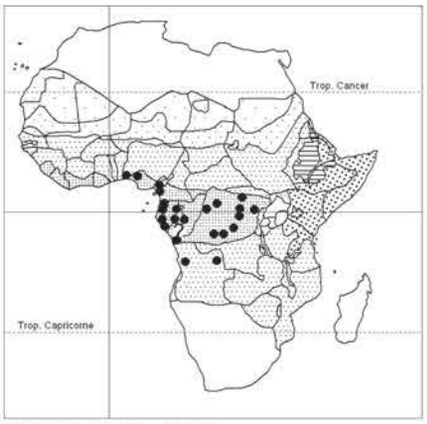
Comprises 2 subspp.: – subsp. **obtusata**; – subsp. **kirkiana** (Planch.) Wild & R. B. Drumm. (bas. & syn. in Enum. 2: 191, 1992); icon.: Engler, Pflanzenwelt Afr. 3/2: 319, 1921 (sub nom. *A. pulchra),* erect, without tendrils; often at lower altitudes (60-1750 m) than subsp. **obtusata** (> 600 m). – Intermediates between the subspp. are known.

A. poggei Gilg & M. Brandt

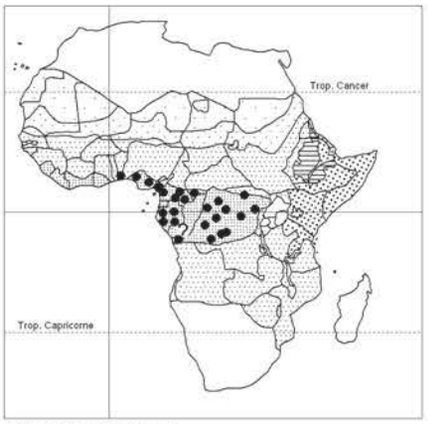
syn.: *A. obtusata* (Welw. ex Bak.) Planch. var. *quercifolia* (Rolfe) Rolfe quoad specim. Marques 113.

Shrub 1 m tall with round glabrous striate stems ± 4 mm Ø; leaves 3-foliolate; petiole 2,5-3 cm long, glabrous; leaflets lobed, subsessile, oblanceolate, attenuate at base, acute at apex, median leaflet 6-12 × 3-4,5 cm, lateral leaflets smaller; blade glabrous above, woolly-reddish-brown beneath, irregularly denticulate in the upper half; cyme compound, ± 5 cm long; fruit unknown ?

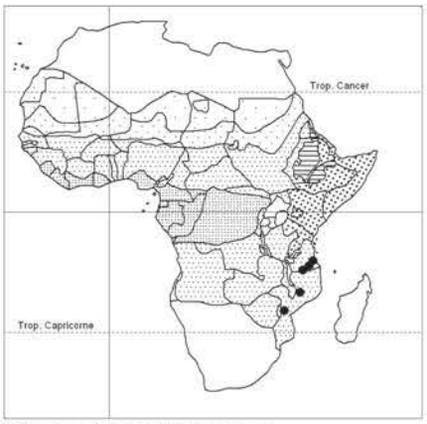
Open savanna on sandy soil; rivulet side; 1000 m alt.



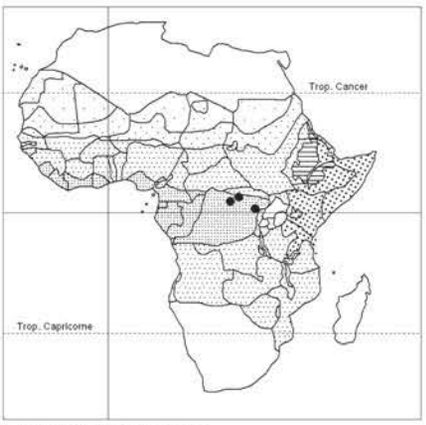
Cissus barbeyana



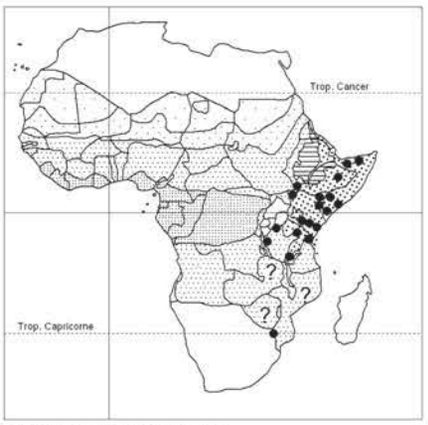
Cissus barteri



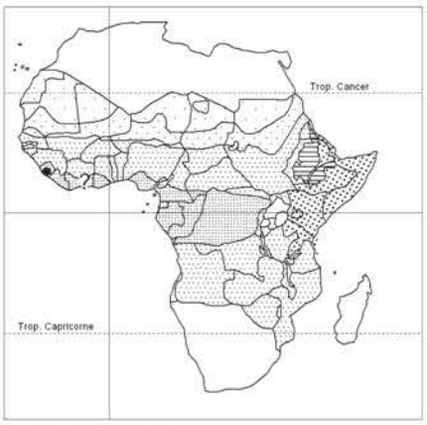
Cissus bathyrhakodes



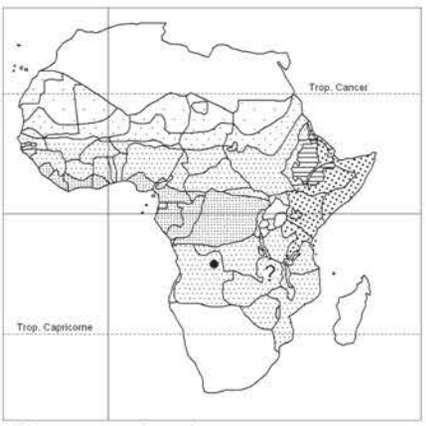
Cissus bequaertii



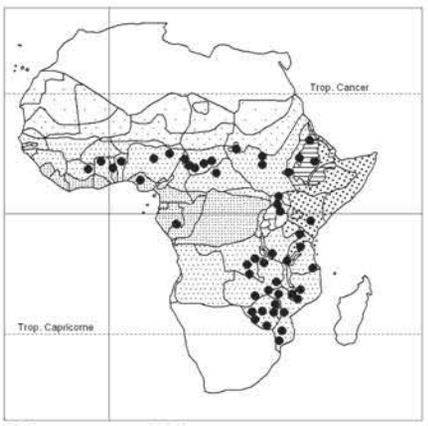
Cissus cactiformis



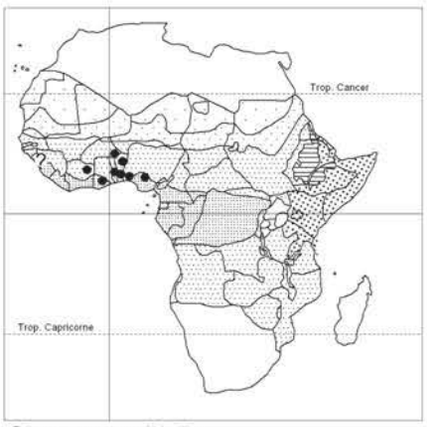
Cissus caesia



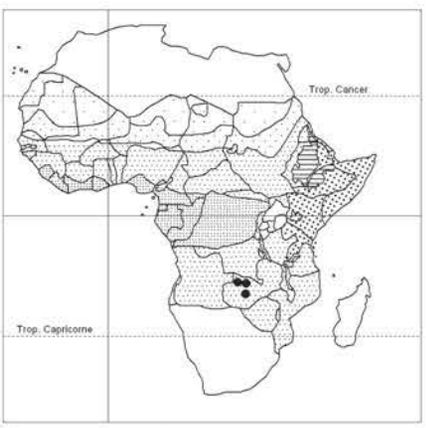
Cissus carrissoi



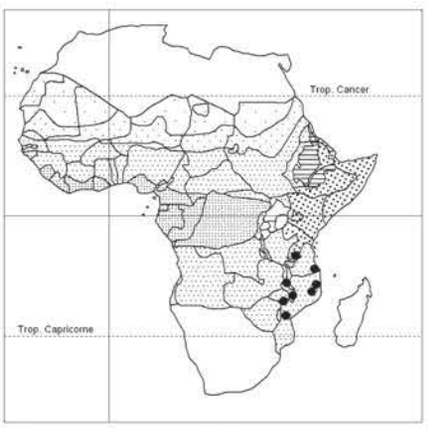
Cissus cornifolia



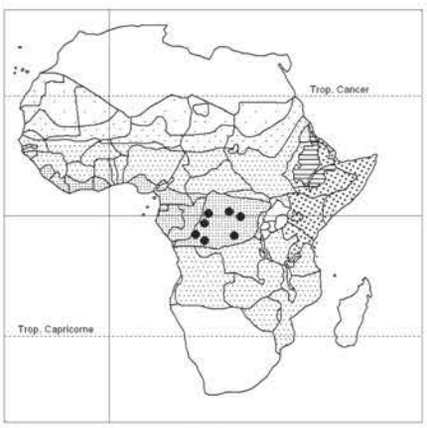
Cissus corylifolia



Cissus crusei



Cissus cucumerifolia



Cissus dasyantha

CISSUS

A. sapinii (De Wild.) Gilg & M. Brandt

bas.: *Rhoicissus sapinii* De Wild.

Climber with round striate glabrous stems ± 3 mm Ø; leaves digitate, 3-5-foliolate; petiole 1-2 cm long, glabrescent; leaflets sessile to subsessile, obovate to spatulate, long attenuate at base, acute to rounded at apex, dentate, the central leaflet 10 × 3 cm, the two laterals smaller and asymmetrical; blade glabrous but sparsely pubescent on the nerves and with scattered translucent dots; inflorescence of compound glomerules 2 cm long, 3 cm when in fruit.

Ecology unknown.

A. sarcocephala (Schweinf. ex Oliv.) Planch.; Adansonia, Sér. 2, 14: 661, 1974. – Icon.: Hook. Ic. Pl. 13: pl. 1253, 1878; Bot. Jahrb. Syst. 46: 429, 1911; Engler, Pflanzenwelt Afr. 3/2: 320, 1921.

bas.: *Vitis sarcocephala* Schweinf. ex Oliv. 1878.

syn.: *Cissus sarcocephala* Schweinf. ex Planch. 1885; *Ampelocissus iomalla* Gilg & M. Brandt

Climber with cylindrical striate stems 4-5 mm Ø; indumentum reddish-brown, rather dense and stiff with scattered whitish wool; tendrils cylindrical, densely pubescent and ± pilose; leaves digitate, 3-5-foliolate; petiole cylindrical, striate, deeply canaliculate, densely pubescent and ± woolly, 1-2 mm Ø, 3-10 cm long; central leaflet obovate, ± elliptic or narrowly elliptic, 8-13 × 3,5-7 cm, cuneate or obtuse at base, acute at apex, acumen 2-3 mm; lateral leaflets smaller, asymmetric; margins with many denticulate at apex; blade firm, glabrescent above, ± pubescent below and with greyish or reddish wool; inflorescences dense, rounded, head-like, peduncle ± 5 cm long.

Open forest; shady forest. Rare.

A. schimperiana (Hochst. ex A. Rich.) Planch.

bas.: *Vitis schimperiana* Hochst. ex A. Rich.

Herbaceous climber or scrambler arising from a tuberous woody rootstock; young stems whitish to reddish woolly, soon glabrescent; mature leaves sparsely whitish to reddish woolly on petioles and nerves; petiole 3-15 cm long; lamina cordiform or reniform in outline, unlobed (rarely shallowly 3-lobed), 6-29 × 6-25 cm, finely to grossly dentate; apex acuminate to retuse; inflorescence a sparsely to densely whitish to reddish woolly cyme 1-7 cm long on a peduncle 0,5-6 cm long.

Combretum, *Terminalia* woodland; alluvial *Acacia* woodland; riverine forest; 900-1900 m alt.

Occurs together with *A. bombycina;* intermediate specimens known (? hybridization).

A. verschuerenii De Wild.

syn.: *A. angolensis* (Bak.) Planch. var. *congoensis* Planch.

Climber with canaliculate, striate stems, ± 3 mm Ø, cobwebby to woolly, greyish; leaves digitate, 5-foliolate; petiole 2-5 cm long, woolly; leaflets elliptic with petiolule 5-10 mm long, obtuse to attenuate at base, rounded at apex, toothed; the central leaflet 6 × 2 cm, the laterals gradually smaller; blade sparsely pubescent, sometimes with scattered translucent dots; cymes compact, compound ± 12 cm long; fruit unknown.

Forest.

CISSUS

INSUFFICIENTLY KNOWN TAXA:

Ampelocissus dekindtiana Gilg – Icon.: Engler, Pflanzenwelt Afr. 3/2: 319, 1921.

Tree-like shrub 0,6-1,2 m tall; stem with densely grey cobwebby indumentum; leaves 5-foliolate, long-petiolate (5-7 cm long), petiolules 2-2,5 cm long, blades 8-10 × 3-5 cm, the distal pair of leaflets smaller, margins deeply lobed, ± serrate, upper surface densely hairy, lower surface with greyish-yellow dense indumentum; flowers in head-like dense compound cymes 1-2 cm Ø, pedicel 1-2 cm long, without or with small tendrils, the whole yellowish-tomentose; fruit unknown.

On rocky hills, c. 1740 m alt. (SW Angola: Huilla).

Gilg compares this species with *A. sarcocephala.* Perhaps near *A. dissecta* or *A. obtusata* occurring in the same area.

Known only from the type collected in 1899. Cited by Figueiredo & Smith, Plant of Angola: 168, 2008.

A. multiloba Gilg & M. Brandt – Icon.: Bot. Jahrb. Syst. 46: 424, 1911; Engler, Pflanzenwelt Afr. 3/2: 319, 1921.

Climbing shrub with hollow branches, striate, glabrous, c. 1 cm Ø; leaves long-petiolate (11-13 cm long) 18 × 6 cm, pinnately 7-lobed, cordate at base, margins lobed; inflorescence panicle dense, densely brown-pilose, peduncle c. 10 cm long with a tendril ± 15 cm long; young flower buds brownish cobwebby; mature flowers and fruits unknown. – "A distinctive plant".

Ecology not recorded.

Known only from the type collected in 1898-1899 (Conrau 92; N Cameroon: Bangwe).

SYNONYMS:

Ampelocissus aesculifolia Gilg & M. Brandt = **Ampelocissus obtusata** subsp. **obtusata**

angolensis (Bak.) Planch. var. *congoensis* Planch. = **A. verschuerenii**

arcuata (Welw. ex Bak.) Planch. = **A. obtusata** subsp. **obtusata**

asarifolia (Bak.) Planch. = **A. africana** var. **africana**

atacorensis A. Chev., nom. = **Cyphostemma junceum** subsp. **jatrophoides**

bakeri Planch. = **Ampelocissus leonensis**

brunneo-rubra Gilg = **A. obtusata** subsp. **obtusata**

calophylla Gilg ex De Wild. = **A. abyssinica**

cavicaulis (Bak.) Planch. = **A. abyssinica**

cavicaulis sensu Vollesen 1980 = **Cissus bathyrhakodes**

chantinii (Carrière) Planch. = **Ampelocissus africana** var. **africana**

cinnamochroa (Planch.) Planch. = **A. bombycina**

cussoniifolia (Planch.) Planch. = **A. abyssinica**

elisabethvilleana De Wild. = **A. obtusata** subsp. **kirkiana**

gourmaensis A. Chev. = **A. africana** var. **africana**

grantii (Bak.) Planch. = **A. africana** var. **africana**

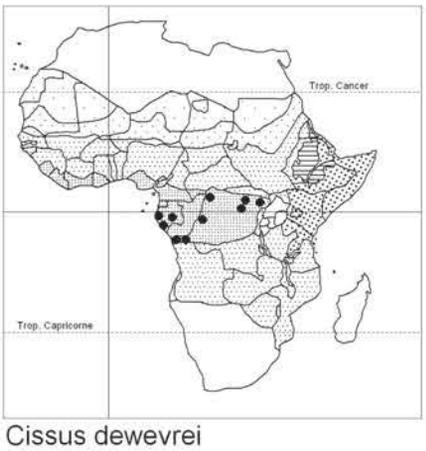
heracleifolia (Bak.) Planch. = **A. dissecta**

iomalla Gilg & M. Brandt = **A. sarcocephala**

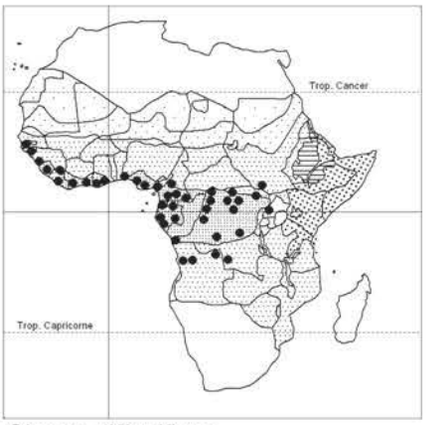
kirkiana Planch. = **A. obtusata** subsp.

lecardii sensu A. Chev. 1920, non Planch. = **A. bombycina**

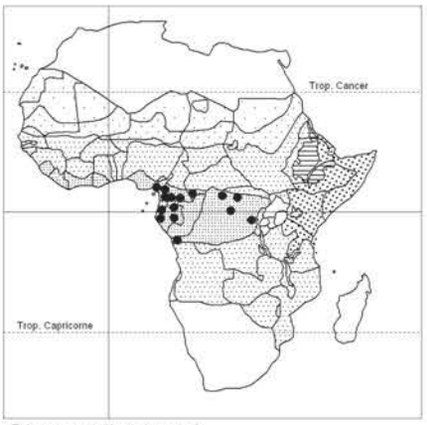
leprieurii Planch. = **A. multistriata**



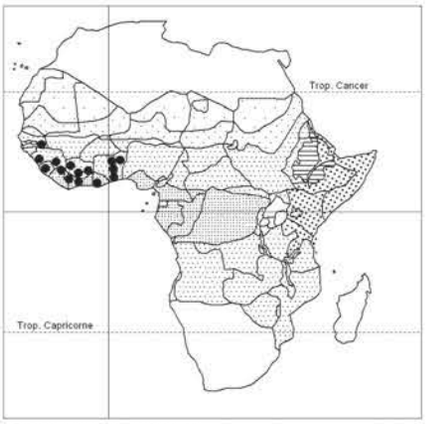
Cissus dewevrei



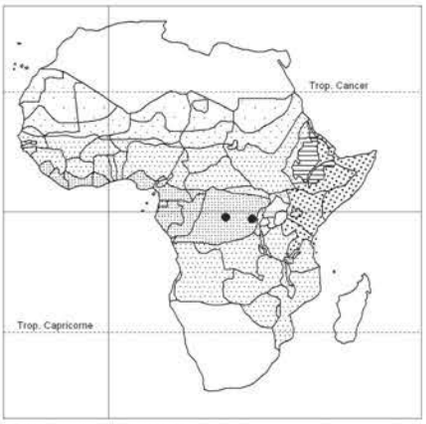
Cissus diffusiflora



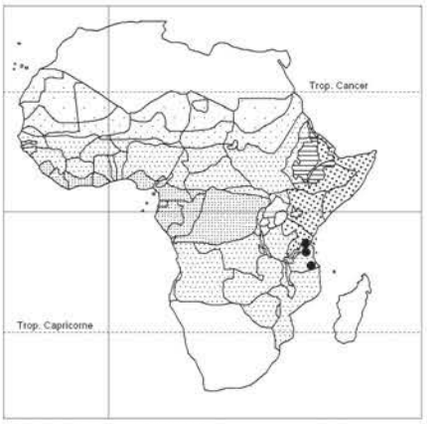
Cissus dinklagei



Cissus doeringii



Cissus duboisii



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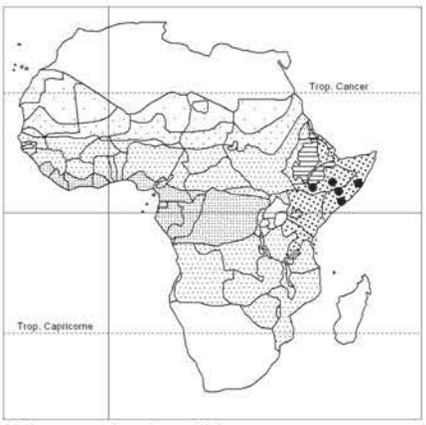

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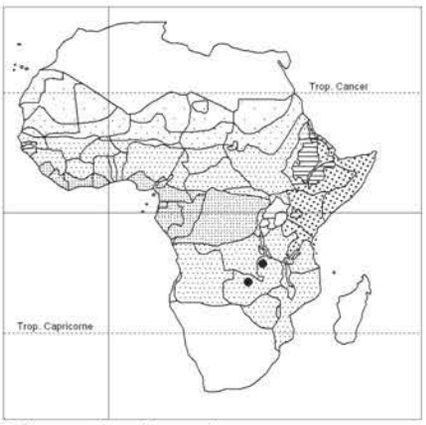
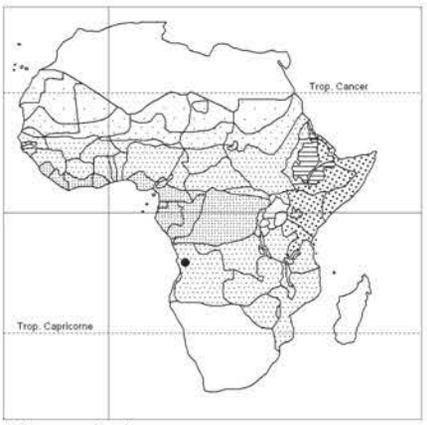
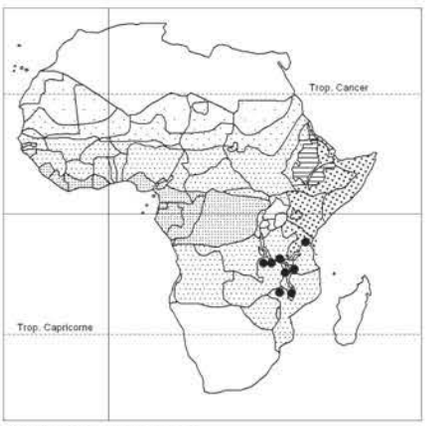


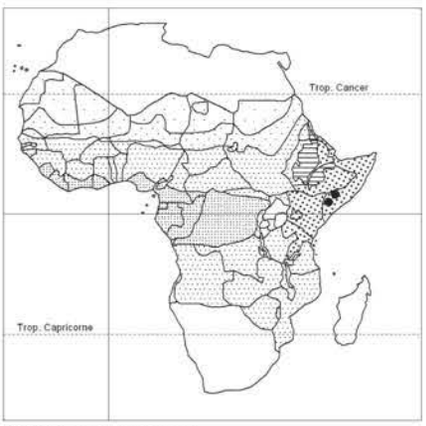
Cissus fanshawei



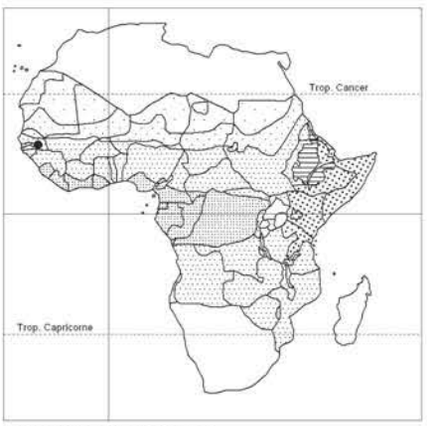
Cissus farinosa



Cissus faucicola



Cissus furcifera



Cissus gambiana

longicuspis Mildbr. = **A. multistriata**

malchairii De Wild. = **A. bombycina**

mossambicensis (Klotzsch) Planch. = **A. africana** var. **africana**

obtusata (Welw. ex Bak.) Planch. var. *quercifolia* (Rolfe) Rolfe p.p. = **A. obtusata** subsp. **obtusata, A. poggei**

pentaphylla (Guill. & Perr.) Gilg & M. Brandt = **A. multistriata**

platanifolia (Bak.) Planch. = **A. dissecta**

pulchra Gilg = **A. obtusata** subsp. **kirkiana**

quercifolia (Rolfe) Gilg & M. Brandt = **A. obtusata** subsp. **obtusata**

rhodesica Suess. = **A. obtusata** subsp. **kirkiana**

salmonea (Bak.) Planch. = **A. leonensis**

sarcantha Gilg & M. Brandt = **A. multistriata**

schliebenii Werderm. = **A. africana** var. **africana**

urenifolia Planch. = **A. dissecta**

venenosa De Wild. = **A. obtusata** subsp. **kirkiana**

volkensii Gilg = **A. africana** var. **africana**

Botria africana Lour. = **Ampelocissus africana**

CAYRATIA / *4*

syn.: *Cissus* L. sect. *Cayratia* (Juss.) Planch.

A genus of >60 (or 50 ?) species: 4 in Africa, c. 45 in Asia, 16 in Oceania.

Cayratia debilis (Bak.) Suess.; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 384, 2006. – Icon.: Bot. Jahrb. Syst. 46: 488, 1912, Engler, Pflanzenwelt Afr. 3/2: 326, 329, 1921 (sub gen. *Cissus);* Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 445, 2009.

syn.: *Cissus repens* A. Chev., nom.; Enum. 2: 191, 1992.

Herbaceous or sub-woody much branched climber 1,8-5 m long; stems rather slender, glabrous or slightly pubescent, striate; tendrils present; leaves pedately 5-foliolate; leaflets thin, elliptic to oblong-obovate, 2,5-12 cm × 1,2-5,5 cm, usually acuminate at apex, cuneate to ± rounded at base, very shortly toothed at margins, the teeth apically ± subulate, glabrous or with main nerves above with whitish hairs or puberulous; petiole 4-12 cm long; cymes lax 3-7 cm long to 13 cm wide in fruit; berry round, flat-topped, c. 4 mm Ø.

Evergreen forest; forest gallery; secondary forests; regrowths; clearings; half-deciduous forest; among tall bushes at the borders of primitive forest; 150-1200 m alt.

S. Tomé, Bioko/Fernando Poo, Principe ?

C. delicatula (Willems) Desc.; Adansonia, Sér. 2, 14: 665, 1974; Fl. Congo belge 9: 551, 1960 (sub gen. *Cissus).*

Herbaceous slender liane, soft fleshy, with cylindrical stems, deeply striate and fluted, glabrous or ± pubescent; tendrils very slender, glabrous, several times bifurcate; leaves compound-pennate 3-foliolate or pedately 5-9-foliolate; petiole cylindrical, canaliculate, glabrescent or weakly pubescent, 1-4 cm long; central leaflet lanceolate, oblong-lanceolate, obtuse or rounded at base, long-acuminate, 5-12 × 0,8-2,5 cm; lateral leaflets ovate-oblong, rounded or cordate at base, attenuate towards apex; margins crenulate with thick, obtuse teeth; upper surface with nerves ± densely pubescent and lamina sometimes sparsely

pubescent; lower one glabrous, nerves slightly or ± densely pubescent; inflorescence 3-8 cm long, loose, cymes pseudo-axillary; berry 6-10 mm Ø.

Savannas with *Protea* or *Lophira;* rocks; forest gallery; on laterite under shade; thicket on hardpan; scrub after cultivation; fallow land with *Pennisetum;* termite mound in rice field and in humid situation.

Also recorded from Ghana (fide Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 290, 2000).

C. gracilis (Guill. & Perr.) Suess.; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 384, 2006. – Icon.: Bot. Jahrb. Syst. 46: 488, 1912 and Engler, Pflanzenwelt Afr. 3/2: 329, 1921 (sub gen. *Cissus*); Fl. Trop. E. Afr., Vitaceae: 137, 1993 (partial); Troupin, Fl. Rwanda 2: 355, 1983; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 445, 2009.

syn.: *Vitis gracilis* (Guill. & Perr.) Bak. 1868, non Wall. 1824; *Cissus tenuicaulis* Hook. f.; *Vitis tenuicaulis* (Hook. f.) Bak.; *Cisssus membranacea* Hook. f.; C. *bigemina* Harv.; Enum. 2: 191, 1992.

Climbing or trailing herb, 0,9-7,5 m long arising from fleshy rootstock; stems striate, ± 3 mm Ø, foliage, petioles and inflorescences glabrous or glabrescent; leaves pedately 3-9-foliolate; leaflets narrowly ovate to ovate or elliptic, 1,7-10 × 1-6 cm, acuminate at apex, broadly cuneate to cordate at base, coarsely serrate to entire, puberulous particularly on nerves beneath, glabrescent; petiole 4-6 cm long; cymes axillary 5-10 cm long; tendrils bifid; berry purple-black, flat-topped, 4-8 mm Ø.

Tall grassland with scattered trees; forest margins; swampy and damp areas, streamside forest; savanna; clumps of trees; rock of gneiss, granitic gravel; bushland; thicket; fallows; way sides; sometimes ruderal; rain-forest with *Albizia, Macaranga, Croton, Ocotea* (at edges); 0-2130 m alt.

Bioko/Fernando Poo; S. Africa, Namibia; Yemen.

Confused with *Cyphostemma adenocaule.*

C. ibuensis (Hook. f.) Suess. – Icon.: Fl. Trop. E. Afr., Vitaceae: 137, 1993; Troupin, Fl. Rwanda 2: 355, 1983; Fl. Ethiopia 3: 403, 1989; Boulos, Fl. Egypt 2: 85, 2000; Akoegninou & al., Fl. analyt. Bénin: 999, 2006.

syn.: *Vitis ibuensis* (Hook f.) Bak.; *V. intricata* Bak.

Climbing herb 1-2 m tall; stems slightly fleshy, ± 4 mm Ø; stems, foliage and inflorescences glabrescent to puberulous; leaves pinnately 3-foliolate; leaflets narrowly ovate to elliptic, 3,5-8 × 2-4 cm, acute at apex, rounded to ± cuneate at base, finely serrate, occasionally lobed; petiole 1-5 cm long; cymes axillary; tendrils present; berry black, flattened, 0,8-1 cm Ø.

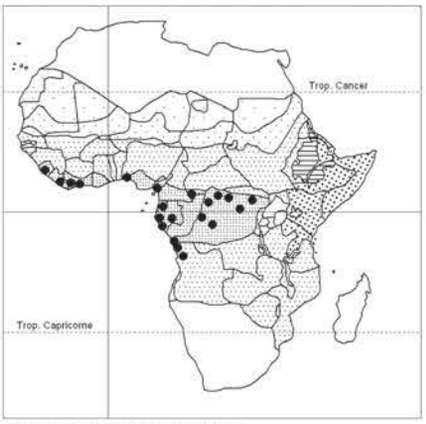
Edges of small forest patches and derived thickets; cleared land; old termite mounds; sandy river banks; *Papyrus* swamps; sometimes a weed; open forest gallery; rarely in *Brachystegia* woodland; alluvial soils in grassland and woodland; lake shores; *Alchorneetum cordifoliae;* 15-1490 m alt.

Egypt (Gebel Elba).

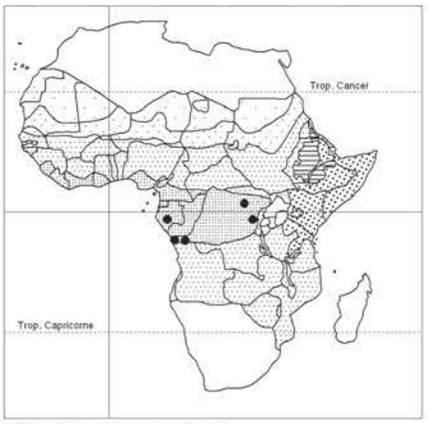
SYNONYMS:

Cayratia gracilis sensu Vollesen 1980, non (Guill. & Perr.) Suess. = **Cyphostemma trachyphyllum**

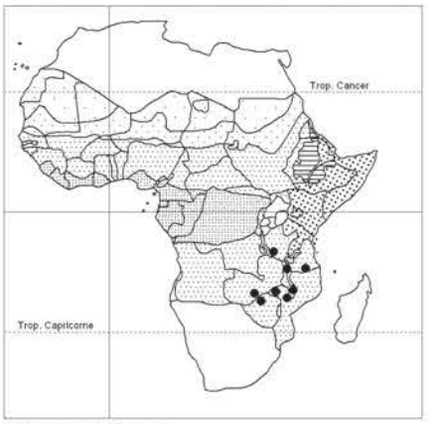
ruspolii (Gilg) Suess. = **Cissus**



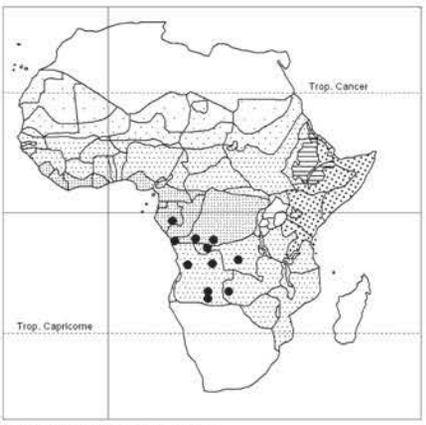
Cissus glaucophylla



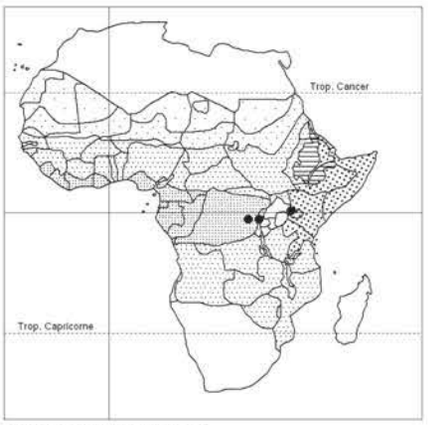
Cissus gossweileri



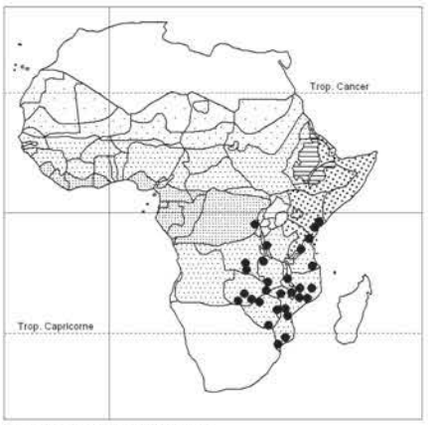
Cissus grisea



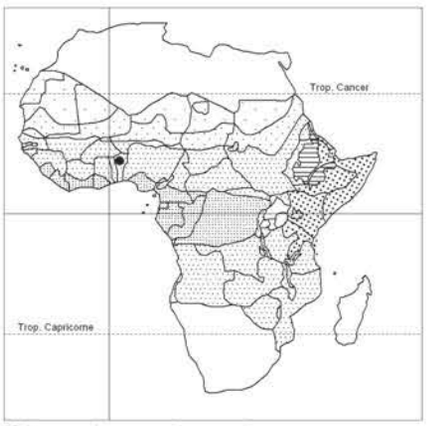
Cissus guerkeana



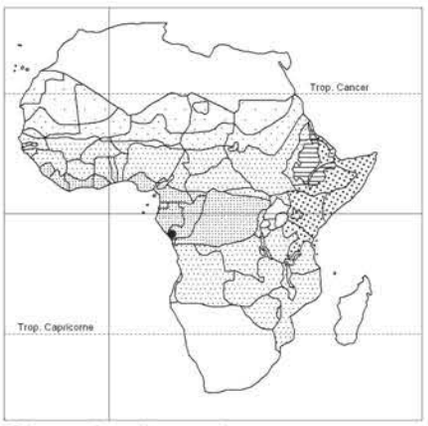
Cissus humbertii



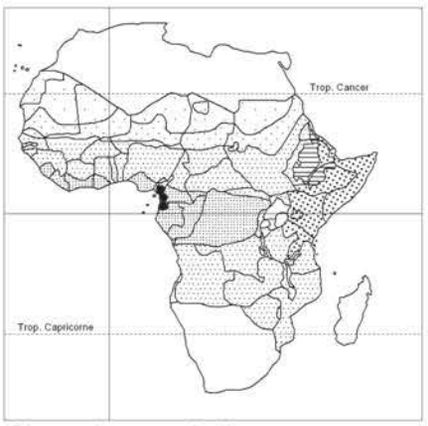
Cissus integrifolia



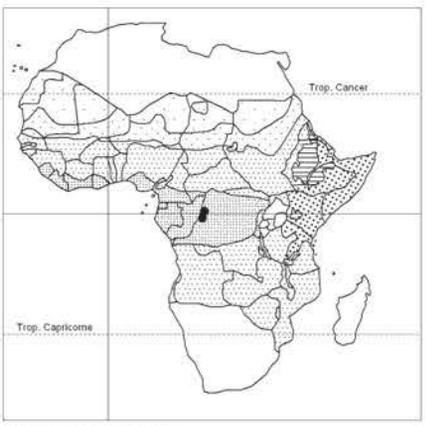
Cissus kouandeensis



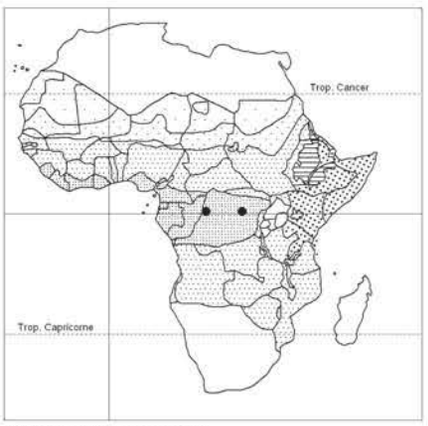
Cissus kouilouensis



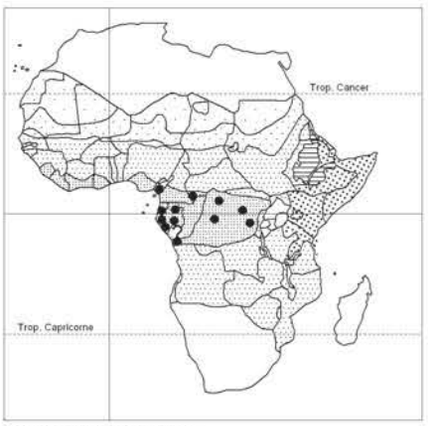
Cissus lamprophylla



Cissus lebrunii



Cissus leemansii



Cissus leonardii

CISSUS / *85*

About 350 species distributed in all tropical regions, a few extending into the temperate zone. There are, e.g., 74 species in the Flora Neotropica area, 72 ? in SE Asia, 14 in Australia; 3 are endemic in S. Africa.

Some species are insufficiently known in our area: 1 species without flowers *(C. carrissoi),* no fruit seen in 9 +2 ? species and only unripe fruit in further 4 species (= 15 spp.), no ecology recorded for 1 species; 8 species are known only from the type (or syntypes); 2 or very few collections known for further 3 species.

Cissus adamii Dewit, non *Cyphostemma adamii* Desc.

Climber ± 1 m tall, arising from swollen roots; tendrils rare, slender, bifurcate, pubescent under the bifurcation and with a triangular scale at the bifurcation, ± 3 × 0,5 mm, glabrous, ciliate, stems and branches cylindrical, finely striate, pubescent; leaves simple; petiole 5-8 cm long, pubescent; lamina orbicular, deeply cordate at base, obtuse to acuminate at apex, 3-5 × 5-7 cm, dentate, sparsely pubescent, more densely on the nerves above, sparsely covered by medifixed black hairs and pubescent on the nerves beneath; cymes compound-umbelliform, to 8 cm long, loose; fruit unknown.

Open forests.

Only known from the type collected in 1948.

C. adeyana Masinde & L. E. Newton; Enum. 3: 332, 1995; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 161, 1994; Descoings in Eggli, Handbook Succ. Pl.: Dicot: 452, 2002. – Icon.: Newton in Brit. Cactus Succ. J. 19: 19, 2001.

Climbing or straggling shrub to ± 1-5 m tall; stems green when young, fleshy, jointed, 8-sided or appearing 12-sided due to grooves, with 4 deeply channelled faces alternating with intermediate couvex faces, the stem appearing ± round; in older stems the green or greyish green faces shallowly to deeply grooved alternating with hardened whitish grey intermediate faces ± 2,2 mm wide, scabridulous and minutely pubescent, striate when dry; green faces wrinkled when dry and with prominent close raised dots (stomata); each angle of the stem is rather like a railway-line in section; internodes 3-11 × 0,4-1 cm; transverse bands of fibres present beneath the intermediate faces in mature stems; tendrils simple, minutely pubescent; leaves deep green with cream venation, present on youngest shoots, soon falling, broadly ovate, thin and flexible, capable of folding completely without snapping, 1,5-5 × 1,5-8 cm, shallowly to deeply 3-lobed, each lobe with ± 3 coarse acute teeth, pubescent on both surfaces; petiole 0-5 cm long; inflorescence finely pubescent, to 4 cm long; berry ovoid, smooth, c. 7 mm Ø.

Scattered scrub on rocky ground, dry *Acacia-Commiphora* bushland on rocky limestone ridge; 750-1250 m alt.

A very peculiar plant near *C. quadrangularis;* discovered by Bally in 1952; described in 1993.

C. albiporcata Masinde & L. E. Newton – Icon.: Newton in Brit. Cactus Succ. J. 19: 19, 2001; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 58, 1994.

Climber, tendrillate, with root-tubers; stem jointed, 8-sided, with 4 broad green faces alternating with 4 much narrower (±1-1,7 mm) flat intermediate whitish grey faces, usually green but sometimes purplish maroon in young stems; internodes 3-13 × 0,4-1 cm, nodes usually slightly constricted, a transverse band of fibres present below each intermediate face in addition to fibre bundles associated with the vascular bundles; leaves either shallowly or deeply 3-lobed, green or faintly maroon coloured especially along margins, 2-5 × 2-6 cm, slightly hirsute on both surfaces, thin (± 0,5 mm), flexible and can be folded completely in two without snapping, veins cream, bulging on lower surface; petiole ± 1-5 cm long; inflorescence glabrous.

Bushland in rocky areas; 10-1220 m alt.

Somalia ?

Near *C. quadrangularis;* first collection in 1902; few other later collections; described in 1993.

C. amoena Gilg & M. Brandt – Icon.: Bot. Jahrb. Syst. 46: 468, 1912; Engler, Pflanzenwelt Afr. 3/2: 324, 1921.

Climbing, bushy plant with cylindrical stems to 5 mm Ø, densely pubescent becoming glabrescent; tendrils several times bifurcate, ± densely pubescent; leaves simple, entire; petiole cylindrical, slender, 2-5 cm long, densely pubescent; lamina ± ovate-cordiform, 6-8 × 5-6 cm, acuminate at apex, cordate or subhastate at base, with some curly hairs and some medifixed red-brown hairs above, lower surface very densely covered by a very short indumentum, the nerves also with some medifixed hairs, margins with many very short teeth; inflorescence to 12 cm long, a panicle with numerous subumbellate clusters, peduncles pubescent; berry pointed, ellipsoid, c. 8 mm long.

Forest regrowth; clearing in rain-forest; lake sides; ? 200-650 m alt.

C. aphylla Chiov.

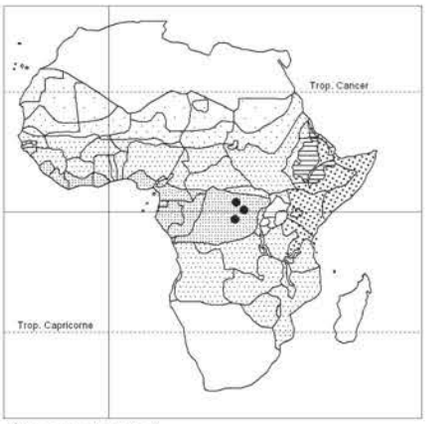
Scrambling shrub or woody climber to 1-3 m tall; stems reddish when young, later pale to dark grey, somewhat angled and ridged, glabrous, usually leafless when flowering; tendrils few, 3,5-5 cm long; leaves ovate, 1-4,5 × 0,7-2,5 cm, narrowly rounded to acute and apiculate at apex, truncate or slightly subcordate at base, glabrous, remotely dentate; petiole 1-15 mm long; inflorescence appearing before the leaves, graceful, much branched, 1-4 cm long; peduncules and axes purple; berry ± beaked at apex, constricted at base, pink to purple, with a glaucous bloom.

Open bushland to dense mixed thicket of *Acacia, Commiphora, Terminalia, Grewia,* etc.; yellowish brown sandy alluvial loam with *Acacia, Commiphora* bushland; 30-750 m alt.

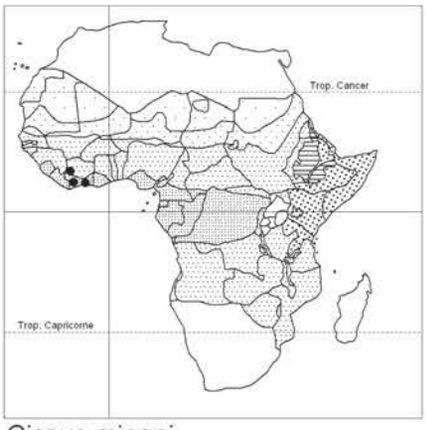
C. aphyllantha Gilg; Beentje, Kenya trees, shrubs & lianas: 362, 1994; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 161, 1994. – Icon.: Engler, Pflanzenwelt Afr. 3/2: 327, 1921.

Shrub, scrambler or intricate woody climber 1-4 m tall, often forming large tangles over trees and shrubs, arising from a swollen rootstock; stems ± dark purplish brown, ridged and later ± fissured, at first pubescent with yellow or ferrugineous hairs, later glabrous, flowering when leafless in dry weather; lateral shoots bearing inflorescences often very reduced and congested with internodes suppressed, to 1 cm long; tendrils simple; young leaves broadly ovate, 4 × 5 mm, later ± round, 1,5-6,5 × 1,7-8 cm, ± rounded at apex, truncate to cordate at base, serrate, densely pale ferrugineous velvety pubescent; petiole 0,1-2,5 cm long; inflorescence a branched panicle of umbelliform cymes 1,5-4 cm long, densely yellowish pubescent; berry dull red, ovoid, pointed at apex, c. 1 cm long, smelling of vitamin B.

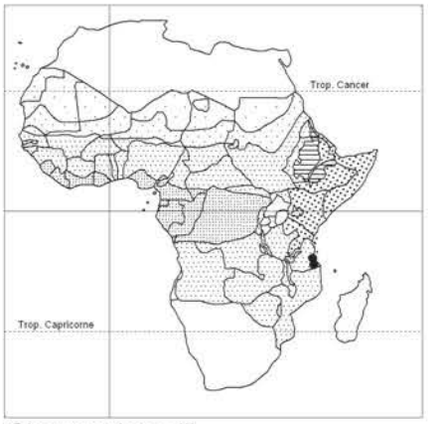
Acacia desert thorn bush; *Acacia – Commiphora* scrub; *Combretum, Entada, Sterculia, Acacia, Boscia, Adansonia* scrubby woodland, mostly on rocky outcrops; level sandy to loamy red soil; locally common; 240-1500 m alt.



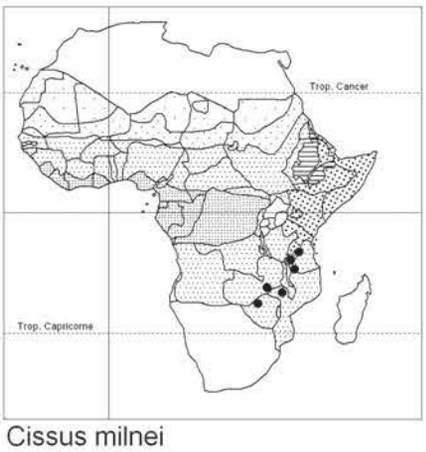
Cissus louisii



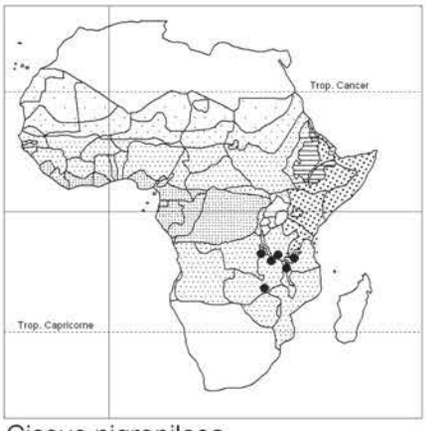
Cissus miegei



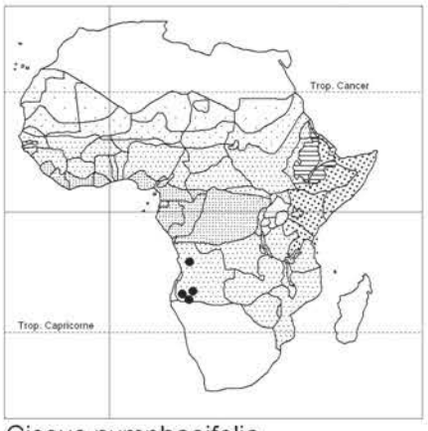
Cissus migeodii



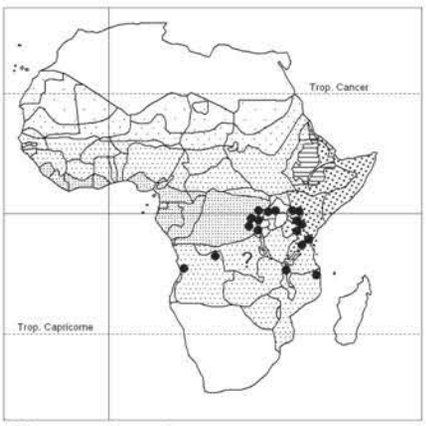
Cissus milnei



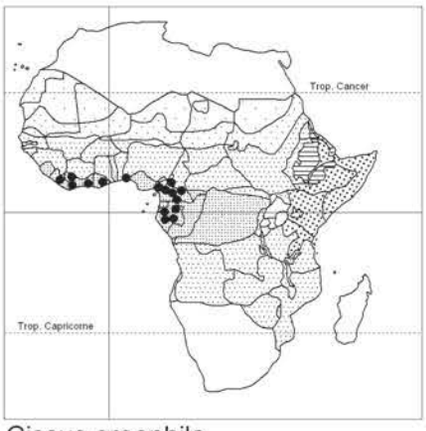
Cissus nigropilosa



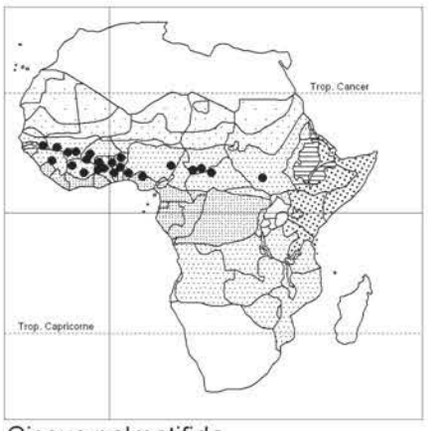
Cissus nymphaeifolia



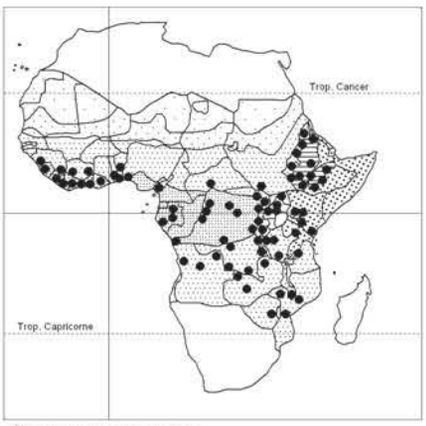
Cissus oliveri



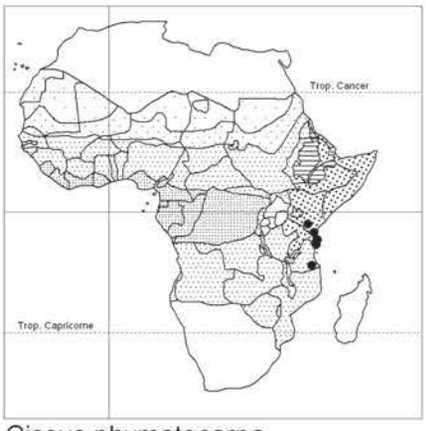
Cissus oreophila



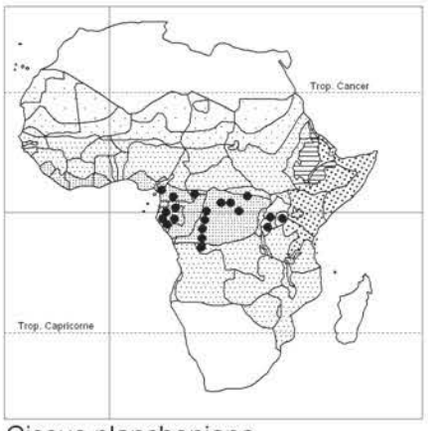
Cissus palmatifida



Cissus petiolata



Cissus phymatocarpa



Cissus planchoniana

CISSUS

C. aralioides (Welw. ex Bak.) Planch.; Enum. 3: 332, 1995; Descoings in Eggli, Ill. handbook succ. pl.: Dicot.: 452, 2002. – Icon.: Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 86, 2007; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 385, 2006; Kasparek, Fl. Parc Natl. Taï (Côte d'Iv.): 315, 2000; Berhaut, Fl. ill. Sénégal 1: 200, 1971; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 446, 2009.

bas.: *Vitis aralioides* Welw. ex Bak.

syn.: *V. constricta* Baker; *Cissus constricta* (Baker) Planch. ex A. Chev.

Liane to 25 m long, gracefully pendulous, resembling an *Aralia,* or herbaceous climber 2-2,5 m long, woody at base; stems often violet-purple or yellowish, 6,25-7,5 cm Ø at base, ± fleshy, cylindrical, jointed as in *Rhipsalis,* 3-5 mm Ø, glabrous or glabrescent except sometimes laxly reddish pilose at the nodes and a tuft within the axils of the stipules, sometimes with densely scattered black points; drying yellow-green; the lower stems can be to 7,5 cm Ø, ridged and angular when dry; tendrils simple or bifid, glabrous or glabrescent; leaves 3-9-foliolate; leaflets somewhat fleshy, the median one narrowly oblong-elliptic to oblong-obovate, 3,5-25 × 1,5-8 cm, narrowly long decurrent into the petiolule, the laterals asymmetrically oblong-elliptic, ovate-oblong or ± elliptic, glabrous except for a few hairs at base of the midrib beneath, dentate, the teeth red, subulate or short and thick; petiole 1,5-15 cm long, glabrous or glabrescent; cymes compound, 4-10 cm long, made up of umbelliform cymules; berry green-red, ellipsoid, c. 1,8 cm long, edible, with a red gummy juice.

Coastal and riverine evergreen forest; semi-deciduous forest; disturbed forest; coastal bushland; deep, narrow ravine; wet *Acacia* bushland; grassland; often in thicket on granite rocks and termite mounds; damp dense primitive woods, swampy forest, forest gallery along streams; 15-1600 m alt.

Comprises 2 subspp., however not accepted by Descoings, l.c.

C. crusei is very close to **C. aralioides** subsp. **orientalis** Verdc. (intermediates possible), but is erect and lacks tendrils. Mature fruits needed for distinction between species of this group.

C. arguta Hook. f., *excl.* var. *oliveri* Engl. *(= C. oliveri);* Dokosi, Herbs Ghana: 233-234, 1998; Akoegninou & al., Fl. analyt. Bénin: 1002, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 386, 2006.

syn.: *Vitis arguta* (Hook. f.) Bak.

Stem wide-climbing, to 5 m tall and more, much branched, firm, *herbaceous,* woody or rather fleshy, naked, subterete or sometimes tetragonous, almost glabrous when young; leaves cordate-ovate 7,5-10 × 5-3,7 cm, petiole ± 2,5 cm long; the basal lobes rounded 0,6-1,2 cm deep, the broadest part of the leaf 2/3 of the distance from the apex to the base, the point acute or acuminate, the edge sharply but not deeply toothed, the teeth pointing upwards, texture crisp, membranous, both sides green and glabrous, the lower one rather shining; tendrils long, copious, firm; cymes lateral, compound; berry ovoid, c. 1,2 cm Ø.

Aningera altissima, Chlorophora, Celtis rain-forest; half deciduous rain-forest; swampy forest; forest gallery; savannas; field; thicket. – Weedy.

In habit and the shape of cutting of its leaves, this species comes near the Asiatic *Vitis flexuosa* Thunb. var. *parvifolia* (Roxb.) Gagnep. (not *"V. parviflora"* sphalm. in F.T.A. 1: 392, 1868).

Often considered to be synonymous with *C. producta* widespread from W Africa to Tanzania; but *C. producta* has: leaves with truncate to subcordate bases, larger apiculate buds and larger fruits.

Our map is probably quite approximate.

CISSUS PALMATIFIDA

C. aristolochiifolia Planch.

Climber with scattered caducous hairs when young; tendrils 2-fid; leaves simple; petiole to 4,8 cm long; lamina to 8,5 × 9 cm, but usually smaller, broadly to very broadly ovate, obtuse or acute at apex, margin minutely serrate with teeth to 1 mm long, cordate to truncate at base; cymes lax; berry ± pyriform, c. 6 mm Ø.

Riverine vegetation; c. 1000 m alt.

C. barbeyana De Wild. & Th. Durand; Cheek & al., Pl. Kupe …: 423, 2004.

Herbaceous or woody climber 10-20 m long; old stems 3-4 mm Ø; young stems slender, cylindrical, with a fine whitish rather dense pubescence; tendrils ramose, glabrous; leaves simple, entire, petiole cylindrical, slightly canaliculate above, 2-6 cm long, glabrous or finely pubescent; lamina ovate, ovate-lanceolate or ovate-oblong 6-12 × 3-8 cm, truncate at base, sagittate or cordate, and rounded or obtuse at apex, acuminate; margins with some broad indentations; lamina glabrous on both surfaces, domatia with hairs beneath; texture slightly tough; inflorescence of cymes composed of umbelliform, dense many-flowered cymules, 2-5 cm long.

Rain-forest; fallows in forest; forest gallery; secondary forest; 1-1110 m alt.

São Tomé, Principe.

Not in East Africa, but *C. humbertii, C. leonardii* and *C. oxyodonta* (Bak.) Descoings (from Madagascar) are related. – Darbyshire in Cheek & al., l.c., remarks that *C. leonardii* differs by its polygonal mature stems, leaves undulate and with larger teeth, and smaller fruits (6-8 not 8-9 mm long).

C. barteri (Bak.) Planch. – Icon.: De Wildeman, Miss. E. Laurent 2: tab. 21, 1905 (-07).

bas.: *Vitis barteri* Bak.

syn.: *Cissus hauptiana* Gilg; *C. laurentii* De Wild.

Herbaceous climber with cylindrical rather succulent stems 2-3 mm Ø, glabrous; tendrils simple, glabrous; leaves simple, glabrous; petiole cylindrical, flattened or canaliculate above, 3-10 cm long; lamina ovate, elliptic or lanceolate, 10-20 × 4-9 cm, truncate at base, attenuate and acuminate at apex; margins with short, thick teeth; texture thin; inflorescence 5-15 cm long, of lax cymes formed by few-flowered umbelliform cymules.

Forest gallery; forest regrowth; rain-forests; secondary forest; thickets; half-deciduous forest; on clayey or swampy soils; 1-1200 m alt.

Bioko/Fernando Poo.

C. bathyrhakodes Werderm. – Icon.: Fl. Moçamb. 50: 19, 1969.

Erect perennial somewhat fleshy herb, 0,6-1,5 m tall arising from a woody rootstock; stems glabrous but with a fine white bloom, without tendrils; leaves simple, ± rounded in outline, 5-25 cm long and wide, shallowly to very deeply 3-7-lobed, acute at apices of lobes, truncate to shallowly cordate at base, lobes ± elliptic or oblong, sinuate-crenate and with small narrow teeth, glabrous; petiole 5-13 cm long, glabrous; flowers in leaf-opposed umbel-like cymes; berry red, ellipsoid, 8 mm long.

Open woodland with grasses; rocky outcrops in *Brachystegia* woodland; 200-300 m alt.

May be confused with *C. cucumerifolia* (without white bloom).

C. bequaertii Dewit

Liane with pubescent to glabrous ramose tendrils with several bifurcations; stems and branches cylindrical, finely striate, sparsely pubescent to subglabrous; leaves simple; petiole 5-15 cm long, pubescent becoming glabrescent; lamina ovate, deeply cordate at base, cuspidate at apex, 6-10 cm long and wide, dentate, discolorous, subglabrous above, with some hairs on the central nerve, and puberulent beneath with black basi- or medifixed hairs; inflorescence of umbelliform, compound dense cymes, to 10 cm long; fruit unknown.

Forest formations.

C. cactiformis Gilg (19 July 1895); Enum. 3: 332, 1995; Beentje, Kenya trees, shrubs & lianas: 362, 1994; Descoings in Eggli, Ill. handbook succ. pl.: Dicot.: 453, 2002. – Icon.: Bot. Jahrb. Syst. 46: 483, 1912; Engler, Pflanzenwelt Afr. 3/2: 326, 1921; Agnew & Agnew, Upl. Kenya wild flow., ed. 2: pl. 58, 1994; Fl. Trop. E. Afr., Vitac.: 39, 1993; Newton in Brit. Cactus Succ. J. 19/1: 18, 2001, and A Checklist of Kenyan succulent plants: back cover, 2003; Thulin, Fl. Somal. 2: 162, 1999; E. Schmidt & al., Trees & shrubs Mpumalanga….: 386-387, 2002.

Glabrous succulent grey-green or green and liver-coloured climber or scrambler 1,2-4,5 m long with root-tubers; stems quadrangular with massive wings, constricted at the nodes, striate and wrinkled in dry state; faces 2-8 cm wide; wings or lobes 0,2-0,3 cm wide, the reddish brown horny margins usually markedly crinkled; internodes 5-17 cm long; tendrils straw-coloured, stout, 15-40 cm long, simple, ridged and glabrous; leaves rarely seen, succulent, palmately lobed, 1-2 × 0,9-3,7 cm; inflorescence several-branched, to 10-15 cm long, or sometimes ± fasciculate with axes suppressed, glabrous, ultimate umbel-like elements 7-10 mm long and wide; berry ± round, red-purple, 1-1,3 cm Ø.*Commiphora, Kirkia* and *Acacia, Combretum, Diospyros*, etc., woodland; mixed bushland of *Commiphora, Acacia, Sterculia, Euphorbia, Entada, Boswellia,* etc.; usually in stony places, rock domes, etc.; also on sand; 30-1500 m alt.S. Africa, Swaziland.

Easily grown from cuttings.

Similar to *C. quadrangularis* (a smaller plant) and often put in synonymy under this species, however the two are quite distinct in the field. Intermediates seem to occur in Fl. Zambes.- area and in S. Africa.

C. succulenta (Galpin) Burtt Davry (bas.: *Vitis succulenta* Galpin, late July 1895) described from S. Africa (Transvaal) "is not true *C. cactiformis* but could be considered a subspecies of it" (Verdcourt in Fl. Trop. E. Afr., l.c.).

C. caesia Afzel.; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 293, 2000; White, Kew Bull. 1951: 54, 1951. – Icon.: Kew Bull. 1951: p. 61 fig. 3a (partial).

syn.: *Vitis caesia* (Afzel.) Sabine

Climbing shrub to 3 m long with well developed tendrils, usually not coiled in the apical regions of the plant; arising from a tuberous root-stock; branchlets glabrous, even when very young, occasionally there are a few scattered short hairs; covered with a glaucous, waxy bloom, which may disappear from older stems; leaf *very variable:* petiole 1-4 cm long (usually 1,5-2); length of lamina 7-9-12 cm; shape cordate to reniform-cordate, may also be orbicular, polygonal-orbicular or sagittate-cordate (there is a tendancy for the leaves to have 3-5 lobes or cusps); margin with setaceous teeth 1-1,5 mm long set at right-angles; upper leaf surface: a few wax particles and hairs are scattered along the nerves, there are also a few shining black medifixed structures scattered over the surface; lower surface: in the mature leaf the inter-venal area is completely obscured by a dense indumentum of very fine short grey hairs, interspersed among which are a few black medifixed structures; on the nerves and the veins there are fewer, stronger curly hairs, those on the nerves being longer than those on the veins; the young leaves differ in that the indumentum on the lamina is less dense, and the leaf-surface can be seen through it; inflorescences: umbelliform multiflorous cymes.

Grassfield; jungle, forest; 95-270 m alt.

Confused with *C. rufescens, C. polyantha;* the specimens Lécard 162, 163 are perhaps a hybrid *C. rufescens* × *C. caesia;* Lécard 38, 178 are doubtful specimens (fide White); these plants were collected in NE Senegal or NW Mali. Probably endemic in Sierra Leone, elsewhere confused with other species.

C. carrissoi Exell & Mendonça

Climber with subcylindrical, sulcate or striate branches; tendrils ferruginous-pubescent becoming glabrescent; leaves simple; petiole 15 cm long, ferruginous-tomentose, soon glabrescent; lamina 22 × 18 cm, ovate-cordate, acuminate at apex, margin shortly denticulate, sub-entire, deeply cordate at base; above sparsely ferruginous-pilose when young, soon glabrescent; below ferruginous-tomentose or minutely ferruginous-velvety nearly pulverulent, becoming brownish-greyish pulverulent; inflorescence divaricate-cymose, ultimate branchlets sub-umbellate, to 12 cm long; flowers unknown; fruit obovate, apiculate, 5-6 × 4-5 mm when dry.

Low vegetation in riverine hydrophilous forest.

Near *C. farinosa.*

Only known from the type ?

C. cornifolia (Bak.) Planch.; Dokosi, Herbs Ghana: 234, 1998; Coates Palgrave, Trees south. Afr., ed. 3: 680, 2002. – Icon.: Fl. Trop. E. Afr., Vitac.: 37, 1993; E. Schmidt & al., Trees & shrubs Mpumalanga…: 386-387, 2002; Akoegninou & al., Fl. analyt. Bénin: 1002, 2002.

bas.: *Vitis cornifolia* Bak.

syn.: *Cissus volkensii* Gilg; *C. lonicerifolia* C. A. Sm.

Erect or semi-scandent rarely climbing shrub or treelet 0,2-2,1 m tall arising from a large tuberous fire-resistant rootstock; stems cylindrical, to 4 mm Ø, with ± swollen nodes, ferruginous-tomentose, sparsely hairy or glabrescent, later woody with green ridged bark and glabrous; tendrils usually absent, if present simple, glabrous; leaves simple, oblong, elliptic, ovate, narrowly elliptic, ovate-lanceolate or ± lanceolate, 2-9,5 × 1,5-5 cm, obtusely angled to apiculate at apex, rounded at base, not lobed but denticulate at margins with appressed teeth, whitish or ferruginous hairy, velvety at first, always very densely so on very young leaves but later sparse on the face but ± dense on venation beneath; at length sometimes ± entirely glabrous; petiole 2-12 mm long, ± densely pilose; flowers usually appearing well before the leaves or sometimes when the leaves are not fully developed, with a heavy foetid smell attracting flies; the umbel-like clusters are arranged in leaf-opposed cymes, 2-10 cm long, mostly on the woody branches; fruit red to purplish black, ovoid, 1-1,5 cm long.

Brachystegia woodland; *Commiphora, Acacia, Euphorbia* thicket; *Acacia, Strophanthus, Royena* thicket; scattered-tree grassland; grassland; often on granite outcrops; sometimes on black soil; occasionally persisting in cultivations; *Pterocarpus, Anogeissus* and

Pterocarpus, Pseudocedrela woodland; *Combretum, Terminalia* wooded grassland on grey sandy to rocky soil; termite mounds, secondary forests; from the coast to 2300 m alt.

Botswana, S. Africa.

C. corylifolia (Bak.) Planch. *excl.* var. *latifolia* A. Chev., nom. *(= C. doeringii);* Akoegninou & al., Fl. analyt. Bénin: 1002, 2006; Kew Bull. 1951: 59, 1951. – Icon.: Kew Bull. 1951: p.60 fig. 1, 1a.

bas.: *Vitis corylifolia* Bak.

syn.: *Cissus dahomensis* A. Chev. 1920, nom., quoad specim. Chevalier 24426 bis, non *C. dahomensis* A. Chev. 1950 quoad specim. Chevalier 23679, 24470.

Stem herbaceous, erect, little branched, 1 m tall, arising from a succulent woody rootstock; branchlets thick and succulent, covered with an indumentum of long, ± straight, pale-coloured hairs; tendrils absent; leaf with petiole c. 4 cm long, lamina 7-14 cm long, shape varying from reniform to cordate-orbicular, margin usually repand or indefinitely lobed, teeth 2-3 mm broad, directed forward, upper surface with hairs, few to many, only on nerves and veins, also with a few scattered wax particles; on lower surface nerves and veins not so prominent, much wider in Ø, and forming a close network; they are clothed with long, ± straight, colourless hairs; lamina without hairs but with a number of large, angular, wax particles of c. 3-4 times the Ø of those of *C. rufescens;* black, medifixed structures absent from the leaves and the plant.

Forest gallery, savanna; 450-690 m alt.

C. crusei Wild & R. B. Drummond

Erect, glabrous herb to 40 cm tall; stem often unbranched, zig-zag, deeply sulcate or winged; tendrils absent; leaves digitately 5-7-foliolate; petiole 3-9,5 cm long; leaflet-lamina to 13,5 × 3,5 cm, subsessile, narrowly cuneate at base; cymes relatively few-flowered, axillary, to 3 cm Ø.

Brachystegia woodland on termite mounds.

C. cucumerifolia Planch.; Enum. 3: 332, 1995; White & al., Evergreen for. fl. Malawi: 596, 2001.

Liane with stems 4-5-angled and lax, with white crisped pubescence or glabrescent; tendrils 2-fid; leaves simple; petiole to 1 5 cm long, pubescent as the stems; lamina to 15 × 6 cm, broadly transversely elliptic to very broadly ovate, usually 3-lobed to halfway down, apiculate at apex, margin subsinuate-dentate, cordate at base, pubescent as the stems but sparse above; cymes leaf-opposed and terminal; berry ellipsoid, 1,7-2 cm long.

Riverine forest; woodland; grassland with scattered groups of trees and rocks; near sea-level to 1000 m alt.

C. dasyantha Gilg & M. Brandt

Liane to 6 m tall; tendrils sparsely pubescent to glabrous, ramose; stems and branches finely striate, cylindrical, pubescent, becoming glabrous; leaves simple with petiole 3-12 cm long, pubescent, glabrescent; lamina ovate, deeply cordate or ± truncate at base, long-cuspidate at apex, 6-10 × 4-9 cm, dentate with inrolled margins, glabrous above, sparsely pubescent when young beneath, sometimes some long hairs on nerves present; cymes compound, umbelliform, dense to 10 cm long, sparsely pubescent at base, more densely towards the apex.

Forest sometimes flooded; forest gallery; forest regrowth.

Not in Cameroon.

C. dewevrei De Wild. & T. Durand

Liane with reddish-brown indumentum, to 30 m long, much-branched towards the top, and scrambling from one tree-top to another; tendrils rare, puberulous to subglabrous, ramose; leaves simple with petiole 4-8 cm long, puberulous; lamina ovate, hastate-cordate at base, acuminate-cuspidate at apex, 7-17 × 4-13 cm, dentate, thick, tough, glabrous above, velvety when young below, with long, ± dense hairs on the nerves when mature; cymes compound, umbelliform, to 15 cm long, rather dense.

Riverine formations; swampy forests; sometimes common (Angola, Cabinda); 200 m alt. (Gabon).

Near *C. amoena.*

C. diffusiflora (Bak.) Planch., incl. var. *pilosocalyx* Dewit – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 387, 2006; Berhaut. Fl. ill. Sénégal 1: 206, 1971; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 447, 2009.

bas.: *Vitis diffusiflora* Bak.

syn.: *V. afzelii* Bak.; *Cissus afzelii* (Bak.) Gilg & M. Brandt

Herbaceous climber, 1,8-8 m long; stem cylindrical, 1-2 mm Ø, sparsely to densely pilose with ± ferruginous medifixed hairs, the hairs straight or angled like a V; tendrils few, bifid, glabrous to sparsely pilose; leaves simple, papery, elliptic to oblong, distinctly more elongate than in *C. planchoniana,* 5-15 × 2-5 cm, acuminate at apex, rounded to truncate at base, dentate with fine narrow teeth, prolongations of the lateral nerves, densely pilose when very young but hairs restricted to nerves or glabrescent when adult; petiole 0,3-4,5 cm long, grooved, pilose; inflorescence short compound cymes of umbel-like cymules, 1-2,5 cm long, ± few-flowered; berry crimson to red-purple, ± round, 6-8 mm Ø.

Forest and forest edges; disturbed forest and regrowth; forest gallery; rain-forest with *Mapania rhynchocarpa;* secondary – scrub and forest; sandy soil; swampy meadow; after cultivations; 1-1200 m alt.

Bioko/Fernando Poo.

C. dinklagei Gilg & M. Brandt

Liane, woody, to 25-40 m long; stem cord-like, flexible, 5 cm Ø; branches cylindrical with sparse pilosity; tendrils generally simple, glabrous; leaves simple, entire; petiole cylindrical, canaliculate, 1-4 cm long, slightly pubescent; lamina ovate, ± deltoid or elliptic, 5-10 × 3-6 cm, glabrous or slightly pilose above, with domatia below, truncate, rounded or subcordate at base, acuminate at apex, margins *entire,* texture subcoriaceous; cymes compound of umbel-like cymules, 4-10 cm long; berry ovoid, reddish, 3 × 2 cm.

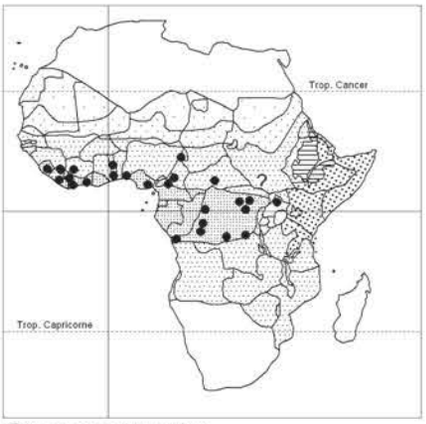
Rain-forest; river banks; open secondary forest; bushy edges at the base of rock; 1-750 m alt.

Comprises 2 vars.

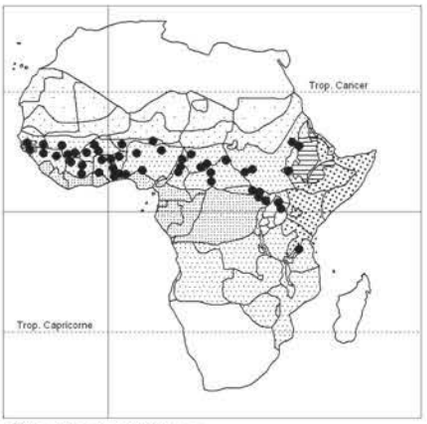
C. doeringii Gilg & M. Brandt; Burkill, Useful pl. W. trop. Afr., ed. 2, 5: 294, 2000; Akoegninou & al., Fl. analyt. Bénin: 1003, 2006; Kew Bull. 1951: 58, 1951. – Icon.: Kew Bull. 1951: p. 61 fig. 4a (partial); Berhaut, Fl. ill. Sénégal 1: 208, 1971.

syn.: *C. corylifolia* A. Chev. 1920 [non (Bak.) Planch. 1887] var. *latifolia* A. Chev., nom. 1920.

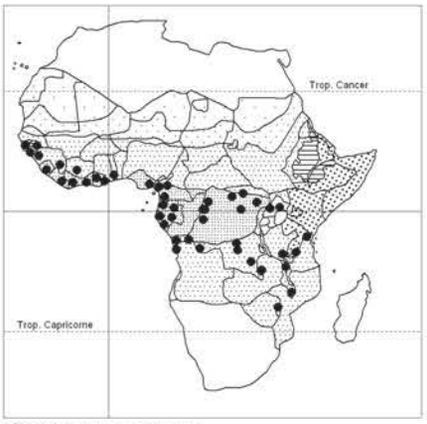
Sub-shrub ± 1 m tall, with erect, non-cirrhose or obsoletely cirrhose branches; branchlets very stout, woody, with an indumentum of strong straight hairs; leaf shape from ovate to orbicular-cordate, and may be orbicular, orbicular-reniform, or polygonal-



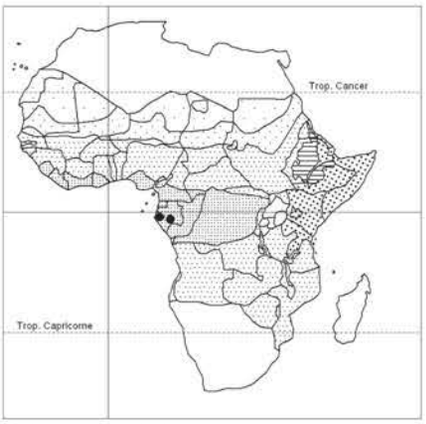
Cissus polyantha



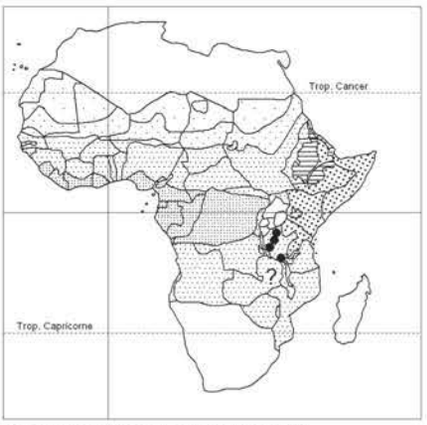
Cissus populnea



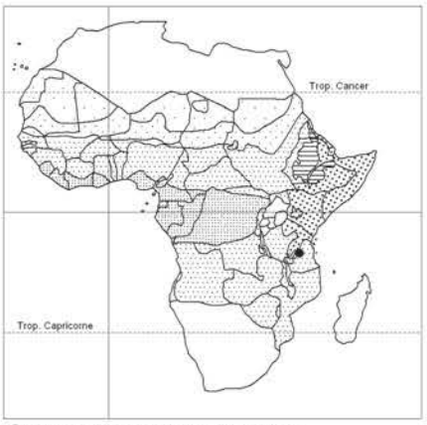
Cissus producta



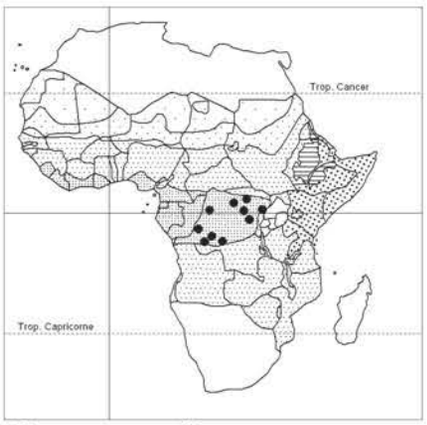
Cissus prunifera



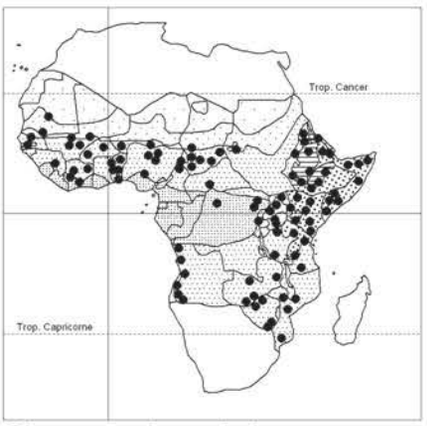
Cissus pseudoguerkeana



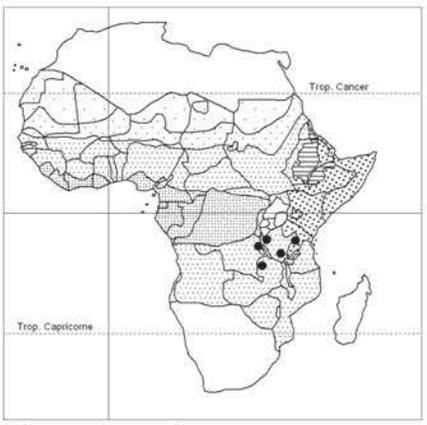
Cissus pseudopolyantha



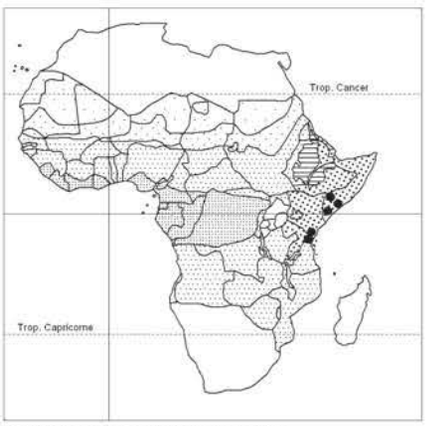
Cissus pynaertii



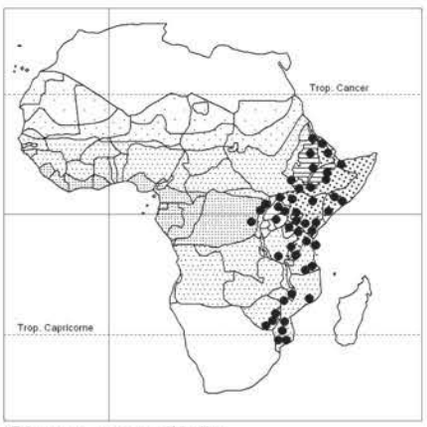
Cissus quadrangularis



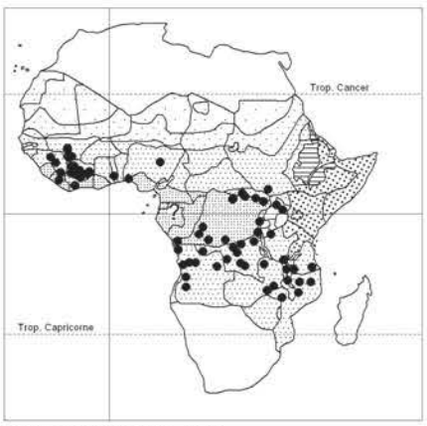
Cissus quarrei



Cissus quinquangularis



Cissus rotundifolia



Cissus rubiginosa

C. quarrei Dewit

Erect herb or ± climbing, 0,6-1 m tall, from an extensive woody rootstock with swollen tubers 4,5-10 mm Ø; stem cylindrical, tomentellous with short crisped hairs and scattered shining black medifixed hairs; leaves simple; petiole to 3 cm long, with pubescence as on stems; lamina to 8,5 cm each way, very broadly oblong to circular, apiculate at apex, margins serrate, subcordate at base, with pubescence on both sides as on stems; cymes trichotomously branched; peduncle 4,5 cm long, pubescent; pedicels to 5 mm long (to 10 mm in fruit), densely pubescent; ripe fruit unknown.

Riverine vegetation; *Brachystegia* woodland; 1110-1500 m alt.

C. quinquangularis Chiov., incl. var. *pentagona* Chiov.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 455, 2002; Beentje, Kenya trees, shrubs & lianas: 363, 1994.

Succulent climbing plant 2-several m long, similar to *C. quadrangularis;* all but oldest stems slender, 2,5-4 mm wide in dry state, 5-angled, the angles brown or ± purple, horny, sharp; older stems to 1,2 cm wide, more obtusely angled, glabrous; internodes 2,5-6 × 0,4-1,3 cm; root tubers absent; tendrils simple; leaves ± persistent, fleshy and snapping easily when folded, elliptic to distinctly ovate-triangular, 2-9 × 1-6 cm, rounded to acute at apex, cuneate to rounded at base, not lobed but ± coarsely dentate, glabrous; petiole 0,5-4 cm long, inflorescence with peduncle and secondary axes 1-2,5 cm long; pedicels 4-8 mm long, glabrous; berry ± round, c. 8 mm Ø, ± rugose-tuberculate when fresh.

Trachylobium, Cynometra, Combretum schumannii, Tamarindus forest; *Brachystegia spiciformis* woodland; grassland with scattered trees (habitats moist for entire year); mostly in soil pockets on limestone outcrops or coral; riverine forest; also on dunes; deciduous bushland; 0-470 m alt.

Probably also in Tanzania.

C. rotundifolia "(Forssk.)" Vahl; Enum. 3: 332, 1995; Beentje, Kenya trees, shrubs & lianas: 363, 1994; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 455, 2002. – Icon.: Thulin, Fl. Somal. 2: 160, 1999; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 419, 2001; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 59, 1994.

(bas.: *Saelanthus rotundifolius* Forssk., nom. invalid.).

syn.: *Vitis crassifolia* Bak.; *Cissus crassifolia* (Bak.) Planch.

± Woody climber or scrambler 1,2-10 m long, often forming dense masses; stems often purplish; older branches 4-5-angled or winged, the wings often becoming corky 1-2,5 cm wide; younger stems ± terete, striate and rugulose when dry with the stomata forming conspicuous sunken dots; pubescent or glabrescent, rarely densely ferruginous pubescent (var. **ferrugineo-pubescens** Verdc.); tendrils simple or bifid; leaves glaucous, bluish grey, thick and fleshy, round to elliptic or ± ovate, 2-13 cm each way, to 6 mm thick, rounded at apex, cordate at base, rarely lobed, crenate or remotely to ± closely denticulate or dentate; petiole 0,2-4 cm long, usually ± pubescent; flowers green-yellowish in lax, leaf-opposed or terminal panicles of umbel-like cymes 2,5-25 cm long; peduncle and axes 0,7-3,5 cm long, ± pubescent or glabrescent; pedicels 3-13 mm long to 1-1,5 cm in fruit, ± adpressed pubescent or scurfy; berry red or purplish, ellipsoid, 1-1,5 cm long.

Commiphora, Acacia scrub; *Acacia, Salvadora, Capparidaceae, Sansevieria* bushland; *Balanites* and *Strychnos, Acacia* thickets; *Olea, Euclea,* etc. dry forest; forest edges particularly on rocky outcrops; lava slopes; termite mounds; sea-cliffs and shores; woodland; alluvial and sandy plains; often dominant where it occurs: 0-1900 m alt.

S. Africa, Swaziland; Yemen, SW Saudi Arabia, Oman; Mascarenes, Seychelles (introduced).

Comprises 2 vars. (with many intermediates; Kenya, K7).

C. rubiginosa (Welw. ex Bak.) Planch. – Icon.: Fl. Congo belge 9: 539, 1960; Fl. Trop. E. Afr., Vitaceae: 27, 1993; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 452, 2009.

bas.: *Vitis rubiginosa* Welw. ex Bak.

syn.: *Cissus livingstoniana* Welw.; *C. bussei* Gilg & M. Brandt; *C. mugansa* de Wild.

Woody or ± herbaceous climber or shrubby, 0,5-1,8 m (? 10) tall, from a thick woody rootstock; stems to 4 mm Ø; all parts woolly pilose with reddish brown or coppery red hairs; tendrils bifid, to 30 cm long; leaves simple, round to broadly elliptic or ovate 5-15 cm all ways, acute, obtuse or apiculate at apex, deeply cordate at base, margin dentate with subulate teeth 2-3 mm long; petiole 2-8 cm long; inflorescence cymose of umbel-like cymes, 4-7 cm long; peduncle 2-6,5 cm long; secondary axes 1,5-3 cm long; pedicels 3-11 mm long; berry ± round, black, 5-6 cm Ø, glabrous.

Lake shore; valley forest; rocky places in *Brachystegia* woodland; grassland; dry termite mounds in swamps; dense secondary thickets among tall herbage on river bank; dry rocky places; forest gallery; savanna after cultivations; savanna with *Imperata;* 450-1200 m alt.

C. rufescens Guill. & Perr.; Kew Bull. 1951: 55. – Icon.: Berhaut, Fl. ill. Sénégal 1: 230, 1971; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 453, 2009.

syn.: *Vitis rufescens* (Guill. & Perr.) Miq.; *V. durandii* Lécard

Perennial vine with an underground stock throwing up creeping and trailing or climbing herbaceous annual stems to 3 m long, 5-10 mm Ø; tendrils *if present* unbranched, not coiled, 4-5 cm long; branchlets slender even when young, not glaucous but with a sparse to dense indumentum of short yellow hairs, becoming almost glabrous; leaf petiole 0,5-7 cm long; lamina 5-13,5 cm long, suborbicular to subcordate, sometimes 3-5-lobed; margins beset with spreading, setaceous teeth, 1 mm long and 2-3 mm apart; upper leaf surface with a few short stout hairs, scattered along the main nerve (sometimes there are also numerous, very short hairs, and wax particles scattered over the surface); lower leaf surface with rust-coloured hairs entirely confined to the nerves and veins; also with small angular wax particles, 0,03 mm Ø, regularly distributed over the surface; black medifixed structures, so conspicuous in *C. caesia,* are usually absent; cymes umbel-like, 6-15 cm long; peduncle cylindrical, 3-10 mm long; pedicels 1-3 mm; all axes with hairs and black glands; berry black, glabrous, ± round, 6-8 mm Ø, edible.

Derived *Imperata, Crossopterix* savanna; grassy bank; wooded savanna; shady rocks, marges of granitic formation; forest gallery; fallows; open forest on sand; laterite; 160-1530 m alt.

Not in Uganda.

C. ruginosicarpa Descoings; Sosef & al., Check-list pl. vascul. Gabon: 415, 2006.

Herbaceous climber; stems cylindrical, 4-5 mm Ø, glabrous or glabrescent; tendrils ramose, glabrous or sparsely pubescent; leaves simple, entire; petiole cylindric, flattened above, glabrescent, 2,5-4 cm long; lamina ovate, obovate or suborbicular, 8-14 × 6-9 cm, rounded or obtuse acuminate at apex, base broadly cordate; margins rolled backwards, with small, thick teeth; blade

glabrous or glabrescent above, with a very dense short reddish pubescence below; texture thick; cymes compound of umbel-like dense cymules; peduncle 5-7 cm long; axes pubescent; pedicel 1,5-2 mm long, densely pubescent; berry obovoid, glabrous, c. 1 cm long.

Rain-forest; forest edges; on rock; savanna near forest; 100-758 m alt.

C. ruspolii Gilg; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 161, 1994.

Herbaceous climber or creeper to 1,5 m long from a woody rootstock, glabrous to sparsely pubescent; tendrils simple or rarely bifid; leaves 3-foliolate; median leaflet narrowly elliptic, narrowly oblong or lanceolate, 3,5-12 × 1-3,5 cm, acute at apex, narrowly cuneate at base, the laterals asymmetrically obliquely lanceolate to ovate, 2-9,5 × 0,7-3 cm, acute, asymmetrically broadly cuneate at base, sometimes ± lobed at base on outer side, all sharply toothed at margins; petiole 1-4,5 cm long; cymes terminal and axillary, lax, 1,5-7 cm long, of 2-6 umbelliform elements; peduncle 1-3 cm long; secondary axes 0,2-1 cm long; pedicels crimson, 3-5 mm long (to 8 mm in fruit), scurfy-pubescent with short thick grandular hairs; berry red, ellipsoid, 8-12 mm long.

Dry *Juniperus* forest; *Acacia-Commiphora, Acacia-Combretum, Combretum-Terminalia* woodland and bushland on rocky slopes and on red sandy to loamy soil; *Acacia* woodland on alluvial soil; grassland on black clay; scrub; sometimes on old termite mounds; seasonally swampy grassland with trees; lake edges; 1065-1700 m alt.

Not in Somalia.

Placed by Gilg & M. Brandt in section *Cayratia*, but is a true *Cissus* (flowers in pseudoumbels not in divaricate cymes; flower buds conical and not globose; seeds: vide Nord. J. Bot. 4: 36, 1984).

C. schmitzii Dewit

Woody climber; stems cylindrical, pubescent when young with scattered shining black medifixed hairs, glabrescent when older; tendrils 2-fid; leaves simple; petiole 4-13 cm long, tomentellous as the stems; lamina 7-16 cm all ways, broadly ovate to subcircular, abruptly acuminate at apex, margins serrate, cordate at base, sparsely pubescent above, tomentellous below with hairs as on stems on both surfaces; cymes compound umbel-like, lax, to 10 cm long, with a crisped white indumentum densely interspersed with shining black medifixed hairs; peduncle 4-10 cm long; pedicels to 7 mm (to 12 mm in fruit); berry ovoid, glabrescent, 1-1,5 cm long.

Termite mounds in woodland; savanna; 1280 m alt. (Zaire).

Not in Mozambique *(= C. oliveri).*

C. sciaphila Gilg – Icon.: Fl. Trop. E. Afr., Vitac.: 29, 31, 1993.

Climber or liane 3-12 m long or ± shrubby; stems often drying purplish brown, striate when dry, with white spreading hairs, later glabrous; tendrils bifid to 30 cm long; leaves simple, ovate, 4,5-30 × 4-25 cm, narrowly acuminate at apex, cordate at base, margins with close subulate emergences 1 mm long continued from nerves, with sparse short crisped hairs above and denser brownish hairs beneath particularly on the venation and also dense sessile glands; petiole 1,5-11,5 cm long, crisped-hairy; cymes umbel-like of umbel-like cymules, 7-9 cm long; peduncle 3 cm long; pedicels 3-6 mm long; all axes of inflorescence densely pubescent with yellowish brown multicellular hairs; flowers with unpleasant smell; berry obovoid, coarsely reticulate-rugose, c. 7 mm long.

Forest; riverine forest fringes; woodland slopes above river valleys; *Hyphaene-Trichilia-Sorindeia* associations; 0-450 m alt.

Difficult to distinguish from *C. polyantha, C. oliveri.* Similar in general appearance to *C. grisea* but fruit and leaf margin different.

C. senegalensis Lavie

Liane 8-10 m long; stem slightly woody in young specimens, ± hexagonal in cross-section, 5-25 mm Ø, arising from a slightly tuberous rootstock, glabrous; tendrils leaf-opposed, simple; leaves simple, wedge-shaped, sometimes ± cordate when young; lamina 12 × 10 cm; petiole c. 2 mm Ø, 6-9 cm long, channelled above; lamina glabrous above, with some stiff hairs below at base of the nerves; margins with asymmetrical hooked teeth; inflorescence compound cymose of 2-6 cymules; peduncle 0,5-1,3 cm long, sparsely pubescent; pedicels 4-10 mm long, very pubescent, ± polygonal in cross-section; berry ± ovoid, black, 8 mm long.

Stream sides, climbing on *Anogeissus leiocarpus;* forest gallery, flooded banks.

Near *C. petiolata.* Discovered in 1980.

C. silvestris Tchoumé – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 387, 2006.

Stem climbing, woody, with tendrils; young stem polygonal; branches hexagonal; leaves ± oblong to ovate; petiole 5-8 cm long, rounded, channelled above; lamina 3-5-nerved at base; cymes leaf-opposed, shortly pedunculate, dichotomous; flowers in pseudo-umbels.

Clayey-muddy very humus-rich soil; clayey-sandy soil slightly humus-bearing.

Near *C. producta, C. miegei.*

A good species ? Discovered in 1961.

C. sue Gilg & M. Brandt

Climber with tendrils; branches subrounded, glabrous to subglabrous; leaf petiole 4-7 cm long, glabrous, slender; blade broadly ovate, 5-8 × 4-6 cm, base slightly cordate or often subtruncate, not lobed, apex with (very) long acumen, margins densely and acutely toothed, texture thin to ± papery, glabrous above, lower surface very shortly and densely tomentose, greyish-ferruginous also on veins that are prominent and reticulate; inflorescence leaf-opposed with peduncle 2,5-3,5 cm long, 3-4-branched, umbel-like, densely flowered, rhachis sparsely ferruginous-pilose, pedicels slender very shortly but densely ferruginous-pilose; fruit unknown.

On trees in half-shady rain-forest; 800 m alt.

Only known from the syntypes probably lost (Zenker, Staudt 20; Zenker 1398).

Near *C. dasyantha.* Not in Flore du Cameroun.

C. sylvicola Masinde & L. E. Newton; Enum. 3: 332, 1995; Newton in Brit. Cactus Succ. J. 19: 20, 2001; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 455-456, 2002.

Liane to 12 m long; lateral roots often tuberous; younger stems rather slender with internodes 4-5-6- or indistinctly angled, glabrous, green, leafy; older stems mostly becoming 4-5-angled, 3,5-4 cm wide with prominent corky wings to 1,5 cm broad on angles; tendrils simple, 6-13 cm long; leaves slightly to markedly fleshy, glabrous, 2,5-10 × 4-11 cm, rhombic, ovate or circular,

sometimes shallowly 3-lobed, sometimes folded adaxially along midrib, apex shortly acuminate or rounded, base subcordate or rounded, margins with regular short teeth; *young leaves* mostly *crimson-purple,* becoming green when mature; petiole thick, 1-2,7 cm long; inflorescence lateral, 15-25 cm long, branching, the branches 5-7 cm long and bearing flowers in umbellate clusters, axes with ferruginous tomentum; pedicels 10-12 mm long; berry ovoid, 4-8 cm long, with slight swellings.

Evergreen forest; forest on rocky hills and coral limestone; thicket; 5-500 m alt.

Habit very similar to that of *C. petiolata* but foliage fleshy. Also similar to *C. quinquangularis* occurring in similar habitats. There are many sight records for *C. sylvicola* (c. 15 localities on the E. Afr. coast; fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 18, 1993).

C. tiliifolia Planch.

syn.: *C. myriantha* Gilg & M. Brandt, excl. fructu (cf. *C. lebrunii).*

Herbaceous or ± woody climber 3-9 m long; stems glabrous; tendrils present; leaves ovate, rounded-oblong or round, 5-13,5 × 5-11 cm, abruptly acuminate at apex, cordate at base, slightly angularly lobed, crenate or crenate-serrate, glabrous above or with very sparse medifixed hairs, velvety greyish or ferruginous tomentellous to tomentose beneath with minute hairs and longer ones on the venation; petiole fleshy 3,5-10 cm long; inflorescences leaf-opposed and terminal cymes of ± numerous umbel-like cymules, 7-20 cm long, each terminal cymule 4-30-flowered; peduncle 2-12 cm long; secondary axes, etc., 0,7-4,5 cm long; pedicels 1-8 mm long, with brown medifixed hairs; berry green turning dark, obovoid, 7-8 mm long.

Forest and thickets in swampy areas; swamp-forest margins particularly near lake-shore; swampy grassland; secondary formations; forest gallery; forest periodically flooded; 1120-1200 m alt.

Close to *C. oreophila* and *C. glaucophylla. C. tiliifolia* sensu A. Chev., Rev. Bot. Appl. Agric. Trop. 30: 453,1950, is probably *C. glaucophylla.*

C. touraensis A. Chev.

Erect, very slender herb, 45-100 cm tall, glabrous, arising from a deep rootstock; stems striate, ramose; tendrils rare, short, slender, simple; leaves sparingly pubescent beneath, not reticulate, ovate, cordate at base, acuminate, 5-7 × 3,5-6 cm, margins dentate; petiole 2-4 cm long, very slender; cymes 4-5-flowered; peduncle 1,5-2 cm long; cymules umbel-like with pedicels 8-12 mm long, finely pubescent; fruit known ?

Savanna.

In habit similar to a very reduced *C. populnea.* Discovered in 1909, rediscovered in 1951, and again a few times up to 1997.

C. trothae Gilg & M. Brandt

Erect or suberect shrub, 1,2-3 m tall, the branches becoming scandent; stems ± square, densely velvety with ferruginous hairs or later ± greyish silvery; tendrils present and bearing a stipule-like organ below the middle (according to the original description a shrub without tendrils); leaves ovate, round or rounded-oblong, 2,5-21 × 3-21 cm, rounded at apex but with a short apiculum, cordate at base, denticulate, densely ferruginous woolly-velvety on both surfaces when young; petiole 1-12 cm long; inflorescence axillary, ± 9 cm long (to 17 cm in fruit), densely ferruginous; peduncle 5-6,5 cm long; secondary axes 2,5 cm long; pedicels 2-5 mm long (to 7 mm in fruit), densely ferruginous hairy; only young fruits known, c. 1,2 cm long, glabrous.

Isoberlinia-Brachystegia and *Combretum-Commiphora-Lannea-Delonix-Sterculia* woodland; semi-evergreen bushland; sometimes in quite arid places, usually on granite outcrops; 950-1650 m alt.

Not in Zambia, Zimbabwe and Malawi *(= C. milnei).*

C. wallacei Verdc.

Deciduous climber or trailing shrub; stems purplish, ferruginous pubescent and with medifixed black hairs; older ones woody with longitudinally wrinkled brownish bark, glabrous; leaves ovate or triangular-ovate, 2,5-6,5 × 1,3-5 cm, long-acuminate or cuspidate at apex, truncate or shallowly emarginate at base, closely denticulate with narrow subulate teeth, ± glabrous above except for short hairs on nervation and scattered medifixed black hairs, more densely pubescent on venation beneath and with more numerous black hairs; petiole 0,8-2,5 cm long with the same pubescence; inflorescence leaf-opposed, 3-8 cm long with similar black and brown pubescence; ultimate umbel-like cymules ± 10-flowered; peduncle 1-4,5 cm long; pedicels 2-8 mm long; fruit unknown.

Presumably grassland with trees and evergreen thickets at escarpment edges; 480-820 m alt.

Collected twice, in 1932 and 1955, respectively.

C. wellmanii Gilg & M. Brandt

Very near *C. palmatifida* but: leaves not densely matted on the lower surface; petiole very short, not 2-4 cm; flower bud glabrous, ± 3 mm long, not pilose 1,5 mm long.

Open rather deeply sandy parts of woods with *Pterocarpus erinaceus.*

Endemic in Angola. – Not from Senegal through to Central Afr. Rep. – Sudan.

C. welwitschii (Bak.) Planch. – Icon.: Fl. Moçamb. 50: 19, 1969.

bas.: *Vitis welwitschii* Bak.

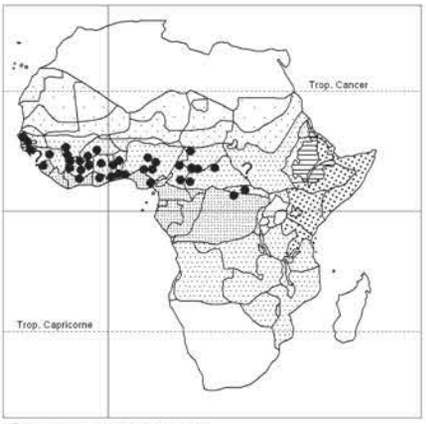
Vigorous climber 1,8-9 m long, or shrubby, with aerial roots; stems cylindrical, copiously branched, glabrous, often spotted black and granular, never 4-angular and not developing corky wings; bark on old stems sometimes wrinkled and purplish black; tendrils simple; leaves simple, glabrous or with a few hairs when young, (broadly) ovate, 9-12,5 × 7,5-8,5 cm, apex acuminate, base truncate to slightly cordate, margins closely sharply serrate with teeth c. 1,5 mm long, petiole 1-4,5-8 cm long; cymes axillary, few-flowered, sparsely branched; peduncle 1-2 cm long, glabrous or puberulous; pedicels 1-6 mm long (1,5 cm in fruit), glabrous to scurfy puberulous; berry ellipsoid, 1,5 cm long.

Riverine fringes; termite mounds in *Brachystegia* woodland; rather rare in primitive forest; semi-evergreen bushland and woodland; *Commiphora-Delonix* thicket; associations with *Adansonia, Commiphora, Brachystegia;* often on large rocky (granite) outcrops; 500-1350 m alt.

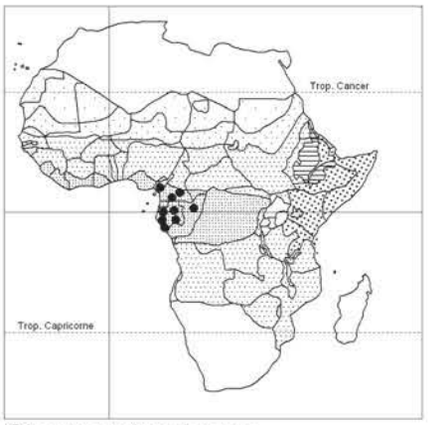
Closely related to *C. fragilis* E. Mey. ex Kunth in Transvaal and Natal. Also near *C. migeodii.*

C. youngii Exell & Mendonça

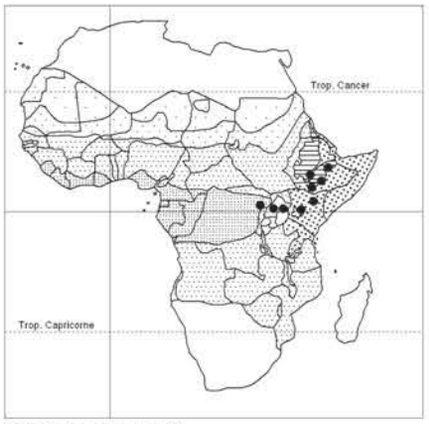
Perennial herb ? erect or climbing; stems subcylindrical, slightly 4-angled, glabrous, leaves simple; petiole to 7 cm long; lamina oval-cordate to suborbicular, acute-acuminate at apex; margin denticulate, deeply emarginate to cordate at base, 4-8 × 3,5-9 cm, glabrous; cyme leaf-opposed, compound, of umbellike cymules; peduncle 12 cm long; tendrils absent, ripe fruit unknown.



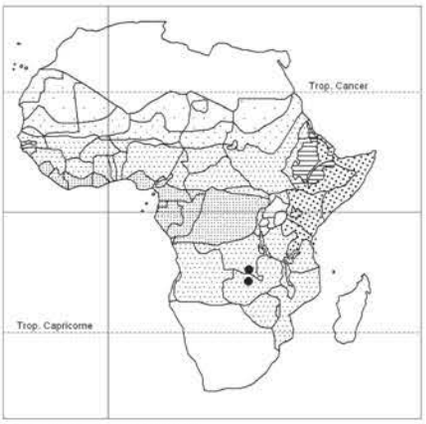
Cissus rufescens



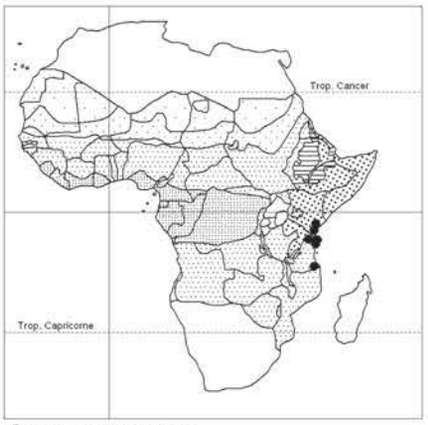
Cissus ruginosicarpa



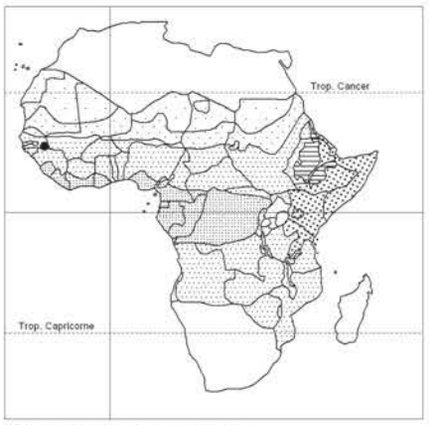
Cissus ruspolii



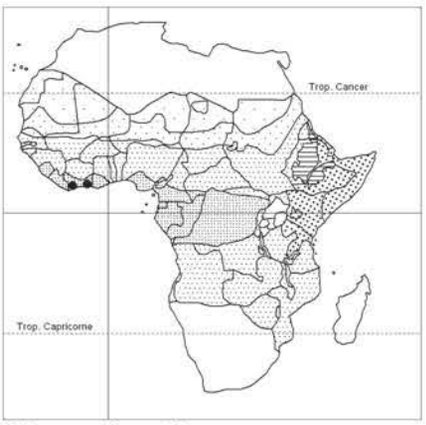
Cissus schmitzii



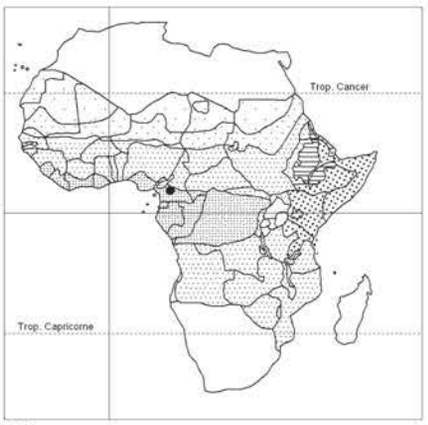
Cissus sciaphila



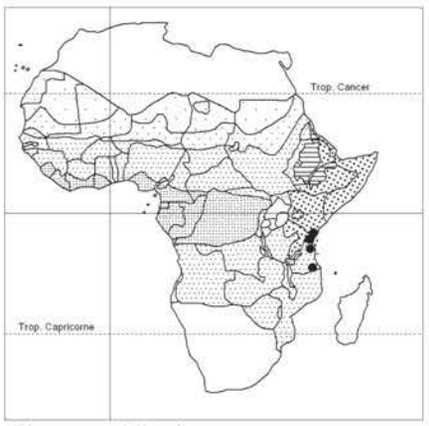
Cissus senegalensis



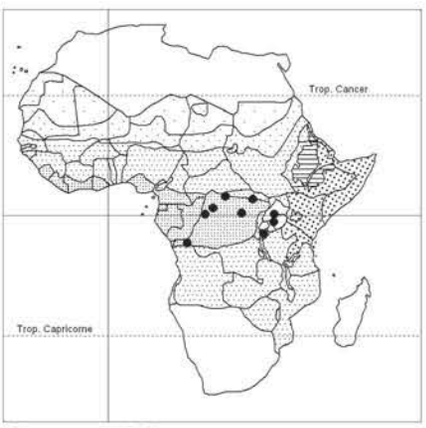
Cissus silvestris



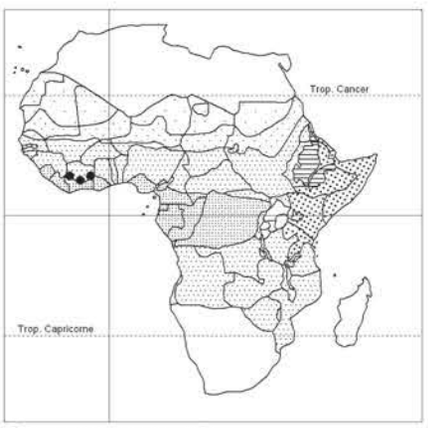
Cissus sue



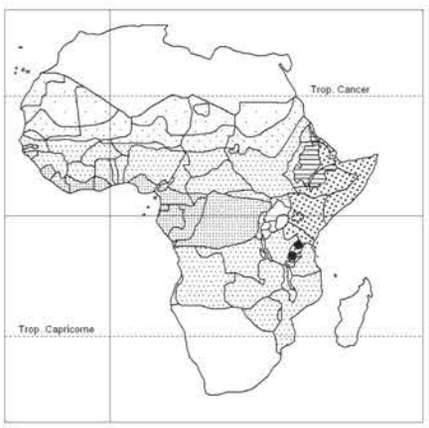
Cissus sylvicola



Cissus tiliifolia



Cissus touraensis



Cissus trothae

Edge of cultivated land.

Near *C. quadrangularis.*

Only known from the type collected in ? 1932.

* * *

SPECIES OF UNCERTAIN STATUS:

Cissus flavescenti-virescens Gilg ined.

Liane of unknown identity used as an ingredient of "krou" poison called "gouga" ("Devil's packet"). Reported by J. Kerharo & A. Bouquet, Pl. médicin. & toxiques Côte d'Ivoire – Haute-Volta: 144, 1950, from Taï (Côte d'Ivoire). Also recorded by Burkill, Useful pl. W. trop. Afr., ed. 2, 5: 295, 2000.

Cissus pseudocaesia Gilg & M. Brandt

Perennial ?, erect or decumbent herb with poorly developed tendrils; stems thick, glaucous, with a waxy covering, yellow-tomentose, soon glabrescent; leaves orbicular-cordate, petiole 0,7-2 cm long, lamina 10-14 cm Ø, undersurface with long curly hairs, nerves and veins hairy.

In long grass by roads, common up to 1200 m alt., in Sierra Leone.

According to F. White (Kew Bull. 1951: 57, 1951) this plant combines characters of *C. caesia* (glaucous young stems and curly hairs on leaves beneath) and of *C. rufescens* (indumentum): "The evidence suggests that they [the specimens seen] are in fact hybrids."

* * *

NOMINA NUDA:

Cissus griseopubescens Gilg

C. togoensis Gilg

SYNONYMS:

Cissus adenantha Fresen. = **Cyphostemma**

adenocarpa Gilg & M. Brandt = **Cy. adenocarpum**

adenocaulis Steud. ex A. Rich., incl. var. *articulata* Kuntze, var. *chiovendae* Lanza, var. *eglandulosa* Dewit, var. *pubescens* Dewit, var. *eglanduloso-pubescens* Dewit = **Cy. adenocaule** subsp. **adenocaule**

adenocephala Gilg & M. Brandt = **Cy. dembianense**

adenopoda Sprague = **Cy. adenopodum**

afzelii (Bak.) Gilg & M. Brandt = **Cissus diffusiflora**

agnus-castus Planch. = **Cyphostemma bororense**

allophylloides Gilg & M. Brandt = **Cy. allophylloides**

alnifolia Schweinf. ex Planch. = **Cy. alnifolium**

amboensis Schinz = **Cy. congestum**

amplexa (Bak.) Planch. = **Cy. bororense**

andongensis (Welw. ex Bak.) Planch. = **Cy. chloroleucum**

aphyllantha auct. p.p. quoad specim. Ruspoli & Riva 1031, non Chiov. = **Cissus aphylla**

aralioides sensu auctt., non (Bak.) Planch. = **Ci. aralioides** subsp. **orientalis**

arguta Hook. f. var. *oliveri* Engl. = **Ci. oliveri**

arguta sensu A. Chev. 1920, p.p. = **Ci. kouandeensis**

atacorensis A. Chev., incl. subsp. *chariensis* A. Chev. = **Cyphostemma junceum** subsp. **jatrophoides**

bakeriana Planch. = **Cy. cymosum** subsp. **cymosum**

bambuseti Gilg & M. Brandt = **Cy. bambuseti**

var. *glandulosissima* Dewit = **Cy. bambuseti**. var. **glandulosissimum**

betiformis Chiov. = **Cy. betiforme**

bigemina Harv. = **Cayratia gracilis**

bignonioides [Planch.] Gilg & M. Brandt = **Cissus petiolata**

biternata Chiov. = **Cyphostemma sarcospathulum**

bororensis Klotzsch = **Cy. bororense**

braunii Gilg & M. Brandt = **Cy. braunii**

brieyi De Wild. = **Cy. brieyi**

bryophyllum Mattei = **Cy. ternatum**

buchananii Planch. p.p. = **Cy. adenocaule, Cy. buchananii, Cy. crassiusculum, Cy. masukuense** subsp. **musukuense**

bullata Gilg & M. Brandt = **Cy. bullatum**

bussei Gilg & M. Brandt = **Cissus rubiginosa**

cabui Dewit = **Cyphostemma cabui**

caillei A. Chev. = **Cissus aralioides** subsp. **aralioides**

capensis Willd. = **Rhoicissus tomentosa**

centrali-africana Gilg & R. E. Fries = **Cyphostemma mildbraedii**

chariensis (as subsp.) = ? **Cy. junceum** subsp. **jatrophoides**

chevalieri sensu A. Chev. p.p. = **Cy. pobeguinianum**, **Cy. sokodense**, **Cy. waterlotii**

chlorantha Gilg = **Cy. junceum** subsp. **jatrophoides**

chloroleuca (Welw. ex Bak.) Planch. = **Cy. chloroleucum**

chrysadenia Gilg = **Cy. chrysadenium**

cirrhiflora Eckl. & Zeyh. = **Rhoicissus digitata**

cirrhosa (Thunb.) Willd. s. str. = **Cyphostemma cirrhosum**

var. *glabra* Harv. = **Cy. quinatum**

var. *transvaalensis* (Szyszył.) Burtt Davy & R. Pott. = **Cy. cirrhosum** subsp. **transvaalense**

clematitis A. Chev. = **Cissus oreophila**

congesta (Bak.) Planch. = **Cyphostemma congestum**

conradsii Gilg & M. Brandt = **Cy. serpens** subsp.

constricta (Bak.) Planch. ex A. Chev. = **Cissus aralioides** subsp. **aralioides**

cordata Zimmermann, ms. = **Cyphostemma zimmermannii**

corylifolia A. Chev. 1920 var. *latifolia* A. Chev. 1920, nom.,[non (Bak.) Planch. 1887] = **Cissus doeringii**

crameriana Schinz = **Cyphostemma currorii**

crassifolia (Bak.) Planch. = **Cissus rotundifolia** var. **rotundifolia**

crassiuscula (Bak.) Planch. = **Cyphostemma crassiusculum**

crinita Planch. = **Cy. crinitum**

crinita sensu A. Chev. p.p. = **Cy. sokodense, Cy. tisserantii**

crithmifolia Chiov. = **Cy. crithmifolium**

crotalarioides Planch. = **Cy. crotalarioides**

cuneata Gilg & M. Brandt = **Cy. cuneatum**

cuneifolia Eckl. & Zeyh. = **Rhoicissus tridentata** subsp.

currorii Hook. f. = **Cyphostemma currorii**

currorri sensu Gilg & M. Brandt 1912 p.p. quoad fig. 13 = **Cy. bainesii** (Namibia)

cussoniifolia Planch. = **Ampelocissus abyssinica**

cymosa Schumach. & Thonn. = **Cyphostemma cymosum**

cyphopetala Fresen. = **Cy. cyphopetalum**

dahomensis A. Chev. 1920 p.p. = **Cissus corylifolia, Cyphostemma flavicans**

debilis (Bak.) Planch. = **Cayratia**

decurrens Gilg & M. Brandt = **Cyphostemma ochroleucum**

degraeri Dewit = **Cy. degraeri**

delicatula Willems = **Cayratia**

dembianensis Chiov. = **Cyphostemma dembianense**

desenfansii Dewit = **Cy. desenfansii**

digitata Lam. = **Cy. digitatum**

digitata ("Forssk.") Lam. = **Cy. digitatum**

dinteri Schinz = **Cissus nymphaeifolia**

dolichopus C. A. Sm. = **Cyphostemma humile** subsp.

duparquetii Planch. = **Cy. duparquetii**

dysocarpa Gilg & M. Brandt = **Cy. dysocarpum**

egregia Gilg = **Cy.** ? **cyphopetalum** subsp. & var. **cyphopetalum**

elisabethvilleana Dewit = **Cy. elisabethvilleanum**

eminii Gilg = **Cy. eminii**

engleri Gilg = **Cy. engleri**

erythraeae Gilg & M. Brandt = **Cy. molle**

erythrocephala Gilg & M. Brandt = **Cy. erythrocephalum**

erythrochlora Gilg = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

esaso Gilg = **Cissus producta**

feddeana Gilg & M. Brandt = **Cyphostemma**

figariana Webb = **Cy. adenanthum**

fischeri Gilg = **Cissus quadrangularis** var. **pubescens**

flamignii De Wild. = **Ci. petiolata**

flavicans (Bak.) Desc. = **Cyphostemma**

flaviflora Sprague = **Cy. flaviflorum**

fleckii Schinz = **Cy. congestum**

fragariifolia Bojer = **Cy. buchananii**

fugosioides Gilg = **Cy. fugosioides**

gallaensis Gilg & M. Brandt = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

gastropus Welw. ex Planch. = **Cy. currorii**

gigantophylla Gilg & M. Brandt = **Cy. gigantophyllum**

gilletii De Wild. & T. Durand = **Cy. gilletii**

glandulifera A. Chev. nom. p.p. = **Cy. lageniflorum**, **Cy. rubrosetosum**

glandulosissima (Gilg & M. Brandt) Wild & R. B. Drumond = **Cy. ukerewense**

gracillima Werderm. = **Cy. gracillimum**

gracilis Guill. & Perr. = **Cayratia**

grandistipulata Gilg & M. Brandt = **Cyphostemma grandistipulatum**

granitica Wild & R. B. Drumm. = **Cy. graniticum**

griseo-rubra Gilg & M. Brandt = **Cy. griseo-rubrum**

guerkeana auctt., non (Büttn.) T. Durand & Schinz = **Cissus pseudoguerkeana**

gwinneriana Engl. & Gilg, nom. = **Cyphostemma duparquetii**

haullevilleana De Wild. = **Cy. junceum** subsp. **jatrophoides**

haumanii Dewit = **Cy. haumanii**

hauptiana Gilg = **Cissus barteri**

helenae Buscal. & Muschl. = **Cyphostemma crotalarioides**

heterotricha Gilg & R. E. Fries = **Cy. heterotrichum**

hildebrandtii Gilg = **Cy. hildebrandtii**

hochstetteri (Miq.) Planch. = **Cissus petiolata**

homblei De Wild. = **Cyphostemma homblei**

huillensis Exell & Mendonça = **Cy. huillense**

humilis (N. E. Br.) Planch. = **Cy. humile** subsp. **humile**

hypargyrea Gilg = **Cy. chloroleucum**

hypoleuca Harv.= **Cy. hypoleucum**

ibuensis Hook. f. = **Cayratia**

inaequilatera E. Mey. ex Harv. = **Rhoicissus tridentata**

jaegeri Gilg & M. Brandt = **Cyphostemma kilimandscharicum** var.

jatrophoides (Bak.) Planch. = **Cy. junceum** subp.

javellensis Lanza, incl. var. *rotundata* Lanza = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

johannis Exell & Mendonça = **Cy. johannis**

juncea Webb = **Cy. junceum**

juttae Dinter & Gilg = **Cy. juttae**

kaessneri Gilg & M. Brandt = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

kakoma De Wild. = **Cy. junceum** subsp. **jatrophoides**

kaniamae Mullenders ex Dewit = **Cy. kaniamae**

kapiriensis Dewit = **Cy. kapiriense**

karaguensis Gilg = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

keilii Gilg & M. Brandt = **Cy. keilii**

keniensis T. C. E. Fries = **Cy.** ? **knittelii**

kerkvoordei Dewit = **Cy. princeae**

kilimandscharica Gilg = **Cy. kilimandscharicum**

kirkiana Planch. = **Cy. kirkianum**

var. *livingstoniana* sensu Planch. p.p. = **Cy. ukerewense**

kiwakishiensis Dewit = **Cy. kiwakishiense**

knittelii Gilg = **Cy. knittelii**

koehneana F. Hoffm. = **Cy. buchananii**

koualensis A. Chev., nom. = **Cy. waterlotii**

koumiensis A. Chev., nom. = **Cissus petiolata**

lageniflora Gilg & M. Brandt = **Cyphostemma lageniflorum**

lanigera Harv., incl. var. *holubii* Planch. = **Cy. lanigerum**

lanigera Harv. var. *sosong* Planch. = **Cy. puberulum**

laurentii De Wild. = **Cissus barteri**

ledermannii Gilg & M. Brandt = **Cyphostemma**

lelyi Hutch. = **Cy. serpens** subsp. **serpens**

lentiana Volkens & Gilg = **Cy. lentianum**

leonensis Hook. f. = **Ampelocissus**

leucadenia Suess. = **Cyphostemma gigantophyllum**

leucotricha Gilg & M. Brandt = **Cy. leucotrichum**

libenii Dewit = **Cy. libenii**

livingstoniana Welw. = **Cissus rubiginosa**

loandensis Gilg & M. Brandt = **Cyphostemma adenocaule** subsp. **adenocaule**

lonicerifolia C.A. Sm. = **Cissus cornifolia**

lutea Exell & Mendonça = **Cyphostemma luteum**

lynesii Dewit = **Cy. lynesii**

macrantha Werderm. = **Cissus cucumerifolia**

macropus Welw. = **Cyphostemma currorii**

sp. aff. *macropus* Welw. = **Cy. jiguu**

macrothyrsa Gilg = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

manikensis De Wild. = **Cy. manikense**

mannii (Bak.) Planch. = **Cy. mannii**

maranguensis Gilg = **Cy. maranguense**

marionae Exell & Mendonça = **Cy. subciliatum**

marlothii Dinter & Gilg = **Cy. congestum**

marunguensis Dewit = **Cy. marunguense**

masukuensis (Bak.) Gilg & M. Brandt = **Cy. masukuense**

mayumbensis Gilg ex T. Durand & Schinz = **Cissus glaucophylla**

membranacea Hook. f. = **Cayratia gracilis**

menyanthifolia A. Chev. = **Cyphostemma crotalarioides**

meyeri-johannis Gilg & M. Brandt = **Cy. meyeri-johannis**

michelii Dewit = **Cy. michelii**

micradenia Gilg & M. Brandt = **Cy. micradenium**

migiurtinorum Chiov. = **Cy. betiforme**

mildbraedii Gilg & M. Brandt = **Cy. mildbraedii**

mollis (Bak.) Planch. = **Cy. molle**

morifolia Planch. = **Cissus nymphaeifolia**

mugansa De Wild. = **Ci. rubiginosa**

muhuluensis Mildbr. = **Cyphostemma**

myriantha Gilg & M. Brandt (fruit) = **Cissus lebrunii**

myriantha Gilg & M. Brandt (excl. fruit) = **Ci. tiliifolia**

nanella Gilg & R. E. Fr. = **Cyphostemma nanellum**

neghelliensis Lanza = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

nieriensis T.C.E. Fries = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

nigroglandulosa Gilg & M. Brandt = **Cy. nigroglandulosum**

nivea Hochst. ex Schweinf. = **Cy. niveum**

njegerre Gilg & H. Strauss = **Cy. njegerre**

nodiglandulosa T. C. E. Fries = **Cy. cyphopetalum** subsp. **cyphopetalum** var.

obovato-oblonga De Wild. = **Cy. obovato-oblongum**

odontadenia Gilg = **Cy. odontadenium**

oliveri sensu Vollesen 1980, non (Engl.) Gilg = **Cissus migeodii**

"oliveriana" (Engl.) Gilg = **Ci. oliveri**

oliviformis Planch. = **Ci. aralioides** subsp. **aralioides**

oppositifolia Welw. ex Planch. in syn. sub *C. buchananii* = **Cyphostemma crassiusculum**

ornata A. Chev. ex Hutch. & Dalziel = **Cy. ornatum**

orondo Gilg & M. Brandt = **Cy. serpens** subsp. **serpens**

overlaetii Dewit = **Cy. overlaetii**

oxyphylla (A. Rich.) Chiov. = **Cy. oxyphyllum**

pachyantha Gilg & M. Brandt = **Cy. pachyanthum**

pachyrrhachis Gilg & M. Brandt = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

passargei Gilg & M. Brandt = **Cy. passargei**

paucidentata Klotzsch = **Cy. paucidentatum**

pauciflora Burchell = **Rhoicissus tridentata**

pauli-guilielmii Schweinf. p.p. quoad lectotypum von Wurtenberg = **Ampelocissus abyssinica**

pauli-guilielmii Schweinf., quoad syntypum Schweinf. 2301 = **Merremia kentrocaulos** var. **kentrocaulos** *(Convolvulaceae)*

pendula (Welw. ex Bak.) Planch. = **Cyphostemma**

penduloides Dewit = **Cy. hildebrandtii**

perforata Louis = **Cy. perforatum**

phyllomicron Chiov., incl. fa. *eglandulosa* Chiov. = **Cy. engleri**

pobeguinii A. Chev. = **Cy. junceum** subsp. **jatrophoides**

polyantha sensu De Wild. 1922, non Gilg & M. Brandt = **Cissus oliveri**

polycymosa De Wild. = **Ci. producta**

populnea Guill. & Perr. var. *kottoensis* Desc. = **Ci.** ? **populnea**

princeae Gilg & M. Brandt = **Cyphostemma**

prostrata De Wild. & T. Durand = **Cissus guerkeana**

pruriens (Welw. ex Bak.) Planch. = **Cyphostemma**

psammophila Gilg & M. Brandt = **Cy. setosum**

pseudocaesia Gilg & M. Brandt = ? See at the end of the species list *(Cissus)* p. 312

pseudomanikensis Dewit = **Cyphostemma manikense**

pseudonivea Gilg & M. Brandt = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

pseudonjegerre Gilg & M. Brandt = **Cy. pseudonjegerre**

pseudonjegerre sensu Fries 1929 = **Cy. pseudonjegerre** subsp. **A**

pseudorhodesiae Dewit = **Cy. pseudorhodesiae**

pseudoupembaensis Dewit = **Cy. pseudoupembaense**

puberula C. A. Sm. = **Cy. puberulum**

purpurascens A. Chev., nom. = **Cissus producta**

purpureizonatus Zimmermann, nom. in sched. = **Cyphostemma kirkianum** subsp. **kirkianum**

quadrangularis in sched. = **Cissus phymatocarpa**

quadrangularis L. var. *pentagona* Chiov. = **Ci.** ? **phymatocarpa**

"quadrangulus (-la)" auctt. = **Ci. quadrangularis**

quinata Dryand. = **Cyphostemma**

quinquangularis sensu adnot. in herb., non Chiov. = **Cissus phymatocarpa**

reedii Dewit = **Cyphostemma heterotrichum**

repens A. Chev., nom. = **Cayratia debilis**

rhodesiae Gilg & M. Brandt = **Cyphostemma rhodesiae**

rhomboidea E. Mey. ex Harv. = **Rhoicissus**

rivae Gilg = **Cyphostemma rivae**

robynsii Dewit = **Cy. robynsii**

rotundifolia sensu Gilg & M. Brandt p.p. quoad specim. Stuhlmann 748, non (Forssk.) Vahl = **Cissus phymatocarpa**

rowlandii Gilg & M. Brandt = **Cyphostemma adenopodum**

ruacanensis Exell & Mendonça = **Cy. ruacanense**

rubromarginata Gilg & M. Brandt = **Cy. rubromarginatum**

rubrosetosa Gilg & M. Brandt = **Cy. rubrosetosum**

rupicola Gilg & M. Brandt = **Cy. rupicolum**

sandersonii Harv. var. *transvaalensis* (Szyszył.) C. A. Sm. = **Cy. cirrhosum** subsp. **transvaalense**

sarcocephala Schweinf. ex Planch. = **Ampelocissus**

sarcospathula Chiov. = **Cyphostemma**

saxicola Gilg & R. E. Fr. = **Cy. saxicola**

scarlatina Gilg & M. Brandt = **Cy. scarlatinum** (S. Africa)

schimperi Hochst. ex Planch., nom. illegit. superfl. = **Cy. oxyphyllum**

schlechteri Gilg & M. Brandt = **Cy. schlechteri**

schliebenii Mildbr. = **Cy. schliebenii**

schmitzii sensu Fl. Moç. p.p. (Correia 99), non Dewit = **Cissus oliveri**

schweinfurthii Planch. = **Cyphostemma serpens** subsp. **serpens**

serjanioides Planch. = **Cy. adenocaule** subsp. **adenocaule**

serpens Hochst. ex A. Rich. = **Cy. serpens**

sesquipedalis Gilg = **Cy. serpens** subsp. **serpens**

sessilifolia Dewit = **Cy. sessilifolium**

setosa Roxb. = **Cy. setosum**

simulans C. A. Sm. = **Cy. simulans**

smithiana (Bak.) Planch. = **Cissus glaucophylla**

sokodensis Gilg & M. Brandt = **Cyphostemma sokodense**

somaliensis Gilg = **Cy. ternatum**

sp. A sensu Agnew & Agnew, Upl. Kenya wild fl. (1974) = **Cyphostemma** sp. × sensu F.T.E.A.

sp. C sensu Agnew & Agnew, o.c. = **Cy. dysocarpum** subsp. **dysocarpum**

sp. 1 sensu Masinde in thesis = **Cissus sylvicola**

sp. aff. *macropus* Welw. sensu Bally 1940 = **Cyphostemma jiguu**

sp. 8 sensu Fl. Eth. 3, 1990 = **Cissus adeyana**

stefaniniana Chiov. ("stephaniniana") = **Cyphostemma stefaninianum**

stenoloba (Welw. ex Bak.) Planch. = **Cy. stenolobum**

stenopoda Gilg ex Gilg & M. Brandt = **Cy. junceum** subsp. **jatrophoides**

stipulacea (Bak.) Planch. = **Cy. stipulaceum**

var. *hochstetteri* Planch. = **Cy. dembiense**

stipulaceoides Dewit = **Cy. vanmeelii**

strigosa Dewit = **Cy. strigosum**

stuhlmannii Gilg = **Cy. buchananii**

subciliata (Bak.) Planch., incl. var. *kirkii* Planch. and var. *stuartii* Planch. = **Cy. subciliatum**

subdiaphana Steud. ex A. Rich. = **Cayratia gracilis**

suberosa (Welw. ex Bak.) Planch. = **Cissus petiolata**

subglaucescens Planch. = **Cyphostemma subciliatum**

taschdjianica Chiov. = **Cy. adenanthum**

tenuicaulis Hook. f. = **Cayratia gracilis**

tenuipes Gilg = **Cyphostemma cyphopetalum** subsp. and var. **cyphopetalum**

tenuissima Gilg & R. E. Fr. = **Cy. tenuissimum**

ternata ("Forssk.") Gmelin = **Cy. ternatum**

ternatomultifida Chiov. = **Cy. sarcospathulum**

thomasii Gilg & M. Brandt = **Cy. thomasii**

thunbergii Eckl. & Zeyh. = **Rhoicissus digitata**

tomentosa Lam. = **R. tomentosa**

trachyphylla Werderm. = **Cyphostemma trachyphyllum**

triangularis A. Chev. = **Cissus palmatifida**

tridentata (L. f.) Eckl. & Zeyh. = **Rhoicissus**

trinervis De Wild. = **Cissus integrifolia**

triumfettoides Gilg & M. Brandt = **Cyphostemma rhodesiae**

trothae sensu Fl. Zambes. & Fl. Moç., non Gilg & M. Brandt = **Cissus milnei**

ukerewensis Gilg = **Cyphostemma ukerewense**

unguiformifolia C. A. Sm. = **Cy. schlechteri**

urophylla Gilg & M. Brandt = **Cy. urophyllum**

usambarensis Gilg ex Engl., nom., sphalm. = **Rhoicissus tridentata** subsp. **tridentata**

uter Exell & Mendonça = **Cyphostemma**

vandenbrandeana Dewit = **Cy. vandenbrandeanum**

vanderbenii Dewit = **Cy. vanderbenii**

vanmeelii Lawalrée = **Cy. vanmeelii**

variifolia (Bak.) Gilg & M. Brandt = **Cy. crotalarioides**

villosiglandulosa Werderm. = **Cy. villosiglandulosum**

violaceoglandulosa Gilg = **Cy. violaceoglandulosum**

viniferoides Mildbr. = **Cissus cucumerifolia**

viscosa Gilg & R. E. Fr. = **Cyphostemma**

vogelii Hook. f. = **Cy. vogelii**

volkensii Gilg = **Cissus cornifolia**

vuilletii A. Chev. = **Ci. palmatifida**

waterlotii A. Chev. = **Cyphostemma**

wittei Staner = **Cy. wittei**

zambesica Wild & R. B. Drumm. = **Cy. bororense**

zechiana Gilg & M. Brandt = **Cy. zechianum**

zechiana sensu A. Chev. p.p. = **Cy. crotalarioides, Cy. waterlotii**

zombensis (Bak.) Gilg & M. Brandt = **Cy. crotalarioides**

CYPHOSTEMMA / *177*

syn.: *Cissus* subgen. *Cyphostemma* (Planch.) Gilg; *C.* section *Cyphostemma* Planch.

Very homogeneous genus with about 280 species (150 according to Wen in Kubitzki 2007: 476), mainly in intertropical and South Africa (16 spp. endemic) and Madagascar, Comoro Isl., Mascarene Isl. (23 spp. endemic); Arabia (1 sp. endemic); India, Sri Lanka (2 spp. endemic), extending into Thailand. Four morphological types can be recognized: plants with large cylindrical caudex (not lianes), such with conical caudex terminating in a liane-like stem, small plants with short thickened stems ending in short branches, and lianes with ± fleshy stems (Descoings in Eggli, Ill. Handbook succ. pl.: dicotyl.: 456, 2002). Approximately 40 species are succulent.

* * *

In our area a poorly known genus. Many species are insufficiently known: flowers are lacking in 4 species and they are incomplete in further 6 species (in all = 10 spp. = 5%); the fruit is unknown in 24 +1 ? species (= c. 14%), and the *ripe* fruit is lacking in 13 + 1 ? species (= c. 8%), with a total of 37 + 2 ? species without the (mature) fruit (= c. 22%); the ecology is not recorded for 12 + 1 ? species (= c. 7%); 27 + 1 species (= < 16%) are known only from the type (+ 1 = syntypes only); and 3 species are known from only 2 or 3 collections.

CATTABRIGA, A. [& E. J. VAN JAARSVELD] (2007). Appunti su – Notes on Cyphostemma. *Cactus & Co.* 11/2: 94-107.

DESCOINGS, B. (2004). Les grandes Vitacées pachycaules. *Succulentes (France),* Numéro spécial 2004: 32-49.

TEPPNER, H. (2003). Vitaceae in the Botantic Garden of the Institute of Botany in Graz (Austria, Europe). *Fritschiana (Graz)* 39: 23-40.

WILSON, T.C. & al. (2006). Morphological and anatomical development in the Vitaceae. VIII. Comparative development of three Cyphostemma (Vitaceae) species reveals important vegetative and reproductive differences among the species. *Canad. J. Bot*. 84: 702-716.

Cyphostemma abercornense Wild & R. B. Drumm.

Prostrate or semi-prostrate herb; stems brownish-tomentose to pubescent; tendrils absent; leaves digitately 3-5-foliolate; petiole 0,4-4 cm long, tomentose or densely pubescent; lamina oblanceolate, apex acute or subobtuse, margins serrate, base cuneate, glabrous above but midrib puberulous, whitish- or brownish-villous or sometimes pilose below, veins reticulate; median leaflet to 15 × 5 cm; laterals to 9 × 2,5 cm; petiolules to 1 cm long; cymes compound, leaf-opposed to 11 cm Ø; peduncle to 4,5 cm long, tomentose or pubescent; pedicels to 3 mm long, pubescent or sparsely pubescent; ripe fruit unknown.

Sandy rocky soil on mountain side; sandy soil; 1400-1500 m alt.

According to Verdcourt (Fl. Trop. E. Afr., Vitaceae: 86, 1993) perhaps not distinct from *C. mildbraedii.*

C. adamii Descoings – Icon.: Adam, Fl. descr. Mts Nimba 3: 1367, 1975.

Perennial slender herb with tendrils; all parts reddish yellow; branches rounded, striate, 3-4 mm Ø, pubescent, sparsely glandular; leaves digitately 5-foliolate; petiole rounded 3-4,5 cm long; lamina ± elliptic, 3,5-5 × 1,7-2,3 cm, obtuse at base to subrounded, apex attenuate and acute, denticulate at margins, sparsely pubescent above, very sparsely glandular, pilose on the nerves below; inflorescence pedunculate, 6-10 cm long, peduncle

rounded, densely pubescent; branches pubescent-glandular, cymose; berry oblong, densely pubescent, 1-1,5 cm long; seed particular (see Adansonia, Sér. 2, 12: 308-311, 1972).

Forest regrowth; scrambling over a fallen tree in a forest clearing; 500 m alt.

Near *C. cymosum, C. ornatum.*

C. adenanthum (Fresen.) Descoings

bas.: *Cissus adenantha* Fresen.

syn.: *Vitis sambucina* Beccari ex Martelli; *Cissus taschdjianica* Chiov.; *C. figariana* Webb

Erect perennial herb to 1 m tall arising from a woody rootstock with fleshy fusiform roots; all parts glabrous to puberulous or pubescent and sparsely to densely sticky glandular (rarely not); leaves 3-7-foliolate, with scattered discoid glands (rarely without); petiole 0-12 cm long, leaflets narrowly elliptic to elliptic or obovate 6-30 × 1,5-9 cm, serrate; apex cuspidate to acuminate; base attenuate; inflorescence 5-30 cm long, peduncle 3,5-20 cm long, pedicels 3-12 (-15 in fruit) mm long; fruit ± ellipsoid, 9-13 mm long, sparsely pubescent and glandular.

Combretum, Terminalia or *Terminalia, Boswellia*, *Anogeissus* and *Acacia* woodland and wooded grassland; rocky slopes and outcrops; black cotton soil; 1100-2050 m alt.

Near *C. pseudosesquipedale* but different in many (small) characters.

C. adenocarpum (Gilg & M. Brandt) Descoings ex Verdcourt

bas.: *Cissus adenocarpa* Gilg & M. Brandt

Erect perennial from a thick woody rootstock; stems thick, woody, round, longitudinally striate, together with the petioles, peduncle, inflorescence-rhachides, pedicels laxly or ± densely (above) shortly ferruginous-pilose and with short thick glandular hairs; tendrils absent; leaves 5-foliolate; leaflets sessile, oblanceolate or obovate-lanceolate, the mid-leaflet 10-12 × 3-4 cm, acute or rounded at apex, gradually narrowed to the base, unequally coarsely acutely serrate-dentate, sparsely covered above and on the venation beneath with short ± thick hairs; cymes 2-3-fid; peduncle 7-9 cm long, flowers unknown; berry oblong, 1 cm long, (very) densely hairy and glandular.

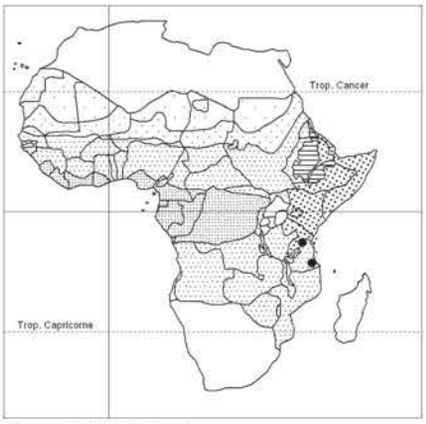
Ecology unknown; 1170 m alt.

Only known from the type collected ante 1912. – It is one of the 28 single-collection species in E. Africa listed by H. Beentje & al.

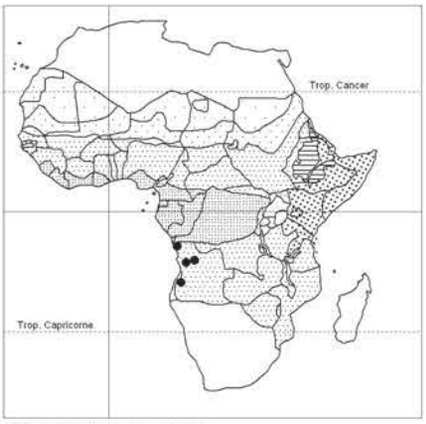
BEENTJE, H. J. & al. (2006). Restricted range endemism in East African plants. *In:* GHAZANFAR, S. A. & H. J. BEENTJE, eds., *Taxonomy and ecology of African plants, their conservation and sustainable use:* 229-245 (see p. 234).

C. adenocaule (Steud. ex A. Rich.) Descoings ex Wild & R. B. Drumm.; Enum. 2: 193, 1992, and 3: 333, 1995. – Icon.: Fl. Trop. E. Afr., Vitaceae: 90, 1993; Troupin, Fl. Rwanda 2: 363, 1983; Akoegninou & al., Fl. analyt. Bénin: 1005, 2006; Berhaut, Fl. ill. Sénégal 1: 198, 1971; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 385, 2006; Fl. Congo belge 9: 471, 1960 (subsp. **adenocaule**, sub var. *eglanduloso-pubescens).*

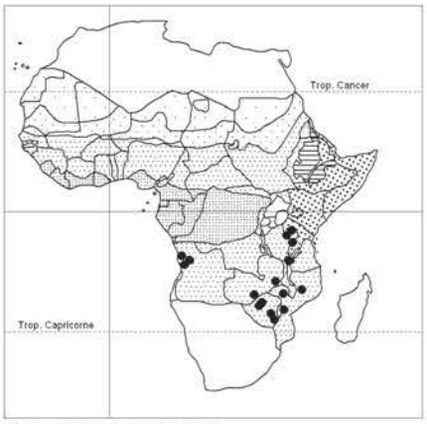
Herbaceous climber or scrambler 1,5-7,5 m long from a tuberous rootstock; basal part sometimes ± woody; stems glabrous to densely whitish or reddish pubescent or sometimes with scattered to rarely dense stalked glands; tendrils present, often red, long, slender; stipules falcate, persistent; leaves pedately 5-11-foliolate; leaflets thin, elliptic or ovate to broadly ovate, 1,5-11,5 × 1-7,5 cm, the median ones largest, acuminate or acute at apex, cuneate



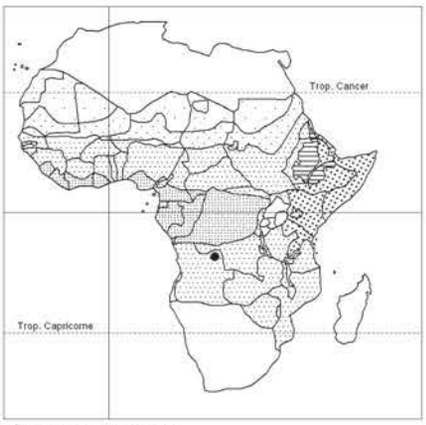
Cissus wallacei



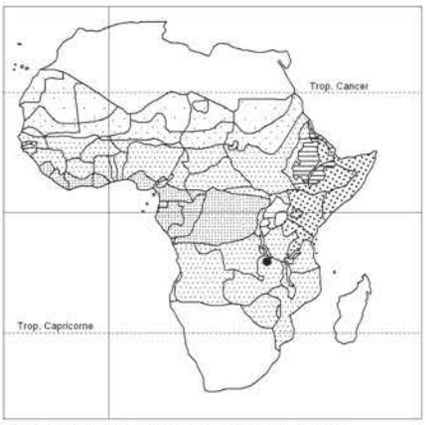
Cissus wellmanii



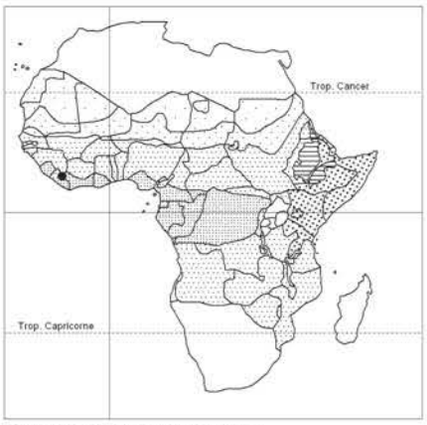
Cissus welwitschii



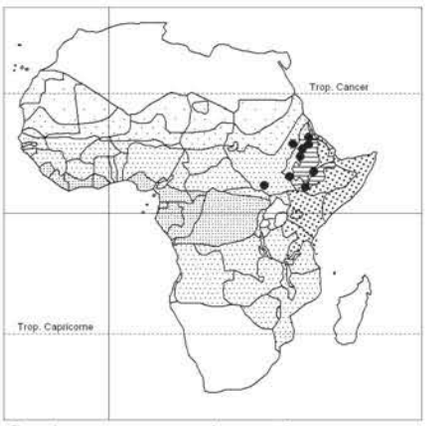
Cissus youngii



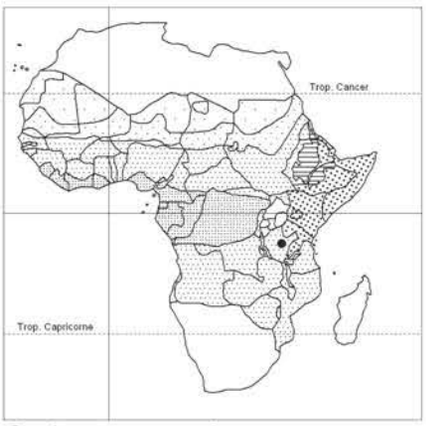
Cyphostemma abercornense



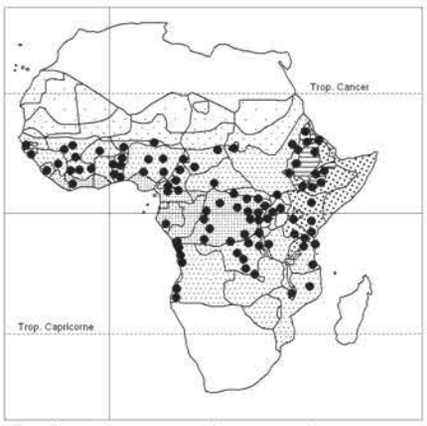
Cyphostemma adamii



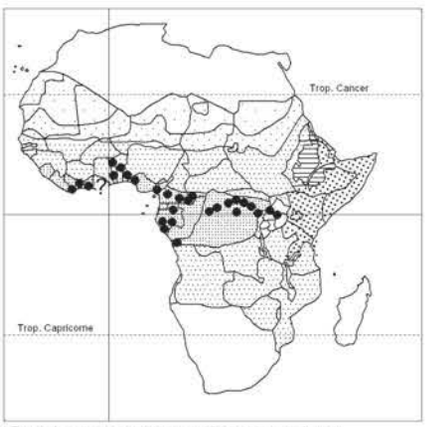
Cyphostemma adenanthum



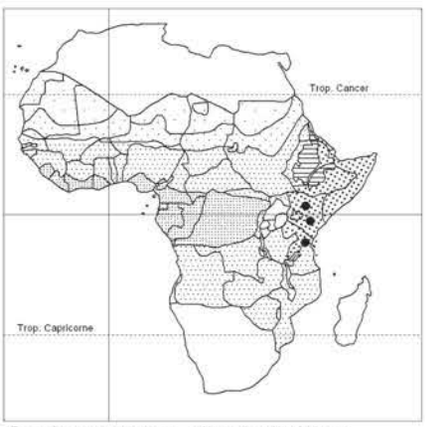
Cyphostemma adenocarpum



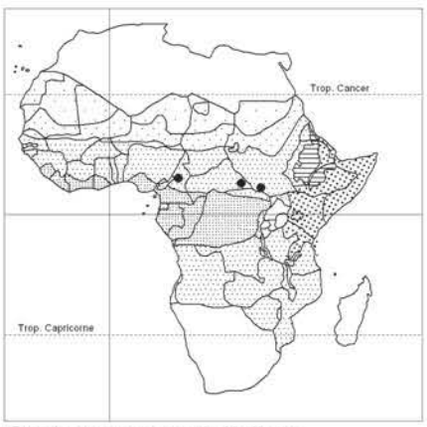
Cyphostemma adenocaule



Cyphostemma adenopodum



Cyphostemma allophylloides



Cyphostemma alnifolium

to cordate at base, serrate, glabrous to densely pubescent; petiole 1-9,5 cm long; petiolules of lateral leaflets 0,6-1 cm long, of median to 4,5 cm; cymes corymbose, 2-15 cm long; peduncle 1-10 cm long; pedicels 1-4 mm long, lengthening to 10 mm in fruit, sometimes with stalked glands; all axes glabrescent to ± densely often ferruginous pubescent; berry red to purplish black, ellipsoid, glabrous, 6-8 mm long, edible.

Fringing forest; clearings in evergreen forest; bushland; thickets; grassland with or without scattered trees; abandoned cultivations; fallows; secondary forest; palm-plantations; sandy river-banks; granitic rocks; rain-forest; savanna; woodland with *Combretum collinum, C. molle, Annona senegalensis;* humid places: sandy, clayey or clayey-sandy on sandstone or laterite hollows; also in fences in cultivated areas; *Acacia-Combretum/Terminalia*- and *Commiphora*-woodland and bushland; 0-2650 m alt.

Extremely variable: from glabrous to densely pubescent, non-glandular to glandular.

Comprises 2 subspp.: – subsp. **adenocaule,** incl. var. *pubescens* (Dewit) Descoings, nom. invalid. [syn.: *Vitis adenocaulis* (A. Rich.) Miq.; *Cissus adenocaulis* (A. Rich.) Miq., incl. var. *articulata* Kuntze, var. *chiovendae* Lanza, var. *eglandulosa* Dewit, var. *pubescens* Dewit, var. *eglanduloso-pubescens* Dewit; *C. serjanioides* Planch.; *C. loandensis* Gilg & M. Brandt]; – subsp. **pulverulentum** Verdc. in CE Tanzania, in thornbush, 480-600 m alt.

According to Burkill (Useful pl. W. trop. Afr., ed. 2, 5: 301, 2000) commonly cultivated in Ethiopia (medicinal).

C. adenopodum (Sprague) Descoings, excl. syn. *Cissus bakeriana* Planch. *(= Cyphostemma cymosum);* Akoegninou & al., Fl. analyt. Bénin: 1006, 2006; Sosef & al., Check-list pl. vascul. Gabon: 415, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 384, 2006. – Icon.: Bot. Mag. 135: pl. 8278, 1909 (sub gen. *Cissus);* Bot. Jahrb. Syst. 46: 539, 1912.

bas.: *Cissus adenopoda* Sprague

syn.: *C. rowlandii* Gilg & M. Brandt; *Cyphostemma rowlandii* (Gilg & M. Brandt) Descoings

Herbaceous climber to several m long from a tuberous rootstock; stems red when young, covered with dense reddish multicellular hairs and also a few gland-tipped hairs; older stems drying dark, ± woody, ± glabrous; tendrils present; leaves red when young, soon green above but ± remaining red beneath, 3-foliolate; leaflets ovate, obovate or elliptic, 1-10 × 3-7 cm, acuminate at apex, median obtuse to rounded at base, the laterals unequally rounded, coarsely serrate, pilose with red hairs; petiole red, 3-6 cm long, hairy like the stem; petiolules 4-8 mm long; cyme flat, 6-20 cm wide; peduncle red or green, 3,5-10 cm long, pubescent; pedicels 1,5-4 mm long, pubescent and with sparse very conspicuous gland-tipped hairs; berry c. 1,5 cm Ø, glabrous, red.

Rain-forests (secondary or primary); forest gallery; fallows in forests; granitic rocks; forest edges and regrowth after cultivation; roadsides; 10-1200 m alt.

Bioko/Fernando Poo.

Ornamental plant: foliage violaceous yellow-red with pink or dark red pilosity, flowers greenish (-yellowish) with red spots.

C. allophylloides (Gilg & M. Brandt) Descoings; Agnew & Agnew, Upl. Kenya Wild fl. ed. 2: 163, 1994.

bas.: *Cissus allophylloides* Gilg & M. Brandt

Perennial climber to 6 m long; stems brown to dark purplish, slightly striate, and together with petioles, peduncles, inflorescence-axes and pedicels ± densely covered with short grey-ferruginous tomentum and with longer gland-tipped hairs 1,5-2 mm long, the older stems with sparser indumentum or almost glabrous; tendrils present; leaves 3-5-foliolate; leaflets ovate, obovate or elliptic, unequal, 2-8 × 1,2-7 cm, ± rounded to acute at apex, rounded at base or rarely narrowly cuneate, ± coarsely serrate, often ± discolorous, pubescent above with scattered adpressed hairs and sometimes a few scattered gland-tipped hairs, ± velvety beneath with adpressed grey-ferruginous indumentum particularly on nerves; sometimes both surfaces sparsely pubescent to glabrescent; petiole 0,8-7 cm long; petiolules 0,4-2 cm long; cymes 7-24 cm wide, 3-fid, the cymules many-flowered but ± lax; peduncles or apparent peduncles 3,5-8 cm long; pedicels 3-7,5 cm (or 1,3 cm in pole flower), with ± dense gland-tipped hairs ± 0,5 mm long or lacking; berry ellipsoid, 1 cm long, densely ferruginous pubescent and reddish glandular.

Ocotea, Podocarpus, etc. evergreen forest and bushland; rather dry evergreen forest; 1140-1980 m alt.

Comprises 2 subspp.: – subsp. **allophylloides**, in W. Usambaras; – subsp. **karuraensis** Verdc., in Kenya. Seeds different.

Without fruit differentiation from *C. kilimandscharica* is scarcely possible.

C. alnifolium (Schweinf. ex Planch.) Descoings

bas.: *Cissus alnifolia* Schweinf. ex Planch.

Erect, tufted plant to 1,2 m tall; tendrils absent; stems cylindrical, 4-10 mm Ø, striate, with very short, whitish, rather dense pubescence and thin, often very long glandulous hairs; leaves sessile, 1- to 2-3-foliolate; foliole(s) sessile or nearly so, ovate-subcordiform, rounded at base, sometimes slightly cordate, rounded or obtuse at apex, 10-15 × 7-11 cm; margins with irregularly rounded lobes ending by an obtuse, thick point; with stiff short white pubescence on both faces and fine, stiff, rather dense glandular hairs; inflorescence 4-10 cm long with few-flowered umbel-like cymes; peduncle 2-5 cm long, ± cylindrical; peduncles and axes densely bristly hairy with long, glandular hairs.

Savanna; rare.

C. bambuseti (Gilg & M. Brandt) Descoings ex Wild & R. B. Drumm. – Icon.: Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 60, 1994; Troupin, Fl. Rwanda 2: 363, 1983; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 733, 2008.

bas.: *Cissus bambuseti* Gilg & M. Brandt

Climber to 6 (?-12) m long; stems striate, densely ferruginous pubescent with curled hairs when young, later more sparsely so and with sparse to very dense short gland-tipped hairs 0,5 mm long; tendrils present; leaves 5-foliolate; leaflets obovate to elliptic or obovate-oblong, 2,5-12 × 1,5-5,2 cm, acute at apex, broadly acuminate to rounded at base, crenate, the crenae ending in asymmetric, ± acute, glandular points with sparse hairs above or dense on midrib or glabrescent, thinly whitish ferruginous velvety beneath with venation darker; petiole 4-7,5 cm long; petiolule 0,4-1 cm long; cymes 7,5-25 cm wide; peduncle 4-7 cm long, pedicels 1,5-2 mm long, both with similar indumentum to stem; berry purple, ± ellipsoid, 9 mm long, with short glands.

Hillside thicket; lakeside forest; waste ground; edges of dry upland forest; bamboo forest; swamp edges, transitional forest; sclerophyllous formations; 1500-2400 m alt.

Comprises 2 vars.: – **bambuseti;** – var. **glandulosissimum** (Dewit) Descoings (bas.: *Cissus bambuseti* var. *glandulosissima* Dewit) with densely glandular stems "is intermediate with *C. cyphopetalum"* (fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 119, 1993).

Record from SW Tanzania uncertain.

C. bambuseti sensu Fl. Zambes. 2: 478, 1966, from Zambia is probably another species ("sp. H" sensu Verdcourt, F.T.E.A.: l.c.).

C. barbosae Wild & R. B. Drumm., non sensu Vollesen, Op. Bot. 59: 62, 1980 *(= C. sanctuarium-selousii).*

Erect or suberect herb with tuberous root; stem pubescent or glabrescent and with dense elongate red glandular hairs to 1,4 cm long; tendrils present or sometimes absent; leaves digitately 3-7-foliolate; petiole to 1,6 cm long, indumentum as for stem; lamina subsessile, to 19 × 8 cm, broadly elliptic to circular, apex acuminate, base cuneate, margins crenate with apiculate teeth, sparsely and shortly capitate-glandular above, main nerves with long glandular capitate hairs below; cymes on axillary branches; peduncles to 12 cm long, indumentum as for stem; pedicels to 1,2 cm long, puberulous and with short capitate-glandular hairs; berry red, ellipsoid, 1 cm long, with long glandular hairs.

Open woodlands; dry stony places.

C. sanctuarium-selousii is similar but *trailing;* fruit needed to confirm the latter's position.

C. betiforme (Chiov.) Vollesen; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 457, 460, 2002. – Icon.: Cact. Succ. J. (U.S.) 48: 281, 1976; Lavranos in Russo, L., ed., The succulent plants of Eastern Africa: 138, 2004.

syn.: *Cissus migiurtinorum* Chiov.; *Cyphostemma migiurtinorum* (Chiov.) Descoings (maintained as a good species by Descoings in Eggli, o.c.: 460).

Succulent shrub with basally swollen flask-shaped trunk 0,4-1 m tall with a few thick branches apically; bark yellowish white, flaking off in irregular parchmenty patches; leaves congested at branch ends, fleshy, 1-5-foliolate, puberulous when mature; petiole 0,5-7 cm long; leaflets obovate or cuneiform to suborbicular, 2-7,5 × 1-7,5 cm, finely denticulate to grossly dentate; apex broadly rounded to emarginate; base attenuate to subcordate; inflorescence 2-7 cm long, puberulous; peduncles 1-3,5 cm long; pedicels 0,5-1 (-3 in fruit) mm long with subsessile glands; berry ellipsoid, 6-9 mm long, red, glabrous.

Acacia-Commiphora bushland on limestone; gypsum hills; also on sand; mixed thicket on buff sandy soil; coastal dunes; 0-900 m alt.

Very variable, with many forms.

C. bidgoodiae Verdc.

Slender twiner to 2 m long; stems ± densely covered with slender gland-tipped hairs 0,5-1 mm long; tendrils present; leaves 3-foliolate; mid-leaflet rhombic-elliptic, 4,5-9 × 2-4 cm, long-acuminate at apex, cuneate at base, the laterals elliptic to 6,5 × 3 cm, more rounded at base; all coarsely crenate-serrate, the crenations with subulate projections often terminated by a gland-tipped hair and ciliate with ordinary and gland-tipped hairs, with long colourless appressed (? in life) hairs ± 1,5 mm long above and similar hairs at right-angles to the main venation beneath, also minute hairs and long gland-tipped hairs on the lamina, thin; petiole 1,5-2,5 cm long, with hairs similar to the stem; petiolules 1,5-7 mm long, the median one longest; inflorescences axillary on short shoots bearing one leaf; peduncles ± 1 cm long; pedicels ± 3 mm long, all axes with dense short gland-tipped hairs; fruit unknown.

Forest; 700 m alt.

Only known from the type collected in 1991.

C. boranense Vollesen (1984).

syn.: *Cissus agnus-castus* Planch.

Slender woody climber to 3 m long; young stems glabrous, older with greyish slightly longitudinally ridged bark; tendrils unbranched to 10 cm long; leaves digitately 3-5-foliolate, glabrous; petiole 2-4 cm long; leaflets elliptic to broadly elliptic or obovate 3-6,5 × 1,5-4,5 cm; apex acute; base cuneate; margins crenate to serrate in upper half; inflorescence an umbelliform cyme, glabrous apart from a few subsessile glands on distal branches, 4-9 cm long; peduncles 1,5-3 cm long; pedicels 2-3 mm long (to 5 mm in fruit), with subsessile glands, almost discoid; berry ± ellipsoid, 1-1,2 cm long.

Dense *Acacia-Commiphora* bushland; pure *Acacia*-bushland on greyish to blackish clay soil; 850-1150 m alt.

Not in Somalia *(= C. cornus-africani).*

C. bororense (Klotzsch) Descoings ex Wild & R. B. Drumm. – Icon.: Fl. Zambes 2 (2): 475, 1966 (bud).

bas.: *Cissus bororensis* Klotzsch

syn.: *Vitis bororensis* (Klotzsch) Bak.; *Cyphostemma amplexum* sensu Wild & Drummond in Flora Zambes. 2 (2): 487, 1966, p.p. (Torre 1181); *Vitis amplexa* Bak.; *Cissus amplexa* (Bak.) Planch.; *Cyphostemma amplexum* (Bak.) Desc. ex Wild & R. B. Drumm.; *C. zambesicum* (Wild & R. B. Drumm.) Galet

Climber to 3,5 m long or creeping; stems striate, glabrous or finely setulose and with a few gland-tipped hairs near the nodes; tendrils present; leaves 3-5-foliolate; leaflets narrowly to broadly elliptic, oblong-elliptic or obovate, 2,5-11 × 0,5-5,5 cm, rounded to subacute or acute and mucronate at apex, cuneate to rounded at base, coarsely crenate-serrate, the divisions directed to leaf-apex, ± glandular-apiculate, rather thin, glabrous to finely pubescent on both surfaces and a few gland-tipped hairs on midrib at base; petiole 1-7 cm long, glabrous or finely pubescent or only puberulous above and usually with scattered gland-tipped hairs; petiolules 0-10 mm long, the median longest, usually with rather denser gland-tipped hairs or tubercles; cymes axillary, 6-8 cm wide; peduncles 2-6 cm long, sometimes appearing longer when cymes apparently terminate a leafless branch; pedicels 4-7 mm long with prominent gland-tipped hairs or sessile glands in middle portion; flowers deep red; berry red, ± round, 4-8 mm Ø, glabrous.

Brachystegia manga woodland on red gritty to rocky soil; termite mounds at *Brachystegia-Uapaca* woodland / marshy valley edges; bushland; river sides; 1080-1200 m alt.

Caprivi Strip.

More material needed from the Fl. Zambesiaca area. See also below under *C. trachyphyllum.*

C. braunii (Gilg & M. Brandt) Desc.

bas.: *Cissus braunii* Gilg & M. Brandt

Climber 3-8 m long; stems usually red, puberulous and often with dense longer green to red or puplish bristly hairs 2-3 mm long which are not gland-tipped; tendrils present; leaves 5-foliolate; leaflets deep green, often red-flushed beneath or with puple venation, elliptic to obovate, 2,5-14 × 1,3-7 cm, acuminate at apex, cuneate at base, crenate, the crenations apiculate, glabrous or with very few hairs on the midrib; petiole usually red 2,5-5,5 cm long, hairy like the stem; petiolules usually red, 0,7-2,5 cm long, similarly hairy; cymes axillary 6-18 cm wide; peduncles 11 cm long; pedicels 2-7 mm long or pole flowers with them to 18 mm; all axes mostly green, densely shortly pubescent or tomentose with ± pale ferruginous indumentum and with long red hairs; berry ellipsoid, 1 cm long, ± pubescent, covered with red hairs 3-4 mm long.

Evergreen forest, *Podocarpus, Ocotea,* etc.; secondary bush and scrub in old plantations; rocky areas with small trees and shrubs in rain-forest clearings; 100-1950 m alt.

Near *C. masukuense, C. allophylloides.*

C. brieyi (De Wild.) Compère

bas.: *Cissus brieyi* De Wild.

Herbaceous climber; tendrils pubescent, ramose, sparsely glandular hairy; stems and branches striate, pubescent and with rare glandular hairs; leaves digitately 3-5-foliolate; petiole 3-5 cm long, densely pubescent and with some glandular hairs at the top; leaflets with petiolules 0,5-1 mm long, densely pubescent; lamina elliptic-obovate, serrate-dentate, ciliate, the median one 6-9 × 3-5 cm, pubescent-strigulose above, sparsely pubescent below, more densely on nerves; cymes compound, 15 cm long; peduncle ± 4,5 cm long, pubescent like the axes; berry ovoid, 7 mm long, pubescent.

Clayey soils.

C. buchananii (Planch.) Descoings ex Wild & R. B. Drumm., incl. var. ? sensu F.T.E.A. – Icon.: Fl. Zambes. 2 (2): 475, 1966 (bud).

bas.: *Cissus buchananii* Planch., *excl.* specim. Welwitsch 1469,1492 *(= Cyphostemma crassiusculum* & *Cy. adenocaule).*

syn.: *Cissus fragariifolia* Planch.; *C. koehneana* F. Hoffm.; *C. stuhlmannii* Gilg

Scrambling or climbing ± weak rather viscid herb 1,5-2,5 m long, nearly always drying black; rootstock a large tuber; stem rather slender, with short often sparse pubescence and longer but still short red gland-tipped hairs 0,5-1 mm long; nodes red; tendrils present; leaves digitately 3-7-foliolate; petiole 2-5 cm long, always shorter than the main leaflet; leaflets elliptic to narrowly obovate, 1,5-11 × 0,7-7 cm, acute at apex, rounded to cuneate at base, usually rather regularly crenate-serrate, rarely ± lobulate, pubescent to glabrescent above, more densely grey-pubescent beneath, often with gland-tipped hairs on lower part of midrib and margins; petiolules 0,3-2,2 cm long; cymes lax and ± straggly, axillary, 2-15 cm wide; peduncles 4-7 cm long; pedicels 2-4 mm long; all axes with indumentum similar to the stem; berry red, ellipsoid, 7-10 mm long, ferruginous pubescent and with short capitate-glandular hairs.

Forest edges; open forests; coastal thicket on old coral reefs, etc.; bushland; woodland with *Brachystegia, Julbernardia,* etc.; wooded grassland; old cultivations; rocky hills; 0-1125 m alt.

Botswana, S. Africa.

C. bullatum (Gilg & M. Brandt) Descoings

bas.: *Cissus bullata* Gilg & M. Brandt

Erect perennial plant (? subshrub); stems woody, round, longitudinally striate, together with petiole, peduncle, rhachis and pedicels glabrous, tendrils absent; leaves 5-foliolate; leaflets lanceolate, the middle one 8-11 × 0,9-1,2 cm, acute at apex, narrowly cuneate at base, the other leaflets obliquely so, equally ± distantly serrate, subcoriaceous in dry state, bullate, glabrous above, beneath with cobwebby reddish tomentum; venation reticulate, impressed above, very prominent beneath; petiole 1,2-2,2 cm, petiolules obsolete or mid-leaflet rarely shortly petiolulate; cymes dichotomous, the branches with many few-flowered elements; flowers unknown; berry ± round, ± 5 mm Ø.

Ecology unknown; 1170 m alt.

Only known from the type collected ante 1911 (1896 ?).

C. burgeri Vollesen

Trailing perennial herb; stems glabrous, to 30 cm long or with erect stems to 10 cm from a fleshy fusiform rootstock; tendrils absent; leaves digitately 4-6-foliolate, glabrous; petiole 0-1,5 cm long; leaflets narrowly obovate 3,5-11 × 0,6-3 cm; petiolules to 1 cm long; apex acute, base attenuate; margins dentate with large triangular widely spaced teeth; cyme umbelliform, glabrous apart from a few stalked glands on distal branches, 3-8 cm long; peduncle 0,5-5,5 cm long; berry obovoid, 8-9 mm long, glabrous.

Secondary grassland derived from *Acacia-Commiphora* bushland; soil derived from basement rock; sandy to loamy limestone or quartz soil; 1500-1800 m alt.

In appearance resembling *C. serpens* but glabrous. Also very similar to *C. pseudoburgeri* (seeds different).

C. cabui (Dewit) Descoings

bas.: *Cissus cabui* Dewit

Erect herb; stems and branches striate, pubescent-puberulent and with thick short glandular hairs; leaves sessile, digitately 3-5-foliolate; leaflets sessile, ovate, long-cuneate at base, serrate, mid-leaflet 6-19 × 2-5 cm, sparsely pubescent above, pubescent below when young, pubescence later persistent mainly on the nerves; cymes compound, ± 8 cm long; peduncle 4,5 cm long; all axes pubescent-puberulent and with rare glandular hairs; fruit unknown.

Ecology unknown.

Only known from the type collected in 1937.

C. camerounense Descoings

Slender climber; stems cylindrical, 2,5-3,5 mm Ø with dense pubescence of erect hairs and long, fine, scattered glandular hairs; tendrils slender, cylindrical, loosely pubescent; leaves digitately 5-foliolate; petiole and petiolules cylindrical, striate, rather densely pilose with numerous grandular hairs; petiole 7-10 cm long, 1,5-2 mm Ø; petiolules 8-20 mm long; leaflets obovate-elliptic, 8-15 × 3,5-5 cm, cuneate at base, not or slightly decurrent, obtuse at apex with an acumen; margins irregularly dentate, indentations ± deltoid ending in stout teeth; with rather dense regularly distributed pilosity below; very sparse pilosity above with also some glandular long fine hairs; cyme umbel-like, very lax, few-flowered; peduncle and axes ± cylindrical, densely pubescent; peduncle 4-6 cm long; berry ovoid, 7-10 mm long, glandular with long fine hairs.

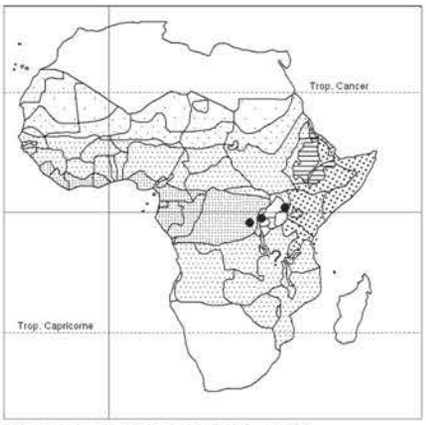
Secondary forest; 700 m alt.

C. chloroleucum (Welw. ex Bak.) Descoings ex Wild & R. B. Drumm.

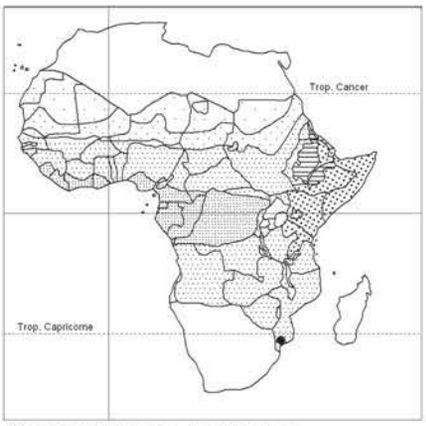
bas.: *Vitis chloroleuca* Welw. ex Bak.

syn.: *Cissus chloroleuca* (Welw. ex Bak.) Planch.; *Vitis andongensis* Welw. ex Bak.; *Cissus andongensis* (Welw. ex Bak.) Planch.; *C. hypargyrea* Gilg; *C. decurrens* Gilg & M. Brandt; Enum. 2: 193, 1992.

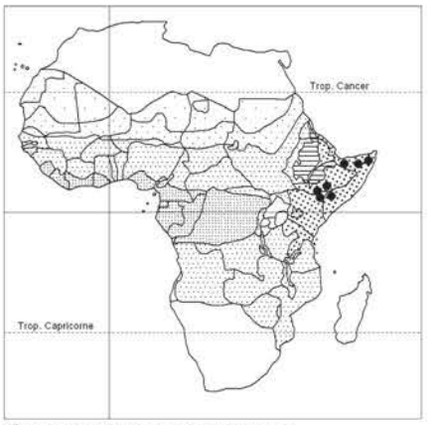
Erect herb or subscandent undershrub 0,3-0,6 m tall; stems zigzag, rather stout, sulcate, ferruginous-tomentose with scattered long red capitate-glandular hairs; tendrils absent or scarce; leaves digitately 3-5-foliolate; petiole with indumentum like the stem, 2,5-11 cm long; lamina to ± 24 × 10 cm, elliptic to obovate-elliptic, apex acute, margins serrate, base cuneate, upper surface puberulous with scattered short capitate-glandular hairs, lower surface ferruginous-tomentose with a few glandular hairs on the midrib; cymes spreading, trichotomous towards the ends of



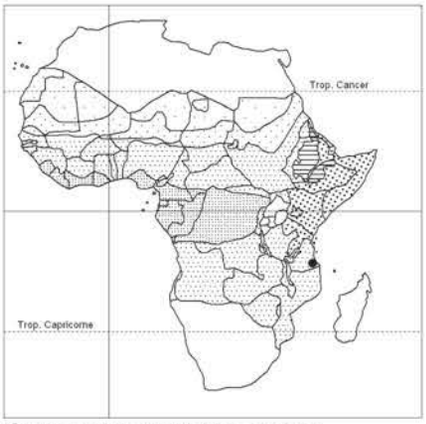
Cyphostemma bambuseti



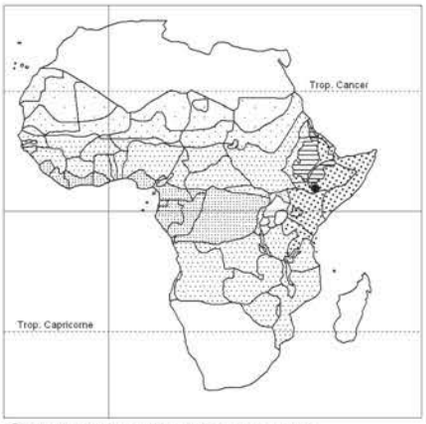
Cyphostemma barbosae



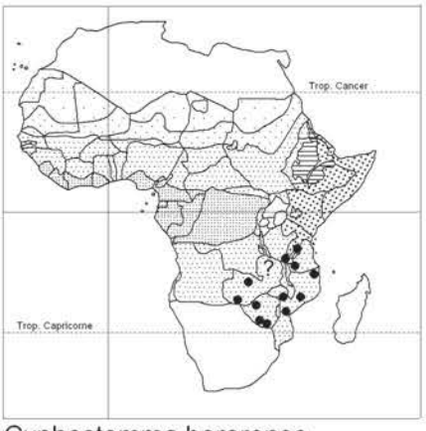
Cyphostemma betiforme



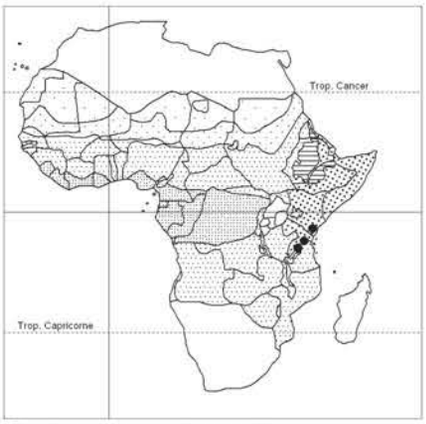
Cyphostemma bidgoodiae



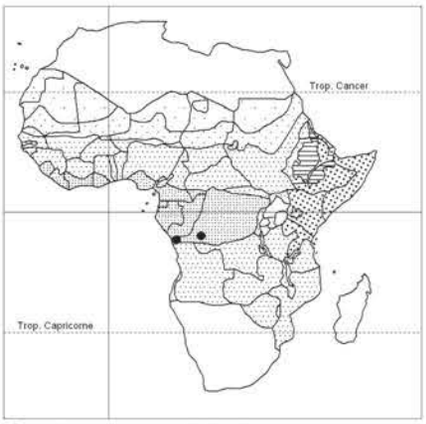
Cyphostemma boranense



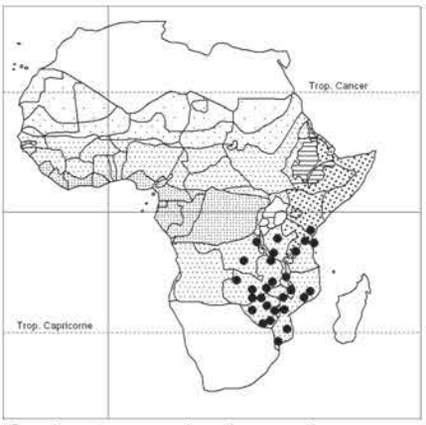
Cyphostemma bororense



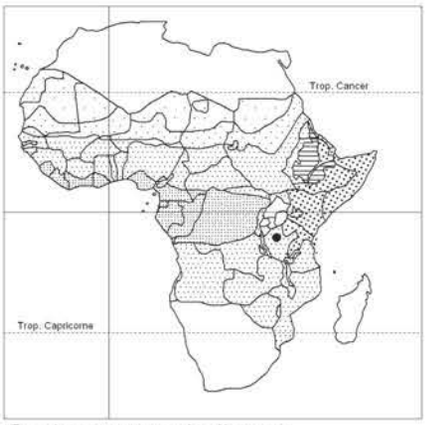
Cyphostemma braunii



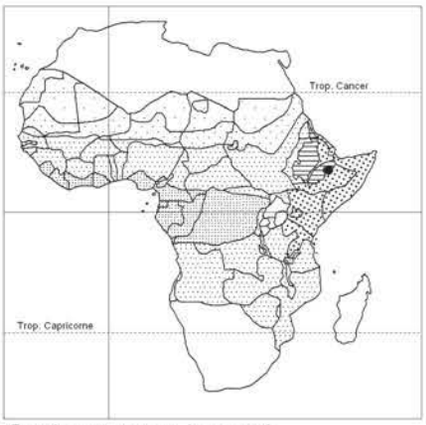
Cyphostemma brieyi



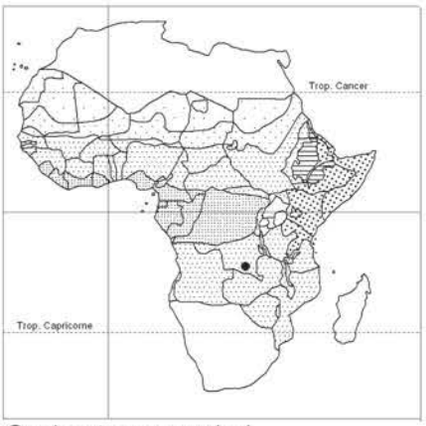
Cyphostemma buchananii



Cyphostemma bullatum



Cyphostemma burgeri



Cyphostemma cabui

the branches; peduncle 4,5-8 cm long, ± tomentose and with dense red capitate-glandular hairs; pedicels ± 2 mm long clothed as peduncle; berry purple-black, ± round, 1 cm Ø, tomentose-pubescent, glandular.

Brachystegia woodland; termite mounds; wooded or bushy rocky places; sometimes very rare to rare and sporadic; 1000-1200 m alt.

Zaire ?

C. chrysadenium (Gilg) Descoings

bas.: *Cissus chrysadenia* Gilg

Climbing shrub; young branches glabrescent, older ones glabrous; tendrils present; leaves 3-foliolate, 12-14 × 17-18 cm; leaflets ovate-oblong with laterals obliquely rounded ovate, acute at apex, rounded at base, unequally coarsely toothed, thin, glabrous above, sparsely hispid or pilose beneath; venation lax, clearly reticulate; petiole 6-7 cm long; petiolules 1-3 cm long; cymes ample, very distinctly branched, pedunculate; pedicels 7-9 mm long; berry oblong, densely covered with long gland-tipped hairs only, c. 1 cm long. – "From the specific epithet one presumes that the fruit glands are golden; no other glands are mentioned."

Ecology unknown (probably forest edge); 1250 m alt.

Only known from the type collected in 1893, in spite of extensive collecting on Kilimanjaro (Verdcourt, Fl. Trop. E. Afr., Vitac.: 111, 1993).

C. cirrhosum (Thunb.) Descoings ex Wild & R. B. Drumm. – Icon.: E. Gledhill, Eastern Cape veld flowers: 159 fig. 8, 1981.

bas.: *Vitis cirrhosa* Thunb.

syn.: *Cissus cirrhosa* (Thunb.) Willd., *excl.* var. *glabra* Harv. in Harv. & Sond. *(= C. quinatum).*

Climbing herb; stems pubescent or with capitate-glandular hairs also (subsp. **rhodesicum**); tendrils present; leaves 3-5-foliolate; petiole to 5-8 cm long, indumentum as for stem; lamina to ± 13 × 7,5 cm, ovate, broadly elliptic or elliptic, apex rounded or acute, margins serrate or crenate-serrate, base cuneate or rounded, ± pubescent on both sides; petiolules 0-3 cm long; cymes on short side-branches, lax, di- or trichotomous; peduncle to ± 9 cm long, pubescent; pedicels ± 3 mm long, pubescent; berry ellipsoid, pubescent c. 9 mm long.

Common in *Brachystegia* woodland; drier types of woodland; 1000-1400 m alt. (S. Africa).

S. Africa, Botswana, Namibia.

Comprises 2 subspp. in our area: – subsp. **transvaalense** (Szyszyl.) Wild & R. B. Drumm. [bas.: *Vitis cirrhosa* var. *transvaalensis* Szyszyl.; syn.: *Cissus cirrhosa* var. *transvaalensis* (Szyszyl.) Burtt Davy & R. Pott-Leendertz; *C. sandersonii* Harv. var. *transvaalensis* (Szyszyl.) C. A. Sm.]; – subsp. **rhodesicum** Wild & R. B. Drumm. – Subsp. **cirrhosum** in S. Africa.

C. congestum (Bak.) Descoings ex Wild & R. B. Drumm.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 457, 2002.

bas.: *Vitis congesta* Bak.

syn.: *Cissus congesta* (Bak.) Planch.; *C. fleckii* Schinz; *C. amboensis* Schinz; *C. marlothii* Dinter & Gilg; Enum. 2: 193, 1992.

Prostrate or climbing herb with a tuberous root; stems striate, greyish-pubescent or – puberulous with scattered ± long capitate-glandular hairs, sometimes glands very few, rarely quite absent; tendrils present; leaves ± subfleshy, 3-5-foliolate, sessile or subsessile; lamina to 12 × 5 cm, from narrowly elliptic to obovate when young and ± folded along the midrib, falcate, apex acute, base cuneate, from very sparsely to fairly densely puberulous or pubescent on both surfaces; petiolules to 1,5 cm long, grey-pubescent or -puberulous, sometimes with a few scattered capitate glands; cymes lax, on short axillary branches, trichotomous; peduncle to ± 5 cm long, pubescent, sometimes with scattered capitate-glandular hairs; pedicels ± 2 mm long, densely whitish-pubescent; berry ellipsoid, 7-8 mm long, red, densely pubescent.

Woodland; near river banks; 900-1600 m alt. (S. Africa).

Namibia, Caprivi Strip, Botswana, S. Africa.

Cultivated at the Botanic Garden, Graz, Austria (Fritschiana 39: 23-40, 2003).

C. cornus-africani Thulin – Icon.: Nord. J. Bot. 19: 342, 1999; Thulin, Fl. Somal. 2: 167, 1999.

syn.: *C. boranense* sensu Vollesen in Fl. Eth. 3: 412, 1989, specim. ex Somalia.

Climbing or trailing plant to c. 3 m long; young stems herbaceous, ± purplish, glabrous, later woody; bark greyish, ± peeling; tendrils unbranched, to 25 cm long; leaves digitately 3-5-foliolate, glabrous; petiole 1-6,5 cm long; leaflets broadly ovate to suborbicular, 1,5-6 × 1,2-6 cm, cordate-truncate at base, acute-obtuse at apex, margins crenate-serrate; cymes flattened, glabrous, 3-18 cm long; peduncle 1-12 cm long, pedicels 2-4 mm long (6 mm in fruit); berry ± ellipsoid, 5-6 mm long, red, glabrous.

Acacia-Commiphora open bushland on rocky limestone slopes; 350-1000 m alt.

Closely related to *C. boranense.*

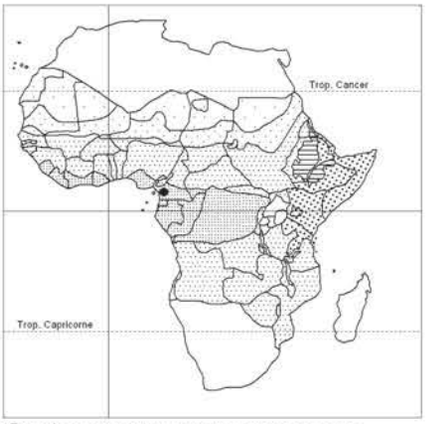
C. crassiusculum (Bak.) Descoings; Eggli, Ill. handbook succ. pl.: dicot.: 457, 2002.

bas.: *Vitis crassiuscula* Bak.

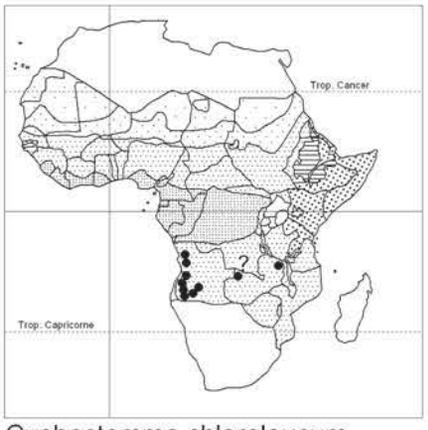
syn.: *V. thonningii* Bak. in Oliv., Fl. Trop. Afr. 1: 407, 1868, quoad specim. Welwitsch (1469, 1492 b); *Cissus buchananii* Planch. quoad specim. Welwitsch cit.; Hiern, Cat. Afr. Pl. Welw. 1: 164, 1896, quoad specim. Welwitsch cit.; *C. oppositifolia* Welw. ex Planch. in syn. sub *C. buchananii; C. crassiuscula* (Bak.) Planch.; *Cyphostemma loandense* (Gilg & M. Brandt) Descoings p.p.

Prostrate or climbing herb, rather fleshy throughout or soft woody; stems slender 1,2-3 (? -7) m long, with deciduous fine grey glandular pubescence; tendrils present; all parts with distant thickly stalked glands; leaves (3-)5-foliolate, mostly alternate but occasionally in the middle of the stem opposite, deep green on both surfaces, somewhat pubescent, almost lepidote-pubescent, occasionally with truncate viscid purple glands; petiole 3,7-5 cm long; leaflets fleshy, c. 3 × 1,5 cm, ovate-oblong, grey-glandular tomentose beneath, petiolulate, obtuse and acuminate at apex, rounded at base, margins crisped, irregularly crenate; inflorescence ample, lax, slender, 7,5-10 cm long; berry ovoid; grey-tomentose.

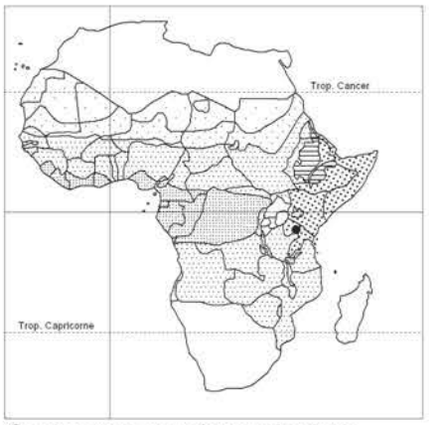
Rocky thickets; sometimes rather rare or sparingly; shortly bushy poor ground; stony grassy slopes.



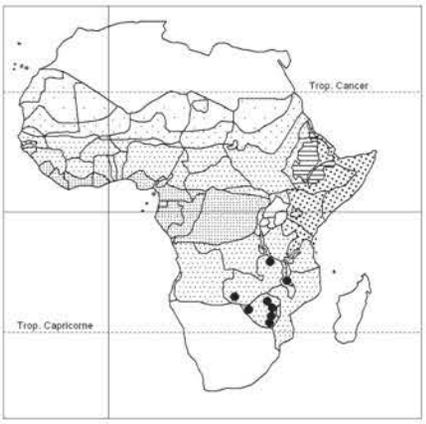
Cyphostemma camerounense



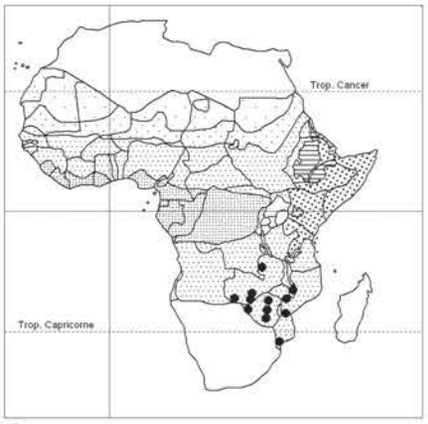
Cyphostemma chloroleucum



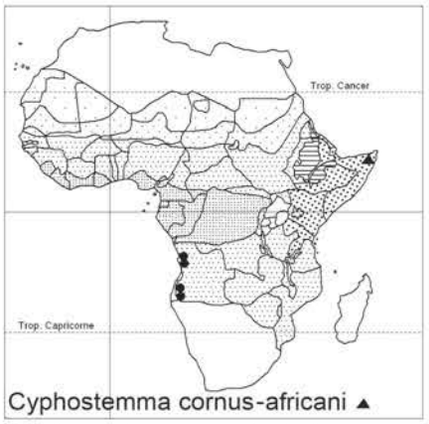
Cyphostemma chrysadenium



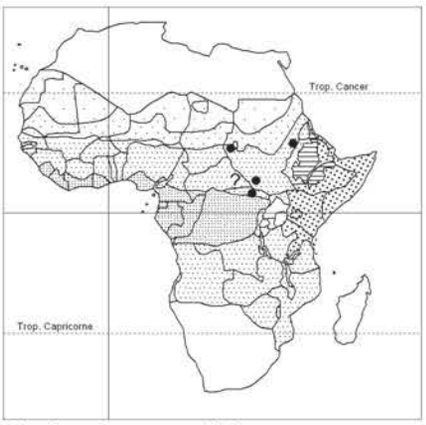
Cyphostemma cirrhosum



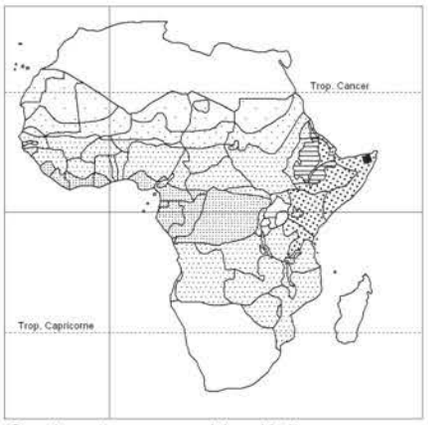
Cyphostemma congestum



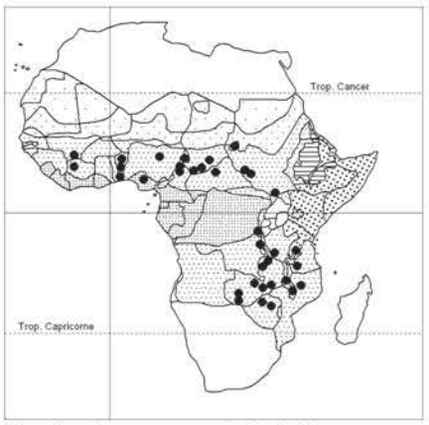
Cyphostemma cornus-africani ▲
Cyphostemma crassiusculum ●



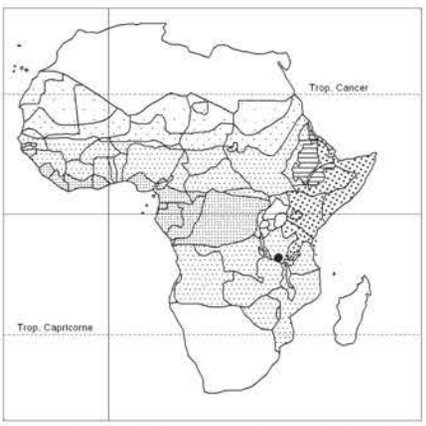
Cyphostemma crinitum



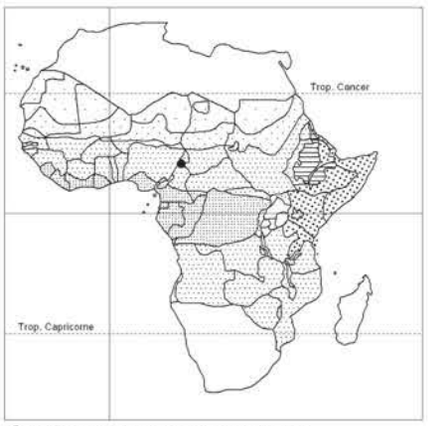
Cyphostemma crithmifolium



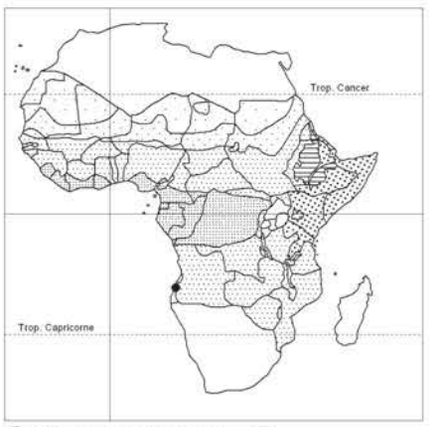
Cyphostemma crotalarioides



Cyphostemma cryptoglandulosum



Cyphostemma cuneatum



Cyphostemma currorii

C. crinitum (Planch.) Descoings ("crinatum", sphalm. Fl. Congo belge 9: 495, 1960). – Icon.: Bot. Jahrb. Syst. 46: 483, 1912; Engler, Pflanzenwelt Afr. 3/2: 326, 1921 (sub gen. *Cissus).*

bas.: *Cissus crinita* Planch.

Erect herb, ± 50 cm tall, from a half-succulent woody base; tendrils absent or very reduced; stems and branches striate, pubescent and with glandular hairs to 5 mm long; leaves digitate, 3-7-foliolate; petiole 3-12 cm long, pubescence as for the branches; leaflets sessile, lanceolate-elliptic, cuneate at base, irregularly serrate-dentate, ciliate, the main leaflet 15-24 × 3-8 cm, granular on both surfaces; subglabrous above, sometimes with some glandular hairs on the main nerve; glabrous below but pubescent on the nerves; cymes compound, to 6 cm long, ramose from the base; axes tomentose-pubescent and with glandular hairs; berry ovoid, reddish, c. 9 mm long, pubescent, glandular.

Wooded savannas.

C. crithmifolium (Chiov.) Descoings; Eggli, Ill. handbook succ. pl.: dicot.: 457, 2002.

bas.: *Cissus crithmifolia* Chiov.

Trailing or scrambling plant; stems slender, fleshy, pubescent; leaves fleshy, pubescent, the upper ones sessile, 1-3-foliolate, the lower ones shortly petiolate, 5-foliolate; leaflets spathulate, 10-22 × 6-12 cm, attenuate or cuneate at base, rounded and incised-dentate at apex; inflorescence pubescent, peduncle 2-3 cm long; pedicels 2-5 mm long; berry ellipsoid-obovate, c. 1 cm long, puberulous.

Semi-desert open ground; 0-470 m alt.

Not in Ethiopia.

C. crotalarioides (Planch.) Descoings ex Wild & R. B. Drumm.; Akoegninou & al., Fl. analyt. Bénin: 1006, 2006.

bas.: *Cissus crotalarioides* Planch.

syn.: *Vitis variifolia* Bak.; *Cyphostemma variifolium* (Bak.) Descoings; *Cissus variifolia* (Bak.) Gilg & M. Brandt; *C. menyanthifolia* A. Chev., nom.; *Vitis apodophylla* Bak. 1897; *V. zombensis* Bak.; *Cissus zombensis* (Bak.) Gilg & M. Brandt; *Cyphostemma zombense* (Bak.) Descoings ex Wild & R. B. Drumm. (vide Fl. Trop. E. Afr., Vitaceae: 82, 1993); *Cissus helenae* Buscal.& Muschl. (vide o.c.: 68); *Cyphostemma helenae* (Buscal. & Muschler) Descoings

Erect usually sticky perennial herb, 0,45-1,5 m tall from a tuberous rootstock; stem single, 8-10 mm Ø, ridged, tomentellous to densely pubescent and usually but not always with short gland-tipped hairs or ± sessile glands; tendrils absent; leaves drying ferruginous, sessile, digitately 3-4-foliolate; leaflets oblanceolate or narrowly oblong-obovate to obovate, 8,5-25 × 1,7-10,5 cm, rounded or truncate at apex, cuneate at base, serrate or crenate, puberulous and with scattered short gland-tipped hairs or sessile glands above, densely pubescent or tomentose beneath and with scattered glands; venation closely reticulate beneath; petiolules 0-3 cm long; cymes borne in upper axils, to 6 cm wide; peduncles to 4 cm long, tomentose and with gland-tipped hairs or ± sessile glands; pedicels 2,5 mm long, with similar indumentum; berry ellipsoid, 0,7-1 cm long, green to orange-red, red turning black-brown or blue, rugose, densely pubescent and with gland-tipped hairs.

Grassland; *Brachystegia* woodland; grassland with scattered trees; valley forest / grass plateaux mosaics; often on rocky hillsides; forest gallery; fallow land on deep sand; sandstone plateaux; 820 (? and less) -1800 m alt.

C. cryptoglandulosum Verdc.

Erect shrub 0,4-1,5 m tall from a large woody rootstock at least 5 cm wide; stems densely floccose velvety with pale ferruginous (cinnamon; ? white in life) tangled hairs hiding scattered sessile discoid glands; tendrils absent; leaves sessile, 5-7-foliolate; leaflets ± sessile, elliptic-lanceolate, 6-26 × 1-6 cm, narrowly acute at apex, narrowly cuneate at base, sharply regularly serrate, very discolorous, puberulous above, thickly velvety beneath, often hiding the sessile discoid glands; cymes terminal, to 8 cm wide; peduncle 1-1,5 cm long, together with axes pubescent and with sessile glands; pedicels 2-3 mm long pubescent and with gland-tipped hairs; fruit unknown.

Brachystegia longifolia woodland on sandy slopes; 1400 m alt.

Related to *C. gigantophyllum.*

C. cuneatum (Gilg & M. Brandt) Descoings

bas.: *Cissus cuneata* Gilg & M. Brandt

Perennial climber; stems ± cylindrical, channelled, 2,5-3,5 mm Ø, with rather dense pubescence and glandular, scattered, sometimes rare hairs; tendrils slender, cylindrical, forked, ± densely pubescent with scattered glandular hairs; leaves digitately 5-foliolate; petiole cylindrical, 2-5 cm long, ± densely pubescent, slightly glandular; petiolules 2-5 mm long, canaliculate above, pubescent; leaflets oblong-lanceolate or oblanceolate, obtuse at apex or shortly pointed, long cuneate and decurrent along the petiolules, 8-15 × 2,5-4,5 cm; margins with some broadly deltoid indentations ending in a stout point; pubescence very scattered below, subglabrous above; cymes umbel-like, to 20 cm long; peduncles and axes striate, ± densely pubescent and sparsely glandular; peduncle to 11 cm long; pedicels cylindrical, 1,5-2,5 mm long, densely pubescent; berry 2 cm long, 1 cm Ø.

Hills; rather rare; grassy, swampy savanna; bushwood; 300 m alt.

C. currorii (Hook. f.) Descoings; Coates Palgrave, Trees south. Afr., ed. 3: 681, 2002; Descoings, Succulentes (France), N° Spécial: 42, 2004. – Icon.: Curtis's Bot. Mag. 90: tab. 5479, 1864; Curtis & Mannheimer, Tree Atlas Namibia: 420-421, 2005; Descoings in Eggli, Ill. handbook succ. pl.: dicots.: fig. LXIII g, 2002; Craven & Marais, Damaraland flora: 14, 16, 2003; Cattabriga & van Jaarsveld, Cactus & Co. 2/11: 97-98, 102 *(C. crameriarum),* 104, 106, 2007.

bas.: *Cissus currorii* Hook. f.

syn.: *Cissus macropus* Welw.; *Vitis macropus* (Welw.) Hook.; *Cissus gastropus* Welw. ex Planch.; *Vitis gastropus* Welw. ex Planch. in syn.; *Vitis currorii* (Hook. f.) Bak.; *Cissus currorii* sensu Gilg & M. Brandt, Bot. Jahrb. Syst. 46, 512, 1912, *excl.* fig. 13 *[= Cyphostemma bainesii* (Hook. f.) Descoings]; *Cissus crameriana* Schinz; Enum. 2: 193, 1992.

Deciduous tree < 1 to 8 m tall, quite succulent (pachycaul); trunk to 1 m Ø, straight, forming a large ovato-conical bulb towards the apex, 2-3 -brachiate, covered with a smooth herbaceous green bark and a whitish-brown pergamentaceous epidermis, which separates from the bark in lamellae as a Birch-tree *(= Betula);* roots consisting of long cylindrical subsimple fibres; branches 22,5 cm long × 5-10 cm thick, towards their apices dividing abruptly into branchlets producing leaves and flowers; tendrils absent; branchlets indistinctly striate and very patent, and, as well as the leaves and petioles while young, clothed with white arachnoid hairs, at length subglabrous, of the thickness of a finger; leaves (at first plicate and albo-tomentose) long-petiolate, 3-5-foliolate; leaflets ovate-elliptical or obovate, shortly

petiolulate, unequally toothed, arachnoid-pubescent on both sides, the terminal one longer, petiolulate, 10-12,5 cm long, the lowest pair inequilateral at the base, the rest ± cordate; inflorescence peduncles (or by abortion terminal) about equal in length with the petiole, slightly striate, patent, dichotomo-ramulose, the branchlets obliquely erect, forming a broadish corymb; berries ± round, red, 0,5-1 cm Ø, in grape-like bunches.

Rocky plains and hillsides; dry mountains; 120-180 m alt.

N Namibia (1154-1800 m alt.).

The largest pachycaul species in the genus; cultivated.

C. cymosum (Schumach. & Thonn.) Descoings; Akoegninou & al., Fl. analyt. Bénin: 1002, 2006 (sub gen. *Cissus).* – Icon.: Berhaut, Fl. ill. Sénégal 1: 204, 1971 (sub gen. *Cissus).*

bas.: *Cissus cymosa* Schumach. & Thonn.

syn.: *Vitis thonningii* Bak.; *Cissus bakeriana* Planch.; *Cyphostemma bakerianum* (Planch.) Desc., nom. invalid. (treated by Descoings, Fl. Cameroun 13: 46, 1972, as a synonym under *C. adenopodum).* – All of subsp. **cymosum**.

Climber 1,8 to several m long; with short gland-tipped hairs on all parts; stems striate, cylindrical, 2-3 mm Ø, densely covered with short ± adpressed grey-brown pubescence; tendrils present; leaves sessile to shortly petiolate, 3-5-foliolate; leaflets elliptic to elliptic-oblong or obovate-elliptic to obovate-lanceolate, 2-10 × 1-3,5 cm, acute to rounded at apex, cuneate at base, ± unequally shortly acutely serrate, pubescent above and sometimes with glandular hairs, more densely pubescent or even thinly velvety beneath, gland-tipped hairs sometimes restricted to nervation and margins; venation usually ± reticulate beneath; petiole 0-4 cm long, with similar pubescence to stems; median petiolules 5-13 mm long, the laterals much shorter or ± suppressed; cymes axillary or appearing terminal, 9-20 cm wide; peduncles 2,2-10 cm long, pubescent; pedicels 2-3 mm long (to 10 mm in pole flower and 4-5 mm in fruit); berry red-purple, ± round, c. 1 cm Ø, pubescent or puberulous, glandular hairy (subsp. **cymosum**) or not (subsp. **orientale**).

Woodland with rich herb cover; bushland; *Harrisonia-Ziziphus* scrub; grassland; old termite mounds; wet savanna; marigot edges; rocky places; fallow land; granitic rock screes; wooded savanna, near sea-level to 2375 m alt.

Comprises 2 subspp. (subsp. **orientale** Verdc. in E. Africa).

C. cyphopetalum (Fresen.) Descoings ex Wild & R. B. Drumm. – Icon.: Troupin, Fl. Rwanda 2: 363, 1983.

bas.: *Cissus cyphopetala* Fresen.

syn.: Enum. 3: 333, 1995; and *Vitis cyphopetala* (Fresen.) Bak.; *Cissus macrothyrsa* Gilg; *C. gallaensis* Gilg & M. Brandt; *C. kaessneri* Gilg & M. Brandt; *C. pachyrrhachis* Gilg & M. Brandt; *C. pseudonivea* Gilg & M. Brandt; *C. tenuipes* Gilg; *C. nieriensis* T. C. E. Fries; *Cyphostemma pseudoniveum* (Gilg & M. Brandt) Descoings; ? *C. egregium* (Gilg) Descoings; ? *Cissus egregia* Gilg – All of subsp. **cyphopetalum** var. **cyphopetalum**.

Herbaceous often ± succulent climber or scrambler 3-6 m long, from a fleshy ellipsoid or turnip-shaped rootstock to 60 cm long; all parts puberulous to tomentose or velvety and occasionally with stalked glands; stems often reddish; tendrils often crimson or red; leaves 3-5-foliolate; leaflets ovate to elliptic, obovate or ± round, 1,5-15 × 1-10 cm, rounded to acute or ± acuminate at apex, cuneate to subcordate at base, very coarsely toothed or crenate, pubescent above, pubescent to velvety beneath; petiole 1-6,5 cm long; petiolules 0,3-3,5 cm long; cymes lax, 4-20 cm long

and wide; peduncle 2,5-13,5 cm long; pedicels 1-8 mm long (to 11 in fruit), densely pubescent-tomentose and often with few gland-tipped hairs; berry scarlet, ellipsoid-round, 4-10 mm long, puberulous to tomentose or densely softly pubescent.

Bushland; montane evergreen forest; *Olea-Juniperus* and *Prunus, Podocarpus, Acacia lahai* forest particularly forest / grassland margins; grassland with scattered trees and derived waste places; grassy savannas, rocks and grantic-sandy places; *Acacia-Commiphora, Acacia-Combretum, Acacia-Balanites* woodland; roadsides; persisting in cultivated areas; termite mounds; forest gallery; neglected *Cedrela* plantation with regenerating mixed woodland of *Combretum collinum, Stereospermum kunthianum, Acacia hockii, Albizia grandibracteata* on ground with rocky outcrops; *Combretum molle, Cussonia arborea, Stereospermum, Erythrina abyssinica, Entada abyssinica* wooded grassland; riversides; 250-2800 m alt.

Complex and variable species: without gland-tipped hairs [subsp. **cyphopetalum** var. **cyphopetalum**, subsp. **craterum** Verdc.], with often red gland-tipped hairs [subsp. **cyphopetalum** var. **nodiglandulosum** (T. C. E. Fries) Verdc.]; type of pubescence; shape of leaflets and flower buds. – Shape and sculpture of the seeds were thought to be good characters, but according to Verdcourt (Fl. Trop. E. Afr., Vitac.: 123, 1993) this seems to be false. – See also discussion in Thulin, Fl. Somal. 2: 168, 1999, under *C. digitatum.*

Comprises 2 subspp.; subsp. **cyphopetalum** with 2 vars. in Kenya, Tanzania (Enum. 3: 333, 1995).

C. bambuseti var. *glandulosissimum* is intermediate with **C. cyphopetalum**.

C. dasycarpum Verdc.

Climber, with striate stems; plant with dark red gland-tipped hairs 1-3 mm long but ± without other indumentum; tendrils present, similarly hairy; leaves 3-5-foliolate; leaflets oblong-elliptic to elliptic, 4,5-9,5 × 2-3,5 cm, acuminate at apex, attenuate at base, crenate-serrate, glabrous except the sparse hairs on nerves beneath and with scattered small sessile pale orange glands beneath, very evident on very young leaves; petiole 2-7,5 cm long; petiolules 0-3 mm long, both very densely covered with gland-tipped hairs; cymes 8-14 cm wide; peduncles to 9,5 cm long, glandular hairy; pedicels 3-5 mm long, all axes densely pubescent and with gland-tipped hairs and sessile glands; berry oblong, 11 mm long, with red gland-tipped hairs.

Forest edges, *Acacia* woodland; 1005-1524 m alt.

Similar to *C. greenwayi* but stem indumentum different.

C. degraeri (Dewit) Descoings

bas.: *Cissus degraeri* Dewit

Herbaceous climber; stems and branches striate, pubescent, becoming glabrescent and with glandular hairs; tendrils pubescent and with glandular hairs, simple or forked; leaves 3-5-foliolate; petiole 2-6 cm long, pubescence as for the stems; leaflets with petiolules 2-4 mm long, pubescence as for the stems; lamina elliptic, acuminate at apex, serrate, the main leaflet 6-12 × 2,5-5 cm; pubescence above becoming glabrescent except on the main nerve with sometimes some glandular hairs, glabrous below except on nerves; cymes compound, to 17 cm long; peduncle 3-7 cm long, like the axes pubescent with very dense glandular hairs at tip of peduncle; ripe fruit unknown.

Savannas with forest regrowth; wooded dry savannas.

CYPHOSTEMMA

C. dembianense (Chiov.) Vollesen

syn.: Enum. 2: 193, 1992.

Herbaceous climber to 3 m long; all parts pubescent and sometimes with scattered to dense stalked glands; leaves 3-5-foliolate; petiole 1-8 cm long; leaflets ovate to elliptic, 3-15 × 1,5-8,5 cm, grossly dentate with large triangular apiculate teeth; apex acuminate to acute; base attenuate to cuneate; inflorescence 5-20 cm long; peduncle 1,5-9 cm long; pedicels 2-4 (-7 in fruit) mm long, pubescent to subtomentose and usually glandular; berry ellipsoid – ± round, 6-8 mm Ø, densely pubescent to tomentose, with scattered glands.

Forest edges; grassland and scrub-grassland; secondary forest; 1500-2300 m alt.

C. descoingsii Lavie

Erect herb to ± 1 m tall; tendrils absent; stems pale green, to 3 cm Ø at base, channelled longitudinally, arising from a tuberous, ramose rootstock, very pilose with glandular-capitate, reddish hairs to 1,5 mm long and some rare hyaline short hairs; leaves simple, alternate, deeply 3-lobed, to 42 × 25 cm, with some sessile orange to brownish glands and glandular stiff hairs; main lobe elliptic to obovate, 32 × 8 cm, attenuate at base, acute or cuspidate at apex; lateral lobes ± falcate, 29 × 8 cm, very asymmetrical at base, acute or cuspidate at apex; margins denticulate; inflorescence terminal, cymose, generally biparous, dense, 6 × 5 cm; peduncle 1-3 cm long, 1-1,5 mm Ø, pubescent and glandular; berry blackish, ellipsoid, 1-1,2 cm long, densely pubescent and glandular.

Ravine with waterfall; track side among lateritic and sandstone boulders.

Very near *C. waterlotii.* The specimen Lavie 1597 from Dinndéfélou is quite probably the hybrid *C. waterlotii* × *C. descoingsii.* Sometimes the two species grow together. Really a good species ?

A. desenfansii (Dewit) Descoings

bas.: *Cissus desenfansii* Dewit

Herb, erect, to 1 m tall; stems and branches striate, puberulent and with glandular hairs to 5 mm long; leaves sessile, digitately 3-foliolate; leaflets with petiolules 2-3 cm long, puberulent and with glandular hairs; lamina ovate, cuneate at base, dentate, 12 × 5 cm, sparsely puberulent and with short, scattered, glandular hairs; similar below but glandular hairs longer and denser; cyme compound, to 7 cm long; peduncle ± 3 cm long; all axes clothed as leaflets; ripe fruit unknown.

Open forests.

Only known from the type collected in 1953.

[**C. digitatum** ("Forssk.") Descoings] or (Lam.) Descoings (bas.: *Cissus digitata* Lam.).

bas.: *Saelanthus digitatus* Forssk., nom. invalid.

syn.: *Cissus digitata* ("Forssk.") Lam.

Treated in Thulin, Fl. Somal. 2: 94-95, 1999, as regrouping *C. cyphopetalum* and *C. dysocarpum.* Verdcourt (Fl. Trop. E. Afr., Vitac.: 124, 1993) used the name *C. digitatum* for the Arabian material (Yemen, SW Saudi Arabia) without stalked glands (and with very different petals).

CYPHOSTEMMA

C. duparquetii (Planch.) Descoings – Icon.: Fl. Trop. E. Afr., Vitaceae: 104, 1993.

bas.: *Cissus duparquetii* Planch.

syn.:? *C. gwinneriana* Engl. & Gilg, unpubl. name in sched.

Climber to 10 m long, drying dark; stems striate with sparse to ± dense tangled greyish hairs and few red gland-tipped hairs; tendrils present; leaves 5-foliolate; leaflets obovate, 1,5-12 × 0,5-7 cm, rather rounded in outline at apex but ± acute, cuneate at base, crenate, the crenations mostly rounded or rounded and apiculate, shortly pubescent above, ± velvety adpressed pubescent beneath particularly on nervation and often with a few gland-tipped hairs; petiole 2-12 cm long, pubescent like the stems; petiolule 0-1 cm long, with dense obviously multicellular hairs and some gland-tipped hairs; cymes lax, 6-22 cm wide, the individual cymelets dense; peduncles and axes pubescent like the stems, the gland-tipped hairs sparse; pedicels 5 mm long, pubescent and with many ± purple ± long gland-tipped hairs; berry red, ovoid, 1-1,6 (-2) cm long, with stiff crimson hairs, very characteristic.

Forest of *Combretum schumannii, Sterculia appendiculata, Cordyla, Annonaceae;* forest on coral; thickets; *Cedrela* plantation edges; 10-600 m alt.

C. dysocarpum (Gilg & M. Brandt) Descoings; Enum. 3: 333, 1995.

bas.: *Cissus dysocarpa* Gilg & M. Brandt

Usually very sticky scrambling or climbing herb to 4 m long, or massive climber, at least sometimes from a tuberous root; all parts shortly pubescent and with usually dense short gland-tipped hairs; tendrils present; leaves often fleshy, 3-5-foliolate; leaflets elliptic, obovate or ± round to transversely elliptic, 2,5-11,5 × 1,5-12 cm, broadly rounded at apex, cuneate to rounded at base, coarsely crenate to dentate, densely shortly pubescent or ± glabrous above, glabrous beneath except for hairs and glands on nerves or velvety pubescent or with gland-tipped hairs on both surfaces; petiole 0,5-7 cm long; petiolules 0-10 mm long; cymes 8-30 cm wide; peduncle 4-22 cm long; pedicels 2-5 (-10 in fruit) mm long; axes puberulous or pubescent and with often crimson dense short gland-tipped hairs; berry ± ellipsoid, 0,8-1,3 cm long, red, pubescent and with red dense gland-tipped hairs.

Acacia, Cadaba, Grewia, Salvadora bushland and thickets on rocky hillsides and stony volcanic soil; ? dry grassland; woodland edges; bushland near shore (subsp. **pwani** Verdc.); *Acacia, Commiphora* woodland and bushland on sandy soil overlying limestone or on rocky outcrops; 0-1860 m alt. (subsp. **glandulosissimum** at higher alt.)

Variable in type of indumentum: from densely glandular (subsp. **glandulosissimum** Verdc.) to ± glabrous to pubescent without glands (subsp. **dysocarpum**).

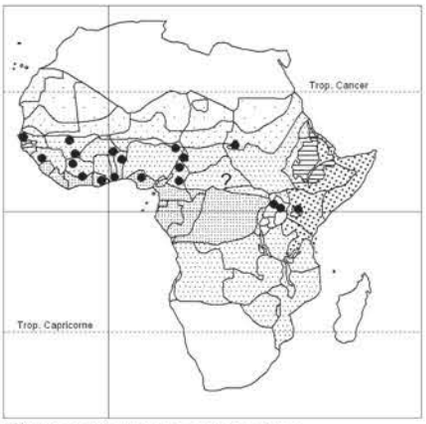
Comprises 3 subspp.

In Thulin, Fl. Somal. 2: 168, 1999, treated as a synonym under *C. digitatum.* – The complex *C. jiguu, C. dysocarpum, C. niveum, C. cyphopetalum, C. engleri,* must be cleared up in the field and by cultivation.

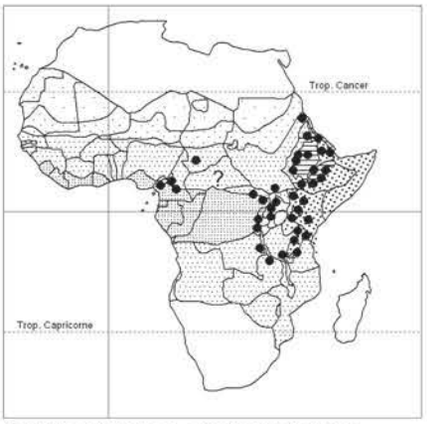
C. elisabethvilleanum (Dewit) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus elisabethvilleana* Dewit

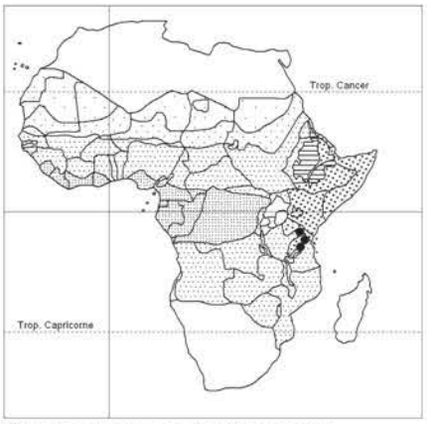
Suberect, prostrate or scrambling herb 20-60 cm long from a ± horizontal or ± globose tuber; stems pubescent with multicellular hairs and with longer red gland-tipped hairs; tendrils



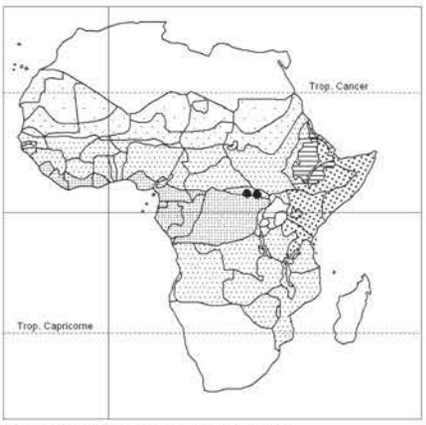
Cyphostemma cymosum



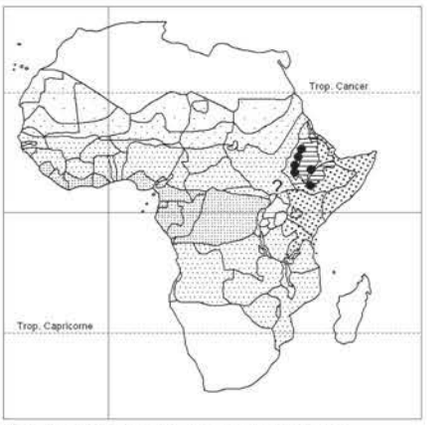
Cyphostemma cyphopetalum



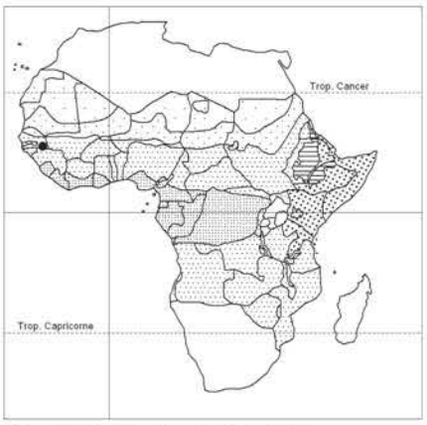
Cyphostemma dasycarpum



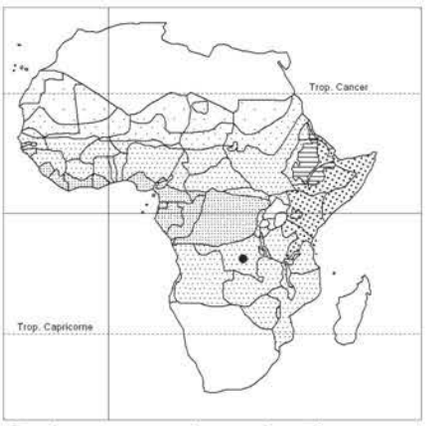
Cyphostemma degraeri



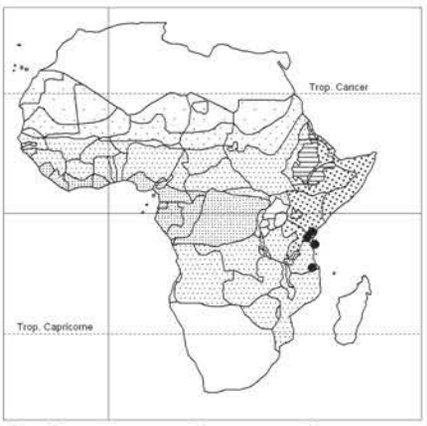
Cyphostemma dembianense



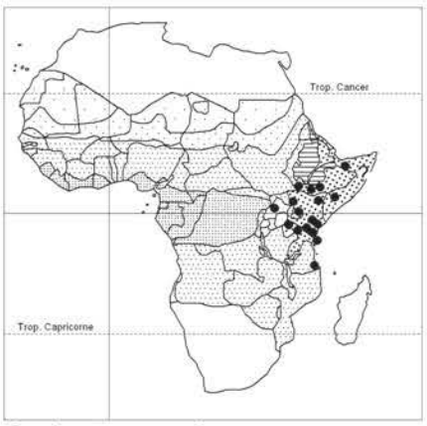
Cyphostemma descoingsii



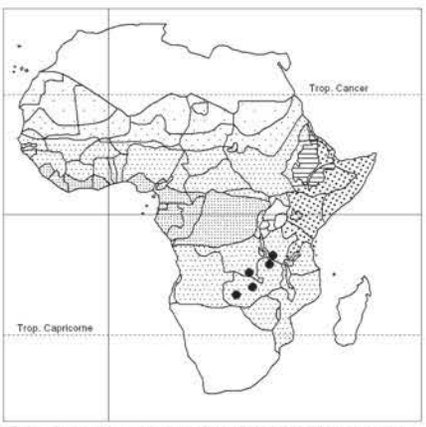
Cyphostemma desenfansii



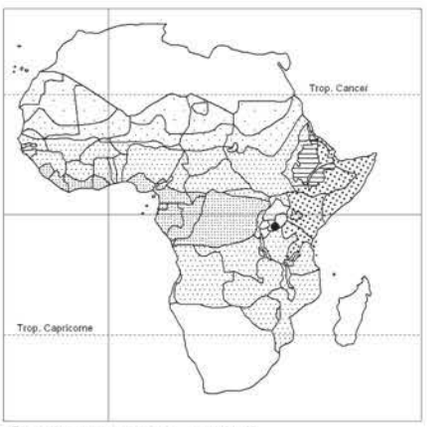
Cyphostemma duparquetii



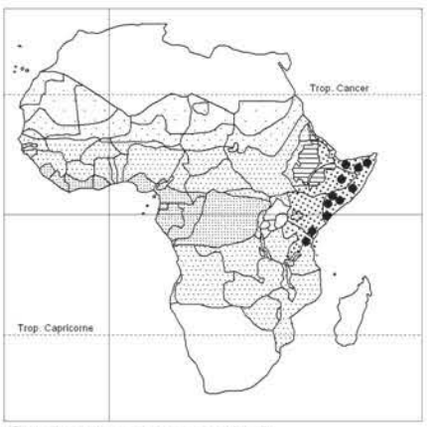
Cyphostemma dysocarpum



Cyphostemma elisabethvilleanum



Cyphostemma eminii



Cyphostemma engleri

sometimes present; leaves digitately 3-foliolate; leaflets narrowly oblong to elliptic, 2-7,5 × 0,7-2,2 cm, acute or subacute at apex, cuneate or ± asymmetrically rounded in the laterals, shallowly crenate to serrate, strigose-pilose and with some gland-tipped hairs; petiole 0-1,5 cm long; petiolules 0-5 mm long; cymes axillary, 2-6 cm wide, axes red; peduncle 1-5 cm long with similar indumentum to stems; pedicels 1,5-5 mm long, glabrescent or pubescent and with some gland-tipped hairs. Fruit known: red, ellipsoid, 6-7 mm long, with scattered gland-tipped hairs.

Long grass on steep hillside; wooded savannas on dry soil; *Brachystegia* and other woodlands; 1250-1740 m alt.

C. eminii (Gilg) Descoings

bas.: *Cissus eminii* Gilg

Climbing shrub; stems grey tomentose with some intermixed glands; tendrils present; leaves fleshy, 5-foliolate; terminal leaflet obovate-oblong, 3-3,5 × 2 cm, acute at apex, gradually attenuate at base; laterals smaller, suboblique, all sparsely tomentose above, very densely tomentose beneath, unequally coarsely serrate; petiole 1,5-2 cm long; petiolules clearly evident; inflorescence "pseudopaniculate", 17-18 cm wide; peduncle 4-5 cm long; pedicels 3-4 mm long, brown tomentose; flower unknown; berry ± round, pea-sized, densely brown-tomentose and with glands.

Ecology unknown; 1120 m alt.

Form of *C. dysocarpum* ?

Only known from the type collected in the years 1888-1890.

C. engleri (Gilg) Descoings

bas.: *Cissus engleri* Gilg

syn.: *C. phyllomicron* Chiov., incl. fa. *eglandulosa* Chiov.; *Cyphostemma phyllomicron* (Chiov.) Descoings, incl. fa. *eglandulosa* (Chiov.) Descoings

Woody climber 1,5-2 m long (sometimes woody stems absent) with herbaceous shoots; young stems glabrous to puberulous; older stems brown to dull purplish brown with grey epidermis, often prominently lenticellate, eventually the bark flaking; leaves ± fleshy, 3-5-foliolate, glabrous to pubescent; leaflets obovate to spathulate 1-5 × 0,5-3,5 cm, broady rounded to truncate at apex, cuneate at base, coarsely toothed, sometimes folded; petiole 0,3-4 cm long, glabrous to pubescent, sometimes with scattered glands; petiolules 0-8 mm long; cymes lax, 2-15 cm wide; peduncle 1-5,5 cm long; pedicels 2-5 mm long elongating to 10 mm; axes glabrous to pubescent and sometimes with scattered glands; berry ellipsoid, red, 8-10 mm long, puberulous and occasionally glandular.

Commiphora, Acacia, Combretum, Terminalia, Boscia bushland; *Acacia, Commiphora* woodland on red sandy soil overlying limestone; 20-1650 m alt.

In Thulin, Fl. Somal. 2.: 168, 1999, *C. engleri* is included under *C. digitatum* as its "most common and widespread form" (woody stems often absent). The true distribution in Ethiopia and Somalia needs further studies on fruiting material for seed characters.

C. erythrocephalum (Gilg & M. Brandt) Descoings

bas.: *Cissus erythrocephala* Gilg & M. Brandt

Herbaceous climber; tendrils forked, pubescent and with rare glandular hairs; stems and branches striate, pubescent like the tendrils; leaves digitate, 3-5-foliolate; petiole 1,5-4,5 cm long, pubescent as above; leaflets with petiolules 2-7 mm long, pubescent; lamina elliptic-obovate, cuneate at base, serrate-dentate,

the median leaflet 4-8 × ± 2 cm, sparsely pubescent-puberulent on both surfaces; cymes compound, to 20 cm long; peduncle 4-6 cm long, with a tuft of long glandular hairs at the tip; peduncles and axes pubescent and with rare glandular hairs; berry ovoid, 6 mm long, pubescent.

Savannas; mountain slope in open forest; 300 m alt.

Not in Flore du Cameroun; type (Ledermann 4394) lost.

C. feddeanum (Gilg & M. Brandt) Descoings

bas.: *Cissus feddeana* Gilg & M. Brandt

Erect perennial herb; stems, petioles and peduncles covered with dense short grey-ferruginous tomentum together with dense long spreading red gland-tipped hairs; tendrils absent; leaves 3-5-foliolate; leaflets ovate, the median to 6 × 2,5 cm, acute at apex, cuneate at base, coarsely unequally serrate at margins, densely shortly pilose above, with dense grey tomentum beneath with ferruginous nerves; petiole 1-2,5 cm long; petiolules obsolete; cyme lax and many-flowered, 7-10 times forked; peduncle 2,5-3,5 cm long, pedicel 2 mm long, densely ferruginous-tomentose; fruit unknown.

Ecology unknown; 200 m alt.

Only known from the type collected in the years 1888-1890.

There is a slight discrepancy between the original description and the key (leaves with white velvety tomentum beneath).

C. flavicans (Bak.) Descoings

bas.: *Cissus flavicans* Bak.

Stems annual, erect or suberect, fleshy, angular, deeply striate, firm-herbaceous, when young slightly grey-downy and setose, when mature glabrous, 0,5-2 m tall from an underground rootstock; whole plant sticky; tendrils absent; leaves sub-fleshy, digitately 2-5-foliolate; petiole 3-15 cm long, angular, compressible, striate, clothed with short spreading yellowish hairs and pellucid setae; terminal leaflet oblong-lanceolate, 15-26 × 5-8,5 cm, acute at apex, edges slightly inciso-crenate, lower part cuneate; the laterals similar to the median, the lowest pair rounded on the outer side at base; texture firmly membranous, upper surface scabrous or glabrous, lower clothed, especially on the raised veins, with fine stiff yellowish hairs; cyme leaf-opposed, copiously branched, 15-20 cm wide, pedicels 3-6 mm long, villose and densely setose, peduncle 8-15 cm long; berry red, edible.

Burnt savanna; savanna woodland.

[**C. flaviflorum** (Sprague) Descoings – Icon.: Gibson, Wild flowers of Natal: pl. 62, fig. 4, 1975.]

bas.: *Cissus flaviflora* Sprague

Succulent climber; leaves 3-foliolate; lamina 2-5,5 × 1,5-3,8 cm, succulent, obovate, cuneate at base or obtuse, margins acutely crenate-dentate, tip rounded, glabrous above, nerves wrinkled-pubescent below; petiole 3-4 mm long, densely pilose; petiolules 2-3 mm long, pilose as for petiole; cymes 3-brachiate, 5-6 cm Ø; peduncle 1-2,3 cm long, pedicels 2 mm long, both densely wrinkled-pubescent.

Coastal bush in S. Africa (Natal): creeps over dune trees and into seaside forests; 0-50 m alt.

Also in tropical Africa fide Klopper & al., Checklist flowering pl. Sub-Saharan Afr.: 679, 2006.

Not mapped.

C. fugosioides (Gilg) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus fugosioides* Gilg

Succulent, erect herb 12-50 cm tall from a tuberous rootstock; stems glaucous, whitish green, striate, slender, pubescent; tendrils absent; leaves digitately 3-5-foliolate, sessile or with petioles to 1,5-4,5 cm long, sparsely pubescent or glabrescent; lamina ± 5-8,5 × 0,5-1 cm, subsessile, linear to lorate-lanceolate, apex acute or obtuse, mucronate, margins sparsely and acutely serrate, base narrowly cuneate, glabrous; cymes purplish red, lax, terminal, 4 cm long; peduncle ± 1,5-6 cm long, pubescent: pedicels 1-2 mm long, with short capitate glands; berry ± round, 6-8 mm Ø, scarlet, glabrous. – Resembling some *Apiaceae.*

Woodland; open grassland; on sand; rocks of brown ironstone on river bank; primary open woods on rocky slopes, often with *C. junceum* subsp. *jatrophoides.*

C. gigantophyllum (Gilg & M. Brandt) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus gigantophylla* Gilg & M. Brandt

Subshrubby herb ± 50 cm tall, nearly always a climber, rarely erect; rootstock red, thick, woody, 15 × 7 cm; stems ± succulent, striate, densely shortly pubescent to pale ferruginous velvety, often with sessile capitate glands; tendrils present; leaves digitately 3-7-foliolate; petiole 2-20 cm long but mostly shorter, indumentum as for stems; lamina 2-20 × 0,7-9 cm but usually smaller, elliptic to narrowly obovate-oblong, apex acute, margins from serrate to crenate, base cuneate, pubescent or glabrescent above, ± densely pubescent below or rarely subtomentose, with scattered sessile capitate glands usually concentrated near the apex, subsessile or shortly petiolulate; cymes lax, on short axillary branches; peduncle ± 5 cm long, indumentum as for stem; pedicels to 8 mm long, densely pubescent, usually with sessile capitate glands and occasionally with shortly stalked capitate glands also; berry orange red or scarlet, ellipsoid, c. 1 cm long, pubescent with short white hairs and red-orange brown gland-tipped bristly hairs 3-6 mm long.

Brachystegia, Uapaca and *Julbernardia, Combretum, Terminalia* woodland; sometimes on black cotton soil; 100-1650 m alt.

C. gilletii (De Wild. & T. Durand) Descoings (not "gillettii" as in Fl. Congo belge 9: 507, 1960).

bas.: *Cissus gilletii* De Wild. & T. Durand

Herbaceous climber; stems and branches striate, pubescent; tendrils tomentose to pubescent, forked; leaves digitately 3-5-foliolate; petiole 8-20 cm long, tomentellous to pubescent-puberulous; petiolules 4-20 mm long, tomentellous; lamina ovate to obovate, acuminate at apex, margins undulating-dentate, the median leaflet 8-12 × 3-7 cm, tomentellous when young becoming densely puberulent on both faces; cymes compound, to 30 cm long; peduncle to 20 cm long, tomentellous to pubescent-puberulent as for axes; berry round, 6 mm Ø, pubescent and with ± sessile glands.

Rain-forests; forest regrowth.

C. gracillimum (Werderm.) Descoings

bas.: *Cissus gracillima* Werderm.

Climbing herb to 3 m long; stems slender, pale, glabrous; tendrils present; leaves 5-foliolate; leaflets sessile, narrowly elliptic-lanceolate, 1,5-10,5 × 0,2-1,3 cm, acute at apex, attenuate at base, ± sparsely denticulate with minute narrow teeth, glabrous; petiole 1-6,5 cm long; petiolules obsolete but leaflet-base very narrow; inflorescences terminating lateral shoots, ± 10 cm wide; peduncles ± 4 cm long; pedicels 3-8 mm long, ± glabrous but some axes pubescent with short appressed hairs; berry crimson, ellipsoid, c. 1 cm long, glabrous.

Grassy places in *Brachystegia* woodland; rocky ridge with xerophytes; deciduous coastal thicket; 600-1200 m alt.

C. grahamii Verdc.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 458, 2002.

Succulent erect herb 45 cm tall; stems striate, shortly ferruginous pubescent; tendrils absent; leaves 5-foliolate; leaflets subsessile, obovate, 1-5,5 × 0,5-3,5 cm, rounded at apex, cuneate at base, closely crenate, the lobules distinctly rounded, pubescent above with rather thickish pale hairs and densely velvety beneath with similar hairs and the nervation ferruginous; petiole 1,5-10 mm long, ferruginous velvety; petiolules ± 3 mm long; cymes sweet scented, 5-12 cm wide; peduncles 9-20 cm long; pedicels 2-4 mm long; axes ± ferruginous pubescent and ultimate ones and pedicels with short dense gland-tipped hairs; berry ellipsoid, 7 mm long, densely ± appressed pubescent and with short gland-tipped hairs.

Grassland with scattered trees; 1140-1470 m alt.

C. grandistipulatum (Gilg & M. Brandt) Descoings – Icon.: Bot. Jahrb. Syst. 46: 492, 1912; Engler, Pflanzenwelt Afr. 3/2: 330, 1921.

bas.: *Cissus grandistipulata* Gilg & M. Brandt

syn.: *Vitis stenoloba* Welw. ex Bak., quoad specim. Welwitsch 1451.

Perennial herb, 0,25-0,35 m tall; stems erect, slightly ramose from the base, deeply striate, viscid with glandular very short hairs; tendrils absent; upper leaves subsessile, lower ones shortly petiolate (3 cm long), all 3-5-foliolate; blade lanceolate, acute at apex, cuneate at base, margins acutely serrate, 11-15 × 2-2,5 cm; *stipules large,* 3-4 × 2-2,5 cm; cymes 5-6-forked, peduncles 4-8 cm long, pedicels 2-2,5 mm long; fruit known ?

Very shady woods composed of *Leguminosae;* sandy plains.

C. graniticum (Wild & R. B. Drumm.) Wild & R. B. Drumm.

bas.: *Cissus granitica* Wild & R. B. Drumm.

Scandent herb; stems to 1,5 m long, striate, glabrous; tendrils present; leaves digitately 3-9-foliolate; petiole to 2,5 cm long, glabrous; lamina subsessile, to 11 × 0,7 cm, linear-lanceolate, apex acuminate, margins sparsely serrate, base narrowly cuneate, teeth glandular, glabrous; cymes on axillary branches, lax, trichotomous; peduncle to 6 cm long, glabrous; pedicels to 5 mm long, with sparse capitate glands; berry red, ellipsoid, 1,2 cm long, glabrous.

Usually on granite or serpentine rocks.

C. greenwayi Verdc.; Cattabriga & van Jaarsveld, Cactus & Co. 11/2: 101, 2007.

Climber to several m long, vigorous; stems drying ± pale, striate, with ± tangled white pubescence or ± glabrescent; tendrils present; leaves sometimes ± opposite, 5-foliolate; leaflets broadly elliptic or ovate, 2-15,5 × 1,5-7 cm, subacute to acuminate at apex, cuneate to ± rounded at base, shallowly crenate-serrate, the tooth apices ± thickened, glabrous above and beneath except for scattered hairs on the venation and with very few to ± many sessile amber discoid glands beneath and very few smaller stalked glands on midrib above the base; petiole 2-8 cm long; petiolules 0-5 mm long; cymes 3,5 cm wide, becoming 26 cm in fruit;

peduncle 3-9 mm long; upper axes cottony pubescent at first and with additional purplish red multicellular hairs and some gland-tipped hairs; pedicels to 7 mm long, attaining 1,4-2 cm in fruit, with similar indumentum; berry ovoid, 1-1,4 cm long, slightly pubescent and with dense green crimson gland-tipped hairs 2-3 mm long.

Riverine grassland with scattered shrubs; *Commiphora* woodland; *Combretum, Cordia, Vernonia* bush in clearings in *Acacia, Cordia sinensis* riverine fringe; 780-850 m alt.

Has been wrongly associated with *C. gigantophyllum.* May eventually represent a subspecies of *C. kirkianum,* but distinctive (fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 70, 1993).

C. griseo-rubrum (Gilg & M. Brandt) Descoings

bas.: *Cissus griseo-rubra* Gilg & M. Brandt

Herbaceous climber; tendrils present; branches longitudinally striate and like petiole, peduncles, pedicels below, sparsely grey-pilose but above densely to sparsely so; leaves 5-foliolate, petiole 3-4,5 cm long, laminae subequal, shortly petiolulate, median leaflet 5-7 × 4-5 cm, subrounded at base and apex, but apex acute, margins sparsely crenate, densely pubescent below with short hairs; inflorescence broad, many-flowered, lax, 2-3-brachiate; peduncle 4-4,5 cm long, the median to 8 cm long; fruit unknown.

Ecology unknown.

Only known from the type collected ante 1912.

C. haumanii (Dewit) Descoings

bas.: *Cissus haumanii* Dewit

Herbaceous climber; stems and branches striate, pubescent; tendrils present, pubescent; leaves digitately 3-5-foliolate; petiole 3-10 cm long, tomentose to pubescent; leaflets with petiolules 3-20 mm long, tomentose-pubescent; lamina elliptic-oblong, serrate; median leaflet 5-12 × 3-7 cm, sparsely pubescent above becoming glabrescent, tomentose to densely pubescent below, more densely on the nerves; cyme compound, to 25 cm long, peduncle 10-15 cm long, tomentose-pubescent like the axes; ripe fruit unknown.

Forests; savannas; old cultivations.

C. heterotrichum (Gilg & R. E. Fries) Descoings ex Wild & R. B. Drumm. – Icon.: Fl. Trop. E. Afr., Vitaceae: 76, 1993.

bas.: *Cissus heterotricha* Gilg & R. E. Fries

syn.: *Cissus reedii* Dewit

Erect or somewhat scandent ± fleshy subshrubby very sticky herb 0,5-1,5 m tall from a fleshy bifurcate rootstock ± 15 cm wide; stems ± stout, ridged, with mixed indumentum of short whitish hairs, slightly longer darker red, purplish or black gland-tipped hairs and often a few glandular whitish hairs to 5 mm long; tendrils absent; leaves somewhat fleshy, digitately 3-9-foliolate; leaflets sessile, elliptic, obovate or oblong-lanceolate, 5-25 × 1,3-9 cm, acute to acuminate at apex, cuneate at base, serrate to crenate, pubescent with short white hairs and red or blackish gland-tipped hairs, densest beneath particularly on the nerves; petiole 3,5-18 cm long with indumentum similar to stems; cyme terminal, trichotomous, 3,5-12 cm wide; peduncle 2,5-7 cm long; pedicels 3-11 mm long; all axes densely pubescent with a mixture of short pale hairs and short red or dark gland-tipped hairs; berry red, glandular, ellipsoid, 6-8 mm long.

Grassy slopes; *Borassus*-grassland with *Combretum,* grassland with scattered trees; burnt grassland; bushland; *Brachystegia* woodland; rocky hills; roadsides; old cultivations; mostly in rather damp places (e.g. river banks); 780-2300 m alt.

C. hildebrandtii (Gilg) Descoings ex Wild & R. B. Drumm.; White & al., Evergreen for. fl. Malawi: 599, 2001. – Icon.: Fl. Trop. E. Afr., Vitaceae: 67, 1993.

bas.: *Cissus hildebrandtii* Gilg

syn.: *C. penduloides* Dewit; *Cyphostemma penduloides* (Dewit) Desc.

Climber, or sometimes erect, 0,5-8 m tall from a large fleshy rootstock; stems somewhat fleshy, rather stout, striate, pubescent or velvety with short greyish or pale ferruginous hairs and with dense purple-red usually gland-tipped hairs 5-6 mm long; tendrils present; leaves digitately 3-5-foliolate; leaflets subsessile, elliptic to obovate, 3-18,5 × 1,2-9 cm, acute to acuminate at apex, cuneate at base, crenate-serrate, pubescent or puberulous above, sometimes with stalked glands on the midrib, densely white tomentose or densely pubescent beneath, sometimes with stalked glands near the base of the midrib, with sessile discoid glands concentrated towards the margins on both sides of the leaflets; petiole 2-9 cm long; cymes lax, on axillary branches, ± 6 cm wide extending to 24 cm in fruit; peduncle 4-9 cm long with indumentum as for the stems; pedicels 3-10 mm long, pubescent and with gland-tipped hairs; berry ellipsoid, c. 1,2 cm long, red, with red gland-tipped hairs to 6 mm long.

Grassland; scrub and thickets, e.g. *Commiphora, Terminalia, Acacia, Manilkara, Brachystegia* woodland; evergreen forest; forest gallery; open forests; forest edges; 15-1350 m alt.

The synonym *Cissus helenae* Buscal. & Muschl., *Cyphostemma helenae* (Buscal. & Muschl.) Desc., cited in Fl. Zambes. 2: 476, 1966 (and Enum. 2: 194, 1992), seems to represent a form of *C. crotalarioides* (fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 68, 1993).

C. homblei (De Wild.) Descoings

bas.: *Cissus homblei* De Wild.

Erect herb; stems and branches striate, pubescent and with glandular hairs 2 mm long towards the top of the plant but to 1 mm long at the base; leaves sessile, digitately 1-3-foliolate; median leaflet with petiolule 1-2 mm long, pubescent and with glandular hairs, the laterals subsessile; lamina elliptic-oblong, cuneate at base, toothed to doubly toothed, ciliate and with glandular hairs intermixed; main leaflet 10-20 × 3-8 cm, pubescent and with sparse glandular hairs above, tomentose when young, becoming glabrous but with pubescent nerves also with glandular hairs; venation very prominent when adult; cymes compound, to 10 cm long; peduncle 3-5 cm long; all axes pubescent and with glandular hairs; berry (ripe?) round, 6 mm Ø, glabrous.

Open forests.

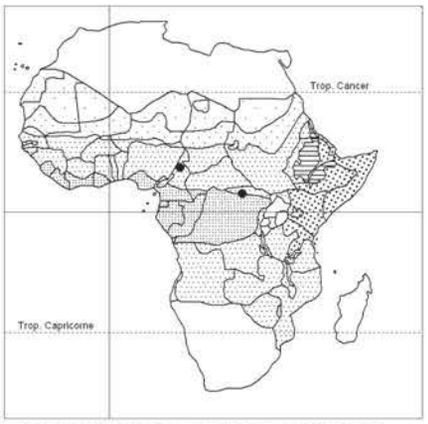
C. huillense (Exell & Mendonça) Descoings

bas.: *Cissus huillensis* Exell & Mendonça

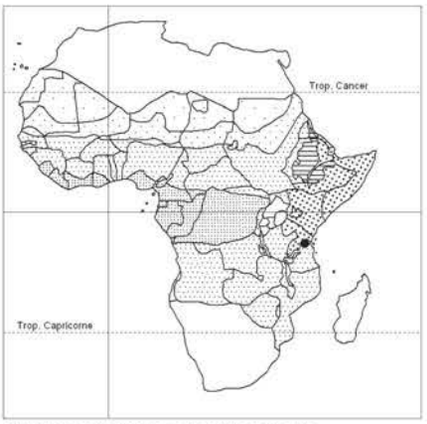
Climber; stems slender, curled-puberulous; leaves subsessile, 3-foliolate, lamina membranous, elliptic, acute at apex, cuneate at base, 10 × 3 cm, glabrous, margins undulate and slightly serrate, petiolules 2,5 cm long; tendrils forked, 15 cm long; inflorescence paniculate, 12 cm wide, densely puberulous; flowers unknown; berry round-ellipsoid, 8 mm long, curled-puberulous or subtomentellous.

Among *Acacia* spp. in thorny scrub; 1000-1100 m alt.

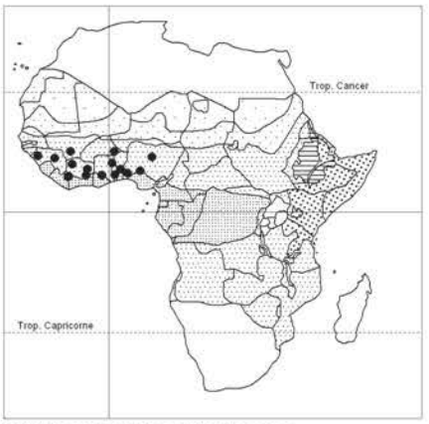
Only known from the type.



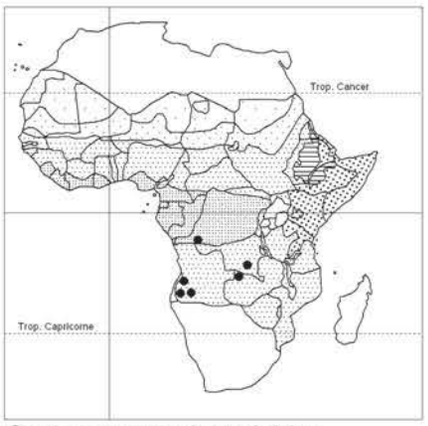
Cyphostemma erythrocephalum



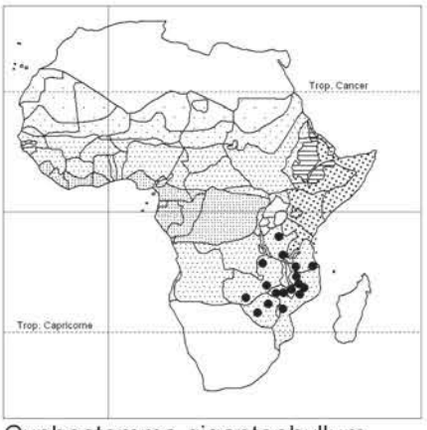
Cyphostemma feddeanum



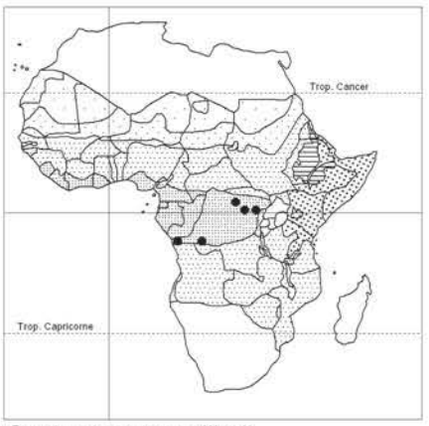
Cyphostemma flavicans



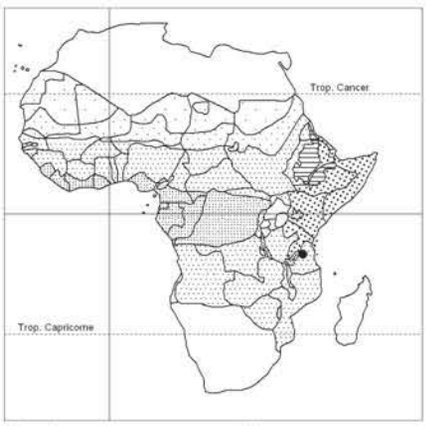
Cyphostemma fugosioides



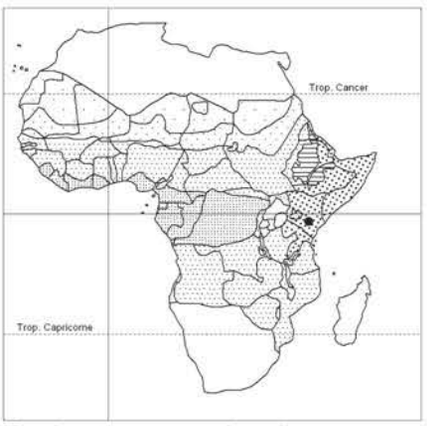
Cyphostemma gigantophyllum



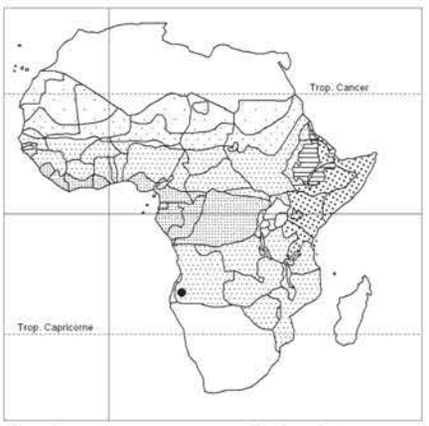
Cyphostemma gilletii



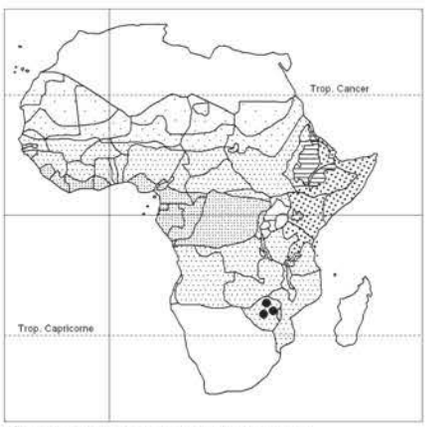
Cyphostemma gracillimum



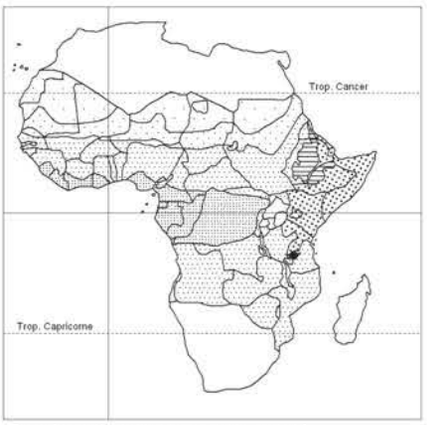
Cyphostemma grahamii



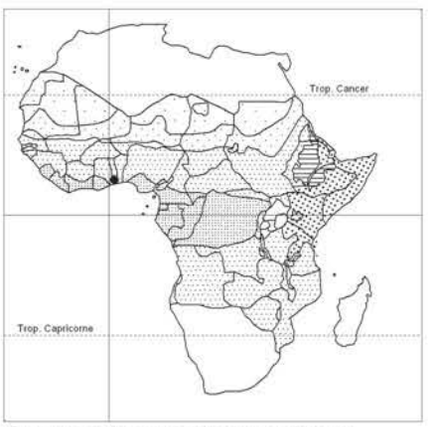
Cyphostemma grandistipulatum



Cyphostemma graniticum



Cyphostemma greenwayi



Cyphostemma griseo-rubrum

C. humile (N. E. Br.) Descoings ex Wild & R. B. Drumm. subsp. **dolichopus** (C. A. Sm.) Wild & R. B. Drumm.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 459, 2002; Cattabriga & van Jaarsveld in Cactus & Co. 11/2: 97, 100, 103, 2007. – Icon.: Hook Ic. Pl. 16: pl. 1565, 1887 *(Vitis humilis).*

bas.: *Cissus dolichopus* C. A. Sm.; *Vitis humilis* N. E. Br.

Prostrate herb or occasionally climbing; plant drying dark; from an enlarged underground turnip-like tuber lying just beneath the soil; stems to ± 0,6 m long, often zigzag, with scattered stalked glandular hairs and often with long eglandular whitish hairs; tendrils absent; leaves simple, or occasionally deeply 3-lobed or 3-foliolate; lamina rather thick and fleshy when fresh, to 20 × 12 cm, from oblong-elliptic to circular, apex rounded or acute, margins coarsely serrate, base from broadly cuneate to truncate, sometimes asymmetric, glabrous above or puberulous with longer hairs on the main nerves, densely pubescent or puberulous below or with a few hairs restricted to the main nerves, rarely quite glabrous; petiole 0,2-2,5 cm long; cymes rather lax; peduncle to 12 cm long, at the apex of axillary branches, with a few scattered glandular hairs ± 1 mm long and often also with whitish eglandular hairs; pedicels with denser and often shorter glandular hairs, otherwise glabrous; berry ellipsoid, 2,2 cm long, glabrous.

Often on stony ground and appearing to have a ready tolerance for serpentine or chrome-bearing soils.

S. Africa (former Traansvaal, Natal), Swaziland (1000-1800 m alt.).

Subsp. **dolichopus** (not drying dark-coloured) is slightly distinct from subsp. **humile** confined in S. Africa; but the specimen Codd 2499 from Natal represents subsp. **dolichopus** (see Fl. Zamb. 2/2: 462, 1966).

C. hypoleucum (Harv.) Descoings ex Wild & R. B. Drumm.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 459, 2002.

bas.: *Cissus hypoleuca* Harv.

syn.: *Vitis hypoleuca* (Harv.) Szyszył.

Climbing herb; stems pubescent, or glandular, thickened at base; tendrils present; leaves 3-5-foliolate; petiole 3,5-5 cm long, pubescent; lamina to 10 × 6 cm, elliptic to obovate or rarely broadly obovate, apex obtuse or acute, margins crenate or serrate-crenate, base cuneate, sparsely pubescent or glabrescent above, grey-tomentose below; petiolule of median leaflet to 1 cm long, petiolules of laterals 0-2,5 cm long; cymes on short side-branches, lax, trichotomous; peduncle to 7 cm long, densely grey-pubescent; pedicels to 3,5 cm long, grey-tomentose or densely pubescent; berry densely pubescent, 7-8 mm long.

Granite hillsides.

E S. Africa (5-1300 m alt.).

C. jiguu Verdc.; Beentje, Kenya trees, shrubs & lianas: 363, 1994; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 459, 2002. – Icon.: J. E. Afric. Nat. Hist. Soc. 15 (66-67): pl. 7 (1), 1940; 16 (71-72): 123, 1942, sub nom. *Cissus* sp. aff. *macropus* Welw.

syn.: Enum. 3: 333, 1995.

Stem (caudex) erect, succulent, 1,8-2,5 m tall, ± 30 cm Ø at base (but possibly not fully developed); bark grey, covered with scars of fallen branchlets; branches few, at the flat apex, scandent, growing rapidly and twice deciduous annually, pubescent and densely covered with red ± viscid glandular hairs ± 0,3 mm long; tendrils ± 20 cm long; leaves 3-4-foliolate; leaflets ovate, elliptic or slightly obovate, 2,8-11,5 × 1,8-9 cm, acute to obtuse at apex, cuneate to ± rounded at base, the laterals ± oblique, slightly succulent, glabrous or puberulous above, glabrescent or more often pubescent with short crisped hairs beneath to thinly white velvety and sometimes a very few ± sessile orange glands, crenate-dentate; petiole 2-6 cm long, rachis 0,3-2 cm long; inflorescence many-flowered, to 12 × 20 cm, the ultimate cymules ± 6-flowered; axes pubescent and densely covered with glandular hairs; peduncles 3-9,5 cm long; secondary axes 1,5-4 cm long; pedicels 1,5-7 mm long; berry ellipsoid, 8 mm long, densely red glandular.

Riverine bush with scattered trees on rocky gorges; dry upland forest; 1200-1700 m alt. – Rare.

Cultivated (Nairobi; Roy. Bot. Gard. Kew; Paris; St Jean Cap Ferrat, etc.).

Very near *C. dysocarpum* and *C. niveum*. Field studies may show if this plant is a good species. "Intermediate forms with erect but basally slender stems should be placed with *C. jiguu",* and not with *C. niveum* (not succulent); fide Descoings, l.c.

C. johannis (Exell & Mendonça) Descoings

bas.: *Cissus johannis* Exell & Mendonça

Climber; stems pubescent nearly without glands; leaves with petiole to 14 cm long, pubescent, 5-foliolate; leaflet petiolules 3 mm long; lamina membranous, obovate, apex acuminate, acute, margins coarsely serrate, base cuneate, 12 × 5,5 cm; nearly glabrous above except on the nerves which are pubescent to tomentose; panicle to 20 cm long and broad; fruit unknown.

Forest edges.

Only known from the type.

C. junceum (Webb) Descoings ex Wild & R. B. Drumm. (? incl. var. *bambariense* Descoings (flowers unknown). – Icon.: Bot. Jahrb. Syst. 46: 583, 1912; Engler, Pflanzenwelt Afr. 3/2: 326, 1921; Fl. Moçamb. 50, Vitac.: 33, 1969; Andrews & Andrews, Upl. Kenya wild fl., ed. 2: pl. 59, 1994.

bas.: *Cissus juncea* Webb

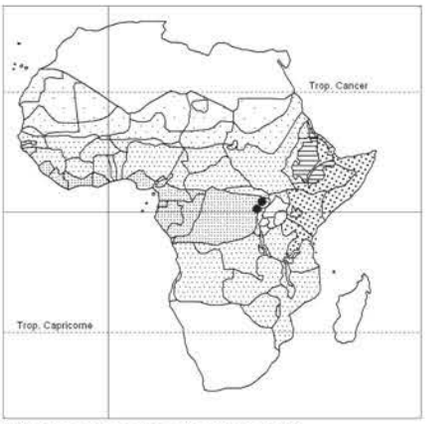
syn.: *Vitis juncea* (Webb) Bak.; Enum. 3: 334; 1995.

Erect herb 0,3-1,8 m tall, often ± glaucous when young, from an orange ± ovoid tuberous rootstock to 15 × 5 cm; stems often crimson, swollen at nodes; plant glabrous except for stipules, or very slightly pubescent; tendrils absent; leaves very variable: the upper pair often opposite, often red or edged with red, digitately 3-5-foliolate; leaflets sessile, linear to oblong-elliptic, 2-30 × 0,1-10 cm, acuminate or ± obtuse but apiculate at apex, base cuneate, often folded, serrate or serrate-crenate but sometimes so shallowly so as to appear ± entire or only remotely denticulate; venation occasionally strongly raised and reticulate in mature leaves; petiole 0-10 cm long; cyme lax, terminal, usually with 3 main branches each again branched, to 30 cm wide; peduncle to 25 cm long; pedicels 3-6 mm long; berry red-purple to blue-black, or yellow, red or orange, often with bloom, ellipsoid, c. 1 cm long, glabrous, edible.

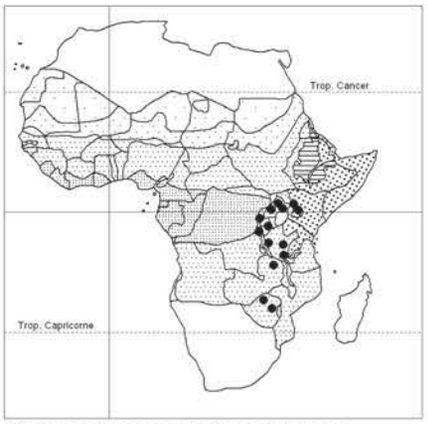
Grassland; swamp-edges; burnt savanna; bushland; sandy- or rocky soils; forest gallery; *Brachystegia* woodlands; slope with lateritic blocks; open clayey-sandy dry stony thickets; sometimes abundant; *Combretum-Terminalia, Terminalia-Pterocarpus, Combretum-Oxytenanthera* woodland, on greyish sandy to loamy soil; ± 500-2500 m alt.

Variable in habit and pubescence, in arrangement, shape, size and coloration of leaves, and in colour of fruit.

Comprises 2 subspp.: – subsp. **junceum**, a more graceful smaller plant often pubescent with yellow or red berries; – subsp. **jatrophoides** (Bak.) Verdc. [bas.: *Vitis jatrophoides* Bak.;



Cyphostemma haumanii



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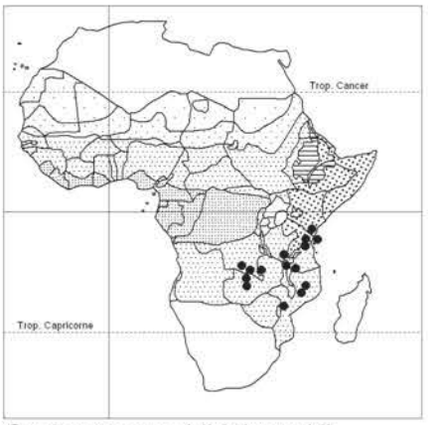

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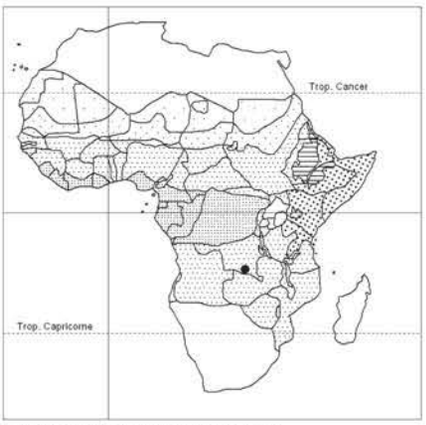

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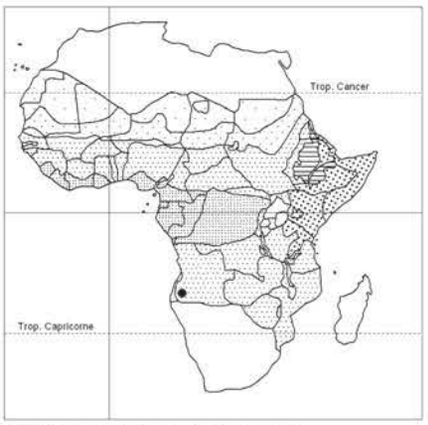
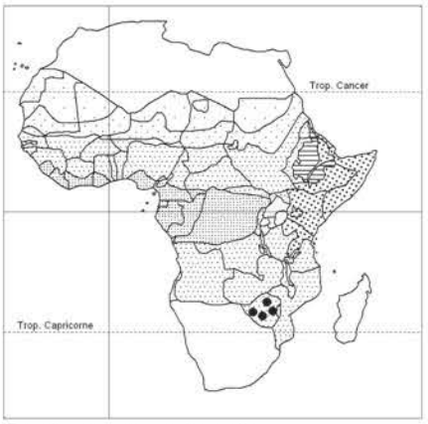
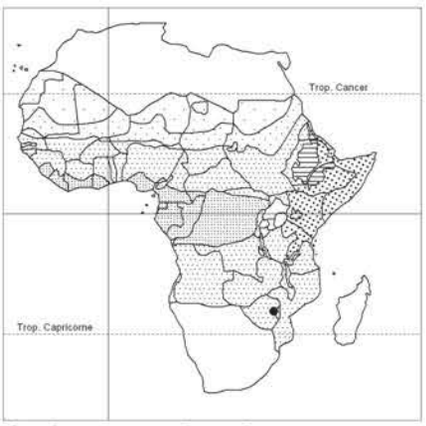


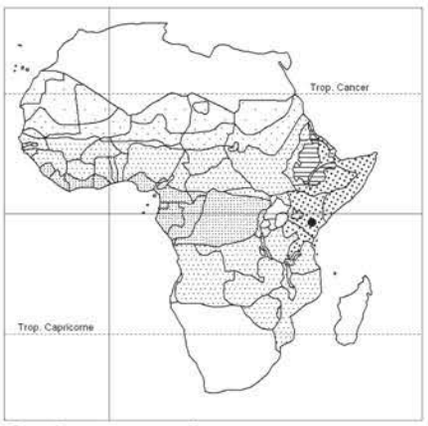
Cyphostemma huillense



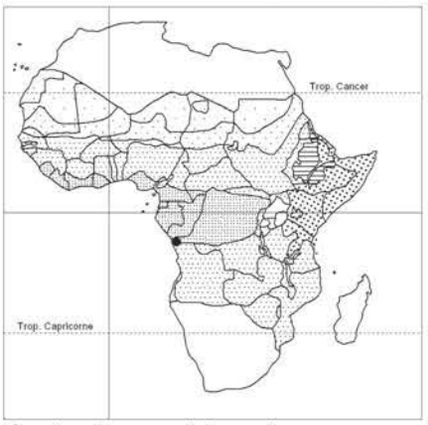
Cyphostemma humile subsp. dolichopus



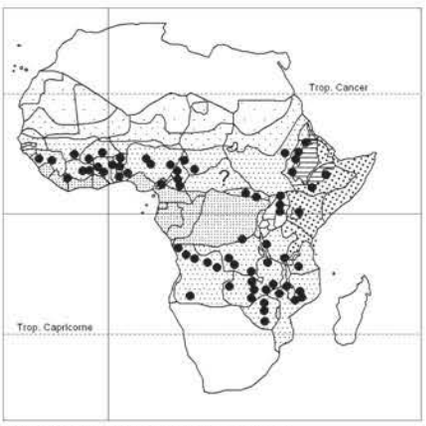
Cyphostemma hypoleucum



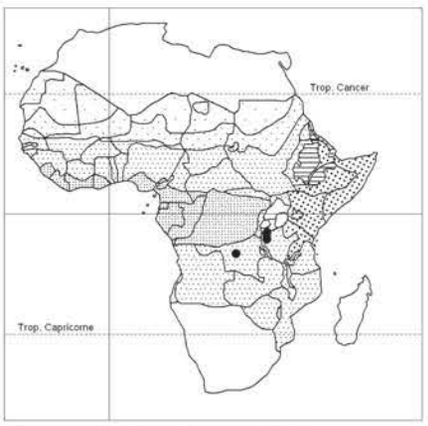
Cyphostemma jiguu



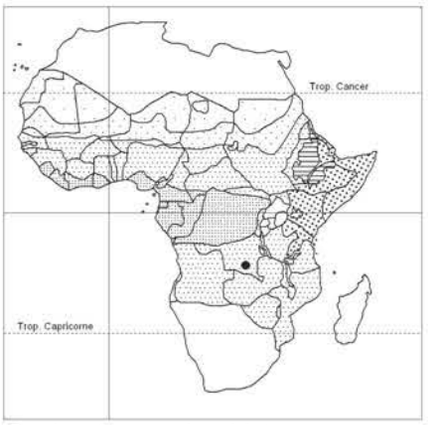
Cyphostemma johannis



Cyphostemma junceum



Cyphostemma kaniamae



Cyphostemma kapiriense

syn.:*Cissus jatrophoides* (Bak.) Planch.; *Cyphostemma jatrophoides* (Bak.) Descoings; *C. stenopodum* (Gilg ex Gilg & M. Brandt) Descoings; *Cissus haullevilleana* De Wild.; *C. chlorantha* Gilg; *C. kakoma* De Wild.; *C. stenopoda* Gilg ex Gilg & M. Brandt; *C. atacorensis* A. Chev.; *Ampelocissus atacorensis* A. Chev., nom.; *Cissus pobeguinii* A. Chev.; ? *Cissus atacorensis* A. Chev. subsp. *chariensis* (type Chevalier 6064, Centr. Afr. Rep.), nom. invalid.], a coarser plant, usually glabrous, with dark berries, in W part of range.

[**C. juttae** (Dinter & Gilg) Descoings] – Icon.: Engler, Pflanzenwelt Afr. 3/2: 334, 335, 1921; Wilson & al., Canad. J. Bot. 84: 704, 2006; Curtis & Mannheimer, Tree Atlas Namibia: 423, 2005; Cattabriga & van Jaarsveld, Cactus & Co. 11/2: 96, 97, 2007; Coates Palgrave, Trees south Afr., ed. 3: ill. 177, 2002; C. Pollet, Ecorces…: 186-187, 2008.

bas.: *Cissus juttae* Dinter & Gilg

Succulent pachycaul shrub or tree 1-2(-4) m tall, with a few thick branches; stem to 1 m Ø, conical, producing 3-5 leaves in flushes; bark pale green, smooth, peeling in short creamy papery flakes; leaves simple, deeply lobed when young, 3-foliolate when mature, terminal leaflet the largest, ± ovate, 12-35 × 5-15 cm, fleshy, slightly prickled along midrib beneath, laterals asymmetric running into the petiolules and thus forming wings, margins coarsely toothed, stipules conspicuous, inflorescence terminal, flat, 15-18 cm Ø, peduncle 8 cm long, appearing with the young leaves; berries round, 1 cm Ø, red-black, in grape-like clusters.

Dry stony places, rocky hillsides.

Namibia (1000-1200 m alt.). – Vulnerable to illegal collection for the pachycaul trade.

Widely cultivated. Growing easily from seed and cuttings.

Most references give Namibia as distribution area. However, Descoings [Succulentes (France) No Special: 44, 2004] also mentions "a small area in Angola". Coates Palgrave, l.c., gives a map indicating an eventual distribution N of Namibia.

Not mapped.

C. kaniamae (Mullenders ex Dewit) Descoings; Enum. 3: 334, 1995.

bas.: *Cissus kaniamae* Mullenders ex Dewit

Suberect herb to 1,5 m tall; stems with rather sparse straggling hairs and gland-tipped hairs ± 1 mm long; tendrils pubescent, forked; leaves digitately 5-foliolate; leaflets narrowly elliptic to elliptic-oblanceolate, 2-18 × 0,6-6 cm, acute at apex, narrowly cuneate at base, coarsely serrate or crenate-serrate, sparsely appressed pubescent above and more densely so beneath, particularly on the raised venation and also with gland-tipped hairs beneath on main venation or at least on midrib at base; petiole 2-12 cm long, with indumentum as for stems; petiolules obsolete or apparently to 1 cm long; cymes 6,5 cm wide; peduncle 4-6 cm long, with indumentum similar to stem; pedicels 1,5-3,5 mm long, pubescent and with gland-tipped hairs; berry ellipsoid, 1 cm long, red, glabrous except for gland-tipped hairs 2-3 mm long (subsp. **tanzaniae** Verdc.).

Bamboo, *Syzygium*, *Parinari*, *Protea* associations; wooded savanna; ± 1500 m alt.

Comprises 2 subspp.

The type of **C. kaniamae** from Zaire has only unripe fruits (hairy and glandular). But their general facies are very similar to other collections. Adult fruits needed from Zaire for re-assessment of the taxa. – Very similar to *C. pseudosesquipedale.*

C. kapiriense (Dewit) Descoings

bas.: *Cissus kapiriensis* Dewit

Erect herb drying blackish; roots swollen; stems and branches striate, sparsely pubescent becoming glabrescent and with very short glandular hairs; leaves sessile, digitately 3-foliolate; leaflets sessile, elliptic-oblong, apex acuminate, base cuneate, margins serrate, the median leaflet 6-14 × 2-3 cm, with glands on both faces; nerves pubescent below; cymes compound, to 7 cm long; peduncle ± 3 cm long, like the axes pubescent and with subsessile, dense glandular hairs; fruit unknown.

Ecology unknown.

Two specimens known, collected in 1913.

C. keilii (Gilg & M. Brandt) Descoings

bas.: *Cissus keilii* Gilg & M. Brandt

Herbaceous climber or scrambler to 3 m long; stems striate, pubescent with curled hairs and with ± sparse short gland-tipped hairs ± 0,5 mm long; tendrils present; leaves 5-foliolate; leaflets elliptic or obovate to obovate-oblong, 3-12 × 1,5-6 cm, apex acute to acuminate, base cuneate, rather coarsely crenate-serrate, the crenations very asymmetrically apiculate, almost glabrous above except for few hairs on venation, ± densely pubescent or tomentose beneath with ± appressed curled hairs, ± ferruginous on main nerves, almost thinly velvety but surface not much obscured; petiole 3-13 mm long, with similar indumentum to the stems; petiolules 0,3-2 cm long; cymes 10-40 cm wide; peduncles reddish purple, 6,5-15 cm long, with similar indumentum to stems; pedicels 1-5 (-8 in fruit) mm long, densely shaggy pubescent but not with obvious gland-tipped hairs; axes ferruginous to yellow pubescent or tomentose; berry ellipsoid, 8-10 mm long, densely ferruginous pubescent and with dense short gland-tipped hairs.

Dense vegetation at forest- and rain-forest edges; riverine forest, secondary scrub and grassland; 1170-2100 (- ? 2500) m alt.

The type (Keil 25), now destroyed (B), came from 2500 m alt. in Burundi. It is not for certain that it is conspecific with the Ethiopian material.

C. kibweziense Verdc.; Andrews & Andrews, Upl. Kenya wild fl., ed. 2: 162, 1994; Enum. 3: 334, 1995 (not "kipweziense").

Erect ± unbranched herb 1 m tall from a tough fibrous rootstock; stems ridged, densely shortly pubescent; leaves subsucculent, 5-7-foliolate; leaflets sessile, obovate to oblanceolate, 6-26 × 2,5-15 cm, round in outline to subacute at apex, narrowly long-attenuate at base, irregularly crenate or crenate-dentate, very shortly pubescent on both surfaces; petiole 11-24 cm long, with pubescence similar to stems; cymes ± 10 cm wide; peduncles 18-22 cm long, reddish pubescent like the stems with some short gland-tipped hairs near the apex; secondary axes and pedicels with dense short gland-tipped hairs; pedicels 4-7 mm long; berry bright red, ellipsoid, c. 1 cm long, shortly pubescent and glandular.

Combretum, Commiphora, Acacia, Lannea, etc., bushland; 960-1600 m alt.

Resembling *C. sesquipedale,* but seeds different.

C. kilimandscharicum (Gilg) Descoings ex Wild & R. B. Drumm.; Enum. 3: 334, 1995. – Icon.: Beentje, Kenya trees, shrubs & lianas: 364, 1994; White & al., Evergreen for. fl. Malawi: 600, 2001.

bas.: *Cissus kilimandscharica* Gilg

Climber ± herbaceous, robust, 3-20 m long; stems often reddish, thick, rubbery, to 3 cm Ø, wrinkled and ridged when dry; mostly quite glabrous but sometimes all parts sparsely puberulous to pubescent, tendrils forked; leaves digitately 3-foliolate, leaflets ovate, broadly elliptic, obovate or rarely ± lanceolate, 2,5-13 × 1,5-9,4 cm, apex acute to acuminate, base cuneate in median leaflet, rounded to subcordate in laterals, coarsely serrate or dentate to serrate-crenate, glabrous or sparsely pubescent on nerves on both sides, less often more densely pubescent, rarely even velvety beneath; petioles 1-8,5 cm long; petiolules, 0,3-2,5 cm long; cymes lax, 3-fid, on axillary branches, 8-25 cm long; peduncles 3-14 cm long; pedicels 2-5 mm long (to 8 mm in fruit); fruit known: red or purple, ± ellipsoid, 10-14 mm long, glabrous (var. **kilimanscharicum**) or with multicellular red hairs [probably; var. **jaegeri** (Gilg & M. Brandt) Verdc., ripe fruit not seen].

Evergreen forest; forest edges; derived secondary scrub; bamboo thickets; streamside evergreen bushland; mist-forest; *Podocarpus latifolius* forest; forest clearings; ground water forest; 1000-2700-3040 m alt.

Comprise 2 vars. – Sometimes (var. **jaegeri**) difficult to separate from *C. masukuense* subsp. *ulugurense.*

C. kirkianum (Planch.) Descoings ex Wild & R. B. Drumm.; Enum. 3: 334, 1995.

bas.: *Cissus kirkiana* Planch.

syn.: *Cissus purpureizonatus* Zimmermann, nom. in sched.

Climbing herb to 3 m long; stems sulcate-striate, with ± sparse long glandular hairs, sometimes sparsely puberulous also; tendrils present; leaves 3-5-foliolate; petioles to 5 cm long, indumentum as for stems or occasionally quite glabrous; lamina membranous, to 12 × 6,3 cm, elliptic, apex acuminate, margins crenate-serrate, base cuneate, glabrous on both sides but often with a few stalked glands on the midrib; petiolules to 1 cm long in the median leaflet, puberulous; cymes lax, axillary; peduncles to 5 cm long, puberulous and with long scattered glandular hairs; pedicels to 1 cm long, densely pubescent; berry ellipsoid, 8 mm long, deep red-purple, glandular and sometimes also pubescent.

Thickets; woodland; riverine fringes; rain-forest; evergreen forest on coral; *Casuarina* woodland; 0-900 m alt.

Variable in type of indumentum.

Comprises 2 subspp.

Ripe seeds are needed from the whole range of the species to assess its relationships with (and between) *C. paucidentatum, C. greenwayi, C. dasycarpum, C. gigantophyllum* (fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 73, 1993).

C. kiwakishiense (Dewit) Descoings

bas.: *Cissus kiwakishiensis* Dewit

Erect herb with swollen roots; stems and branches striate with only glandular hairs ± 2 mm long becoming prickles; leaves sessile or subsessile, digitately 3-5-foliolate; leaflets sessile, oblong-lanceolate, base cuneate, median leaflet 10-18 × 2-3 cm, both faces glabrous; cymes compound, to 20 cm long; peduncle 6-15 cm long, like the axes with some glandular hairs ± 1 mm long, compressed; fruit unknown.

Dry savanna on rocks (Fl. Congo belge); above the caves (original description).

Only known from the type collected in 1948.

C. knittelii (Gilg) Descoings – Icon.: Fl. Trop. E. Afr., Vitaceae: 75, 1993.

bas.: *Cissus knittelii* Gilg

syn.: ? *C. keniensis* T. C. E. Fries; ? *Cyphostemma keniense* (T. C. E. Fries) Descoings (sterile specimen).

Erect or spreading perennial viscous aromatic herb, 0,4-1 m tall from a reddish pink tuberous root; stems reddish brown or at least red at nodes, (warty) covered with short and long white (in life) reddish brown (dry) gland-tipped ± thick bristles 0,25-1,6 cm long and some fine pubescence; tendrils absent or rarely present; leaves 3-5-foliolate; leaflets ± ovate, rarely oblate, 1,5-7 × 0,6-5,5 cm, acuminate to long-cuspidate at apex; rounded to cordate at base, sharply ± coarsely toothed, the teeth gland-tipped, pubescent and with short gland-tipped hairs on margins and longer gland-tipped hairs on the midrib and sessile glands on faces or gland-tipped hairs all over; petiole 2,5-7 cm long; petiolules 3-22 mm long; cymes leaf-opposed, terminal on side-shoots; peduncles 0-2 cm long; pedicels 2-4 mm long; all axes pubescent and with short and a few long gland-tipped hairs; berry ellipsoid, 1-1,7 cm long, orange-red, with long red-brown gland-tipped bristles.

Bushland of *Lannea, Commiphora, Acacia, Combretum, Grewia,* and *Turraea, Brachystegia* and *Combretum* woodland with long grass; often on mbugas (black soil) or swampy ground with grassland and scattered bushes; 825-1500 m alt.

C. kundelunguense Malaisse

Perennial, creeping herb; tendrils slender, bifurcate, sparsely glandular pilose; root cylindrical, yellowish-blackish, ± 12 × 2-3 cm; stems reddish, ramose, cylindrical, pubescent, to 50 cm long; leaves alternate, subsessile, simple, rarely 2-3-foliolate, pubescent; lamina cordate to elliptic, to 5-7 × 7-9 cm, dentate, papery; with glandular, red hairs above, glabrous below, except for nerves, with glandular, reddish hairs and simple shorter hairs; margins with simple reddish hairs and red glandular hairs; cymes axillary, compound, to 1 cm long and 4,5 cm wide; peduncles reddish green, pubescent, 1,5-2 cm long; berry round, black c. 8 mm Ø, sparsely pilose-glandular.

Under *Harungana madagascariensis* in shade at some meters from a narrow forest fringe; 1650 m alt.

C. lageniflorum (Gilg & M. Brandt) Descoings

bas.: *Cissus lageniflora* Gilg & M. Brandt

syn.: *C. glandulifera* A. Chev. nom., p.p. quoad specim. Chevalier 14974, 21611.

Herbaceous climber; tendrils present; stems and petioles with red gland-tipped hairs ± 1 mm long intermixed with short, curly, scattered hairs; branches striate; leaves with petiole 3-4,5 cm long, 3-5-foliolate; petiolules 7-10 mm long; median leaflet obovate, ± 9 × 5,5 cm, the laterals obliquely ovate, apex acute or shortly, broadly acuminate, broadly cuneate at base or rarely subrounded, margins sparsely serrulate at base, distantly serrate towards the apex, herbaceous; glabrous or subglabrous above, densely covered with short hairs below; inflorescence with peduncle ± 4 cm long, trichotomous; cymes branched, lax, pedicels 4-6 cm long; all axes with short, ferruginous hairs and long, glandular hairs; fruit ?

Savanna.

Bioko/Fernando Poo.

C. lanigerum (Harv.) Descoings ex Wild & R. B. Drumm.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 459-460, 2002. – Icon.: Germishuizen & Fabian, Wild flow. northern S. Afr.: 249, 1997; van Wyk & Malan, Field guide wild flow. Witwatersrand: 185, 1988.

bas.: *Cissus lanigera* Harv.

syn.: *C. lanigera* var. *holubii* Planch., but excl. var. *sosong* Planch. *(= Cy. puberulum).*

Climbing herb; stems from a tuberous rootstock, densely white pubescent or tomentose and usually with some scattered capitate glands; tendrils present; leaves 3-5-foliolate; petiole to 2 cm long, indumentum as for the stems; leaflets subsessile to 5,5 × 3 cm, (narrowly) obovate, apex obtuse or acute, margins serrate or crenate-serrate, base cuneate, sparsely pubescent above, greyish-tomentose below; cymes opposite the leaves, lax, di- or trichotomous; peduncle to 7 cm long, indumentum as for stem; pedicels pubescent and with capitate glandular hairs; berry red, tomentose.

Granite kopjes.

S. Africa (former Transvaal, Natal), Swaziland, Namibia (1300-1500 m alt.).

Cultivated at, e.g., Zürich, Switzerland (Städtische Sukkulenten-Sammlung); Inst. Bot. Graz, Austria (Teppner in Fritschiana 39: 30-31, 2003).

C. ledermannii (Gilg & M. Brandt) Descoings

bas.: *Cissus ledermannii* Gilg & M. Brandt

Erect perennial herb to 1 m tall; tendrils absent; stems, branches and axes densely clothed with grey curly hairs becoming glabrous; leaves 3-5-foliolate; petiole 3 cm long; leaflets sessile or subsessile, oblong or narrowly obovate, apex acute, base narrowly cuneate, margins densely and unequally *very acutely serrate-dentate* (teeth *falcate-spinulose),* thick-textured, light green above and sparsely pilose, very densely white tomentose below; hairs denser and shorter at margins; median leaflet 14-18 × 3,5-4 cm; inflorescence branched, (very) dense; peduncle 8-9 cm long; ripe fruit unknown.

Clayey savanna.

Only known from the type (Ledermann 3619) now destroyed; not in Flore du Cameroun 13, 1972.

Near *C. bullatum.*

C. lentianum (Volkens & Gilg) Descoings

bas.: *Cissus lentiana* Volkens & Gilg

Climber or ± prostrate herb to several m long; stems grey pubescent and with short pale or red gland-tipped hairs to 0,5 mm long; tendrils long; leaves ± thin, 3-5-foliolate; leaflets often somewhat curved so that they press folded with mid-rib curved, sometimes with red margins, often subsessile, oblong to obovate, 1-8,5 × 0,8-3,5 cm, apex acute, base narrowly to broadly cuneate, equally ± coarsely dentate, glabrous or sparsely pubescent above, densely grey ± velvety pubescent beneath, distinctly discolorous; petiole 1-4 cm long, pubescent and glandular like the stems; petiolules 0,5-10 mm long, often with gland-tipped hairs; inflorescence 4-10 cm wide; peduncles 4-7 cm long, with similar indumentum to stems; pedicels 1-5 mm long with short gland-tipped hairs; berry ellipsoid, red, 8 mm long, ± pubescent but without glands.

Acacia, Commiphora trothae etc., *Euphorbia cuneata, Cordia, Sterculia*, etc. bushland with grass (e.g. *Tricholaena);* rocky areas with grass, *Dracaena, Aloe,* etc.; 900-2220 m alt.

C. letouzeyanum Descoings

Climber; stems cylindrical, 2,5-3 mm Ø, densely pubescent and glandular; tendrils slender, cylindrical, rather densely pubescent and glandular; leaves 3-foliolate; petiole ± cylindrical, channelled and striate, 1-2 cm long; petiolules and petiole clothed like the stems; leaflets 8-13 × 3,5-6 cm, obovate to elliptic, base cuneate, apex rounded to subobtuse; margins nearly entire at base, becoming slightly dentate towards the apex, teeth triangular; glabrous above but with glandular hairs; with white dense pubescence and scattered glandular hairs below; inflorescence of corymb-like many-flowered cymes, 8-20 cm long; peduncles and axes cylindrical, glandular and densely pubescent, 5-12 cm long; pedicels cylindrical, 2-3 mm long clothed like the peduncles; complete flower unknown; berry ovoid, 8-10 mm long, densely pubescent and glandular.

Savanna.

C. leucotrichum (Gilg & M. Brandt) Descoings

bas.: *Cissus leucotricha* Gilg & M. Brandt

Erect herb to 1 m tall from a tuberous rootstock; tendrils absent; stems ± cylindrical, channelled and striate, 5-7 mm Ø at base, with a long dense greyish pilosity and long dense glandular hairs; leaves digitately 5-foliolate; petiole ± cylindrical, 2-6 cm long, densely pubescent and glandular; leaflets sessile, oblong-lanceolate, 10-17 × 2-4 cm, base cuneate, apex cuneate with a short acute acumen, margins often entire at base, very irregularly denticulate above; with curly long pilosity and sessile round red glands below; sparsely pubescent becoming glabrous above; inflorescence umbel-like, many-flowered, rather dense, 8-15 cm long; peduncle striate, cylindrical, 3-7 cm long, densely pubescent and glandular like the other axes; berry ovoid, 8-10 mm long, densely pubescent and glandular.

Savanna; 1200 m alt.

C. libenii (Dewit) Descoings

bas.: *Cissus libenii* Dewit

Erect herb, 0,4-1,5 m tall from swollen roots; stems and branches striate, pubescent, generally clothed with many glandular hairs ± 2 mm long; leaves digitately 3-5-foliolate; petiole 3-6 cm long, pubescent and with scattered glandular hairs; leaflets with petiolules 0-10 mm long, pubescent and with rare glandular hairs, elliptic, cuneate at base, serrate-dentate; median leaflet 10-18 × 3-10 cm; glabrous above except on the nerves; glabrous below except on the nerves and with glandular margin; cymes compound, to 15 cm long; peduncle 3-6 cm long, pubescent-puberulous and with dense glandular hairs like on the other axes; berry ovoid, 9 mm long, with caducous glandular hairs.

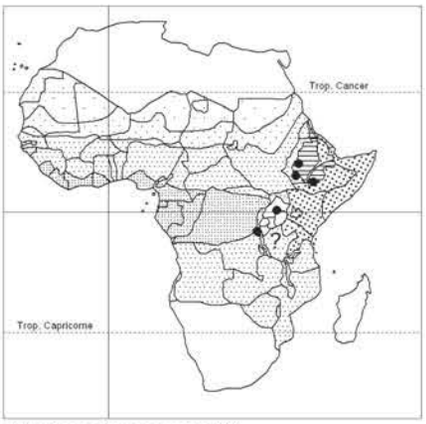
Savanna sometimes wooded; forests on ± swampy soil.

C. lovemorei Wild & R. B. Drumm.

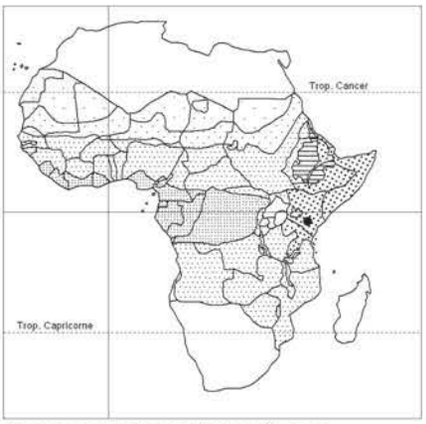
Climbing herb; stems glabrous or with a few capitate-glandular hairs near the nodes; leaves digitately 5-foliolate, petiole to 2 cm long, glabrous; leaflets semi-succulent, glaucous, to 9 × 4 cm, oblong-elliptic to narrowly ovate, apex acute to subacute, margins ± sparsely serrate with acuminate teeth, base cuneate to obtuse, glabrous on both sides; petiolules to 3 cm long; cymes on side-branches; peduncle to 4 cm long, glabrous; pedicels to 7 mm long, glabrous; berry ± round, 7 mm Ø, glabrous.

Colophospermum mopane woodland; riverine thicket.

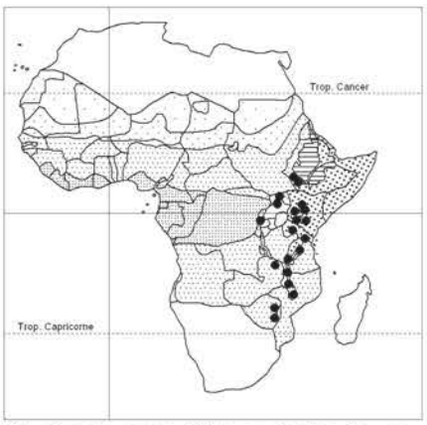
Perhaps only a subsp. of *C. quinatum.*



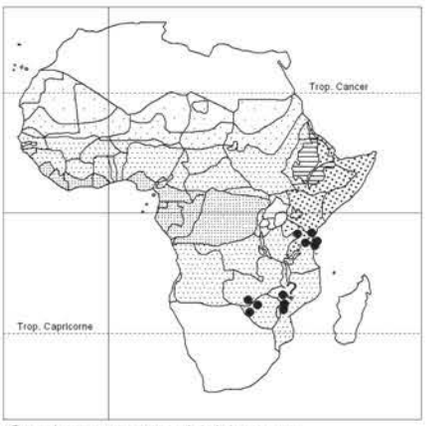
Cyphostemma keilii



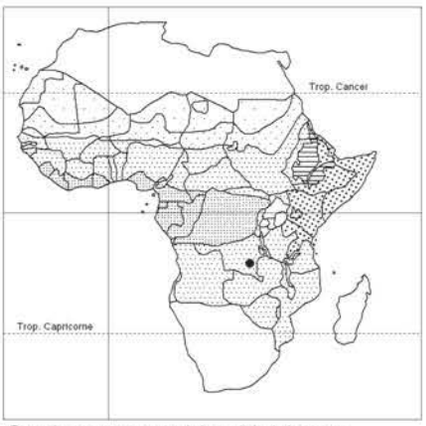
Cyphostemma kibweziense



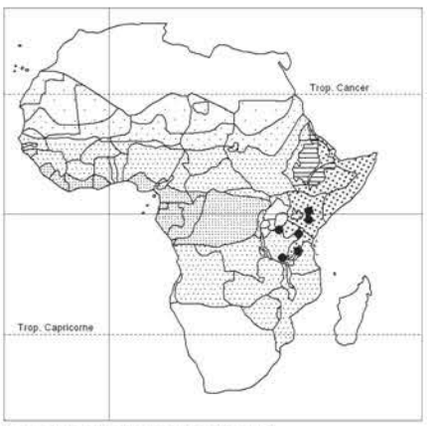
Cyphostemma kilimandscharicum



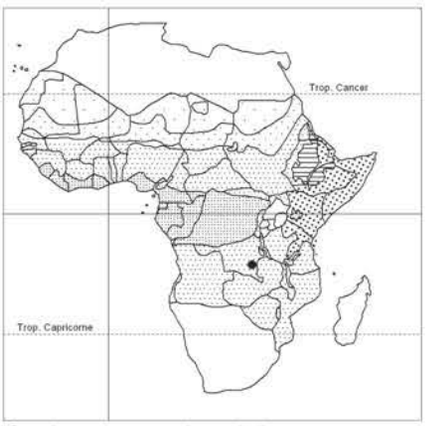
Cyphostemma kirkianum



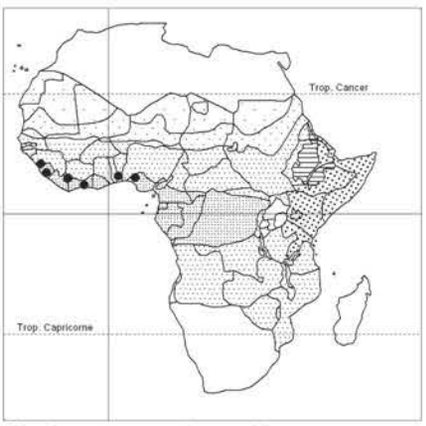
Cyphostemma kiwakishiense



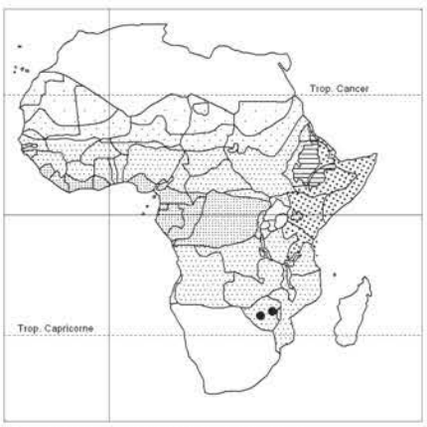
Cyphostemma knittelii



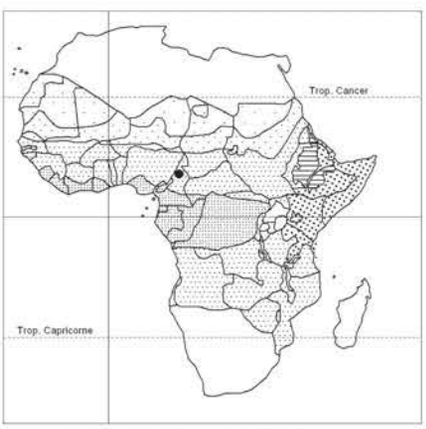
Cyphostemma kundelunguense



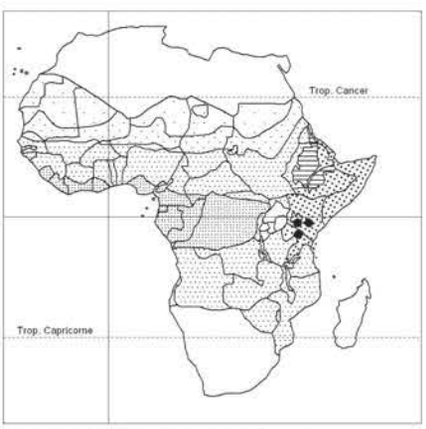
Cyphostemma lageniflorum



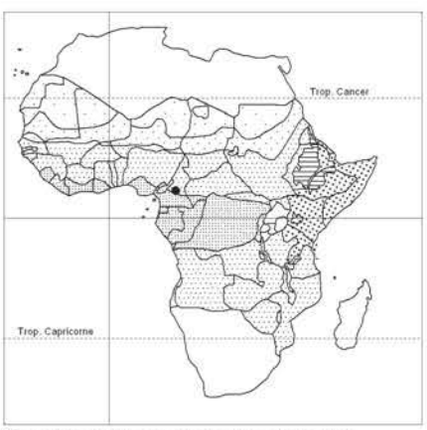
Cyphostemma lanigerum



Cyphostemma ledermannii



Cyphostemma lentianum



Cyphostemma letouzeyanum

C. luteum (Exell & Mendonça) Descoings

bas.: *Cissus lutea* Exell & Mendonça

Rootstock many-headed; stems and branches procumbent; stems subquadrangular, purplish red, pubescent; leaves 3-5-foliolate; petiole rather fleshy, to 2 cm long, pubescent; leaflets with petiolules 3-20 mm long, pubescent; lamina obovate-elliptic or elliptic, rounded at apex, margins serrate, purplish red, base cuneate, 10 × 5 cm; glabrous or nearly so above, nerves pubescent or puberulous; panicle leaf-opposed, to 15 cm long; fruit unknown.

Herb-grown thickets amongst ferruginous, porous rocks.

Near *C. chloroleucum.*

Only known from the type.

C. lynesii (Dewit) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus lynesii* Dewit

Climber or creeper to 3 m from a tuberous rootstock, the tubers spreading horizontally; stems, petioles, tendrils and axes covered with short pale pink hairs tipped with dark red glands; leaves digitately 3-5-foliolate, ± sticky; leaflets elliptic to obovate or oblanceolate, 2,5-12 × 1-8 cm, acute to acuminate at apex, cuneate at base, crenate-dentate, the teeth apiculate and gland-tipped, sometimes ± subulate-tipped, sparsely pubescent and densely covered with pale hairs tipped with red or greenish brown glands; petiole 1,7-10 cm long; petiolules 0-3 mm long; cymes lax, 3-6 cm wide on axillary branches, trichotomous; peduncle 2-5 cm long; pedicels 2-3,5 mm long, pubescent and with dense short gland-tipped hairs; berry ± round, 6-7 mm long, black, pubescent and glandular.

Secondary thicket on sandy ground near stream; termite mounds; rocky hills; 700-960 m alt.

C. manikense (De Wild.) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus manikensis* De Wild.

syn.: *C. pseudomanikensis* Dewit

Erect herb ± 60 cm tall from a stout rootstock; stems shortly and densely pubescent or tomentose and with very dense purplish glandular-capitate hairs; leaves digitately 5-foliolate; petiole 4-10 cm long, indumentum as for stem; leaflets 7-19 × 2-8 cm, narrowly obovate to elliptic, apex acute, margins serrate, base cuneate, pubescent above and with ± dense capitate-glandular hairs; pale-brownish-tomentose or -lanate below, nerves pubescent but with dense capitate-glandular hairs; cymes ± terminal; peduncles ± 4 cm long, indumentum as for nerves; pedicels ± 1,5 mm long, indumentum as for peduncles; ripe fruit unknown.

Brachystegia woodland; termite mounds; gravelly soils in valley.

C. mannii (Bak.) Descoings

bas.: *Vitis mannii* Bak.

syn.: *Cissus mannii* (Bak.) Planch.

Herbaceous climber or trailer; stems cylindrical, 3-5 mm Ø, pubescence variable sometimes with glandular hairs; tendrils cylindrical, ± 1 mm Ø, bifid, ± densely pubescent; leaves digitately 5-foliolate; petiole cylindrical, 1-1,5 mm Ø, 3-10 cm long; petiolules channelled above, ± 5-15 mm long; petiole and petiolules shortly pubescent, sometimes with some glandular hairs; lamina obovate(-elliptic) with a stout, sharp acumen at apex, base cuneate, 5-10 × 3-4 cm; margins with oblong, distinct teeth ending by a sharp apex or sometimes by a glandular hair; pubescence reddish or whitish, slightly curly, very sparse on lamina, more dense on nerves above, rather scattered on lamina, rather dense on nerves below; cymes corymb-like, 10-25 × 10-20 cm, many-flowered; peduncle ± cylindrical, ± 2 mm Ø, 7-15 cm long, ± densely pubescent with some glandular, scattered glandular hairs; all axes ± densely pubescent towards the apex; berry round, 6 mm Ø, glabrous.

Basaltic black ground; forest/grassland transition; thicket; 1400-2400 m alt.

Bioko/Fernando Poo.

C. maranguense (Gilg) Descoings, non *C. marunguense!* – Icon.: Agnew & Agnew, Upl. Kenya Wild fl., ed. 2: pl 60, 1994; Newton in Ballya 4/3: 67, 1997.

bas.: *Cissus maranguensis* Gilg (Marangu, Tanzania).

Climber to several m long ; stems sticky, ridged, 12,5 mm Ø at base, pubescent and with short red gland-tipped hairs, very dense on young shoots; tendrils present; leaves ± succulent, 3-5 foliolate; leaflets often ± sessile, obovate, elliptic, oblong or oblanceolate, 1,5-15 × 1,2-8 cm, rounded to acute at apex, base cuneate to rounded, unequally toothed, glabrous and ± glossy to slightly pubescent above, ± densely whitish velvety pubescent beneath and often with a distinct reticulation, with few short gland-tipped hairs on margins; petiole 2,5-5 cm long, hairy like the stem; petiolules 0-8 mm long; inflorescence axillary or appearing terminal, rather dense, 5-15 cm wide; peduncles 2-10 cm long; pedicels 2-3,5 mm long (to 5 mm in fruit, 10 mm on pole flower); all axes pubescent and with dense short gland-tipped hairs, also so on berry, red, ellipsoid, c. 1 cm long.

Juniperus, Warburgia, Euclea dry forest and forest edges; derived *Eucalyptus* plantations etc.; grassland with scattered trees; dry rocky valley, etc.; open bush; 1000-2300 m alt.

C. marunguense (Dewit) Descoings, non *C. maranguense!*

bas.: *Cissus marunguensis* Dewit (Marungu Mts., Zaire).

Climber; tendrils forked; stems and branches striate, pubescent becoming glabrescent; leaves digitately 5-foliolate; petiolules 2-5 mm long, densely pubescent; leaflets oblong-elliptic, serrate-dentate, median leaflet 6-8 × 2-3 cm, glabrous above but pubescent on the main nerve, glabrous below but pubescent on the nerves and with some glandular hairs on the main nerve; cyme compound, to 8 cm long; peduncle ± 4 cm long with a tuft of long, glandular hairs at the tip; peduncle and axes pubescent; fruit unknown.

Streamlet sides; 1700 m alt.

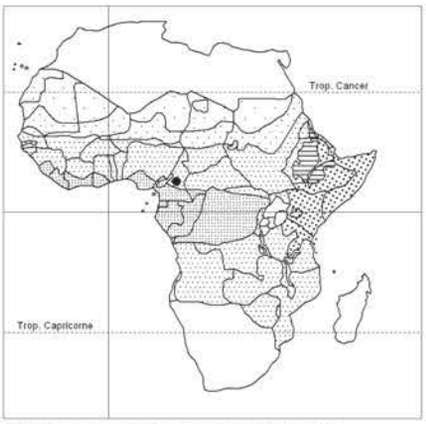
Only known from the type collected in 1957.

C. masukuense (Bak.) Descoings ex Wild & R. B. Drumm.; Enum. 3: 334, 1995; White & al., Evergreen for. fl. Malawi: 599, 2001.

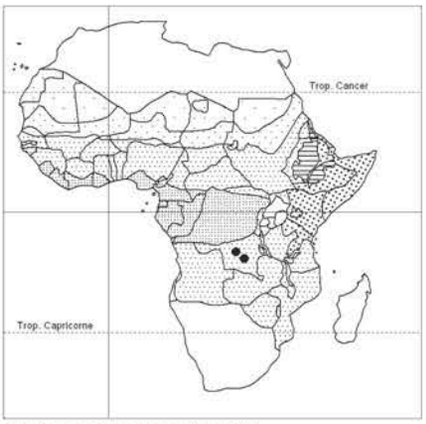
bas.: *Vitis masukuensis* Bak.

syn.: *Cissus masukuensis* (Bak.) Gilg & M. Brandt

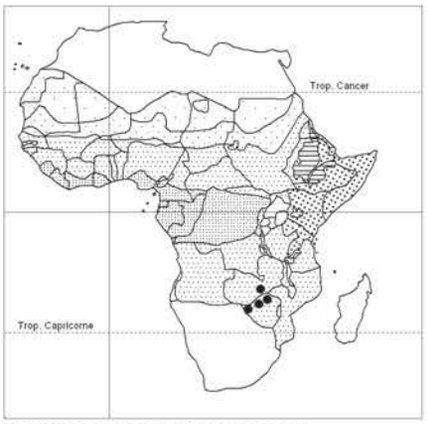
Climbing herb or scrambler; young stems pubescent and sometimes with a few ± gland-tipped more bristly hairs or ± non-glandular setae particularly near nodes, later often purplish and usually ± glabrous; tendrils present; leaves 3-5-foliolate; leaflets oblong-elliptic to elliptic or elliptic-oblanceolate, 1,7-12 × 1-6 cm, apex acute or acuminate, base ± cuneate or ± rounded, rather distinctly or irregularly serrate-crenate, sparsely pilose above, densely pubescent beneath or ± glabrous all over except for few hairs on the midrib; petiole 1-6,5 cm long; petiolules 0,2-1,9 cm long, that of median leaflet the longest, both with multi-



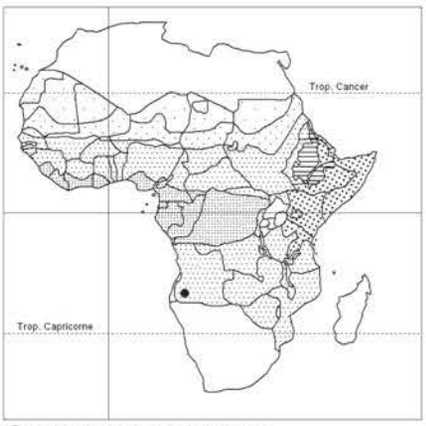
Cyphostemma leucotrichum



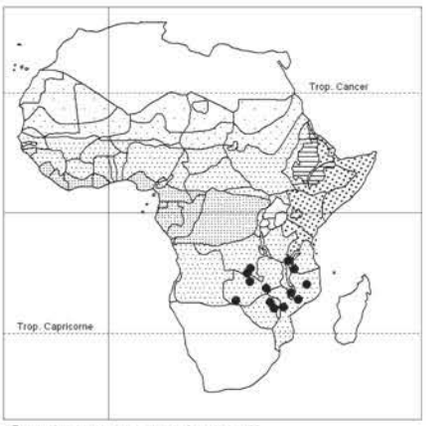
Cyphostemma libenii



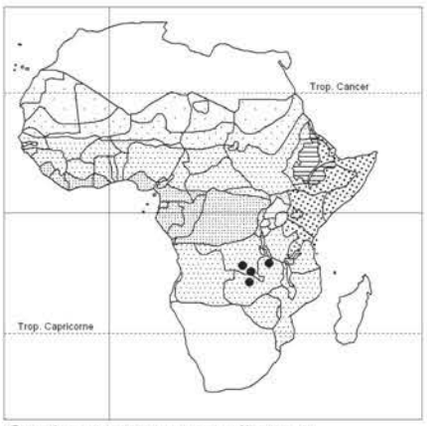
Cyphostemma lovemorei



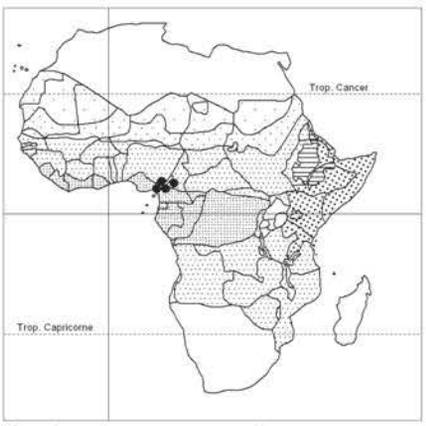
Cyphostemma luteum



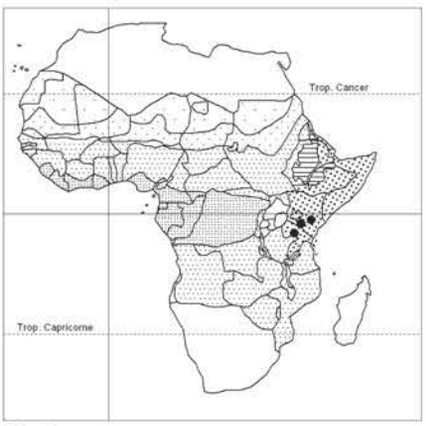
Cyphostemma lynesii



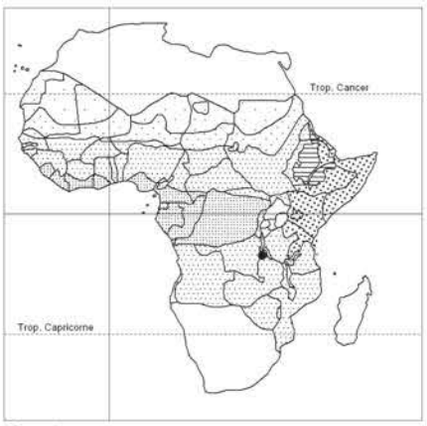
Cyphostemma manikense



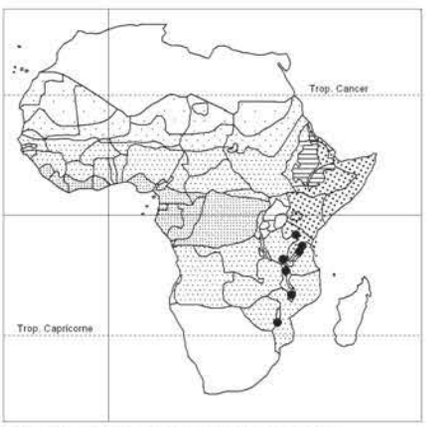
Cyphostemma mannii



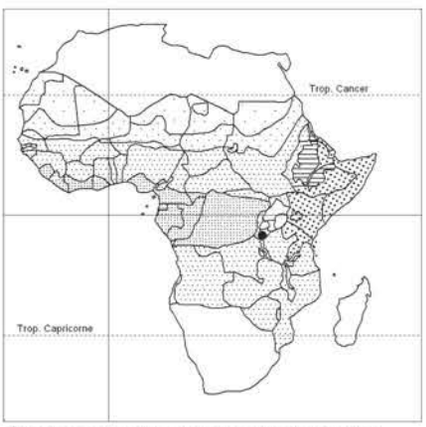
Cyphostemma maranguense



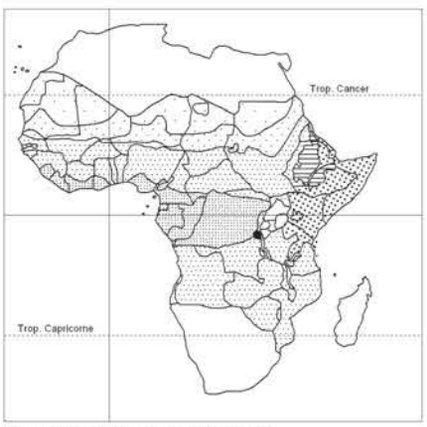
Cyphostemma marunguense



Cyphostemma masukuense



Cyphostemma meyeri-johannis



Cyphostemma michelii

cellular hairs and a few setae particularly at apex of petiole; inflorescence 5-15 cm wide; peduncles 2-7 cm long, pubescent and with sparse setae; pedicels 2-4 mm long; inflorescence-axes often pale to bright ferruginous pubescent; berry ellipsoid, 8 mm long, ± glabrous or with long multicellular hairs and stiff bristles, sometimes glandular.

Evergreen forest; rain-forest; open areas in bushland at forest edges; open rock vegetation with *Sparrmannia, Peponium, Oreosyce, Urena, Pilea* surrounded by *Arundinaria, Cryptocarya* montane wet evergreen forest; 1050-2400 m alt.

Variable in: type of indumentum on stems, leaves and fruits; size of stipules.

Poorly understood species; Verdcourt distinguished (Fl. Trop. E. Afr., Vitac.: 105-106, 1993) 4 subspecies based mainly on the pubescence and on the size of the stipules.

C. braunii is perhaps a synonym.

C. meyeri-johannis (Gilg & M. Brandt) Verdc.

bas.: *Cissus meyeri-johannis* Gilg & M. Brandt

Erect perennial herb 50-70 cm tall; stems simple, together with petiole, peduncle, rhachis, pedicels, stipules, calyx covered with very short spidery grey ± dense tomentum and with some gland-tipped hairs on petiole; tendrils absent; leaves 5-foliolate; leaflets drying blackish, sessile, oblanceolate to narrowly obovate, 10-13 × 3-4,5 cm, acute at apex, narrowly cuneate at base, the outer ones scarcely oblique but much smaller than the inner, all densely shortly very acutely serrate, the teeth apiculate, except for basal ¼ which is entire, rather thick, above densely covered with small "subspidery" hairs, beneath with grey or sometimes somewhat fulvous tomentum, denser between veins than on them; venation very densely reticulate, slightly impressed above, conspicuous beneath but covered with tomentum; petiole 2-5 cm long; inflorescence leaf-opposed or terminal, branched, 4-8 cm long; peduncles 5 cm long, much shorter than leaves, dichotomously divided into several many-flowered cymes; bracteoles 1-1,5 mm long; pedicels 0,8-3 mm long; flower incompletely known; ripe fruit unknown.

Probably *Brachystegia* woodland; ± 1300 m alt.

Only known from the type collected in 1912.

Seems to be near *C. princeae, C. rhodesiae,* perhaps also *C. crotalarioides.*

C. michelii (Dewit) Descoings

bas.: *Cissus michelii* Dewit

Erect herb, ± 1 m tall; stems and branches striate, pubescent and with glandular hairs; leaves digitately 3-5-foliolate; upper leaves sessile, to 4 cm long in the others, pubescence as for stems; leaflets sessile, obovate, base cuneate, undulate-dentate, the median leaflet 9-15 × 2-4 cm; above sparsely pubescent; below glabrous but nerves pubescent and with glandular hairs; compound cymes to 12 cm long; peduncle ± 5 cm long; all axes pubescent like the stems; ripe fruit unknown.

Open forest with *Brachystegia.*

Only known from the type collected in 1952.

Described as near *Cissus reedii (= Cyphostemma heterotrichum)* but probably a form of *Cyphostemma crotalarioides.*

C. micradenium (Gilg & M. Brandt) Descoings

bas.: *Cissus micradenia* Gilg & M. Brandt

Perennial herb; stems longitudinally striate, together with peduncles, rhachides, pedicels, etc. densely to very shortly grey-pilose or grey-tomentose and with intermixed short or very short gland-tipped hairs, very dense on youngest parts, less so beneath; tendrils present; leaves sessile, 3-foliolate; leaflets subequal, the middle one petiolulate the laterals sessile, obovate to broadly obovate, 3,5-4,5 × 3-4 cm, apex acute, base broadly cuneate, equally sinuate-dentate, the teeth patent, fleshy, densely covered with short or very short hairs on both sides but densest beneath; petiolules 5-10 mm long; cymes 3-fid, cymules many-flowered; peduncle 12 cm long; axes 6-9 cm long; pedicels 2,5-3 mm long; complete flower and ripe fruit unknown.

Ecology unknown. The locality is very probably Kerimasi (2°51'Sx35°57'E); fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 115, 1993.

Close to *C. dysocarpum.*

Only known from the type collected ante 1912 (1901-1904; Merker 633).

C. mildbraedii (Gilg & M. Brandt) Descoings ex Wild & R. B. Drumm.; Enum. 2: 194, 1992.

bas.: *Cissus mildbraedii* Gilg & M. Brandt

syn.: *Cissus centrali-africana* Gilg & R. E. Fries

Climbing or prostrate herb 0,7-4 m long; stems striate, pubescent and with capitate-glandular hairs; tendrils present or sometimes absent; leaves digitately 3-7-foliolate; petiole 0-9,5 cm long, indumentum as for stems; leaflets 1,5-22 × 1-6 cm, narrowly elliptic, oblanceolate or obovate, apex obtuse or acute, margins serrate-crenate, base cuneate, sparsely pubescent above, somewhat more densely pubescent or tomentose below especially on the nerves, with some capitate glands near the base and on the midrib; petiolules 0-1,5 cm long; cyme lax to 25 cm long, 6-16 cm wide, on axillary branches; peduncle 3,5-20 cm long, indumentum as for stems; pedicels 2-4 mm long, pubescent; berry reddish purple, ellipsoid, 8 mm long, pubescent and sometimes sparsely glandular.

Grassland; Chipya savannas; termitaria; *Brachystegia* woodland; gallery with *Euphorbia;* dry savannas; open forests; hillside; 1000-1700 m alt.

C. abercornense, C. obovato-oblongum, C. richardsiae are very close if not conspecific; further study particularly of seed variation is necessary.

C. milleri Wild & R. B. Drumm.

Climbing herb; stems sparsely pubescent or glabrescent; tendrils present; leaves digitately 3-5-foliolate; petiole to 6 cm long, with a few capitate-glandular hairs; leaflets membranous, to 12 × 8 cm, broadly elliptic to rotund, apex acute or obtuse, margins coarsely serrate, base cuneate, glabrous above, glabrous below except for a few glandular hairs on nerves; petiolules to 2 cm long, very sparsely glandular; cymes on short side-branches, lax; peduncle to 5 cm long, sparsely pubescent; pedicels to 6 mm long, pubescent and with capitate-glandular hairs; berry ellipsoid, 9 mm long, yellow, glabrous.

Woodland.

C. molle (Steud. ex Bak. !) Descoings

bas.: *Vitis serpens* Hochst. ex A. Rich. var. *mollis* Steud. ex Bak.

syn.: *Cissus mollis* (Bak.) Planch.; *C. erythraeae* Gilg & M. Brandt; *Cyphostemma erythraeae* (Gilg & M. Brandt) Descoings

Erect perennial herb to 1 m tall from a woody rootstock; all parts reddish pubescent to tomentose; leaves 1-5-foliolate; petiole 0-8,5 cm long, uppermost often sessile; leaflets (narrowly) elliptic, 7,5-32 × 1,5-10 cm, serrate (rarely crenate or dentate); apex cuspidate to acute; base attenuate (rarely cuneate); inflorescence 5-16 cm long; peduncle 2-12 cm long; pedicels 2-5 (-8 in fruit) cm long, rarely with a few stalked glands; berry ellipsoid, 1 cm long, glabrous to sparsely pubescent.

Wooded grassland and bushland; sometimes on rocky slopes; 200-2800 m alt.

Close to *C. crinitum.*

C. montanum Wild & R. B. Drumm.

Climbing herb to 1,2 m tall; stems with ± sparse ± straggling appressed hairs and a few to many red gland-tipped hairs; tendrils present; leaves 3-5-foliolate; leaflets sessile or subsessile, elliptic to obovate, 2-8,5 × 1-5,5 cm, acuminate at apex, cuneate at base, regularly serrate, ± glabrous above, puberulous or pubescent on main nerve beneath and with some gland-tipped hairs on the midrib towards the base; petiole 1-5 cm long, with indumentum as for stems; cymes ± compact, 5-7,5 cm wide; peduncle 2-8 cm long, with indumentum similar to stems; pedicels 1-2 mm long (to 5 mm in pole flower), ferruginous pubescent but without glands; berry ± round, 7 mm long, glabrous.

Forest; on rocky crags; 1700-2100 m alt.

Plants from Zimbabwe are more densely hairy and glandular; common at c. 2000 m alt.

Probably not distinct from *C. vandenbrandeanum* (fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 102, 1993).

C. muhuluense (Mildbr.) Descoings

bas.: *Cissus muhuluensis* Mildbr.

Climber with fairly slender stems, glabrous except for a few gland-tipped hairs 0,5-1 mm long near the nodes; tendrils present; leaves 3-foliolate; leaflets elliptic, 5-13,5 × 1,7-7 cm, acuminate at apex, cuneate at base, remotely dentate with upwards directed small teeth, glabrous but surface minutely blistered in the dry state and with numerous minute white cystoliths; petiole (2-)5-7,5 cm long; petiolules ± 0-2 cm long, the median the longest, together with petiole with gland-tipped bristly hairs densest at junction with stem and each other; inflorescence 6-8 cm wide; peduncle 5-7 cm long, together with axes with very sparse gland-tipped hairs; pedicels 2-6 mm long, puberulous with characteristic short hairs; entire flower unknown; ripe fruit unknown.

Mist forest; climbing on bush; sporadic; ± 1200 m alt.

Only known from the type collected in 1932.

C. nanellum (Gilg & R. E. Fries) Descoings – Icon.: Fries, Schwed. Rhod.-Kongo-Exped. 1: tab. 10 fig. 4, 1914.

bas.: *Cissus nanella* Gilg & R. E. Fries

Erect herb ± 20-25 cm tall from a tuberous root ± 2 cm Ø; stems 1-2 mm Ø, pubescent; tendrils absent; leaves 2-4 with 2-3 leaflets, digitate; petiole 3,5-4 cm long, pubescent and with some short pedicelled glands towards the apex; lamina linear to narrowly oblanceolate-lorate, sessile, margins serrate near the apex, 4,3-7 × 0,6-2,5 cm; glabrous above, pubescent on the midrib below; cymes axillary and (or) ± terminal, compound, trichotomous, 6-7 cm Ø; peduncle 1-2 cm long, pubescent; pedicels 1,5-3 mm long, pubescent with short purple-black capitate glands. Fruit known !: ovoid, 6 mm long, pubescent to glabrescent.

Open forest with *Marquesia macroura, Julbernardia grandiflora;* humid miombo; dry forest or woodland on burnt ground; 1208-1250 m alt.

C. nigroglandulosum (Gilg & M. Brandt) Descoings

bas.: *Cissus nigroglandulosa* Gilg & M. Brandt

Erect perennial 0,4-1 m tall; branches, peduncles, rhachides ± densely covered with ferruginous or grey-ferruginous tomentum or often above subtomentose with short densely intermixed gland-tipped hairs which are longer than the tomentum; *tendrils absent; stipules very large;* leaves *sessile*; leaflets 3-5, sessile, very unequal, oblong to oblanceolate, the mid-leaflet 8-10 × 2-2,5 cm, very acute at apex, long-cuneate at base, margins equally serrulate, ferruginous-tomentose and with dense intermixed *black* (in dry state) short thickened glandular hairs; cymes terminal, 2-3-fid, the elements branched and many-flowered; peduncle 2,5-7 cm long; secondary axes 3-5 cm long; pedicels ± 2 mm long, ± densely grey pilose and with very rare gland-tipped hairs; flower incompletely known; berry red-yellow, ± round (not collected).

Open grassland on sandy loam; 1800 m alt.

Only known from 2 syntypes collected in 1908-1909 (destroyed). Not refound in nature.

Near *C. crotalorioides*, *C. rhodesiae* (but stipules 3-4 × 5-7 mm), also *C. hereroense;* different from *C. vanmeelii.*

C. niveum (Hochst. ex Schweinf.) Descoings

bas.: *Cissus nivea* Hochst. ex Schweinf.

syn.: *Vitis pannosa* Bak.

Sticky herbaceous climber to 3 m long with a thick fleshy rootstock, sometimes with erect fleshy basal stem to 0,6 m tall, 1 cm Ø; stems pubescent and with dense sticky glands to 3 mm long; leaves 3-foliolate, tomentose to woolly; petiole 2-13 cm long, pubescent and glandular; leaflets ovate or broadly so, 2,5-19,5 × 1,5-12,5 cm, grossly dentate to serrate; apex acuminate to acute; base cuneate to truncate; inflorescence 6-18 cm long, pubescent and glandular; peduncle 2,5-11,5 cm long; pedicels 1-5 (-8 in fruit) mm long; tendrils on some branches or absent; berry ellipsoid, 8-12 mm long, puberulous to pubescent, densely glandular.

Juniperus, Podocarpus forest (mostly at edges); bushland; thicket clumps in grassland; persisting in hedges and in grassland after forest clearing; rocky outcrops; 1250-2600 m alt.

Closely allied to *C. jiguu.*

C. njegerre (Gilg & H. Strauss) Descoings – Icon.: Hesdörfer Gartenwelt 14: 90, tab., 1910 (title of the note: Die Usambararebe von H. Strauss, Dahlem).

bas.: *Cissus njegerre* Gilg & H. Strauss

Perennial climbing herb to at least 12 m long; branches slender, together with petiole, peduncles, inflorescence-axes, pedicels densely to very densely covered with long spreading white, red or purple hairs; tendrils present; leaves 3-5-foliolate; leaflets obovate to broadly obovate, 3,5-13,5 × 2-7,5 cm, the laterals often oblique, all shortly narrowly acuminate or acute at apex, median one broadly cuneate at base, laterals mostly ± rounded, serrate-dentate, ± densely pubescent above, densely covered with ± long spreading hairs beneath, white except for nerves and margins where red, also with obscure glandular hairs;

petiole 2-5 cm long; petiolules 1-2 cm long; cyme lax, 2-3-branched, 16-21 cm wide; peduncle 3-6 cm long; pedicels 3 mm long; berry ovoid, 1 cm long, long-hairy and glandular.

Rain-forest (clearings and cuttings); 800-950 m alt.

Cultivated at the Botanic Garden, Graz (Austria) where the old specimen died (Teppner, Fritschiana 39: 31, 2003). But a new one was received from Berlin-Dahlem which is believed to belong to the original collection by Engler in 1903.

Collected in 1903, 1905, 1906, 1916, 1953.

C. obovato-oblongum (De Wild.) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus obovato-oblonga* De Wild.

Creeping herb from a tuberous rootstock; stems and branches striate, pubescent; tendrils absent; leaves digitately 3-5-foliolate; petiole 2-6 cm long, pubescent; leaflets with petiolules 3-20 mm long, pubescent; lamina narrowly oblong-elliptic to narrowly obovate, apex acute to obtuse, margins serrate or serrate-crenate, base narrowly cuneate, ± glabrous above, shortly pubescent on the nerves below; median leaflet ± 4,5-16 × 1-7 cm; cyme compound, to 30 cm long, terminal on short axillary branches, trichotomous; peduncle 10-20 cm long, pubescent; pedicels ± 2-3,5 mm long, pubescent; berry ± ovoid, 7 mm long, glabrous (not quite ripe).

Open forest; wooded savannas; termite mounds; *Brachystegia* woodland.

Probably not distinct from *C. mildbraedii* (fide Verdcourt, Fl. Trop. E. Afr., Vitac.: 86, 1993).

C. odontadenium (Gilg) Descoings

bas.: *Cissus odontadenia* Gilg

Climber with tendrils; stems, petioles, peduncles, pedicels with short gland-tipped hairs and stems sparsely pilose; leaves 5-foliolate, ± 5 cm wide, petiolate; leaflets fleshy, obovate, the median ones ± 3 × 1,3-1,4 cm, apex rounded, base narrowed, glabrous, coarsely serrate-dentate, the teeth thickened and glandular at apex; petiolules 3-4 mm long; cyme lax, pseudopaniculate or raceme-like, 4-5 cm wide; pedicels 3-4 mm long; fruit unknown.

Dense *Sansevieria* bushland; 195 m alt.

Taxonomic status uncertain; recent material lacking. A specimen seen by Verdcourt from the same area (Voi, Kenya) is a variety of *C. dysocarpum* lacking glands on the buds (Fl. Trop. E. Afr., Vitac.: 115-116, 1993).

C. ornatum (A. Chev. ex Hutch. & Dalziel) Descoings; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 384, 2006.

bas.: *Cissus ornata* A. Chev. ex Hutch. & Dalziel

Large climber; stems 5-7 mm Ø, cylindric, deeply-channelled, glabrous or glabrescent; tendrils present, several-forked; stipules 1-2 cm long; leaves digitately 3-5 foliolate; petiole cylindric, 3-4 mm Ø, 10-18 cm long, glabrous or nearly so; petiolules channelled, ± 1,5 mm Ø, *3-5 cm long,* glabrous or glabrescent; petiolule junction-point thickened and pubescent; lamina ovate-elliptic to obovate ± orbicular, 8-13 × 5-9 cm, obtuse to rounded, sometimes slightly oblique-cuneate, rounded or obtuse at apex with obtuse acumen 8-10 mm long, 2-3 mm broad; margins with long indentations, generally ending by fine recurved sharp teeth; glabrous, black, shining above, glabrous below, brownish with loosely pubescent nerves; cyme corymb-like, 25-30 cm long; peduncle 10-15 cm long, like the axes cylindrical, glabrous or ± pubescent; outmost axes with pale reddish pubescence; flower constricted near middle, tips of petals long, recurved; berry ovoid, 7-8 mm long, glabrous.

At edges of clearings in forest.

C. ouakense Descoings

Erect herb 1-1,5 m tall; stems stout, ± cylindrical, striate, 4-6 mm Ø, ± densely covered with a reddish pubescence and sometimes glandular hairs; tendrils absent; leaves digitately 3-foliolate, sessile; leaflets sessile or with petiolules 10-15 mm long, cylindrical, thick, canaliculate, densely pubescent; leaflets lanceolate, oblong to oblong-elliptic, 20-40 × 6-12 cm, base cuneate, decurrent on the petiole, apex cuneate or obtuse; margins dentate, glabrous or glabrescent above, pubescent below on the nerves, slightly pubescent or glabrous on the surface; cymes corymb-like, very ramose, 8-10 cm long; peduncle 2-5 cm long, cylindrical, canaliculate, densely pubescent (all axes also); berry ovoid, 8 mm long, glabrous.

Grazed savanna; wooded savanna; laterite sometimes overlaid with clay.

Comprises 2 vars.

C. overlaetii (Dewit) Descoings

bas.: *Cissus overlaetii* Dewit

Herbaceous climber; tendrils glabrous, forked; stems and branches ridged, with very rare glandular hairs; leaves digitately 3-foliolate; petiole 1-1,5 cm long, pubescent below; leaflets with petiolules 0,5-1 cm long, pubescent above; lamina elliptic, subentire, the median 3-8 × 1,5-3 cm; glabrous above but main nerve pubescent; glabrous with some glandular, deciduous hairs below; cymes compound, to 5 cm long; peduncle ± 2,5 cm long with some glandular hairs but with a tuft of long glandular hairs at the apex; axes pubescent; fruit unknown.

Wooded savanna.

Only known from the type collected in 1934.

C. oxyphyllum (A. Rich.) Vollesen; Enum. 2: 195, 1992.

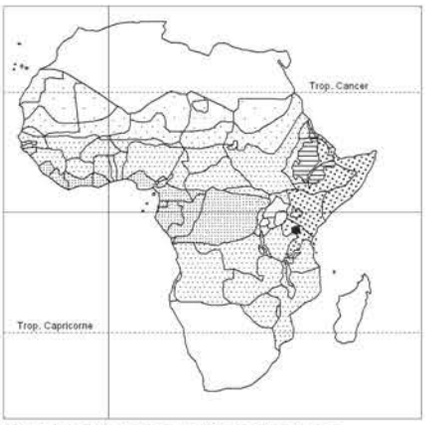
Herbaceous climber to 4 m long from a fleshy rootstock; all parts glabrous; leaves 4-5-foliolate; petiole 1,5-6 cm long; leaflets narrowly to broadly elliptic or obovate, 2-9 × 0,5-2,5 cm, serrate, apex acuminate, base truncate to subcordate; inflorescence 6,5-13 cm long, with scattered subsessile glands on distal branches; peduncles 2,5-8 cm long; pedicels 2-4 (-8 in fruit) mm, with dense subsessile glands; berry ± ellipsoid, 7-10 mm long.

Combretum-Terminalia and *Acacia-Commiphora-Combretum* woodland and bushland, on rocky slopes or black cotton soil; 1300-2650 m alt.

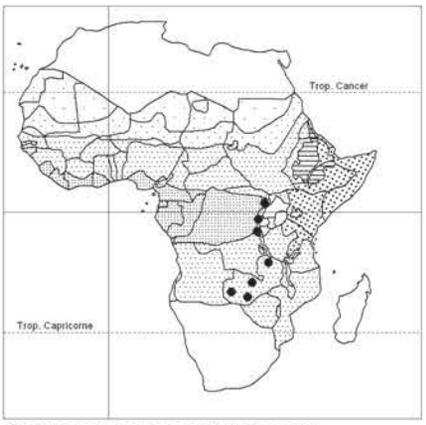
C. pachyanthum (Gilg & M. Brandt) Descoings; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 461, 2002.

bas.: *Cissus pachyantha* Gilg & M. Brandt

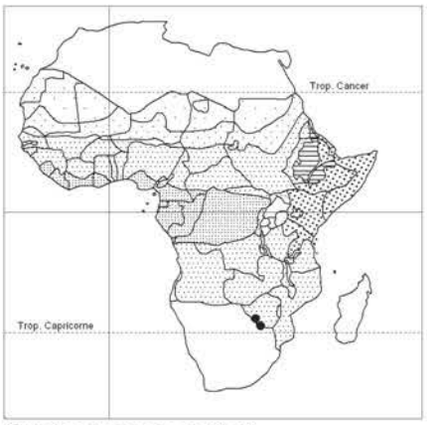
Rather fleshy climber to 10 m long; branches glabrous or with scattered glandular hairs, soon with brown striate ± peeling epidermis; tendrils present; leaves 3-foliolate, fleshy; leaflets obovate-oblong to oblong, 3,5-12 × 1,5-6,5 cm, acuminate at apex, base cuneate to rounded; margins distantly shallowly crenate or entire except for very sparse scarcely perceptible purple teeth, glabrous but with numerous rhaphides appearing whitish and scale-like in dried plant; petiole fleshy, 2-4 cm long, sometimes thickened and epidermis transversely cracking; petiolules thick, the median 0,5-2 cm long and the laterals 3-5 mm long, sometimes with 2-3 gland-tipped hairs; cymes axillary, laxly branched, 10-20 cm wide, the cymules spaced at intervals; peduncles 2,5-6 cm long; pedicels 2-6 mm long; axes and pedicels shortly pubescent; berry ovoid, 7-11 mm long, rugulose, glabrous or sparsely glandular.



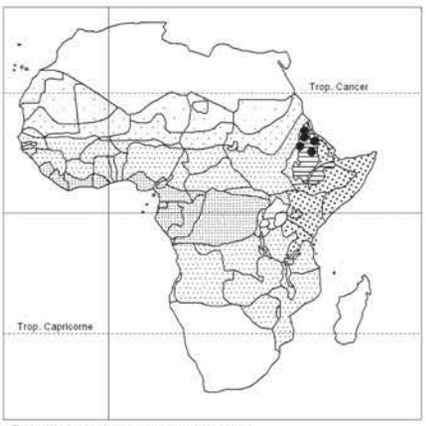
Cyphostemma micradenium



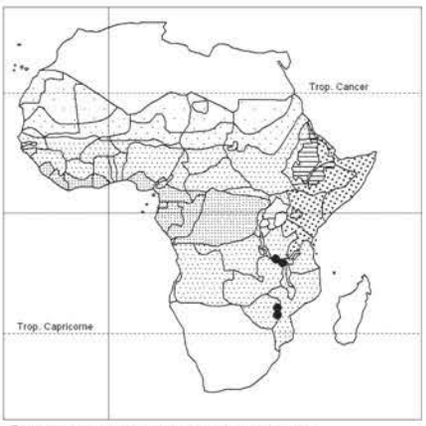
Cyphostemma mildbraedii



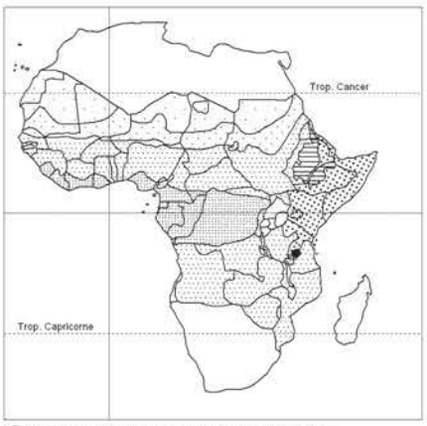
Cyphostemma milleri



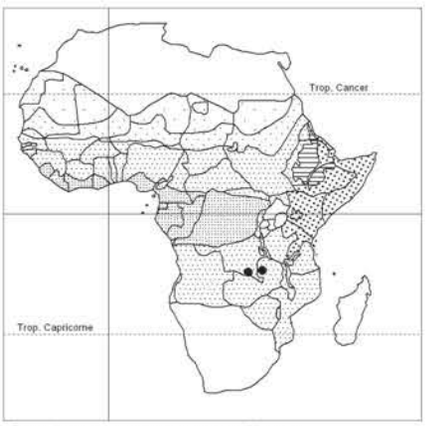
Cyphostemma molle



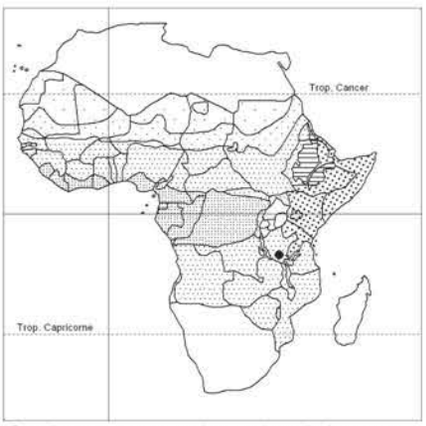
Cyphostemma montanum



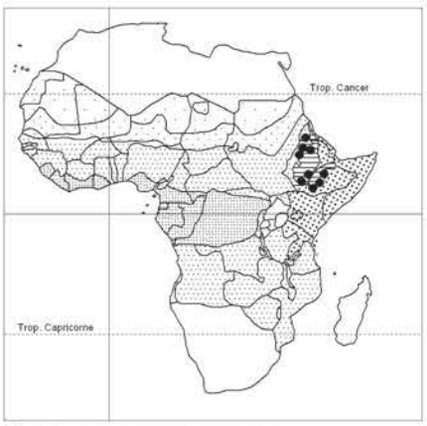
Cyphostemma muhuluense



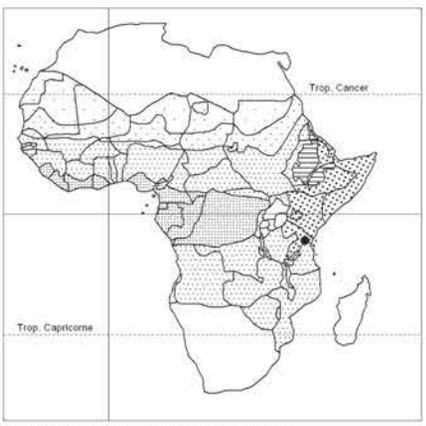
Cyphostemma nanellum



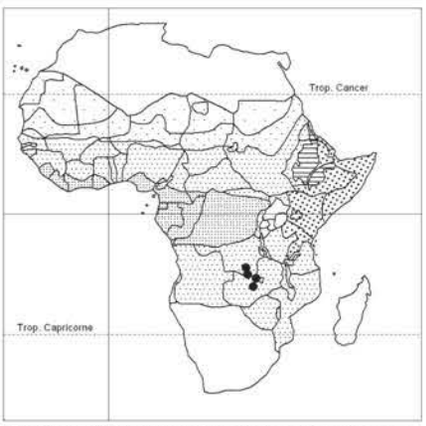
Cyphostemma nigroglandulosum



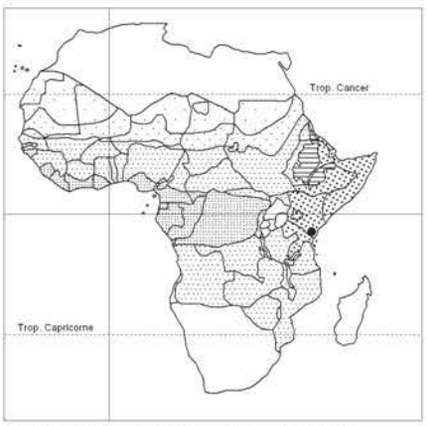
Cyphostemma niveum



Cyphostemma njegerre



Cyphostemma obovato-oblongum



Cyphostemma odontadenium

Rain-forest *(Cephalosphaera, Pachystela, Strombosia, Entandrophragma,* etc.); margins of clearings; Jurassic limestone outcrops with *Pandanus rabaiensis, Euphorbia, Ficus, Cola,* etc.; 200-900 m alt.

C. pannosum Vollesen

Erect perennial herb 0,5-1,8 m tall from a woody rootstock; young stems deep red, sparsely to densely puberulous; tendrils absent; leaves digitately 3-7-foliolate, whitish lanate beneath except for a narrow subglabrous edge formed by the sharply recurved margin, subglabrous above; petiole 1,5-12 cm long, densely puberulous; leaflets elliptic to obovate, held like a V and therefore appearing folded when dry, 6,5-15 × 2-6,5 cm, subsessile; apex acute to acuminate; base attenuate; margins sharply serrate to irregularly dentate; cyme umbelliform, puberulous and sometimes with a few shortly stalked glands, 10-35 cm long; peduncle 5,5-25 cm long; pedicels 1-3 mm long, puberulous and sometimes with shortly stalked glands; berry ellipsoid, 8-10 mm long, glabrous or shortly pubescent.

Combretum-Terminalia-Protea wooded grassland on greyish to blackish clay soil; sandy quartz soil derived from basement rocks; 1110-2000 m alt.

Only known from 3 collections in Ethiopia, one from Uganda (seeds are needed for comparison with Ethiopian material).

700 km distance between the N and S collections.

C. passargei (Gilg & M. Brandt) Descoings

bas.: *Cissus passargei* Gilg & M. Brandt

Perennial herb, 50-60 cm tall; stems arising from a thick, woody rootstock; stems, peduncles, rhachides, pedicels densely shortly ferruginous pilose; leaves sessile, 3-foliolate; leaflets sessile, oblong, ± 10 × 2 cm, apex acute, base narrowed, margins dentate (teeth very acute, falcate, fleshy), glabrous above, densely ferruginous tomentose below; inflorescence terminal, peduncle ± 8 cm long, 3-4-chotomous; cymules many-flowered; pedicels 1-2 mm long, moderately thick, densely shortly pilose; fruit unknown.

Forming dense clumps in grassland; 1200 m alt. (Passarge 36, incomplete); burnt, rocky wooded savanna; 1050 m alt. (Ledermann 2529, with very young leaves).

Only known from the 2 collections cited and now destroyed.

Not in Flore du Cameroun.

Near *C. crotalarioides.*

C. paucidentatum (Klotzsch) Descoings ex Wild & R. B. Drumm.; Enum. 3: 334, 1995.

bas.: *Cissus paucidentata* Klotzsch

syn.: *Vitis paucidentata* (Klotzsch) Bak.

Climber or spreading scrambler to 3-4 m long, ± herbaceous; stems often purplish, striate, glabrous or rarely sparsely puberulous; tendrils present; leaves bright green, thin when dry but often slightly fleshy in life, 3-5-foliolate; leaflets lanceolate to oblong, (broadly) elliptic, 3,5-15,5 × 1,6-5 cm, apex acute to acuminate, base cuneate, margins rather distantly serrate or crenate-dentate, sometimes ± entire near the base, glabrous with white rhaphides ± evident; petiole 1,5-3 cm long, glabrous; petiolules 0-5 mm long on central leaflet, laterals ± sessile; cymes on axillary or leaf-opposed branchlets, ± dense or lax, 2,5-15 cm wide; peduncle 1-7 cm long, glabrous, pedicels ± 3-10 mm long, always enlarging to 5-10 mm in fruit, ± glabrous or pubescent to puberulous; axes glabrous or ± pubescent particularly at forks; berry ± ovoid, 5-7 mm long, glabrous or glabrescent.

Ground-water forest; wooded grassland with *Diospyros kirkii*, *Terminalia stenostachya*, *Combretum molle* on shallow stony soil; open bush behind shore (subsp. **zanzibaricum** Verdc.); 0-275 m alt.

Either the seeds vary remarkably, or 3 distinct species are involved (Verdcourt, Fl. Trop. E. Afr., Vitac.: 74, 1993).

S. Africa (1900 m alt.).

Comprises 2 subspp.

C. pendulum (Welw. ex Bak.) Descoings

bas.: *Vitis pendula* Welw. ex Bak.

syn.: *Cissus pendula* (Welw. ex Bak.) Planch.

Climbing perennial herb, 45-90 cm long; stems brownish, much striated, fleshy, covered as well as the petioles, peduncles, with long, spreading or deflexed, weak, gland-tipped blood-red, viscid bristles; leaves herbaceous-fleshy, bright green, glabrous above, white- or whitish tomentose beneath; petiole 5-7,5 cm long, weak, herbaceous, bristly like the branches; leaves 5-foliolate; leaflets sessile, obovate-lanceolate, the central ones 7,5-12,5 × 3,7-5 cm, apex acute, base cuneate, margins inciso-dentate, texture thin but fleshy; tendrils copious, herbaceous, bristly; compound cymes 10-15 cm broad on bristly herbaceous peduncles, 7,5-10 cm long; pedicels ± 0,22 cm, slender, setose; berry ± roundish, red, glandular, c. 9 mm long, pendulous.

Rocky thickets; stony bushy pastures; also on rocks but less abundantly; 1150 m alt.

C. perforatum (Louis) Descoings

bas.: *Cissus perforata* Louis

Herbaceous climber; stems and branches striate, puberulous-pubescent and with glandular, rather dense, hairs becoming prickles; tendrils pubescent, forked, and with glandular hairs; leaves digitately 5-foliolate; leaflets with petiolules 0,5-1,5 cm long, clothed like the stems, apex acuminate, cuneate to ± rounded at base, dentate principally towards the apex, teeth obtuse mucronate ciliate, the central ones 7-12 × 2-6 cm; adpressed pubescent above, more densely on the nerves and with sparse glandular hairs, more sparsely pubescent below; compound cymes to 20 cm long; peduncle 4-7 cm long, pubescent and with ± dense glandular hairs as for the axes; berry round, pubescent and glandular, c. 6 mm Ø.

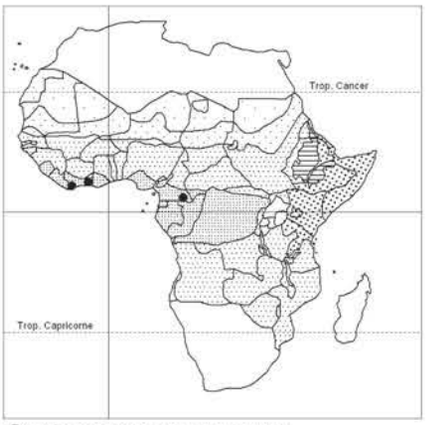
Rain-forest on firm ground; secondary formations.

C. pobeguinianum Descoings, non *C. pobeguinii* A. Chev. *(= C. junceum* subsp. *jatrophoides).*

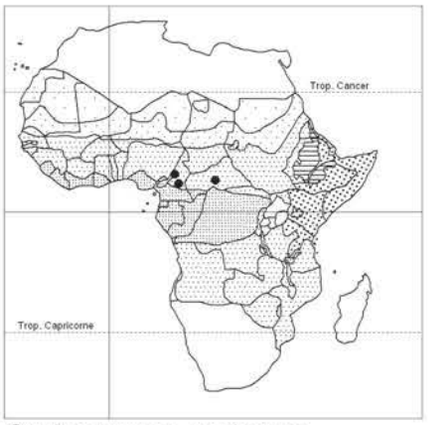
syn.: *Cissus chevalieri* sensu F.W.T.A., ed. 2, 1(2): 680, 1958 quoad specim. Chevalier 18574, Pobéguin 347.

Perennial herb, 0,5-0,7 m tall; stems erect, rounded, canaliculate, densely pubescent and sparsely glandular; leaves digitately 3-foliolate, petiolate or sometimes sessile; petiole ± cylindrical-compressed, broadly canaliculate, densely pubescent; leaflets sessile, obovate to oblanceolate 10-14 × 3-4,5 cm, base cuneate, obtuse to cuneate and shortly acuminate at apex; margins broadly denticulate; both faces densely pubescent and glandular; inflorescence cymose with peduncle 0,5-2 cm long, striate, densely pubescent and glandular; pedicels cylindrical, 1,5-3 mm long, clothed like the peduncles; berry densely pubescent and glandular.

Ecology unknown; sometimes rather rare; 1100-1200 m alt.



Cyphostemma ornatum



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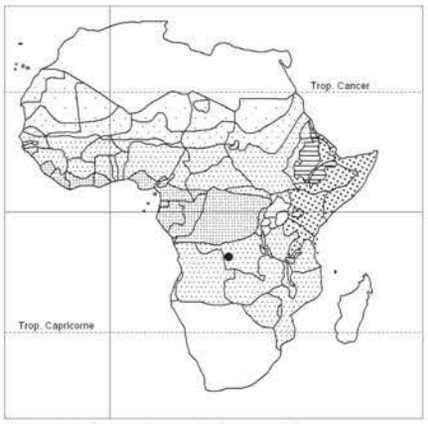
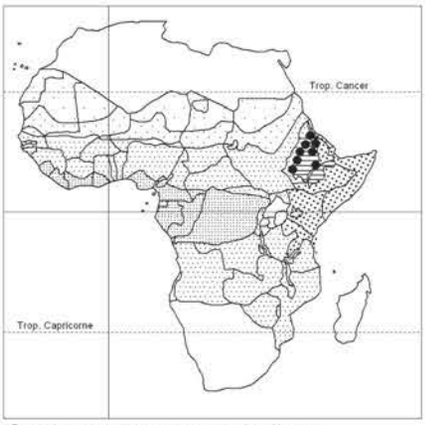
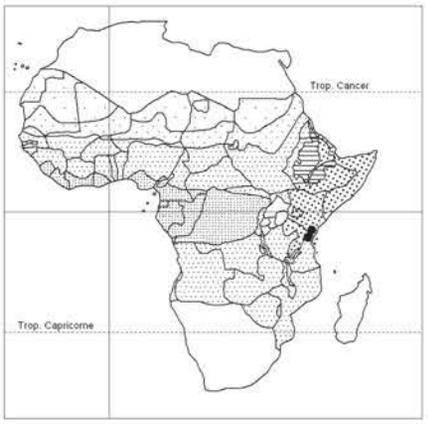


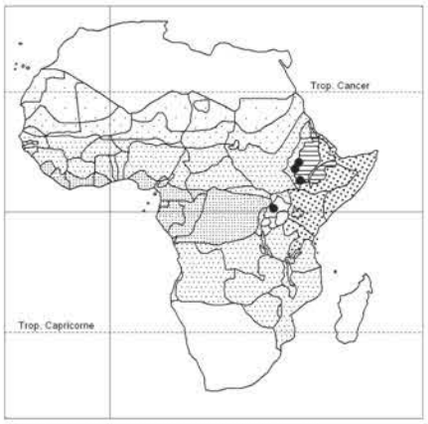
Cyphostemma overlaetii



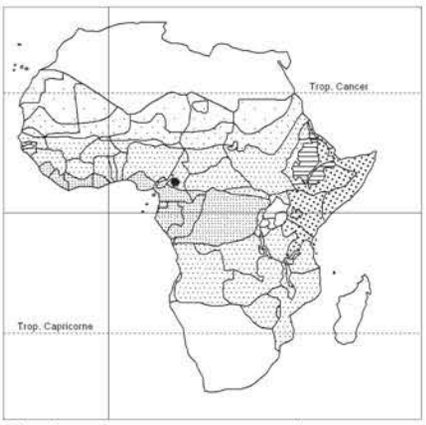
Cyphostemma oxyphyllum



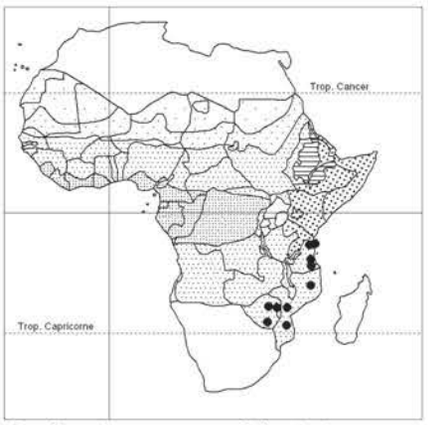
Cyphostemma pachyanthum



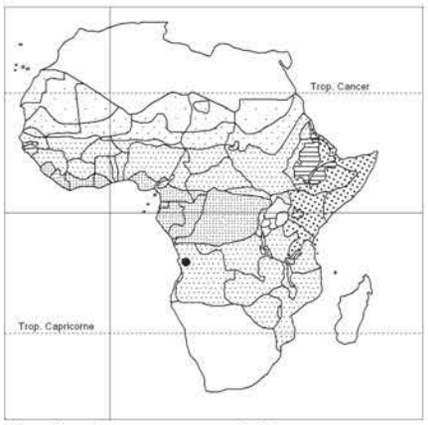
Cyphostemma pannosum



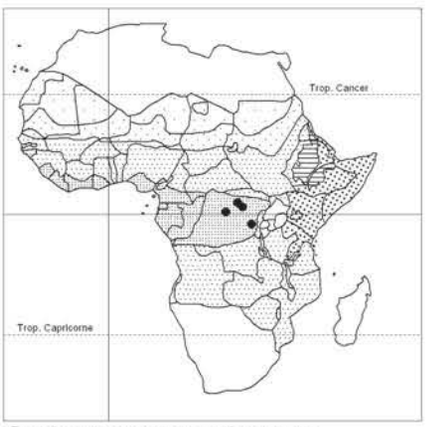
Cyphostemma passargei



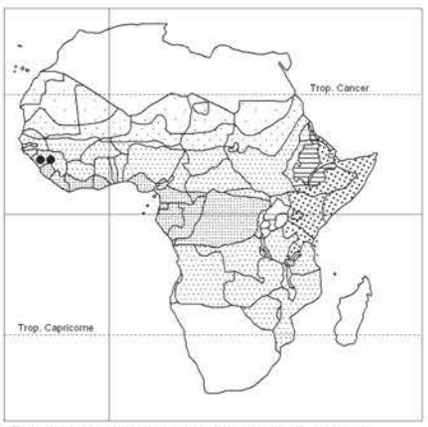
Cyphostemma paucidentatum



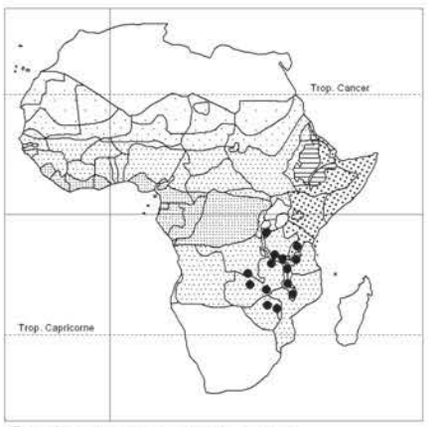
Cyphostemma pendulum



Cyphostemma perforatum



Cyphostemma pobeguinianum



Cyphostemma princeae

C. princeae (Gilg & M. Brandt) Descoings ex Wild & R. B. Drumm. – Icon.: Fl. Zambes. 2: 468, 1966 (flower bud, sub nom. *C. kerkvoordei*).

bas.: *Cissus princeae* Gilg & M. Brandt

syn.: *C. kerkvoordei* Dewit; Enum. 3: 334, 1995.

Erect herb 0,25-1,2 m tall from a woody rootstock; stems ± stout, ferruginous tomentose to floccose-velvety and with scattered short red or blackish gland-tipped stiff hairs; tendrils absent; leaves digitately 3-9-foliolate, the upper sometimes sessile or subsessile, lower shortly to distinctly petiolate, less often sessile; leaflets usually 4-27 × 0,4-8,5 cm, apex acute, base cuneate to narrowly attenuate, rather irregularly sharply serrate, glabrous or very sparsely pubescent above, densely ferruginous woolly-velvety beneath (white in life), later ± appressed arachnoid-pubescent but venation not obscured; petiole 0-7 cm long; petiolules 0-2 cm long, often ± stout; cymes terminal or axillary, corymbose, 6-25 cm wide; peduncle 1-8 cm long; pedicels 1,5-5 mm long; all axes ferruginous pubescent and main axes with scattered gland-tipped hairs; berry ± subglobose, 8-9 mm Ø, red to black, glabrous.

Grassland; rocky slopes; *Brachystegia* woodland; 800-2250 m alt.

C. pruriens (Welw. ex Bak.) Descoings

bas.: *Vitis pruriens* Welw. ex Bak.

syn.: *Cisssus pruriens* (Welw. ex Bak.) Planch.

Erect or wide-climbing perennial herb; stems several, sparingly branched, stout, 60-90 cm tall (? and more), finely striated, finely clothed with short grey hairs tipped with brownish or red glands; leaflets 5, the 3 upper ones on petiolules 3-4,3 cm long, rotundate-cordate, lobed, 5-7,5 cm broad by rather more deep, the basal lobes broadly rounded, the point acute, the edge with sharp subdeltoid teeth, the lower pair smaller and the stalks much shorter, texture considerably fleshy, both sides pale green and glandular all over like the stems, especially on the veins beneath; berry oblong, red, densely glandular, c. 1 cm long.

Wooded stony meadows; sparingly; 1200-1700 m alt.

C. pseudoburgeri Verdc.

Succulent ? trailer; stems swollen at nodes, nodular when dry, striate, with long white hairs particularly at nodes; tendrils absent; leaves sessile, 3-7-foliolate; leaflets oblanceolate 2-10,5 × 0,3-1,5 cm, ± rounded in outline at apex but tipped with teeth, very narrowly attenuate at base so as to appear pseudopetiolate, conspicuously toothed, the teeth directed upwards, with long hairs on the venation, drying wrinkled; cymes 5-8 cm wide; peduncles 5-8 cm long; pedicels 3-4 mm long; axes with gland-tipped hairs; berry ± round, 7 mm Ø, red.

Swamp on dark heavy clay with long grassland; ± 1200 m alt.

Related to *C. burgeri, C. stefanianum, C. unguiformifolium, C. hereroense.*

C. pseudonjegerre (Gilg & M. Brandt) Descoings; Enum. 3: 334, 1995. – Icon.: Bot Jahrb. Syst. 46: 545, 1912; Engler, Pflanzenwelt Afr. 3/2: 341, 1921.

bas.: *Cissus pseudonjegerre* Gilg & M. Brandt

Perennial climber to 4 m long; stems striate, together with petioles and densely ferruginous or pale brown shaggy pubescent and with scattered to extremely dense red gland-tipped hairs or bristles on stem and petioles and occasionally elsewhere; tendrils present; leaves digitately 3-5-foliolate; leaflets (oblong-) elliptic, obovate or obovate-rhombic, 2-14,5 × 1-7 cm, apex acute or subacute, base ± rounded to widely cuneate, unequally serrate-dentate or irregularly incised-lobate or crenate, minutely ferruginous pubescent to densely hairy above, grey-ferruginous velvety beneath; petiole 3-8,5 cm long; petiolules 0,5-1,8 cm long; cymes 12-23 cm wide; peduncles 5-12 cm long; pedicels 2 mm long; axes all ferruginous hairy but without gland-tipped hairs; berry ellipsoid, 8 mm long, red, glandular-hairy.

Albizia-Podocarpus forest and derived bushland; *Albizia-Croton* wooded valleys; cultivated bushland; evergreen forest; 1260-2100 m alt.

Comprises 3 subspp.: – subsp. **pseudonjegerre** in Tanzania; – subsp. **A** sensu Verdc., densely shaggy hairy and glandular; – subsp. **B** sensu Verdc., ± hairy and glandular, with blue fruits; the latter two in Kenya.

C. pseudorhodesiae (Dewit) Descoings

bas.: *Cissus pseudorhodesiae* Dewit

Erect herb with inflated roots; stems and branches striate, puberulous and with glandular hairs, ± 3 mm long; leaves sessile, digitately 3-5-foliolate; leaflets with petiolules 0-10 mm long, pubescent-puberulous like the stems; lamina elliptic to ovate, base long-cuneate, irregularly serrate-dentate, ciliate and with glandular hairs; median leaflet 10-18 × 3-5 cm sparsely pubescent and with very short glandular hairs, more densely on the nerves on both faces; cymes compound, to 15 cm long; peduncle 4-8 cm long, pubescence as for stems; fruit unknown.

Ecology unknown.

C. pseudosesquipedale Verdc.; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 162, 1994.

Erect to prostrate ± fleshy often unbranched herb or subshrubby herb 0,6-1,5 m tall from a large woody rootstock; stems ± densely shortly pubescent; tendrils absent; leaves subsucculent, 5-6-foliolate; leaflets elliptic, narrowly obovate or oblanceolate, 3,5-23,5 × 1-12 cm, ± acute at apex, base long-attenuate, irregularly narrowly double crenate, the divisions rounded, glabrous to very shortly pubescent above, pubescent to velvety tomentose beneath; petiole 1,5-9,5 cm long, pubescent like the stem; petiolules 0-1 cm long but leaflets usually sessile; cymes terminal, dichotomous, 4,5-20 cm long; peduncles 9-21 cm long, with ferruginous indumentum as on stems and some short gland-tipped hairs; other axes with denser short black gland-tipped hairs; pedicels 4-10 mm long, also with dense gland-tipped hairs; berry ellipsoid, 1,2 cm long, bright red, shortly pubescent and glandular.

Grassland with scattered trees; boulder-covered hills with scrub; bushland; *Berlinia, Combretum, Brachystegia, Isoberlinia* plus very mixed species woodland; *Brachystegia,* bamboo, *Protea,* etc. woodland; *Uapaca, Parinari, Syzygium* woodland; 960-1830 m alt.

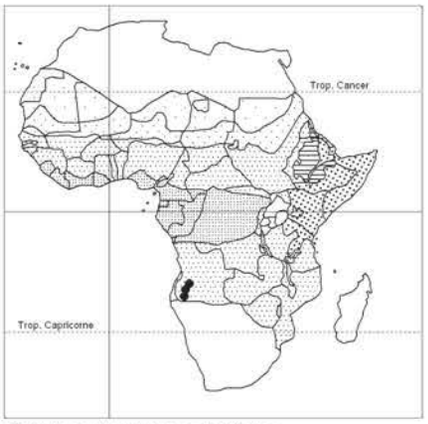
Confused with *(C. sesquipedale =) C. serpens.*

C. pseudoupembaense (Dewit) Descoings

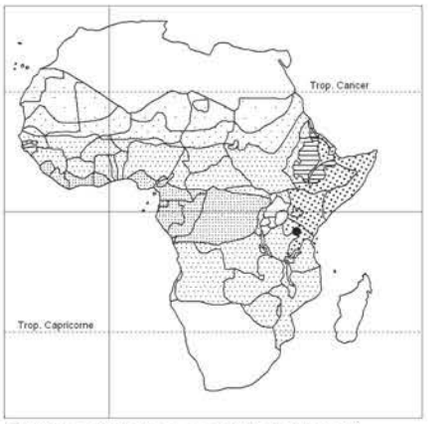
bas.: *Cissus pseudoupembaensis* Dewit

Erect herb with swollen roots; stems and branches striate, sparsely pubescent, more densely at nodes; leaves sessile when young, digitately 3-foliolate; leaflets sessile when young, oblong-lanceolate, serrate, the median ± 4,5 × 1 cm, glabrous above, glabrous below except on main nerve; cymes compound, to 10 cm long; peduncle ± 5 cm long; peduncle and axes pubescent; fruit unknown.

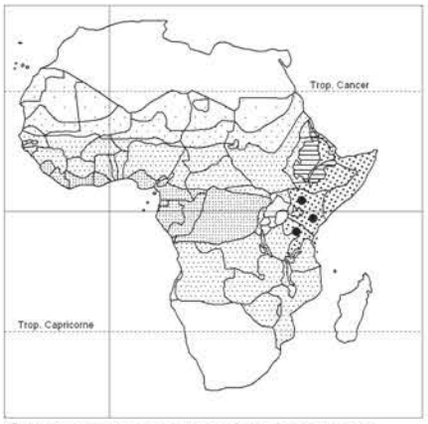
Open forests; 700 m alt.



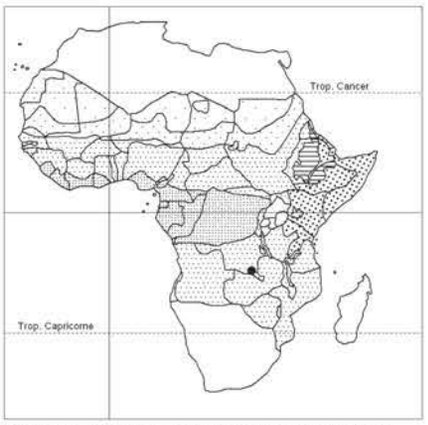
Cyphostemma pruriens



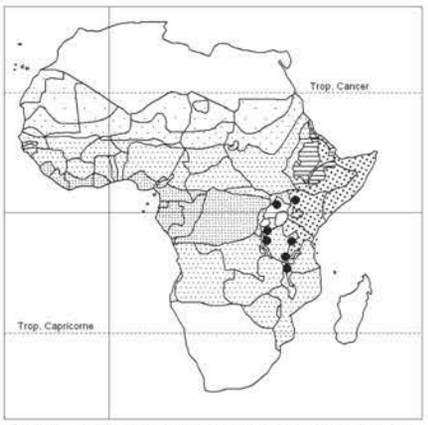
Cyphostemma pseudoburgeri



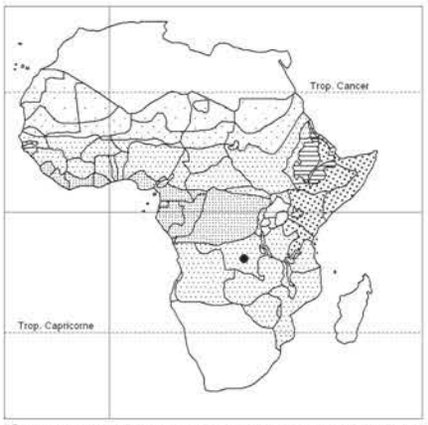
Cyphostemma pseudonjegerre



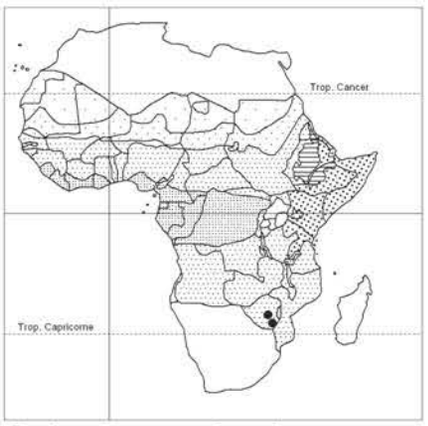
Cyphostemma pseudorhodesiae



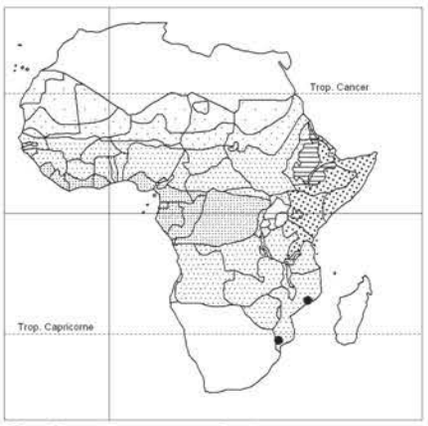
Cyphostemma pseudosesquipedale



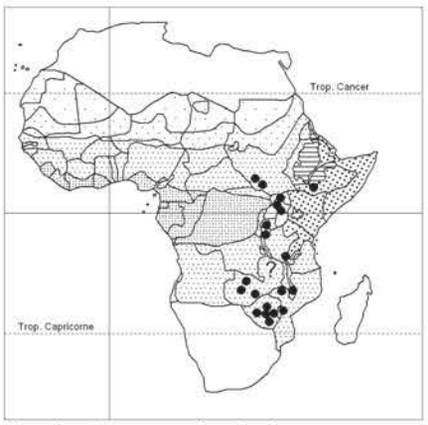
Cyphostemma pseudoupembaense



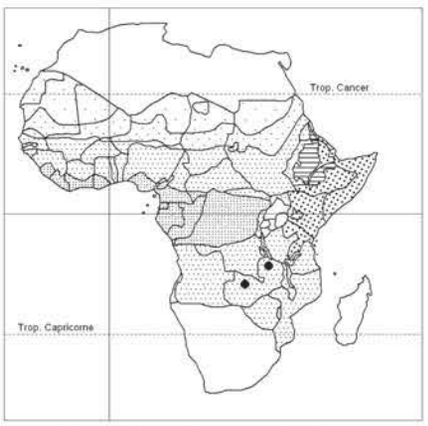
Cyphostemma puberulum



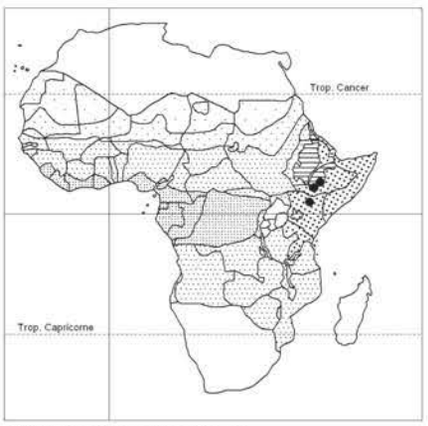
Cyphostemma quinatum



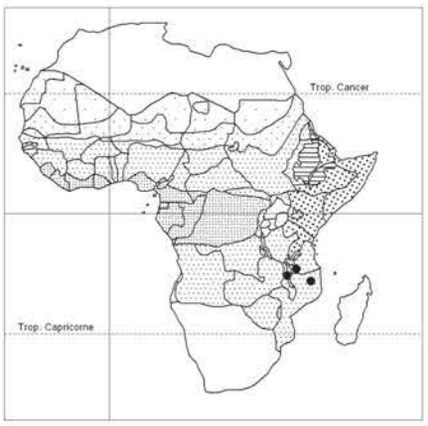
Cyphostemma rhodesiae



Cyphostemma richardsiae



Cyphostemma rivae



Cyphostemma robsonii

C. puberulum (C. A. Sm.) Wild & R. B. Drumm.

bas.: *Cissus puberula* C. A. Sm.

syn.: *C. lanigera* Harv. var. *sosong* Planch.

Climbing herb; stems shortly grey-pubescent; tendrils present; leaves 3-5-foliolate; petiole 1-4 cm long, grey-pubescent; leaflets slightly fleshy, to 8 × 2,3-4,5 cm, narrowly elliptic to obovate, apex obtuse or acute, margins serrate-crenate, base cuneate, puberulous or glabrescent above, densely pubescent below; petiolules 0-2 mm long (to 1 cm on central leaflet); inflorescences on short side-branches or leaf-opposed, trichotomous, lax; peduncle to 7 cm long, densely pubescent; pedicels to ± 2 mm long, pubescent and with short capitate-glandular hairs; berry sub-globose, 8 mm long, pubescent.

Often along river banks.

Botswana, NE S. Africa (300-1380 m alt.).

Close to *C. lanigerum.*

C. quinatum (Dryand.) Descoings ex Wild & R. B. Drumm.; Descoings in Eggli Ill. handbook succ. pl.: dicot.: 461, 2002.

bas.: *Cissus quinata* Dryand.

syn.: *C. cirrhosa* (Thunb.) Willd. var. *glabra* Harv.; *Vitis cradockensis* Kuntze

Climbing subsucculent herb; stems thickened towards base forming a caudex 10-20 cm tall, glabrous or with a few scattered hairs; tendrils present; leaves 3-5-foliolate; petiole 2-4 cm long, sparsely pubescent or glabrous; leaflets subfleshy, to 5-8 × 2,4-5 cm, broadly elliptic to obovate, apex acute or obtuse, margins coarsely serrate, base cuneate, glabrous on both sides or very sparsely puberulous on the midrib; petiolules ± 2-5 mm long, glabrous or pubescent and often with 1-2 glandular hairs; cymes on short side-branches, lax, trichotomous; peduncle to 5-6 cm long, glabrous; pedicels to 4 cm long, glabrous; berry ellipsoid, 1 cm long, glabrous.

Coastal; 100 m alt.

E S. Africa (320-1000 m alt.) – Also in Zambia ?

C. rhodesiae (Gilg & M. Brandt) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus rhodesiae* Gilg & M. Brandt

syn.: *C. triumfettoides* Gilg & M. Brandt.; Enum. 3: 334, 1995.

Erect or ± straggling herb 0,4-1,3 m tall from a woody rootstock; stems rather stout, reddish at nodes, grooved, with loose ferruginous indumentum or glabrescent; tendrils absent; leaves digitately 3-5-foliolate, (sub)sessile; leaflets narrowly elliptic-lanceolate, obovate-oblanceolate or ovate to oblong-elliptic, 5,5-41 × 1-16,5 cm, acute to subacute at apex, narrowly attenuate or cuneate at base, serrate, glabrous above, densely ferruginous pubescent beneath when young but later glabrescent or ± glabrous except for venation; petiole to 3 cm long; cymes terminal or in upper axils, 2-3-fid, often appearing when leaves are young, 3-16 cm wide; all axes ferruginous pubescent; peduncles 2,5-10 cm long; pedicels 2-5 mm long, the pole one in centre of cyme often ± 1 cm long, densely pubescent to ferruginous pilose; berry ± round, 1-1,2 cm long, yellow-brown, flushed reddish brown, or purplish black.

Grassland, deciduous thicket; *Brachystegia*- and other open woodlands; fireswept *Combretum, Protea* wooded grassland; sometimes on laterite; 900-± 2000 m alt.

C. richardsiae Wild & R. B. Drumm.

Prostrate herb; stems pubescent and with glandular capitate hairs; tendrils absent; leaves digitately 3-5-foliolate; petiole to 3,5 cm long, indumentum as for stems; leaflets narrowly obovate to obovate, apex obtuse, margins serrate-crenate, base cuneate, very sparsely pilose above, sparsely pilose below but nerves and veins pubescent and principal nerves with capitate-glandular hairs; median leaflet to 16 × 8 cm; laterals to 9 × 4,5 cm; petiolules 0-1 cm (2 in median leaflet) long; cymes on axillary branches or subterminal; peduncle to 7,5 cm long, pubescent and with capitate glandular hairs; ripe fruit unknown.

Brachystegia woodland; road side, red sandy soil; 1700 m alt.

The complex *C. richardsiae, C. abercornense, C. obovato-oblongum, C. mildbraedii* needs further studies particularly of seed variation.

C. rivae (Gilg) Descoings

bas.: *Cissus rivae* Gilg

Sticky scrambling or suberect herb 0,5-1 m long, with thick fleshy roots; stems puberulous to pubescent and densely covered with long gland-tipped hairs 2-10 mm long; tendrils present; leaves 3-5-foliolate; leaflets sessile, elliptic, or laterals ± elliptic-obovate and slightly asymmetrical, 5-18,5 × 1,5-9 cm, acute to acuminate at apex, base cuneate, coarsely toothed or crenate, densely white-pubescent and with small sessile yellow glands beneath and longer gland-tipped hairs on the midrib; petiole 3-11 cm long, hairy like the stem; cymes 7-20 cm wide; peduncle 9-19 cm long, hairy like the stem; pedicels 0,3-1,2 cm long, very densely covered with gland-tipped hairs; axes mostly with crimson hairs; berry ellipsoid, 1,1-1,7 cm long, pubescent and sticky glandular.

Dry *Juniperus* forest and scrub; *Acacia, Commiphora* bushland; red loamy soil; rocky granitic and basaltic ridges; 1110-1800 m alt.

Near *C. niveum, C. hildebrandtii.*

C. robsonii Wild & R. B. Drumm. – Icon.: Fl. Moç. 50, Vitac.: 33, 1969.

Slender climbing herb from a tuberous rootstock ± 3 cm Ø; stems glabrescent or pubescent; tendrils slender; leaves 3-5-foliolate; leaflets elliptic or oblanceolate to ± obovate, 1,2-6 × 0,4-3 cm, apex acute to rounded, base cuneate, serrate-crenate with gland-tipped teeth; slightly scabridulous puberulous above and especially on nerves beneath; petiole 1,2-5 cm long; petiolules of central leaflets 1-10 mm long, of laterals 0-2 mm; cymes slender, to 7 cm long and wide, terminating short side-branches with reduced leaves, the ultimate cymules rather dense; peduncle 4 cm long; pedicels to 4 mm long, glabrous; fruit unknown.

Brachystegia woodland on sand; 535-910 m alt.

C. robynsii (Dewit) Descoings

bas.: *Cissus robynsii* Dewit

Erect herb, ± 1,5 m tall, stems and branches striate, puberulent, with dense glandular hairs; leaves digitately 3-5-foliolate; petiole 4-9 cm long, puberulous and with glandular hairs; leaflets with petiolules 2-10 mm long, puberulous like the petiole; lamina elliptic, base long-cuneate, serrate-dentate, the median leaflet 13-25 × 3-6,5 cm, puberulent but more densely below on the main nerve and with glandular hairs; compound cymes ± 5 cm long; peduncle ± 1,5 cm long, like the axes tomentose-puberulent and glandular-hairy; berry ovoid, tomentellous, c. 1 cm long.

Wooded savanna on lateritic soils and soil with limonite; 595 m alt.

Only known from the type collected in 1926.

C. rotundistipulatum Wild & R. B. Drumm.

Climbing herb or scrambler to 3 m long; stems often red, sparsely pubescent or glabrescent; tendrils present; leaves digitately 3-foliolate; leaflets elliptic or rhombic- to ovate-elliptic, the laterals asymmetrical at base, 3-11 × 1,2-6 cm, acute and mucronate at apex, base cuneate to rounded, crenate with each lobe mucronate, membranous, glabrous except for pubescence on venation above; petiole 2,5-6 cm long; terminal petiolules to 8 mm long, the laterals ± absent-2 mm; inflorescence branched, 4-7 cm wide, the individual cymes 4-8-flowered; peduncle 3-9 cm long, pubescent; axes usually crimson; pedicels 2-4 mm long; berry ± round, 8 mm long, red, glabrous.

Rocky places; open bush on loamy soil; *Brachystegia* woodland; 1600-2100 m alt.

C. ruacanense (Exell & Mendonça) Descoings; Merxmüller, Prodr. Fl. Südwestafr. 80: 5, 8, 1969.

bas.: *Cissus ruacanensis* Exell & Mendonça

Climber; stems densely glandular-pubescent; leaves 3-5-foliolate; petiole to 25 cm long clothed as the stem; tendrils leaf-opposed; leaflets with petiolules 3-10 mm long, densely glandular-pubescent; lamina wide-elliptic to suborbicular, apex subrounded, margins serrate, base rounded, to 8 × 9 cm, entirely waxed and densely glandular-pubescent; cymes paniculate, glandulose, to 15 × 12 cm; berry c. 1,2 cm Ø.

Xerophilous scrub near waterfalls; 1000 m alt.

Namibia (800-1000 m alt.).

C. rubromarginatum (Gilg & M. Brandt) Descoings

bas.: *Cissus rubromarginata* Gilg & M. Brandt

Erect herb, 0,4-1,5 m tall, with numerous *sessile red* glands; stems stout, ± rounded, grooved, with rather dense pubescence and scattered glandular hairs; tendrils absent; roots with tubers; leaves digitately 5-7-foliolate; petiole cylindrical, 6-14 cm long, rather densely pubescent and with glandular hairs; petiolules 2-8 mm long; leaflets obovate-oblong(-elliptic), 5-20 × 1,5-6 cm, base cuneate decurrent on the petiolule, apex obtuse ending in a short acumen; margins with numerous teeth; both faces glabrous but below slightly pubescent on nerves; cymes lax, corymb-like, 10-20 cm long; peduncle 6-8 mm long, like the axes rather densely pubescent and with numerous glandular hairs; berry ovoid, 1 cm long, hairy and glandular.

Wooded savannas; fallow land; sandy soil between granitic blocks; swampy, grassy hollow; 300-800 m alt.

C. rubrosetosum (Gilg & M. Brandt) Descoings; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 384, 2006; Cheek & al., Pl. Mt. Oku…: 169, 2000; Y. Harvey & al., Pl. Bali Ngemba for. res.: 133, 2004. – Icon.: Adam, Fl. Mts. Nimba 3: 1368, 1975.

bas.: *Cissus rubrosetosa* Gilg & M. Brandt

syn.: *C. glandulifera* A. Chev. p.p. quoad specim. Chevalier 18854 p.p., 21474.

Herbaceous climber; stems ± cylindrical, striated, 2-3 mm Ø, glabrous except for numerous glandular hairs like on all parts of the plant; hairs to 5 mm long; nodes often pubescent; tendrils cylindrical, bifid, glabrous except at the bifurcation; leaves digitately 5-foliolate; petiole cylindrical, 2-4,5 cm long; shortly and ± densely pubescent; petiolules broadly canaliculate, 2-5 mm long, rather densely pubescent; leaflets (obovate-)elliptic, laterals slightly asymmetrical, 6-15 × 2-6 cm, base cuneate, apex cuneate to acuminate; margins crenate-dentate; both faces glabrous or glabrescent but main nerve sometimes ± pubescent; compound cymes very ramose, 5-10 cm long, lax; peduncle cylindrical, 2-5 cm long, rather densely pubescent with a tuft of glandular hairs at apex; all axes densely pubescent; berry ± rounded, c. 5 mm Ø, glabrous.

Wooded savanna; sandy soil; farm-bush; open forest; narrow gallery at deeply embanked brook; dense forest-like formation; 300 – ± 2000 m alt.

Not in Congo-Brazzaville (confusion with Centr. Afr. Rep.).

Resembling *C. mannii.*

C. rupicola (Gilg & M. Brandt) Descoings; Adansonia, Sér. 2, 19: 84, 1979; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 462, 2002.

bas.: *Cissus rupicola* Gilg & M. Brandt

Erect succulent shrub or herb, 0,5-1 m tall; stems fleshy, very stout, conical, ± cylindrical, striate, 5-13 mm Ø, with short curled scattered hairs; nodes rather densely pubescent; tendrils absent; leaves digitately 3-5-foliolate; petiole thick, fleshy, ± cylindrical, 4-5 mm Ø, 1-8 cm long, sparsely pubescent; petiolules 0-some mm long; leaflets oblong-lanceolate 20-30 × 5-10 cm, base narrowly cuneate, decurrent on the petiolule, apex cuneate ending in a very short sharp acumen; margins strongly and irregularly denticulate, teeth narrowly deltoid with a sharp acumen at apex; nearly glabrous above except on the midrib; slightly dense white pubescent below; cymes umbel-like, lax, many-flowered, 20-30 cm long; peduncle 8-15 cm long, ± cylindrical, deeply grooved, loosely pubescent; axes densely pubescent; berry ovoid, 1-1,2 cm long, glabrous.

Granitic gravel; savanna on sandy or moist soils; gneissic gravel with quartzitic pebbles; rock crevice in dense very rocky wooded savanna; temporarily humid places on clayey-sandy soils.

C. sanctuarium-selousii Verdc.; Enum. 3: 334, 1995.

Trailing or climbing herb from a tuberous root; stems to 3 m long, densely covered with dense ± slender bristly gland-tipped hairs to 1,3 mm long; tendrils present; leaves digitately 5-foliolate; leaflets sessile, broadly elliptic 4,5-12,5 × 2-5,5 cm, acute at apex, base cuneate, crenate with crenae apiculate, shortly pubescent on both surfaces and with gland-tipped hairs particularly on nervation beneath; petiole to 11 cm long, hairy as for stems; cymes axillary, flat-topped, 10 cm wide; peduncle 4 cm long; pedicels 3-4 mm long (1 cm in pole flower); axes hairy as for stems; fruit unknown.

Julbernardia, *Pseudolachnostylis* woodland; 400 m alt.

Known only from the type collected in 1978.

Shows a certain resemblance with *C. barbosae.*

C. sarcospathulum (Chiov.) Descoings; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 462, 2002. – Icon.: Chiovenda, Fl. Somalia 1: pl. 34, 1929.

bas.: *Cissus sarcospathula* Chiov.

syn.: *C. biternata* Chiov. 1929, non Bak. 1882, nom. illegit.; *C. ternatomultifida* Chiov.; *Cyphostemma ternatomultifidum* (Chiov.) Descoings; *Cy. biternatum* (Chiov.) Descoings (considered as a good species by Descoings, l.c.).

Succulent shrub with ovoid-cylindrical swollen trunk, to 0,4 m tall, with yellowish bark, flaking off in irregular papery pieces; shoots sparsely branched; leaves congested at ends of branches, fleshy, 3-foliolate or doubly 3-foliolate, densely pubescent;

petiole 0,5-1,5 cm long; leaflets spathulate, 10-16 × 6-10 mm, attenuate or cuneate at base, rounded and sparsely incised-dentate at apex; cymes to 12 cm long; peduncles to ± 2-4 cm long; pedicels 3-4 mm long, pubescent and often with scattered dark glands; berry ellipsoid, 8 mm long, puberulous when young.

Open *Acacia-Commiphora* bushland; ± 0-±300 m alt.

Known only from Somalia.

C. saxicola (Gilg & R. E. Fries) Descoings ex Wild & R. B. Drumm. – Icon.: R. E. Fries, Schwed. Rhod.-Kongo-Exped. 1: 138, 1914.

bas.: *Cissus saxicola* Gilg & R. E. Fries

Climbing or scandent herb; stems to 0,6 m long, slender, shortly pubescent and with very few short capitate glands; tendrils present; leaves digitately 3-5-foliolate; petiole to 3-4 cm long, indumentum as for stems; lamina to 6 × 1,6 cm, very narrowly elliptic to oblanceolate, apex acute, margins with a few serrations towards the apex, base cuneate, very sparsely puberulous on both surfaces; petiolules to 1 cm long; cymes on short axillary branches; peduncle to 1,3 cm long, indumentum as for stems; pedicels ± 2 mm long, puberulous with scattered subsessile capitate glands; berry ellipsoid, 8 mm long, puberulous, scarlet.

Dense woodland on rocky soil.

[**C. scarlatinum** (Gilg & M. Brandt) Descoings (bas.: *Cissus scarlatina* Gilg & M. Brandt) described from S. Africa: Natal].

C. schlechteri (Gilg & M. Brandt) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus schlechteri* Gilg & M. Brandt; *Ci. unguiformifolia* C. A. Sm.

Prostrate or procumbent perennial herb, glabrous and ± glaucous in all parts; stems green or pinkish, to 1 m long; tendrils along the whole length; leaves digitately 3-5-foliolate, sessile or subsessile; lamina subfleshy to ± 12 × 3,5 cm, lateral leaflets smaller, linear-lanceolate to narrowly oblong-obovate, apex acute and often apiculate, margins sparsely but coarsely serrate, base narrowly cuneate, subsessile; cyme lax, at apex of axillary branches; peduncles to ± 6 cm long; pedicels slender, to ± 6 mm long; berry ellipsoid, 1-1,4 cm long, peach-red.

Usually on rocky or sandy soil; c. 300 m alt.

S. Africa, Botswana (200-1300 m alt.).

C. schliebenii (Mildbr.) Descoings

bas.: *Cissus schliebenii* Mildbr.

Climber, probably ± succulent; stems drying brown and ridged, puberulous with minute appressed curled hairs and with much longer thicker crimson gland-tipped hairs 2-5 mm long; tendrils present; leaves drying thin, 3-foliolate; leaflets broadly elliptic, 6-16 × 3,5-10,5 cm, apex shortly acuminate, base rounded, rather distantly shallowly dentate-crenate, with a tooth at apex of the broad crenation, glabrous except for a few minute hairs on the midrib; petiole 2,5-4,5 cm long, with indumentum similar to the stem but gland-tipped hairs shorter and sparser; petiolules 0,3-1,8 cm long, the median the longest, similarly hairy; cymes axillary, ± 15 cm wide, the axes rather thick, puberulous and with gland-tipped hairs; peduncles 2,5-3 cm long, indumentum similar to petiole; pedicels 2-5 mm long, with dense short gland-tipped hairs; unripe fruit with long gland-tipped hairs.

Wooded grassland; climbing on shrubs on brook-bank; 900-1000 m alt.

Only known from the type collected in 1932.

C. serpens (Hochst. ex A. Rich.) Descoings; Enum. 3: 334, 1995. – Icon.: Bot. Jahrb. Syst. 46: 503 sub nom. *Cissus orondo*, 1912; Engler, Pflanzenwelt Afr. 3/2: 332, 1921; Berhaut, Fl. ill. Sénégal 1: 214, 1971 (sub nom. *Cissus lelyi*); Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 59, 1994.

bas.: *Cissus serpens* Hochst. ex A. Rich.

Trailing or climbing herb 0,3-2 m long or sometimes forming mats to 1,2 m Ø and 0,6 m tall; rootstock swollen, woody, to 30 × 4-5 cm, red when cut; stems green, often flushed red at nodes, ± fleshy, together with most other parts covered with crisped pubescence and usually also scattered small red gland-tipped hairs; tendrils present or not; leaves digitately 3-9-foliolate; leaflets linear-elliptic, oblong, narrowly ovate or narrowly obovate, 2,5-16 × 1-6,5 cm, apex acute to rounded, base cuneate to narrowly attenuate, dentate to serrate; petiole 0-7 cm long; petiolules 0-2 cm long; cymes ± flat-topped, 5-20 cm long and wide; peduncle 3-14 cm long; pedicels 2-5 mm long (to 8-11 mm in fruit), densely pubescent and mostly glandular; berry subglobose, c. 1 cm Ø, red-black, glabrescent to densely pubescent and sometimes glandular.

Grassland especially on seasonally waterlogged black soil; grassland with scattered trees; scrub; riverine woodland; roadsides; improved pastureland; *Acacia, Commiphora* woodland and bushland on red sandy to loamy soil over limestone; *Acacia* woodland on black clay; *Acacia, Combretum, Schefflera* wooded grassland; savanna; forest gallery; open forest with *Isoberlinia;* ± 500-2550 m. alt.

Extremely variable; often presence or absence of tendrils varying on different branches of the same plant; variable in length of petioles (leaves sessile in subsp. **conradsii**).

Comprises 2 subspp.: – subsp. **serpens** [syn.: *Vitis serpens* (Hochst. ex A. Rich.) Bak.; *Cissus sesquipedalis* Gilg; *C. orondo* Gilg & M. Brandt; *C. schweinfurthii* Planch.; *C. lelyi* Hutch.; Enum. 3: 334, 1995]; – subsp. **conradsii** (Gilg & M. Brandt) Verdc. [bas.: *Cissus conradsii* Gilg & M. Brandt; syn.: *Cyphostemma conradsii* (Gilg & M. Brandt) Desc.].

C. sessilifolium (Dewit) Descoings

bas.: *Cissus sessifolia* Dewit

Creeping herb; branches striate, pubescent; leaves (sub)sessile, digitately 3-foliolate; leaflets (ob)ovate, base cuneate, deeply undulate-dentate, ciliate, the median leaflet 10-16 × 4-9 cm; glabrous above; pubescent on the nerves only below; petiolules 2-10 mm long; compound cyme to 15 cm long; peduncle 5-9 cm long, like the axes pubescent-puberulent; fruit unknown.

Savanna.

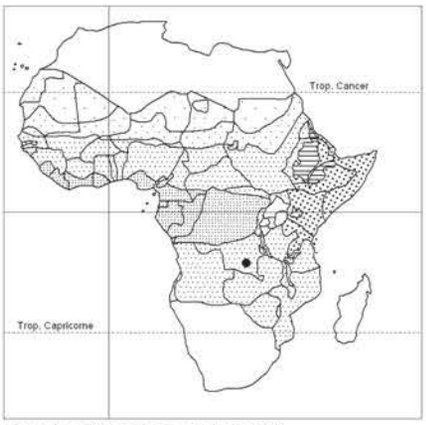
Only known from the type collected in 1939.

C. setosum (Roxb.) Alston

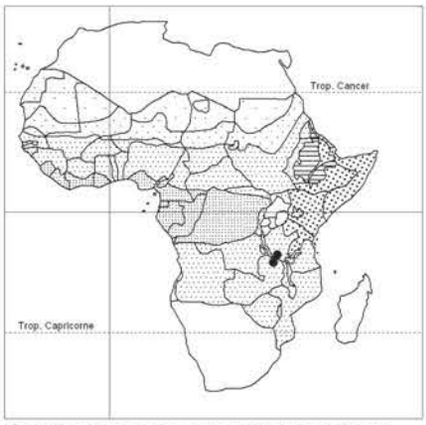
bas.: *Cissus setosa* Roxb.

syn.: *C. psammophila* Gilg & M. Brandt

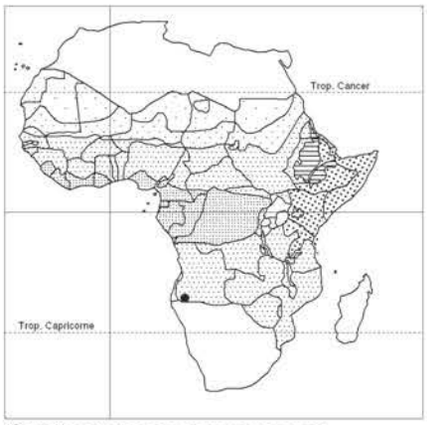
Prostrate herb from a tuberous rootstock; stems tinged reddish, striate, sparsely pubescent and with red gland-tipped bristly hairs; tendrils present or entirely absent; leaves 1-5-foliolate, usually ± sessile; leaflets elliptic or (narrowly) obovate, 1,3-10 × 0,9-7,5 cm, the lateral leaflets often half the size of or very much smaller than the median one, apex obtuse to acute, base cuneate, margins serrate-crenate, the teeth glandular, sparsely pilose and with gland-tipped hairs especially on the nervation beneath; petiole 0-5 mm long; petiolules to 1 cm long; cymes terminal on short side-branches, lax, trichotomous; peduncles 1,5-3 cm long,



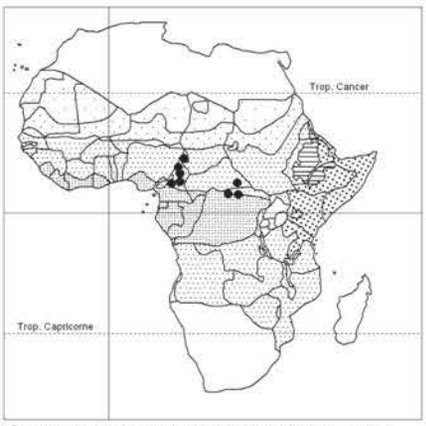
Cyphostemma robynsii



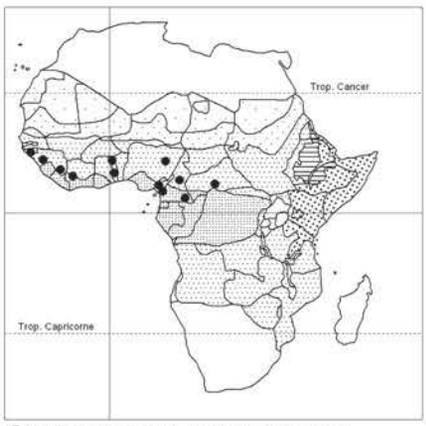
Cyphostemma rotundistipulatum



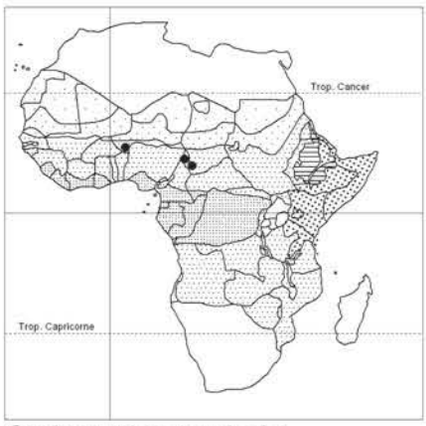
Cyphostemma ruacanense



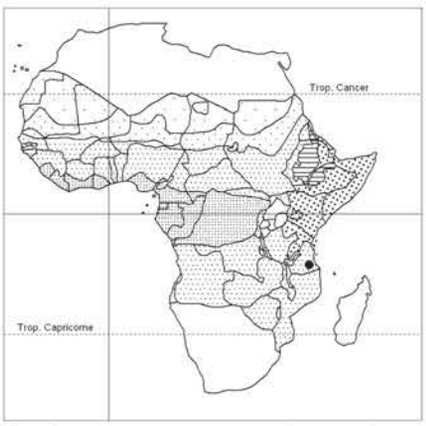
Cyphostemma rubromarginatum



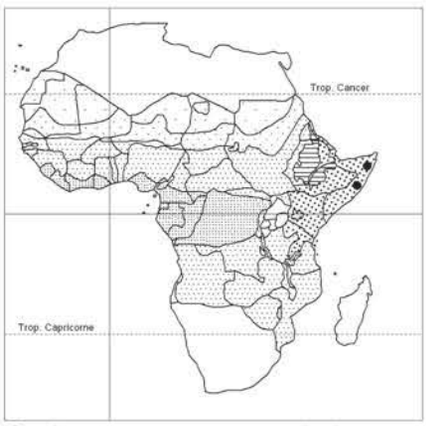
Cyphostemma rubrosetosum



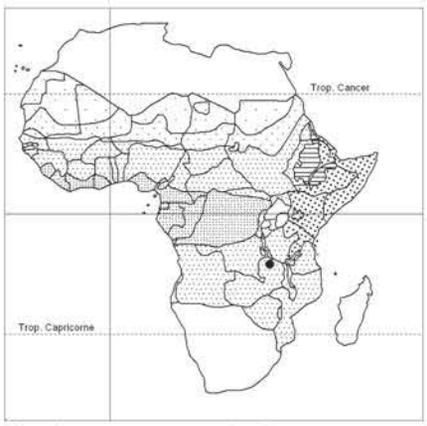
Cyphostemma rupicola



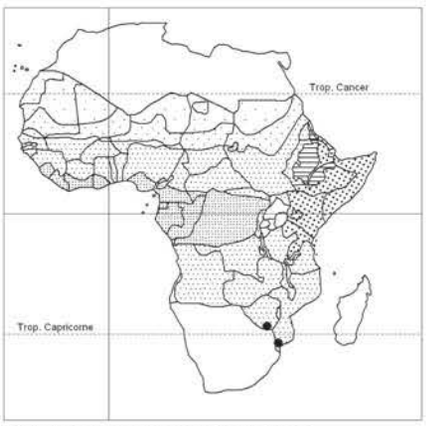
Cyphostemma sanctuarium-selousii



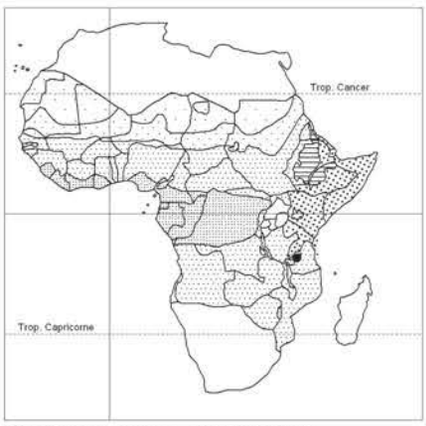
Cyphostemma sarcospathulum



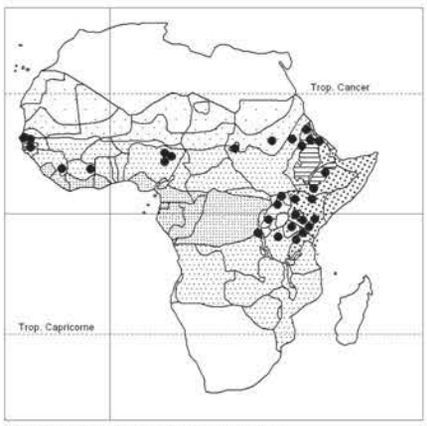
Cyphostemma saxicola



Cyphostemma schlechteri



Cyphostemma schliebenii



Cyphostemma serpens

with same indumentum as the stems; pedicels 2-3 mm long, pubescent and with gland-tipped hairs; berry ellipsoid, 7-9 mm long, red, glabrous (African material).

Brachystegia and *Julbernardia, Pterocarpus, Erythrophloeum* woodland; open place on sandy soil; 250-990 m alt.

India, Sri Lanka: fruits with dense gland-tipped bristly hairs; stems with more developed tendrils. The identity of Indian and African populations in need of confirmation.

C. shinyangense Verdc.

Slender climber to 1,8 m long; stems glabrous, ribbed; tendrils very slender; leaves 3-foliolate; leaflets (elliptic-)ovate, 0,8-2,5 × 0,4-1,5 cm, apex ± acute, base rounded to subcordate, serrate, the serrations apiculate, glabrous; petiole 1-2,5 cm long; petiolules 0,5-4 mm long, ciliate on wings; inflorescence very graceful, 3,5 cm wide; peduncle ± 1,5 cm long; pedicels 3-5 mm long, glabrous but with subsessile glands near base; ripe fruit unknown.

Hard pan thicket; *Terminalia, Combretum* ridge in *Acacia* woodland; 1170-1830 m alt.

From an area known for its endemic plants (e.g. *Panicum shinyangense).*

C. simplicifolium A. Bjørnstad – Icon.: Norweg. J. Bot. 21: 240, 1974.

Perennial herb, erect, 0,5-1 m tall from a short vertical rootstock with 2-5 main tap-roots sometimes swelling to 9 cm Ø and ± 20 cm long; secondary roots with tuberous spheres to 4 mm Ø; stem green, simple, rounded, smooth, slightly striate, very sparsely pubescent at the leafless base; leaves 1-6, alternate, glaucous, sessile, simple, to 53 × 40 cm for the lower ones, the following decreasing in size upwards, acute at apex, cuneate at base, entire to ± crenate-serrulate, all held in one vertical row due to twisting of internodes; tendrils absent; cymes terminal, bright red, 2-3-chotomous, compound, to 7 × 12 cm; peduncle carmin, glabrous, 8-15 cm long, 6-7 mm Ø, pedicels to 3 mm long; berry ± round, 6-7 mm Ø, red or purple.

Open forest with *Pterocarpus angolensis;* stony clay soil; open forest on leached sandy soils; miombo woodland with *Brachystegia spiciformis, Burkea africana, Julbernardia globiflora, Isoberlinia angolensis, Protea, Monotes africanus,* etc.; rare but locally forming large populations; 950-1740 m alt.

First collected in 1936; described in 1974.

In certain characters resembling *C. wilmsii.*

C. simulans (C. A. Sm.) Wild & R. B. Drumm. – Icon.: Canad. J. Bot. 84: 704, 705, 2006.

bas.: *Cissus simulans* C. A. Sm.

Prostrate or climbing perennial herb; stem often swollen at base, shortly pubescent and with capitate-glandular hairs; tendrils leaf-opposed; leaves digitately 3-5-foliolate; petiole to 4,5 cm long; indumentum as for stem; leaflets to 10 × 7 cm, narrowly elliptic to broadly obovate, apex acute, margins serrate, base cuneate, very sparsely pubescent above, pubescent and glandular at least on the nerves below; petiolules to 1,5 cm long; cymes leaf-opposed, 3-chotomous, lax; peduncle to 10 cm long, indumentum as for stem; pedicels 2-3 mm long; pubescent and with short capitate-glandular hairs; berry ellipsoid, 9 mm long, pubescent and glandular.

Open woodland; c. 100 m alt.

S. Africa, Swaziland (800-1000 m alt.).

C. sokodense (Gilg & M. Brandt) Descoings; Akoegninou & al., Fl. analyt. Bénin: 1006-1007, 2006.

bas.: *Cissus sokodensis* Gilg & M. Brandt

syn.: *C. chevalieri* sensu A. Chevalier, Expl. Bot. A.O.F.: 141, 1920 quoad specim. Chevalier 18387; *C. crinita* sensu A. Chev., o.c.: 143 quoad specim. Chevalier 24347, 23767.

Erect herb to 1 m tall with a stout underground cylindrical stock; stems cylindrical, channelled, 8-12 mm Ø; branches pubescent-araneous and with capitate-glandular hairs; leaves compound-palmate, 3-7-foliolate; petiole 10-12 cm long, channelled, araneous and glandular, broadly enlarged like a spathula at the insertion-point of the leaflets; leaflets elliptic to obovate, narrow, 25-30 × 7-8 cm; apex acuminate, base cuneate-attenuate, sessile or nearly so, petiolule 0-< 1 cm long; lateral leaflets slightly asymmetric, very pubescent and sparsely glandular above, woolly and with glandular hairs below, margins denticulate to nearly entire; teeth often ending in a stout glandular hair red at apex; inflorescence cyme-like, terminal, 10 × 8 cm; peduncle 4-5 cm long; axes slightly pubescent but very glandular; pedicels to 15 mm long clothed like the peduncles; berry red, black when ripe.

Humid sands; wooded savanna; open forests; fallow land; flooded clays; laterite; forest gallery; 800 m alt.

C. stefaninianum (Chiov.) Descoings ("stephaninianus").

bas: *Cissus stefaniniana* Chiov.

Ascending suberect herbaceous plant 20-40 cm tall; young stems with 2-2,5 mm long glandular hairs or glabrous; tendrils bifid, glandular or not; leaves 5-foliolate; petiole 2-3,5 cm long, 2,5 mm thick, sparsely glandular or not; leaflets linear-lanceolate, 3-8 × 0,6-2 cm, irregularly and sharply dentate and sometimes incised, with long glandular hairs at margins and on nerves beneath and often also with normal hairs, or glabrous; petiolules 1-2 cm long; cymes much branched; peduncle ± 4-5 cm long; pedicels 6-8 mm long with short dark glandular hairs; berry ovoid, 1 cm long, glabrous.

Open bush; ± 30-180 m alt.

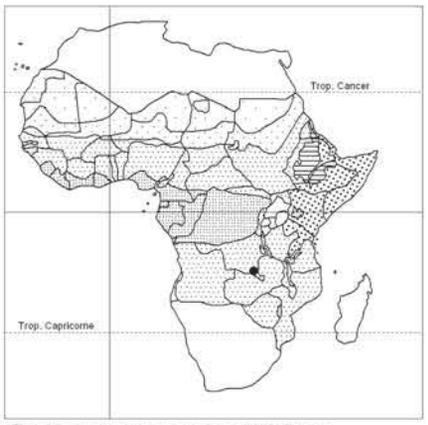
Similar to *C. pseudoburgeri.*

C. stegosaurus Verdc.; Enum. 3: 334, 1995.

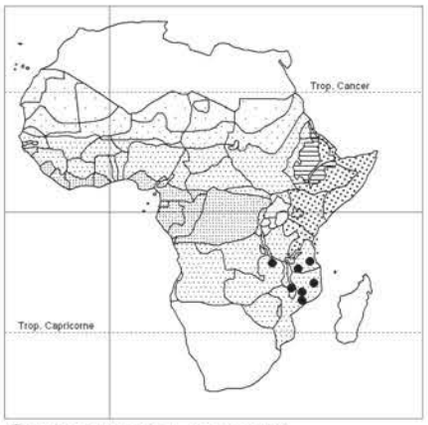
Erect or scrambling ? herb ± 1 m tall from a woody rootstock; stem striate, puberulous and with gland-tipped hairs, 2-6 mm long; tendrils absent; leaves sessile, ? 2-5-foliolate; leaflets unequal, actually sessile but appearing pseudo-petiolate, narrowly oblanceolate, 2-14 × 0,4-2 cm, acute at apex, base very narrowly attenuate, serrate, discolorous, minutely puberulous above, velvety tomentose beneath and also with pale sessile scattered discoid glands; main venation pale and slightly raised beneath; inflorescence ± sessile, terminal, and terminal on axillary short shoots, the subtending node with opposite leaves due to suppression of an internode, 8 cm wide, the axes appressed pubescent and with gland-tipped hairs ± 1 mm long; pedicels 5-8 mm long, pubescent and glandular; corolla unknown; berry ellipsoid, 1,3 cm long, densely yellow-glandular.

Brachystegia manga woodland on red gritty to rocky soil; 1200 m alt.

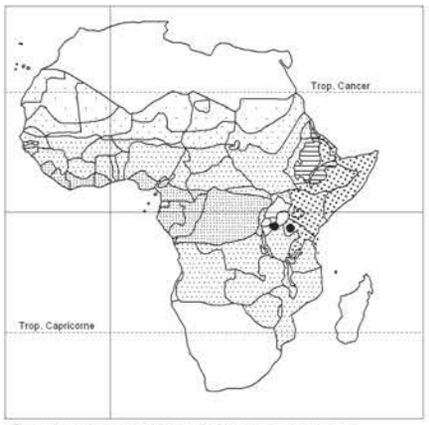
Only known from the type collected in 1988.



Cyphostemma sessilifolium



Cyphostemma setosum



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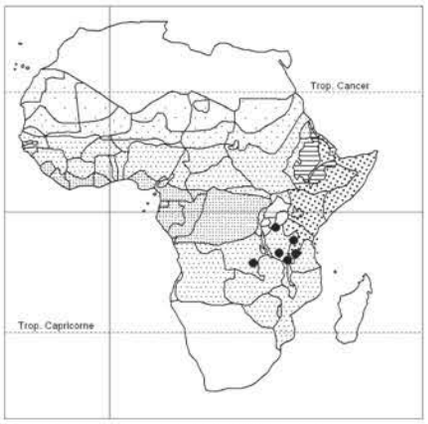

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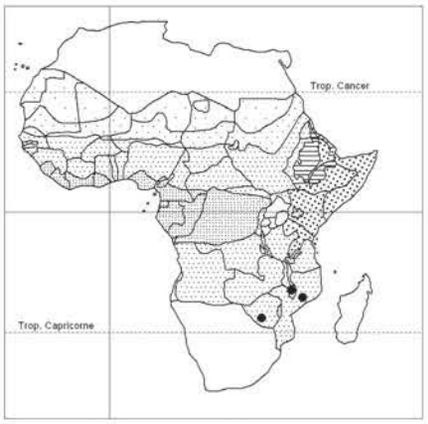

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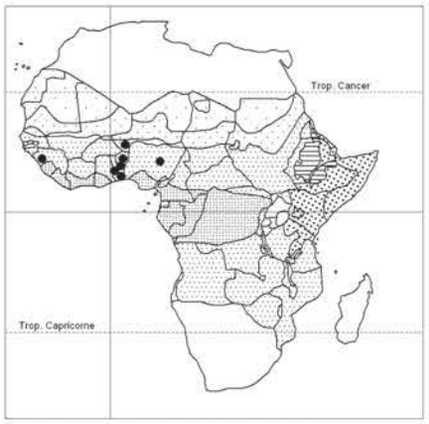

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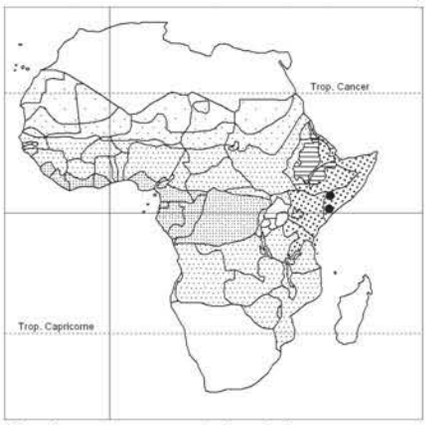
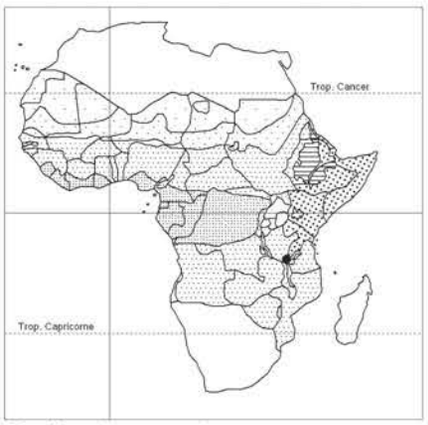


Cyphostemma stefaninianum



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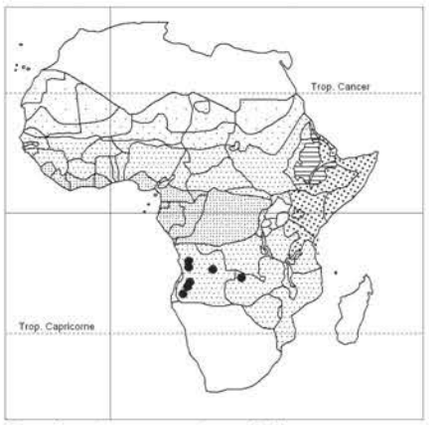
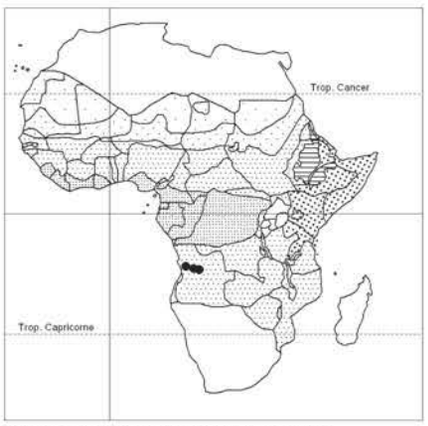
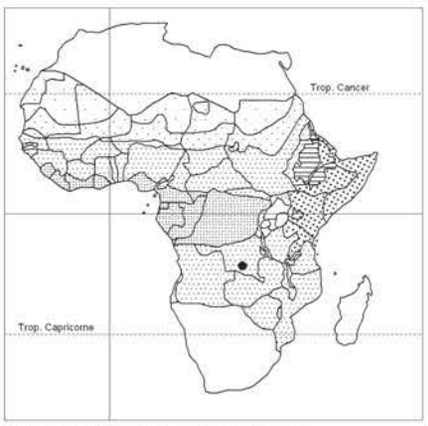


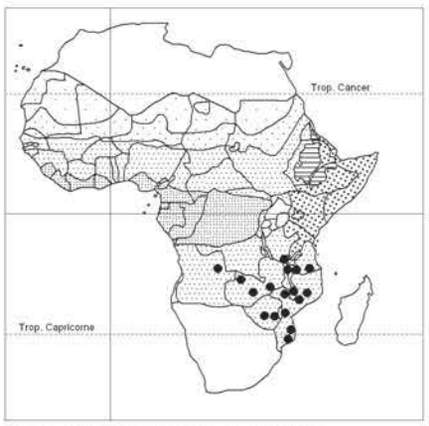
Cyphostemma stenolobum



Cyphostemma stipulaceum



Cyphostemma strigosum



Cyphostemma subciliatum

C. stenolobum (Welw. ex Bak.) Descoings ex Wild & R. B. Drumm.

bas.: *Vitis stenoloba* Welw. ex Bak. p.p., *excl.* specim. Welwitsch 1451 *(= C. grandistipulatum).*

syn.: *Cissus stenoloba* (Welw. ex Bak.) Planch.

Erect herb to 0,6-1 m tall from a narrowly elongated tuberous root; stems rather slender, ferruginous-pilose or -tomentose with a few capitate glands especially at nodes; tendrils absent; leaves digitately 3-5-foliolate, sessile, or the lower leaves with ferruginous-pilose petiole to 1,4 cm long; leaflets to 10 × 1 cm, linear-oblanceolate to very narrowly elliptic, apex acute, margins serrate but entire towards the narrowly cuneate base, glabrous or glabrescent above, ferruginous-pubescent or -tomentose below, especially on the main nerves; cymes ± terminal, trichotomous; peduncle to 2,5-5 cm long, ferruginous-pilose with capitate-glandular hairs also; pedicels ± 2,5 mm long, pubescent; berry ellipsoid, 1 cm long, glabrous.

Cryptosepalum woodland on Kalahari sand; sometimes rather rare; 1360 m alt.

C. stipulaceum (Bak.) Descoings

bas.: *Cissus stipulacea* (Bak.) Planch., s. str. (excl. var. *hochstetteri* Planch. = *Cyphostemma dembiense).*

Stem stout, angular, herbaceous, weak, densely clothed, when young, with spreading grey woolly hairs, some of them gland-tipped; leaves 5-foliolate, petiole 10-15 cm long; leaflets subsessile, lanceolate-obovate, the central one 12,5-15 × 6-7 cm, apex acute, base cuneate; edges irregularly and sharply incisodentate, texture rather fleshy and moderately thick, glabrous when mature above, finely grey-downy below; cymes lax, copiously compound, 15-20 cm broad, on herbaceous peduncles 10-15 cm long; pedicels 0,22-0,66 cm long, weak, glandular and grey-downy; berry oblong, red, finely grey-downy and glandular.

Sporadic, in thickets at the borders of woods; damp tall-grassy places; more arid stony thickets amongst shrubs of *Strychnos*, at river bank; 730 m alt.

C. strigosum (Dewit) Descoings

bas.: *Cissus strigosa* Dewit

Erect herb; stems and branches striate, pubescent, clothed with glandular and pubescent hairs to 20 mm long, the diameter of the hair is decreasing from the base to the top (fig.: Fl. Congo belge 9: 503, 1960); leaves digitately 1-3-foliolate, sessile; leaflets sessile, obovate-elliptic, base cuneate, serrate-dentate, the median 7-15 × 2,5-4 cm, puberulent and with glandular and pubescent hairs above, sparsely pubescent below; compound cymes to 10 cm long; peduncle ± 3 cm long, pubescent and with glandular and pubescent hairs; fruit unknown.

Ecology unknown.

Only known from the type collected in 1913.

C. subciliatum (Bak.) Descoings ex Wild & R. B. Drumm.: White & al., Evergreen for. fl. Malawi: 599, 2001.

bas.: *Vitis subciliata* Bak.

syn.: *Cissus subciliata* (Bak.) Planch., incl. var. *stuartii* Planch. and var. *kirkii* Planch.; *C. subglaucescens* Planch.; *C. marionae* Exell & Mendonça; Enum. 2: 195, 1992.

Climbing herb from an elongated tuberous rootstock 4 cm long, 1 cm Ø; stems glabrous to sparsely pubescent and with scattered gland-tipped hairs; tendrils present; leaves somewhat fleshy, digitately 3-5-foliolate, sessile or nearly so; leaflets narrowly obovate, narrowly elliptic, (ovate-)elliptic, 3-11 × 1,2-4,3 cm, apex obtuse to acute, cuneate to narrowly truncate or asymmetric at base, crenate-serrate or serrate, sparsely puberulous when young but soon glabrous except for some hairs on the midrib above and glandular hairs beneath; median petiolule 0,5-2 cm long, the laterals often obsolete or to 5 mm long; cymes lax, terminating short lateral branches, to 9,5 cm long; peduncle 3-8 cm long, glabrous to puberulous and sometimes with gland-tipped hairs; pedicels 2-4,5 mm long, glabrous or puberulous; berry ellipsoid, 0,6-1,2 cm long, red, glabrous. – Leaves (below), stems and buds are beetroot-coloured (varying degrees).

Brachystegia, Uapaca woodland along stream; riparian forest; 20-1230 m alt.

S. Africa, Swaziland.

C. taborense Verdc.

Herb (annual ?) 0,5-1 m tall, probably viscous, stems striate, ± densely covered with short gland-tipped hairs 0,5-1 mm long and also puberulous; ? tendrils; leaves 3-foliolate; leaflets ovate, 2,5-4 × 2-3,5 cm, apex narrowly acuminate, base rounded to subcordate, sharply ± coarsely toothed, margins with very shortly stipitate glands, surface with ± dense sessile glands and short pubescence on the nerves beneath; petiole 3-4,5 cm long; petiolules 0,2-1 cm long, the median one much longer than the laterals, all with gland-tipped hairs; cymes axillary or terminating lateral shoots, 3,5-6 cm wide (to 10 cm in fruit); peduncles 1-5,5 cm long; pedicels 1,5-3 mm; all axes with dense very shortly stipitate glands and yellowish short pubescence; berry long-ellipsoid, 1,2 cm long, reddish, densely glandular; seeds unknown.

Open burnt grassland on black cotton soil, "near mbuga" area; 1200 m alt.

C. tenuissimum (Gilg & R. E. Fries) Descoings ex Wild & R. B. Drumm. – Icon.: Fries, Schwed. Rhodesia-Kongo-Exped. 1: tab. 10, fig. 5, 1914.

bas.: *Cissus tenuissima* Gilg & R. E. Fries

Scandent herb with a tuberous root; stems slender, striate, glabrous; tendrils present; leaves digitately 3-5-foliolate; petiole to 2 cm long, puberulous above; lamina to 4 × 0,5 cm, linear-lanceolate to narrowly lanceolate, apex acuminate, margins sparsely serrate, base cuneate, puberulous near the margins above; petiolules ± 1 mm long or less; cymes lax, on axillary branches; peduncle to 4 cm long, glabrescent or glabrous; pedicels to 3 mm long, glabrous or minutely puberulous; fruit unknown.

Rocky ground.

Only known from the type collected in 1911.

C. ternatum (Forssk.) Descoings [or (Gmel.) Descoings]; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 462, 2002; Ghazanfar, Fl. Sultan. Oman 2: 102, 2007. – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 420, 2001.

bas.: *Saelanthus ternatus* "Forssk." (generic name was published without a diagnose).

syn.: *Cissus ternata* ("Forssk.") Gmel.; *Vitis apodophylla* Bak. 1894; *Cissus bryophyllum* Mattei; *C. somaliensis* Gilg

Trailing or climbing succulent herb to 2 m long; stems mostly glabrous but with a few pale slender gland-tipped hairs; tendrils present; leaves pale green, 3-5-foliolate, sessile or lowermost sometimes with a petiole to 1 cm long; leaflets oblong, elliptic or ovate, 2-15 × 1-7 cm, apex acute or ± rounded in outline; base cuneate or truncate, coarsely toothed; petiolules 0-2,5 mm long;

cymes 5,5-9 cm wide; peduncle 2-12 cm long; pedicels 3-8 mm long (to 1,3 cm in fruit), often with short gland-tipped hairs but sometimes glabrous; also long hairs to those on the stem; berry ± ellipsoid, 7-12 mm long, red, glabrous.

Open bushland and grassland with some bushes and numerous annuals on moist level sand; edges of riverine forest with *Pachystela, Sorindeia, Mimusops, Garcinia,* etc.; *Acacia, Commiphora* bushland on yellowish alluvial loam; coastal bushland; near sea level to 400 m alt.

SW Saudi Arabia, Yemen.

C. thomasii (Gilg & M. Brandt) Descoings; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 163, 1994.

bas.: *Cissus thomasii* Gilg & M. Brandt

Trailer, climber or somewhat shrubby to several m long from a vertical softly woody base; stems crimson, striate, pubescent and densely covered with mostly red gland-tipped hairs 0,2-1 mm long; tendrils present; leaves somewhat fleshy, 3-5-foliolate; leaflets (rounded-)elliptic, 1,5-10 × 1-10 cm, apex sharply acute, base rounded to cordate, rather irregularly toothed, ± densely shortly pubescent on both surfaces and with a few glands, also ciliate with short gland-tipped hairs; petioles crimson, 1,5-7 cm long; petiolules 0,5-3 cm long, both pubescent and glandular like the stems; cymes 12 cm wide, lax, with cymules well separated; peduncles 3-9,5 cm long; axes crimson, pubescent and with dense short gland-tipped hairs; pedicels 4-7 mm long, glandular; berry ellipsoid, 1-1,5 cm long, red, glandular.

Melia, Combretum, Commiphora, Terminalia, Sesamothamnus, Lannea, Euphorbia, Commiphora, Steganotaenia, Grewia, Adansonia and *Sansevieria* woodland on basement complex rocky ridges and massive inselbergs: 500-1400 m alt.

C. tisserantii Descoings

syn.: *Cissus crinita* sensu A. Chevalier, Etudes Fl. Afr. centrale franç.: 62, 1913, quoad specim. Chevalier 5412, 9224.

Erect plant to 0,5-1 m tall from a very thick woody rootstock; tendrils absent; stems ± cylindrical, 3-4 mm Ø, clothed with a short, ± dense pubescence and with very long, very dense glandular hairs and with sessile, red, rare glands; leaves digitately 3-5-foliolate; petiole ± cylindrical, 2,5-6 cm long, ± densely pubescent and with very numerous glandular hairs; leaflets sessile, oblong-elliptic, lanceolate to linear, 12-20 × 2-5 cm, base cuneate, apex ± narrow and acuminate; margins irregularly denticulate with deltoid lobes ending in a stout point; glabrous above or nearly so; glabrous or ± sparsely pubescent below but with many sessile red glands; nerves ± pubescent; cymes many-flowered, dense, 4-6 cm long; peduncle 1,5-3 cm long, cylindrical, rather densely pilose and densely glandular; other axes slightly pubescent or glabrous but with many glandular hairs; berry ovoid, 6-7 mm long, slightly pubescent and glandular.

Wooded savannas; sand; sometimes riverine.

C. trachyphyllum (Werderm.) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus trachyphylla* Werderm.

syn.: *Cayratia gracilis* sensu Vollesen, Op. Bot. 59: 61, 1980, non (Guill. & Perr.) Suess.

Climbing herb; stems slender, glabrous or with few gland-tipped hairs near nodes, to puberulous; tendrils present; leaves 3-5-foliolate; leaflets elliptic to narrowly obovate, 2-7 × 1-3,8 cm, apex acute, base cuneate, coarsely serrate, the teeth ± apiculate,

scabrous papillate-pubescent on both surfaces, the papillae with minute hairs but also short pubescence on the main venation beneath and midrib above; petiole 1-4,5 cm long, densely shortly pubescent; petiolules 0-8 mm long, similarly pubescent and with some gland-tipped hairs; cymes ± 10 cm wide, on axillary branches; peduncle 3-7 cm long, glabrous; pedicels red, 2-7 mm long, glabrous but with marked thick short stalked glands, sometimes ± scattered but often clustered in a group at about the middle; berry ellipsoid, 7 mm long, ± apiculate, glabrous.

Cleared forest; woodland and grassland with scattered trees; sandy soil; 125-520 m alt.

Probably only a var. of *C. bororense* (material needed for the group with *C.* sp. J sensu Verdcourt, Fl. Trop. E. Afr., Vitac.: 129, 1993).

C. ukerewense (Gilg) Descoings; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 163, 1994; Troupin, Fl. Rwanda 2: 364, 1983; Sosef & al., Check-list pl. vascul. Gabon: 415, 2006.

bas.: *Cissus ukerewensis* Gilg

syn.: *C. glandulosissima* Gilg & M. Brandt; *Cyphostemma glandulosissimum* (Gilg & M. Brandt) Descoings; *Cissus kirkiana* Planch. var. *livingstoniana* sensu Planch., Monogr. Phan. 5: 601, 1887 quoad specim. Grant 389; *Vitis cirrhosa* sensu Bak., Fl. Trop. Afr. 1: 410, 1868 quoad specim. Grant 389, *non* Kirk s.n. *(= Cy. kirkianum).*

Climbing or prostrate herb ± 1,5-2 m long; stems straw-coloured when dry, slightly pubescent and with rather dense crimson or green long ± straggling gland-tipped hairs or sometimes almost entirely glabrous; tendrils present; leaves 3-5-foliolate; leaflets usually sessile, obovate(-oblanceolate), 2-14 × 1-7 cm, sharply acute at apex, base narrowly attenuate, sharply serrate, ± glabrous above or with few hairs and very few gland-tipped hairs, slightly appressed pubescent beneath, particularly on the venation, and with gland-tipped hairs on the nerves; petiole 1,5-8 cm long, with similar hairs to stem; petiolules 0-5 mm long; cymes polygamous, axillary, 5-15 cm wide; peduncle 6 cm long, hairy like the stems (long gland-tipped hairs are missing on tips of petiole and peduncle in var. **gabonicum**); upper axes are appressed yellow-tomentose or densely appressed ferruginous pubescent (in W Uganda material), rarely only sparsely pubescent; pedicels 1-5 mm long (pole one to 10 mm); berry ± black, ± ellipsoid, 6 mm long, apiculate, glabrous or slightly glandular.

Edges of *Papyrus* swamps; wet grassland with scattered trees; bracken scrub; seasonally inundated areas; secondary forest; forest gallery; fallows; rain-forest with *Albizia, Macaranga, Croton, Ocotea,* at edge; sclerophyllous forest on old lava; rocky hills; 110-2520 m alt.

Comprises 2 vars.; var. **gabonicum** Desc. (berries glandular) in W part of range.

C. uter (Exell & Mendonça) Descoings; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 463, 2002; Descoings in Succulentes (France), N° special, 2004: 44, 2004. – Icon.: Flow. Pl. Africa 52: pl. 2074, 1993; B. Curtis & Mannheimer, Tree Atlas Namibia: 424-425, 2005; Cattabriga & van Jaarsveld, Cactus & Co. 11/2: 100, 103, 107, 2007.

bas.: *Cissus uter* Exell & Mendonça

Deciduous caudiciform succulent, much branched apically; to 1,5 m tall from a tuberous rootstock; stems 7-30 cm Ø; bark dull white, peeling off in paper-like flakes; leaves alternate, fleshy, tough, crowded at end of branches, 5-foliolate, with the terminal leaflet the largest, petioled, leaflets with distinct petiolules, with multicellular glandular trichomes intermixed with nonglandular

multicellular trichomes, below more densely pubescent than above; leaflets suborbicular to broadly obovate, terminal leaflet to 9 × 10 cm, margins serrate, undulate, base cordate; petiole 3-6 cm long; cymes leaf-opposed or axillary, 5-10 cm long; peduncle and pedicels pubescent; berry ellipsoid, 1-2 cm long, scarlet, pubescent and glandular.

Dry, stony, mostly east-facing slopes; 100-450 m alt.

NW Namibia.

Vulnerable to overexploitation and illegal collection for horticultural purposes and pachycaul trade.

Difficult to propagate from seed.

C. currorii is a similar pachycaul plant in our area; like *C. bainesii* (Hook. f.) Descoings and *C. juttae* (Dinter & Gilg) Descoings from south Africa.

C. uwanda Verdc., Kew Bull. 58: 503, 2003. – Icon.: o.c.: 504.

syn.: ? *C.* sp. × sensu Verdcourt, Fl. Trop. E. Afr., Vitac.: 135, 1993 (specim. Hanid & Kiniaruh 532: Kenya: Machakos, K4; roadside grassland; ± 1000 m alt.); ? *C.* sp. × sensu Agnew & Agnew, Upland Kenya wild fl., ed. 2: 163, 1994.

Perennial herb, procumbent, succulent; young stems zigzag, with short stiff gland-tipped hairs and weaker white pubescence, lacking on older stems; tendrils apparently absent; leaves 1-foliolate (always ?), elliptic, 4-13 × 2,5-6 cm, apex ± rounded, base rounded to broadly cuneate, white-hairy on nerves on both surfaces and at margins which are crenate-dentate, teeth often gland-tipped; petiole 3-10 mm long, thick; cymes dichasial, many-flowered, leaf-opposed or pseudo-terminal, peduncle 6-8 cm long clothed like the young stems, pedicels short, densely glandular; ripe fruit unknown.

Open grassland; 510 m alt.

Also in Kenya ? (cf. above).

In Fl. Trop. E. Afr., Vitac.: 50 ff., 1993, will key to *C. wittei (not* succulent !).

C. vandenbergheae Malaisse & Matemba

Erect herb, 30-50 cm tall; stem cylindric, striate, puberulous and with red, glandular, dense hairs to 20 mm long at base of the plant, shorter above; tendrils absent; leaves 3-5, alternate, simple, sessile, pubescent; lamina triangular to ovate, to 25 × 18 cm, apex acute, base narrowed to truncate, irregularly doubly toothed, sparsely puberulous above and with scattered glandular short hairs; densely puberulous below and with scattered, long glandular hairs; margins with simple hairs and yellow glandular hairs; compound cymes to 15 cm long; peduncle to 8 cm long, pubescent and with glandular hairs like on the other axes; fruit unknown.

Wooded savanna; ± 900 – ± 1400 m alt.

Leaves very variable.

First collected in 1988.

C. vandenbrandeanum (Dewit) Descoings ex Wild & R. B. Drumm.; Bull. Jard. Bot. Natl. Belg. 60: 86, 1990; White & al., Evergreen for. fl. Malawi: 599, 2001.

bas.: *Cissus vandenbrandeana* Dewit

Climbing or prostrate herb reaching the forest canopy; stems tinged red, pubescent greyish or ferruginous and sometimes with capitate-glandular hairs near the nodes; tendrils red; leaves digitately 3-5-foliolate; petiole 1-13 cm long, pubescent and sometimes with a few scattered capitate glands; leaflets sessile or subsessile, 3-12,5 × 1-6,5 cm, elliptic, obovate or ovate, apex acute, margins crenate, base cuneate, veins reticulate; cymes on side-branches, ± compact, 4-6 cm long, trichotomous; peduncle ± 2-12,5 cm long, densely pubescent as for the other axes; ripe fruit known !

Edges of forest patches; rain-forest and forest; riverine forest; wooded grassland; secondary evergreen bushland; steep banks; scree slopes; 1750-2450 m alt.

? Also in Zimbabwe sub nom. *C. montanum.*

C. vanderbenii (Dewit) Descoings

bas.: *Cissus venderbenii* Dewit

Climber to 1,5 m long; stems drying pale, hollow, striate, glabrous or with laterally 1-2 to sparse stiff gland-tipped hairs near the nodes; tendrils red, ± glaucous; leaves 3-5-foliolate, subsessile or shortly petiolate; leaflets narrowly elliptic, oblong or oblanceolate, 1,5-10 × 0,4-2,8 cm, apex acute, base narrowly cuneate, ± shallowly crenate-dentate, glabrous except for some stiff hairs on midrib above and nervation beneath; petiole 2-10 mm long, petiolules 0,2-1,6 cm long, both with stiff ± gland-tipped hairs; cymes deep crimson red, ± condensated, 3,5-5 cm wide; true peduncles 2-6 cm long; pedicels 1-3 (-5 in fruit) mm long; all axes finely pubescent; berry ± round, 6 mm Ø, glabrous.

Woodland; grassland with bracken, *Costus, Dissotis, Helichrysum,* etc., and some scattered shrubs of *Protea, Bridelia, Harungana, Psorospermum;* fallow land; 1520-1650 m alt.

In Burundi and nearby Tanzania.

C. vanmeelii (Lawalrée) Wild & R. B. Drumm.

bas.: *Cissus vanmeeelii* Lawalrée

syn.: *Ci. stipulaceoides* Dewit

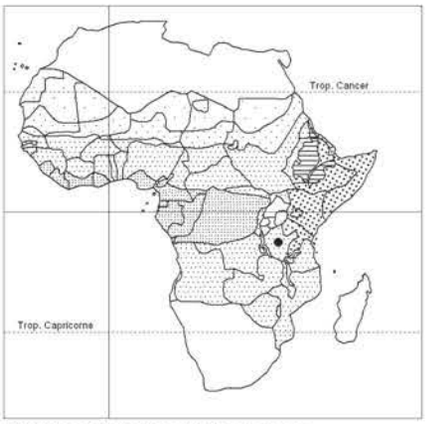
Erect herb 0,4-1 m tall, or occasionally prostrate; stems striate, tomentose, with 1 cm long whitish weak hairs or glabrescent later and also with long slender red patent glandular hairs 0,7-2 cm long; tendrils absent; leaves digitately 3-5-foliolate, sessile or with petiole 0-6 cm long, indumentum like that of stems; lamina 6,5-28 × 1-8,5 cm, linear-lanceolate to narrowly elliptic, apex acute to acuminate, margins serrate, base narrowly cuneate, ± sparsely pubescent above with short whitish hairs and also with sessile scattered discoid glands; cymes terminal or in the upper axils, usually trichotomous, 2,5-10 cm long; individual cymes ± 2,5 cm long; peduncle 2 – ± 9 cm long, indumentum as for the stems; pedicels 1-5 mm long but often shorter, pubescent and with short capitate-glandular hairs; berry round, 0,7-1 cm Ø, crimson, pubescent and red-glandular.

Grassland; *Brachystegia* woodland; rocky areas, screes; old cultivations; red, rather fresh forest soils; sometimes termite mounds; 1200-2400 m alt.

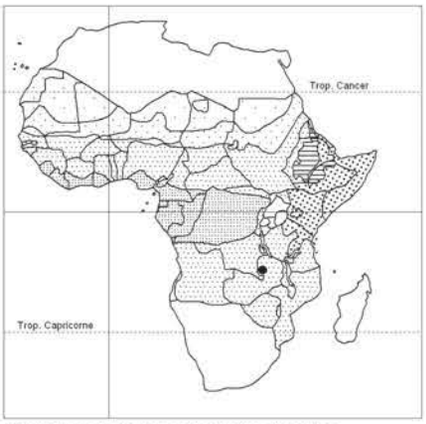
C. villosicaule Verdc.

Erect fleshy herb; tendrils presumably absent; stems very densely covered with obviously multicellular spreading hairs ± 7 mm long which hide fewer gland-tipped hairs only 0,7 mm long; leaves 3-foliolate; leaflets elliptic, 9-30 × 3,5-17,5 cm, apex ± acute, median leaflet attenuate at base, laterals broadly cuneate, sessile, irregularly lobulate-crenate, with long hairs similar to stems and sparse gland-tipped hairs; petiole 4-? ± 11 cm long, with similar hairs; cymes 12 cm wide; stalk ± 14 cm long with stipular involucre and small leaf, the true peduncle 5,5 cm long, with hairs to 3 mm long and ± dense short gland-tipped hairs becoming denser on shorter axes; pedicels 2-4 mm long with very dense short gland-tipped hairs; fruit unknown.

Roadside thicket; 1200 m alt.



Cyphostemma taborense



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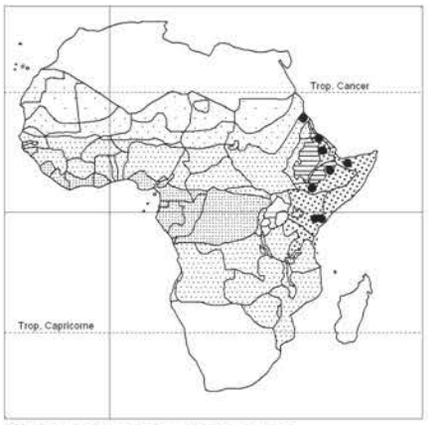

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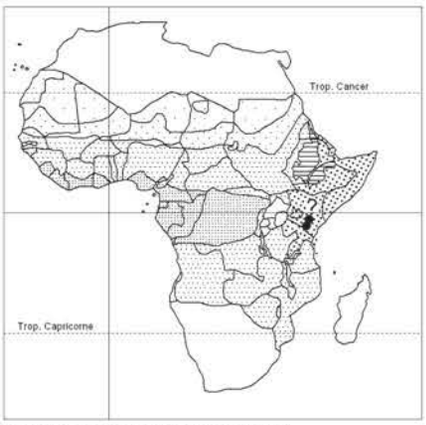
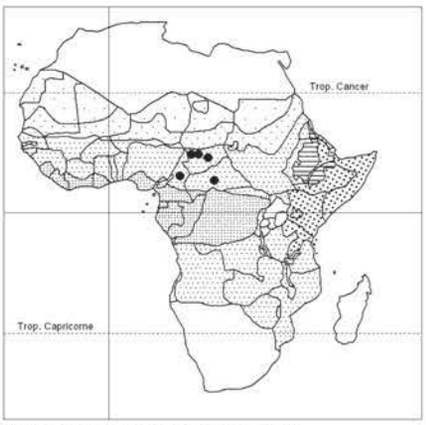
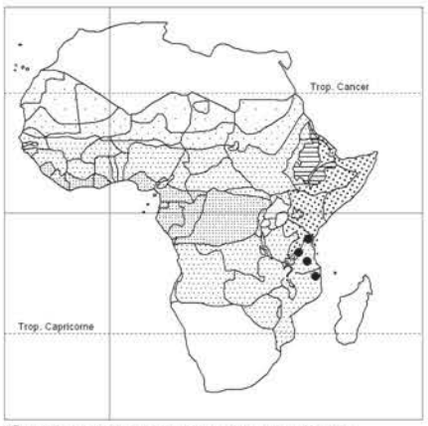


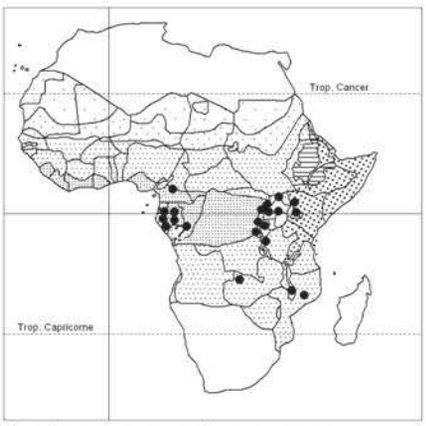
Cyphostemma thomasii



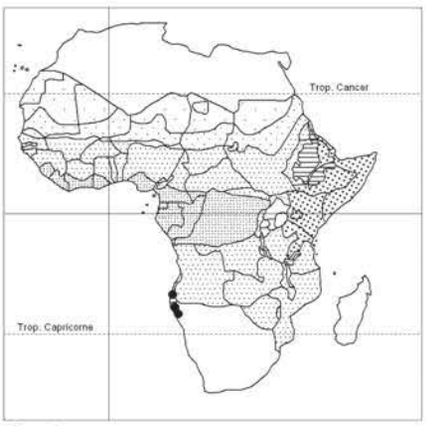
Cyphostemma tisserantii



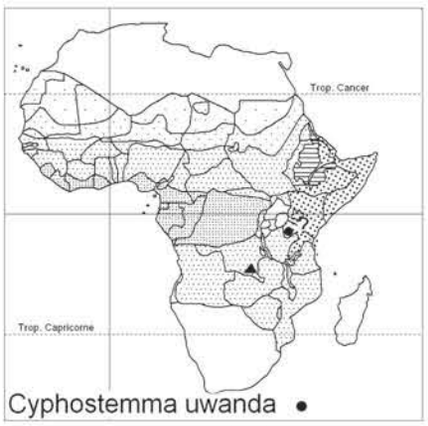
Cyphostemma trachyphyllum



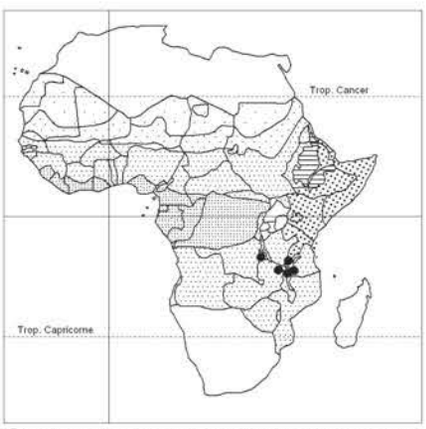
Cyphostemma ukerewense



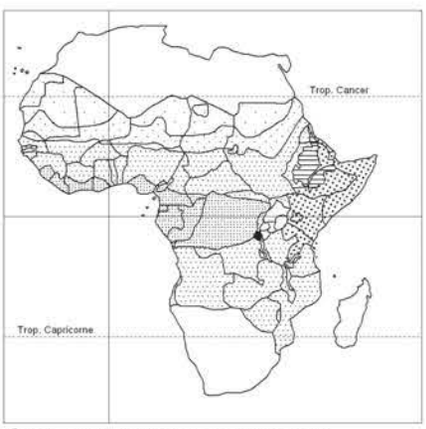
Cyphostemma uter



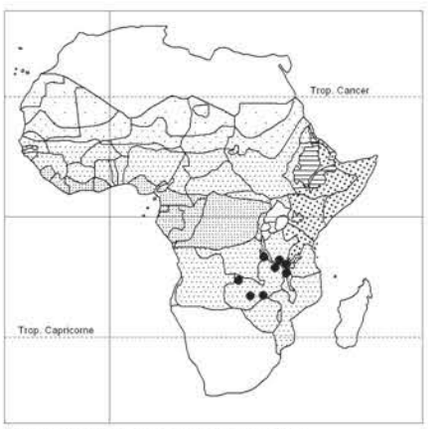
Cyphostemma uwanda ●
Cyphostemma vandenbergheae ▲



Cyphostemma vandenbrandeanum



Cyphostemma vanderbenii



Cyphostemma vanmeelii

C. villosiglandulosum (Werderm.) Descoings

bas.: *Cissus villosiglandulosa* Werderm.

Erect herb ± 60 cm tall; tendrils absent; branches rounded, canaliculate when dry, loosely ferruginous-grey tomentose and with dense glandular hairs (at stem base to 1 cm long); leaves alternate near inflorescence, opposite elsewhere; petiole to 8 cm long; 5-foliolate; leaflets herbaceous, oblong, to ± 5,5 × ± 1,5 cm, apex acute, base gradually narrowed, sessile, margins densely crenate-serrate; densely, very shortly pilose above, densely grey tomentose or sometimes subferruginous below; cymes diversely forked, peduncle to 11 cm long; pedicels ± 0,5-2 cm long; axes clothed like stems; flowers crimson; fruit unknown.

Miombo; ± 1300 m alt.

Near *C. leucotrichum;* not in F.T.E.A.; type probably lost (Schlieben 4272, 18.10. 1933).

C. violaceoglandulosum (Gilg) Descoings – Icon.: Bot. Jahrb. Syst. 46: 509, 1912; Engler, Pflanzenwelt Afr. 3/2: 333, 1921.

bas.: *Cissus violaceoglandulosa* Gilg

Prostrate herb from a fleshy, woody, many-headed rootstock; tendrils absent; stems fleshy with many long glandular hairs; leaves with fleshy petiole, 3 – ? 5-foliolate, developed after flowering (young leaves 4 cm long); leaflets oblong, acute, narrowed at base, coarsely serrate; petiole and nerves densely covered with violet glandular hairs; cymes short, forked, many-flowered; pedicels and peduncles very densely glandular pilose; fruit known ! (elliptic, c. 1 cm long, glabrous).

Common in open mixed woods of *Caesalpiniaceae;* sandy-clayey soil on bare surface; 1200 m alt.

C. viscosum (Gilg & R. E. Fries) Descoings ex Wild & R. B. Drumm.

bas.: *Cissus viscosa* Gilg & R. E. Fries

Erect herb 0,7-1 m tall from a large tuberous rootstock; secondary roots fusiforme; stems stout, cylindrical, with (sub-)sessile capitate glands and stalked glands; tendrils absent; leaves digitately 3-foliolate; petiole 2-6 cm long, 6-8 mm Ø, glandular like the stems; leaflets with petiolules 1-3 cm long, (narrowly) obovate or elliptic, 20-45 × 7-25 cm, apex acute or obtuse, margins (undulate-)crenate, base cuneate, glabrous above except for sessile glands giving a varnished appearance, whitish-tomentellous beneath (lamina discolorous); cymes terminal, trichotomus, 15-25 cm Ø; peduncle to 8 cm long, indumentum as for stems; pedicels to 7 mm long, puberulous and glandular; berry ellipsoid, 1,8 cm long, plum-coloured, puberulous and glandular.

Brachystegia woodland; *Pericopsis-Pterocarpus* savanna (chipya); on burnt ground; open forest on sandy soil; 1380 m alt.

C. vogelii (Hook. f.) Descoings; Akoegninou & al., Fl. analyt. Bénin: 1004, 2006 (sub gen. *Cissus).* – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. for.: 375, 2006 (fruits).

bas.: *Cissus vogelii* Hook. f.

syn.: *Vitis vogelii* (Hook. f.) Bak.

Herbaceous climber, extensive, branched; stems cylindrical, sulcate, 4-5 mm Ø, rather densely clothed with bristles and glandular, long, rather fine and dense hairs; tendrils present; leaves digitately 5-foliolate; petiole cylindrical, 4-17 cm long, petiolules 0-4 mm long, both densely pubescent and sparsely glandular; leaflets obovate to elliptic, 6-16 × 2,5-8 cm, base ± cuneate or obtuse, apex cuneate to obtuse, ending in a narrow acumen; margins with broad deltoid indentations ending in a stout point; rather dense curly pubescence below; glabrous or very loosely pubescent above but veins densely pubescent and with many long, glandular hairs; cymes corymb-like, many-flowered, loose, 10-35 cm long; peduncle cylindrical, 6-20 cm long; peduncle and axes glabrescent to densely pubescent, sparsely glandular; berry black, glandular, ± round.

Humid places; old cultivations; forest (edges); open forest; forest gallery; wooded savanna; ?-1900 m alt.

Bioko/Fernando Poo.

Leaves and stems often purple- or violet-tinged.

C. vollesenii Verdc.; Enum. 3: 334, 1995.

Herbaceous climber to 3 m long; stems glabrous or with very few subsessile glands; tendrils reddish or purple; leaves 5-foliolate; leaflets elliptic-lanceolate, 4,5-9,5 × 2-2,8 cm, long-tapering to a very narrow acute apex, base cuneate, rather distinctly serrate, ± entirely glabrous except for very minute hairs on midrib above and marginal ciliae, densely pellucid-punctate; petiole 1,8-3,5 cm long; petiolules 0,5-1,8 cm long, the median one twice as long as others; inflorescence ± 8 cm wide; peduncle reddish, 1-2,5 cm long; pedicels 4-7 mm long; berry ± round, 6-7 mm Ø, glabrous.

Rocky outcrop with *Aeollanthus*-scrub in *Brachystegia* woodland; 1400-1500 m alt.

Somewhat similar to *C. robsonii, C. lovemorei*. Has been named *C. paucidentatum* (coastal).

C. waterlotii (A. Chev.) Descoings

bas.: *Cissus waterlotii* A. Chev.

syn.: *C. koualensis* A. Chev., nom.; *C. chevalieri* sensu A. Chev., Expl. bot. A.O.F. 1: 141, 1920, quoad specim. Chevalier 21869.

Perennial herb, rank-smelling, with a stout underground stock, sending up annually erect fleshy stems to 1 m tall, 1-2 cm Ø, striate, pulverulent-puberulous and with long gland-tipped hairs; tendrils absent; leaves sessile, 3-5-7-foliolate; leaflets sessile, lanceolate, long tapering and pointed at both extremities, dentate-runcinate on the upper half, 8-20 × 3-11 cm, with sessile reddish glands on both surfaces, undersurface pulverulent-puberulous, greyish above, white adpressed below; cymes leaf-opposed, flat, 5-9 cm wide; peduncle puberulent, 2,5 cm long; berry round, 6-7 mm Ø, red.

Savanna; laterite; under shade; screes.

Not in Central African Rep.

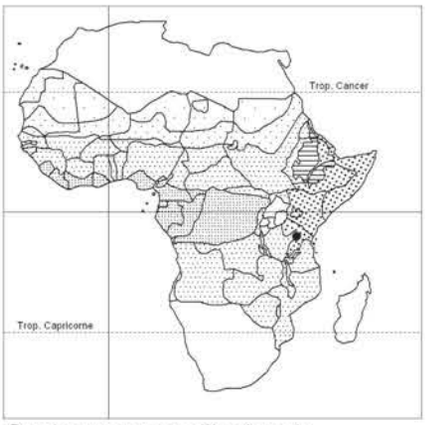
C. descoingsii is perhaps a synonym (cf. under this species).

C. wittei (Staner) Wild & R. B. Drumm.; Fl. Trop. E. Afr., Vitac.: 61, 1993; Enum. 3: 334, 1995.

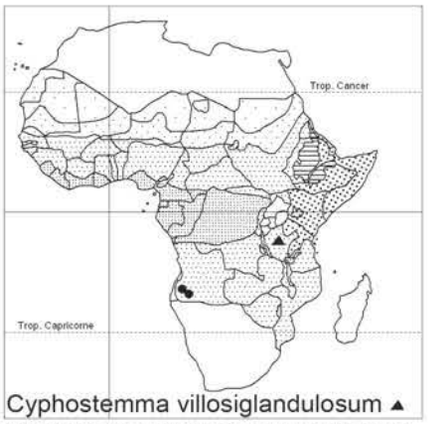
bas.: *Cissus wittei* Staner

syn.: *Cyphostemma hermannioides* Wild & R. B. Drumm.

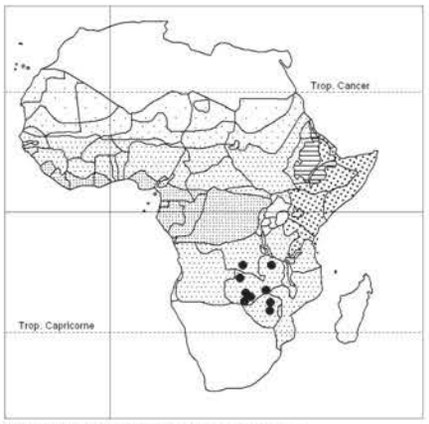
Prostrate or scrambling herb from a thick fusiform woody tap-root to 30 cm long, 8 cm Ø, red inside; stems 1-2 m long, brownish- or whitish-tomentose or -pubescent and sometimes with sparse to dense gland-tipped bristly hairs; tendrils absent; leaves simple to digitately 3-foliolate, lateral leaflets often much smaller than the median, petiole 0-3 mm long; simple leaves and median leaflets ovate, oblong-elliptic to narrowly obovate-oblanceolate or ± round, 3-21 × 1,5-15 cm, sometimes shallowly to deeply 3-lobed, apex ± rounded, base cuneate to cordate; lateral leaflets (broadly) obovate to broadly ovate or ± round, 1-5 × 0,7-3 cm, apex acute to



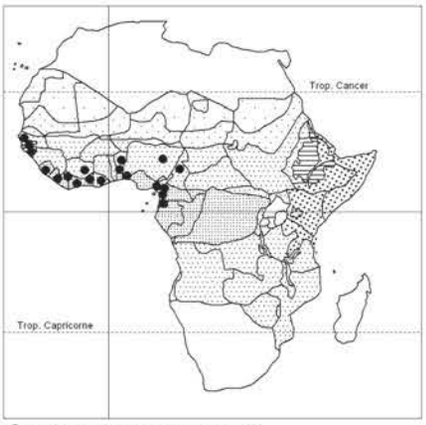
Cyphostemma villosicaule



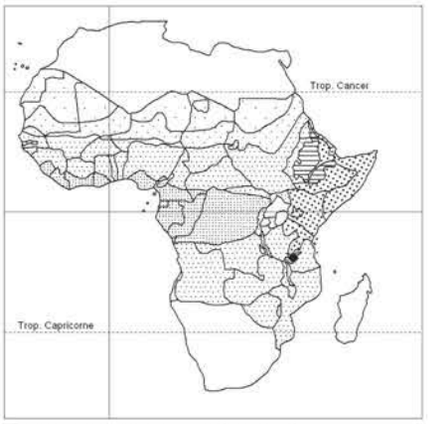
Cyphostemma villosiglandulosum ▲
Cyphostemma violaceoglandulosum •



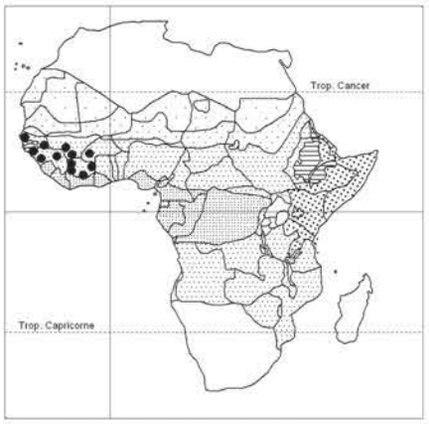
Cyphostemma viscosum



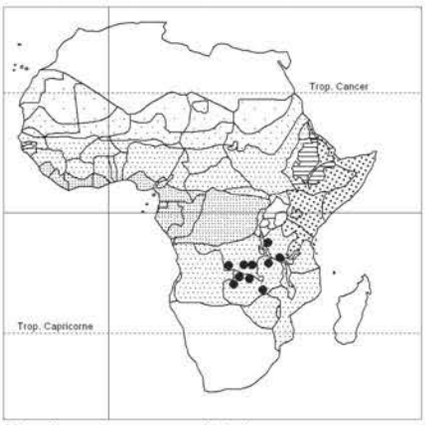
Cyphostemma vogelii



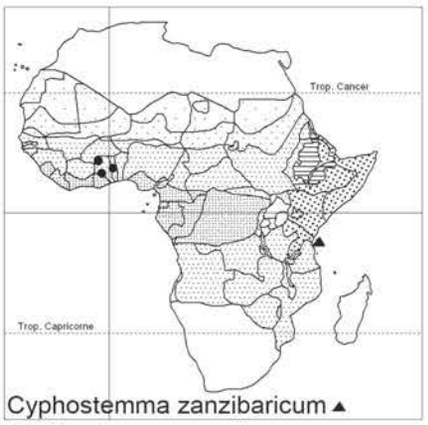
Cyphostemma vollesenii



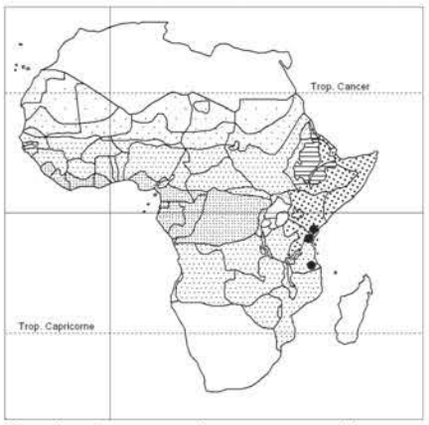
Cyphostemma waterlotii



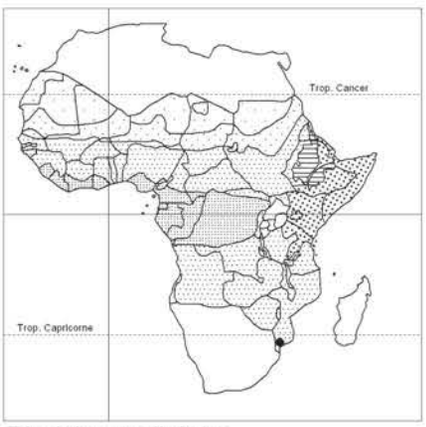
Cyphostemma wittei



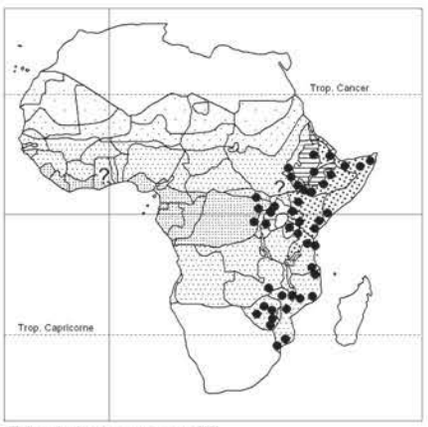
Cyphostemma zanzibaricum ▲
Cyphostemma zechianum •



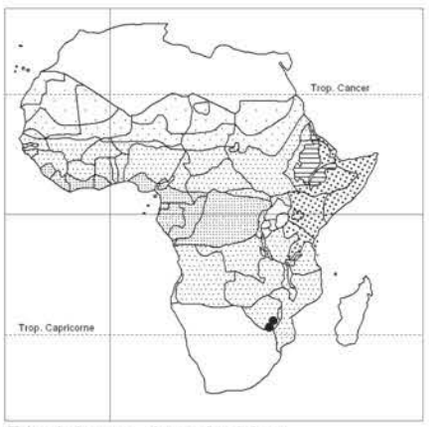
Cyphostemma zimmermannii



Rhoicissus digitata



Rhoicissus revoilii



Rhoicissus rhomboidea

rounded, base asymmetrically rounded; all leaflets glabrous above except for nerves slightly pubescent, margins crenate, puberulous, densely pubescent to ferruginous felted velvety on nerves beneath; petiolules 0-6(-15) mm long; cymes axillary, bright red, 3-12 cm wide, peduncle 2,5-11 cm long with indumentum as for stem; pedicels 2-3 mm long, axes sometimes with gland-tipped hairs; berry ± ellipsoid, 7-10 mm long, red to purplish black, glabrous.

Grassland with scattered trees; *Brachystegia-Julbernardia-Pterocarpus* woodland; savannas; open forest; river banks; wayside; on sandstone; 950-1950 m alt.

Not in N Malawi (cf. Verdcourt, Kew Bull. 58: 505, 2003). – *C. uwanda* is similar, and will key to *C. wittei* in Fl. Trop. E. Afr., Vitaceae (cf. under this species).

C. zanzibaricum Verdc., Fl. Trop. E. Afr., Vitac.: 97, 1993 – Icon.: o.c. 98.

Herbaceous climber; young stems brown, becoming dark purplish and somewhat woody when old, pubescent and with sparse to dense red bristly hairs 3-5 mm long; tendrils present; leaves 3-foliolate; leaflets oblong-elliptic, 1,5-5,5 × 0,7-2,5 cm, apex ± acute, base cuneate to rounded, margins crenate with narrow divergent or curved mucros, glabrescent except for short hairs and longer bristly ones on main venation on both surfaces; petiole 1-2 cm long, petiolules 0,3-1 cm long; cymes 3-6 cm wide, peduncle 2-3 cm long, pubescent and bristly, pedicels 3 mm long with a few gland-tipped bristly hairs; berry ellipsoid, 8 mm long, bright red, with sparse bristly possibly gland-tipped hairs.

Woodland edges; sea-level.

Very close to *C. setosum.*

Only on Zanzibar and Pemba, Fundo Isl.; 3 collections known.

C. zechianum (Gilg & M. Brandt) Descoings – Type: Zech 363, lost.

bas.: *Cissus zechiana* Gilg & M. Brandt

syn.: *C. zechiana* sensu A. Chev., Rev. Bot. Appliq. Agric. Trop. 30: 458, 1950, excl. specim. 23941 *(= C. crotalarioides*) and 22201 *(= C. waterlotii),* non Gilg & M. Brandt

Perennial erect herb to 1 m tall; tendrils absent; stems sometimes woody, sulcate, like the petioles, peduncles, pedicels sparsely (at base), and densely (above) clothed with very short hairs and with glandular hairs; leaves 3-5-foliolate; petiole 3-6 cm long; leaflets sessile, obovate to oblong, 8-12 cm long, apex acute, base broadly cuneate-narrowed (laterals very oblique), margins crenulate-serrate, pilose only on veins above but with sessile glands, very densely clothed below with very dense, rigid hairs, veins very reticulate and prominent; inflorescence (very) shortly pedunculate, 3-4-chotomous, with several forked, many-flowered cymes; peduncles 0,6-3,5 cm long; ripe fruit unknown ?

Ecology unknown ?

Actually only known from two specimens, viz. Brunel & Kaman 582, Andoh FH 5178.

C. zimmermannii Verdc.; Descoings in Eggli, Ill. handbook succ. pl.: dicot.: 463, 2002.

syn.: *Cissus cordata* Zimmermann ms.

Fleshy ± succulent trailer; older stems with tough greyish purple almost shiny epidermis, longitudinally wrinkled due to drying, appearing ± glabrous but with scattered straggling hairs; young stems ± densely pubescent but not glandular; tendrils

present; leaves 3-4-foliolate; leaflets elliptic, 2-8 × 1-5,5 cm, apex acute or subacute, base ± rounded to broadly cuneate, shallowly crenate and with minute teeth at end of nerves, surface densely covered with rhaphides and scattered hairs on main nerves and midrib, otherwise glabrous; petiole 2-3 cm long, densely pubescent with curled hairs; petiolules 0,3-1,5 cm long, similarly pubescent; cymes 6,5 cm wide in flower (to 15 cm in fruit); peduncle 4,5 cm long and with ± similar epidermis to stems; axes pubescent but not glandular; pedicels 5 mm long (to 1 cm in fruit), slightly widened at apex, mostly pubescent; berry 1-1,5 cm long, glabrous but with surface rhaphides, bright red, when dry angular due to seed-wings.

Streamsides in rain-forest; *Brachystegia* patches; 330-900 m alt.

* * *

In his treatment of *Vitaceae* for Flora of Tropical East Africa (1993) Verdcourt quotes many unnamed taxa listed as sp. A through to sp. x (= perhaps syn. of *C. uwanda).* Agnew & Agnew, Upland Kenya wild flowers, ed. 2: 163, 1994, cite sp. B and sp. x (= sp. x of F.T.E.A.).

* * *

The following species figuring in Enum. 2: 193-196, 1992, are not present in our area, but occur in South Africa:

Cyphostemma scarlatinum (Gilg & M. Brandt) Descoings

C. spinosopilosum (Gilg & M. Brandt) Descoings

C. wilmsii (Gilg & M. Brandt) Descoings (syntypes: Wilms 172, 173, lost; near *C. simplicifolium).*

C. woodii (Gilg & M. Brandt) Descoings; not in Mozambique (Junod 1313 is from S. Africa).

– São Tomé: **C. curvipodum** (Baker) Descoings

– Arabia: **C. digitatum** (Forssk.) Descoings

* * *

IN NEED OF FURTHER STUDY:

Cyphostemma congoense (Ch. D. B. ! = Ch. De Bosschere) Descoings, Not. Syst. Herb. Mus. Paris 16: 120, 1960, comb. inval.; Natural. Monspel., Sér. Bot. 18: 219, 1967.

bas.: *Vitis congoensis* Ch. D. B. !, Gard. Chron., Ser. 3, 9 (1), N° 213: 116, 1891, nom. subnud.?

A plant among the climbers which contribute to the decoration of the Victoria-House in the Brussels Botanic Garden (from Congo).

C. urophyllum (Gilg & M. Brandt) Descoings

bas.: *Cissus urophylla* Gilg & M. Brandt

A perennial climbing herb with tendrils, petiolate digitately divided leaves, and undeveloped inflorescences, from Bingila, Lower Congo Basin, Zaire, is insufficiently known.

* * *

SYNONYMS:

Cyphostemma adenocaule (Steud. ex A. Rich.) Desc. ex Wild & R.B. Drumm. var. *chiovendae* Lanza, var. *eglandulosum* (Dewit) Desc., var. *pubescens* (Dewit) Desc. = **Cyphostemma adenocaule** subsp. **adenocaule**

adenocephalum (Gilg & M. Brandt) Desc. = **Cy. dembianense**

agnus-castus (Planch.) Desc. = **Cy. bororense**

amplexum (Baker) Desc. ex Wild & R. B. Drumm. = **Cy. bororense**

amplexum sensu Wild & R. B. Drumm. = **Cy. bororense**

andongense (Webb) Desc. ex Wild & R. B. Drumm. = **Cy. chloroleucum**

bakerianum (Planch.) Desc. = **Cy. cymosum** subsp. **cymosum**

barbosae sensu Vollesen 1980, non Wild & R. B. Drumm. = **Cy. sanctuarium-selousii**

bambuseti sensu Fl. Zambes. 2: 478, 1966, ex Zambia, non (Gilg & M. Brandt) Wild & R. B. Drumm. = **Cy.** sp. **H** sensu Verdc. F.T.E.A., Vitac.: 119, 1993

biternatum (Chiov.) Desc. = **Cy. sarcospathulum**

boranense sensu Vollesen 1989, p.p., non Vollesen 1984 = **Cy. cornus-africani**

centrali-africanum (Gilg & R. E. Fr.) Desc. = **Cy. mildbraedii**

chevalieri (Gilg & M. Brandt) Desc. = **Cy. flavicans**

congoense (Ch. D. B.) Desc. – See at the end of the species list *(Cyphostemma)* p. 360

conradsii (Gilg & M. Brandt) Desc. = **Cy. serpens** subsp.

cramerianum (Schinz) Desc. = **Cy. currorii**

decurrens (Gilg & M. Brandt) Desc. = **Cy. chloroleucum**.

egregium (Gilg) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

eythraeae (Gilg & M. Brandt) Desc. = **Cy. molle**

fleckii (Schinz) Desc. = **Cy. congestum**

gallaense (Gilg & M. Brandt) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

glandulosissimum (Gilg & M. Brandt) Desc. = **Cy. ukerewense**

gracillimoides (Dewit) Desc. = **Cy. fugosioides**

helenae (Buscal. & Muschl.) Desc. = **Cy. crotalarioides**

hermannioides Wild & R. B. Drumm. = **Cy. wittei**

hypargyreum (Gilg) Desc. = **Cy. chloroleucum**

jaegeri (Gilg & M. Brandt) Desc. ex Wild & R. B. Drumm. = **Cy. kilimandscharicum** var. **jaegeri**

jatrophoides (Baker) Desc. = **Cy. junceum** subsp.

junceum (Webb) Wild & R. B. Drumm. var. *bambariense* Desc. = **Cy. junceum** ? subsp. **junceum**

kaessneri (Gilg & M. Brandt) Wild & R. B. Drumm. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

keniense (T. C. E. Fr.) Desc. = **Cy.** ? **knittelii**

kerkvoordei (Dewit) Desc. ex Wild & R. B. Drumm. = **Cy. princeae**

lelyi (Hutch.) Desc. = **Cy. serpens** subsp. **serpens**

loandense (Gilg & M. Brandt) Desc. p.p., excl. specim. Gossweiler 5172 = **Cy. crassiusculum**

loandense p.p. quoad specim. Welw. 1452, 1479 et b = **Cy. adenocaule** subsp. **adenocaule**

macropus (Welw.) Desc. = **Cy. currorii**

CYPHOSTEMMA

macrothyrsum (Gilg) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

marionae (Exell & Mendonça) Desc. = **Cy. subciliatum**

marlothii (Dinter & Gilg) Desc. = **Cy. congestum**

migiurtinorum (Chiov.) Desc. = **Cy. betiforme**

nieriense (T. C. E. Fr.) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

nodiglandulosum (T. C. E. Fr.) Desc. = **Cy. cyphopetalum** subsp. **cyphopetalum** var. **nodiglandulosum**

orondo (Gilg & M. Brandt) Desc. = **Cy. serpens** subsp. **serpens**

pachypus Verdc. 1985, non Desc. 1964, nom. illegit. = **Cy. jiguu**

pachyrrhachis (Gilg & M. Brandt) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

paucidentatum auct., non (Klotzsch) Desc. ex Wild & R. B. Drumm. = **Cy. vollesenii**

penduloides (Dewit) Desc. = **Cy. hildebrandtii**

phyllomicron (Chiov.) Desc., incl. fa. *eglandulosa* (Chiov.) Desc. = **Cy. engleri**

pobeguinii A. Chev. = **Cy. junceum** subsp. **jatrophoides**

psammophilum (Gilg & M. Brandt) Desc. = **Cy. setosum**

pseudomanikense (Dewit) Desc. = **Cy. manikense**

pseudoniveum (Gilg & M. Brandt) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

pubescens (Dewit) Desc. var. *eglanduloso-pubescens* (Dewit) Desc. = **Cy. adenocaule** subsp. **adenocaule**

reedii (Dewit) Desc. = **Cy. heterotrichum**

ringoetii (De Wild.) Desc. = **Cy. obovato-oblongum**

rowlandii (Gilg & M. Brandt) Desc. = **Cy. adenopodum**

schimperi (Hochst. ex Planch.) Desc. = **Cy. oxyphyllum**

schweinfurthii (Planch.) Desc. = **Cy. serpens** subsp. **serpens**

septemfoliatum Wild & R. B. Drumm. = **Cy. princeae**

serjanioides (Planch.) Desc. = **Cy. adenocaule** subsp. **adenocaule**

sesquipedale (Gilg) Desc. = **Cy. serpens** subsp. **serpens**

sp. x sensu Verdcourt, 1993, and sensu Agnew & Agnew, 1994 = **Cy.** ? **uwanda**

stenopodum (Gilg ex Gilg & M. Brandt) Desc. = **Cy. junceum** subsp. **jatrophoides**

stipulaceoides (Dewit) Desc. = **Cy. vanmeelii**

subglaucescens (Planch.) Desc. = **Cy. subciliatum**

tenuipes (Gilg) Desc. = **Cy. cyphopetalum** subsp. and var. **cyphopetalum**

termetophila (De Wild.) Desc. = **Cy. mildbraedii**

ternatomultifidum (Chiov.) Desc. = **Cy. sarcospathulum**

trachyphyllum (Werderm.) Desc. ex Wild & R. B. Drumm. = **Cy. bororense**

triumfettoides (Gilg & M. Brandt) Desc. = **Cy. rhodesiae**

unguiformifolium (C. A. Sm.) Desc. = **Cy. schlechteri**

upembaense (Dewit) Desc. = **Cy. crotalarioides** subsp. **junceum**

urophyllum (Gilg & M. Brandt) Desc. – See at the end of the species list *(Cyphostemma)* p. 360

variifolium (Baker) Desc. = **Cy. crotalarioides**

zambesicum (Wild & R. B. Drumm.) Galet = **Cy. bororense**

zombense (Baker) Desc. ex Wild & R. B. Drumm. = **Cy. crotalarioides**

LEEA – See under **LEEACEAE**

RHOICISSUS / *5*

A genus of 11 species in tropical and South Africa, extending to Arabia. The species are variable and difficult.

Rhoicissus digitata (L. f.) Gilg & M. Brandt; Coates Palgrave, Trees south. Afr., ed. 3: 677, 2002. – Icon.: Pooley, Compl. guide trees Natal: 305: 1993; E. Schmidt & al., Trees & shrubs Mpumalanga …: 388-389, 2002. – Baboon Grape.

bas.: *Rhus digitata* L. f.

syn.: *Rhus cirrhiflora* L. f.; *Cissus thunbergii* Eckl. & Zeyh., nom. illegit.; *Rhoicissus thunbergii* Planch., nom. illegit.; *R. cirrhiflora* (L. f.) Gilg & M. Brandt quoad syn. *Rhus cirrhiflorum* L.f. et *Cissus cirrhiflora* Eckl. & Zeyh. excl. syn. alt. et specim. cit.

Woody climber to 15 m long or scandent shrub or bushy tree to 3-4 m tall; young parts densely red-hairy with rather long hairs, later glabrescent and with pale lenticels; tendrils glabrescent, leaf-opposed; leaves digitately 3-5-foliolate; petiole to 2,8 cm long; lamina to 9 × 2,8 cm, narrowly oblong to oblong-oblanceolate, the median the longest, apex acute or obtuse, margins entire or with a few dentations, ± revolute, base cuneate, glabrous above, appressed-ferruginous-pubescent below at least on the main nerves and midrib; main nerves ± prominent below and usually having horny domatia in their axils; petiolules to 0,8 mm long; cymes rather lax, axes ferruginous-hairy; peduncle to 5 mm long; pedicels 1-2 mm long; fruit oval, fleshy, 1,5 cm Ø, black.

Usually in riverine fringing vegetation.

E S. Africa (0-600 m alt.; coastal dunes, dry sand forest).

Records (as *R. thunbergii)* from NE Tanzania are probably *R. revoilii* (Verdcourt, Fl. Trop. E. Afr., Vitaceae: 8, 1993).

R. revoilii Planch.; Beentje, Kenya trees, shrubs & lianas: 364, 1994; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: 164, 1994; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 304, 2000; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 384, 2006. – Icon.: Audru & al., Pl. vascul. Rép. Djibouti 2/2: 475, 1994; Troupin, Fl. Rwanda 2: 357, 1983; Chaudhary, Fl. Kingd. Saudi Arabia ill. 2/1: 417, 2001; E. Schmidt & al., Trees & shrubs Mpumalanga…: 388-389, 2002; Coates Palgrave, Trees south. Afr., ed. 3: ill. 178, 2002.

syn.: *Vitis erythrodes* sensu Franch. in Révoil, Faune Fl. Çomalis, Sert. Som.: 21, 1882, non Fresen.; *Rhoicissus sansibarensis* Gilg; *R. drepanophylla* Gilg; *R. jemensis* Schweinf., msc.; *R. cymbifolius* C. A. Sm.

Mainly a woody climber, 1-10 m long, but also sometimes a shrub or tree 1-6 m tall; usually tendrils present, leaf-opposed, not on flowering branches and often lacking in herbarium specimens; stems porous with copious watery sap (potable); young branches ferruginous pubescent or tomentose with appressed or spreading hairs, later ± glabrous; root-branches in some specimens with spherical tubers to 12,5 cm Ø; leaves 2-3-foliolate; terminal leaflet narrowly lanceolate to ovate or obanceolate; lateral leaflets lanceolate, subfalcate, oblong or ± rhomboid; all 2-14,5 × 0,8-8,5 cm, apex acute to obtuse or retuse, base narrowly to broadly cuneate, entire or slightly undulate, glabrous to sparsely pubescent above, ferruginous-tomentose to glabrous beneath; domatia sometimes present in axils of main nerves; petiole 1-4 cm long; petiolules 0,2-2 cm long; cymes lax or ± dense, axes ferruginous pubescent or tomentose; peduncle 0,5-4 cm long; pedicels 1-4 mm long; fruit 2-lobed, fleshy, black, glabrous, round, 0,6-1,5 cm Ø, ± warty.

Grassland; (dry disturbed) bushland and woodland*; Juniperus, Olea, Teclea* forest edges; *Tarchonanthus, Juniperus* associations; sometimes on river banks; coastal bushland, etc.; coral rocks and cliffs; 0-2460 m alt.

S. Africa; Saudi Arabia, Yemen; Comoro Isl.

Spontaneous in Ghana ?

Possible confusion with *R. tridentata,* but "the taxa become increasingly distinct from each other as one moves northwards from South Africa" (Verdcourt, Fl. Trop. E. Afr., Vitaceae: 11, 1993).

R. schlechteri Gilg & M. Brandt, considered as a synonym, "will probably be reinstated as a separate species" (Coates Palgrave, o.c.: 678); type from Mozambique, Delagoa Bay, 30 m. alt.

R. rhomboidea (E. Mey. ex Harv.) Planch.; Coates Palgrave, o.c.: 678. – Icon.: Pooley, o.c.: 305, 1993; E. Schmidt & al., o.c.: 388, 391.

bas.: *Cissus rhomboidea* E. Mey. ex Harv.

syn.: *Vitis rhomboidea* (E. Mey. ex Harv.) Szyszyl., incl. var. *transvaalensis* Szyszyl.

Scrambling vine or tall liane to 20 m long, occasionally a small tree 3-6 m tall; young parts ferruginous-villous with long weak hairs, soon glabrescent; tendrils thick, glabrescent; leaves 3-foliolate; petiole to 2,3 cm long; leaflets 5-12 × 2-5 cm, terminal obovate, laterals asymmetric, rhomboid, apex acuminate, margins with ± 6 acuminate dentations, base cuneate; petiolules to 1-4 cm long; undersurface furry with pale rusty hairs, glossy dark green above; cymes moderately dense in branched inflorescences, branches ± persistently red-hairy, peduncle to 1 cm long, pedicels ± 2 mm long; fruit grape-like, round, 1 cm Ø, purple to black.

Closed forest, margins of evergreen forest, edges of forest clearings.

S. Africa (3-1600 m alt.), Swaziland.

R. tomentosa (Lam.) Wild & R. B. Drumm.; Coates Palgrave, o.c.: 679. – Icon.: Pooley, o.c.: 305, 1993; White & al., Evergreen for. fl. Malawi: 600, 2001 (partial); E. Schmidt & al., o.c.: 391.

bas.: *Cissus tomentosa* Lam.

syn.: *Vitis capensis* Thunb. 1794, non Burm. f. 1768; *Rhoicissus capensis* Planch., nom. illegit.; *Cissus capensis* Willd.

Liane to 30 m long; stems to 25 cm Ø, with aerial roots hanging vertically from a low height (like a *Ficus);* occasionally a tree 3-7 m tall; young branchlets rusty-hairy, later glabrescent and with large pale lenticels; tendrils velvety; leaves simple, ± round, 9-20 × 7-16 cm, apex obtuse, margins repand(-dentate), base cordate, very shallowly 3-5-lobed or entire, glabrous above, undersurface with soft dense rusty hairs, petiole ± 6 cm long, velvety; inflorescence of subumbellate or subcapitate densely furry with rusty hairs, peduncle to ± 2 cm long, pedicels ± 2 mm long; fruit round, 2 cm Ø, red to purplish black, grape-like.

Closed- or fringing forest, covering trees; montane rain-forest; 600-1800 m alt.

S. Africa, Swaziland. – Mauritius, probably cultivated.

Not in Tanzania *(= R. tridentata,* a "freak form"; Verdcourt, Fl. Trop. E. Afr., Vitaceae: 8, 1993).

RHOICISSUS

R. tridentata (L . f.) Wild & R. B. Drumm., incl. subsp. *cuneifolia* (Eckl. & Zeyh.) Urton; Burkill, Useful pl. W. Trop. Afr., ed. 2, 5: 304-305, 2000; Coates Palgrave, Trees south. Afr., ed. 3: 679, 2002. – Icon.: Bot. Jahr. Syst. 46: 442, 1911, and Engler, Pflanzenwelt Afr. 3/2: 322, 1921 (sub nom. *R. erythrodes);* Troupin, Fl. Rwanda 2: 357, 1983; Fl. Trop. E. Afr., Vitaceae: 10, 1993; Beentje, Kenya trees, shrubs and lianas: 365, 1994; Agnew & Agnew, Upl. Kenya wild fl., ed. 2: pl. 59, 1994; White & al., Evergreen for. fl. Malawi: 600, 2001; E. Schmidt & al., Trees & shrubs Mpumalanga…: 390, 393, 2002; V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 227-229, 2002; B. van Wyk & P. van Wyk, How to identify trees south. Afr.: 136, 2007.

bas.: *Rhus tridentata* L. f.

syn.: *Vitis erythrodes* Fresen., incl. var. *ferruginea* Bak.; *Rhoicissus holstii* [Engl.] Gilg; *R. usambarensis* Gilg emend. Suess.; *R. verdickii* De Wild.; *Cissus usambarensis* Gilg ex Engl., nom. (sphalmate); *Rhoicissus cirrhiflora* sensu Gilg & M. Brandt, Bot. Jahrb. Syst. 46: 438, 1911, p.p., quoad syn. et specim. cit. excl. *Rhus cirrhiflora* L. f. *(= Rhoicissus digitata*); *Cissus tridentata* (L. f.) Eckl. & Zeyh.; *Vitis cuneifolia* (Eckl. & Zeyh.) Planch.; *Cissus pauciflora* Burchell; *Rhoicissus pauciflora* (Burchell) Planch.; *Cissus inaequilatera* E. Mey. ex Harv.; Enum. 2: 196, 1992.

Shrub or treelet 1-4 m tall, or more often a robust woody climber 2-10 m long; stems porous, containing a watery sap; young branches with rust-coloured (woolly) pubescence; tendrils leaf-opposed, fulvous pubescent or glabrescent, often lacking in herbarium specimens; roots with tubers ("potato-like"); leaves 3-foliolate, or rarely 1-foliolate; leaflets narrowly to broadly obovate, the laterals somewhat asymmetric, 1,5-16 × 0,7-8 cm, apex truncate to subacute, base cuneate, the laterals often rounded on one side, toothed towards the apex with 1-18 teeth or rarely ± entire, glabrous to densely ferruginous pubescent; petiole 0,2-4 cm long; petiolules to 5-12 mm long; flowers in small tight heads, the axes ferruginous pubescent or tomentose, peduncle 2-3 cm long, pedicels ± 2 mm long; fruit round, c. 1 cm Ø, fleshy, black, glabrous.

In a wide range of habitats.

Grassland with scattered trees; thicket and scrub; forest edges; often in rock crevices; dry *Juniperus* forest; riverine forest; montane rain-forest; *Acacia* and *Combretum, Terminalia* woodland; secondary forest; dry and stony ground; tolerating a wide range of climatic conditions; sometimes common; also used as fences in cultivated land; 0-2400 m alt.

An extremely variable species. Specimens with entire leaves have been named *R. usambarensis.* Shape and size of leaflets, their toothing and length of petioles are variable. Two subspecies are sometimes recognized. Subsp. *tridentata* is a small plant with small leaves and ± entire margins, present in the S part of range. Subsp. *cuneifolia* has larger leaves which are hairless in the S part of range, and velvety towards the N.

S. Africa, Botswana, Swaziland; Saudi Arabia, Yemen !

Sometimes difficult to distinguish from *R. revoilii;* but the taxa become increasingly distinct towards the North.

SYNONYMS:

Rhoicissus capensis (Willd.) Planch. = **Rhoicissus tomentosa**

cirrhiflora (L. f.) Gilg & M. Brandt, p.p. = **R. digitata**, **R. tridentata**

cuneifolia (Eckl. & Zeyh.) Planch. = **R. tridentata**

cymbifolius C. A. Sm. = **R. revoilii**.

RHOICISSUS

drepanophylla Gilg = **R. revoilii**.

edulis De Wild. = **Ampelocissus**

erythrodes (Fresen.) Planch. = **Rhoicissus tridentata**

holstii [Engl.] Gilg = **R. tridentata**

jemensis Schweinf., ms. = **R. revoilii**

pauciflora (Burchell) Planch. = **R. tridentata**

sansibarensis Gilg = **R. revoilii**

sapinii De Wild. = **Ampelocissus poggei**

schlechteri Gilg & M. Brandt = **Rhoicissus revoilii**

thunbergii Planch. = **R. digitata**

usambarensis Gilg emend. Suess. = **R. tridentata**

verdickii De Wild. = **R. tridentata**

(*SAELANTHUS*)

Saelanthus digitatus Forssk., nom. invalid. = **Cyphostemma**

quadragonus Forssk. = **Cissus quadrangularis**

rotundifolius Forssk. = **Ci. rotundifolia**

ternatus "Forssk." = **Cyphostemma**

[VITIS]

[**Vitis vinifera** L.] – Grape Vine; Enum. 2: 196, 1992.

Deciduous woody climber or trailer with leaf-opposed tendrils or inflorescences; leaves entire to deeply palmately lobed, cordiform, 4-17 × 5-16 cm, dentate, apex acute; flowers in dense pyramidal panicles 5-20 cm long; berry ellipsoid-round, 1-4 cm long, yellowish to purplish violet.

Among the first fruit crops to be cultivated (Gerrath & Poluszny in Canad. J. Bot. 85/8: III-IV, 2007).

In Africa cultivated for many centuries in higher areas (in E. Africa 1800-2100 m alt.) – "is not at its best in tropical climates" (Verdcourt, Fl. Trop. E. Afr., Vitaceae: 1, 1993).

BESSIS, R. (2008). Vitis vinifera L., ses variétés et leur évolution intravariétale. Nomenclature et domestication. *In:* PRAT, D. & al., eds., *Peut-on classer le vivant? Linné et la systématique aujourd'hui. Actes du Colloque Dijon 31 janvier-3 février 2007*: 303-312, Belin, Paris.

SYNONYMS:

Vitis abyssinica Hochst. ex A. Rich. = **Ampelocissus**

adenocaulis (A. Rich.) Miq., incl. var. *articulata* Kuntze = **Cyphostemma adenocaule**

afzelii Bak. = **Cissus diffusiflora**

amplexa Bak. = **Cyphostemma bororense**

andongensis Welw. ex Bak. = **Cy. chloroleucum**

angolensis Bak. = **Ampelocissus**

apodophylla Bak. 1894 = **Cyphostemma ternatum**

apodophylla Bak. 1897 = **Cy. crotalarioides**

aralioides Welw. ex Bak. = **Cissus**

arcuata Welw. ex Bak. = **Ampelocissus obtusata** subsp. **obtusata**

arguta (Hook f.) Bak. = **Cissus arguta**

asarifolia Bak. = **Ampelocissus africana** var. **africana**

barteri Bak. = **Cissus barteri**

bombycina (Bak.) Planch. = **Ampelocissus**

bororensis (Klotzsch) Bak. = **Cyphostemma**

caesia (Afzel.) Sabine = **Cissus**

capensis (Willd.) Thunb., non Burm. f. = **Rhoicissus tomentosa**

cavicaulis Bak. = **Ampelocissus abyssinica**

chantinii Carrière = **A. africana** var. **africana**

chloroleuca Welw. ex Bak. = **Cyphostemma**

cirrhosa Thunb. = **Cy. cirrhosum**

var. *transvaalensis* Szyszył. = **Cy. cirrhosum** subsp. **transvaalense**

cirrhosa sensu Bak. in F.T.A., p.p., non Thunb. = **Cissus aralioides** subsp. **orientalis**, **Cyphostemma kirkianum** subsp. **kirkianum**

concinna Bak. = **Ampelocissus**

congesta Bak. = **Cyphostemma**

constricta Bak. = **Cissus aralioides**

cornifolia Bak. = **Ci. cornifolia**

corylifolia Bak. = **Ci. corylifolia**

cradockensis Kuntze = **Cyphostemma quinatum**

crassifolia Bak. = **Cissus rotundifolia** var. **rotundifolia**

crassiuscula Bak. = **Cyphostemma**

cuneifolia (Eckl. & Zeyh.) Planch. = **Rhoicissus tridentata**

currorii (Hook f.) Bak. = **Cyphostemma**

cyphopetala (Fresen.) Bak. = **Cy. cyphopetalum**

debilis Bak. = **Cayratia**

diffusiflora Bak. = **Cissus**

dissecta Bak. = **Ampelocissus**

dubia Martelli 1886, non Lawson 1875 = **Cissus petiolata**

durandii Lécard = **Ci. rufescens**

erythrodes Fresen., incl. var. *ferruginea* Bak. = **Rhoicissus tridentata**

erythrodes sensu Franch., non Fresen. = **R. revoilii**

farinosa Welw. ex Bak. 1868, non Rafin. 1830 = **Cissus**

gastropus Welw. ex Planch. in syn. = **Cyphostemma currorii**

glaucophylla (Hook. f.) Bak. = **Cissus**

gorgonobotrys Webb = **Ampelocissus leonensis**

gracilis (Guill. & Perr.) Bak. 1868, non Wall. 1824 = **Cayratia gracilis**

grantii Bak. = **Ampelocissus africana** var. **africana**

grisea Bak. = **Cissus**

grossedentata Büttn. = **Ci. glaucophylla**

guerkeana Büttn. = **Ci. guerkeana**

heracleifolia Bak. = **Ampelocissus dissecta**

hochstetteri Miq. = **Cissus petiolata**

humilis N. E. Br. = **Cyphostemma**

hypoleuca (Harv.) Szyszył. = **Cy. hypoleucum**

ibuensis (Hook. f.) Bak. = **Cayratia**

integrifolia Bak. = **Cissus**

intricata Bak. = **Cayratia ibuensis**

jatrophoides (Bak.) Verdc. = **Cyphostemma junceum** subsp

juncea (Webb) Bak. = **Cy. junceum**

leonensis (Hook. f.) Bak. = **Ampelocissus**

macropus (Welw.) Hook. = **Cyphostemma currorii**

mannii Bak. = **Cy. mannii**

masukuensis Bak. = **Cy. masukuense**

mossambicensis Klotzsch = **Ampelocissus africana** var. **africana**

multistriata Bak. = **A. multistriata**

nana Baill. = **Cissus guerkeana**

nymphaeifolia Welw. ex Planch. = **Ci. nymphaeifolia**

obtusata Welw. ex Bak., incl. var. *quercifolia* Rolfe = **Ampelocissus obtusata** subsp. **obtusata**

oxyphylla A. Rich. = **Cyphostemma**

palmatifida Bak. = **Cissus palmatifida**

pannosa Bak. = **Cyphostemma niveum**

paucidentata (Klotzsch) Bak. = **Cy. paucidentatum**

pendula Welw. ex Bak. = **Cy. pendulum**

pentaphylla Guill. & Perr. = **Ampelocissus multistriata**

platanifolia Bak. = **A. dissecta**

producta (Afzel.) Bak. = **Cissus**

pruriens Welw. ex Bak. = **Cyphostemma**

quadrangularis (L.) Wall. ex Wight & Arn. = **Cissus**

rhomboidea (E. Mey. ex Harv.) Szyszył., incl. var. *transvaalensis* Szyszyl. = **Rhoicissus rhomboidea**

rubiginosa Welw. ex Bak. = **Cissus**

rufescens (Guill. & Perr.) Miq. = **Ci. rufescens**

salmonea Bak. = **Ampelocissus leonensis**

sambucina Beccari ex Martelli = **Cyphostemma adenanthum**

sarcocephala Schweinf. ex Oliv. = **Ampelocissus**

schimperiana Hochst. ex A. Rich. = **A. schimperiana**

serpens Hochst. ex A. Rich. = **Cyphostemma serpens** var. *mollis* Bak. = **Cy. molle**

smithiana Bak. = **Cissus glaucophylla**

stenoloba Welw. ex Bak., p.p. = **Cyphostemma grandistipulatum**, **Cy. stenolobum**

subciliata Bak. = **Cy. subciliatum**

suberosa Welw. ex Bak. = **Cissus petiolata**

succulenta Galpin = **Ci. cactiformis**

tenuicaulis (Hook. f.) Bak. = **Cayratia gracilis**

thonningii Bak., non Bl. = **Cyphostemma cymosum** subsp. **cymosum**

thonningii Bak. p.p. = **Cy. crassiusculum**

variifolia Bak. = **Cy. crotalarioides**

vogelii (Hook. f.) Bak. = **Cy. vogelii**

welwitschii Bak. = **Cissus**

zombensis (Bak.) Desc. ex Wild & R. B. Drummond = **Cyphostemma crotalarioides**

LEEACEAE /*1*g. /*1* sp.

PATIL, S. G. (2006). Inter-generic variations in the leaf characters of family Vitaceae and their taxonomic significance. *J. Econ. Taxon. Bot*. 30: 699-704.

WEN, J. (2007). Leeaceae. *In:* KUBITZKI, K., ed., *The families and genera of vascular plants 9: Flowering plants – Eudicots* …: 221-225. Springer Verlag, Berlin & Heidelberg.

LEEA / *1*

Sometimes included in *Vitaceae.* – Circa 34 (or more?) species occurring from Africa through to Malesia and Australia; 2 in Africa (one restricted to S. Tomé).

Leea guineensis G. Don – Icon.: Suessenguth in Engler & Prantl, Natürlich. Pflanzen-Fam. 20 D: 373, 1953; Fl. Zambes. 2(2): 495, 1966; Adam, Fl. descr. Mts Nimba 2: 794, 1971; Fl. Trop. E. Afr., Vitaceae-Leeaceae: 142, 1993; Beentje, Kenya trees, shrubs & lianas: 364, 1994; Descoings in Fl. Madag., fam. 124 bis, Leeac.: 9, 1967, in Fl. Gabon 14: 117, 1968, and in Fl. Mascareignes 75, Lééac.: 3, 1997; Akoegninou & al., Fl. analyt. Bénin: 1007, 2006; Hawthorne & Jongkind, Woody pl. west. Afr. for.: 375, 385, 2006.

syn.: *Leea sambucina* sensu Bak. in Oliver, Fl. Trop. Afr. 1: 415, 1868, and sensu Schumach. & Thonn., Pl. Guin.: 134, 1829, etc., non (L.) Willd.; *L. arborea* Bojer, nom. nud.; *L. coccinea* Bojer, nom. nud.

(Sub)erect softly woody shrub (or tree) 1-10 m tall; stem fleshy, jointed; branches terete, naked, usually glabrous, rarely pubescent to densely hairy or papillose; leaves 2-3(-5)-pinnate with 3-7 leaflets per pinna, rhachis with reddish swellings; stipules soon deciduous; inflorescences 10-25(-40) cm long, glabrous to rusty pubescent, with pink to crimson axes; flowers red, orange or yellow; fruit red turning black when ripe, to c. 8 mm Ø, with a persistent calyx. – Very ornamental.

Evergreen forests; swamp and gallery forests, fringing forest, forest edges, clearings and windfall gaps, along paths; moist shaded places, by springs and streams; in understorey; also grassland with bracken; locally abundant; also in moist palm-groves (Angola); edge of marigot; 1-1829 m alt.

Very variable (e.g. c. 40 synonyms given for the Philippines by Ridsdale in Blumea 22: 92-93, 1974, and in Fl. Males. 1, 7 (4): 777-778, 1976 (with a map). – Several forms described by Descoings figuring in Fl. Madag., o.c.: 8-12.

Bioko/Fernando Poo; Madagascar, Comoros, Mauritius, Réunion; India, Burma, Indo-China, Malesia, Taiwan, New Guinea.

Also cultivated (often marketed under the name *L. coccinea)* and used in traditional medicines.

Closely related to *L. indica* (Burm. f.) Merr. (with greenish-white flowers), the latter also introduced in Tanzania (Usambaras) where specimens can be found (flower colour to be noted carefully in this area), fide Verdcourt, Fl. Trop. E. Afr., Leeaceae: 143, 1993.

RUTACEAE / *12* g. / *114* spp.

excl. *Harrisonia* (see under *Simaroubaceae).*

A large family of 155-160 genera and 900 species (or 1600 or 1900?) in the tropical and temperate regions of the World. Most numerous in S. Africa and Australia.

CORAZZA-NUNES, M. J. & al. (2006). The phylogeny of Rutaceae: Contributions from molecular systematics. *In:* SHARMA, A. K. & A. SHARMA, Eds., *Plant Genome: Biodiversity and Evolution.* 1/C. *Phanerogams (Angiosperm-Dicotyledons):* 331-360. Science Publishers, Enfield (NH), etc.

GROPPO, M. & al. (2008). Phylogeny of Rutaceae based on two noncoding regions from cpDNA. *Amer. J. Bot*. 95: 985-1005.

LISOWSKI, S. (2009). Flore (angiospermes) de la République de Guinée 1 (texte) and 2 (illustrations). *Scripta Bot. Belg*. 41 and 42, respectively.

WING-SEM POON & al. (2007). Congruence of molecular, morphological, and biochemical profiles in Rutaceae: A cladistic analysis of the subfamilies Rutoideae and Toddalioideae. *Syst. Bot.* 32: 837-846.

Several taxa are insufficiently known. No flowers known in one *(Afraegle)* species; *Citropsis* is a little known genus; also some *Diphasia, Oricia* and *Toddaliopsis* taxa are poorly known.

Male flowers are lacking for 4 species (= >3%), female ones for 6 (+4?) species (= c. 5% or > 8%); no fruit is known in 9 (+1?) species (= c. 8%). No ecology is recorded for one species *(Citropsis).* Nine species (= c. 8%) are known only from the type, others only from two collections (e.g. only from the type locality).

[AEGLE]

[**Aegle marmelos** (L.) Corrêa] – B(a)el-fruit, Bengal Quince: Burkill, Useful pl. W. trop. Afr. 4: 637, 1997.

bas.: *Crateva marmelos* L.

Glabrous deciduous tree to 10-15 m, often with sharp straight axillary spines 2,5-5 cm long and with alternate trifoliolate leaves; flowers greenish white, c. 2 cm Ø, sweet scented, in short lateral panicles.

Native of India, Indomalaysia.

Grown for its edible fruits, 5-15 cm Ø, with a hard brownish shell and orange fleshy pulp, 8-15-chambered.

SYNONYM:

Aegle barteri Hook. f. = **Afraegle paniculata**

AEGLOPSIS / *4*

Tropical African genus.

Poorly known; one species known only from the type, without fruit.

Aeglopsis beguei A. Chev.

Shrub with slender branchlets; leaves alternate, simple, ovate, 10-15 × 7-8 cm, margins crenate in upper half; spines axillary, slender, 2-5 cm long; flowers 3-8 in short axillary umbel-like cymes, with persistent bracts; stamens 8-10, free; fruit unknown.

Forest.

Known only from the type collected in 1949 (Bégué s. n.).

Near *A. mangenotii.*

AEGLOPSIS

A. chevalieri Swingle, excl. var. *tanakae* (Swingle & M. Kellerm.) A. Chev. *(= Citropsis gabunensis).* – African Cherry Orange. – Icon.: Engler in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 352, 1931; Irvine, Woody pl. Ghana: 489, 1961; Adam, Fl. descr. Mts Nimba 2: 796, 1971 and 3: 1369, 1975; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 701, 709, 2006 (partial); Swingle in Bull. Soc. Bot. France 58, Mém. 8 d: pl. 2-3, 1912.

syn.: *Balsamocitrus chevalieri* (Swingle) A. Chev.

Shrub, semi-scandent, or tree 2-3-10 m tall, branched from the base, with bent trunk to 30 cm in girth; branchlets glabrous, green or yellowish; spines axillary, 2-7 cm long; leaves simple, alternate, densely gland-dotted, scented when crushed, ± elliptic, 5-12 × 2,5-7 cm, margins crenate; flowers white, sweet-scented, in axillary panicles to 5 cm long; fruit round to pear-shaped, orange-yellow, hard-shelled, containing a gum, 6-9 cm Ø.

(Semi-)deciduous forests, riverine or in wet places, in understorey; forest margins; secondary forest; sands and alluvium near the sea, behind the mangrove; coastal dunes; to c. 600 m alt.

Introduced into the USA by Swingle, cultivated in Florida. Used as a root-stock for other *Rutaceae*. – Easily propagated by seeds produced in abundance.

Also in SE Nigeria? (Chapman & Chapman, Forests Taraba & Adamawa States: C 40, 2001; 1061 m alt).

A. eggelingii M. Taylor

syn.: *Aeglopsis* sp. sensu Gilbert in Fl. Congo belge 7: 108, 1958.

Deciduous shrub or tree 2-4(-7) m tall; bark dark grey, glabrous; branches terete; spines strong, straight, solitary or in pairs, 2-3,5 cm long; leaves 1(-2-3)-foliolate, alternate, elliptic to ovate, 7-17 × 3-6,5 cm, with numerous pellucid glands, margins crenulate; flowers greenish-white in 2-5 cm long axillary panicles, irregularly branched; stamens 9-12, free; fruit round or pear-shaped, 9-11 cm long, yellow-green, woody, aromatic.

Rain-forest margins, riverine forest; 900-1500 m alt.

A. mangenotii A. Chev.

Tree 5-6 m; trunk slender, bent, 4-6 cm Ø, often branched from the base; bark smooth, greyish white; spines axillary, solitary, very sharp, 2-3 cm long; young branchlets green, glabrous, becoming greyish; leaves alternate, ±ovate, 8-12 × 4,5-7 cm; flowers in branched cymes 0,5-2 cm long; fruit yellowish green, pear-shaped, 5 cm long, hard-shelled, aromatic.

Rain-forest in understorey, primary forest on slopes of ravine; c. 20 m alt. (and more?).

Very similar to (and identical with?) *A. chevalieri.*

SYNONYMS:

Aeglopsis alexandrae Chiov. = **Vepris eugeniifolia**

chevalieri Swingle var. *tanakae* (Swingle & M. Kellerm.) A. Chev. = **Citropsis gabunensis**

sp. sensu F.W.T.A., ed. 2, 1(2): 687, 1958 = **Balsamocitrus camerunensis**

AFRAEGLE / *2* ?

Afraegle gabonensis (Swingle) Engl. – Icon.: Bull. Soc. Bot. France 58, Mém. 8 d: p. 235 and pl. 4, 1912 (sub gen. *Balsamocitrus).*

bas.: *Balsamocitrus gabonensis* Swingle

Tree with glabrous cylindrical green slender young branches, very spiny; bark on older branches greenish brown, becoming grey-spotted; spines solitary or paired, slender, very sharp-pointed, 1,5-2 cm long; leaves simple or, in vigorous specimens 3-foliolate, the latter with a large lanceolate terminal foliole 12-20 × 3,5-6,5 cm, the lateral ones much smaller (6-9 × 2,5-3 cm), all bright green with numerous translucent glands, petiole articulated at base of folioles; fruit large, pear-shaped, hard-shelled, 8-10 cm Ø.

Forest?; 110 m alt. (fide Sosef & al., Check-list pl. vascul. Gabon: 377, 2006).

The description is based on plants grown in greenhouses at Paris Jardin des Plantes from seed sent by Klaine in 1892 from Gabon (Libreville). Also grown at Washington DC. Already in 1890 Klaine sent fruit and seed to Paris (Herb. P) from NW Gabon/Equatorial Guinea (Pahouins, or Fangs, Country); fruit locally called "poire à poudre", "powder-flask fruit"; name also used for *Afraegle paniculata,* or *Aeglopsis chevalieri).*

In his discussion Swingle (1912) notes that the cultivated specimens with simple leaves resemble *Aeglopsis chevalieri*, but those with 3-foliolate leaves come nearer to *Balsamocitrus* (also in habit, spine and fruit characters). But flowers are lacking! – In his treatments of *Rutaceae* for Fl. Cameroun 1, 1963 and Fl. Gabon 6, 1963, Letouzey places the species in *Afraegle* (also so by Walker & Sillans, Pl. utiles Gabon: 378-379, fig. 125, 1961). Flowers obtained at Washington seem to be similar to those of *Afraegle paniculata.*

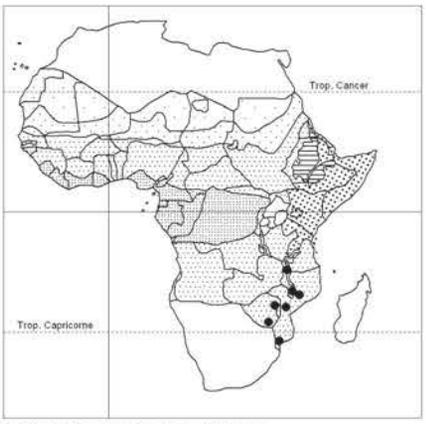
A. paniculata (Schumach. & Thonn.) Engl. – Icon.: Engler in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 762, 1915, and in Natürl. Pflanzenfam., ed. 2, 19a: 351, 1931; Irvine, Woody pl. Ghana: 490, 1961; F. Busson, Pl. aliment. Ouest afric.: fig. 132, 1965 (sterile): Akoegninou & al., Fl. analyt. Bénin: 910, 2006; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 701, 709, 2006 (partial); Hooker Ic. Pl.: pl. 2285, 1895 (sub nom. *Aegle barteri);* Swingle in Bull. Soc. Bot. France 58, Mém. 8 d: pl. 1, 1912 (sub gen. *Balsamocitrus).*

bas.: *Citrus paniculata* Schumach. & Thonn.

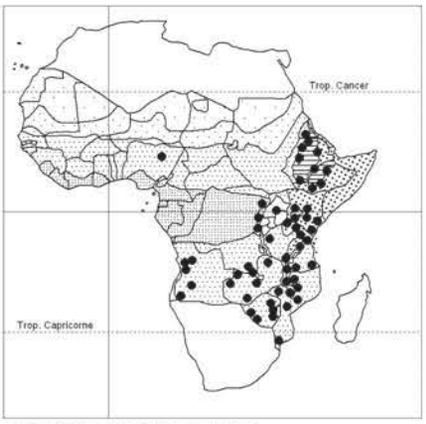
syn.: *Balsamocitrus paniculata* (Schumach. & Thonn.) Swingle; *Aegle barteri* Hook. f.; *Limonia warneckei* Engl.

Shrub or tree, evergreen, to 16 m tall resembling a "citrus"; trunk brief 1,5-2 m long before branching, 25-40 cm Ø, with numerous spiny branches in a rounded crown like an orange tree; bark smooth; bark slash aromatic; spines axillary, 2-6 cm long; branchlets grey-green; leaves 3-foliolate, but also some simple or 2-foliolate, with 3-5 pairs of lateral veins, petiole tip swollen or articulated; laminae glabrous, entire, with numerous translucent glands; flowers white, fragrant, in short axillary cymes, stamens 12-20, free; fruit like a hard orange, 9-12 cm Ø, containing a yellow mucilage (used as lime).

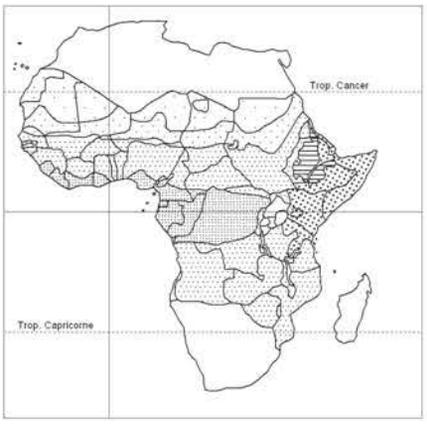
Savanna, (rarely) dry forest and edges; gallery forest; secondary thickets on coastal plains; also planted in villages (growing easily from seed); to c. 500 m alt.

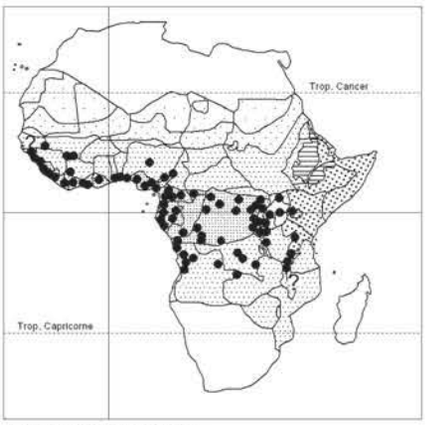


Rhoicissus tomentosa

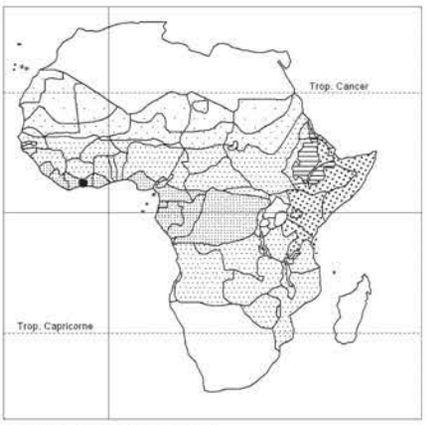


Rhoicissus tridentata

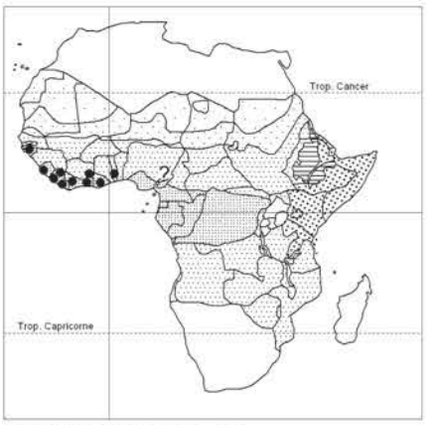




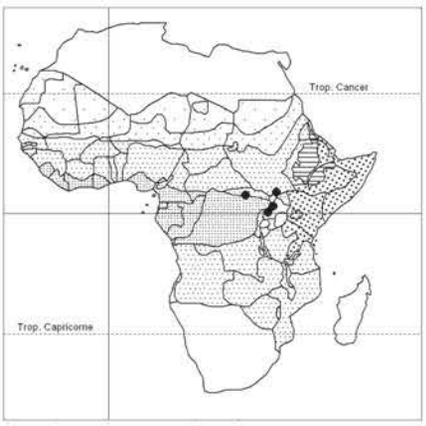
Leea guineensis



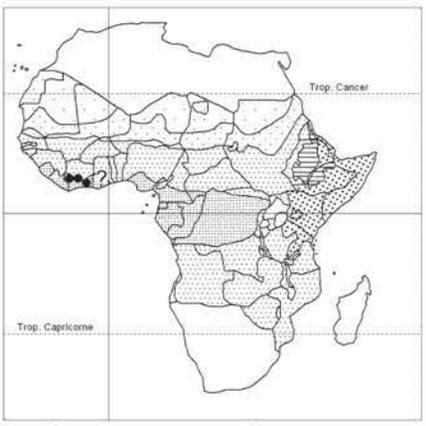
Aeglopsis beguei



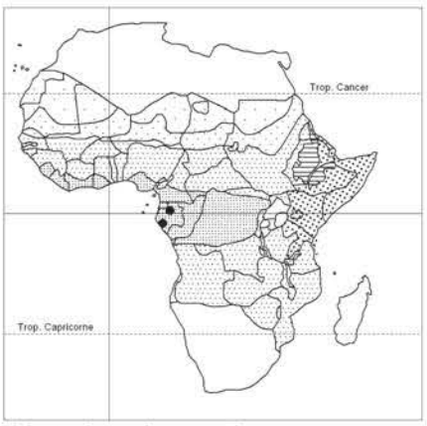
Aeglopsis chevalieri



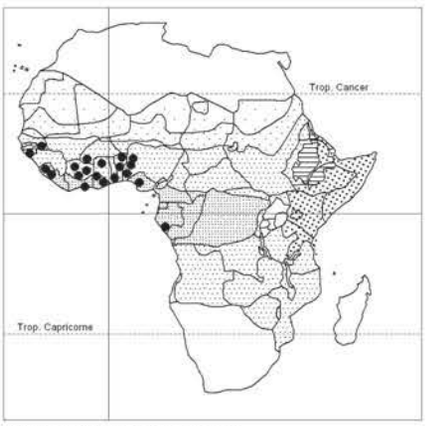
Aeglopsis eggelingii



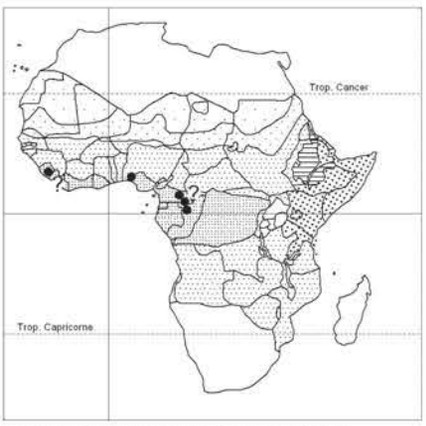
Aeglopsis mangenotii



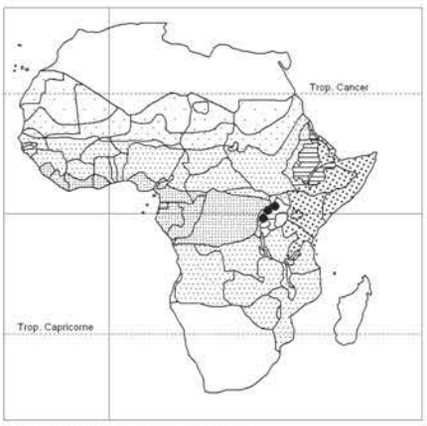
Afraegle gabonensis



Afraegle paniculata



Balsamocitrus camerunensis



Balsamocitrus dawei

AFRAEGLE

IMPERFECTLY KNOWN SPECIES:

Afraegle asso Engl. – Tree c. 30 m; leaves 3-foliolate, leaflets broadly ovate; fruit large; flowers unknown. In forest. Collected by Mildbraed in S Cameroon (Moloundou); type in B destroyed. Similar ecological conditions exist in nearby Centr. Afr. Rep. (Mbaïko, Boukoko) where Tisserant collected a specimen (N° 2119) which Letouzey (in Fl. Cameroon 1: 146-147, 1963) considers perhaps conspecific. Already Engler (in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 761, 1915) suggested it to be a *Balsamocitrus.* – This taxon is also reported from Equatorial Guinea by Aedo & al. (Bases docum. Fl. Guinea Ecuat.: 293, 1999), based on Guinea 1946: 301.

Afraegle mildbraedii Engl. is known from Bioko/ Fernando Poo.

(AFRAURANTIUM)

Genus described by A. Chevalier (Rev. Bot. Appl. Agric. Trop. 29: 480, 1949) based on *A. senegalensis* A. Chev., l. c. and icon. o. c.: 477), a tree with slender branchlets, small axillary spines and persistent 1-foliolate leaves, and small dry lemon-like fruits; flowers unknown; growing in forest patches near Dakar, Senegal; collected by Mangenot in 1949. – In his description Chevalier noted that there is a certain resemblance with *Citrus aurantifolia.*

In 1949 and 1950 Chevalier visited the locus classicus, which he describes as a "half-wild wooded savanna" where a few *Afraurantium* trees grew amongst introduced species such as *Strophanthus sarmentosus.* The site seemed to be an old cultivation. Chevalier then determined his new species as belonging to *"Citrus bergamia* Risso & Poiteau" and presented a full description (Rev. Int. Bot. Appl. Agric. Trop. 31: 233-234, 1951). He had also received flowers of his *"Afraurantium senegalensis"* from Cape Verde Isl. which confirmed his re-determination. He then proposed a new name for his plant, a sour orange: *"Citrus aurantium* L. var. *bergamia* Hook. f. fa. *senegalensis* (A. Chev.) A. Chev.", i.e.

Citrus × aurantium L. (pro sp.) subsp. **bergamia** (Risso & Poiteau) Wight & Arn. ex Engl. in Natürl. Pflanzenfam. 3/4-5: 198, 1897, fa. **senegalensis** (A. Chev.) A. Chev. (names based on: *Citrus bergamia* Risso & Poiteau, and *Afraurantium senegalensis)* A. Chev., respectively; syn.: *Citrus × aurantium* L. var. *bergamia* Loisel. in Duhamel du Monceau, Traité arbr. arbust., nouv. éd. 7: 98, pl. 26, 1819).

(ARALIOPSIS)

SYNONYMS:

Araliopsis soyauxii Engl. = **Vepris soyauxii**

soyauxii auctt. = **V. tabouensis**

tabouensis Aubrév. & Pellegr. = **V. tabouensis**

tabouensis auctt. = **V. soyauxii**

trifoliolata Engl. = **V. trifoliolata**

(ASPIDOSTIGMA)

Aspidostigma acuminatum Hochst. = **Vepris nobilis**

BALSAMOCITRUS / *2*

Tropical African genus.

Balsamocitrus camerunensis Letouzey; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 708, 2006.

syn.: *Aeglopsis* ? sp. in Fl. W. Trop. Afr., ed. 2, 1(2): 687, 1958.

Tree or sarmentous shrub to 5 m tall; trunk c. 10-15 cm dbh; branchlets reddish, zigzag, with spines often paired, young ones slightly hairy; leaves simple, sometimes (2-)3-foliolate, petiole not winged, leaflets with 7-8 pairs of lateral veins; median leaflet often larger than the lateral ones; flowers white, in small axillary clusters, stamens 8-10; fruit pear-shaped, hard-shelled, > 3 cm Ø.

Evergreen rain-forest, in understorey, also on mountains.

Similar to *Afraegle paniculata* but with larger mostly simple leaves with >6 pairs of lateral nerves and smaller pear-shaped fruits. Ecology also different.

B. dawei Stapf – Icon.: Swingle in The Citrus Industry 1: 414, 1967 (partial).

Deciduous tree 6-21(-25) m, sometimes branching low and then double-stemmed; bark rough, dark grey or brown; twigs rather thick, drying black, young ones hollow or spongy; unarmed or usually armed with single or paired axillary spines 1-4,3 cm long, if in pairs one is shorter than the other; leaves 3-foliolate, glabrous, gland-dotted, variable in size but terminal leaflet larger than the laterals; lateral nerves 7-10 pairs; flowers white (-yellowish), in axillary panicles 2-6,5 cm long; stamens 8-10; fruit round, aromatic, yellow-orange, hard-shelled, 9-12 cm Ø.

Rain-forest; 600-1500 m alt.

Easily propagated by grafting on seedlings of *Afraegle chevalieri.*

SYNONYMS:

Balsamocitrus chevalieri (Swingle) A. Chev. = **Aeglopsis**

gabonensis Swingle = **Afraegle**

paniculata (Schumach. & Thonn.) Swingle = **Afraegle**

CALODENDRUM / *2*

E & S African genus.

TRINDER-SMITH, T. H. & al. (2007). Plastid DNA sequences reveal generic paraphyly within Diosmeae (Rutoideae, Rutaceae). *Syst. Bot.* 32: 847-855.

Calodendrum capense (L. f.) Thunb. – Cape Chestnut. – Icon.: Engler in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 751, 1915; Fl. Zambes. 2/1: 182, 1963; Beentje, Kenya trees, shrubs & lianas: 366, 1994; V. Thomas & R. Grant, Sappi tree spotting, highveld, rev. ed.: 73-75, 2002; White & al., Evergreen forest fl. Malawi: 509, 2001.

bas.: *Dictamnus capensis* L. f.

Tree 5-20 m, single-trunked; bark grey, smooth; crown dense, rounded, branches opposite; young branchlets hairy, flexible, becoming glabrous, stiff; leaves ellipsoid, simple, large (6-17 × 3,5-10 cm), opposite, (stellate-)hairy when young, glabrescent, clustered towards tips of twigs, margins wavy; flowers pink, large, sweet-scented, in panicles to 15 cm long; stamens 5 alternating with petaloid staminodes longer than the 2-3,5 cm long petals; fruits a plum-like *warty hard capsule* 2-4 cm Ø, splitting from the base to expose black oily seeds.

Dry upland evergreen forest (remnants); rain-forest; evergreen riverine forest; 700-2300 m alt.

S. Africa, Swaziland.

Very attractive easily grown garden tree, ornamental shade-tree. Also cultivated in Ethiopia and possibly wild in the S part.

Can be confused with *Dais cotinifolia (Thymelaeaceae),* with leaves, flowers, and distribution similar.

C. eickii Engl.

Deciduous tree or shrub to 14 m tall; young branches, leaves and inflorescences tomentose; leaves simple, oblong-elliptic (8-23 × 4-10 cm); flowers small (petals 0,8-1,6 cm long), greenish white or mauve in 10-15 cm long panicles; stamens as long as petals, staminodes slightly longer than petals; capsule 5-8 cm Ø, long-spiny.

Upland dry evergreen forest; 1700-2000 m alt. – Known only from W. Usambara Mts.

[CHLOROXYLON]

[**Chloroxylon swietenia** (Roxb.) DC.] – Satinwood. – Icon.: Engler in Natürl. Pflanzenfam., ed. 2, 19a: 295, 1931.

bas.: *Swietenia chloroxylon* Roxb. *(Meliaceae).*

Tree to >8 m, much-branched; leaves alternate, pinnately compound with 18-40 asymmetrical leaflets c. 2,5 cm long.

Native of India, Sri Lanka.

Sometimes cultivated.

CITROPSIS / *6* (or *4*)

Tropical African genus, closely related to *Citrus.* Partly poorly known: *C. angolensis, C. letestui, C. noldeae.* One species with no ripe fruit, 1 species without fruit, for 1 species ecology unknown, 2 species known only from type, and 1 from 2 collections.

Citropsis angolensis Exell – Angola Cherry-Orange.

Tree to c. 4,5 m, shortly branched from the base; branchlets brown, spineless; leaves 3-foliolate, glabrous, petioles broadly winged; flowers 4-merous, in axillary clusters; stamens 10, filaments free, glabrous; ovary 4-locular, young fruits 8 × 5 mm.

Ecology not stated, only "along the road".

Swingle (in The Citrus Industry 1: 304-305, 1967) notes that "in spite of the general resemblance of its leaves to those of *C. schweinfurthii,* it is in fact a very distinct species, differing … in its spineless twigs, in its longer ovary and its longer, more slender style arising from the center of the top of the ovary (not from one side as in *C. schweinfurthii),* and, … in its very different, noncupulate disk, which does not enclose the base of the ovary…". He adds that when the flowers are studied *C. angolensis* is even distinguished from all the other known species of *Citropsis.*

Exell (J. Bot. 70, Suppl. Polypet.: 222, 1932) states, however, that the Gossweiler collection n° 4454) had been identified in the Herbarium BM as *Citropsis schweinfurthii* by Tanaka. – Letouzey in Fl. Cameroon 1: 135, 1963 treats *C. angolensis* as a probable synonym of *C. articulata.*

C. articulata (Spreng.) Swingle & M. Kellerm. – African Cherry-Orange – Icon.: Engler in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 348, 1931 (sub nom. syn.); Irvine, Woody pl. Ghana: 492, 1961; Fl. Cameroun 1: 137, 1963; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 709, 2006.

bas.: *Citrus articulata* Spreng.

syn.: *Citropsis preussii* (Engl.) Swingle & M. Kellerm.; *C. schweinfurthii* (Engl.) Swingle & M. Kellerm.; *C. mirabilis* A. Chev.; *Limonia preussii* Engl.; *L. schweinfurthii* Engl.; *L. mirabilis* A. Chev.; *L. poggei* Engl., incl. var. *latialata* De Wild.; *L. ugandensis* Bak. f.; *L. demeusei* De Wild.; *Citropsis latialata* (De Wild.) Swingle & M. Kellerm.; ? *C. gilletiana* Swingle & M. Kellerm.; ?? *C. angolensis* Exell (cf. under these two species).

Shrub or tree 2,5-7 m tall, branched from the base, thorny, glabrous; stem ca. 23 cm Ø; branchlets slender, cylindrical; thorns 5-25 mm long; leaves 7-35 cm long, coriaceous, gland-dotted, with (3-)5(-7) leaflets up to 20 cm long, rhachis broadly winged (5-20 mm wide on each side); flowers greenish white-cream, 4-merous, very fragrant, in small clusters on short lateral branches or from sessile buds on leafless branches of the previous year; petals 18 × 4 mm; fruit round, like a small *Citrus,* c. 2,5 cm Ø.

Rain-forest; dry (semi-)deciduous and secondary forests; forest edges; along rivers; 480-1550 m alt.

Seems to be endangered by extinction in Uganda as the root is considered aphrodisiac. The bark is used in medicine.

C. daweana Swingle [& M. Kellerm.] – Icon.: Fl. Zambes. 2(2): 194, 1963.

syn.: *Hesperethusa villosa* Tanaka, nom. nud., and O. B. Mill. 1952, sine descr. lat.

Shrub or tree to 10 m tall, aromatic; young branches, leaves, spines and inflorescences pubescent or puberulous; spines solitary, short, straight, 1-2,5 cm long; leaves 6-13 cm long, alternate, petiole and rhachis with wings 1-4 mm broad on each side; lateral leaflets 2-4 pairs, 2-6 × 0,7-2,5 cm, greyish pubescent, densely gland-dotted; flowers 4-merous, cream in small clusters on lateral branches or from sessile buds on leafless branches of the previous year; petals 4-6 mm long, stamens 8, shorter than petals; fruit c. 1,5 cm Ø, punctate, green turning orange.

Coastal woodland, bushland or thicket (in the hotter and drier regions); 200-1000 m alt.

Caprivi Strip (very restricted, on river banks and dunes; Curtis & Mannheimer, Tree atlas Namibia: 258, 2005), Botswana, S. Africa.

C. gabunensis (Engl.) Swingle & M. Kellerm., incl. var. *lacourtiana* (De Wild.) Swingle & M. Kellerm. – Icon.: Engler in Natürl. Pflanzenfam., ed. 2, 19a: 348, 1931; J. Arnold Arbor. 21/1: pl. 3 figs. 1-5, 1940 (sub nom. *C. tanakae);* Aké Assi in Boissiera 58: 111, 2002; Hawthorne & Jongkind, Woody pl. W. Afric. forests: 709, 2006 (partial).

bas.: *Limonia gabunensis* Engl.

CITROPSIS GABUNENSIS

syn.: *L. lacourtiana* De Wild.; *Citropsis tanakae* Swingle & M. Kellerm.; *C. gabonensis* Pierre in herb.; *C. zenkeri* Engl.; *C. citrifolia* Tanaka; *C.* sp. nr. *gabunensis* sensu F.W.T.A., ed. 2, 1: 688, 1958; *Aeglopsis chevalieri* Swingle var. *tanakae* (Swingle & M. Kellerm.) A. Chev.

Shrub or tree 1,5-6 m tall; trunk c. 7 cm Ø; branchlets slender, 1,5-3 mm Ø, with (single or) paired spines 1-4 cm long; leaves glabrous, gland-dotted, 1-3(-5)-foliolate, 15-20 cm long, leaflets variable in size (1-foliolate leaves very large, 7-15 × 3-7 cm), 3,5-8 × 1,5-5 cm, acuminate, with a swollen joint between stalk and lamina; petiole and rhachis very narrowly winged (wings absent where 1-foliolate); terminal leaflet much larger than laterals; flowers white, small, 4-merous, c. 1-1,3 cm Ø, in short axillary clusters; calyx lobes with a single oil gland near apex; fruit round, 1,5-2,5 cm Ø, hard, yellowish green to orange-red.

Wet evergreen forest, in understorey; 50-900 m alt. Uncommon.

Very variable in number, shape and size of leaflets.

C. letestui is very similar.

(**C. gilletiana** Swingle & M. Kellerm.) – Icon.: Swingle in Citrus Industry 1: 307, 1967.

Tree 8-10 m tall, glabrous, with large 3-5-foliolate leaves, rhachis winged; flowers large, c. 2,5 cm Ø; fruit c. 2,5 cm Ø.

The type tree was grown in a greenhouse of the Bureau of Plant Industry, Washington DC., from seeds sent by J. Gillet in 1913 from Kisantu, Zaire.

Probably conspecific with *C. articulata* (see under this species above).

Not mapped.

C. letestui Pellegr.; Walker & Sillans, Pl. utiles Gabon: 378, 1961. – Icon.: Pellegrin, Fl. Mayombe 1: 43, 1924.

Tree 3 m tall; branches grey-green, slender, glabrous, ±spiny; spines 1 or 2, 2-3 cm long; leaves 3(-5)-foliolate, petiole not winged, articulated with the rhachis segment; leaflets 6-12 × 3,5-7,5 cm, acuminate; flowers white, 4-merous, glandular, petals 7 mm long; ovary glandular, ±globose, yellow, c. 2 cm Ø.

Slopes of hills, never in wet situations.

Very close to *C. gabunensis,* and probably only a variant of the latter, as noted by Letouzey in Fl. Gabon 6: 97-98, 1963. Also similar to *C. noldeae.*

Known only from the type collected in 1918.

C. noldeae Exell & Mendonça – Icon.: Bol. Soc. Brot., Sér. 2, 25: pl. 1 facing p. 106, 1951.

Tree or shrub; branchlets spiny, puberulous when young, glabrescent; spines solitary 1,5-2 cm long; leaves 3-5-foliolate; petiole and rhachis grooved, hardly winged; leaflets 3-7 × 1,4-5 cm, gland-dotted; flowers 4-merous, small, in short axillary clusters, petals 6-8 mm long; ovary glabrous, 4-locular.

Ecology unknown; forest?; c. 1200 m alt.

Known from 2 gatherings from the same locality? (Nolde 491, 492) collected c. 1930.

Similar to *C. letestui.*

* * *

CITROPSIS

TAXA OF UNCERTAIN STATUS:

Citropsis klainei Pierre ms; shrub or small tree; in Walker & Sillans, Pl. utiles Gabon: 378, 1961.

C. sp. sensu Thulin in Fl. Somal. 2: 180, 1999.

Shrub 1,5-2 m tall with pubescent young branchlets; spines c. 2 cm long; leaves 3-foliolate, gland-dotted, petiole narrowly winged; terminal leaflet larger (1,5-4 × 0,7-2,5 cm) than laterals, margins crenate; flowers and fruit unknown.

Semi-deciduous bushland, sometimes in coarse sandy loam; 50-75 m alt.

Known from 2 gatherings in S Somalia (S3: 1°27' N × 42°57' E, and 1°04' S × 41° 29' E). Apparently a member of *Citropsis,* but fertile material needed for identification.

SYNONYMS:

Citropsis citrifolia Tanaka = **Citropsis gabunensis**

gabonensis Pierre, ms. = **C. gabunensis**

sp. near *gabunensis* sensu F.W.T.A., ed. 2 = **C. gabunensis**

latialata (De Wild.) Swingle & M. Kellerm. = **C. articulata**

mirabilis A. Chev. = **C. articulata**

preussii (Engl.) Swingle & M. Kellerm. = **C. articulata**

schweinfurthii (Engl.) Swingle & M. Kellerm. = **C. articulata**

tanakae Swingle & M. Kellerm. = **C. gabunensis**

zenkeri Engl. = **C. gabunensis**

[CITRUS]

A list of cultivated *Citrus* figures in Enum. 2: 198, 1992.

BAYER, R. J. & al. (2009). A molecular phylogeny of the orange subfamily (Rutaceae: Aurantioideae) using nine cpDNA sequences. *Amer. J. Bot.* 96: 668-685.

CHAPOT, H. (1950). Pamplemousses, pomelos ou grape-fruits et tangelos. *Rev. Int. Bot. Appl. Agric. Trop.* 30: 62-75 [drawings of leaves and fruits].

MABBERLEY, D. J. (1997). A classification for edible Citrus (Rutaceae). *Telopea* 7: 167-172.

MARTINS, E. S. (2002). *Flora de Cabo Verde, plantas vasculares: 62. Rutaceae.* Centro de Botânica, Instituto de Investigação Cientifica Tropical, Lisboa.

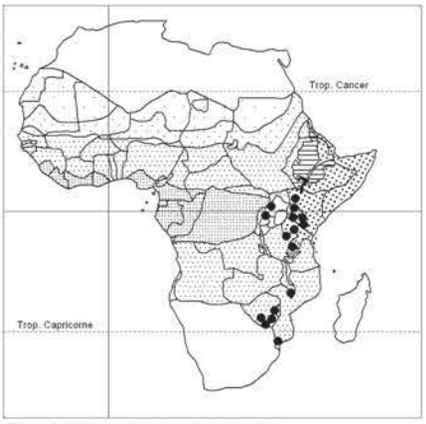
SCHIRAREND, C. & M. HEILMEYER (1996). *Die Goldenen Äpfel. Wissenswertes rund um die Zitrusfrüchte*. Förderkreis der naturwissenschaftlichen Museen Berlins e. V. & Freie Universität Berlin, Botanischer Garten und Botanisches Museum Berlin-Dahlem. 96 pp.

Good keys are found in:

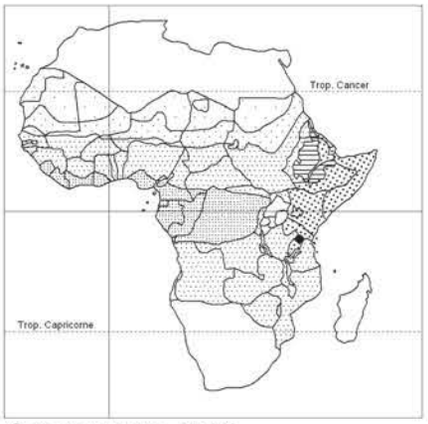
- Flora of Tropical East Africa, Rutaceae: 5, 1982.
- Flora of Ethiopia 3: 430, 1989.
- Akoegninou & al., Flore analytique Bénin: 911, 2006.
- Lisowski, Fl. Rép. Guinée 1: 327, 2009.

* * *

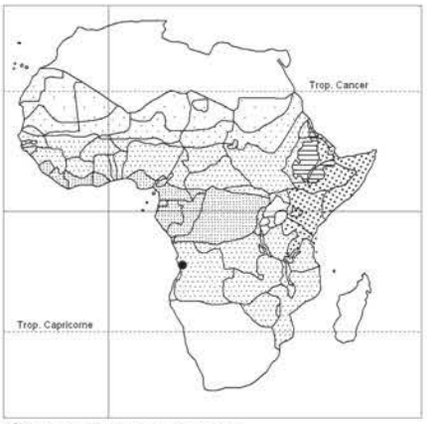
"The taxonomy of the citrus fruits is complicated by hybridity and apomixis, with many stable hybrid lines being accorded species status, so that the number of edible species recognised in the genus *Citrus* L. (type: *C. medica* L., the citron) varies from 1 to 162, though Swingle (1944) is widely followed. He recognises 12 species with edible fruits (subg. *Citrus* and six without (subg. *Papeda* (Hassk.) Swingle)." …



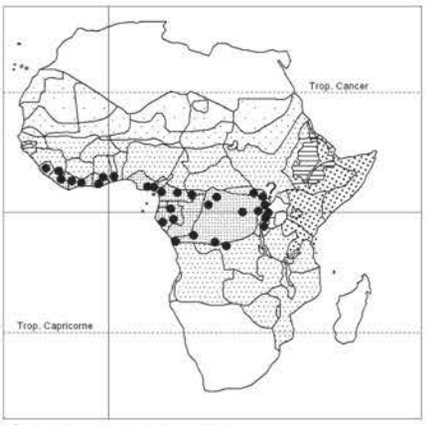
Calodendrum capense



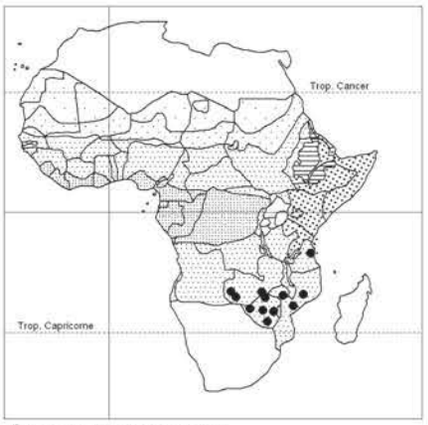
Calodendrum eickii



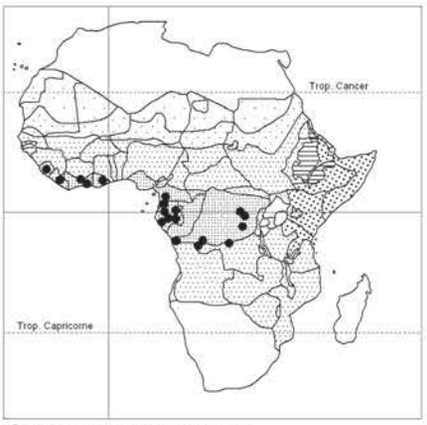
Citropsis angolensis



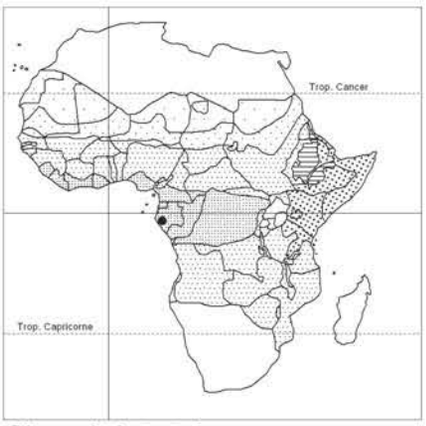
Citropsis articulata



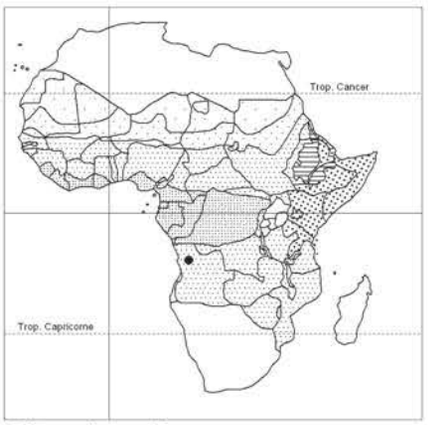
Citropsis daweana



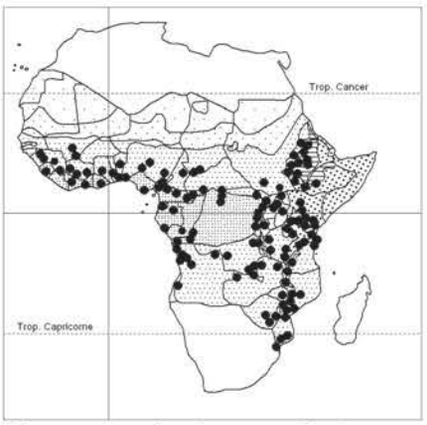
Citropsis gabunensis



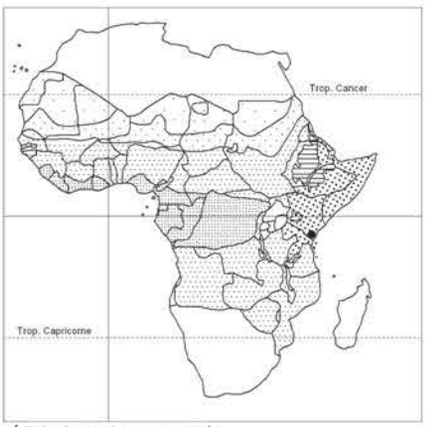
Citropsis letestui



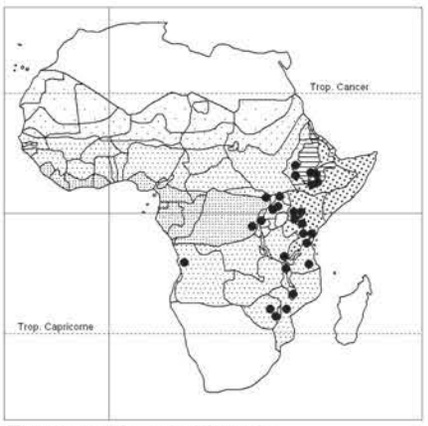
Citropsis noldeae



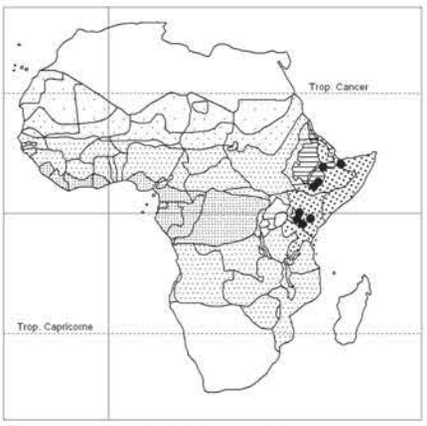
Clausena anisata var. anisata



(Diphasia sp. A)



Fagaropsis angolensis



Fagaropsis hildebrandtii

"Intensive chemotaxonomic studies … indicate that subg. *Citrus* comprises merely four known allopatric wild species – the tropical… *C. halimii* B. C. Stone (Malay Peninsula and Borneo) and *C. maxima* (Burm.) Merr. (pomelo, pummelo, SE Asia) and the subtropical *C. medica* L. (citron) and *C. reticulata* Blanco (mandarin, tangerine). From enzymatic work it has been shown that from the last three of these and two unknown plants, all commercial edible citrus fruits presently referred to the genus *Citrus* have been derived through selection and hybridisation (usually unintentional), followed by further selection of 'agamic complexes'."

… "where there is certainty, it is more informative to use a Linnean system, where species and hybrid names for citrus crops indicate their presumed relationship to wild plants. The oldest name for the hybrid group involving oranges (pomelo-mandarin crosses) is *C.* × *aurantium* L. and that for the wild tangerine (i.e. mandarin) is *C. reticulata* Blanco, so that the examples above become *C.* × *aurantium* L. 'Valencia' and *C. reticulata* Blanco 'Dancy', to which the parenthetical Group can be added.

The bulk of commercial edible citrus presently referred to the genus *Citrus* can now be accommodated in a Linnaean scheme …" (Mabberley, o. c.: 167, 169).

Citrus × **aurantiifolia** (Christm.) Swingle – Lime, Cédratier – Hybrid *C. maxima* × ? – Icon.: Fl. Ethiopia 3: 431, 1989.

bas.: *Limonia aurantiifolia* Christm.

syn.: *Citrus medica* L. var. *limon* L.; *C.* × *limon* (L.) Osbeck var. *abyssinica* Riccob.

Much branched tree to 5 m, usually with numerous short sharp spines; leaves ovate-elliptic, 4-8 × 2-5 cm, crenulate, petiole narrowly winged; flowers white, small, petals c. 1 cm long; fruit ±ovoid, 3,5-6 cm Ø, peel thin, green-yellow, difficult to remove; pulp green, acid.

Widely cultivated in E part of Africa for jam and perfume, in Ethiopia up to 2500 m alt.; also found there naturalized in e.g. riverine bushland. In Angola: cultivated and escaped (Figueiredo & Smith, Pl. Angola: 154, 2008).

C. × **aurantium** L. – Sour or Seville Orange, etc. – Hybrid *C. maxima* × *C. reticulata;* Figueiredo & Smith, o.c.: 155.

syn.: *C. aurantium* L. var. *sinensis* L.; *C.* × *sinensis* (L.) Osbeck; *C.* × *paradisi* Macfad.; *C.* × *nobilis* Lour.; *C. bigarradia* Lois.

Under this name Mabberley suggests a classification according to the parental features expressed after backcrosses with one or the other parent of the original hybrids.

– Sour Orange Group, Sour or Seville Oranges with more features of *C. maxima.* Tree to 10 m with slender thorns; leaves ovate, 7-10 × 4-7 cm, petiole rather broadly winged; flowers large; fruit subglobose, orange, peel thick, rough, orange-red, pulp orange very sour.

Widely cultivated for preserves, flavouring, medicines. Often used as rootstock for plantation citrus.

– Sweet or Common Orange Group, *C.* × *sinensis*, with more of *C. reticulata* features. Tree 6-12 m; twigs angled when young, often with stout spines; leaves ovate-elliptic, 5-15 × 2-8 cm, petiole narrowly winged, articulated; flowers often single, large (2-3 cm Ø); petals ±5; fruit depressed-globose, 5-8 cm Ø, peel adherent, 5 mm thick, orange (or green); pulp sweet, juicy. The 3 main forms are: with normal fruit, navel oranges with a second row of carpels, and blood oranges with red(-streaked) pulp.

Widely cultivated in less hot regions, for fruit eaten raw, or prepared. – Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 89, 2007.

– Grapefruit Group *C.* × *paradisi,* a backcross between an orange and *C. maxima* made in Barbados in the 18th century. – Icon.: Akoegninou & al., Fl. analyt. Benin: 912, 2006. – Tree 10-15 m tall; crown spreading; twigs glabrous; leaves pale green when young, ±elliptic, 8-10 × 5-6 cm, petiole broadly winged; flowers 4-5 cm Ø, petals 5; fruit globose (-pear-shaped), 8-15 cm Ø, peel thin, greenish or pale yellow, pulp mildly bitter.

Widely cultivated, used as dessert fruit and for juice.

– Tangor Group, *C.* × *nobilis*; vars. are backcrosses with *C. reticulata*, many called mandarins in commerce (not the true mandarin). Tree 2-8 m, sometimes spiny; fruit depressed globose, small, peel thin, orange.

– Tangelo Group, *C.* × *tangelo* J. W. Ingram & H. E. Moore; vars. are further crosses between grapefruit and *C. reticulata.*

Afraurantium senegalensis A. Chev. should be **Citrus** × **aurantium** L. subsp. **bergamia** (Risso & Poiteau) Wight & Arn. fa. **senegalensis** according to A. Chevalier (cf. under *Afraurantium* above).

C. × **limon** (L.) Osbeck – Lemon. – Hybrid *C. medica* × ? – Icon.: Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 88, 2007.

bas.: *C. medica* L. var. *limon* L.

syn.: *C. limonum* Risso; *C. limonia* var. *limonia* sensu Cufod., non Osbeck

Spiny tree 3-6 m; leaves ovate, 5-10 × 3-6 cm, serrate, petiole margined, not winged, with a distinct articulation with the blade; flowers 4-5 cm Ø, petals pink in bud; stamens 20-40; fruit ellipsoid, pale yellow; peel thick, adherent; pulp very sour.

Widely cultivated for (at lower alt. in e.g. Ethiopia) as source of lemon-juice; also grown as live hedge; also naturalised (e.g. on the banks of tributaries of the Zambeze R., "floresta dos limoeiros").

C. maxima (Burm.) Merrill – Pomelo ("pummelo") Shaddock.

bas.: *Aurantium maximum* Burm.

syn.: *C. aurantium* L. var. *grandis* L.: *C. grandis* (L.) Osbeck; *C. aurantium* L. var. *decumana* L., nom. superfl. pro var. *grandis.*

Spiny tree 5-15 m; branchlets pubescent; leaves 5-20 × 2-12 cm, petiole broadly winged; flowers 3-7 cm Ø, cream; fruit globose or pear-shaped, yellow, 10-30 cm Ø; peel thick, ± yellowish; pulp yellow or pink, sweet.

Cultivated in W & E parts of Africa; used as dessert fruit, preserves (peel candied), juice.

C. medica L. – Citron.

Shrub or tree to 3 m tall of irregular habit; spines stout; leaves elliptic, 8-20 × 3-9 cm, serrate, petiole short, wingless, not articulated with blade; flowers 3-4 cm Ø, tinged pink; stamens 30-40; fruit irregularly cylindrical-ovoid, bumpy, 5-10-20 cm long, with terminal nipple; peel very thick, yellow; pulp sour or sweetish, often lacking.

Widely cultivated for medicine, preserves (peel candied).

Traditionally believed to be native in India but in studies by Bayer & al. (o.c.: 668) clustering with species from New Guinea, Australia and New Caledonia.

C. reticulata Blanco – Tangerine, true mandarin, satsuma, clemantine.

syn.: *C. deliciosa* Ten.; *C. nobilis* Andrews, non Lour.

Tree (or shrub) 2-8 m tall, sometimes with spines; leaflets ±ovate, 4-8 × 1,5-5 cm, crenate; petiole narrowly winged or margined; flowers 1,5-2,5 cm Ø, petals 5, stamens ±20; fruit depressed-globose, yellow or orange-red; 5-8 cm Ø; peel thin, loose; pulp sweet, juicy, orange.

Widely cultivated for fruit eaten raw and juice.

Considered to be the hardiest of the *Citrus* species.

SYNONYMS:

Citrus articulata Spreng. = **Citropsis**

aurantium L. var. *decumana* L. and var. *grandis* L. = **Citrus maxima** var. *sinensis* L. = **C.** × **aurantium**

bigarradia Lois. = **C.** × **aurantium**

deliciosa Ten. = **C. reticulata**

grandis (L.) Osbeck = **C. maxima**

limon (L.) Osbeck var. *abyssinica* Riccob. = **C.** × **aurantifolia**

limonia var. *limonia* sensu Cufod., non Osbeck = **C.** × **limon**

limonum Risso = **C.** × **limon**

medica L. var. *limon* L. = **C.** × **limon**

nobilis Andrews = **C. reticulata**

nobilis Lour. = **C.** × **aurantium** (Tangor Group)

paniculata Schumach. & Thonn. = **Afraegle**

paradisi Macfad. = **Citrus** × **aurantium** (Grapefruit Group)

x *sinensis* (L.) Osbeck = **C.** × **aurantium** (Sweet Orange Group)

x *tangelo* J. W. Ingram & H. E. Moore = **C.** × **aurantium**

CLAUSENA / *1*

("Claussena")

Palaeotropical genus of 15 species present in SE Asia from Nepal, India and Sri Lanka through Malesia to New Guinea and NE Australia (map by Molino in Bull. Mus. Natl., Sér. 4, Sect. B, Adansonia 16: 114, 1994). The African species, *C. anisata,* is considered by Molino, o. c., as an Asiatic species that "recently invaded Africa".

KÉMEUZÉ, V. A. & al. (2009). Variation altitudinale de la distribution des plantes à activité insecticide dans la forêt communautaire de Kilum-Ijim: cas de Clausena anisata (Willd.) Hook. f. ex-Benth. (sic!). *Bois Forêts Trop.* 299/1: 71-77.

Clausena anisata (Willd.) Hook. f. ex Benth. 1849 var. **anisata** – Icon.: Aubréville, Fl. forest. Soudano-guinéenne: 363, 1950; Fl. W. Trop. Afr. 1(2): 686, 1958; Fl. Zambes. 2(1): 192, 1963; Troupin, Fl. Rwanda 2: 247, 1983; Beentje, Kenya trees, shrubs & lianas: 366, 1994; Akoegninou & al., Fl. analyt. Bénin: 913, 2006; White & al., Evergreen forest fl. Malawi: 510, 2001; Latham, Pl. visited by bees … Umalila, s. Tanz., ed. 3: 49, 2007; Bois Forêts Trop. 299: 71-73, 2009; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 394, 2009.

bas.: *Amyris anisata* Willd.

syn.: *Clausena anisata* (Willd.) Hook. f. ex Benth. var. *mollis* Engl. 1895, var. *mollis* A. Chev. 1920, var. *abyssinica* Engl., var. *multijuga* Welw. ex Hiern and var. *pubescens* Engl.; *C. anisata* subsp. *abyssinica* (Engl.) Engl.; *C. anisata* (Willd.) Oliv. 1861 nom. superfl.; *C. pobeguinii* Pobég.; *C. dentata* (Willd.) M. Roemer, incl. var. *pubescens* (Wight & Arn.) Tanaka, var. *robusta* Tanaka, var. *henryi* Swingle, var. *dunniana* (A. Léveillé) Swingle, and var. *nana* (Roxb.) Balakr.; *C. willdenowii* Wight & Arn., nom. superfl.; *C. inaequalis* (DC.) Benth., incl. var. *abyssinica* Engl.; *C. nana* (Roxb.) Wight & Arn.; *C. abyssinica* (Engl.) Engl.; *C. wightii* M. Roemer; *C. bergeyckiana* De Wild. & T. Durand; *C. dunniana* A. Léveillé; *C. odorata* C. C. Huang; *C. vestita* D. D. Tao; *Rhus obliqua* E. Mey. in Herb. Drège *(Anacardiaceae),* non Thunb. *(= Ptaeroxylon*, *Ptaeroxylaceae); Cookia dulcis* Beddome; *Fagarastrum anisatum* (Willd.) G. Don; *Amyris inaequalis* (DC.) Spreng.; *Elaphrium* ? *inaequale* DC.; *Myaris inaequalis* (DC.) C. Presl; *Clausena abyssinica* (Engl.) Engl. (full synonymy given by Molino, o. c.: 129-130).

Shrub, tree (or liane) 1-10(-20) m tall, unarmed, deciduous; bark grey, mottled; crown broad; young branches and leaves pubescent, glabrescent; leaves 6-28 cm long, strongly smelling of anise or lemon, imparipinnate, of 11-37 asymmetric glandular-dotted leaflets; flowers white or cream, sweet-scented, small, in 20-35 cm long panicles; drupe shining purple or black, 4-8 mm Ø.

Evergreen fringing forest; dense forest; (tall) moist or dry forest (margins and clearings); sometimes forming dense thickets; savanna; (secondary) evergreen bushland; riverine; abandoned *Tectona* and *Gmelina* plantations; bush steppe, sometimes wooded grassland; mountain meadows; in bushy rocky situations; roadside vegetation; termite mounds; coastal thickets; *Croton-Macaranga* forest, common in forest undergrowth; upland rainforest with *Albizia, Macaranga, Croton, Ocotea;* in and at the edges of *Albizia* forest; 0-3000 m alt.

Variable species.

Bioko/ Fernando Poo; S. Africa, Swaziland; India, Sri Lanka, Bangladesh, Burma.

Var. **paucijuga** (Kurz) Molino in E India – China – Indo-China.

Kokwaro (Fl. Trop. E. Afr., Rutaceae: 45, 1982) has suggested that plants described as *Zanthoxylum engleri* P. G. Waterman based on *Fagara tenuifolia* Engl. could be *Clausena anisata* (Mt. Meru, Mt. Kilimanjaro).

[**Clausena lansium** (Lour.) Skeels]

Evergreen tree 3-12 m, with 15-40 cm long leaves of 5-11 leaflets, and with yellow edible pubescent fruits 1,5-3 cm Ø; sometimes cultivated.

Native of SE Asia.

SYNONYMS (cf. also above under *C. anisata):*

Clausena hildebrandtii Engl. = **Fagaropsis**

impunctata Welw. ex Hiern = **Harrisonia abyssinica**

inaequalis (DC.) Benth., incl. var. *abyssinica* Engl. = **Clausena anisata**

melioides Hiern = **Fagaropsis angolensis**

Clausenopsis angolensis (Engl.) Engl., incl. var. *mollis* Suesseng. = **Fagaropsis angolensis**

gillettii Chiov. = **F. hildebrandtii**

hildebrandtii (Engl.) Milne-Redh. = **F. hildebrandtii**

(DIPHASIA)

Genus included by Mziray (in Acta Univ. Upsal., *Symb. Bot. Upsal.* 30/1, 1992) in *Vepris.* However, he maintains 2 insufficiently known taxa under *Diphasia* (o.c.: 77).

Diphasia mildbraedii Engl., Natürl. Pflanzenfam., ed. 2, 19a: 304, 1931.

Small tree, brown pubescent, with 3-foliolate leaves; leaflets large, short-acute at apex; fruit glabrous, 2-lobed.

Ecology not recorded.

Occurs in E part of Central Cameroon. – Not mapped.

In Fl. Cameroun 1: 98, 1963, Letouzey discusses the possible identity of this taxon, which could perhaps match *D. angolensis* (Hiern) I. Verdoorn (bas.: *Cranzia angolensis* Hiern 1896), with the synonym *Diphasia klaineana* Pierre, cited by Mziray (p. 70) as *Vepris angolensis* (I. Verdoorn) Mziray, nom. illegit., now *Vepris hiernii* Gereau, nom. nov. (Novon 11: 43, 2001).

D. sp. **A** sensu Kokwaro in Fl. Trop. E. Afr., Rutaceae: 32, 1982. – Icon.: Beentje, Kenya trees, shrubs & lianas: 367, 1994.

Tree, evergreen, to 25 m; bark smooth, grey; leaves 3-foliolate (rarely 1-2-foliolate); leaflets 12-18 × 5-8 cm, subacute or obtuse at apex; fruit ±ovoid, 1,2-1,5 cm long, 2-lobed, glandular, glabrous, green, 2-locular; flowers unknown.

Coastal forest; 5 m alt.

Known only from one gathering (Faden & Faden 77/389): Kenya, Kwale Distr., Kaya Kinondo (K7). – Endangered fide Beetje, l. c.

SYNONYMS:

Diphasia angolensis (Hiern) I. Verdoorn p.p. = **Vepris hiernii, V. eggelingii**

dainellii (Pic. Serm.) Kokwaro = **V. dainellii**

klaineana Pierre = **V. hiernii**

morogorensis Kokwaro = **V. morogorensis**

noldeae Exell & Mendonça = **V. noldeae**

(DIPHASIOPSIS)

Genus included by Mziray (in Acta Univ. Upsal., *Symb. Bot. Upsal.* 30/1, 1992) in *Vepris*.

SYNONYMS:

Diphasiopsis fadenii Kokwaro = **Vepris fadenii**

whitei Mendonça = **V. mendoncana**

(*FAGARA*)

Fagara adolfi-friederici Engl. = **Zanthoxylum poggei**

afzelii Engl. = **Z. rubescens**

altissima Engl. = **Z. rubescens**

amaniensis Engl. = **Z. gilletii**

angolensis Engl. = **Z. leprieurii**

cf. *angolensis* sensu Eggeling 1952 = **Z. mildbraedii**

armata Thunb. = **Z. capense**

atchoum Aké Assi = **Z. atchoum**

attiensis Hutch. & Dalziel p.p. = **Z. leprieurii, Z. rubescens, Z. viride**

bachmannii Engl. – See under **Z. davyi**

becquetii G. C. C. Gilbert = **Z. usambarense**

beniensis Engl. = **Z. leprieurii**

bouetensis Pierre ex Letouzey = **Z. bouetense**

braunii Engl. = **Z. deremense**

sp. aff. *braunii* sensu Mendonça 1963 = **Z. deremense**

brieyi Vermoesen ex G. C. C. Gilbert = **Z. heitzii**

buesgenii Engl. = **Z. buesgenii**

bukobensis Engl. = **Z. chalybeum**

cabrae De Wild. = **Z. rubescens**

capensis I. Verdoorn = **Z. delagoense**

chalybea (Engl.) Engl. = **Z. chalybeum**

chevalieri (P. G. Waterman) Aké Assi = **Z. chevalieri**

claessensii De Wild. = **Z. claessensii**

consolatae Chiov. = **Z. usambarense**

davyi I. Verd. = **Z. davyi**

densiaculeata Engl. = **Z. poggei**

densicrenata Engl. = **Z. rubescens**

deremensis Engl. = **Z. deremensis**

dinklagei Engl. = **Z. dinklagei**

discolor Engl. = **Z. gilletii**

dschaensis Engl. = **Z. poggei**

elondii De Wild. ex Renier = **Z. pilosiusculum**

fischeri Engl. = **Z. chalybeum**

fuscopilosa Engl. = **Z. viride**

gabonensis Pierre ms. = **Z. gilletii**

gilletii De Wild., incl. var. *cordata* G. C. C. Gilbert = **Z. gilletii**

gracilifolia Mildbr. ex Engl. = **Z. lemairei**

heitzii Aubrév. ex Pellegr. = **Z. heitzii**

holtziana Engl., incl. var. *puguensis* Engl. = **Z. holtzianum** subsp. **holtzianum**

homblei De Wild. = **Z. chalybeum** var. **chalybeum**

humilis E. A. Bruce = **Z. humile**

inaequalis Engl. = **Z. gilletii**

iturensis Engl. = **Z. gilletii**

kelekete De Wild. = **Z. leprieurii**

kibomboensis De Wild. = **Z. leprieurii**

kivuensis Lebrun ex G. C. C. Gilbert = **Z. gilletii**

klaineana Pierre ms. = **Z. rubescens**

klainei Pierre ex De Wild. = **Z. dinklagei**

laurentii De Wild. = **Z. laurentii**

lemairei De Wild. = **Z. lemairei**

leprieurii (Guill. & Perr.) Engl. = **Z. leprieurii**

leprieurii sensu Aubrév. 1959 = **Z. mezoneurispinosum**

leprieurii sensu F.W.T.A. p.p. = **Z. parvifoliolum**

lindensis Engl. = **Z. lindense**

lomiensis Engl. = **Z. poggei**

longipetiolulata Engl. = **Z. poggei**

macrophylla (Oliv.) Engl., incl. var. *preussii* Engl. ex De Wild. and var. *adamaouensis* Aubrév. ms. = **Z. gilletii**

magalismontana Engl. = **Z. capense**

mawambensis Engl. = ? **Z.** sp.

melanacantha (Planch. ex Oliv.) Engl. = **Z. rubescens**

melanorhachis Hoyle = **Z. gilletii**

sp. aff. *melanorhachis* = **Z. gilletii**

membranifolia Mildbr. = **Z. rubescens**

merkeri Engl. = **Z. chalybeum**

mildbraedii Engl. = **Z. mildbraedii**

mortehanii De Wild. = **Z. poggei**

mpapwensis Engl. = **Z. chalybeum**

multifoliolata Engl., non Hemsley = **Z. capense**

nitens sensu Exell p.p., non Engl. = **Z. leprieurii, Z. pilosiusculum**

nitens (Hiern) Engl. = **Z. leprieurii**

obliquefoliolata Engl. = **Z. gilletii**

olitoria Engl. = **Z. chalybeum**

olung Engl. = **Z. leprieurii**

ovatifoliolata Engl. = **Z. ovatifoliolatum**

paracantha Mildbr. = **Z. paracanthum**

parvifoliola A. Chev. ex Keay = **Z. parvifoliolum**

pendula Engl. = **Z. poggei**

pilosiuscula Engl. = **Z. pilosiusculum**

poggei Engl. = **Z. poggei**

polyacantha Engl. = **Z. leprieurii**

psammophila Aké Assi = **Z. psammophilum**

pubescens A. Chev. = **Z. chevalieri**

renieri G. C. C. Gilbert = **Z. renieri**

rigidifolia Engl., non Herzog = **Z. gilletii**

rubescens (Planch. ex Hook. f.) Engl. = **Z. rubescens**

rubescens var. *disperma* G. C. C. Gilbert = **Z. rubescens** var. **dispermum**

schlechteri Engl., non Guillaumin = **Z. delagoense**

senegalensis (DC.) A. Chev. = **Z. zanthoxyloides**

somalensis Chiov. = **Z. holtzianum** var. **holtzianum**

sp. A. sensu F.W.T.A., ed. 2 = **Z. mezoneurispinosum**

sp. B sensu F.W.T.A., ed. 2 = **Z. atchoum**

stuhlmannii (Engl.) Engl. = **Z. leprieurii**

tenuifolia Engl. 1911, non 1896 = **Z. engleri** (cf. **Clausena anisata**)

tessmannii Engl. = **Z. gilletii**

thomensis Engl. = **Z. thomense** (see under **Z. rubescens**)

trijuga Dunkley = **Z. trijugum**

ubanghensis A. Chev., nom. nud. = **Z. rubescens**

unwinii Hutch. & Dalziel = **Z. lemairei**

usambarensis Engl. = **Z. usambarense**

verschuerenii De Wild. = **Z. pilosiusculum**

viridis A. Chev. = **Z. viride**

welwitschii Engl. = **Z. rubescens**

welwitschii Hiern p.p. = **Vepris grandifolia**

xanthoxyloides Lam. = **Zanthoxylum zanthoxyloides**

zanthoxyloides Lam. = **Z. zanthoxyloides**

AUSTIN, D. F. & R. S. FELGER (2008). Sichuan Peppers and the Etymology of Fagara (Rutaceae). *Econ. Bot.* 62: 567-573.

FAGAROPSIS / *2*

Four species two of which in Madagascar.

Fagaropsis angolensis (Engl.) Dale in H. M. Gardner, incl. var. *mollis* (Suesseng.) Mendonça – Icon.: Consp. Fl. Angol. 1: pl. 10 facing p. 272, 1951; Troupin, Fl. Rwanda 2: 247, 1983; Beentje, Kenya trees, shrubs & lianas: 368, 1994; White & al., Evergreen for. fl. Malawi: 512, 2001; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 325, 2008

bas.: *Vepris angolensis* Engl. non [*Diphasia angolensis* (Hiern) I. Verdoorn =] *Vepris angolensis* (Hiern) Mziray, nom. illegit. = *V. hiernii* Gereau

syn.: *Clausena melioides* Hiern; *Clausenopsis angolensis* (Engl.) Engl., incl. var. *mollis* Suesseng.; *Fagaropsis oppositifolia* Mildbr. ex Siebenlist

Deciduous tree, unarmed, dioecious, (5-)7-24(-40) m; trunk often branched near the base; bark pinkish grey, ±rough, sometimes with corky outgrowths; branchlets purple-brown, dotted with pale elliptical lenticels, greyish-pubescent, glabrescent; leaves (sub-)opposite, with 5-11 leaflets, glabrous except midrib, with gland-dots ±near margins (sometimes little apparent); flowers yellowish, unisexual by abortion, scented, in 3-12 cm long panicles, appearing before the leaves; fruit purple, 6-8 mm Ø.

Dry evergreen forest, sometimes moist forest; rain-forest, especially edges; upland forest with *Podocarpus,* also extending into lowland *Celtis-Aningeria altissima* forest; upland rain-forest with *Albizia, Macaranga, Croton, Ocotea;* sporadic in colonies in mixed woods and in thickets in hilly situations (Angola); slopes of mountains in rocky places; 1000-2250 m alt.

Without flowers easily mistaken for an *Ekebergia (Meliaceae),* but the latter without glands on leaflets.

F. hildebrandtii (Engl.) Milne-Redh. – Icon.: Thulin, Fl. Somal. 2: 175, 1999.

bas.: *Clausena hildebrandtii* Engl.

syn.: *Clausenopsis hildebrandtii* (Engl.) Milne-Redh.; *Fagaropsis gillettii* Chiov.

Deciduous shrub or tree 2-7 m tall, dioecious; trunk with corky bosses; branchlets purple-brown, tomentose to puberulous, later glabrate, dotted with pale elliptical lenticels; leaves opposite or sometimes clustered at tips of branchlets, of 5-9 leaflets, glandular along margins, *tomentellous beneath*, rhachis sometimes with 1-2 prickles; flowers yellowish, unisexual by abortion, in 2-6 cm long panicles; fruit glandular-foveolate (or -bullate), 6-8 mm Ø.

Rocky deciduous and evergreen bush or woodland, dry evergreen forest; *Acacia-Commiphora* bushland extending into open *Combretum-Terminalia* woodland; 1050-1900 m alt.

Gilbert in Fl. Eth. 3: 422, 1989, and Beentje (Kenya trees, shrubs & lianas: 368, 1994) think that this species may be an ecological form (dry-country vicariad) of *F. angolensis,* and better treated as subspecies. Intermediates occur in the contact area in Kenya.

(GLYCOSMIS)

SYNONYM:

Glycosmis welwitschii Hiern = **Vepris welwitschii**

* * *

Glycosmis ? *africana* Hook. f.

Described from São Tomé (Hooker, Niger flora: 256, 1849; specim. Don s. n.).

Cited as such by Exell (Cat. vascul. pl. S. Tomé: 132, 1944) who agrees with Oliver (Fl. trop. Afr. 1: 308, 1868) that the type (a leafy twig and a 1-seeded fruit) is too imperfect for determination. This was later maintained by Exell (Angiosperms isl. Gulf-Guinea, Bull. Brit. Mus. Nat. Hist. Bot. 4: 366, 1973).

J. B. Carpenter & P. C. Reece (Catalogue of genera, species, and subordinate taxa in the Orange subfamily Aurantioideae: 99, 1969) cite *Glycosmis africana* Hook. f. as a synonym under *Teclea unifoliolata* Baill. ("unifoliata" sphalm.). The latter was described from the Comoros, and treated as an insufficiently known taxon by Mziray (in Symb. Bot. Upsal. 30/1: 77, 1992).

The name *Teclea unifoliolata* has been applied to different plants by various authors. Engler (Bot. Jahrb. Syst. 23: 152, 1897) cites *Toddalia simplicifolia* Engl. *(= Vepris simplicifolia)* from E. Africa as a synonym. It was used by Gossweiler & Mendonça (carta Fitogeogr. Angola: 152, 1939) for *Vespris welwitschii* (bas.: *Glycosmis welwitschii*). In his description of the latter species Hiern (Cat. Welwitsch. Afr. pl. 1: 115-116, 1896) writes: "This should be compared with *G. africana* Hook. f., which however has rather shorter infrutescence and petioles".

HAPLOPHYLLUM / *3*

Aplophyllum A. Juss., orthogr. var.

Temperate and subtropical genus of c. 67 species in Eurasia, Arabia, N & NE Africa (approximate-distribution map by C. C. Townsend in Hook. Ic. Pl. 40(1-3): 15, 1986).

Haplophyllum arbusculum Franch. – Icon.: Thulin, Fl. Somalia 2: 179 & pl. 3E, 1999.

syn.: *Ruta arbuscula* (Franch.) Cufod.

Slender shrub 0,2-1,3 m tall, much branched, glabrous to shortly and finely pubescent; older branches bare, covered with leaf scars; younger branches dark purplish to brown, pruinose below, greenish yellow above; leaves alternate, closely set, simple, ±linear, 1-2,5 × 0,2-0,3 cm, rather thick; inflorescences numerous at tips of branches, small, dense, 10-20-flowered; petals yellow; capsule glabrous, glandular-dotted, sustended by persistent calyx.

Rocky limestone hillsides; 1370-1600 m alt.

A record from Arabia (S Yemen) by Engler is probably based on a misidentification [then undescribed *H. amoenum* (O. Schwartz) C. C. Townsend], fide Townsend, o. c.: 93.

H. sanguineum Thulin

Slender shrub 0,5-1,5 m tall, glabrous; older branches with ±rugose greyish brown cortex; young branches purplish-brown, pruinose; leaves simple, rather thick, closely set, ±elliptic, 1-2,5 × 0,3-1 cm; inflorescences terminal or in leaf axils on broken branches, 10-25-flowered; flowers dark red; capsule glabrous, gland-dotted.

Rocky limestone slopes; 1370-1600 m alt.

Related to *H. arbusculum, H. amoenum* and *H. molle* (O. Schwartz) C. C. Townsend both in S Yemen, but petals *red, glandular.*

H. tuberculatum (Forssk.) A. Juss., incl. var. *obovatum* Hochst. ex Boiss., var. *arabicum* (Boiss.) Boiss., var. *leiocalycinum* Hand.-Mazz., var. *linearifolium* Stapf ex Parsa, and subsp. *vermiculare* (Hand.-Mazz.) Maire – Icon.: Zohary in Fl. Palaest. 2, Plates: pl. 432, 432a, 1972; Jafri in Fl. Libya 50: 7, 1977: Townsend in Hook. Ic. Pl. 40: pl. 3930, 3931, 1986; Chaudhari, Fl. Kingd. Saudi Arabia ill. 2(1): 486, 2001: Andrews, Flow. Pl. Anglo-Eg. Sudan 2: 316, 1952.

bas.: *Ruta tuberculata* Forssk.

syn.: Enum. 2: 199, 1992; *Haplophyllum longifolium* Boiss.; *H. obovatum* (Hochst. ex Boiss.) Hand.-Mazz.; *H. arabicum* Boiss.; *H. longifolium* Boiss., incl. var. *ciliosum* Bornm. and var. *eriocalycinum* Bornm.; *H. vermiculare* Hand.-Mazz., incl. var. *cyrenaicum* Pamp. and forms; *Ruta montbretii* (DC.) Viv. – Full synonymy in Townsend, o. c.: 151-153, and in Fl. Iraq 4: 460, 462, 1980.

Perennial herb, sometimes ±woody at base, 10-60 cm tall, glabrous to pubescent; stem solitary, or often much branched from the base, with or without basal sterile shoots; leaves alternate, obovate to linear, 0,5-1(-4) × 0,3-0,6(-1) cm, gland-dotted; inflorescences lax, branched; flowers yellow; capsule glabrous to white-pilose, gland-dotted.

Coastal plains, arid ground; near sea level.

Extremely variable especially in shape and size of leaves: in Somalia ±obovate, up to 1,5 × 0,8 cm.

N Africa, Egypt, Sinai; SE Turkey, Israel, Jordan, Syria, Arabian Peninsula, eastwards to Pakistan (approximate-distribution map in Townsend, o. c.: 17).

HARRISONIA – see **Simaroubaceae**

(LIMONIA)

Limonia aurantiifolia Christm. = **Citrus × aurantiifolia**
demeusei De Wild. = **Citropsis articulata**
gabunensis Engl. = **C. gabunensis**
lacourtiana De Wild. = **C. gabunensis**
mirabilis A. Chev. = **C. articulata**
poggei Engl., incl. var. *latialata* De Wild. = **C. articulata**
preussii Engl. = **C. articulata**
schweinfurthii Engl. = **C. articulata**
trifolia Burm. f. = **Triphasia**
trifoliata L. = **T. trifolia**
ugandensis Bak. f. = **Citropsis articulata**
warneckei Engl. = **Afraegle paniculata**

[MURRAYA]

[**Murraya koenigii** (L.) Sprengel]- Curry-leaf Tree. – Icon.: Swingle in Citrus Industry 1: 236-237, 1967 (photos); R. Wight, Ic. plant. Ind. orient 1: pl. 13, 1838.

bas.: *Bergera koenigii* L.

syn.: *Chalcas koenigii* (L.) Kurz

Evergreen tree or shrub 0,8-4 m tall; bark black; branchlets and leaves shortly hairy; leaves alternate, with 13-21 alternate leaflets; flowers small, greenish-white, numerous in hairy, terminal corymbs; berries round, black, c. 1 cm Ø.

Cultivated in E. Africa. Probably native of India, or Sri Lanka.

Fresh leaves used in curries.

Resembling *Clausena anisata* which has, however, paniculate inflorescences.

[**M. paniculata** (L.) Jack] – Orange Jessamine, Mock Orange, Satin Wood. – Icon.: Wight, o. c.: pl. 96, 1840 (sub nom. *M. exotica* L.); Swingle, o. c.; 233 (photos).

bas.: *Chalcas paniculata* L. 1767.

syn.: *C. camuneng* Burm. f.; *Murraea exotica* L. 1771.

Evergreen shrub or tree 1,5-3,5(-7) m tall; leaves as *M. koenigii* but with 3-8 leaflets and glabrous; flowers large, white, fragrant, in terminal and axillary corymbs; berries round, red, 0,7-2 cm Ø, edible.

Native of tropical Asia-Australia.

Many varieties and strains cultivated in gardens and parks, also as a fence. Var. *exotica* (L.) M. R. Almeida quoted in Akoegninou & al., Fl. analyt. Bénin: 913, 2006. Essential oil present in leaves. Easily propagated from cuttings.

(ORICIA)

Genus included by Mziray (in Acta Univ. Upsal., *Symb. Bot. Upsal.* 30/1, 1992) in **Vepris**. However, he maintains 1 insufficiently known taxon under *Oricia* (o.c.: 77).

Oricia (?) **lecomteana** Pierre; Cable & Cheek, Pl. Mt. Cameroon: 124, 1998. – Icon.: Fl. Gabon 6: 61, 1963.

syn.: *O. congoensis* Pierre ms.; *O.* sp. B sensu Keay in Fl. W. Trop. Afr., ed. 2: 688, 1958.

Shrub or tree to 8-15 m tall; leaf petiole to 30 cm long; leaflets (3?)5, oblong-elliptic, 25-44 × 10-16,5 cm; male inflorescence 20 cm long, flowers 4-merous, white, with scent of *Valeriana;* female flowers unknown; fruit resembling that of *O. gabonensis (= Vepris gabonensis).*

Forest.

Could possibly be an *Araliopsis,* fide Letouzey in Fl. Cameroun 1: 96, 1963.

Also in S Nigeria?

SYNONYMS:

Oricia bachmannii (Engl.) I. Verdoorn = **Vepris**

congoensis Pierre, ms. = **Oricia** ? **lecomteana**

gabonensis Pierre = **Vepris gabonensis**

klaineana Pierre = **V. gabonensis**

leonensis Engl. = **V. suaveolens**

ORICIA

renieri G. C. C. Gilbert = **V. renieri**

sp. sensu White 1962 = **V. mendoncana**

sp. A sensu F.W.T.A., ed. 2 = **Vepris** sp. (imperfectly known)

sp. B sensu F.W.T.A., ed. 2 = **Oricia** ? **lecomteana**

suaveolens (Engl.) I. Verdoorn, incl. var. *letesrantii* Letouzey = **Vepris suaveolens**

swynnertonii (Bak. f.) I. Verdoorn = **V. bachmannii**

transvaalensis I. Verdoorn = **V. bachmannii**

trifoliolata (Engl.) I. Verdoorn = **V. trifoliolata**

(ORICIOPSIS)

Genus included by Mziray (in Acta Univ. Upsal., *Symb. Bot. Upsal.* 30/1, 1992) in **Vepris**.

Oriciopsis glaberrima Engl. = **Vepris**

[PILOCARPUS]

[**Pilocarpus pennatifolius** Lemaire] – Icon.: Spichiger & Stutz de Ortega in Fl. Paraguay, Rutaceae: 42, 1987.

syn.: *P. selloanus* Engl.

Evergreen shrub or tree 2-5 m tall; leaves leathery, alternate, with 57 leaflets; flowers c. 1 cm Ø, brownish red, in 30 cm long, drooping, spike-like racemes, with a sourish smell; fruit with 4-5 follicles.

Cultivated in E Africa. Native of SE Brazil, Paraguay, N Argentina.

[**P. racemosus** Vahl] – Icon.: Howard, Fl. Lesser Antilles 4: 562, 1988.

Evergreen shrub or small tree to 5 m tall; leaves 1-3-foliolate, coriaceous, glabrous; flowers reddish brown, in narrow 20-50 cm long racemes on horizontal 1-1,5 cm long pedicels; follicles 1-5, strongly ridged.

Cultivated in E Africa. Native of C. & S. America.

[RUTA]

[**Ruta chalepensis** L., incl. var. *tenuifolia* Dum. d'Urv. and var. *bracteosa* (DC.) Boiss.] – Icon.: Chaudhary, Fl. Kingd. Saudi Arabia ill. 2(1): 485, 2001; Fennane, Fl. prat. Maroc 2: 255, 2007 (partial).

syn.: *R. bracteosa* DC.

Subshrub 20-45-100 cm tall, glaucous, strongly aromatic; leaves alternate, 2(-3)-pinnate; flowers yellow, bisexual, 5-merous, in terminal bracteate cymes, petals ciliate-fringed; capsule opening apically.

Widely cultivated as a culinary herb in the Ethiopian highlands above 1500 m alt. – Also recorded in old fields from Angola (Mossamedes) by Welwitsch (Hiern. Cat. 1: 111, 1896), as *R. graveolens.*

Native of the Mediterranean or Middle East. Naturalized (and cultivated) in the Cape Verde Isl.; Oman.

Often misnamed as *R. graveolens* L.

RUTA

SYNONYMS:

Ruta arbuscula (Franch.) Cufod. = **Haplophyllum arbusculum**
bracteosa DC. = **Ruta chalepensis**
montbretii (DC.) Viv. = **Haplophyllum tuberculatum**
obovata (Hochst. ex Boiss.) O. Schwartz = **H. tuberculatum**
propinqua (Spach) O. Schwartz = **H. tuberculatum**
tuberculata Forssk. = **H. tuberculatum**

(TECLEA)

Genus included by Mziray (in Acta Univ. Upsal., *Symb. Bot. Upsal.* 30/1, 1992) in **Vepris**. However, he maintains 6 insufficiently known taxa under **Teclea** (o.c.: 77) in our area.

Teclea campestris Engl.

Shrub 1-1,5 m tall; young branchlets green, sticky, becoming ash-grey with age; leaves alternate, coriaceous, glabrous, closely set, 3-foliolate; leaflets lanceolate, 8-9 × 1,5-3 cm, gland-dotted beneath, acuminate at apex; the young inflorescences c. 1 cm long; flowers and fruits unknown.

Dense, hilly, wooded grassland ("Baumsteppe") covered with large sandstone slabs; c. 380 m alt.

Known from 2 collections (Ledermann 5184, coll. in 1909, and Pistner coll. in 1906), apparently disappeared.

To Engler this species seems to be a "xerophytic relative of *T. nobilis* Delile" *(= Vepris nobilis)*. Very close to *T. oubanguiensis*.

T. carpopunctifera A. Chev. – Icon.: Rev. Int. Bot. Appl. Agric. Trop. 30: 77, pl. 4B, 1950.

Small tree; branchlets slender, subterete, glabrous; leaves alternate, glabrous, (2-)3-foliolate; leaflets ±coriaceous, ovate-oblong, 7-12 × 2-4 cm, decurrent on petioles; infrutescences with 1-3 erect carpels, glabrous; fruit ovoid, slightly oblique, with a hard pit-dotted shell, c.1 × 0,7 cm.

Forest.

Resembling *"T. grandifolia" (= Vepris grandifolia)* but secondary nerves of leaflets ascending, and fruits pit-dotted (not raised dots).

T. crenulata (Engl.) Engl.

bas.: *Toddalia crenulata* Engl.

Habit unknown; stems shortly pubescent; leaves 3-foliolate, petioles 2-3 cm long, over half as long as the lateral leaflets, narrowly winged and shortly pubescent; leaflets obovate-oblong, rounded and retuse at apex, glabrous except on midrib, margins crenulate; middle leaflets larger than the laterals; panicles terminal, pubescent; flowers unknown; fruit ellipsoid, 1-2 × 0,8 cm, fleshy, 1-celled.

Ecology unknown.

Known only from the type (Stuhlmann, Ser. 1, 562, herb. Hamburg, coll. 1890-1892).

Similar to *T. engleriana* but leaflets notched at apex.

TECLEA

T. engleriana De Wild. – Icon.: Ann. Mus. Congo, Bot., Sér. 4: pl. 27 figs. 1-5, 1902.

Tree; bark greyish; young branchlets pubescent; leaves 3-foliolate, petiole narrowly winged, pubescent, 2-4,5 cm long; leaflets ±oblanceolate, 2-5,7 × 1,5-3 cm, papery, pubescent on both surfaces, apex rounded or shallowly notched, margins entire, middle leaflet larger than the laterals; inflorescences axillary and terminal , dense, many-flowered, 2,5 cm long; female flowers glabrous, 4-merous; male flowers unknown; fruit unknown.

Ecology unknown.

Known ? only from the type, collected in 1900 (Verdick 365); also Verdick 142? (same locality: Lukafu).

Similar to *T. crenulata;* differs from *"T. angustialata" (= Vepris trichocarpa)* by its smaller leaves.

T. ferruginea A. Chev.

Shrub 1,5 m tall; leaflets pendulous, papery, conspicuously reticulately nerved above, ferrugineous, convex, hood-shaped, long-acuminate, strongly lemon-scented; inflorescences axillary, glabrous or pubescent; flowers and fruit unknown.

On rocks in dry country (in the loop of the Niger); xerophyte.

Known only from the type collected in 1932 (Rogeon 293), in Mali.

A form of *Vepris heterophylla* ?

T. oubanguiensis Aubrév. & Pellegr.

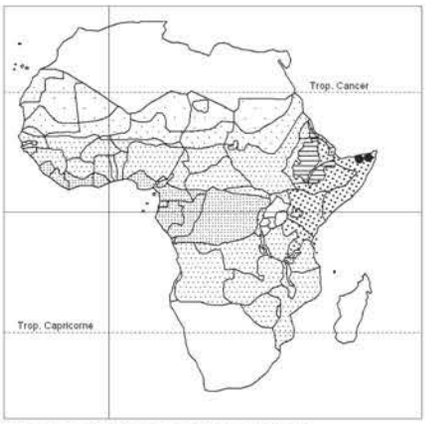
Shrub 3-4 m tall; branches light grey, lenticellate; leaves 1-2-3-foliolate, petiole to 6 cm long; leaflets lanceolate, 9-20 × 3-6 cm, coriaceous, mucronate at apex, gland-dotted on both surfaces, nerves conspicuous; inflorescences axillary and terminal, 8-12 cm long, axes pubescent and with minute ciliate bracteoles; flowers bisexual, 4-merous, sessile, calyx ciliolate; fruit ellipsoid, 8 × 6 mm, not warty.

Forest gallery.

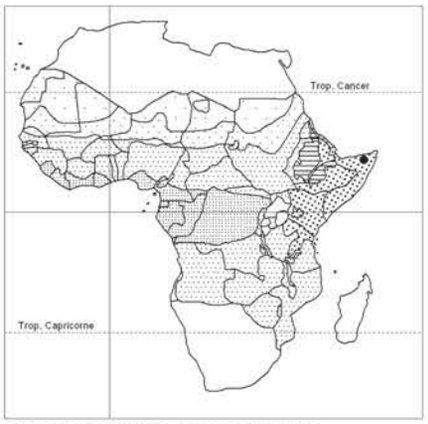
Allied to *"T. nobilis" (= Vepris nobilis)*. Very close to *T. campestris*.

SYNONYMS:

Teclea acuminata Engl. = ? **Vepris afzelii**
afzelii Engl. = **V. afzelii**
alexandrae (Chiov.) Senni = **V. eugeniifolia**
amaniensis Engl. = **V. amaniensis**
angustialata Engl. = **V. trichocarpa**
bachmannii Engl. = **V. bachmannii**
borenensis M. G. Gilbert = **V. borenensis**
diversifolia Mattei = **V. nobilis**
ebolowensis Engl. = ? See below under **Toddaliopsis**
eggelingii Kokwaro = **Vepris eggelingii**
evodioides Chiov. = **V. glomerata** var. **glabra**
fischeri (Engl.) Engl. = **V. trichocarpa**
fischeri sensu White 1962 p.p. = **V. trichocarpa, V. rogersii**
gerrardii I. Verdoorn = **V. trichocarpa**
glomerata (Engl.) I. Verdoorn = **V. glomerata** var. **glomerata**
gossweileri I. Verdoorn 1926, p.p. = **V. gossweileri**
gracilipes Engl. = ? **V. eugeniifolia**



Haplophyllum arbusculum



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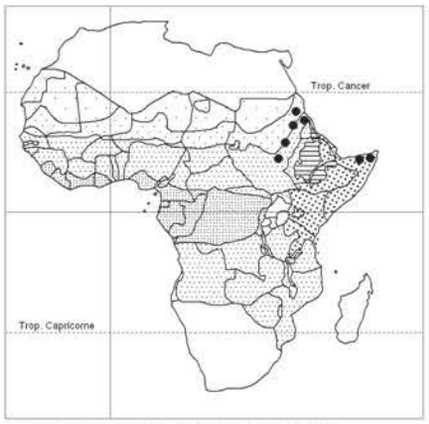
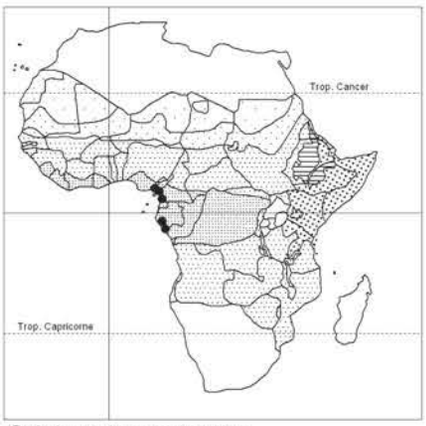
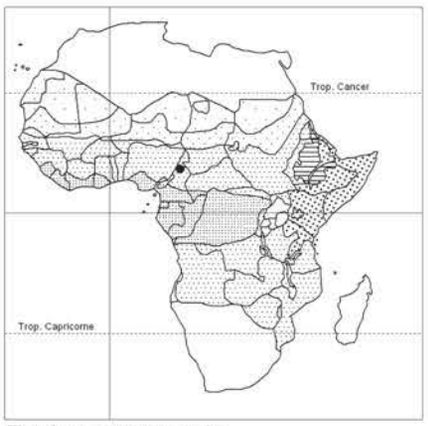


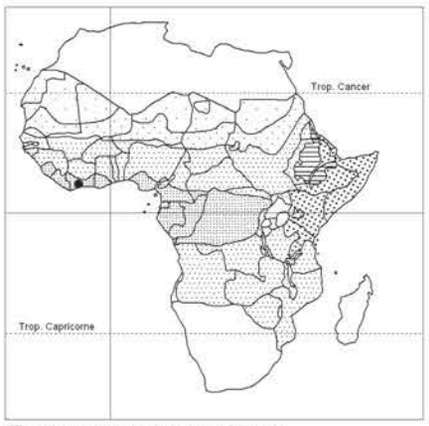
Haplophyllum tuberculatum



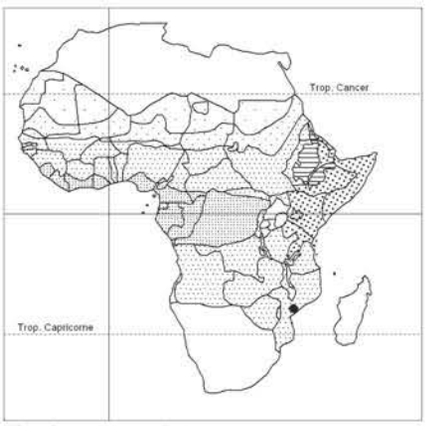
Oricia(?)lecomteana



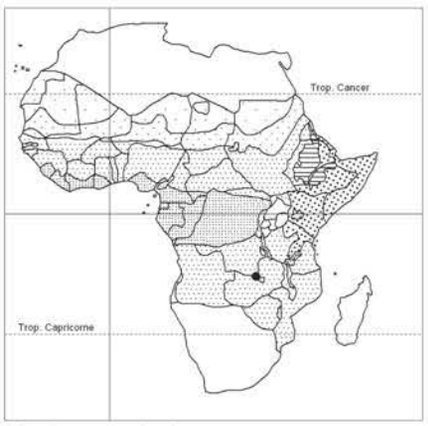
Teclea campestris



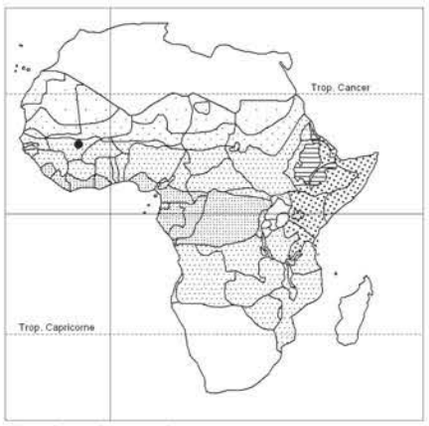
Teclea carpopunctifera



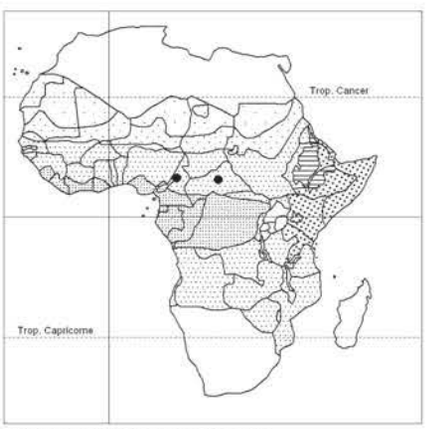
Teclea crenulata



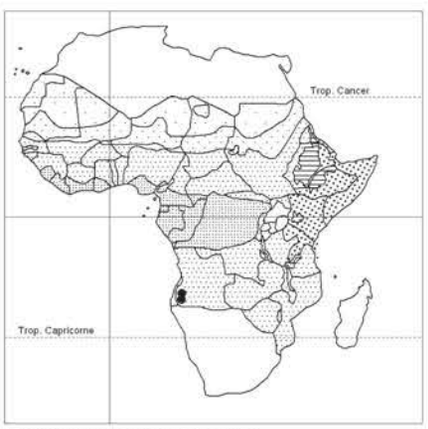
Teclea engleriana



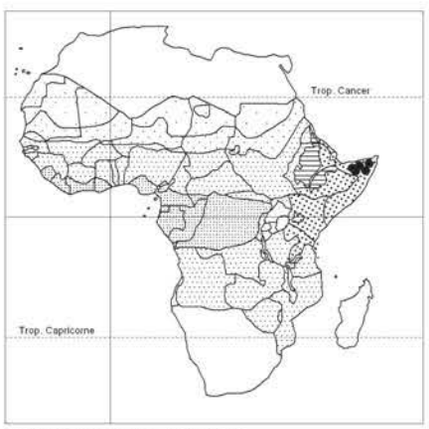
Teclea ferruginea



Teclea oubanguiensis



Thamnosma africana



Thamnosma hirschii

grandifolia Engl. = **V. grandifolia**

grandifolia sensu I. Verdoorn etc., non Engl. = **V. verdoorniana**

hanangensis Kokwaro p.p. = **V. hanangensis**

hanangensis Kokwaro p.p. quoad spec. Gillett 14120 = **V. borenensis**

heterophylla Engl. = **V. heterophylla**

macedoi Exell & Mendonça = **V. macedoi**

myrei Exell & Mendonça = **V. myrei**

natalensis sensu Bak. f. 1911, non (Sond.) Engl. = **V. nobilis**

ngamensis Engl. = **V. ngamensis**

nobilis Delile, incl. var. *latifoliolata* Engl. = **V. nobilis**

"*ovodioides*" Chiov. = **V. glomerata** var. **glabra**

pilosa (Engl.) I. Verdoorn = **V. glomerata** var. **glomerata**

pilosa misapplied = **V. carringtoniana**

rogersii Mendonça = **V. rogersii**

salicifolia Engl. = **V. simplicifolia**

simplicifolia (Engl.) I. Verdoorn = **V. simplicifolia**

simplicifolia sensu Chapman & White, Malawi, 1970 = **V. amaniensis**

stuhlmannii Engl. = **V. trichocarpa**

suaveolens Engl. = **V. suaveolens**

sudanica A. Chev. = **V. heterophylla**

swynnertonii Bak. f. = **V. bachmannii**

trichocarpa (Engl.) Engl. = **V. trichocarpa**

unifoliolata sensu Engl. p.p., non Baill. = **V. simplicifolia, V. welwitschii**

utilis Engl. = ? (imperfectly known species from Tanzania, E. Usambaras)

verdoorniana Exell & Mendonça = **V. verdoorniana**

villosa M. R. F. Taylor = **V. trichocarpa**

viridis I. Verdoorn = **V. simplicifolia**

welwitschii (Hiern) I. Verdoorn p.p. = **V. grandifolia, V. nobilis**

zenkeri Engl. p.p. = **V. grandifolia**

zenkeri sensu I. Verdoorn, 1926 p.p. = **V. afzelii**

(TECLEOPSIS)

Tecleopsis glandulosa Hoyle & Leakey = **Vepris**

THAMNOSMA / *4*

Disjunct genus: Mexico-S N. America (5 spp.) – Africa, Arabian Peninsula, Socotra (map by B. A. Mies, Flora und Vegetationsökologie der Insel Soqotra: 68, 2001).

THULIN, M. (1999). Thamnosma (Rutaceae) in Africa. *Nord. J. Bot.* 19: 5-11 [genus here treated in a wide sense, i.e. incl. *Rutosma* A. Gray; if treated in a narrow sense, the African species belong to *Rutosma* then also comprising the American species except *Thamnosma montana* Torrey & Frémont from California].

Thamnosma africana Engl. ("africanum"), incl. fa. *pentadactyla* Dinter, but excl. var. *rhodesica* Bak. *(= T. rhodesica)* and var. *crenata* Engl. *[= T. crenata* (Engl.) Thulin]. – Icon.: Engler in Engler & Drude, Veg. d. Erde 9, Afrika 3/1B: 750, 1915, and in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 247, 1931.

Perennial herb with woody base or subshrub to 1 m tall, densely gland-dotted; leaves 3-5-fid, sometimes simple on short shoots in leaf axils, leaf segments narrowly oblanceolate, 10-25 × 1-2 mm; flowers 4-merous, (greenish-)yellow to whitish, often turning maroon, in terminal cymes; capsule c. 1 cm long. Resembling a *Ruta.*

In rocky places; 500-800 m alt.

Namibia, S. Africa (760-1850 m alt.).

T. hirschii Schweinf.

syn.: *Rutosma hirschii* (Schweinf.) C. A. Smith

Perennial herb with a woody base, or annual, to 35 cm tall, glabrous gland-dotted; leaves simple, linear, c. 20 × 2,5 mm; flowers 4-merous, reddish-purple, *small* (petals c. 3 mm long, smallest in the genus in Africa), in lax terminal cymes; capsule 5-6 mm long.

In a variety of vegetation types: semi desert, open grassland, evergreen bushland; 500-1500 m alt.

Yemen (Hadramaut), Oman, Socotra.

Related to *T. somalensis* and *T. socotrana.* Also similar to *T. texana* A. Grey (N. America) in habit and in the small flowers, but capsules different.

T. rhodesica (Bak. f.) Mendonça

bas.: *T. africana* Engl. var. *rhodesica* Bak. f.

Perennial herb woody and corky at base or shrublet 20-60 cm tall, densely gland-dotted; leaves 3(-5)-fid, but lower and upper ones usually simple, 8-32 × 0,9-1,4 mm, segments obtuse at apex (emarginate in *T. africana);* flowers yellow, 4-merous, in lax terminal cymes; anther connective without gland (distinct apical gland in *T. africana);* capsule 8-11 m long.

Dry bushland, open woodland; 1000-1400 m alt.

Botswana.

Resembling *T. africana* (for morphological differences; see above).

T. somalensis Thulin – Icon.: Thulin in Nord. J. Bot. 19: 8, 1999; and in Fl. Somal. 2: 180 and pl. 3F, 1999.

Perennial herb with woody base or subshrub to 40 cm tall, densely gland-dotted; leaves simple, linear, to 23 × 3 mm; flowers 4-merous, reddish to dark purple, in terminal dense to lax cymes, petals c. 6 mm long; capsule 5-7 mm long.

In open vegetation of low shrublets on rocky ridges and slopes on limestone; 860-1700 m alt.

Similar to *T. hirschii* but with more robust habit and larger flowers; also seeds different: in *T. somalensis* 2 mm long with spine-like tubercles, in *T. hirschii* c. 1 mm and tubercles low, rounded.

Closely related to *T. socotrana.*

Known only from the Cal Madow Range and Cal Miskaat Mts.

* * *

Thamnosma crenata (Engl.) Thulin (bas.: *T. africana* Engl. var. *crenata* Engl.) occurs in S. Africa (Transvaal). **T. socotrana** Balf. f. only on Socotra.

TODDALIA / *1*

Monospecific, very distinctive genus.

Toddalia asiatica (L.) Lam. 1797 – Icon.: Engler in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 753, 1915 (sub nom. *T. aculeata)*; Fl. Congo Belge 7: 101 pl. 13, 1958; Fl. Zambes. 2/1: 198, 1963; Troupin, Fl. Rwanda 2: 251, 1983; White & al., Evergreen forest fl. Malawi: 517, 2001; Burrows & Willis, Pl. Nyika Plateau: 257, 2005.

bas.: *Paullinia asiatica* L. 1753.

syn.: *Toddalia aculeata* (Sm.) Pers. 1805, nom. illegit. et superfl.; *Scopolia aculeata* Sm. 1790, nom. illegit.; *Toddalia nitida* Lam.; *T. angustifolia* (Lam.) Spreng.; *Scopolia nitida* (Lam.) Spreng.

Climbing or scrambling shrub or liane 2-15 m tall, dioecious; stems and often leaves with sharp recurved prickles to 5 mm long, also rusty-red hairy, soon glabrescent; leaves alternate 3-foliolate, gland-dotted; flowers 5-merous, small, unisexual by abortion, greenish-yellow, in clusterers on axillary and terminal panicles; drupe 5-7-angular, orange, 7-10 mm Ø.

Riverine forest margins; forest clearings, secondary regrowth; woodland, grassland; also grassland thickets; upland rain-forest with *Albizia, Macaranga, Croton, Ocotea,* forest edge; along rivers and streams; 1-3300 m alt. – Widespread.

A variable species; several varieties described from Asia. In Africa rather uniform (perhaps a recent introduction?). Female flowers seem to be rare in collections from Africa, not seen from Ethiopia (fide M. G. Gilbert in Fl. Eth. 3: 424, 1989).

S. Africa (Transvaal), Swaziland; Madagascar, Comoros, Seychelles, Mascarene Isl.; India, Sri Lanka eastwards to Taiwan, Borneo, Philippines (map by Verdoorn in Bull. Misc. Inf. Kew 1926: 390). – Presence in Gabon possible: Walker & Sillans, Pl. utiles Gabon: 31, 1961.

Sometimes used as a hedge plant and for fodder.

SYNONYMS:

Toddalia aculeata Pers. = **Toddalia asiatica**

angustifolia Lam. = **T. asiatica**

crenulata Engl. = **Teclea crenulata**

fischeri Engl. = **Vepris trichocarpa**

glomerata F. Hoffm. = **V. glomerata**

lanceolata Lam., incl. var. *florida* Cordem. = **V. lanceolata**

nitida Lam. = **Toddalia asiatica**

nobilis (Delile) Hook. f. = **Vepris nobilis**

paniculata Lam. = **V. lanceolata**

pilosa Engl., non Bak. = **V. glomerata** var. **glomerata**

sansibarensis Engl. = **V. sansibarensis**

simplicifolia Engl. = **V. simplicifolia**

var. *eugeniifolia* Engl. = **V. eugeniifolia**

trichocarpa Engl. = **V. trichocarpa**

Scopolia Sm. 1790, non Jacq. (Jacq.= *Solanaceae)*

aculeata Sm. = **Toddalia asiatica**

angustifolia (Lam.) Spreng. = **T. asiatica**

nitida (Lam.) Spreng. = **T. asiatica**

(TODDALIOPSIS)

Genus included by Mziray (in Acta Univ. Upsal., *Symb. Bot. Upsal.* 30/1, 1992) in **Vepris.**

However, one species seems uncertain as to its place, and not referred to by Mziray:

Toddaliopsis ebolowensis Engl. 1917.

Shrub with dark grey striate subpilose branchlets; leaves large, papery, glabrous, 3-foliolate; petiole 10 cm long; leaflets oblong, 15-17 × 6-7 cm, acuminate at apex; male flowers (with rudimentary ovary) small, white, in 10-12 cm long, terminal panicles; female flowers and fruit unknown.

Rain-forest.

Known only from the type collected at Ebolowa in 1911 (Mildbraed 5494).

In his discussion about the identity of the genus *Toddaliopsis* Letouzey (Adansonia, N. S. 2: 138, 1962) writes that there are resemblances between *T. ebolowensis* and *Vepris stolzii,* but he leaves the question open due to lack of material.

In 1915 already Engler cites a *Teclea ebolowensis* (in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 756) with a short description of the leaves, and occurring at Ebolowa. In 1917 no reference is given to the latter plant. I. Verdoorn (in Bull. Misc. Inf. Kew 1926: 393) concludes that "it is impossible to say to which genus they belong", since the fruits are unknown, and the specimens not seen.

According to Letouzey (in Fl. Cameroun 1: 108-110, 1963) *Toddaliopsis ebolowensis* has also been found in the forest of Bali-Ngemba at Bamenda (1700 m alt.) by Edwin Ujor (n° 30422-FHI) but only with male flowers. This collection was determined as *Vepris* cf. *heterophylla* by Mziray. Cheek in Y. Harvey & al., Plants Bali Ngemba Forest Reserve: 124, 2004, thinks that it represents a new species of *Vepris.* Another gathering from near Kumba (Izunwa n° 29689-FHI) seems to represent the same plant. Letouzey suggests that it is a *Vepris,* perhaps *"Oricia trifoliolata" (= Vepris trifoliolata).*

SYNONYMS:

Toddaliopsis bremekampii I. Verdoorn = **Vepris**

heterophylla (Engl.) Engl. = **V. heterophylla**

sansibarensis (Engl.) Engl. = **V. sansibarensis**

[TRIPHASIA]

[**Triphasia trifolia** (Burm. f.) P. Wilson] – Limeberry. – Icon.: Engler in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 325, 1931; Swingle in Citrus Industry 1: 261, 1967 (photo).

bas.: *Limonia trifolia* Burm. f. 1768.

syn.: *L. trifoliata* L. 1771, nom. illegit. superfl.; *Triphasia aurantiola* Lour.; *T. trifoliata* (L.) DC.

Shrub or tree to 3 m tall; twigs terete, with paired spines at leaf axils; leaves 3-foliolate, middle leaflet larger than the laterals, petioles wingless; flowers white, 1-3 in leaf axils, 3-merous, bisexual; petals 1-1,3 cm long; berry ovoide, dull reddish-orange, edible.

Cultivated for hedges. Native of SE Asia (type from Java). – Not mapped.

VEPRIS / *54*

syn.: *Araliopsis* Engl.; *Diphasia* Pierre; *Diphasiopsis* F. A. Mendonça; *Oricia* Pierre; *Oriciopsis* Engl.; *Teclea* Delile; *Tecleopsis* Hoyle & Leakey; *Toddaliopsis* Engl.

Genus of c. 80 species distributed throughout Africa, Madagascar (1 sp.), the Mascarenes (1 sp.), tropical Arabia (1 sp.), and SW India (1 sp.).

A few species poorly known *(V. mildbraediana, V. trifoliolata),* and *V. elegantissima* only from the type locality.

Male flowers are lacking (or only in bud) in 3 species; female flowers unknown in 4 + 2? species; the fruit unknown in 7 +1? species. Six species are known only from the type gathering.

Vepris afzelii (Engl.) Mziray – Icon.: Fl. Gabon 6: 85, 1963; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 707, 2006 (partial).

bas.: *Teclea afzelii* Engl.

syn.: *T.* ? *acuminata* Engl.; *T. zenkeri* sensu I. Verdoorn in Bull. Misc. Inf. Kew 1926: 407 p.p., non Engl.

Shrub or tree 4-6 m tall, glabrous; leaflets (3) elongate-elliptic, long-acuminate; petiole 2,5-13,5 cm long, not winged, petiolules 0,5-2,5 cm long; flowers orange-red in short glabrous racemes; fruit yellow, c. 2,5 cm long, edible. Fragrant.

Closed forest; 475-1450 m alt.

According to A. Chevalier (Bull. Mus. Hist. Nat., Sér. 2, 5: 409, 1933) this plant was refound in 1930 by himself, not collected since 1792 (Afzelius in Sierre Leone).

Teclea acuminata was described by Engler on a specimen (Schlechter 12410) from Bibundi in former British Cameroon. Verdoorn placed it as an imperfectly known species not coming "into the tribe *Toddalieae* at all": it "has a long style overtopping the stamens".

A synonym under *V. heterophylla* ?

V. allenii I. Verd.

Tree to 3 m, dioecious; young branches glabrous, lenticellate; leaves 3-foliolate, opposite; petiole 1-2,5 cm long, not winged, leaflets ±sessile, lower leaf surface densely but inconspicuously gland-dotted; flowers pedicellate, unisexual by abortion, in slender racemes or panicles 1,5 cm long on leafless stems; female flower and fruit unknown?

Dry deciduous thickets.

Known ? only from the type collected in 1912.

Perhaps also present in Tanzania.

Chapman & Chapman, Forests of Taraba & Adamawa States, Nigeria, cite this species ("montane *Pouteria altissima* forest… amongst boulders close to the stream at the bottom of a gorge a few meters from the forest edge", 1818 m alt.); and from Gorongoro forest, 1440 m: "Yet to be indentified, New to West Africa?".

V. amaniensis (Engl.) Mziray – Icon.: F. White & al., Evergreen forest fl. Malawi: 514, 2001.

bas.: *Teclea amaniensis* Engl.

Shrub or tree 1-2(-8) m tall; stems glabrous, bark smooth, grey; leaves 1(-3)-foliolate, glabrous; petiole 0,7-5 cm long, jointed near apex, occasionally winged; leaflets elliptic, 8-17 × 4,5-9 cm, papery; flowers greenish, unisexual, in axillary panicles 1-6 cm long; fruit red, c. 1,5 cm long, glandular-punctate, pilose, ellipsoid.

Moist forest, rain-forest, forest edge thickets; 50-2000 m alt.

Hybrids with *V. trichocarpa* exist (fide Beentje, Kenya trees, shrubs & lianas: 368, 1994).

"Teclea simplicifolia" erroneously reported by Chapman & White, Evergreen forests, Malawi, 1970: 176, is this species (Bull. Jard. Bot. Natl. Belg. 60: 81, 1990).

V. angolensis (Hiern) Mziray = **V. hiernii**

V. arushensis Kokwaro – Icon.: Kew Bull. 32: 794, 1978.

Tree, evergreen, much-branched, 7-17 m; bark grey; branchlets glabrescent, lenticellate; leaves (sub-)opposite, 3(-2)-foliolate, petiole 1,5-5 cm long, minutely pubescent to glabrate; leaflets coriaceous, elliptic-oblong, 8-18 × 2-6 cm, shortly acuminate, ±glabrous, with numerous pellucid gland dots; flowers unisexual, yellow, in axillary and terminal pubescent panicles 6-15 cm long; fruit unlobed, glandular-bullate, c. 1 cm long.

Upland dry evergreen forest and bushland; 1600-2200 m alt. (only on Mt. Meru & Kilimanjaro).

Related to *V. glandulosa*, but like *V. glomerata* the only species in the genus with a unilocular ovary; also resembling *V. nobilis* but inflorescences hairy, male flowers with 6-9 stamens (not 4-5), and fruits different.

V. bachmannii (Engl.) Mziray – Icon.: J. Linn. Soc. Bot. 40: pl. 2 figs. 1-5, 1911 (sub nom. *Teclea swynnertonii);* Palmer & Pitman, Trees south. Africa 2: 988, 1972 (sub. gen. *Oricia);* F. White & al., Evergreen forest fl. Malawi: 517, 2001.

bas.: *Teclea bachmannii* Engl.

syn.: *Oricia bachmannii* (Engl.) I. Verd.; *O. swynnertonii* (Bak. f.) I. Verd.; *Teclea swynnertonii* Bak. f.; *Oricia transvaalensis* I. Verd.

Evergreen dioecious tree 5-15 m, slender, much-branched, or a straggling forest shrub; bark pale grey, ±smooth becoming rough with corky spots; crown dense; branches softly hairy, glabrescent; leaves (sub-)opposite, 3-foliolate, leathery, shiny, aromatic; petiole 1-7 cm long; leaflets with petiolules to 1 cm long, lamina ±elliptic, 5-16 × 2-7 cm, conspicuously and densely dotted with pellucid glands; flowers creamy-white, unisexual, in large, ferruginous-pubescent panicles; fruit yellow-orange, plum- or lemon-like, c. 1,5 cm long, with a heel-like lobe (undeveloped carpels) at base.

Montane mist-forests; 20-1900 m alt.

E S. Africa, Swaziland. – Not in Zambia (Fanshawe 4491 from Fort Jameson is misidentified).

Resembling *V. nobilis* which has, however, spirally arranged leaves, and leaflets without petiolules.

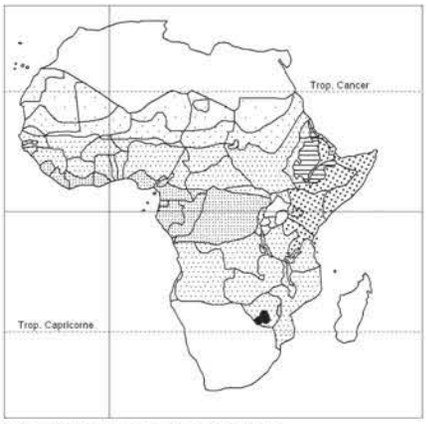
Larvae of Swallowtail butterflies breed on this tree.

V. borenensis (M. G. Gilbert) Mziray

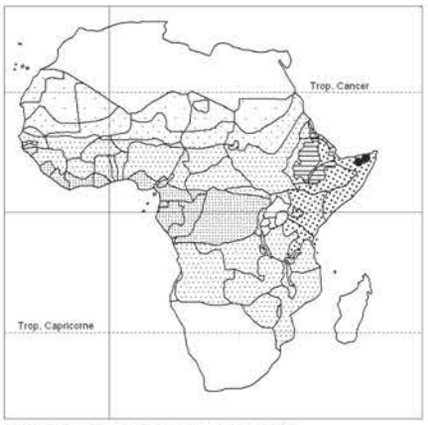
bas.: *Teclea borenensis* M. G. Gilbert

syn.: *T. hanangensis* Kokwaro 1978 p.p. quoad specim. Gillett 14120.

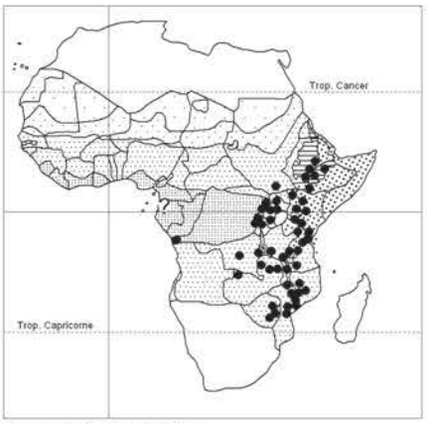
Tree to 12 m; twigs pale brown, minutely puberulent, soon glabrescent, also such pubescence on leaf petioles and midribs; leaves alternate, 3-foliolate; petiole to c. 7 cm long; leaflets to >10 × 4 cm, coriaceous, glabrous but for midribs, gland dots prominent, with short petiolules; flowers unisexual; drupe ellipsoidal, yellow, c. 1,7 cm long, sparsely pilose at base, conspiculously gland-dotted; only old female flowers (after petal fall) known.



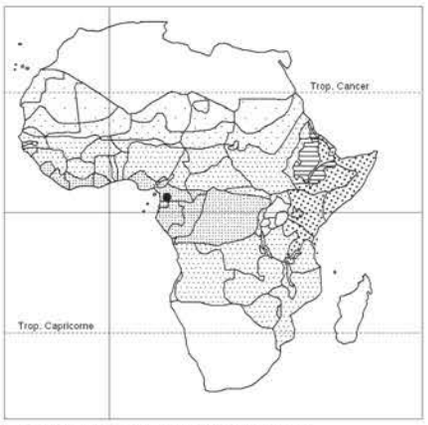
Thamnosma rhodesica



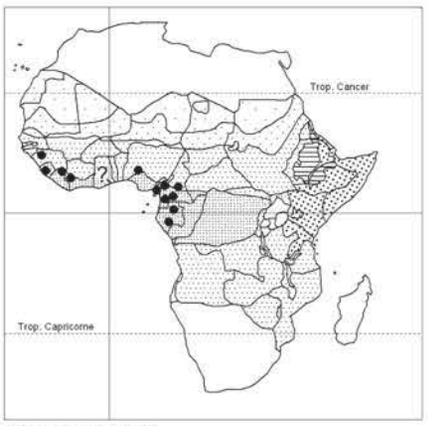
Thamnosma somalensis



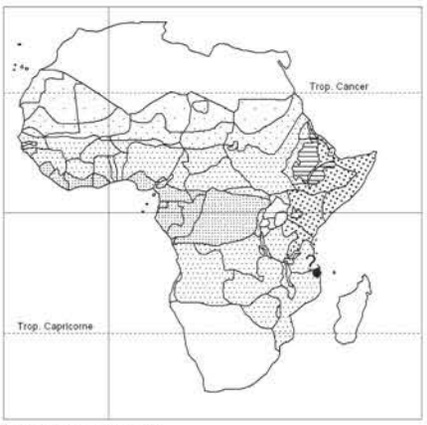
Toddalia asiatica



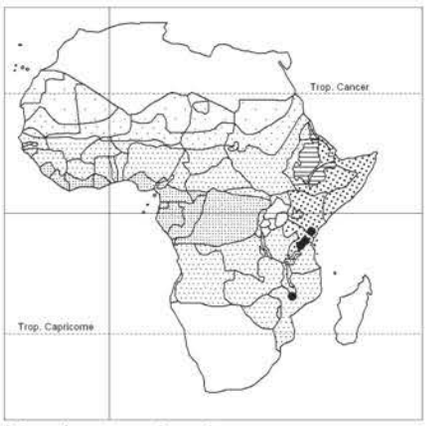
Toddaliopsis ebolowensis



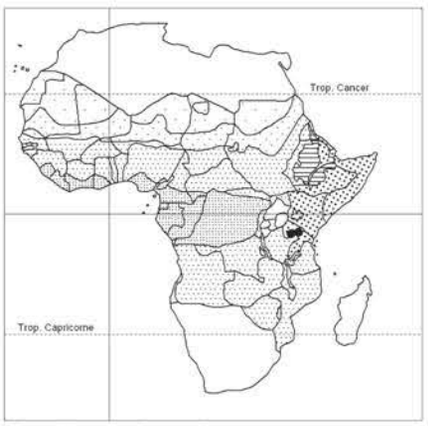
Vepris afzelii



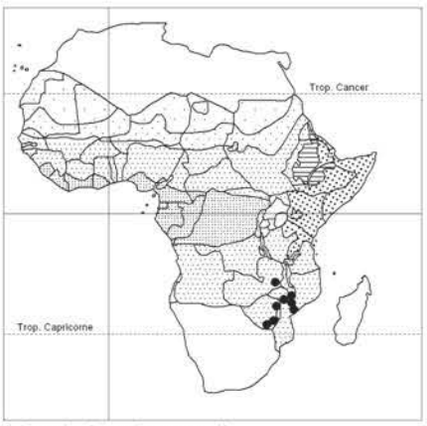
Vepris allenii



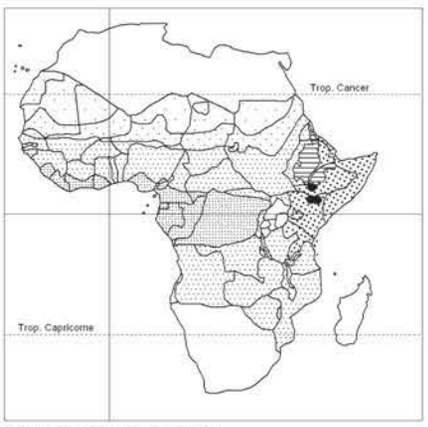
Vepris amaniensis



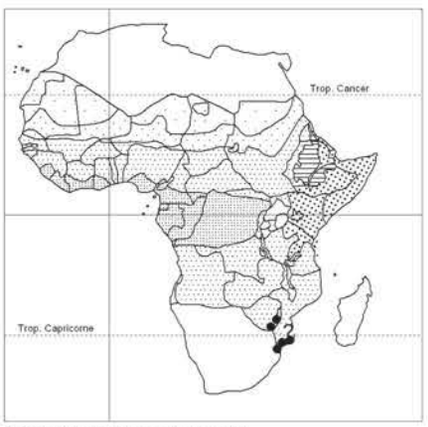
Vepris arushensis



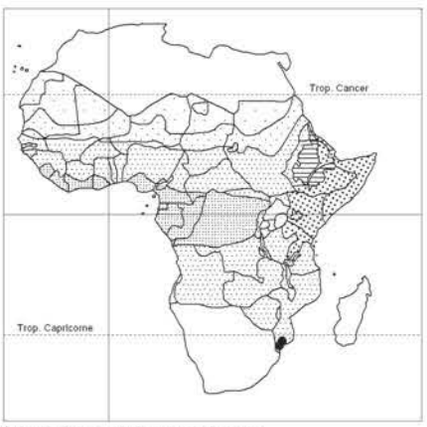
Vepris bachmannii



Vepris borenensis



Vepris bremekampii



Vepris carringtoniana

Riverine forests, under *Ficus, Trichilia emetica,* along seasonal watercourses in *Acacia-Commiphora* bushland; 800-1250 m alt.

The type collection (J. B. Gilbert 14120) was cited by Kokwaro (in Kew Bull. 32: 791, 1978) under *Teclea hanangensis* var. *hanangensis* (Kenya N. Frontier: Moyale).

Similar to *V. nobilis* in most features, but pubescence different.

V. bremekampii (I. Verd.) Mziray – Wild-mandarin. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 994, 1972.

bas.: *Toddaliopsis bremekampii* I. Verd.

Evergreen shrub or tree, monoecious, 4-6 m tall; branches smooth, reddish, glabrous, when older dark grey; leaves alternate, petiolate (1-4 cm long), gland-dotted; leaflets elliptic, 3-8 × 1,2-3,5 cm, with base running down the petiolule; flowers creamy-white, unisexual, in small clusters or short panicles, to 4 cm long; fruit round, c. 1,4 cm Ø, skin wrinkled, warty, loose, green turning reddish brown when ripe, distinctive, resembling a small lemon.

Dry woodland or bush, scrub, on sandy soils; 45-1200 m alt. (S. Africa).

NE S. Africa, Swaziland.

V. carringtoniana Mendonça – Icon.: Palmer & Pitman, Trees south. Afr. 2: 992, 1972.

syn.: *Teclea pilosa* (Engl.) I. Verd. misapplied.

Deciduous shrub or tree 3-4 m tall, dioecious; young branches glabrous; bark pale, smooth; leaves alternate, 3-foliolate, thinly textured, glabrous; petiole 0,5-2,3 cm long, winged; leaflets sessile, densely gland-dotted, ±elliptic, 1,5-5 × 0,6-1,5 cm; flowers yellow, unisexual, in terminal racemes or panicles 2 cm long; fruit orange, smooth, gland-dotted, ellipsoid, c. 1 cm long.

Dry alluvial or sandy soils in deciduous thickets with *Acacia* in low-lying sublittoral regions; to c. 50 m lat. (100-320 m in S. Africa).

NE S. Africa (first recorded here as uncertain by Palmer & Pitman l.c.), Swaziland.

V. dainellii (Pic. Serm.) Kokwaro – Icon.: Pichi Sermolli, Miss. Stud. Lago Tana 7, Ricerche Bot. 1: pl. 12, 1951 (photo. type).

bas.: *Diphasia dainellii* Pic. Serm.

Evergreen spreading shrub or tree 2-15 m tall; trunk c. 30 cm Ø with dark glossy bark and cream slash; twigs scurfy puberulent, soon glabrescent; leaves (sub-)opposite, 3-foliolate, puberulent glabrescent; petiole 4-12 cm long, terete; leaflets leathery, elliptic, 14-33 × 4-10 cm, petiolule 2-10 mm long; flowers unisexual, in strictly terminal conical panicle to 25 cm long, with conspicuous bract scars; fruit glabrous, conspicuously gland-dotted, *2-lobed*, to 1,7 cm long.

Moist montane forest, widespread, often with *Podocarpus* or *Aningeria adolfi-frederici* in understorey; less often at forest margin or in secondary growth extending into lowland *Celtis-Aningeria altissima* forest (SW Ethiopia); (1050-)1750-2000 (-2500) m alt.

V. drummondii Mendonça

Evergreen shrub 0,7 m tall, dioecious; young branches minutely puberulous, glabrescent; leaves alternate, 1-foliolate, papyraceous, elliptic, 4-12 × 1-3 cm, with very minute gland dots; petiole 3-10 mm long, grooved above; flowers unisexual, pale yellow, in axillary panicles 3 cm long (male); female flowers and fruit unknown.

Forest on mountain slope; c. 1200 m alt.

Known only from the type collected in 1955. – Perhaps also in Mozambique.

V. eggelingii (Kokwaro) Mziray

bas.: *Teclea eggelingii* Kokwaro

Shrub or tree, monoecious, 3-9 m tall; twigs, leaf petioles and inflorescences golden tomentose; older branches grey, lenticellate; leaves (1-2-)3-foliolate, alternate; petiole 1-7 cm long, terete; leaflets subsessile, leathery, oblanceolate 4-13 × 1,5-6 cm; flowers bisexual or unisexual, pedicelled, yellow-white, in terminal panicles 3-12 cm long; fruit red, glandular-bullate, ± hairy, ellipsoid, 1-1,3 cm long, 1-locular.

Evergreen forest; widespread; 900-1600 m alt.

Verdoorn (in Bull. Misc. Inf. Kew 1926: 411) mentions under *Diphasia angolensis (= Vepris hiernii)* the specimen Dummer 722 from Uganda as possibly belonging to the latter species, but ovary not lobed and flowers sessile (fide Kokwaro in Fl. Trop. E. Afr., Rutac.: 29, 1982).

V. elegantissima F. White & Pannell – Icon.: F. White & al. Evergreen forest fl. Malawi: 514, 2001.

Tree 10-12 m, with slender yellowish-brown longitudinally wrinkled twigs with pale yellow simple hairs, glabrescent; leaves (sub-)opposite, 3-foliolate, with inconspicuous glands; petiole 0,7-2,5 cm long; leaflets elliptic, 2-9 × 0,5-2 cm, the terminal slightly larger than the laterals, obtusely acuminate, decurrent at base (resembling a petiolule) and easily breaking off there; flowers pale yellow in delicate inflorescences 2,5-4 cm long with very slender axes; fruit red, ellipsoid, c. 1 cm long.

Rocky river banks, source of stream on slope of crater, in evergreen rain-forest; 900-1000 m alt.

Known only from type locality (Mt Mlanje, Malawi); collected in 1985 and 1986.

An unidentified specimen (Drummond 4995, K) from Zimbabwe is similar (White & Pannell, Bull. Jard. Bot. Natl. Belg. 65: 420, 1996).

Related to *V. nobilis.*

V. eugeniifolia (Engl.) I. Verd. – Icon.: Thulin, Fl. Somal. 2: 176, 1999.

bas.: *Toddalia simplicifolia* Engl. var. *eugeniifolia* Engl.

syn.: *Teclea* ? *gracilipes* Engl.; *Aeglopsis alexandrae* Chiov.; *Teclea alexandrae* (Chiov.) Senni

Profusely branched shrub 2-4,5 m tall, or tree 1,5-12 m; branchlets glabrous; bark grey, smooth or longitudinally fissured; leaves 1-foliolate, alternate, glabrous, with raised glands beneath, bluntly acuminate, elliptic, 3,5-12 × 2-5,5 cm; petiole 1-2 cm long, swollen at both ends; flowers yellow-green, unisexual, pedicellate, in axillary raceme-like panicles to 5 cm long; fruit round, orange-red, 6-10 mm Ø.

Semi-evergreen bushland, often on rocky outcrops; inland in bush- or woodland on rocky hillsides or lava; on the coast mostly in forest or thicket; 1-1400 m alt.

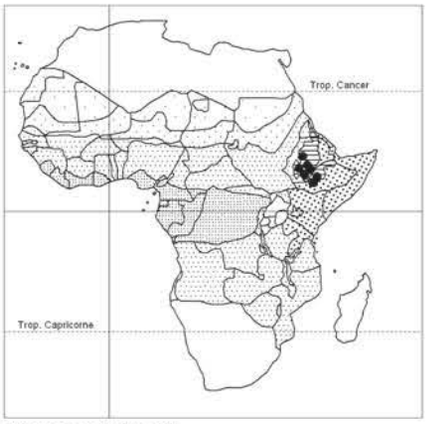
V. fadenii (Kokwaro) Mziray – Icon.: Beentje, Kenya trees, shrubs & lianas: 367, 1994 (sub gen. *Diphasiopsis).*

bas.: *Diaphasiopsis fadenii* Kokwaro

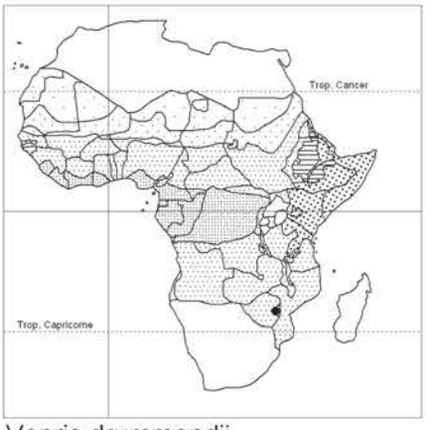
Tree or shrub 3-22 m tall, much branched; each primary branch rebranching into a small dense rounded crown; bark grey; leaves alternate or subopposite, (2-)3-foliolate; petiole 1,5-5,8 cm long, subterete, shortly pubescent when young; leaflets ±elliptic, glabrous, 4-16 × 2-8 cm; flowers cream, unisexual, in panicles 2,5-7 cm long; fruit yellow, ellipsoid, 2-2,5 cm long.

Moist forest or thicket on rocky hills; 900-1950 m alt.

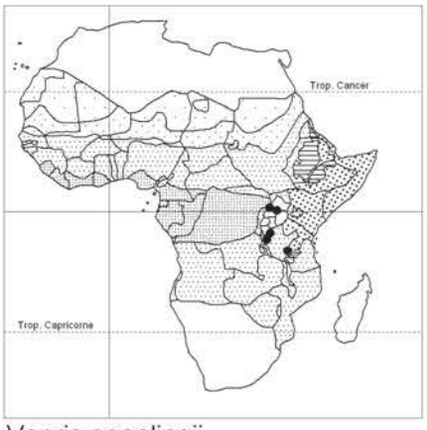
Known only from E Kenya (hills of Teita District).



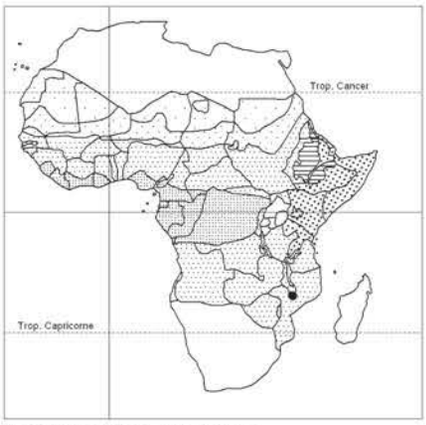
Vepris dainellii



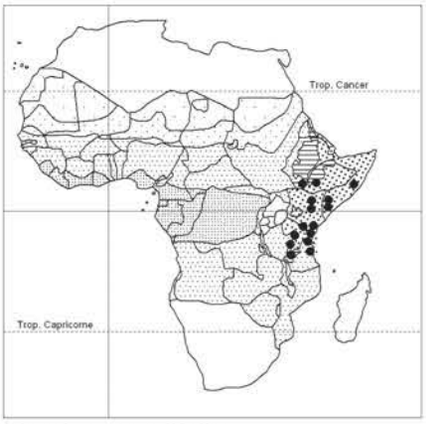
Vepris drummondii



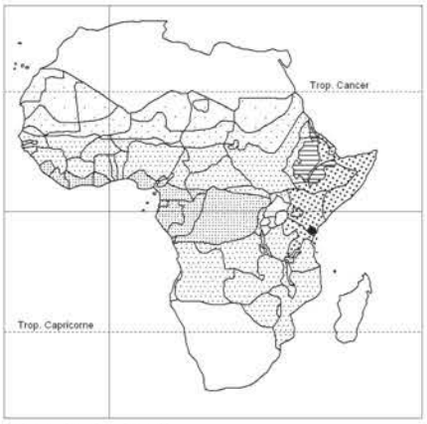
Vepris eggelingii



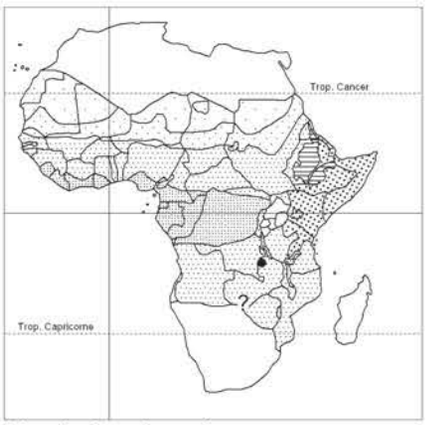
Vepris elegantissima



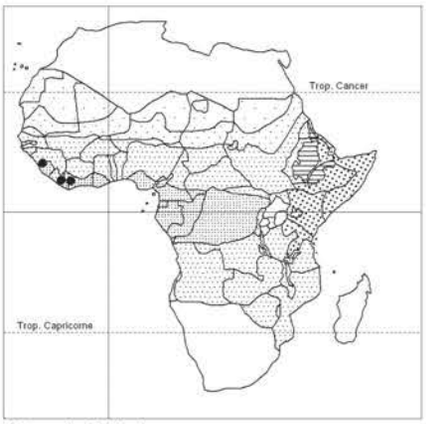
Vepris eugeniifolia



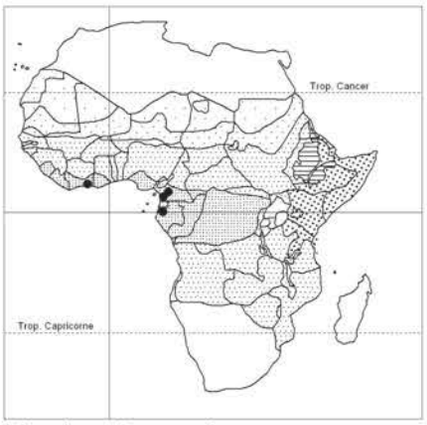
Vepris fadenii



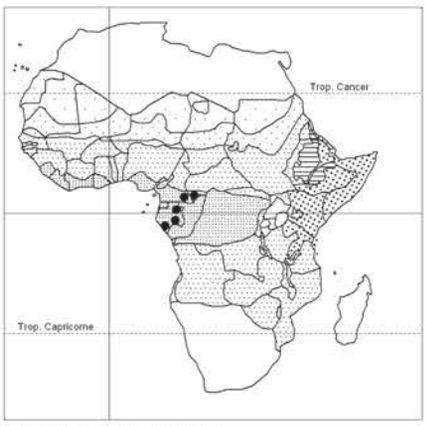
Vepris fanshawei



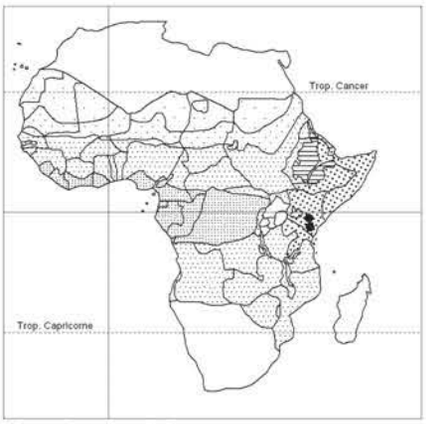
Vepris felicis



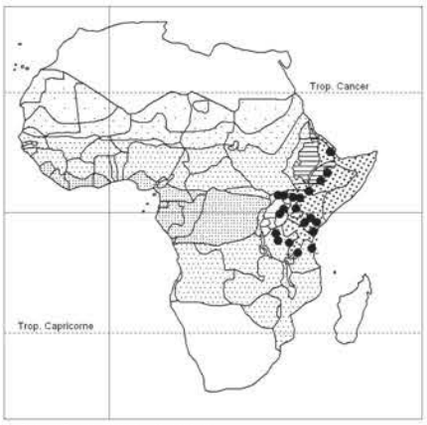
Vepris gabonensis



Vepris glaberrima



Vepris glandulosa



Vepris glomerata

V. fanshawei Mendonça

Shrub 1,5 m tall, glabrous; leaves alternate, (1-)-3-foliolate; petiole 1-4,5 cm long, terete; leaflets sessile, *drooping*, densely gland-dotted, narrowly elliptic, 6,5-11,5 × 2-3 cm; flowers unisexual, clustered in stout axillary panicles to 5 cm long; male flowers known only in bud; female ones and fruit unknown.

Ecology unknown.

Known only from the type collected in 1958.

Related to *V. reflexa.*

V. felicis Breteler – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 705, 2006 (partial).

Shrub to 1,5 m tall, or small tree; branchlets ±puberulous, glabrescent; leaves *truly simple* (not 1-foliolate!), yellowish, mostly (sub-)opposite, elliptic, (6-)8-14(-17) × 2-7 cm, obtusely acuminate, glabrous; petiole 3-10 mm long, ± terete, sparsely puberulous to glabrous; male flowers (c. 30) in small axillary or terminal thyrse, puberulous; ? female flowers unknown.

In a relict fragment of primary forest.

Known from very few collections. Rare.

A collection from Liberia (De Wilde & Voorhoeve 3754, = the type) was first identified and distributed as *Rinorea* sp. *(Violaceae).* Letouzey studied a Jacques-Félix collection (2096) from adjacent Guinea which he recognised as a new species of *Vepris*, but in lack of female flowers did not publish it.

V. gabonensis (Pierre) Mziray – Icon.: Fl. Gabon 6: 59, 1963.

bas.: *Oricia gabonensis* Pierre

syn.: *O. klaineana* Pierre

Shrub or tree 4-15 m tall, most parts with woolly ferrugineous indumentum, soon glabrescent; stem to c. 20 cm Ø; leaves 3-foliolate; petiole 2-25 cm long, terete; petiolules to 2 cm long; leaflets obovate-elliptic, 10-32 × 5-14 cm, ± coriaceous, silvery green beneath; flowers yellow, unisexual, in 20 cm long panicles; fruit red (of 4 free carpels, 1-3 rudimentary and persistent), tomentose, ±glandular-dotted, ellipsoid, 1,2-1,5 cm long.

Forest, in understorey.

V. glaberrima (Engl.) J. B. Hall ex D. J. Harris, Kew Bull. 55: 458, 2000. – Icon.: Fl. Gabon 6: 73, 1963. – Neotype: Letouzey 3728, Cameroon, Ngola by Lomié (Mildbraed s. n., B, assumed destroyed).

bas.: *Oriciopsis glaberrima* Engl.

Tree or shrub 1-3 m tall; branchlets slender, brown or greyish, longitudinally striate; leaves (1-2-)3-foliolate; petiole to 12 cm long; leaflets oblong-elliptic, 10-18 × 2,5-5,5 cm, decurrent and forming petiolules, bluntly acuminate, papery, discolourous; flowers bisexual?, in terminal inflorescences; fruit ± ovoid, 1,5-2 cm long, pale orange, granular.

Moist rain-forest, on loamy soils; common; to c. 800 m alt.

First record for Centr. Afr. Rep. by Harris (Vascul. pl. Dzanga-Sangha Res.: 187, 2002). Recorded from Gabon by Sosef & al., Check-list pl. vascul. Gabon: 378, 2006.

V. glandulosa (Hoyle & Leakey) Kokwaro

bas.: *Tecleopsis glandulosa* Hoyle & Leakey

Shrub or tree 4,5-7 m tall; trunk with smooth grey bark; young branchlets rusty tomentose, shallowly furrowed, older ones greyish brown; leaves opposite or alternate, 3-foliolate; petiole 3,5-6,5 cm long, terete, tomentose, glabrescent; leaflets ±sessile, glabrous but for midrib, elliptic, 8-22 × 3-6,5 cm, sometimes unequal-sided, papyraceous; flowers greenish yellow, hermaphrodite, in 15 cm long panicles; fruit red, bilobed, 1,2-1,6 cm long.

Upland dry evergreen forest (on the Rift Valley flanks); 2000-2100 m alt.

Similar to *V. arushensis*, but ovary bilocular (not unilocular).

Endangered (fide Beentje, Kenya trees, shrubs & lianas: 371, 1994).

V. glomerata (F. Hoffm.) Engl. – Icon.: Beentje, Kenya trees, shrubs & lianas: 371, 1994.

bas.: *Toddalia glomerata* F. Hoffm.

Shrub or tree 1-7,5 m tall with rounded crown; bark grey, smooth, occasionally with some raised knobs; young branchlets tomentellous; leaves 3-foliolate; petiole 2-4,5 cm long, *flattened, winged*; leaflets sessile, ±elliptic, 1,5-8 × 1-3 cm, glabrous (var. **glabra**) to densely pubescent, obtuse or ±emarginate at apex; flowers yellow-green, unisexual, in terminal glomerate panicles to 6 cm long; fruit orange, round, c. 1cm Ø, 1-seeded.

Dry bushland, often on rocky hills; riverine woodland; wooded grassland; deciduous woodland or bushland often on limestone or black cotton soil; 1-1820 m alt.

Comprises 2 vars.: – var. **glomerata** (syn.: *Toddalia pilosa* Engl. 1895, non Bak. 1884; *Vepris pilosa* Engl.; *Teclea glomerata* (Engl.) I. Verd.; *Teclea pilosa* (Engl.) I. Verd.; – var. **glabra** Kokwaro (syn.: *Teclea evodioides* Chiov. as "ovodioides") sporadically throughout the geographic range and in S Sudan. Ethiopia: in deciduous woodland/bushland with *Terminalia, Commiphora,* often on basement complex rocks, 1450 m alt.; S Sudan: in tangle on termite mound; overgrazed bush along road; *Combretum* savanna; thornbush with *Acacia nilotica, Commiphora africana;* 500-700 m (fide Friis & Vollesen, Fl. Sudan-Uganda border: 276, 1998).

V. gossweileri (I. Verd.) Mziray, non *V. gossweileri* I. Verd. 1926: 399 *(=V. welwitschii).*

bas.: *Teclea gossweileri* I. Verd. 1926 (type Gossweiler 8328 p.p.: one part is *Hibiscus gossweileri* Sprague, fide Exell in J. Bot. 65, Suppl. Polypet.: 53, 1927).

Evergreen shrub or tree 1,5-8 m tall; branches glabrous; leaves 1-foliolate, oblong-elliptic, 12-17 × 5 cm, acuminate, inconspicuously gland-dotted; petiole 1,5-3,5 cm long, strongly grooved; ± flattened, slightly pulvinate, jointed at apex; flowers unisexual, sessile, clustered on long weak axillary peduncles; fruit?

Amongst forest-trees; mixed woods; 20-1200 m alt.

V. grandifolia (Engl.) Mziray – Icon.: Fl. Cameroun 1:119, 1963; Fl. Gabon 6: 83, 1963; Fl. Gabon 1: 119, 1963.

bas.: *Teclea grandifolia* Engl., non sensu auctt. *(=V. verdoorniana).*

syn.: *Zanthoxylum welwitschii* Hiern and *Teclea welwitschii* (Hiern) I. Verd., p.p., quoad specim. Welwitsch 4554, 4555, 4556, and excl. specim. Swynnerton 1322 *(= V. nobilis); T. zenkeri* Engl. p.p.

Evergreen shrub or tree 4-11 m tall; bark rough, flaking, yellow-brown; branches and leaves glabrous; leaves (1-2-)3-foliolate; petiole 2-6 cm long, grooved above, often flattened; leaflets subsessile, elliptic-oblong, 7-19 × 2,5-7 cm, long-acuminate, papery, dark green; flowers bisexual, creamy white, clustered on branches of the axillary and terminal inflorescences 3-5(-8) cm long, with reddish-brown peduncle and rhachis; fruit ovoid, glandular-punctate, c. 1 cm long.

Rain-forest, (evergreen) riverine forest, mist forest; 1-1700 m alt.

Bioko / Fernando Poo. (fide Aedo & al., Bases docum. Pl. Guinea Ecuat.: 294, 1999). –Record from Sierra Leone (Barter s.n.) in Verdoorn 1926: 407, is *V. verdoorniana.*

Resembling *V. afzelii* but inflorescence different.

V. hanangensis (Kokwaro) Mziray; Gilbert in Nord. J. Bot. 6: 141, 1986. – Icon.: Kew Bull. 32: 792, 1978 (both vars.).

bas.: *Teclea hanangensis* Kokwaro, excl. specim. Gillett 14120 *(=V. borenensis).*

Shrub much-branched or tree 8-20 m tall; bark grey with raised lenticels; branchlets pubescent; leaves 1-3-foliolate; petiole 1-4 cm long, subterete, slightly flattened or channelled above, puberulous to glabrate; leaflets elliptic, 4-10 × 2-4 cm, ±glabrous, with numerous pellucid gland-dots; flowers polygamous, yellow, in axillary and terminal lax pubescent panicles to 17 cm long; fruit obliquely ovoid, 1,5-1,8 cm long, glabrous, glandular-foveolate and bullate, dry.

Upland dry (evergreen) forest, riparian forest (along the Rift Valley); 1700-2500 m alt.

Comprises 2 vars.: – var. **hanangensis**, restricted to Tanzania; – var. **unifoliolata** Kokwaro, with 1-foliolate leaves in mature trees (young plants frequently have some 2- or 3-foliolate leaves). Juvenile plants may have very large 1-foliolate leaves (30 × 12 cm). Restricted to the dry forests around Nairobi (S Kenya), and possibly in Aberdares (Beentje, Kenya trees, shrubs & lianas: 369, 1994).

V. heterophylla (Engl.) Letouzey – Icon.: Rev. Int. Bot. Appl. Agric. Trop. 30: 78 pl. 4C, 1950 and Aubréville, Fl. forest. Soudano-Guin.: 363, 1950 (sub nom. *Teclea sudanica);* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 701, 707, 2006.

bas.: *Teclea heterophylla* Engl.

syn.: *Toddaliopsis heterophylla* (Engl.) Engl.; *Teclea sudanica* A. Chev.; *Vepris sudanica* (A. Chev.) Letouzey

Shrub 1-3 m tall; branchlets grey, striate, puberulous; leaves (1-2-)3-foliolate, yellowish green, glabrous, aromatic; petiole 1-1,5-4 cm long, terete; leaflets ±sessile, elliptic, 10-12 × 3-4 cm, long-acuminate, with conspicuous black glands beneath; flowers yellow, unisexual, sessile, in very short (to 3 cm long) axillary glabrous inflorescences.

Very dry forest; rocky hills in savannas, hill slopes with granite boulders; river banks; c. 300 m alt.

Sold on markets in Mali, where it appears to be locally overharvested (fide Duvall, Syst. Geogr. Pl. 71: 699, 2002).

With remarkable adaptions to dry conditions.

V. hiernii Gereau, nom. nov. for *V. angolensis* (Hiern) Mziray – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 119 pl. 171, 1959; Fl. Cameroun 1: 97, 1963; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 707, 2006 (partial).

syn.: *Cranzia* (Schreb. 1789, non J. F. Gmel. 1791 = *Buxus) angolensis* Hiern; *Diphasia angolensis* (Hiern) I. Verd., excl. specim. Dummer 722 from Uganda *(= Vepris eggelingii); D. klaineana* Pierre; *Vepris angolensis* (Hiern) Mziray, nom. illegit., non *V. angolensis* Engl. 1896 *[= Fagaropsis angolensis* (Engl.) Dale].

Shrub or tree 8-16 m tall; trunk to 30-45 cm Ø, soon dividing into spreading branches; young branches with spreading conspicuous orange-rusty yellow hairs; leaves 3-foliolate, alternate, yellowish pubescent beneath like the petiole (2-8 cm long and somewhat flattened); leaflets elliptic-ovate, 5-18(-23) × 2-7 cm, acuminate, glabrous above; flowers white, sweet-scented, unisexual, numerous in terminal and axillary pyramidal yellow-hispid-tomentose panicles; fruit obliquely ellipsoid, orange, glabrous-sparingly hairy, covered with raised dots.

Moist semi-deciduous (coastal) forests, especially in rocky places; forest gallery, river banks; borders of primitive forests; forest in understorey; very scarce in Angola.

WATERMAN, P. G. & al. (1978). Biochemical systematics and ecology of the Toddalioideae in the central part of the West African forest zone. *Biochem. Syst. Ecol.* 6: 239-245 [with maps].

V. lanceolata (Lam.) G. Don – Icon.: A. Jussieu in Mém. Mus. Hist. Nat. Paris 12: pl. 26/41, 1825, and Engler in Engler & Prantl, Nat. Pflanzenfam., ed. 2, 19a: 299, 1931 (partial); Coode in Fl. Mascar. 65: 20, 1979; Palmer & Pitman, Trees south. Afr. 2: 990, 1973 (sub nom. *V. undulata).*

bas.: *Toddalia lanceolata* Lam.

syn.: *Vepris undulata* (Thunb.) I. Verd. & C. A. Sm., nom. illegit.; *V. querimbensis* Klotzsch; *Boscia* (Thunb., non Lam. = *Capparaceae) undulata* Thunb.; *Toddalia lanceolata* Lam. var. *florida* Cordem.; *T. paniculata* Lam.; *Vepris inermis* Commerson ex Juss.; *V. obovata* G. Don, nom. illegit. superfl.; *V. paniculata* (Lam.) Engl.; *Scopolia lanceolata* (Lam.) Spreng.; *S. paniculata* (Lam.) Engl.

Evergreen shrub or tree 2-5 (-24 in forest) m tall, glabrous; bark (dark) grey, smoothish; leaves alternate, 3(-4)-foliolate, strongly lemon-scented (crushed); petiole 1-6-15 cm long, longitudinally grooved above; leafless sessile, narrowly elliptic, 5-12 × 1,5-3 cm, densely gland-dotted; flowers unisexual, yellowish (green), in much branched terminal panicles broader than long; fruit round, smooth, black; 4-lobed, 4-6 mm Ø, glandular punctate.

In a wide range of habitats. Coastal evergreen thicket; along beaches on loose sandy soil, dunes; 0-100 m alt. (5-1400 m in S. Africa).

S. Africa; Mascarane Isl.

Porcupines eat the bark, ring-barking the trees and eventually killing them.

V. louisii G. C. C. Gilbert

Shrub or tree 2-30 m tall, glabrous; trunk to 65 cm Ø; leaves (2-)3-foliolate; petiole 2-7 cm long, slightly grooved above; leaflets oblong-elliptic, acuminate, 7-15 × 2-5,5 cm, ±papery, petiolules 0,5-1,7 cm long; flowers unisexual, in axillary and terminal panicles to 6 cm long; fruit yellow-orange, round, 1-2,3 cm Ø, not lobed.

Forest on firm ground, in understorey and in fallow land; riverine formations; dense forest at foot of cliffs; c. 470 m alt.

V. macedoi (Exell & Mendonça) Mziray

bas.: *Teclea macedoi* Exell & Mendonça

Shrub or tree 3-5 m tall; branchlets glabrous, ash grey, leaves alternate or opposite, 3-foliolate, glabrous; petiole 0,5-1,5 cm long, slightly grooved above; leaflets sessile, elliptic-oblanceolate, cartaceous, 2-6 × 0,6-2 cm, densely gland-dotted beneath; flowers unisexual in branched glabrous axillary panicles c. 3 cm long; fruit ±round, gland-dotted, c. 7 mm Ø.

Evergreen forest; c. 1050 m alt.

V. mandangoana Lisowski

Shrub or tree c. 8 m tall; leaves alternate, 3-foliolate, large; petiole 6-7 cm long, grooved above; leaflets ±papery, sessile, glabrous, gland-dotted beneath, elliptic, long-acuminate, 27-32(-39) × 15-16 cm, the laterals smaller and with unequal sides; flowers bisexual or unisexual, in terminal rusty-hairy panicles shorter than the leaves; fruit (2-3-)4-lobed, rusty-hairy, gland-dotted, c. 1 cm Ø.

Riverine forest at foot of steep cliff.

V. mendoncana Mziray, nom. nov. – Icon.: Fl. Zambes. 2/1: 198, 1963 (sub nom. *Diphasiopsis whitei).*

syn.: *Diphasiopsis whitei* Mendonça 1961, non *Vepris whitei* Mendonça 1961; *Oricia* sp. sensu White, For. fl. N. Rhod.: 170, 1962.

Shrub 1-1,5 m tall, with unpleasant smell; young branches, petioles and inflorescences densely pilose; leaves alternate, 3-foliolate; petiole subterete, 1-8 cm long; leaflets sessile, elliptic, 2-7(-11) × 1-4 cm, glabrous except midrib, or pubescent-glabrescent with long sparse appressed hairs; flowers yellow, unisexual, in panicles to 7 cm long; fruit unknown.

Fringing forest, river banks; c. 1200 m alt.

(**V. mildbraediana** G. M. Schulze 1934)

Small shrub 2 m tall; branchlets short-hairy, glabrescent; leaves 1-foliolate, oblong-lanceolate, 6-15 × 2,5-5,5 cm, short-hairy on midrib beneath, inconspicuously gland-dotted; petiole 1,5-2,5 long, short-hairy; male flowers yellow, in lax axillary racemes; female flowers and fruit unknown.

Mountain mist forest (Tanzania, Uluguru Mts.); 1860 m alt.

Known only from the type collected in 1932.

Related to or perhaps identical with *V. ngamensis.*

Insufficiently known. Not mapped.

V. morogorensis (Kokwaro) Mziray – Icon.: Kew Bull. 32: 786, 1978.

bas.: *Diphasia morogorensis* Kokwaro

Evergreen shrub 1-3 m tall, or occasionally tree to 10 m; branchlets minutely pubescent, conspicuously lenticellate; leaves alternate, (1-2-)3-foliolate; petiole 3-9 cm long; leaflets sessile, elliptic-oblong, 11-22 × 4-7,5 cm; flowers polygamous, white in short panicles or racemes 2-4 cm long, mostly terminal, minutely pubescent; fruit 2-lobed, ellipsoid, 1,2-1,5 cm long.

Rain-forest, especially at edges; sometimes riverine; 1000-2200 m alt. (var. *morogorensis);* riverine forest on limestone outcrops; c. 300 m alt. (var. *subalata).*

Comprises 2 vars., described under *Diphasia morogorensis:* – var. *morogorensis* with subterete leaf petiole; – var. *subalata* Kokwaro, with a narrow wing on either side of petiole.

V. myrei (Exell & Mendonça) Mziray; Coates Palgrave, Trees south. Afr., ed. 3: 419, 2002.

bas.: *Teclea myrei* Exell & Mendonça

Evergreen shrub or tree 2-5 m tall; young branchlets glabrous, blackish, becoming grey-brown or mottled grey; leaves alternate, 3-foliolate, shiny green; petiole 1,5-4 cm long; leaflets elliptic, 3-11 × 1-3 cm, ±coriaceous; flowers greenish, unisexual, in tight axillary clusters; fruit orange-red, ±hairless, ellipsoidal, c. 1 cm long, sessile, produced in tight clusters.

Sandy places near the coast; thickets.

V. ngamensis I. Verd. 1926; Beentje, Kenya trees, shrubs & lianas: 372, 1994.

syn.: *Teclea ngamensis* Engl. ms.

Shrub with glabrous branches; leaves 1-foliolate, (broadly) elliptic, 14-29 × 6-8,5 cm, acuminate, very finely gland-dotted, glabrous; petiole slender, 2-4 cm long, grooved above, articulated at the junction with the blade; flowers in axillary racemes, unisexual; fruit ovoid-ellipsoid, c. 1,2 cm long.

Rain-forest; 80-800 m alt.

Similar to or ? identical with *V. mildbraediana*.

V. nobilis (Delile) Mziray – Icon.: Beentje, Kenya trees, shrubs & lianas: 369, 1994 (sub gen. *Teclea);* Fl. Zambes. 2(1): 207, 1963; Troupin, Fl. Rwanda Sperm. 2: 251, 1983; F. White & al., Evergreen forest fl. Malawi: 514, 2001; Thulin, Fl. Somal. 2: 177, 1999; Chaudhary Fl. Kingd. Saudi Arabia ill. 2(1): 487, 2001; Burrows & Willis, Pl. Nyika Plateau: 257, 2005; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 305, 2008 (sub gen. *Teclea).*

bas.: *Teclea nobilis* Delile

syn.: *T. nobilis* Delile var. *latifoliolata* Engl.; *T. welwitschii* (Hiern) I. Verd. 1926: 408, p.p. quoad specim. Swynnerton 1322; *Toddalia nobilis* (Delile) Hook. f.; *Teclea natalensis* sensu Bak. f. in J. Linn. Soc., Bot. 40: 35, 1911, non *Toddalia natalensis* Sond.; *Aspidostigma acuminatum* Hochst., non *Teclea acuminata* Engl.; *Teclea diversifolia* Mattei

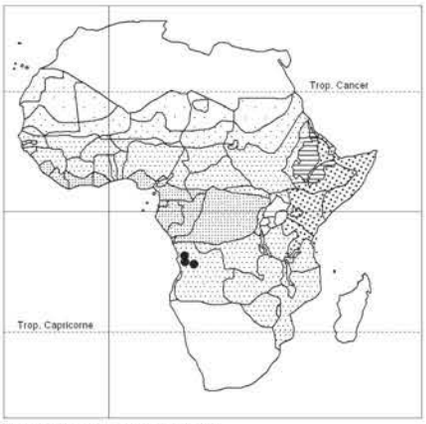
Evergreen tree, less often shrub, 2-12(-18) m tall (taller in rain-forest); trunk to c. 30 cm Ø; bark grey-brown, finely grooved or smooth; twigs glabrous; leaves alternate, (1-2)-3-foliolate; petiole terete, 1,5-8 cm long; leaflets ±glabrous, densely gland-dotted, elliptic, 5-18 × 1,5-5,5 cm, petiolules c. 1 cm long; flowers yellow-green, polygamous, sessile, in terminal and axillary panicles 4-15 cm long; fruit yellow, orange or red, glabrous, obovoid, 5-8 mm long; edible.

Evergreen (dry) forest, thickets on rocky hills; wooded grassland; riverine formations; rain-forest; lake shores; *Podocarpus latifolius-Olea* forest; rocky outcrop with *Sterculia setigera, Cordyla richardii, Ficus arbutilifolia;* slope with *Polyscias-Syzygium-Albizia* forest in dry riverbed; forest in understorey with *Sapium ellipticum, Ficus vallis-choudae;* old high forest; *Juniperus* forest; dry evergreen bushland or woodland in moist montane forest; 450-2800 m alt.

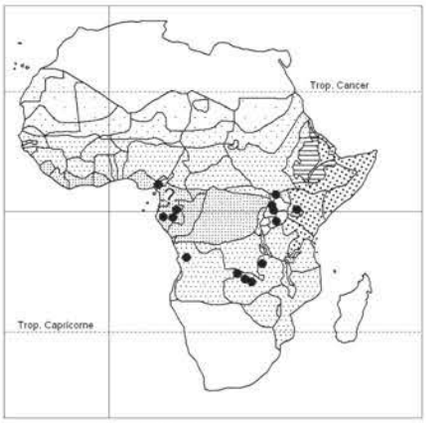
Coppice shoots sometimes with ±opposite leaves. Somali plants have very small leaves (leaflets 5-6 × 1,5-2 cm) and small flowers. – Taxa with different fruit forms can be recognised according to M. G. Gilbert in Fl. Ethiop. 3: 427, 1989: – form A with small obovoid fruits 6-10 mm long lacking obvious oil-glands, similar to those of *V. simplicifolia;* – form B with large, narrowly ellipsoidal fruits 13-15 mm long with conspicuous oil-glands, resembling those of *V. borenensis* and *V. hanangensis.* Form A in drier evergreen bushland and woodland, 900-1900 m alt. Form B in moister upland forests, 2000-2250 m alt; restricted to central Ethiopia: WG, SU.

Saudi Arabia, Yemen.

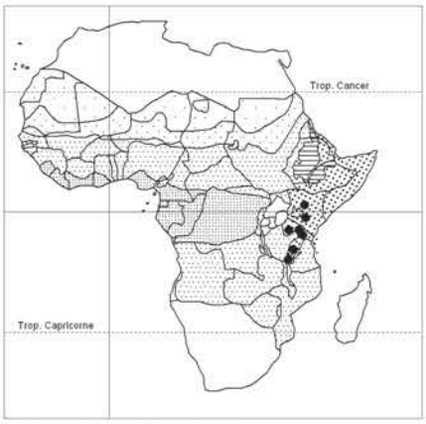
"Attractive and conspicuous when heavily in fruit".



Vepris gossweileri



Vepris grandifolia



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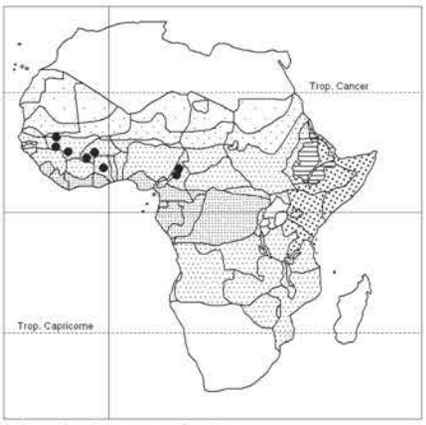
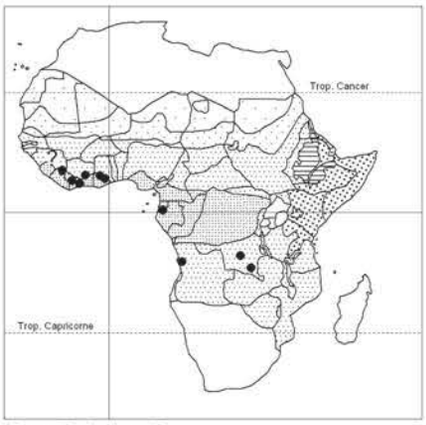
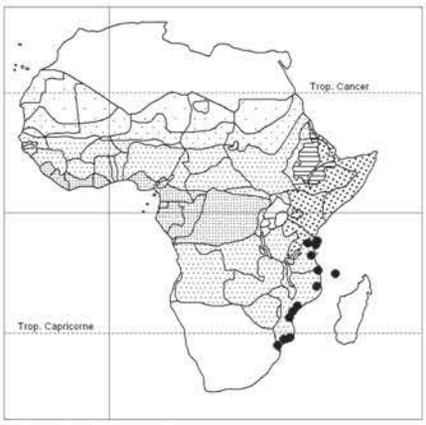


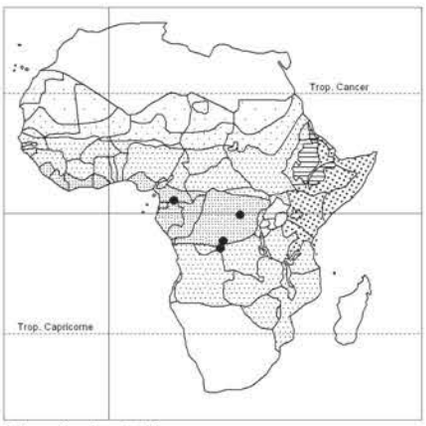
Vepris heterophylla



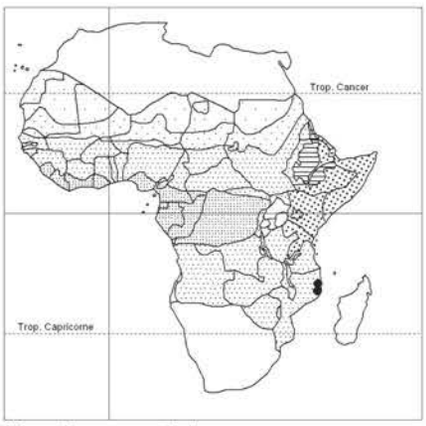
Vepris hiernii



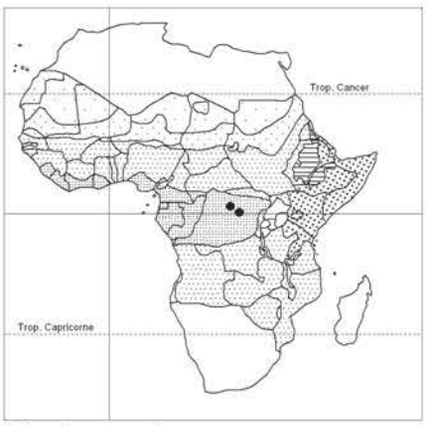
Vepris lanceolata



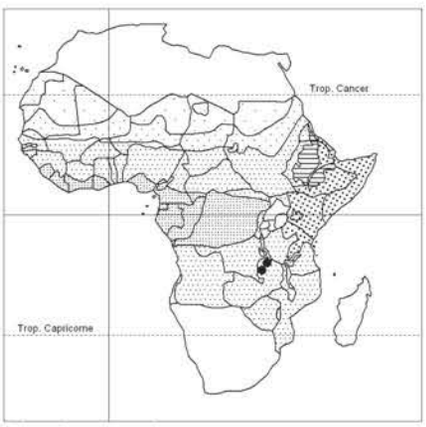
Vepris louisii



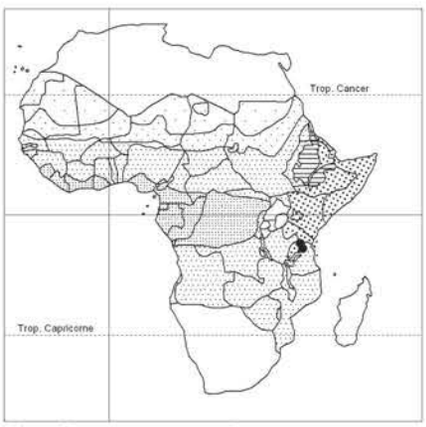
Vepris macedoi



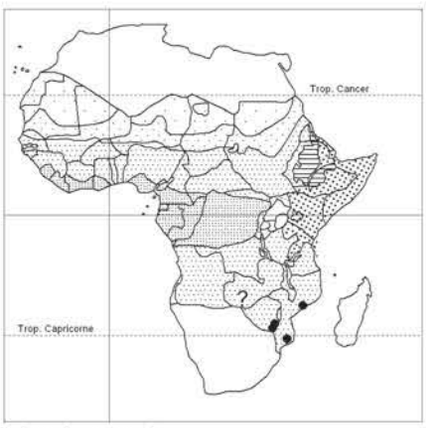
Vepris mandangoana



Vepris mendoncana



Vepris morogorensis



Vepris myrei

V. noldeae (Exell & Mendonça) Mziray

bas.: *Diphasia noldeae* Exell & Mendonça, non *Citropsis noldeae* Exell & Mendonça

Tree with young branchlets yellow-tomentose; leaves 3-foliolate, alternate, yellow-tomentose; petiole 11 cm long, petiolules 1-2,5 cm long; leaflets oblong-elliptic, 24 × 7,5 cm, gland-dotted, acuminate; flowers yellowish-green, unisexual, sessile, in terminal yellow-tomentose inflorescences; fruit unknown.

Rain-forest; 1200 m alt.

Known only from the type collected in c. 1930.

Resembling *V. hiernii* but leaf-petiole longer and flowers sessile.

V. reflexa I. Verd.; Coates Palgrave, Trees south. Afr., ed. 3: 416-417, 2002.

Shrub or tree to 6 m tall, dioecious; all parts glabrous; leaves alternate, 3-foliolate, drooping; petiole 1-3 cm long, terete or ±grooved at apex; leaflets coriaceous, narrowly elliptic, 3-8 × 1-4 cm, folded, densely gland-dotted, with distinct petiolules; flowers sessile, unisexual, in axillary racemes or panicles ± as long as leaf petioles; fruit ellipsoid.

Deciduous woodland, grassland; up to 800 m alt.

S. Africa, Swaziland, Botswana.

May be confused with *V. lanceolata* (with *undulate, not folded* leaflets). – Difficult to separate from *V. rogersii* with 4 stamens (not 8) and sessile leaflets (both occur in the Matopos hills, Zimbabwe).

V. renieri (G. C. C. Gilbert) Mziray – Icon.: Troupin, Fl. Rwanda Sperm. 2: 249, 1983.

bas.: *Oricia renieri* G. C. C. Gilbert

Tree or shrub 4 m tall; branchlets rusty-hairy, glabrescent; leaves 3-foliolate, alternate; petiole 10 cm long, grooved; leaflets with short petiolules, elliptic-oblanceolate, 22-30 × 7-10 cm, glabrous, coriaceous, gland-dots beneath hardly visible; flowers unisexual in puberulous, axillary and terminal panicles; fruit ovoidal, c. 1 cm long.

Mountain forest; 1800-2000 m alt.

Known only from Rwanda.

(**V. robertsonae** Q. Luke ined. in J. E. Afric. Nat. Hist. 94/1: 62, 2005)

Tree 2 m; leaves 1-foliolate, stiff; flowers yellow in axillary clusters; fruit sessile, oblong, 1,4 × 0,6 cm, orange/red.

SE Kenya: Shimba Hills (Kwale Distr.). Cited from one collection (Luke & Robertson 1539).

Not mapped.

V. rogersii (Mendonça) Mziray; Coates Palgrave, Trees south. Afr., ed. 3: 419, 420, 2002.

bas.: *Teclea rogersii* Mendonça

syn.: *T. fischeri* sensu White, Forest fl. N. Rhod.: 170, 1962 p.p., quoad specim. White 2473.

Evergreen shrub to 3 m tall; all parts glabrous; leaves 3-foliolate, alternate; petiole 1-3 cm long, broadly grooved; leaflets sessile, leathery, elliptic, 2-10 × 1-3 cm, veining visible above; flowers unisexual, in axillary sessile glomerules, also on older leafless stems; fruit scarlet drying black, ellipsoidal, c. 1 cm long.

Dry rocky places in the mopane belt of the Zambezi and Save (Sabi) basins.

V. samburuensis Kokwaro

Shrub or tree 3-7 m tall; bark greyish; young branchlets, leaf petioles and inflorescences rusty tomentose; leaves 3-foliolate, alternate; petiole 4-15 cm long, subterete, narrowly grooved; leaflets elliptic, 10-24 × 4-11 cm, sessile, base almost auriculate and very unequal in the laterals, glabrous to pubescent; flowers unisexual, in terminal panicles 6-11 cm long; fruit 2-4-lobed, ellipsoidal, 1-1,5 cm long.

Riverine forest, upland dry (semi-)evergreen forest, bushland and woodland on steep rocky slopes; 1000-1520 m alt.

Rare (fide Beentje, Kenya trees, shrubs & lianas: 372, 1994).

V. sansibarensis (Engl.) Mziray – Icon.: Beentje, Kenya trees, shrubs & lianas: 370, 1994 (sub gen. *Toddaliopsis).*

bas.: *Toddalia sansibarensis* Engl. (July 1895).

syn.: *Toddaliopsis sansibarensis* (Engl.) Engl. (Dec. 1895).

Evergreen shrub or tree 1,5-5 m tall; bark smooth, grey; leaves 3-foliolate, alternate, shiny; petiole 1-3,5 cm long, grooved; leaflets elliptic, 4-12 × 1,5-5 cm, glabrous; flowers white, unisexual in short panicles; fruit a woody nut, brown, 4-angled, warty, c. 1-1,4 cm Ø.

Brachystegia woodland, dense bushland; coastal thicket and *Cynometra* forest; 1-760 m alt.

V. schliebenii Mildbr.

Shrub c. 2 m tall; young branchlets glabrous; leaves 3-foliolate, glabrous; petiole 1-1,5 cm long, terete, furrowed above; leaflets ±coriaceous, sessile, obovate-cuneate, 4-6 × 1,2-2,2 cm, lightly gland-dotted; flowers unisexual, green, sessile, in axillary narrow panicles; flowers known only in bud; fruit unknown.

Bushland; c. 270 m alt.

Known only from the type collected in 1934.

Kokwaro notes (Fl. Trop. E. Afr., Rutaceae: 23, 1982) that Tanzania "T8" is badly known floristically, and that collections are rare.

Resembling *V. uguenensis* but pubescence and length of inflorescences different.

V. simplicifolia (Engl.) Mziray – Icon.: F. White & al., Evergreen forest fl. Malawi: 514, 2001.

bas.: *Toddalia simplicifolia* Engl. s. str. (var. *eugeniifolia* Engl. = *Vepris eugeniifolia).*

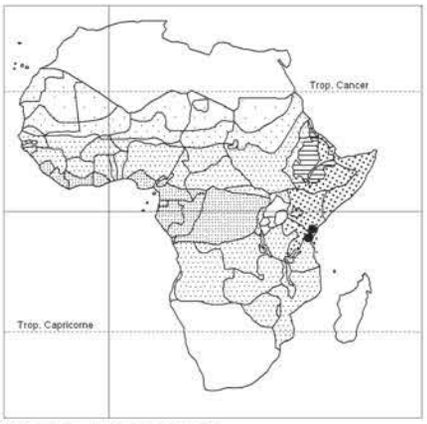
syn.: *Teclea simplicifolia* (Engl.) I. Verd.; *T. viridis* I. Verd.; *T. salicifolia* Engl.; *T. unifoliolata* sensu Engl., Pflanzenwelt O.-Afr. C: 228, 1895, p.p., non Baill. (cf. *V. welwitschii*).

Evergreen shrub or tree 2-10(-20) m tall; bark grey, smooth; leaves alternate, 1-foliolate, elliptic-obovate, 3-15 × 1,5-6 cm, glabrous, glands conspicuous; petiole 0,5-1,8 cm long, swollen and jointed at tip; flowers polygamous, sessile, yellow-green, in terminal and axillary raceme-like panicles 1-5 cm long; stamens 4; fruit orange or red, smooth, ± round, 6-10 mm Ø.

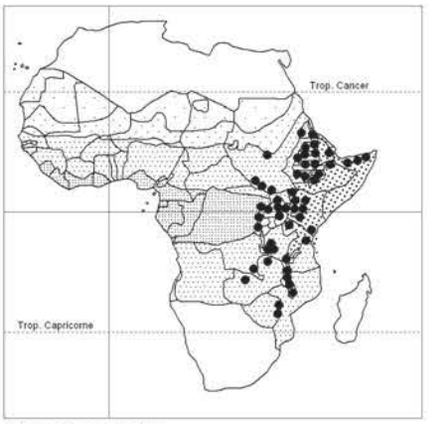
Dry forest; riverine thicket or -woodland; evergreen rocky bushland; montane thicket; drier upland forest and woodland with *Juniperus, Acacia* or *Euphorbia abyssinica,* extending into understorey of *Podocarpus* forest; 850-2300 m alt.

Coppice shoots may have opposite leaves.

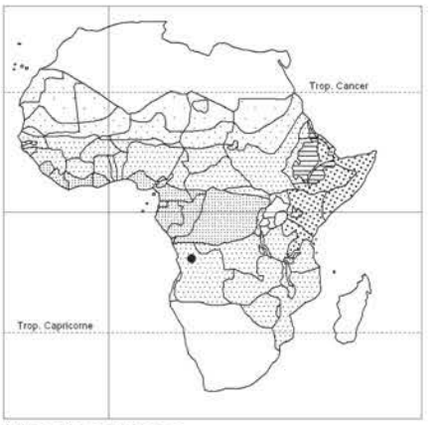
Also in Uganda ? – Not on Mt. Mulanje, Malawi *(= V. amaniensis).*



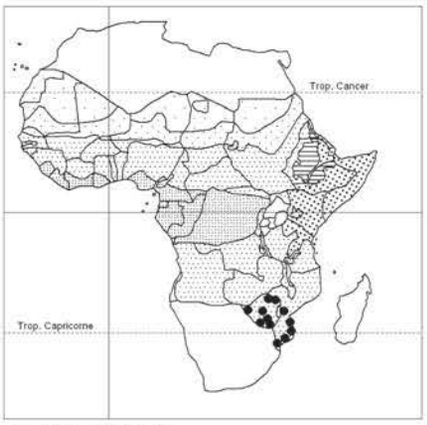
Vepris ngamensis



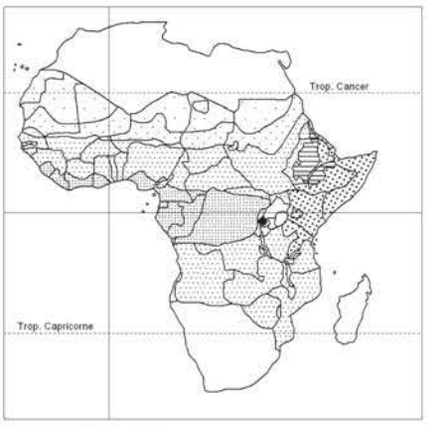
Vepris nobilis



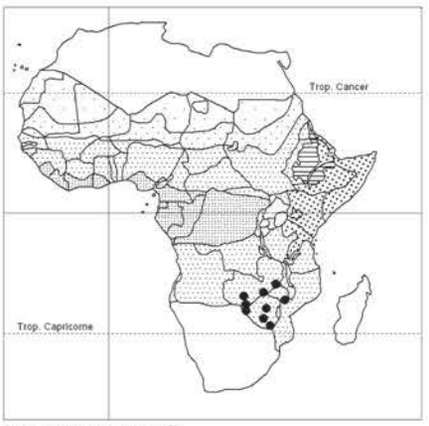
Vepris noldeae



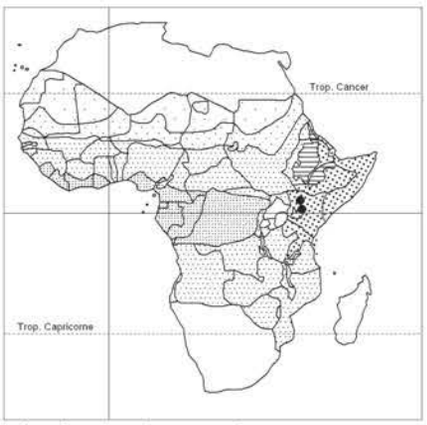
Vepris reflexa



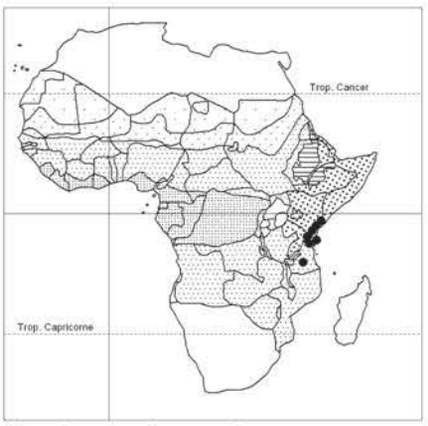
Vepris renieri



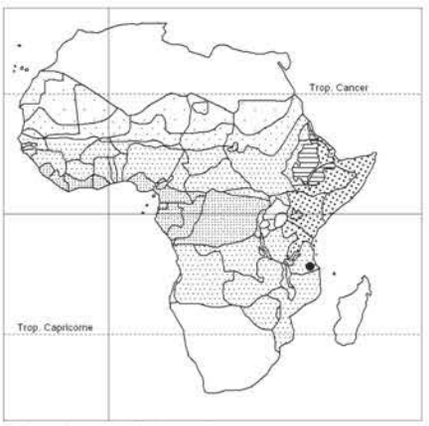
Vepris rogersii



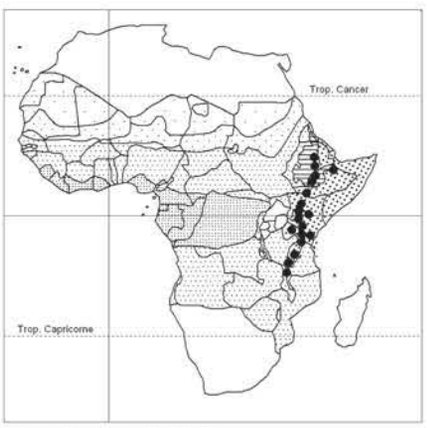
Vepris samburuensis



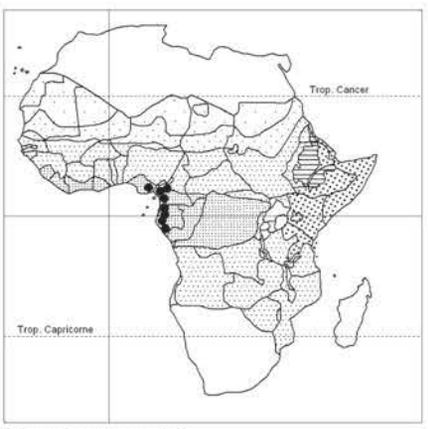
Vepris sansibarensis



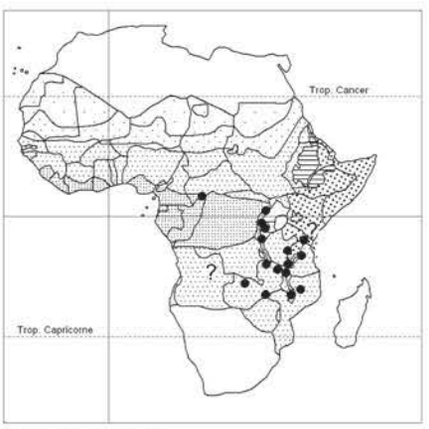
Vepris schliebenii



Vepris simplicifolia



Vepris soyauxii



Vepris stolzii

V. soyauxii (Engl.) Mziray – Icon.: Engler in Engler & Prantl, Natürl. Pflanzenfam., ed. 2, 19a: 299, 1931 (sub gen. *Araliopsis;* partial); Fl. Cameroun 1: 101, 1963; Vivien & Faure, Arbres forêts denses Afr. Centr.: 391, 1985; Wilks & Issembé, Guide arbres Guinée Equat.: 441, 2000.

bas.: *Araliopsis soyauxii* Engl.

syn.: *A. tabouensis* sensu auctt., non Aubrév. & Pellegr. (cf. note below).

Evergreen tree 15-25-30 m; bole 60-80 cm Ø, fluted at base up to 5-6 m height; bark greyish, irregular, with pustules (enlarged lenticels); leaves alternate, (3-)5-7-foliolate, digitate, thick, large; petiole 30 cm long, stout, ±terete; leaflets obovate-elliptic, 40 × 14 cm, rounded towards apex, with 10-20 pairs of lateral nerves; panicles stout, many-flowered, spreading, with puberulous axes; flowers unisexual; fruit green to black, round, fleshy, 0,5-1 cm Ø.

Old forests, especially in mountainous areas; 200-350 m alt.

Hawthorne & Jongkind (Woody pl. west. Afric. forests: 706, 2006) note that there is doubt about the synonymy under *"Araliopsis soyauxii"*. Nigerian specimens of *"A. tabouensis"* (now *Vepris tabouensis)* having been determined as *A. soyauxii.* These authors use the name *Vepris soyauxii* for the western taxon *V. tabouensis.*

V. stolzii I. Verd. – Icon.: Troupin, Fl. Rwanda Sperm. 2: 249, 1983; Letouzey in *Adansonia, N. S.* 2: 136, 1962; White & al. Evergreen forest fl. Malawi: 514, 2001; Burrows & Willis, Pl. Nyika Plateau: 257, 2005.

syn.: *V. orophila* G. C. C. Gilbert; *V.* sp. 1 sensu White, For. fl. N. Rhod.: 171, 1962; ? *V.* sp. sensu Consp. fl. Angol. 1: 273, 1951 (shrub 3 m tall, of moist forest).

Evergreen tree 6-15 m, dioecious, sometime branching from near the base; bark smooth, grey; branchlets glabrous; wood lemon yellow; leaves alternate, 3-foliolate, glabrous; petiole 2-8 cm long, subterete; leaflets elliptic, 6-14(-17) × 2,5-6 cm, glands inconspicuous, petiolules 0,5-2 cm long; flowers unisexual, in axillary and terminal puberulous panicles 3-8 cm long, sometimes on older branches; fruit ±round, 4-lobed, pedicellate, 1-2 cm Ø.

Rain-forest, transitional and secondary forests, evergreen forest; 900-2220 m alt.

Letouzey (l. c.) notes that *Toddaliopsis ebolowensis* has some resemblance to *V. stolzii* (cf. above under this species).

V. suaveolens (Engl.) Mziray – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 115, 1959 (sub gen. *Oricia);* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 707, 2006 (partial); Fl. Gabon 6: 103, 1963 (var. *letesrantii).*

bas.: *Teclea suaveolens* Engl.

syn.: *Oricia suaveolens* (Engl.) I. Verd., incl. var. *letesrantii* Letouzey; *O. leonensis* Engl.

Tree or (sometimes scandent) shrub to 10 m tall; branchlets, leaf petioles and inflorescence axes tomentose; leaves (1-)3-foliolate; petiole 1-3,5 cm long, terete, with ±3 glands near base; leaflets ovate-oblong, 4-28 × 1,5-10 cm, the median larger than the somewhat oblique laterals, glabrous, often with only few gland-dots visible; flowers unisexual, sessile, greenish-white, glabrous, in terminal panicles; ovary of 4 carpels free to the base and separate in fruit; fruit brownish yellow, smooth, ellipsoid, c. 1,5 cm long with pale orange sweetish pulp, 1-seeded.

Moist or montane semi-deciduous forest, often on rocky hills; forest gallery and secondary forests, in understorey; locally abundant; 800-1450 m alt.

Oricia suaveolens var. *letesrantii* Letouzey with glabrous outside of petals and fruits is described from the E part of range; also quoted for Ivory Coast by Aké Assi (Boissiera 58: 112, 2002). Letouzey considers it near to *V. renieri* from Rwanda.

V. tabouensis (Aubrév. & Pellegr.) Mziray – Icon.: Bull. Soc. Bot. France 83: 489, 1936; Voorhoeve, Liber. high forest trees: 333 fig. 63, 1979 (sub gen. *Araliopsis*); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 707, 2006 (as *V. soyauxii);* Holmgren & al. in Poorter & al., Biodiveristy of W. African Forests: 383, 2004.

bas.: *Araliopsis tabouensis* Aubrév. & Pellegr.

syn.: *A. soyauxii* auctt., non Engl. (see above under *Vepris soyauxii).*

Evergreen tree to 30-40 m; bole cylindrical, straight, sometimes bulgy, angular or twisted, to c. 1,2 m Ø; buttresses small, base with heavy root swellings to c. 80 cm high, sometimes with spreading surface roots; bark thick, rough, grey-black; slash yellow, sap watery turning brown on exposure, very bitter; branchlets glabrous; terminal buds covered with a sticky gum; leaves (3-)5-9-foliolate, digitate, alternate, glossy; petiole glabrous 5-9 cm long; leaflets ±obovate, abruptly long-acuminate, 8-27 × 3,5-10 cm, gland-dotted, with numerous parallel lateral nerves; petiolules 1-2 cm long; flowers white, unisexual, in many-flowered terminal and axillary panicles; fruit small, round.

Rain-forest, evergreen forest; moist semi-deciduous forest; often in groups and on plateaux mixed with *Lophira alata.*

The wood when freshly sawn is strongly scented, with a penetrating smell.

Very similar to the eastern vicarious *V. soyauxii* (perhaps conspecific?), but nervation and apex of leaflets different.

May be confused with *Zanthoxylum gilletii,* or with *Cussonia bancoensis (Araliaceae).* Was reported by Cooper & Record in Evergr. for. Liberia: 98, 1931, as *Schefflera* sp. *(Araliaceae).*

V. termitaria Mendonça

syn.: *V.* sp. 4 sensu White, Forest fl. N. Rhodesia: 171, 1962.

Evergreen shrub or tree 3 m tall; young branchlets, leaf petioles and inflorescences velvety; older branches glabrous, lenticellate; leaves alternate, 3-foliolate; petiole 1-4 cm long, sometimes flattened and narrowly winged towards apex; leaflets sessile, chartaceous, elliptic-obovate, 3-6 × 1,3-3,5 cm, gland-dotted; flowers unisexual, in small axillary racemes or panicles shorter than leaf petiole; female flowers unknown?; fruit (immature), glabrous.

Woodland, on termite mounds.

W Caprivi Strip (Namibia), Botswana (Okavango).

V. trichocarpa (Engl.) Mziray – Icon.: Palmer & Pitman, Trees south. Afr. 2: 994, 996-997, 1972 (sub nom. *Teclea gerrardii);* White & al., Evergreen forest fl. Malawi: 514, 2001; Coates Palgrave, Trees south. Afr., ed. 3: 421, 2002 (sub gen. *Teclea).*

bas.: *Toddalia trichocarpa* Engl. (July 1895).

syn.: *Teclea trichocarpa* (Engl.) Engl. (Dec. 1895); *Toddalia fischeri* Engl. (July 1895); *Teclea fischeri* (Engl.) Engl. (Dec. 1895); *Teclea stuhlmannii* Engl.; *T. gerrardii* I. Verd.; *T. villosa* M. R. F. Taylor; *T. fischeri* sensu White, Forest fl. N. Rhodesia: 170, 1962 p.p., excl. specim. White 2473 *(= Vepris rogersii); T. angustialata* Engl.

Evergreen much-branched shrub or tree 1,5-10(-15) m tall; stem c. 10 cm Ø; bark grey, smooth; young branchlets villous-pubescent, ±glabrescent; leaves alternate, 3-foliolate, dark green, aromatic when crushed ("smell like ivy"); petiole 1,5-5 cm long, furrowed or flattened above, occasionally narrowly winged, pubescent; leaflets ±sessile, obovate-elliptic, 3-9(-15) × 1,5-3(-5) cm, the terminal one largest, the laterals usually oblique at base; flowers unisexual, greenish-yellow or cream, clustered in axillary racemes 2,5 cm long; fruit red, ellipsoid, 1-1,5 cm long, furry, wrinkled.

Coastal forest, forest fringes and dune bush; coastal *Brachystegia* woodland; lowland rain-forest; dry semi-deciduous forest, especially in rocky places; riverine associations, forest gallery; grassland with scattered shrubs; littoral dunes; on sandy soils, rocky slopes, stony ground; thicket with *Commpihora eminii* amongst great granite rocks; 1-2300 m alt.

S. Africa, Swaziland (cited as *Teclea gerrardii).*

V. trifoliolata (Engl.) Mziray

bas.: *Araliopsis trifoliolata* Engl.

syn.: *Oricia trifoliolata* (Engl.) I. Verd. ("trifoliata" sphalm. in Cable & Cheek, Pl. Mt. Cameroon: 124, 1998).

Tall tree with a luxuriant crown; young branchlets, leaf petioles and inflorescences puberulous; leaves 3-foliolate, large; petiole 3-16 cm long; leaflets pedicellate, elongate-oblong, 18-35 × 7-12 cm; flowers unisexual, female ones in terminal and axillary panicles; male flowers and fruit unknown.

On hills with open bush in rain-forest area.

Insufficiently known. Type (Zahn 499) collected in 1912 at Victoria. Another collection: Maitland, T. D. 586 (ca. 1927-1930). – *Vepris* sp. A sensu Cheek (in Harvey & al., Pl. Bali Ngemba: 124, 2004), "keys out to *V. trifoliolata* but occurs at a higher altitude, [has] shaggier indumentum, much larger and wider leaves, longer indumentum, larger acumen, shorter male pedicels, and lacks persistent bracts" … Probably a new oricioid species (but fruit lacking).

Letouzey (in Fl. Gabon 6: 56, 1963) notes that "O. trifoliolata" differs from "O. suaveolens" *(= Vepris suaveolens)* only by its pedicellate flowers and the puberulous outside of its petals.

V. uguenensis Engl.

Shrub 1-4 m tall with virgate branches; bark grey; young branchlets tomentose; leaves alternate, 3-foliolate; petiole 0,5-1,2 cm long, terete, tomentose; leaflets elliptic, 1,5-12 × 0,8-2 cm, pubescent on midrib and conspicuously gland-dotted beneath, flowers yellow-green, unisexual, in short axillary racemes; fruit round, c. 1 cm Ø, orange, pubescent becoming pilose, 1-locular.

Wooded grassland and bushland in rocky places; often riverine; 500-1500 m alt.

V. verdoorniana (Exell & Mendonça) Mziray – Icon.: Fl. Gabon 6: 83, 1963; Chevalier, l. c. infra: 77 pl. 4, 1950 (sub nom. *Teclea grandifolia);* Adam, Fl. descr. Mts Nimba 4: 1578 pl. 771, 1975; Akoegninou & al., Fl. analyt. Bénin: 914, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 707, 2006.

bas.: *Teclea verdoorniana* Exell & Mendonça

syn.: *T. grandifolia* sensu I. Verdoorn 1926: 407, non Engl. and sensu A. Chevalier in Rev. Int. Bot. Appl. Agric. Trop. 30: 76-78, 1950, and sensu Aubréville, Fl. forest. Soudano-Guin.: 362, 1950.

Shrub or tree 7-22 m tall; trunk to 1,2 m in girth; crown spreading; branchlets grey, longitudinally striate; leaves sometimes opposite, 3-foliolate, with a strong penetrating smell; petiole 1-7 cm long, narrowly winged; leaflets subsessile, elliptic, 4-20 × 2-8 cm, papery, glabrous, long-acuminate; flowers unisexual, greenish white, numerous in axillary and terminal panicles 5 cm long, with pubescent axes; fruit ellipsoid, c. 1 cm long, strongly glandular.

Dry forest; rain-forest; evergreen, deciduous, or semi-deciduous and secondary forests, and in transition to savanna forest; forest outliers in deep shade; in undergrowth; locally common; 200-1400 m alt.

Bioko / Fernando Poo.

V. welwitschii (Hiern) Exell; J. Bot. 70, Suppl. Polypet.: 222, 1932.

bas.: *Glycosmis welwitschii* Hiern

syn.: *Vepris gossweileri* I. Verd. 1926, non *Teclea gossweileri* I. Verd. *(= Vepris gossweileri);* nec *Teclea welwitschii* (Hiern) I. Verd. (= *Vepris grandifolia* and *V. nobilis*; bas.: *Zanthoxylum welwitschii* Hiern); *Teclea unifoliolata* sensu Gossweiler & Mendonça, Carta Fitogeogr. Angola: 152, 1939, non Baill. (cf. above under *Vepris simplicifolia).*

Bushy tree, evergreen, 4-6 m tall, with the habit of *Laurus nobilis*; branched from the base; branches erect-patent, glabrous; bark whitish-grey; leaves coriaceous, alternate, 1-foliolate, gland-dotted, ±lanceolate, 12-16 × 3-5 cm; petiole c. 1 cm long, jointed at both ends, grooved; inflorescences axillary, racemose, glabrous, erect, c. 2,5 cm long.

Dry bushy rocky hills; mountainous rocky places; 50-800 m alt.

See also note above on *Glycosmis africana* Hook. f. under *Glycosmis* p. 376.

V. whitei Mendonça, non *Diphasiopsis whitei* Mendonça *(= Vepris mendoncana).*

syn.: *V.* sp. 2 sensu White, For. fl. N. Rhod.: 171, 1962.

Shrub or tree, evergreen, to 12 m tall; all parts glabrous; leaves alternate, 3-foliolate; petiole 1-5 cm long, ±terete; leaflets ±sessile, chartaceous, narrowly elliptic, 6-13 × 1,5-3 cm, densely protruding gland-dotted; venation prominent; flowers unisexual, sessile, in axillary pseudoracemes; fruit round, c. 1,5 cm Ø, orange-yellow.

Evergreen riverine forest.

V. zambesiaca S. Moore; Coates Palgrave, Trees south. Afr., ed. 3: 417, 2002.

Deciduous shrub c. 1,5 m tall, occasionally tree to 3,5 m; bark light grey, smooth; young branchlets, leaves (both surfaces) and inflorescences with dense grey hairs (velvety); leaves alternate, 3-foliolate; petiole narrowly winged, 1-2 cm long; leaflets narrowly elliptic, 2-4,5 × 1-1,7 cm, sparsely gland-dotted; flowers greenish white-yellow, unisexual, in very dense short heads produced in profusion; fruit smooth, blackish, ellipsoid, 1,3 cm long.

Scrub and woodland; nowhere common; 1-1000 m alt. (Botswana).

Botswana.

VEPRIS

IMPERFECTLY KNOWN TAXA:

(Oricia =) Vepris sp. A sensu Fl. W. Trop. Afr., ed. 2, 1(2): 688, 1958; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 706, 2006.

Tree to c. 15 m with pale and grooved twigs, short-hairy; bark rough, corky, warty; leaves 3-foliolate with petiole and leaflet midribs beneath dense short-hairy; flowers in terminal panicles; fruit ellipsoid.

Liberia (Mecca).

Vepris sp. sensu M. G. Gilbert in Fl. Ethiop. 3: 426, 1989.

Densely branched shrub c. 2,5 m tall; stems glabrous, dark grey, rough; leaves alternate, 3-foliolate; petiole grooved above, c. 1,8 cm long; leaflets narrowly elliptic, glabrous, conspicuously gland-dotted; inflorescences glomerate, axillary; mature inflorescences and female plants unknown.

Mixed woodland and bushland overlying limestone; 1250 m alt.

Known only from one gathering (Gobelli Valley).

Distinctive plant, but better material needed.

Vepris sp. A sensu Cheek in Harvey & al., Pl. Bali Ngemba: 124, 2004.

Tree to 20 m, grey scurfy-hairy; leaves alternate, 3-foliolate, to 42 cm long, petiole 11 cm; flowers unisexual, white in shaggy-hairy panicles; fruit unknown.

Forest; 1310-1500 m alt.

From W Cameroon; keys out to *V. trifoliolatum* but occurring at higher altitudes. Probably a new species.

Vepris sp. B sensu Cheek, l. c. (Ujor 30422).

Tree, minutely densely brown puberulent; stem c. 90 cm in girth; leaves opposite, 3-foliolate, 15 cm long; flowers white, unisexual, few in terminal few-branched panicles 10 cm long; female flowers and fruit unknown.

Forest; 1700 m alt.

From W Cameroon. Determined by Letouzey as *Toddaliopsis ebolowensis* Engl., and as *Vepris* cf. *heterophylla* by Mziray. – Probably a new species.

SYNONYMS:

Vepris angolensis Engl. = **Fagaropsis angolensis**
angolensis (Hiern) Mziray = **Vepris hiernii**
gossweileri I. Verd. 1926 = **V. welwitschii**
inermis Commerson ex Juss. = **V. lanceolata**
obovata G. Don = **V. lanceolata**
orophila G. C. C. Gilbert = **V. stolzii**
paniculata (Lam.) Engl. = **V. lanceolata**
pilosa Engl. = **V. glomerata** var. **glomerata**
queimbensis Klotzsch = **V. lanceolata**
sp. 1 sensu White 1962 = **V. stolzii**
sp. 2 sensu White 1962 = **V. whitei**
sp. 4 sensu White 1962 = **V. termitaria**
sp. sensu Consp. fl. Angol. = ? **V. stolzii**
sp. sensu M. G. Gilbert in Fl. Ethiop. = **Vepris** sp. (imperfectly known)
sudanica (A. Chev.) Letouzey = **V. lanceolata**
undulata (Thunb.) I. Verd. & C. A. Sm. = **V. lanceolata**

ZANTHOXYLUM / *33*

(Variant spellings: *Xanthoxylum, Xanthoxylon, Zanthoxylon*)

syn.: *Fagara* L.

About 250 species worldwide between the Tropics, but some species extending to temperate areas.

Plants dioecious; leaves usually alternate, imparipinnate with opposite or alternate leaflets; fruit of gland-pitted follicles.

A few species incompletely known: 1 species lacking male flowers *(Z. paracanthum);* no female flowers in 2(+2?) species. – See also at end of *Zanthoxylum.*

OGUNDIPE, O. (2002). Leaf anatomical studies on eleven species of Zanthoxylum Linn. (Rutaceae). *Phytomorphology* 52: 103-112.

Zanthoxylum atchoum (Aké Assi) P. G. Waterman – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 711, 2006.

bas.: *Fagara atchoum* Aké Assi

Large liane to c. 20 m tall; stem 6 cm Ø with mostly single recurved spines, present also on leaf petioles and rhachides and inflorescences; leaves 50-80 cm long, glabrous, leathery, of up to c. 40 leaflets asymmetric at base; leaflets with ±4 crater-like glands around base of midrib; flowers reddish in branched panicles 10-15 cm long, honey-scented.

Evergreen moist forest.

Plant when crushed with a strong smell of *Ruta.*

Z. bouetense (Pierre ex Letouzey) P. G. Waterman – Icon.: Adansonia, N. S. 2: 142, 1962.

bas.: *Fagara bouetensis* Pierre ex Letouzey

Shrub or tree 5-15 m tall; young branchlets lenticellate, pubescent, with blackish straight spines 3-5 mm long; leaves at ends of branches 30-60 cm long, of 4-6 pairs of *opposite* leaflets; petiole and rhachis light brown with orange glands; leaflets papery, glabrous, above, gland-dotted; flowers in branched panicles 18 cm long; female flowers known?

Forest; 400-480 m alt.

Has been confused with *Z. rubescens.*

Similar to *Z. buesgenii.*

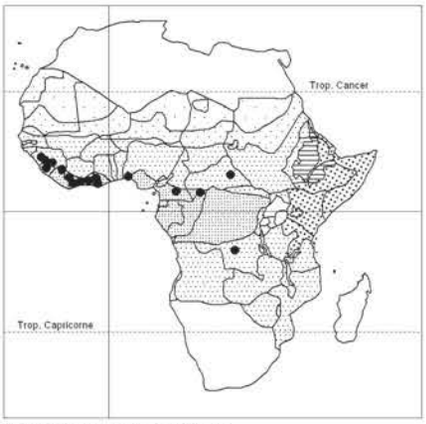
Z. buesgenii (Engl.) P. G. Waterman – Icon.: Fl. Gabon 6: 15, 1963.

bas.: *Fagara buesgenii* Engl.

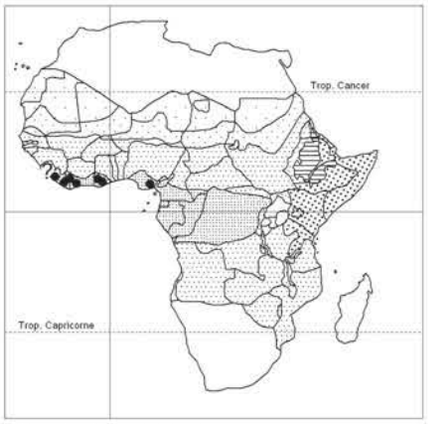
Shrub, sometimes scandent, 0,5-2,5 m tall; stems, branchlets, leaf petiole and rhachis and midribs beneath and inflorescence axes with straight spines, also with rather long rusty spreading hairs; leaves 20-75 cm long, leaflets 6,5-25 × 4-9 cm, with numerous gland-dots; inflorescences pyramidal, to 35 cm long, densely rusty pubescent.

Forest, in understorey; c. 300 m alt.

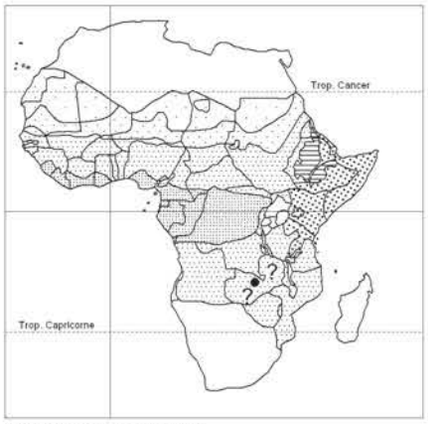
Resembling *Z. bouetense.* Letouzey (Adansonia, N. S. 2: 143, 1962) even suggested they may be conspecific. – Also resembling *Z. viride,* but leaflets different.



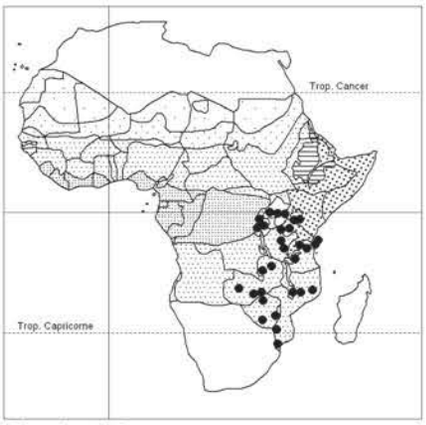
Vepris suaveolens



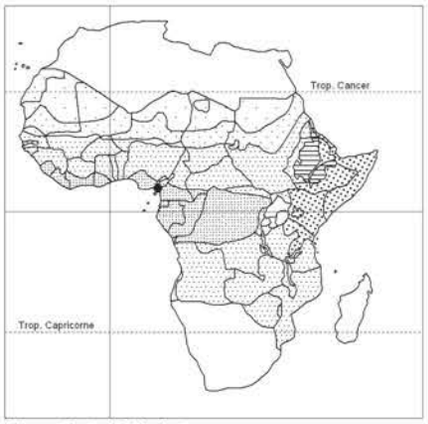
Vepris tabouensis



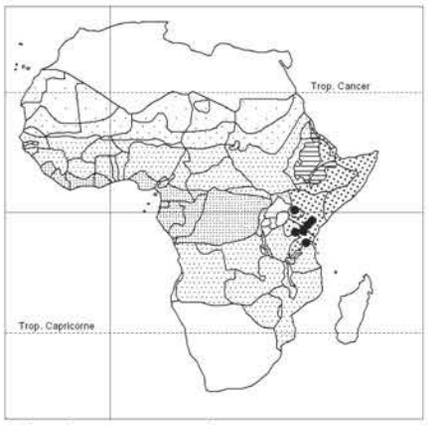
Vepris termitaria



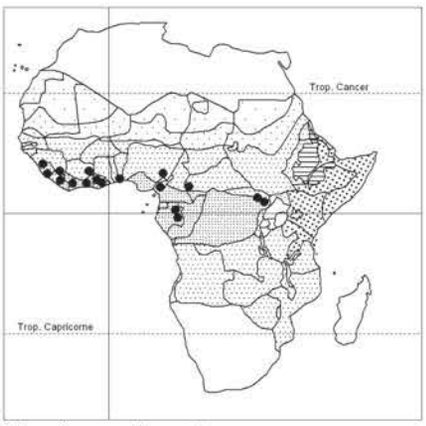
Vepris trichocarpa



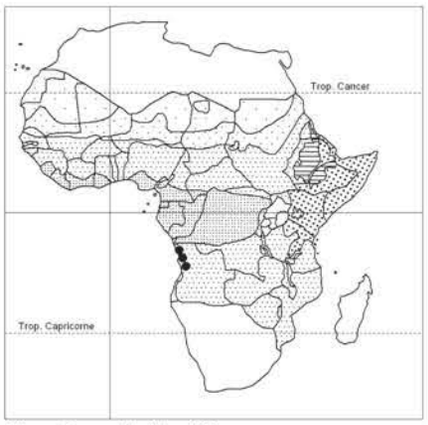
Vepris trifoliolata



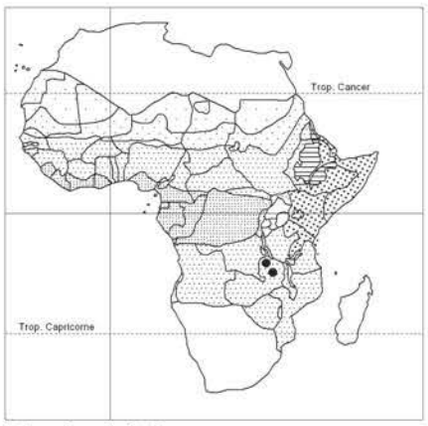
Vepris uguenensis



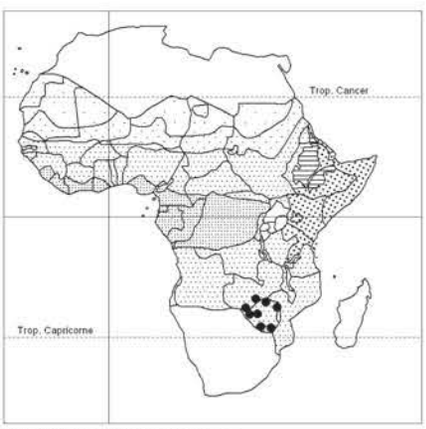
Vepris verdoorniana



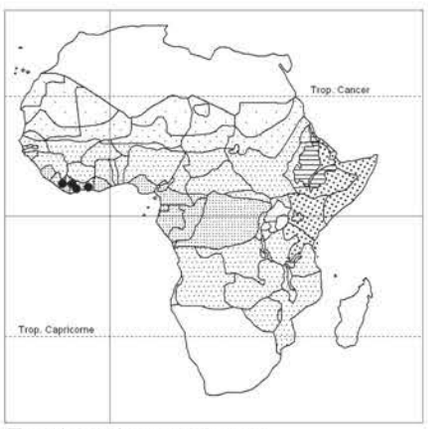
Vepris welwitschii



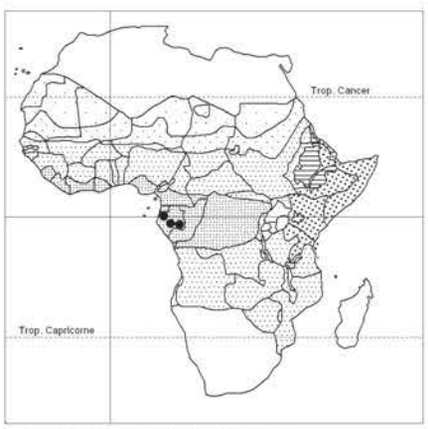
Vepris whitei



Vepris zambesiaca



Zanthoxylum atchoum



Zanthoxylum bouetense

Z. capense (Thunb.) Harv., 1860, non *Z. capense* Sim 1909 *(= Z. delagoense);* Coates Palgrave, Trees south. Afr., ed. 3: 409, 2002. – Icon.: Palmer & Pitman, Trees south. Africa 2: 978, 1972 (sub gen. *Fagara);* V. Thomas & R. Grant, Sappi tree spotting, Highveld, rev. ed.: 277-279, 2002; idem, Bushveld: 386-387, 2000.

bas.: *Fagara capensis* Thunb. 1794, non I. Verd. 1919 *(= Zanthoxylum delagoense).*

syn.: *Fagara armata* Thunb.; *F. multifoliolata* Engl., non Hemsley; *F. magalismontana* Engl.; *F. thunbergii* DC. var. *obtusifolia* Harv.

Tree or slender shrub, much branched, 4-10 m tall; trunk in larger trees with corky spine-tipped knobs; bark grey; branchlets smooth, spiny; spines straight, to 8 mm long; young branchlets and inflorescences minutely pubescent or glabrous; leaves 4-13 cm long, dark shiny green; leaflets 4-10 pairs, the terminal often aborted, lemon-scented, ± toothed with gland-dots along margins only; nerves 4-10 pairs; flowers 4-merous, creamy, sweet-scented, in terminal panicles; capsules red, citrus-smelling, gland-dotted, 5 mm Ø (taste acrid, leaving a persistent burning sensation in the mouth).

Dry forest and woodland, bush; in stony places, hillsides; on sandy soils; in bush groups; very common; sometimes up in the mist-belt; 5-2000 m alt. (S. Africa).

Very variable, with small- and large-leaved forms. Great variability in juvenile shoots, suckers and coppiced specimens.

Frequently and variously misinterpreted. Thunberg specimens at Uppsala Herbarium (Sweden) not homogeneous (3 of 4 specimens are *Clausena anisata),* etc. (see Fl. Zambes 2/1: 187, 1963).

S. Africa, Swaziland.

Z. chalybeum Engl. – Icon.: Thulin, Fl. Somal. 2: 174, 1999; Troupin, Fl. Rwanda Sperm. 2: 253, 1983 (both of var. **chalybeum**); Burrows & Willis, Pl. Nyika Plateau: 258, 2005; Maundu & al.; Tradit. food pl. Kenya: 247-248, 1999.

syn.: *Z. olitorium* Engl.; *Fagara chalybea* (Engl.) Engl.; *F. olitoria* (Engl.) Engl.; *F. fischeri* Engl.; *F. merkeri* Engl.; *F. bukobensis* Engl.; *F. mpapwensis* Engl.; *F. homblei* De Wild.

Deciduous shrub or tree 1,5-10 m tall; trunk 15-40 cm Ø, with large woody spines to 2 cm long; branchlets glabrous, with terminal buds protected by dark scales, with black or reddish recurved usually paired prickles 5-17 mm long; leaves 6-22 cm long, usually crowded on short stout shoots, glabrous (var. **chalybeum**) to densely hairy (rusty-tomentose, var. **molle**); rhachis with few small scattered prickles; leaflets sessile, 2-5 pairs, ±opposite; flowers yellowish green in not or little branched clusters crowded on new shoots below new leaves; follicle solitary, oblique, glandular-bullate, c. 6 mm Ø.

Dry bushland and wooded grassland; on termite mounds; on well drained slopes, locally common; riverine forest; bushland with *Acacia nilotica, Commiphora africana, Dalbergia melanoxylon;* bush with *Grewia* sp., *Commiphora africana;* bushland between rocks; on the coast also in closed thicket near the sea; 1-1560 m alt.

Comprises 2 vars.: – var. **chalybeum**; – var. **molle** Kokwaro (in central part of range; 700-1500 m alt.).

Z. chevalieri P. G. Waterman, nom. nov. based on *Fagara pubescens* A. Chev. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 713, 2006 (partial); Adam, Fl. Mts. Nimba 2: 799, 1971 (partial).

syn.: *Fagara pubescens* A. Chev., 1911, non *Zanthoxylum pubescens* A. St. Hil. & Tul. 1842; *Zanthoxylum melanacanthum* A. Chev. 1920, non Planch. 1853; *Fagara chevalieri* (P. G. Waterman) Aké Assi, comb. superfl. illegit.

Shrub or tree 5-7 m tall; trunk 30 cm in girth; crown spreading; branchlets tomentose, with strongly recurved prickles; leaves thin, leaflets 4-7 pairs, ±opposite, 12-13 cm long, conspicuously hairy (a soft layer below), drip-tipped, margins crenulate, closely gland-dotted; flowers white in terminal panicles of many very fine branches; fruit pubescent, red, c. 1 cm long.

Upland forest areas, semi-deciduous or open forests, regrowth; drier forests and thickets; gallery forest; 700-1100 m alt.

Hawthorne & Jongkind, l. c., suggest it may possibly be just a hairy form of *Z. rubescens.*

Z. claessensii (De Wild.) P. G. Waterman – Icon.: Fl. Cameroun 1: 85, 1963.

bas.: *Fagara claessensii* De Wild.

Small tree, sometimes (scandent) shrub; branches and branchlets with recurved prickles 2-4 mm long; leaves c. 30 cm long, with prickly rhachis; leaflets 5-9 pairs, ±opposite, glabrous, ± asymmetric, long-acuminate, inconspicuously gland-dotted; flowers 5-merous, in 15-25 cm long pyramidal prickly panicles; follicle solitary, round, c. 7 mm Ø.

Forest; c. 40 m alt. (Gabon).

Z. davyi (I. Verd.) P. G. Waterman; Coates Palgrave, Trees south. Afr., ed. 3: 410-411, 2002. – Icon.: Palmer & Pitman, Trees south. Afr. 2: 580, 1972; E. Schmidt & al., Trees & Shrubs Mpumalanga & Kruger Natl. Park: 238-239, 2002.

bas.: *Fagara davyi* I. Verd.

syn.: *Zanthoxylum thunbergii* DC. var. *grandifolia* Harv.

Tree 8-30 m; bark light grey on young trees, later dark brown, with conspicuous woody horn-like knobs with short hard spiny tips; branches with slightly upwards recurved spines; leaves 8-30 cm long, rhachis prickly; leaflets (3-6 pairs, ±opposite), becoming progressively larger from bottom to top, dark shiny green above, lateral veins numerous (c. 20 pairs), with glandular dots only along margins; flowers greenish-yellow in 4-6 cm long terminal sprays; fruit reddish-brown, gland-dotted, lemon-scented.

Forest, forest patches; 160-1900 m alt. (S. Africa).

S. Africa, Swaziland.

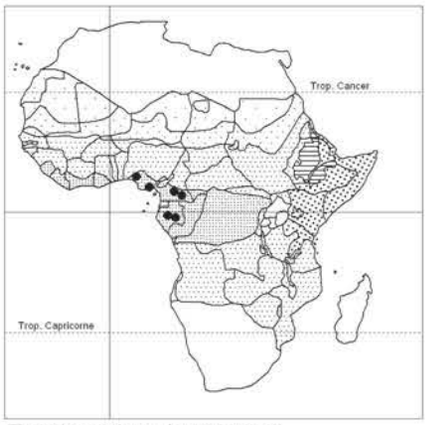
TARUS, P. K. & al. (2006). Benzo [c] phenanthridine alkaloids from stem bark of the Forest Knobwood, Zanthoxylum davyi (Rutaceae). *S. Afric. J. Bot.* 72: 555-558.

Resembling *Z. capense* but leaflets different.

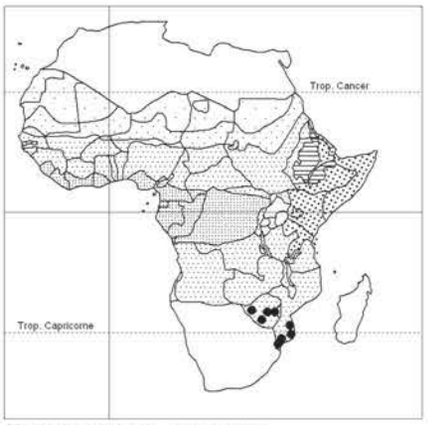
Fagara bachmannii Engl. 1897 (Pondoland = Transkei, S. Africa) is perhaps synonymous.

Z. delagoense P. G. Waterman nom. nov. based on *Fagara schlechteri* Engl. 1911; Coates Palgrave, Trees south. Afr., ed. 3: 411, 2002. – Icon.: Sim, For. fl. Port. E. Afr.: pl. 17a, 1909 (sub nom. *Z. capense).*

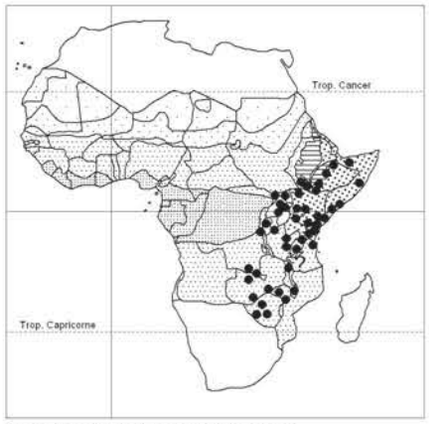
syn.: *Fagara schlechteri* Engl. 1911, non *Zanthoxylum schlechteri* Guillaumin 1936 (New Caledonia); *Z. capense* Sim 1909, non Harv. 1860; *Fagara capensis* I. Verd. 1919, non Thunb. 1794 *(= Z. capense),* p.p. quoad syn. *Xanthoxylon capense.*



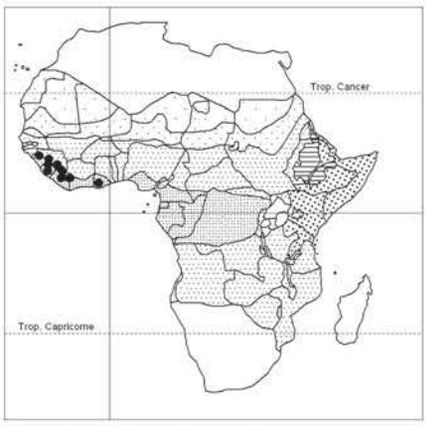
Zanthoxylum buesgenii



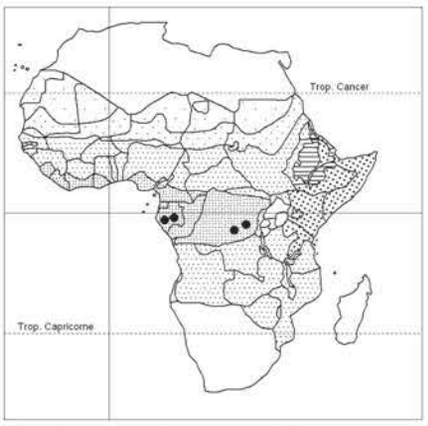
Zanthoxylum capense



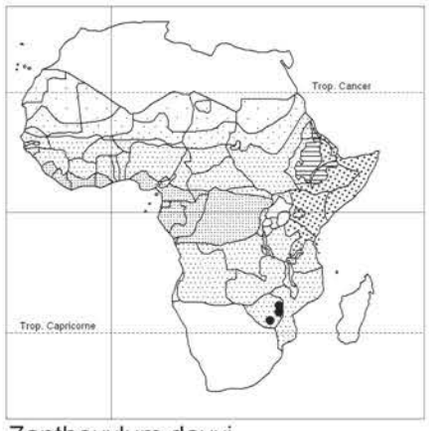
Zanthoxylum chalybeum



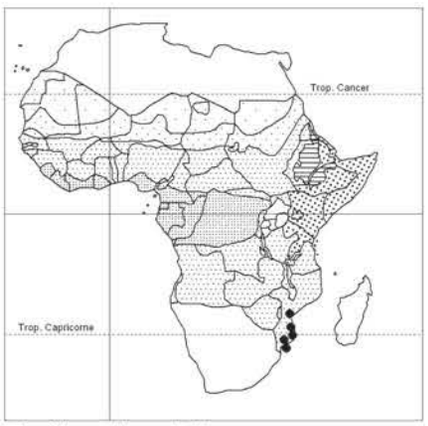
Zanthoxylum chevalieri



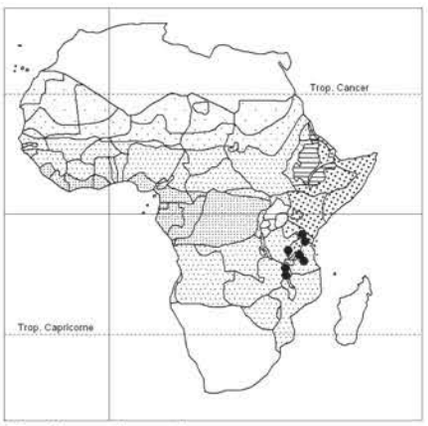
Zanthoxylum claessensii



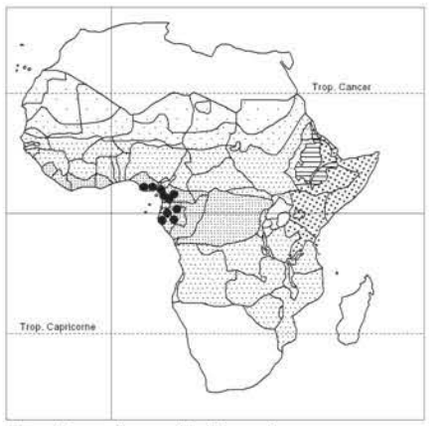
Zanthoxylum davyi



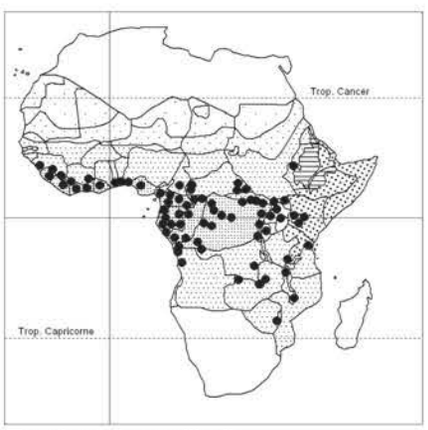
Zanthoxylum delagoense



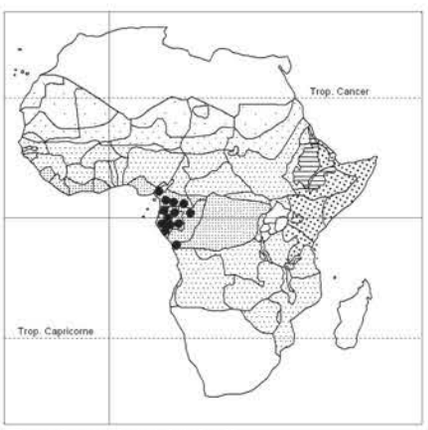
Zanthoxylum deremense



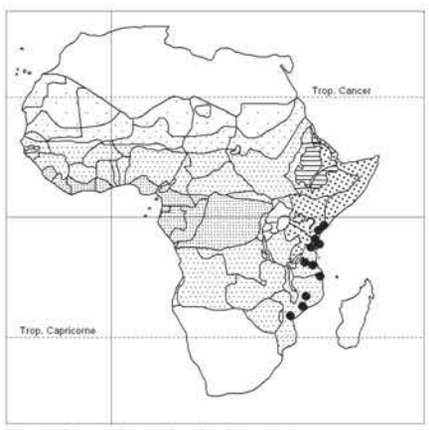
Zanthoxylum dinklagei



Zanthoxylum gilletii



Zanthoxylum heitzii



Zanthoxylum holtzianum

ZANTHOXYLUM DELAGOENSE

Shrub or tree to 4 m tall; bark with spiny bosses; young branchlets reddish brown, glabrous, sparingly prickly, with recurved spines 4-10 mm long; leaves 5-18 cm long, ±coriaceous, glabrous beneath, spines on rhachis recurved, leaflets 2-4 pairs; flowers 4-merous, white, in branched heads 2-10 cm long; fruit globose, orange-red, densely glandular-foveolate, c. 8 mm Ø.

Coastal dunes in thickets; c. 30 m alt.

Z. deremense (Engl.) Kokwaro

bas.: *Fagara deremensis* Engl.

syn.: *F. braunii* Engl.; *F.* sp. aff. *braunii* sensu Mendonça 1963.

Tree, deciduous, 8-12 m tall, sometimes (straggling) shrub; trunk with spinous bosses, c. 25 cm Ø at base; branches glabrous with reddish brown conical prickles 2-4 mm long; leaves 15-56 cm long, rhachis sometimes with prickles dorsally in lower part; leaflets 4-8 pairs, (sub-) opposite, chartaceous, crenulate-denticulate, with numerous dark gland-dots, lateral nerves 18-24 pairs; flowers 4-merous, clustered in pubescent 10-30 cm long terminal panicles; fruit glandular-bullate, c. 1 cm Ø.

Montane evergreen rain-forest in understorey and in ±open patches; 800-1900 m alt.

Resembling *Z. delagoense,* but leaflets different.

Z. dinklagei (Engl.) P. G. Waterman – Icon.: Fl. Gabon 6: 45, 1963.

bas.: *Fagara dinklagei* Engl. (type Dinklage 1349, not 1348).

syn.: *F. klainei* Pierre ex De Wild., non *F. klaineana* Pierre ms. *(= Z. rubescens).*

Small liane or scandent shrub, erect when young, glabrous; branches, leaf petiole and rhachis, and inflorescence axes with numerous recurved prickles to 5 mm long; leaves 20-25 cm long; leaflets 5-6 pairs, papery, long-acuminate, gland-dotted, margins crenate; flowers 4-merous in 30-40 cm long pyramidal terminal panicles; fruit of 1 follicle, glandular.

Forest near streams, stream-sides; 1-500 m alt.

Near *Z. poggei* but leaflets different.

(Z. engleri P. G. Waterman)

nom. nov. based on *Fagara tenuifolia* Engl. 1911, non *F. tenuifolia* Engl. 1896 *(= Zanthoxylum tenuifolium* Engl. 1874, Brazil).

Unarmed bushy tree described from West-Usambara (Holtz 1860) and Kilimanjaro (Holtz 1812). Kokwaro (Fl. Trop. E. Afr., Rutaceae: 45, 1982) saw no authentic material. One specimen determined from the original description (Greenway 13106, from Mt Meru) proved to be *Clausena anisata.*

Z. gilletii (De Wild.) P. G. Waterman, incl. var. *cordata* G. C. C. Gilbert – Bahé, African Satinwood – Icon.: Fl. Gabon 6: 21, 25, 1963 (sub nom. *F. macrophylla* & *F. tessmannii)* and Fl. Cameroun 1: 53, 57, 1963 (idem); Walker & Sillans, Pl. utiles Gabon: pl. 49 opposite p. 380, 1961 (sub nom. *F. macrophylla);* Voorhoeve, Liber. high forest trees: 337, 1979 *(F. tessmannii);* Troupin, Fl. Rwanda Sperm. 2: 253, 1983; Vivien & Faure, Arbres forêts denses Afr. Centr.: 395, 1985 *(F. macrophylla, F. tessmannii);* Wilks & Issembé, Guide arbres Guinée Equat.: 439, 2000 *(Z. tessmannii);* Beentje, Kenya trees, shrubs & lianas: 373, 1994 *("Z. gillettii");* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 701, 711, 2006; Hawthorne & Gyakari, Photoguide Forest Trees Ghana: 154-155, 2006; Latham & Konda, Pl. utiles Bas-Congo, ed. 2: 317, 2007; Fischer & Killmann, Ill. field guide pl. Nyungwe Natl. Park Rwanda: 325, 2008.

bas.: *Fagara gilletii* De Wild.

ZANTHOXYLUM GILLETII

syn.: Enum. 2: 201, 1992; *Fagara discolor* Engl.; *F. kivuensis* Lebrun ex G. C. C. Gilbert; *F. gilletii* De Wild. var. *cordata* G. C. C. Gilbert; *F. amaniensis* Engl.; *F.* sp. aff. *melanorhachis* Hoyle 1950; *F. gabonensis* Pierre ms.; *Zanthoxylum macrophyllum* Oliv. 1868, nom. illegit., non Nutt. 1849 nec (Blume) Miquel. 1859; *Z. horridum* Welw. ex Ficalho 1884, non DC. 1824; *Zanthoxylum gummiferum* A. Chev. ms.; *Fagara iturensis* Engl.; *F. rigidifolia* Engl., non Herzog; *F. obliquefoliolata* Engl.; *F. macrophylla* (Oliv.) Engl. var. *adamaouensis* Aubrév. ms.; *Zanthoxylum tessmannii* (Engl.) J. F. Ayafor; *Z.* sp. sensu Hiern, Cat. Afr. Pl. Welwitsch 1: 112, 1896.

Semi-evergreen tree (4-)10-35(-40)m; bole straight, without branches for several m., 10-30-150 cm Ø at base, with straight corky thorns 1-3 cm long (also on branches); stems especially spiny when young; crown open resembling an *Entandrophragma;* branches glabrous with conical reddish straight or slightly recurved prickles 2-8 mm long; leaves in terminal clusters (at apex of a single stem in young trees), 0,2-1,2-1,8 m long, orange-scented on crushing, rhachis sometimes with straight sharp prickles; leaflets 13-27 × 3-10 cm, alternate, asymmetric, petiolules with small raised crater glands or corky warts on upper surface; flowers 5-merous, white, clustered in pyramidal panicles 20-34 cm long; fruit reddish (-black), round, c. 5 mm Ø, glandular-foveolate with persistent calyx, peppermint-scented (also seed). – In habit resembling *Entandrophragma* or *Nothospondias* (but thorny!). Stem and rhachis of mature leaves exude a pale tasteless gum.

Moist forest, (evergreen) rain-forest, riverine and gallery forests; forest with *Terminalia;* upland rain-forest with *Albizia, Macaranga, Croton, Ocotea;* forest regrowth, farmbush, old farmland, near forest plantations; wooded savanna; 1-2400 m alt. – Scattered, not common, throughout the high forest. Seedlings light-demanding. A pioneer forest tree.

Very variable in size and shape of leaves and leaflets.

Principe, São Tomé.

Recently found in SW Ethiopia at 1350 m alt. [I. Friis & K. Vollesen, Zanthoxylum gilletii (Rutaceae) – a Guineo-Congolian forest tree with a newly discovered disjunct occurrence in western Ethiopia. *XVIIIth AETFAT Congress 26 February – 2 March 2007, Yaoundé, Cameroon. Abstracts:* 76. 2007]. – Nearest record from S Sudan (Imatong Mts, Friis & Vollesen, Fl. Sudan-Uganda border …: 278, 1998). Of the tree observed by these authors only a stump remained at their visit to the place on 14 Nov. 2006.

Z. heitzii (Aubrév. & Pellegr.) P. G. Waterman – Olon – Icon.: Fl. Gabon 6: 31, 1963; Vivien & Faure, Arbres forêts denses Afr. Centr.: 393, 1985; Wilks & Issembé, Guide arbres Guinée Equat.: 443, 2000; Bois Forêts Trop. 191: 56-57, 1980.

bas.: *Fagara heitzii* Aubrév. & Pellegr.

syn.: *F. brieyi* Vermoesen ex G. C. C. Gilbert

Tree to 35 m; bole straight, cylindrical, free to 15 m height, 1-1,5 m Ø at base, with spiny bosses 8-10 cm long disappearing in old trees; bark dark green peeling off in fine stripes; crown large; young trees very prickly; leaves to 1 m long, in terminal clusters, rhachis with few short prickles; leaflets 12-25 pairs, 4-12 × 3,5 cm, sessile, asymmetric at base, long-acuminate, gland-dots inconspicuous, margins crenate, not prickly; flowers 5-merous, whitish, in stout prickly terminal panicles 40 cm long; follicle solitary, c. 4 mm Ø, gland-dotted. – Lemon scented.

Forest associations, secondary forests; up to c. 550 m alt.

Often difficult to distinguish from *Z. gilletii.* Also resembling *Z. lemairei.*

Z. holtzianum (Engl.) P. G. Waterman

syn.: *Fagara holtziana* Engl., incl. var. *puguensis* Engl.; Enum. 2: 201, 1992 (all of subsp. **holtzianum**).

Shrub or tree 2-15 m tall, sometimes scandent; trunk with conical corky bosses 3,5-5 cm Ø, bark grey; branches, leaves, inflorescences sometimes shortly rusty- or brown-pubescent, branches with straight or slightly recurved prickles 2-7 mm long; leaves 15-40 cm long, rhachis usually unarmed; leaflets papyraceous, 3-4 pairs; flowers 4-merous, white, clustered, in terminal panicles 8-25 cm long; fruit scarlet, c. 5 mm Ø, densely gland-dotted.

Moist or dry coastal forest, woodland, semi-evergreen bushland, or thickets, sometimes on coral; 0-700 m alt. (subsp. **holtzianum**); deciduous woodland and thicket; 150-800 m alt. (subsp. **tenuipedicellatum**).

Comprises 2 subspp.: – subsp. **holtzianum**; – subsp. **tenuipedicellatum** Kokwaro [syn.: *Zanthoxylum tenuipedicellatum* (Kokwaro) Vollesen] with usually unarmed branchlets and slender longer pedicels (5-9 mm, not 1-3 mm); known only from SE Tanzania (T8, Kilwa Distr., Selous Game Reserve).

Z. humile (E. A. Bruce) P. G. Waterman – Icon.: E. Schmidt & al., Trees & shrubs Mpumalanga & Kruger Natl. Park: 240-241, 2002.

bas.: *Fagara humilis* E. A. Bruce

Shrub 1-2 m tall, deciduous; branches and leaf rachides greyish tomentose or pubescent, or glabrescent, with straight or ±recurved grey or reddish prickles 2-8 mm long; terminal buds protected by cottony scales; leaves 4-16 cm long, chartaceous; leaflets 6-12 pairs, sessile, opposite or alternate, the distal ones smaller, pellucid glands only on the crenulate margins; flowers 5(-6)-merous in racemes 1-3 cm long borne at base of the new branches below the leaves; fruit 5 mm Ø, gland-dotted.

Woodland with *Colophospermum mopane;* 270-770 m alt. (S. Africa).

S. Africa.

Z. laurentii (De Wild.) P. G. Waterman – Icon.: Pauwels, Nzayilu N'ti, arbres Brazzaville: pl. 212, 1993.

bas.: *Fagara laurentii* De Wild.

Shrub or tree 3-18 m tall; trunk 10-40 cm Ø; branches, branchlets and inflorescences with numerous prickles 4-8 mm long; leaves 30-75 cm long, petioles and rhachides prickly; leaflets 6-12 pairs, alternate, papery, asymmetric; flowers 5-merous in axillary panicles 6-35 cm long; follicle 6 mm Ø, red.

Riverine and seasonally inundated forests.

Has sometimes been confused with *Z. rubescens.*

Z. lemairei (De Wild.) P. G. Waterman – Icon.: Fl. Gabon 6: 51, 1963; Fl. Cameroun 1: 65, 1963.

bas.: *Fagara lemairei* De Wild.

syn.: *F. unwinii* Hutch. & Dalziel; *F. gracilifolia* Mildbr. ex Engl.

Tree 15-30 m, glabrous; bole cylindrical, 50-70 cm Ø at base, armed with spiny conical bosses 6 cm long in vertical rows to c. 5 m height; branches unarmed, rarely sparsely prickly; crown small of tortuous branches; leaves 13-40 cm long; leaflets 3-8 pairs, the terminal one usually aborted, opposite, gland-dots inconspicuous, oblong-falcate, 4-10 × 1,2-3,2 cm, asymmetrically cuneate to rounded at base, petiolules 1,5-3 mm long *without* basal pockets, with long slender drip-tip; margins sub-entire (cf. *Z. parvifoliolum!);* flowers 5-merous, green, in stout panicles 6-15 cm long; follicle solitary, reddish-brown, ±5 mm Ø.

Semi-deciduous moist rain-forest with *Celtis* and *Sterculiaceae;* forest associations; 100-1150 m alt.

Confused with the similar *Z. parvifoliolum* in W. Africa (also a mixture in Fl. W. Trop. Afr., ed. 2, 1/2: 686, 1958, as pointed out by Hawthorne & Jongkind, Woody pl. west. Afric. forests: 712, 2006. Treated as *Z. parvifoliolum* by Hawthorne & Gyakari, Photoguide Forest Trees Ghana: 152-153, 2006. – Has also been confused with *Z. leprieurii.*

Z. leprieurii Guill. & Perr.; Coates Palgrave, Trees south. Afr., ed. 3: 412, 2002. – Icon.: Fl. Cameroun 1: 67, 1963; Fl. Gabon 6: 37, 1963; Adam, Fl. descr. Mts Nimba 2: 798, 799, 1971; Pauwels, Nzayilu N'ti, Guide arbres Kinshasa-Brazzaville: pl. 213, 1993; E. Schmidt & al., Trees & shrubs Mpumalanga & Kruger Natl. Park: 240-241, 2002; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 713, 2006 (partial); Akoegninou & al., Fl. analyt. Bénin: 915, 2006; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 395, 2009; Adansonia, Sér. 3, 31: 173, 2009.

syn.: *Fagara leprieurii* (Guill. & Perr.) Engl.; *F. attiensis* Hutch. & Dalziel p.p. (quoad specim. Scott Elliot 5745, Chevalier 22471); *F. angolensis* Engl.; *F. stuhlmannii* (Engl.) Engl.; *Zanthoxylum stuhlmannii* Engl.; *Z. nitens* Hiern; *Fagara kelekete* De Wild.; *F. kibomboensis* De Wild.; *F. nitens* (Hiern) Engl. (et sensu Exell 1927 p.p., cf. *Z. pilosiusculum*); *F. polyacantha* Engl.; *F. olung* Engl.; *F. beniensis* Engl.

Shrub (sometimes scandent) or tree 5-10 m tall, in forest reaching 15-24 m, deciduous, dioecious; bole short, low-branching, 25-40 cm Ø, 1-1,5 m in girth, smooth with vertical stripes; bark grey with very large conical, broad-based thorns 6-8 cm long; crown spreading; branches and branchlets with paired ±straight thorns c. 3 mm long; leaves 15-55 cm long, glabrous, strongly aromatic (resinous smell), rhachis with or without prickles; leaflets 9-21, subopposite, *thin*, glossy, very reddish-brown gland-dotted, 10-12 × 2-4 cm, *without* pockets at top of *petiolules*, drip-tips 1-2 cm long; flowers 4-merous, white, turpentine-scented, in slender, lax panicles 35 cm long with first order branching only; follicle orange to red, c. 5 mm Ø, splitting to release the single shiny black seed.

Semi-deciduous moist rain-forests, in understorey; boundaries between forest and savanna; dry forest, especially on rocky hills; beside streams in open country; moist woodland; secondary forest with *Salacia pyriformis, Clerodendrum buchholzii;* sand forest near the coast; 20-2000 m alt.

Very variable in: habit depending on habitat; shape and presence of prickles; size and shape of leaves and leaflets.

NE S. Africa, Swaziland.

Sometimes cultivated (Sierra Leone, Ivory Coast). Roots used as chew sticks. Canoes made of large trunks.

Has been confused with *Z. lemairei,* and with *Z. mezoneurispinosum* (cf. Aké Assi & Jérémie, Adansonia, Sér. 3, 31: 169-174, 2009).

Z. lindense (Engl.) Kokwaro

bas.: *Fagara lindensis* Engl.

Shrub 2 m tall or small tree; branches scandent, with blackish-red recurved prickles 3-12 mm long; bark rough; leaves 6-20 cm long, rhachis with numerous upcurved prickles 2-3 mm long; leaflets 9-15, (sub)opposite, acute, petiolules 0,5-2 mm long; flowers 4-merous, in terminal corymbose panicles, ultimate branches umbel-like; follicles paired, ±round, c. 7 mm Ø, scarlet; female flowers unknown.

Coastal woodland and open bushland, on calcareous soil; 6-200 m alt.

Z. mezoneurispinosum (Aké Assi) W. D. Hawthorne – Lectotype: A. Chevalier 19183, P. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 109, 111, 1959 (sub nom. *Fagara leprieurii);* Bull. Jard. Bot. Etat, Brux. 30: 403, 1960; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 713, 2006; Adansonia, Sér. 3, 31: 171, 173, 2009.

bas.: *Fagara mezoneurispinosa* Aké Assi

syn.: *F. leprieurii* sensu Aubréville l. c., non (Guill. & Perr.) Engl.; *F.* sp. A sensu F.W.T.A., ed. 2: 686, 1958; *Zanthoxylum crenatum* A. Chev., Explor. Bot.: 99, 1920, nom. nud.

Scandent (or scrambling) shrub 4-10-15 m tall; dioecious; stems at base 2-10 cm Ø; branches glabrous, with *paired recurved prickles* at base of leaves 5 mm long, black-tipped; leaves 25-35 cm long, glabrous, rhachis with single prickles; leaflets 5-15, slender, abruptly long-acuminate, with crater-like glands below as well as translucent dots, *without* a small pocket at base, with long petiolules; *drying dark-grey or black;* flowers whitish, in panicles on first order branches only to c. 3 cm long; fruit yellowish, c. 5 mm Ø.

Secondary forest near rivers, lagoons; low alt. Not common.

Confused with *Z. leprieurii* (different in leaf and inflorescence characters; cf. Aké Assi & Jérémie, Adansonia, Sér. 3, 31: 170-173, 2009, with comparative table).

The paired thorns resemble those of *Mezoneuron benthamianum (Caesalpiniaceae).*

Z. mildbraedii (Engl.) P. G. Waterman

bas.: *Fagara mildbraedii* Engl.

syn.: *F.* cf. *angolensis* sensu Eggeling, Ind. trees Uganda Prot., ed. 2: 365, 1952.

Tree 10-30 m; bole straight, unbranched for several meters from base, c. 30 cm Ø; bark yellowish brown, smooth but for thorny bosses with upcurved spines 1-3 mm long, aromatic; branchlets pubescent to glabrous, with small black conicle upcurved prickles; leaves 15-37 cm long, rhachis not prickly, rusty puberulent; leaflets 11-23 (sub-)opposite, ±elliptic, 3-12 × 1-3,5 cm, glabrous but for the nerves, petiolule 0,5-2 (rarely 13) mm long; flowers 4-merous, white in panicles 5-11 cm long; follicles paired, glandular-foveolate, reddish, 4-10 mm Ø.

Montane (rain-)forests; 900-2100 m alt.

Z. ovatifoliolatum (Engl.) N. Finkelstein – Icon.: B. Curtis & C. Mannheimer, Tree atlas Namibia: 257, 2005.

bas.: *Fagara ovatifoliolata* Engl. Sept. 1896.

syn.: *Zanthoxylum citriodorum* Welw. ex Hiern Dec. 1896.

Deciduous shrub or shrubby tree 1-3,5 m tall, glabrous; older branches and leaf rhachides with ±hooked sharp paired prickles; leaves crowded near the ends of the twigs, 12-15 cm long, with a citrus-like scent when crushed; leaflets 7-9, ovate, gland-dotted, dark green, glossy above, 2,5-3,5 × 1-2,5 cm, sessile; flowers green-yellow in spiciform-paniculate inflorescences, 6 cm long; fruit gland-dotted, dark brown, c. 5 mm Ø with a very aromatic black seed; female flowers known?

Thickets in mountains.

NW Namibia (uncommon-rare on mountain slopes with dolomite and calcareous conglomerate).

Z. paracanthum (Mildbr.) Kokwaro

bas.: *Fagara paracantha* Mildbr.

Scandent shrub or tree to >10 m tall; branches and branchlets glabrous, dull red, with thick straight or upturned spines 3-11 mm long; leaves 15-37 cm long, lemon-scented, rhachis with upcurved prickles; leaflets 11-23, glabrous, 5-13 × 2-3,5 cm, with few gland-dots, margins crenate; flowers (female) greenish-white in terminal lax panicles 17 cm long; fruit of paired follicles, reddish, c. 6 mm Ø; male flowers unknown.

Evergreen forest and bushland, sometimes riverine; 100-1500 m alt.

Resembling *Z. usambarense* but leaflets more numerous and long-acuminate.

Z. parvifoliolum (A. Chev. ex Keay) W. D. Hawthorne – Icon.: Adam, Fl. descr. Mts Nimba 2: 798, 1971 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 701, 713, 2006 (partial).

bas.: *Fagara parvifoliola* A. Chev. ex Keay

syn.: *Zanthoxylum parvifolium* A. Chev., Vég. util. afr. trop. franç. 5: 233, 1909, nom. sub-nud.; *Z. parvifoliolum* ("parvifoliola") A. Chev., Explor. bot.: 100, 1920, nom. nud.; *Fagara parvifoliola* ("parvifolium"). A. Chev. ex Aubrév., Fl. forest. Côte d'Iv. 2: 88, pl. 159A, 1936, descr. gall., and ed. 2, 2: 110, pl. 166 p. 109, 1959; *F. leprieurii* sensu Fl. W. Trop. Afr. 1: 481, 1928 p.p., non (Guill. & Perr.) Engl. et ibid., ed. 2, 1(2): 686, 1958 p.p.

Tree 15-20 m; bole short, smooth, without thorns, 20-80 cm Ø; young branchlets with small thorns; leaves long in "tufts"; leaflets 20-25, sessile, ±elliptic, 1,4-7,5 × 0,6-1,8 cm, cuneate asymmetric at base with a small pocket on one side, tip blunt-ended or emarginate, translucent dots mostly visible near margins which are often recurved (cf. *Z. lemairei!);* flowers white in branched panicles shorter than leaves; fruit 5 mm Ø. – With the habit of a Leguminosae.

Semi-deciduous rain-forest, secondary forest associations, moist evergreen forest; common; 500-600 m alt.

Has been treated as a synonym under *Z. lemairei.* Known for ±40 years before valid description in 1956. (Cf. also treatment by Hawthorne & Gyakari, Photoguide Forest Trees Ghana: 152-153, 2006).

Not in Zaire *(= Z. lemairei).*

Z. pilosiusculum (Engl.) P. G. Waterman

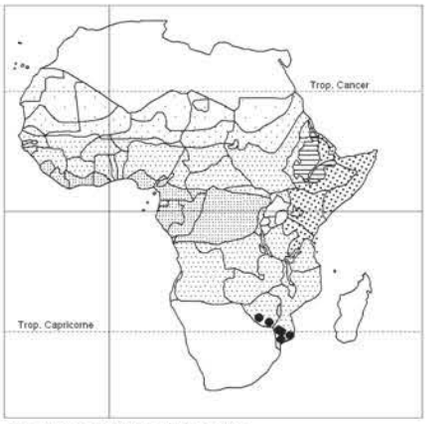
bas.: *Fagara pilosiuscula* Engl.

syn.: *Zanthoxylum rubescens* sensu Hiern, Cat. Welwitsch Afr. pl. 1: 113, 1896, non Planch. ex Hook. f. 1849; *Fagara verschuerenii* De Wild.; *F. nitens* sensu Exell, J. Bot. 65, Polypet. Suppl.: 53, 1927, non Engl. 1896, p.p. (quoad specim. Gossweiler 4618, 4822, 5403, 8964); *F. elondo* De Wild. ex Renier in Flore du Kwango 2: 149, 1948, nom. inval., descr. gall. ("elondii" sensu Waterman), not cited by G. C. C. Gilbert in Fl. Congo Belge 7, 1958!; "elondo" is a vernacular name for *Z. pilosiusculum).*

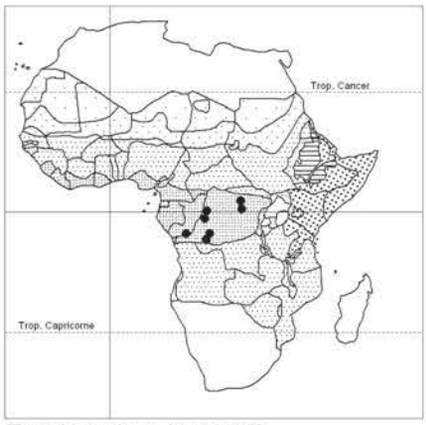
Erect shrub 2 m tall, or tree 3-4 m; branches and branchlets puberulous or glabrous, with recurved spines 7 mm long; leaves 17-30 cm long, petioles and rhachides ±pubescent and prickly; leaflets 11-19, opposite, sessile, papery, 1,5-8 × 0,6-3,5 cm, crenulate-dentate, sparsely pubescent beneath; flowers 4-merous, white, in corymbose panicles 20 cm long; fruit of 2 follicles, 5 mm Ø, glandular, brilliant vermilion.

Savanna with shrubs; mountain forest and at edges; 600-1150 m alt. (Angola).

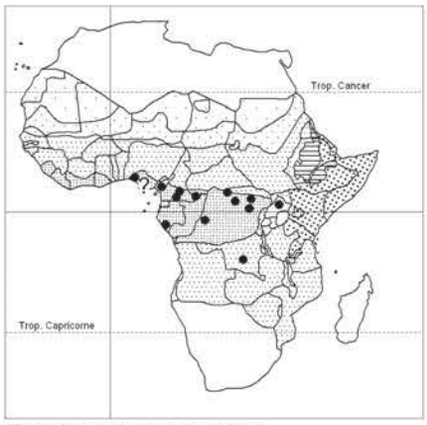
Habit of the Mountain Ash, *Fraxinus* (fide Welwitsch).



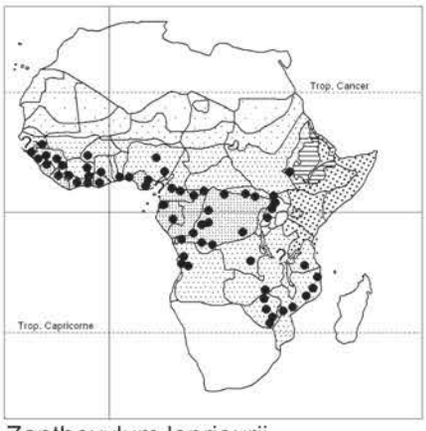
Zanthoxylum humile



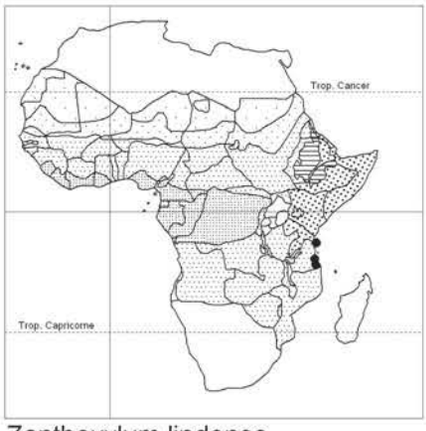
Zanthoxylum laurentii



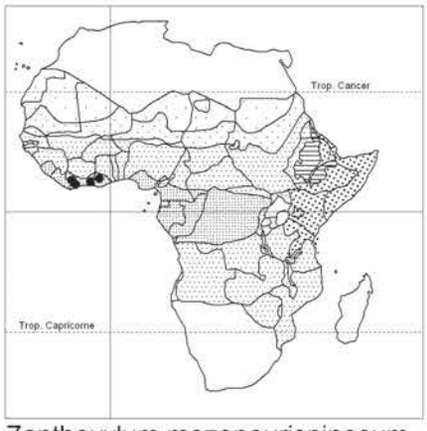
Zanthoxylum lemairei



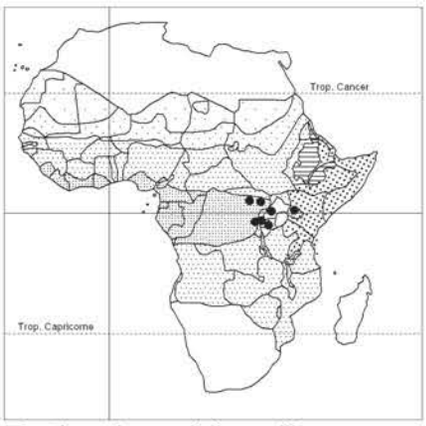
Zanthoxylum leprieurii



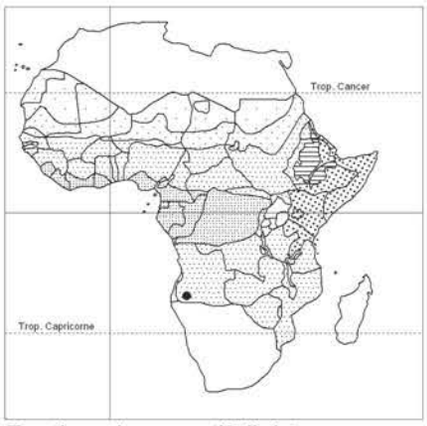
Zanthoxylum lindense



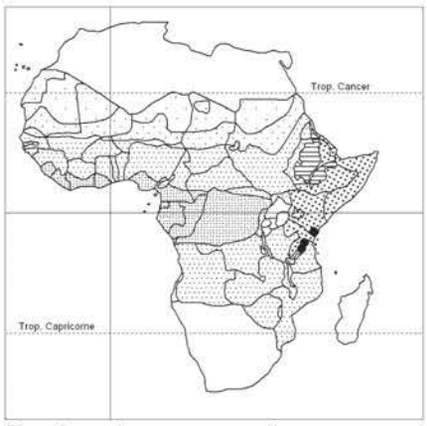
Zanthoxylum mezoneurispinosum



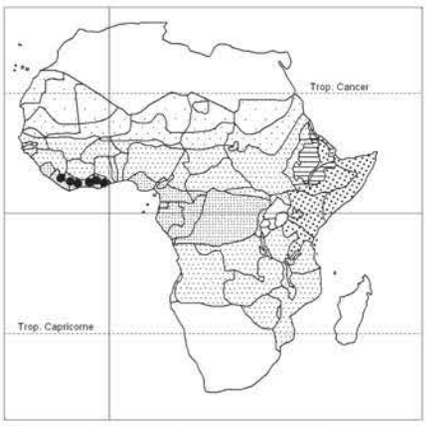
Zanthoxylum mildbraedii



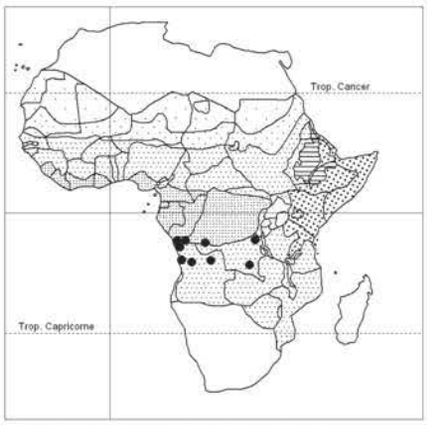
Zanthoxylum ovatifoliolatum



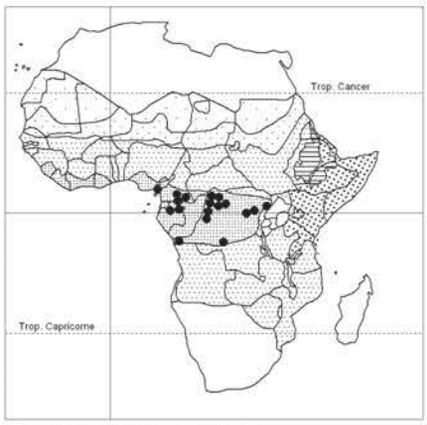
Zanthoxylum paracanthum



Zanthoxylum parvifoliolum



Zanthoxylum pilosiusculum



Zanthoxylum poggei

Z. poggei (Engl.) P. G. Waterman – Icon.: Fl. Gabon 6: 55, 1963; Fl. Cameroun 1: 71, 1963.

bas.: *Fagara poggei* Engl.

syn.: *F. adolfi-friederici* Engl.; *F. densiaculeata* Engl.; *F. mortehanii* Engl.; *F. dschaensis* Engl.; *F. lomiensis* Engl.; *F. pendula* Engl.; *F. longipetiolulata* Engl.

Liane or scandent shrub 3,5-5 m tall; stems 1,2-5 cm Ø; all parts densely armed with recurved prickles; leaves 30-40 cm long; leaflets 2-5 pair, papery, opposite, ovate-elliptic, 6-19 × 3,5-9 cm, drip-tip 2,5 cm long, sparsely gland-dotted, dots at margins translucent; petiolules 3-8 mm long; flowers 4-merous, white, pedicellate, in long (50 cm) lax terminal panicles; follicles 2, one fertile, c. 1 cm Ø.

Forests; rain-forest, open spaces in forest; 200-620 m alt.

Bioko / Fernando Poo.

Z. psammophilum (Aké Assi) P. G. Waterman; Holmgren & al. in L. Poorter & al., Biodiversity of W. African Forests: 389, 2004. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afric. forests: 711, 2006.

bas.: *Fagara psammophila* Aké Assi

Liane 15 m tall, or small tree; stem 2 cm Ø, little branched, with single or paired prickles 1 cm long; leaves 30-40 cm long, glabrous, rhachides sparsely prickly, drying yellowish; leaflets 7-14, alternate, ovate, acuminate, 6-13 × 4-6 cm, midrib with recurved vicious prickles, base very asymmetric; margins entire, recurved; 4 crater glands along midrib beneath; flowers greenish-white in compact spike-like clusters in branched panicles 21-30 cm long; fruit warty, yellowish, 4 mm Ø.

Coastal savanna, edge of savanna, lagoon-side savanna, thicket, forest.

Liberia: rare fide Holmgren & Poorter in J. Biogeogr. 34: 1103, 2007.

Z. renieri (G. C. C. Gilbert) P. G. Waterman

bas.: *Fagara renieri* G. C. C. Gilbert

Tree, glabrous; branches and branchlets with numerous prickles 2-6 mm long; leaves 10-30 cm long; leaflets 3-8 pairs, opposite, terminal one usually aborted, asymmetric at base with 2 glands, oblong-elliptic, 5-10 × 1-3 cm, drip-tip 1-2 cm long; petiolules 2-4 mm long, ±winged; (male) flowers 5-merous in stout panicles 15 cm long; female flowers unknown; follicle single, 6 mm Ø.

Forest.

Resembling *Z. lemairei* but densely prickly in all parts, leaflets narrower, and fruit larger.

Not in Uganda *(= Z. lemairei;* misidentification of specim. Chandler 2014).

Z. rubescens Planch. ex Hook. f. – Icon.: Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 111, 1959 (sub gen. *Fagara);* Hawthorne & Jongkind, Woody pl. west. Afric. forests: 711, 713, 2006; Fl. Cameroun 1: 75, 1963 (sub nom. *F. welwitschii).*

syn.: *Fagara rubescens* (Planch. ex Hook. f.) Engl.; *F. melanacantha* (Planch. ex Oliv.) Engl.; *Zanthoxylum melanacanthum* Planch. ex Oliv.; *Z. ubanghense* A. Chev. ms.; *Fagara ubanghensis* A. Chev., nom. nud. – See synonyms below listed under "Welwitschii type", *Z. thomense.*

Letouzey (in Adansonia, N. S. 2: 139-140, 1962) discussed the taxonomic positions of *Fagara altissima, F. welwitschii* and *F. rubescens*, and the taxonomic treatments proposed by Gilbert (Fl. Congo belge 7: 82-84, 1958, and by Keay (Fl. W. Trop. Afr., ed. 2, 1/2: 684-685, 1958). Gilbert maintained *F. rubescens* (syn.: *F. melanacantha)* and *F. welwitschii* (syn.: *F. altissima),* whereas Keay placed them all under *F. rubescens*. Letouzey concluded, that differences seem to exist although minor, between Gilbert's two groups especially in central Africa. But towards the West they seem to be blurred. However, in Flore du Cameroun (1: 74-77, 83-85: 1963) and in Flore du Gabon (6: 39-42, 47-48, 1963), Letouzey kept the two species separate.

The reference to two morphological-ecological groups under *Z. rubescens* was again made by Hawthorne & Jongkind (Woody plants west. Afric. forests: 710, 712, 2006), viz. "welwitschii type" and "normal and attiensis type", respectively. The latter perhaps also confused partly with *Z. chevalieri.* The differences can be summarized as follows.

– "Normal and attiensis type":

Shrub or small tree to 8 m tall; twigs and leaves glabrous; branches with paired spines at base of petioles, often blackish; prickles on young twigs and leaf rhachis recurved, 3-5 mm long; leaves 30-70 cm long; leaflets 3-9 pairs up to 5 cm wide, margins closely crenate; flowers in ±branched panicles with slender branches clothed with short dense stiff white hairs; fruit <5 mm Ø, petals falling off early.

Dry forests and thickets (SE Ghana, Nigeria to Centr. Afr. Rep. – Zaire).

– "Welwitschii type":

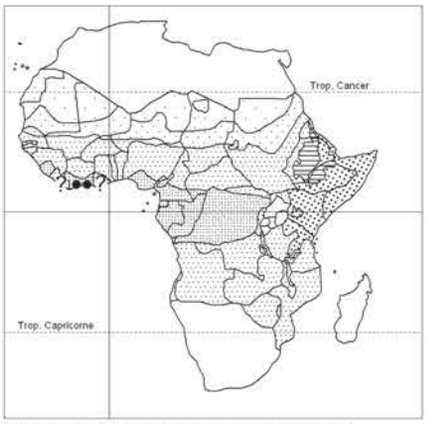
Small tree or straggling shrub 2,5-6 m tall (in W. Africa), or tree to 25 m tall; branches and branchlets with sparse, single prickles, 2-4 mm long; leaves (20-)70-90 cm long, petiole and rhachis unarmed, flat or ±winged; leaflets 3-4 pairs, or 9-13, glabrous but for short hairs on midrib below, obovate-falcate, >8 cm wide, thickly papery, abruptly acuminate, often red above; margins not or finely dentate; flowers in much-branched panicles; fruit 6-8 mm Ø, sepals and petals persisting.

Moist semi-deciduous or evergreen forests, river banks. – From W. Africa to Uganda and Angola; uncommon in Cameroon.

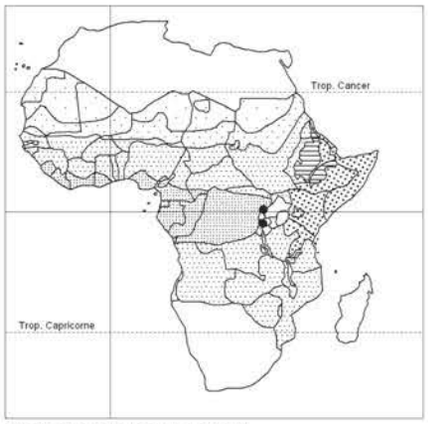
If the "Welwitschii type" is kept as a separate species and *Fagara thomensis* Engl. 1896 from São Tomé is included the correct name of the entity should be, according to Waterman (in Taxon 24: 365, 1975):

Zanthoxylum thomense (Engl.) A. Chev. (1914) ex P. G. Waterman (bas.: *Fagara thomensis* Engl.). *Zanthoxylum welwitschii* Hiern 1896 is a synonym of *Vepris grandifolia* (Engl.) Mziray. Synonyms cited by Waterman and others are: *Zanthoxylum melanacanthum* sensu Ficalho, non Planch. ex Oliv.; *Z. melanacanthum* sensu Hiern non Planch. ex Oliv.; *Fagara welwitschii* Engl.; *F. afzelii* Engl.; *F. altissima* Engl.; *F. attiensis* Hutch. & Dalziel p.p. (quoad specim. Chevalier 17423, Thomas 1747); *Zanthoxylum attiense* A. Chev. 1920, nom.; *Fagara cabrae* De Wild.; *F. klaineana* Pierre ms. (non *F. klainei* Pierre ex De Wild. = *Z. dinklaigei*); *Zanthoxylum pulchellum* A. Chev. 1914, nom. nud.; *Fagara densicrenata* Engl.; *F. membranifolia* Mildbr. (fide Kokwaro, Fl. Trop. E. Afr., Rutaceae: 45, 1982).

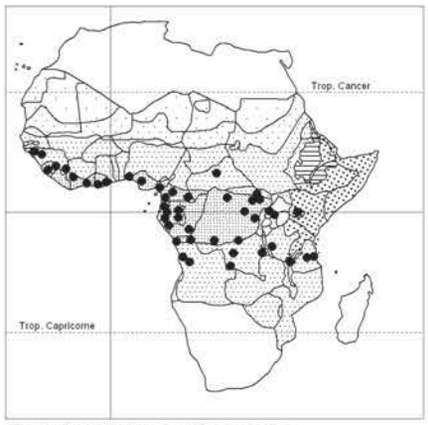
Z. thomense (Engl.) A. Chev. ex P. G. Waterman is the name used by L. Pauwels (Nzayilu N'ti, Guide des arbres Kinshasa-Brazzaville: 203, 1993), and by Sosef & al. (Check-list pl. vascul. Gabon: 379, 2006).



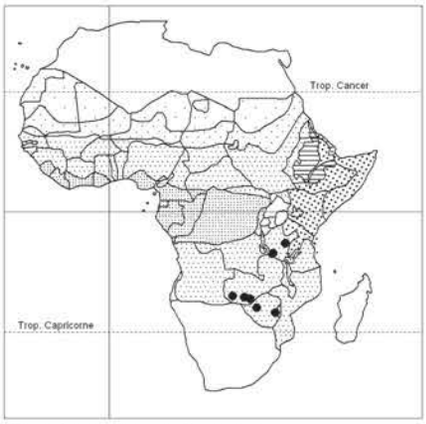
Zanthoxylum psammophilum



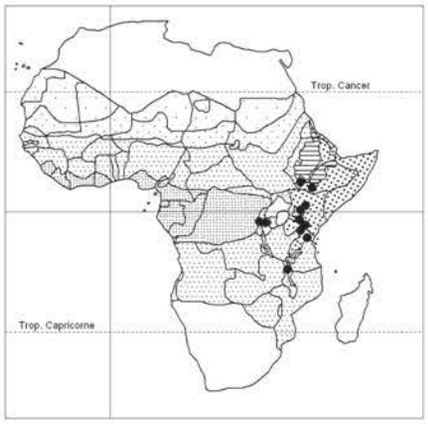
Zanthoxylum renieri



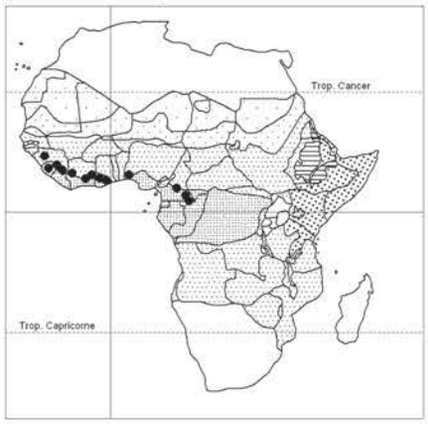
Zanthoxylum rubescens (Z.thomense)



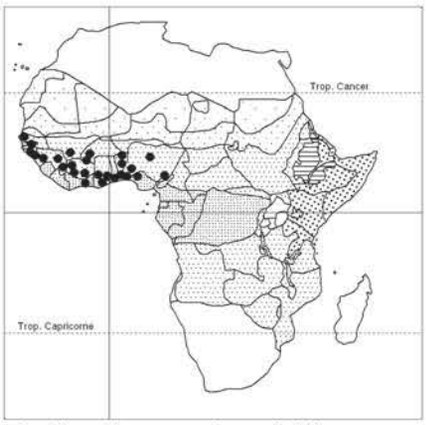
Zanthoxylum trijugum



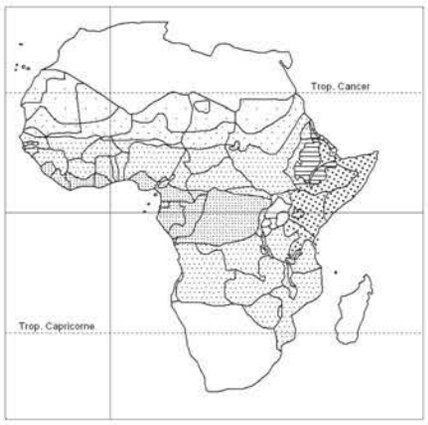
Zanthoxylum usambarense

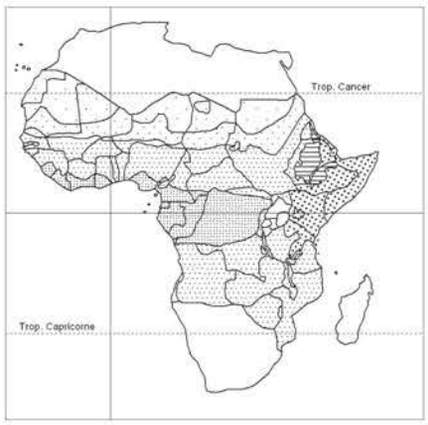


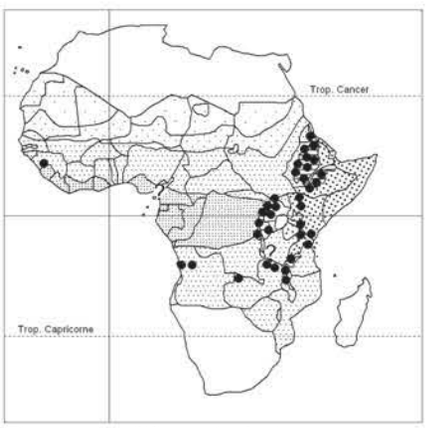
Zanthoxylum viride



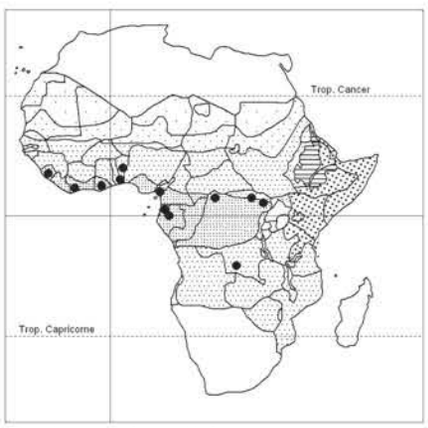
Zanthoxylum zanthoxyloides



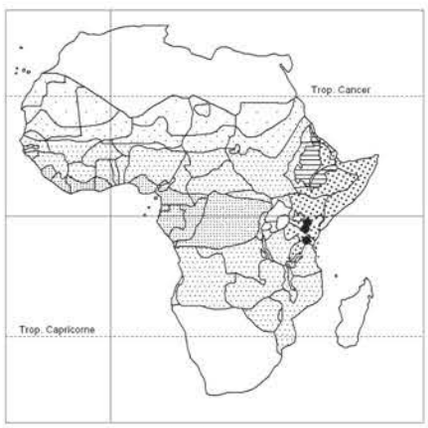




Brucea antidysenterica



Brucea guineensis



Brucea macrocarpa

For **Z. rubescens** s. l.; ecology: Dry forests, thickets; semi-deciduous or evergreen forests, rain-forest, riverine; 600-1800 m alt.

São Tomé, Bioko / Fernando Poo.

Comprises 2 vars.: – var. **rubescens**; – var. **dispermum** (G. C. C. Gilbert) P. G. Waterman (bas.: *Fagara rubescens* Hook. f. var. *disperma* G. C. C. Gilbert), with two follicles in the fruit; described from NE Zaire (mountain summit in dense forest, understorey).

Z. thomense (Engl.) A. Chev. ms. ex P. G. Waterman – See above under **Z. rubescens** ("Welwitschii type").

Z. trijugum (Dunkley) P. G. Waterman; Coates Palgrave, Trees south. Afr., ed. 3: 413, 2002.

bas.: *Fagara trijuga* Dunkley

Shrub or tree 3-7 m tall, deciduous, sometimes with several stems; bark grey, with sparse straight or slightly recurved prickles 2-8 mm long, also on leaf-rhachis; branches, leaves and inflorescences rusty-pubescent or grey-tomentellous, glabrescent; leaves 15-35 cm long; leaflets 7-9, papyraceous, (sub-)opposite, ±sessile, 4-10 × 3-5,5 cm, densely gland-dotted, margins minutely toothed; flowers greenish-white, 4-merous, in branched terminal panicles 12-18 cm long; fruit rusty brown, reticulate, densely gland-dotted, 5 mm Ø.

Dry (deciduous) woodland mainly with *Baikiaea*, bushland, thicket, sometimes riverine; 1100-1450 m alt.

Z. usambarense (Engl.) Kokwaro – Icon.: White & al., Evergreen forest fl. Malawi: 517, 2001.

bas.: *Fagara usambarensis* Engl.

syn.: *F. becquetii* G. C. C. Gilbert; *Zanthoxylum becquetii* (G. C. C. Gilbert) P. G. Waterman; *Fagara consolatae* Chiov.

Shrub 2-5 m tall or tree 2,5-6-15 m with bole clear for several m, c. 40 cm Ø, with spinous bosses and corky furrowed bark with prominent ribs; branchlets glabrous, slender, with straight or ±upcurved prickles 6-12 mm long; leaves glabrous, 6-20 cm long; petiole and rhachis not spiny; leaflets (5-)7-17, glabrous, with few white glands; flowers 4-5-merous, greenish white, clustered, in glabrous rounded terminal much-branched panicles 4-15 cm long; follicles 2-3, ovoid, c. 1 cm long.

Wooded savanna; montane scrub forest; dry forest, forest remnants, clump thickets; evergreen bushland or deciduous woodland on rocky slopes, often over limestone; marshy wooded places; sometimes secondary bushland following *Podocarpus* clearance; 1200-2600 m alt.

Z. viride (A. Chev.) P. G. Waterman – Icon.: Adam, Fl. descr. Mts Nimba 2: 799, 1971 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 713, 2006; Fl. Gabon 6: 49, 1963.

bas.: *Fagara viridis* A. Chev.

syn.: *F. fuscopilosa* Engl.; *F. attiensis* Hutch. & Dalziel, Bull. Misc. Inf. Kew 1929: 24, p.p. (quoad specim. Johnson 750); *Zanthoxylum attiense* A. Chev., Explor. Bot. 1: 99, 1920.

Straggling shrub or tree 2-4 m tall, or liane to 10 m; stem 8 cm Ø at base, bark with spiny corky bosses; branchlets and leaf rhachis pubescent, spiny, prickles c. 3 mm long; young shoots purplish; leaves 20-30(-50) cm long; leaflets 13-15, with conspicuous erect spreading soft hairs on midrib and nerves, but

surface between veins not so, 5-10 × 2-5 cm, with short spathulate drip-tip; conspicuous sparse translucent dots on both surfaces; flowers 4-merous, greenish white, in large spreading panicles with scattered long hairs; fruit 1 follicle + 1 aborted, glabrous, rough, c. 5 mm Ø.

Very dry forest, cleared forest, secondary vegetation; sometimes riverine forest; c. 800 m alt.

Poisonous.

Z. zanthoxyloides (Lam.) Zepernick & Timler – Candle Wood. – Icon.: Irvine, Woody pl. Ghana: 501, 1961; Aubréville, Fl. forest. Côte d'Iv., ed.2, 2: 109, 1959 (partial); Keay, Trees Nigeria, ed. 2: 325, 1989; Akoegninou & al., Fl. analyt. Bénin: 915, 2006; Hawthorne & Jongkind, Woody pl. west. Afric. forests: 701, 711 2006; Willdenowia 11: 362, 1981 (photo. type).

bas.: *Fagara zanthoxyloides* Lam. ("xanthoxyloides").

syn.: *F. senegalensis* (DC.) A. Chev.; *Zanthoxylum senegalense* DC.; *Z. polygamum* Schumach.

Shrub or low-branching shrubby, very prickly tree to c. 12(-16) m tall; trunk grey, with large woody thorns falling later, bark finely fissured longitudinally; thorns present on older branches, branchlets, the latter glabrous; leaves glabrous, glossy, brittle, with a citronella-like smell when crushed, petiole and rhachis and midrib of leaflets beneath with recurved sharp prickles (variable in quantity); leaflets obovate-elliptic, 5-10 × 2-5 cm, with *rounded* or *emarginate apex,* raised glands absent, margins recurved; flowers cream in dense narrow panicles 5-25 cm long; follicle single, gland-dotted, c. 6 mm Ø.

Savanna, thickets, dry and transitional forests, forest patches on dry ground, secondary dry forests; coastal dunes and thickets; termite mounds (Burkina Faso); locally abundant in coastal areas.

Sometimes planted.

Bark of roots and stems toxic. Seeds used for necklaces, also used as pepper. Young shoots and twigs used as chew-sticks.

* * *

Fagara annobonensis Mildbr. is described from Annobón.

* * *

INSUFFICIENTLY KNOWN TAXA:

Zanthoxylum sp. A sensu Harris, Vascul. pl. Dzanga-Sangha Res., Centr. Afr. Rep. – Tree 35 m tall in forest on firm ground.

Fagara mawambensis Engl., shrub 2-3 m tall with prickly branchlets; leaves 40 cm long, glabrous, of 11 opposite leaflets; flowers in densely pubescent panicles 25 cm long; fruit unknown.

Described from forests in NE Zaire.

F. sp. sensu Consp. Fl. Angol. 1: 270, 1951. Tree 5 m tall of moist places in Lunda: Dala (Gossweiler 11422).

ZANTHOXYLUM

SYNONYMS:

Zanthoxylum attiense A. Chev. 1920, nom. = **Zanthoxylum viride**

becquetii (G. C. C. Gilbert) P. G. Waterman = **Z. usambarense**

capense Sim 1909, non Harv. = **Z. delagoense**

citriodorum Welw. ex Hiern = **Z. ovatifoliolatum**

crenatum A. Chev., nom. nud. = **Z. mezoneurispinosum**

engleri P. G. Waterman = ? (cf. **Clausena anisata**)

guineense Stapf = **Harrisonia abyssinica** *(Simaroubaceae)*

gummiferum A. Chev., ms. = **Zanthoxylum gilletii**

horridum Welw. ex Filcalho 1884 = **Z. gilletii**

macrophyllum Oliv. 1868 = **Z. gilletii**

melanacanthum A. Chev. = **Z. chevalieri**

melanacanthum Planch. ex Oliv. = **Z. rubescens**

melanacanthum sensu Hiern = **Z. rubescens**

natalense Hochst. ex C. Krauss = **Cnestis polyphylla** *(Connaraceae)*

nitens Hiern = **Zanthoxylum leprieurii**

olitorium Engl. = **Z. chalybeum**

parvifoliolum A. Chev., nom. nud. = **Z. parvifoliolum**

parvifoliolum A. Chev., nom. subnud. = **Z. parvifoliolum**

polygamum Schumach. = **Z. zanthoxyloides**

pulchellum A. Chev. 1914, nom. nud. = **Z. rubescens**

rubescens sensu Hiern 1896, non Planch. ex Hook. f. = **Z. pilosiusculum**

senegalense DC. = **Z. zanthoxyloides**

somalense (Chiov.) P. G. Waterman = **Z. holtzianum** subsp. **holtzianum**

sp. sensu Hiern 1896 = **Z. gilletii**

stuhlmannii Engl. = **Z. leprieurii**

tenuipedicellatum (Kokwaro) Vollesen = **Z. holtzianum** subsp. **holtzianum**

tessmannii (Engl.) J. F. Ayafor = **Z. gilletii**

thomense (Engl.) A. Chev. ex P. G. Waterman – See under **Z. rubescens**

thunbergii DC. var. *grandifolium* Harv. = **Z. davyi**

var. *obtusifolium* Harv. = **Z. capense**

ubanghense A. Chev., ms. = **Z. rubescens**

welwitschii Hiern = **Vepris grandifolia**

SIMAROUBACEAE / *8* g. / *21* spp.

excl. *Klainedoxa* (see **Irvingiaceae),** but incl. *Harrisonia, Kirkia (Kirkiaceae), Suriana (Surianacea).* Delimitation of the family controversial (cf. E. S. Fernando & C. J. Quinn in Taxon 44: 177-181, 1995; H. J. Beentje, Surianaceae in Fl. Trop. E. Afr. 1998).

Female flowers unknown in 1 species *(Brucea macrocarpa);* no fruit and no ecology recorded for *Iridosma le-testui* known only from the type (= < 5 %).

DAS, S. & S. KHANRA (2007). Foliar sclereids in Simaroubaceae and Balanitaceae with taxonomic implications. *J. Econ. Taxon. Bot.* 31: 367-373.

BRUCEA / *4*

Ten (or 6?) species in the Palaeotropics.

Brucea antidysenterica J. F. Mill., incl. var. *crassivenia* Engl.; Friis, Forest trees NE. trop. Afr.: 196, 319 (map), 1992. – Icon.: Beentje, Kenya trees, shrubs & lianas: 357, 1992; Fl. Trop. E. Afr., Simaroub.: 8, 2000; F. White & al., Evergreen forest fl. Malawi: 551, 2001; Puff & Sileshi Nemomissa, Pl. Simen (Meise): 115, 2005.

syn.: *B.* ("Brucia") *ferruginea* L'Hér.; *B. erythraeae* Chiov.; *B. salutaris* A. Chev; *B. abyssinica* Spreng. – See note below.

Shrub or tree, sparsely branched, 1-10(-15) m tall; stem 15 cm Ø; twigs with prominent leaf-scars, golden- or rusty-brown hairy; bark light brown-grey, smooth; leaves imparipinnate, velvety-hairy, rarely glabrous, 10-65 cm long, leaflets 5-13 with asymmetric base, margins entire wavy; flowers small, 2 mm long, unisexual or bisexual, greenish in 12-35 cm long andromonoecious spikes; fruit red of 1-4 drupaceous mericarps.

Dry or moist forests or forest remnants; upland, montane rainforests with *Podocarpus latifolius* or with *Albizia, Macaranga*, *Croton*, *Ocotea,* in understorey; evergreen bushland; secondary thickets in deforested areas or forest edges; montane grassland; 1400-2800 m alt.

Tropical Arabia.

Bark containing a bitter principle like angustura (Cusparia bark, *Galipea officinalis).*

Note: There are 2 detached leaflets of *B. antidysenterica* in the type material of *Trichilia siderotricha* Chiov. *(Meliaceae),* fide Friis in Biol. Skr. 54: 50, 2001.

B. guineensis G. Don – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 715, 2006 (partial).

syn.: *B. macrophylla* Oliv.

Tree or shrub, unbranched, 2-5 m tall; trunk c. 30 cm in girth; twigs sparsely pubescent; leaves with 4-6 pairs of leaflets, to 1 m long, leaflets slightly hairy or glabrous, often pustulate; flowers unisexual, red, in narrow panicles 40 cm long; fruits red, fleshy, reticulate.

Closed forest beside rivers, forest gallery; moist forest in windfall areas, forest clearings; 1-1200 m alt.

Near extinction in Ivory Coast (fide Aké Assi, Fl. Côte-d'Iv. 2: 140, 2002).

B. macrocarpa Stannard

syn.: *B. tenuifolia* Engl. subsp. *keniensis* Beentje ined. (Beentje, Kenya trees, shrubs, lianas: 375, 1994).

Shrub or tree, ± unbranched, 1-4,5 m tall; bark dark reddish brown; young twigs rusty-tomentose; leaves imparipinnate, 45-72 cm long, of 3-5 pairs of ± glabrous leaflets, petiole and rhachis rusty-pubescent; male inflorescence 38-55 cm long, spiciform, axis rusty-pubescent, flowers greenish; fruits of 1-2 drupaceous mericarps, glabrous, red; female flowers unknown.

Riverine or swamp forest, george near waterfall; (750-)1450-2000 m alt.

Formerly included in *B. tenuifolia* but distinct from the latter by more leathery toothed leaflets with gland-dotted margins, ± glabrous flowers and larger fruit, and from *B. antidysenterica* by its ± glabrous leaves.

Restricted to K4 area, Kenya; vulnerable.

BRUCEA

B. tenuifolia Engl., excl. subsp. *keniensis* Beentje ined. *(= B. macrocarpa).*

Shrub 1-3 m tall; leaves ± glabrous, 20-56 cm long, leaflets thin, 2-5 pairs with asymmetric base, gland dots near (not at) the margins; flowers pubescent in 6-30 cm long spikes, rachis ferrugineous pubescent; fruits glabrous, reticulate, 7-10 mm long (not 14-18 mm = *B. macrocarpa).*

Rain-forest, in shade, in understorey; 650-1400 m alt.

SYNONYM:

Brucea paniculata Lam. = **Trichoscypha smeathmannii** *(Anacardiaceae)*

GYMNOSTEMON / *1*

Gymnostemon zaizou Aubrév. & Pellegr. – Icon.: Hawthorne & Jongkind, Woody pl. west. Afr. forests: 715, 2006 (partial).

Tree to 25 m; young branchlets yellowish-hairy, branchlets soon hollow; stems glabrous; leaves clustered at end of branches, imparipinnate (5-12 pairs of leaflets), 20-45 cm long, pale green, leaflet margins recurved; sun leaves leathery, shade leaves with leaflet base decurrent forming small wings and with long drip tips; flowers small, rusty-villous, in terminal panicles; drupe c. 10 cm long, pustulose. – Habit of an *Entandrophragma.*

(Upland) forest, forest clearings.

(HANNOA)

Hannoa chlorantha Engl. & Gilg = ? **Quassia silvestris** (see Note at the end of this species)

ferruginea Engl. = **Q. sanguinea**

gabonensis Pierre = **Q. silvestris**

kitombetombe G. C. C. Gilbert = **Q. silvestris**

klaineana Pierre ex Engl., incl. var. *afzelii* Engl. and var. *welwitschii* Engl. = **Q. silvestris**

longipes (Sprague) G. C. C. Gilbert = **Q. silvestris**

njariensis G. C. C. Gilbert = **Q. silvestris**

schweinfurthii Oliv. = **Q. schweinfurthii**

undulata (Guill. & Perr.) Planch., incl. var. *longipetiolulata* Engl. = **Q. undulata**

undulata sensu Hiern (Angola) and sensu Beentje (Kenya) = **Q. silvestris**

Samadera indica Gaertn. = **Quassia**

Samandura indica Baill. = **Quassia**

madagascariensis Perrier de la Bâthie = **Q. indica**

HARRISONIA / *1*

In recent floras and lists often placed in *Rutaceae.* About 3-4 species; in tropical Africa and from SE Asia through Malaysia to N Australia (fide Nooteboom in Fl. Malesiana, Ser. 1, 6/2: 207-209, 1962).

Harrisonia abyssinica Oliv., incl. fa. *grandifolia* Engl., var. *somalensis* Fiori and subsp. *occidentalis* (Engl.) Engl. – Icon.: Engler in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 776, 1915; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 131, 1959; Adam, Fl. descr. Mts Nimba 2: 805, 1971; Troupin, Fl. Rwanda, Sperm. 2: 257, 1983; Beentje, Kenya trees, shrubs & lianas: 375, 1994; Thulin, Fl. Somal. 2: 172, 1999; Fl. Trop. E. Afr., Simaroubaceae: 3, 2000.

syn.: *H. occidentalis* Engl.; *Clausena impunctata* Welw. ex Hiern (*Rutaceae*); *Zanthoxylum guineense* Stapf *(Rutaceae).*

Shrub, evergreen, branched from the base or spreading much-branched tree (1-)2-10(-13) m tall, sometimes scandent; trunk and branches corky, pale brown, with conical corky bosses to c. 2 cm high surmounted by a prickle; smaller branches with paired ± hooked stipular prickles c. 5 mm long (rarely unarmed); stems long, supple, sarmentose; annual shoots pubescent; leaves 5-25 cm long, rhachis winged; leaflets 7-13(-21) sessile; flowers white, bisexual, fragrant, in terminal panicles 5-15 cm long; fruit bright red, c. 1 cm Ø, fleshy, 5-8-grooved.

Dry evergreen forest; forest edges and clearings, characteristic of transition zones between forest and savanna; wooded grassland; thickets; secondary formations; coastal bushland; in or at the edge of riparian forest; sometimes forming thickets; widespread and fairly common; 0-1700 m alt. – Usually absent from deciduous bushland and *Brachystegia* woodland.

Very variable in: habit, size and shape and indumentum of leaves. W African specimens tend to have larger leaves.

SYNONYM :

Harrisonia lentiscoides (Engl.) Boas = **Ptaeroxylon obliquum** (Thunb.) Radlk. *(Ptaeroxylaceae)*

IRIDOSMA/ *1*

Monotypic.

Iridosma le-testui (Pellegr.) Aubrév. & Pellegr.

Tree; leaves glabrous, 60 cm long, with 23 leaflets, coriaceous, 8-15 × 6 cm; flowers bisexual, fragrant *(Iris*-scented), in branched panicles; fruit unknown.

Ecology unknown.

Known only from the type collected in 1927.

In habit and leaves resembling *Quassia grandifolia.*

KIRKIA / *3*

Six species in NE-E-SE Africa, Madagascar (ex- *Pleiokirkia* Capuron).

In recent floras placed in *Kirkiaceae.*

BACHELIER, J. B. & P. K. ENDRESS (2008). Floral structure of Kirkia (Kirkiaceae) and its position in Sapindales. *Ann. Bot.* 102: 539-550.

MULHOLLAND, D. A. & al. (2003). Secondary metabolites from Kirkia acuminata and Kirkia wilmsii (Kirkiaceae). *Biochem. Syst. Ecol.* 31: 793-797.

Kirkia acuminata Oliv., incl. var. *cordata* De Wild.; Coates Palgrave, Trees south. Afr., ed. 3: 423, 2002. – Icon.: Hook. Icon. Pl. 11: pl. 1036, 1868: Fl. south. Afr. 18/3: 2, 1986 (partial); Curtis & Mannheimer, Tree atlas Namibia: 260-261, 2005; E. Schmidt & al., Trees & shrubs Mpumalanga…: 240-241, 2002 (photos.); Grant & Thomas, Sappi tree spotting, Lowveld: 206-207, 2001.

Tree, deciduous, 6-20 m, with a clean bole c. 1 m Ø; crown rounded, large, spreading; bark silvery grey, smooth when young, becoming flaky with age; branchlets with conspicuous leaf scars; leaves sticky when young, coloured gold and red in autumn, imparipinnate (13-25 leaflets), (10-)20-45 cm long; flowers small, greenish cream, bisexual but some functionally male or female in many-branched lax heads; fruit a woody capsule. The swollen roots act as water-storage organs.

Dry bushland with *Terminalia sericea, Combretum* spp., *Pericopsis angolensis;* various types of woodland; open woodland with *Commiphora mollis, Cordyla africana, Combretum* and *Terminalia* shrubs; *Brachystegia* and *Acacia-Combretum* woodland; on rocky ridges and outcrops, by rivers, with *Margaritaria discoidea, Clerodendrum discolor, Artabotrys* and *Commiphora mossambicensis,* or with *Colophospermum mopane, Ricinodendron rautanenii;* on alluvial flats to sandy or loamy ground by rivers, or sandy and dry soils or rocky slopes of limestone, granite or basalt; abandoned villages; forest remnants; up to 1600 m alt.

Variable in indumentum (glabrous to thickly pubescent) and in shape of leaflets.

N Botswana, N Namibia, NE S. Africa.

Often planted as a live fence.

According to Engler (in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 777, 1915) the name *K. glauca* Engl. & Gilg, synonym of *K. acuminata,* is based on a herbarium sheet (Baum 966, holotype B †) comprising a specimen in fruit of *K. glauca*, and a leafy branch of "*Sclerocarya schweinfurthiana* Schinz" *[Anacardiaceae; = S. birrea* (A. Rich.) Hochst. subsp. *caffra* (Sond.) Kokwaro].

K. burgeri Stannard, incl. subsp. *somalensis* Stannard

Shrub or tree 3-8 m tall; crown spreading or rounded; bark grey, fissured; branchlets glabrous or puberulous and light brown when young, later grey, forming acute to wide angles with main axis; leaves 8-20 cm long, of (7-)9-15(-17) leaflets; flowers greenish-yellow, unisexual, in axillary dichasia 7-14 cm long; fruits 0,6-1,6 cm long, glabrous.

(Dense) deciduous bushland on limestone or gypsum; 450-1400 m alt.

Variable in shape of leaflets and size of fruits [differences used by Stannard (1981) to distinguish 2 subspp.], but variation found to be ± continuous by Thulin (Fl. Somal. 2: 183, 1999).

Herbarium specimens seen by Stannard were previously determined as *K. tenuifolia*. *K. burgeri* is more vigorous and robust and is larger in all parts than *K. tenuifolia.*

KIRKIA

K. tenuifolia Engl. – Icon.: Engler in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 779, 1915; Thulin, Fl. Somal. 2: 183, 1999; Beentje, Kenya trees, shrubs & lianas: 376, 1994; Fl. Trop. E. Afr., Simaroubaceae: 5, 2000.

Shrub or tree 1,5-8 m tall; crown bushy, spreading; bark grey, ± fissured; branchlets at right angles to main axis, dark red or reddish brown and puberulous when young; leaves 2-10 cm long, on shortshoots, of (3-)5-9 leaflets longer than wide (as long as wide in *K. burgeri);* flowers greenish cream, unisexual, in dichasia 3-6,5 cm long; fruit c. 1 cm long, pinkish.

Acacia-Commiphora bushland, common or occasional, on red sandy or stony soil or on limestone; 100-1000 m alt.

Distinguished by its lack of vigour, twiggy growth, smallness of leaves and inflorescences. Large tubers found on the roots by J. B. Gillett (fide Stannard, Kew Bull. 35: 835, 1981).

SYNONYMS:

Kirkia glauca Engl. & Gilg p.p. (specim. Baum 966, B, †) = **Kirkia acuminata** (fruit), **Sclerocarya birrea** subsp. **caffra** *(Anacardiaceae,* leafy branch)

lentiscoides Engl. = **Ptaeroxylon obliquum** (Thunb.) Radlk. *(Ptaeroxylaceae)*

pubescens Burtt Davy, incl. var. *glabripetala* Burtt Davy = **Kirkia acuminata**

tenuifolia sensu Burger (Ethiopia), non Engl. = **K. burgeri**

Tetraspis ruspolii Chiov. = **Kirkia tenuifolia**

(MANNIA)

Mannia africana Hook. f. = **Quassia grandifolia**

kerstingii (Engl.) Harms ex Engl. = **Pierreodendron kerstingii** (See under **Quassia grandifolia**)

le-testui Pellegr. = **Iridosma**

simarubopsis Pellegr. = **Pierreodendron kerstingii** (See under **Quassia grandifolia**)

zaizou Aubrév. = **Gymnostemon**

NOTHOSPONDIAS / *1*

First described in *Anacardiaceae,* also treated so in Fl. W. Trop. Afr., ed. 2, 1/2: 729, 1958, and in Klopper & al., Checklist of the Flowering Plants of Sub-Saharan Africa: 30, 2006.

Nothospondias staudtii Engl. – Icon.: van der Veken in Bull. Jard. Bot. Etat, Bruxelles: 107, 1960 (partial); Hawthorne & Jongkind, Woody pl. west. Afric. forests: 701, 715, 2006; Hawthorne, Field guide forest trees Ghana: 170, 1990.

syn.: *N. talbotii* S. Moore

Tree, dioecious, 5-26 m; trunk cylindrical, straight, clear to 10 m height, 50 cm Ø; bark smooth, light grey-pale yellow; branchlets puberulous, unfolding leaves with dense orange brown hairs; older tigs 2 cm Ø, hollow; crown spreading with ascending branches ended by whorls of large imparipinnate leaves 0,5-1,5 m long; leaflets 17-43, very unequalsided at base; flowers small, greenish, in lax terminal panicles 70 cm long, 80 cm wide; fruits yellow, plum-like or like those of *Spondias mombin.*

(Broken) high forest, rain-forest, riverine forest; in understorey, in half-shade; rare in the dry forest zone near the coast (originally planted?); 0-400 m alt.

(ODYENDYEA)

Odyendyea gabonensis (Pierre) Engl. = **Quassia**

klaineana (Pierre) Engl. = **Q. gabonensis**

longipes Sprague = **Q. silvestris**

zimmermannii Engl. = **Q. silvestris**

[PICRASMA]

[**Picrasma javanica** Blume] – Icon.: Flora Malesiana, Ser. 1, 6/2: 213, 1962.

Tree to 20 m; bole free to 15 m height, 35 cm Ø; bark grey-brown, smooth, fissured; leaves 2-3(-4)-jugate; flowers unisexual, in long-pedunculate panicles; fruits drupaceous, green to red or blue, c. 1 cm Ø.

A rain-forest tree in SE Asia (map in Fl. Males. l.c.), sometimes planted in W. Africa.

(PIERREODENDRON)

Pierreodendron africanum (Hook. f.) Little = **Quassia grandifolia**

grandifolium Engl. = **Q. grandifolia**

kerstingii (Engl.) Little – See under **Q. grandifolia**

QUASSIA / *9*

syn.: *Hannoa* Planch.; *Mannia* Hook. f.; *Odyendyea* (Pierre) Engl.; *Pierreodendron* Engl.; *Samadera* Gaertn.; *Simaba* Aubl.; *Simarubopsis* Engl.

Like Stannard in Fl. Trop. E. Afr., Simaroubaceae: 11, 2000, we have long hesitated how to treat the genera cited above in synonymy. Some recent floras and similar works still maintain *Hannoa,* e.g. Aké Assi for Côte d'Ivoire (2002), Akoegninou & al. for Benin (2006), Sosef & al. for Gabon (2006) and Hawthorne & Jongkind for their forest flora of W Africa (2006), whereas other authors adopt a wider view of the genus *Quassia* following Nooteboom's concept (Blumea 11: 509-528, 1962). In the end, we have chosen to a certain extent a wider view, although we do not agree completely with the proposed circumscription of some species. *Quassia* is a pantropical genus of 35-40 species in Africa, SE Asia to the Solomon Isl. and Queensland (Australia), tropical and subtropical America.

CHEEK, M. & C. C. H. JONGKIND (2008). Two new names in West-Central African Quassia L. (Simaroubaceae). *Kew Bull.* 63: 247-250.

Quassia africana (Baill.) Baill. – Icon.: Adansonia 8: pl.8, 1868.

bas.: *Simaba africana* Baill.

Shrub or undershrub 1,2-4 m tall, glabrous; bark greyish green; leaves imparipinnate, to 30 cm long, with 5-9 leaflets with decurrent bases; rhachis often narrowly winged, conspicuously constricted at the joints when dry; flowers white, fragrant, bisexual, c. 1,2 cm long, in 12-20 cm long racemes, stamens sometimes to 1,5 cm long; fruit c. 2,5 cm long, glabrous, reticulate. All parts very bitter.

Rain-forest, shady humid woods, in understorey; 5-500 m alt. (Gabon).

LOHOMBO-EKOMBA, M. & al. (2002). Contribution à l'étude de l'activité antipaludique de Quassia africana Baill. [sic.!]. *Ethnopharmacol.* 29: 44-49.

[**Q. amara** L.] – Bitter-wood, quassia-wood – Icon.: Adam, Fl. descr. Mts Nimba 2: 807, 1971.

Erect shrub 2-3 m tall, or tree to 10 m, with a very bitter taste; leaves imparipinnate, rhachis winged, leaflets 5; flowers bright red outside, white inside, c. 3,5 cm long, bisexual, in 10-25 cm long racemes; drupe c. 1,5 cm long, purple-black.

Native of Brazil. Cultivated in tropical Africa.

Q. gabonensis Pierre, non *Hannoa gabonensis* Pierre (= *Q. silvestris).* – Icon.: Wilks & Issembé, Arbres Guinée Equat.: 473, 2000 (sub gen. *Odyendyea).*

syn.: *Q. klaineana* Pierre non *Hannoa klaineana* Pierre ex Engl.; *Odyendyea gabonensis* (Pierre) Engl.; *O. klaineana* (Pierre) Engl.; *Simaba gabonensis* (Pierre) Feuillet

Tree to 25-30 m, glabrous; bole longitudinally grooved, widened at base; crown round, wide; twigs cylindrical, thick, blackish; leaves imparipinnate, 30-50 cm long, reddish when young; leaflets 6-11, leathery; flowers polygamous, small, whitish, numerous in terminal panicles; fruit reddish brown to ± black, to 7 cm long, resembling a large plum, exocarp falling off like in a walnut.

Primary forests, never abundant; 13-780 m alt.

Q. grandifolia (Engl.) Nooteboom

By several authors treated in a wide sense thus including **Pierreodendron kerstingii**, a West African taxon. The two taxa are distinguished as separate entities below. Field observations are needed. As Hawthorne & Jongkind (Woody pl. west. Afr. forests: 714, 2006) have pointed out, their versatile ecology, "from the wettest to very driest forests" may indicate that they are "cryptic" species. – The two entities seem to meet on the border between Benin and Nigeria (fide Akoegninou & al.).

– **A. Q. grandifolia** s. str. (mapped as *Pierreodendron africanum*)

bas.: *Pierreodendron grandifolium* Engl.

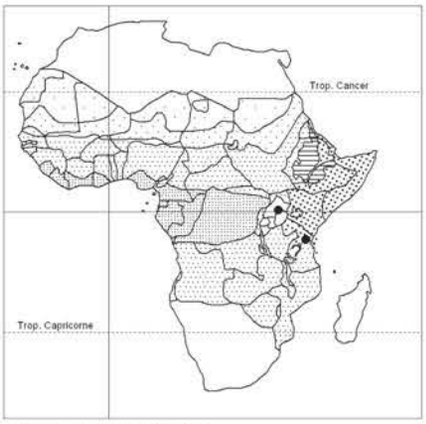
syn.: *P. africanum* (Hook. f.) Little; *Mannia africana* Hook. f.; *Simaba grandifolia* (Engl.) Feuillet; *Quassia grandifolia* sensu Nooteboom in Blumea 11: 521-522, 1962, p.p., and sensu Burkill, Useful pl. W. trop. Afr. 5: 90, 2000, p.p. (from Nigeria to Zaire and Angola).

Erect unbranched shrub 3 m tall or ± straggling tree to 18 m; bole short, longitudinally grooved at base; leaves clustered at the ends of the branchlets, 1 m long; leaflets 11-31, leathery, terminating in a short thick blunt tip; inflorescence and flowers dusky purple, with cochleariform succulent bracts; flowers with petals to 1 cm long, in 40 cm long panicles, polygamous, stamens 15-18; fruit oblong, yellow, 7-5 cm, a drupe resembling a mango, but smelling like an apple. In habit resembling *Carapa procera (Meliaceae).*

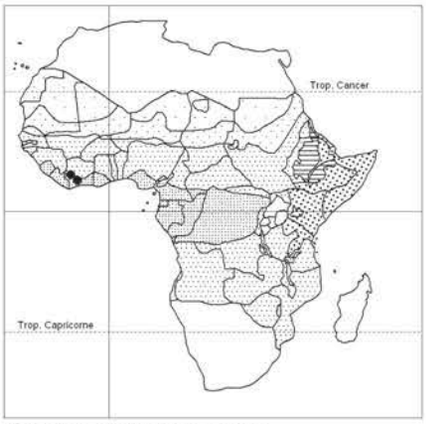
Forest; low alt. (10 m in Angola).

– **B. Pierreodendron kerstingii** (Engl.) Little (combination in *Quassia* not available); Akoegninou & al., Fl. analyt. Benin: 947, 2006. – Icon.: Bot. Jahrb. Syst. 46: 279, 1911, and in Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 778, 1915, and in Engler & Prantl, Natürl. Pflanzenfam. 19a: 370, 1931 (sub gen. *Mannia);* Hawthorne & Jongkind, Woody pl. west. Afr. forests: 715, 2006 (partial).

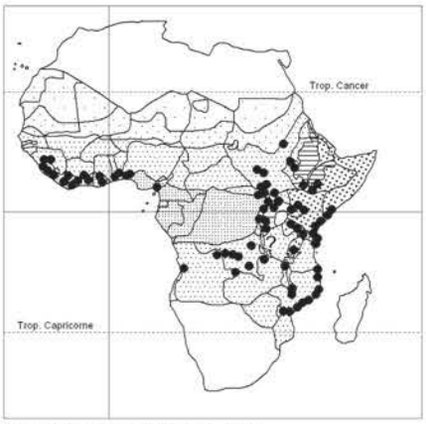
bas.: *Simarubopsis kerstingii* Engl.



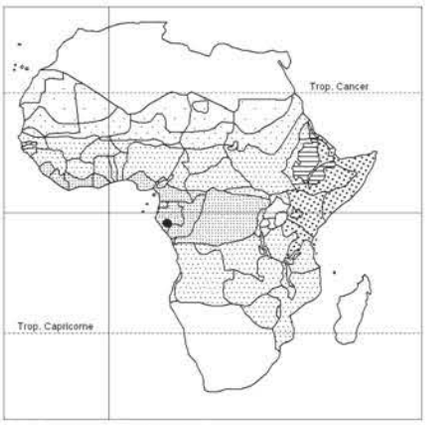
Brucea tenuifolia



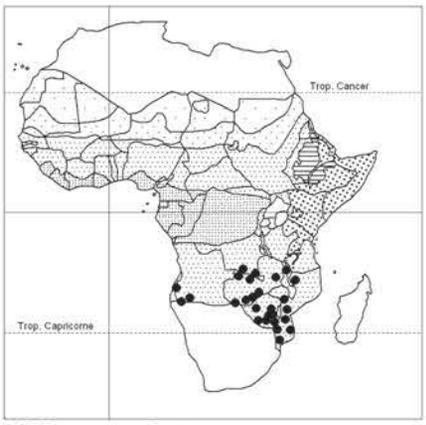
Gymnostemon zaizou



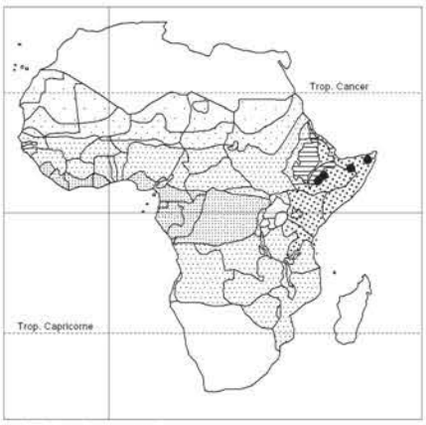
Harrisonia abyssinica



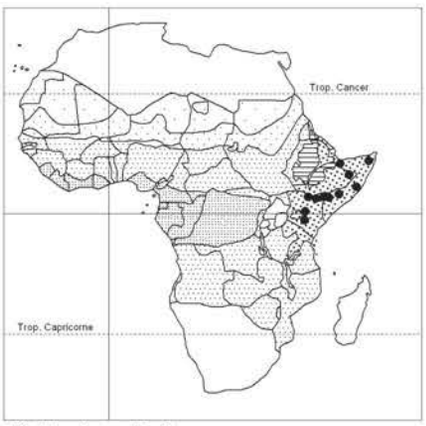
Iridosma le-testui



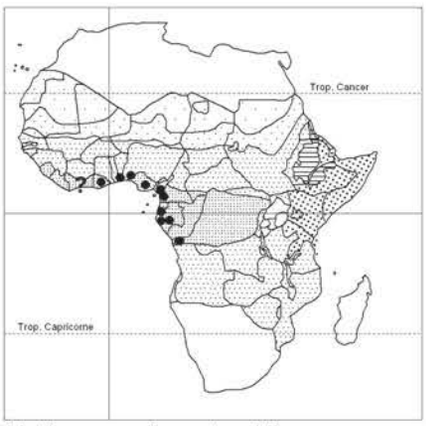
Kirkia acuminata



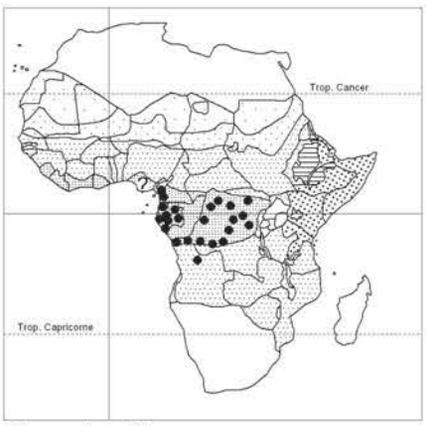
Kirkia burgeri



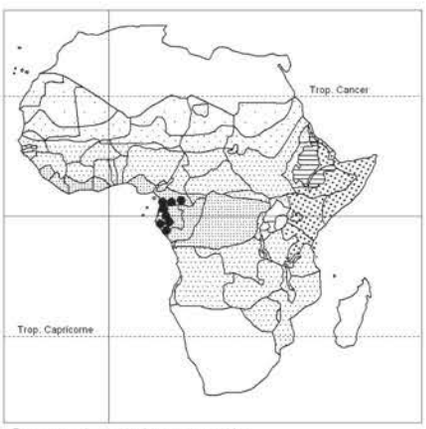
Kirkia tenuifolia



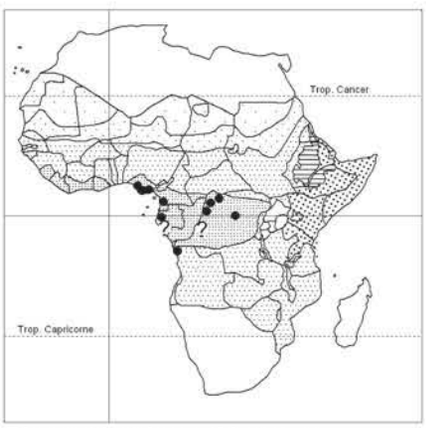
Nothospondias staudtii



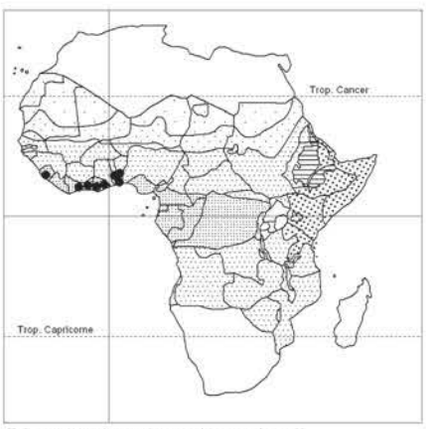
Quassia africana



Quassia gabonensis



Pierreodendron africanum
(Quassia grandifolia s.str)



Pierreodendron kerstingii

(QUASSIA GRANDIFOLIA) PIERREODENDRON KERSTINGII

syn.: *Mannia simarubopsis* Pellegr.; *M. kerstingii* (Engl.) Harms ex Engl.; *Quassia grandifolia* sensu Nooteboom and sensu Burkill p.p. (= W of Nigeria); *Trichoscypha mannioides* A. Chev., nom., Explor. Bot. 1: 161, 1920 (Chevalier 16212).

Tree to 25 m with a wide crown; similar to the precedent but bole long and clear to 60 cm Ø, flowers red, stamens 10 (not 15-18), anthers 4-5 mm long (not 2-3 mm).

Wet evergreen forest, riverine high forest, dry semi-deciduous forest, forest clearings, secondary jungle; c. 300 m alt. (Togo).

Not in Liberia.

Map p. 409 (bottom row, right corner).

Q. indica (Gaertn.) Nooteboom; Fl. Trop. E. Afr., Simaroub.: 13, 2000. – Icon.: Hook. Icon. Pl. 1: pl. 7, 1837 (sub gen. *Samadera);* Fl. Madag., fam. 105: pl. 2, 1950.

bas.: *Samadera indica* Gaertn.

syn.: *Samandura indica* Baill.; *S. madagascariensis* Perrier de la Bâthie; for full synonymy, see Blumea 11: 517, 1962.

Tree to 10 m; trunk irregular; branches glabrous; leaves simple, elliptic, 5-25 × 2-8,5 cm; flowers white, bisexual, of 4 petals 1-2,5 cm long, in pendulous long-pedunculate umbels; woody drupes winged, 4-5 cm long, flattened.

Rain-forest in swampy places with *Barringtonia;* c. 10 m alt. – Only in Tanzania, Pemba Isl.

Madagascar (1-600 m alt.), Comoros, from Burma-Cambodia to Solomon Isl.

Q. sanguinea Cheek & Jongkind ined. in Cheek & al., Pl. Kupe: 185, 405, 2004, and in Harvey & al., Pl. Bali Ngemba: 70, 127, 2004), nom. nov. for *Hannoa ferruginea* Engl., published in Kew Bull. 63: 249, 2008. – Neotype: Cheek 10491.

syn.: *Hannoa ferruginea* Engl. 1902, non *Quassia ferruginea* D. Dietr. 1840 (Brazil).

Tree (1,5-)2-4(-6) m, glabrous; *branchlets, leaf rhachides and midribs purple red;* leaves 3(-4)-jugate, c. 40 cm long; leaflets 13 × 5 cm, drying green below; stalk of leaflets to 2,5 cm long; flowers yellowish-cream in panicles c. 30 cm long. Otherwise resembling *Q. silvestris* (see below).

(Sub)montane forest, in understorey; gallery forest; 800-1200 (?1750) m alt.

Only in SE Nigeria, SW & NW Provinces of Cameroon.

Threatened by forest clearance for wood and agriculture (fide Cheek cited above).

Q. schweinfurthii (Oliv.) Nooteboom

bas.: *Hannoa schweinfurthii* Oliv.

syn.: *Simaba schweinfurthii* (Oliv.) Feuillet

Shrub 60-90 cm tall, glabrous, with a rootstock giving rise to numerous aerial shoots; shoots clustered from old wood; stems pinkish grey, smooth; leaves 20-36 cm long; leaflets 3-7, oblong-lanceolate, 10 × 1,5 cm; racemes long-pedunculate, few-flowered; mericarps drupaceous, 2 cm long.

Savanna with *Lophira lanceolata.*

QUASSIA

Q. silvestris Cheek & Jongkind ined. in Cheek & al., Pl. Kupe: 406, 2004, nom. nov. for *Hannoa klaineana* Pierre ex Engl.; published in Kew Bull. 63: 250, 2008; type: Klaine 1333. – Icon.: Engler in Bot. Jahrb. Syst. 46: 281, 1911 (sub nom. *Odyendea* / sic! /*zimmermannii);* Fl. W. Trop. Afr., ed. 2, 1(2): 691, 1958; Aubréville, Fl. forest. Côte d'Iv., ed. 2, 2: 133, 1959; Irvine, Woody pl. Ghana; 504, 1961; Fl. Gabon 3: 41, 1962; Adam, Fl. descr. Mts Nimba 2: 804, 1971; Keay, Trees Nigeria, ed. 2: 331, 1989; Fl. Trop. E. Afr., Simaroubaceae: 12, 2000 (sub nom. *Q. undulata);* Hawthorne & Jongkind, Woody pl. West. Afric. forests: 715, 2006 (partial); Fl. Zambes. 2(1): 216, 1963 (sub nom. *Hannoa chlorantha);* Akoegninou & al., Fl. analyt. Bénin: 946, 2006 (sub nom. *H. klaineana);* Wilks & Issembé, Arbres Guinée Equat.: 470-471, 2000; Kew Bull. 63: 249, 2008; Lisowski, Fl. (angiosp.) Rép. Guinée 2: fig. 412, 2009 (sub nom. *Hannoa undulata).*

syn.: *Hannoa klaineana* Pierre ex Engl., non *Quassia klaineana* Pierre *(= Q. gabonensis); H. klaineana* var. *afzelii* Engl. and var. *welwitschii* Engl.; *Quassia undulata* (Guill. & Perr.) D. Dietr. fa. *silvestris* Voorhoeve, Liberian high forest trees: 361, 1979 (Wageningen), sine descr. latin. (type: Klaine 1333, P); *Hannoa chlorantha* Engl. & Gilg 1903; *Odyendyea zimmermannii* Engl. 1912*; Hannoa kitombetombe* G. C. C. Gilbert 1958; *H. gabonensis* Pierre nomen, non *Quassia gabonensis* Pierre; *Odyendyea longipes* Sprague; *Hannoa longipes* (Sprague) G. C. C. Gilbert; *Quassia undulata* sensu Beentje, Trees, shrubs & lianas: 376, 1994; *Hannoa njariensis* G. C. C. Gilbert; *H. undulata* sensu Hiern, Cat. Welwitsch's Afr. pl. 1: 118-119, 1896.

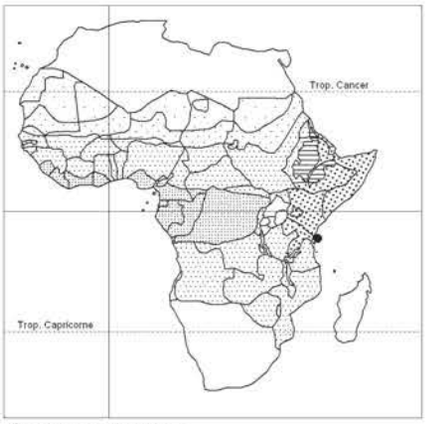
Tree, evergreen, (-2-)5-45 m, fastgrowing, glabrous; rarely a shrub 4-5 m tall; bole cylindrical, clean, straight, to 1 m Ø and 1,8 m in girth; bark grey or pale brown, smooth, often flaking and looking like rotten at base; slash yellow, fibrous, bitter; leaves 20-60 cm long, of (3-)7-19 leaflets, petiolules 5-15 mm long, with crater-like glands near apex; flowers small, bisexual and male, fragrant, in 15-30 cm long panicles; drupes 2,5-3,5 cm long, ± black, hanging in clusters on thick stalks. – Habit of an *Entandrophragma* but stamens free and fruits drupe-like.

Plants described and formerly treated as *Hannoa chlorantha* are morphologically intermediate between *"H. klaineana"* and *"H. undulata"*. They are shrubs or shrubby small trees, 0,5-6 m tall, the leaflets are fewer, longish with ± short petiolules, the fruits smaller (1,5-1,8 cm long). – See Note below.

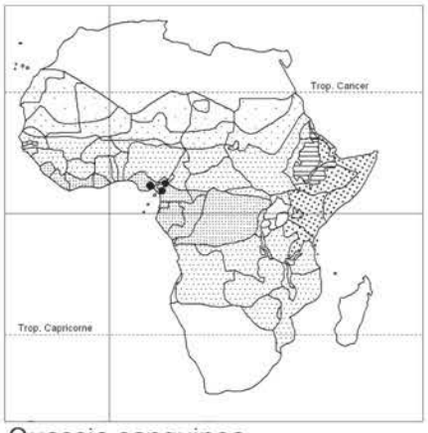
Semi-deciduous moist forest, evergreen forest (mushitu); forest gallery; rain-forest; secondary forests, farmbush; fringing forest of savanna; open forest with *Gaertnera paniculata;* mountain bush with *Dissotis leonensis, Kotschya ochreata;* forest patches with *Parinari excelsa;* swamp edge with *Mitragyna stipulosa,* in valley; on wet soils; sun-loving, quickly colonizing forest clearings and old farms; regeneration more rapid in savanna than in forest; 50-1630 m alt.

Note: Plants formerly treated as **Hannoa chlorantha** often grow in open woodland with *Brachystegia, Julbernardia* or scrub at rivers, on sandy soils, south of the Equator, at 1000-1250 m alt. They seem to belong to a "separate, morphologically distinct species which also deserves resurrection" (Cheek & Jongkind, Kew Bull. 63: 247, 2008).

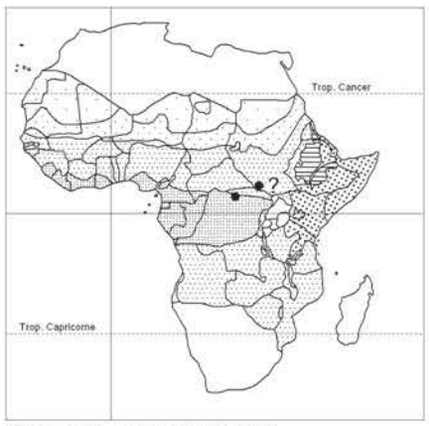
Successful plantations established in Sierra Leone.



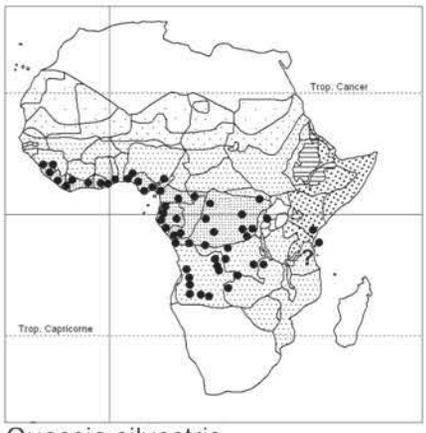
Quassia indica



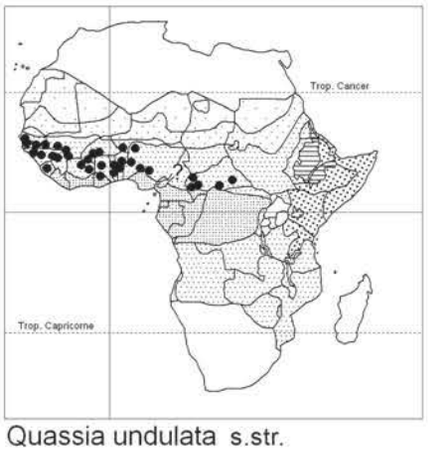
Quassia sanguinea
=(Hannoa ferruginea)



Quassia schweinfurthii

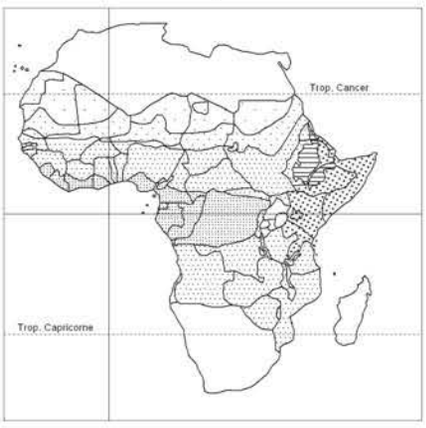


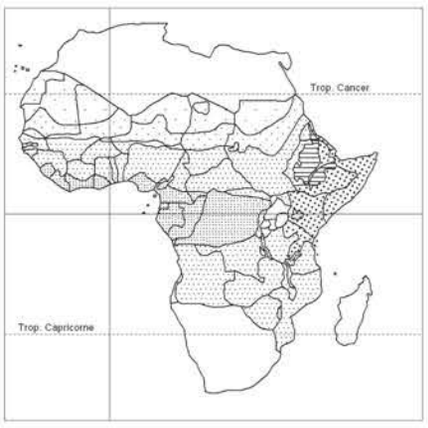
Quassia silvestris
=(Hannoa klaineana)

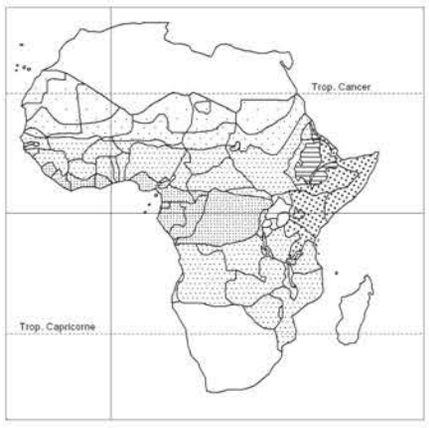


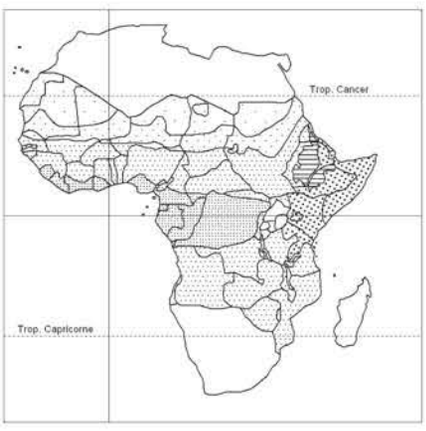
Quassia undulata s.str.

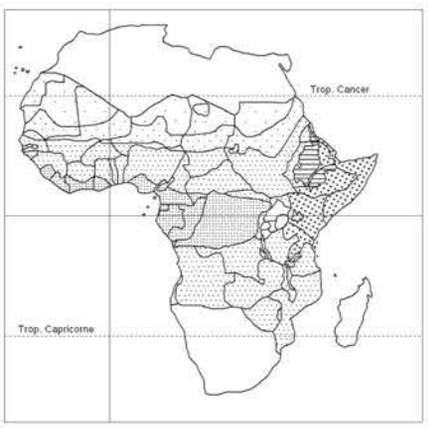
Suriana maritima

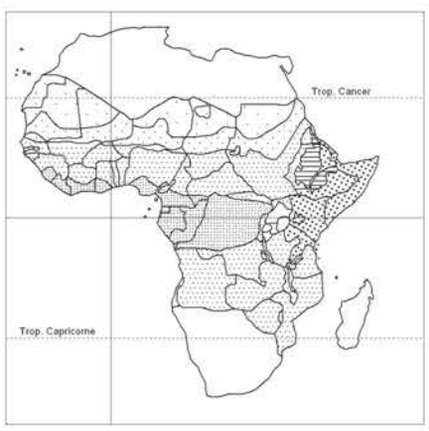












QUASSIA

Q. undulata (Guill. & Perr.) D. Dietr. s. str., excl. fa. *silvestris* Voorhoeve, nomen *(= Q. silvestris).* – Icon.: Engler & Drude, Veg. Erde 9, Afrika 3/1 B: 774, 1915; Aubréville, Fl. forest. Soud.-Guin.: 367, 1950 (sub gen. *Hannoa);* Akoegninou & al., Fl. analyt. Bénin: 946, 2006 (sub gen. *Hannoa);* Kew Bull. 63: 248, 2008.

bas.: *Simaba undulata* Guill. & Perr.

syn.: *Hannoa undulata* (Guill. & Perr.) Planch., incl. var *longipetiolulata* Engl.; *Zwingera* (Schreb. 1791, non Neck. 1790 nec Hofer 1762) *undulata* (Guill. & Perr.) Steud.

Shrub or shrubby tree 6-8(-12) m tall, glabrous; crown high, narrow; bole seldom >3,5 m high, 1-1,5 m in girth; often pollarded with strong shoots; branches ascending; bark (dark) grey, corky, deeply fissured also on the branchlets; wood greyish white, soft; leaves dark green above, pale beneath, drooping, 10-30 cm long; leaflets 7-11, with long petiolules (to 3,5 cm long); flowers c. 1 cm Ø, yellowish cream, fragrant, usually bisexual, in loose erect panicles c. 30 cm long; drupes blue-black, resembling olives, c. 2 cm long, in hanging clusters.

Savannas; wooded grassland; mountain slopes; rocks; 150-400 m alt. – Fire-resistant.

Not seen by Aubréville in N Cameroon.

Note: In his revision of the genus *Quassia* (Blumea 11: 509-528, 1962) Nooteboom treated *Q. undulata* in a wide sense, including 3 entities, viz. *Hannoa undulata* s. str. (a low shrubby fire-resistant savanna tree), *H. klaineana* Pierre ex Engl. (a tall rain-forest tree sometimes reaching drier habitats towards the North in Cameroon), and *H. ferruginea* Engl. (a small tree of montane forests in SE Nigeria and Cameroon). See under *Q. sanguinea* and *Q. silvestris,* p. 410.

Nooteboom concluded that "most of the hitherto used characters for discriminating between the species…are not useful", such as "length of the lateral petiolules and the number of leaflets". He also found that the shape of the leaflets varied considerably and that "all the intermediate shapes can be found". There is also a gradation in the size of the flowers, "but no essential difference". However, no ecology was discussed.

Nooteboom's circumscription of *Q. undulata* has been followed by several authors, including, e.g. Beetje (Kenya trees, shrubs & lianas: 376, 1994), Burkill (Useful pl. W. Trop. Afr. 5: 91-93, 2000), and Voorhoeve (Liberian high forest trees: 358-362, 1979). On the other hand, many authors of recent West- and Central African floras or check-lists distinguish two (or three) species in the genus *Quassia.* Valid names in this genus are not available, and M. Cheek has proposed new names. We follow the narrower circumscription of the species and Cheek's nomenclature.

SYNONYMS:

Quassia grandifolia sensu Nooteboom and sensu Burkill p.p. = **Quassia grandifolia**, **Pierreodendron kerstingii**

klaineana Pierre = **Quassia gabonensis**

undulata (Guill. & Perr.) D. Dietr. fa. *silvestris* Voorhoeve = **Q. silvestris**

undulata sensu Beentje = **Q. silvestris**

(SIMABA)

Simaba africana Baill. = **Quassia**

gabonensis (Pierre) Feuillet = **Q. gabonensis**

grandifolia (Engl.) Feuillet = **Q. grandifolia**

schweinfurthii (Oliv.) Feuillet = **Q. schweinfurthii**

undulata Guill. & Perr. = **Q. undulata**

(SIMARUBOPSIS)

Simarubopsis kerstingii Engl. = **Pierreodendron kerstingii** (See under **Quassia grandifolia**)

SURIANA / *1*

In recent floras and lists placed in *Surianaceae.* Monotypic (the other three genera in the family endemic to Australia).

BELLO, M. A. & al. (2007). Floral morphology and development in Quillajaceae and Surianaceae (Fabales), the species-poor relatives of Leguminosae and Polygalaceae. *Ann. Bot.* 100: 1491-1505.

Suriana maritima L.; Gutzwiller in Bot. Jahrb. Syst. 81: 1-49, 1961. – Icon.: Engler & Drude, Veg. d. Erde 9, Afrika 3/1 B: 766, 1915; Fl. Males., Sér. 1, 6/2: 197, 1962 (with distribution map); Coode in Fl. Mascareignes 66, Surianacées: 2, 1979; Beentje, Kenya trees, shrubs & lianas: 377, 1994; Fl. Trop. E. Afr., Surianaceae: 2, 1998.

Shrub or tree 0,5-2(-8) m tall, much-branched, spreading; all young parts densely pubescent, hairs partly glandular-capitate; wood very hard; stems grey-green, with conspicuous leaf-scars; leaves simple, sessile, crowded, thick, linear, 1-4 × 0,3 cm; flowers yellow, bisexual, in short pauciflorous panicles; fruits hairy, drupaceous, blackish purple, 3-5 together enclosed by the calyx, capable of floating.

Seashores just above the high-water mark, beach crests, cliff ledges above the sea; also on landward side of *Avicennia* mangrove; on coral or sand; locally common; sea-level to just above it. – Dispersed by sea water (can float at least 5 months).

Pantropical (but not in W Africa). Mascarenes, Madagascar. In the Pacific- and Indian Oceans usually on small isolated islands or atolls, not in Hawaii. SE Asia from Sri Lanka to Taiwan, Phillipines to Queensland (Australia); West Indies, Florida Keys, Yucatan, Brazil.

In herbaria sometimes confused with *Pemphis acidula (Lythraceae)* which has solitary 6-merous flowers (not 5-merous) and long calyx tube.

IRVINGIACEAE

See Tropical African Flowering Plants…, Vol.1: 766-770, 2003.

INDEX TO FAMILIES AND GENERA

This Index only gives reference to current names of families and genera used in the text (not on the maps which are in turn placed as closely as possible to the matching descriptions). Synonyms are sometimes cited (printed in *italics).*

However, many synonyms, but perhaps not all, families and genera figure in the Cumulative Index "Enumération des plantes à fleurs d'Afrique tropicale" present at the end of the forth volume (1997 : pp. 678-712). Readers are invited to consult that index.

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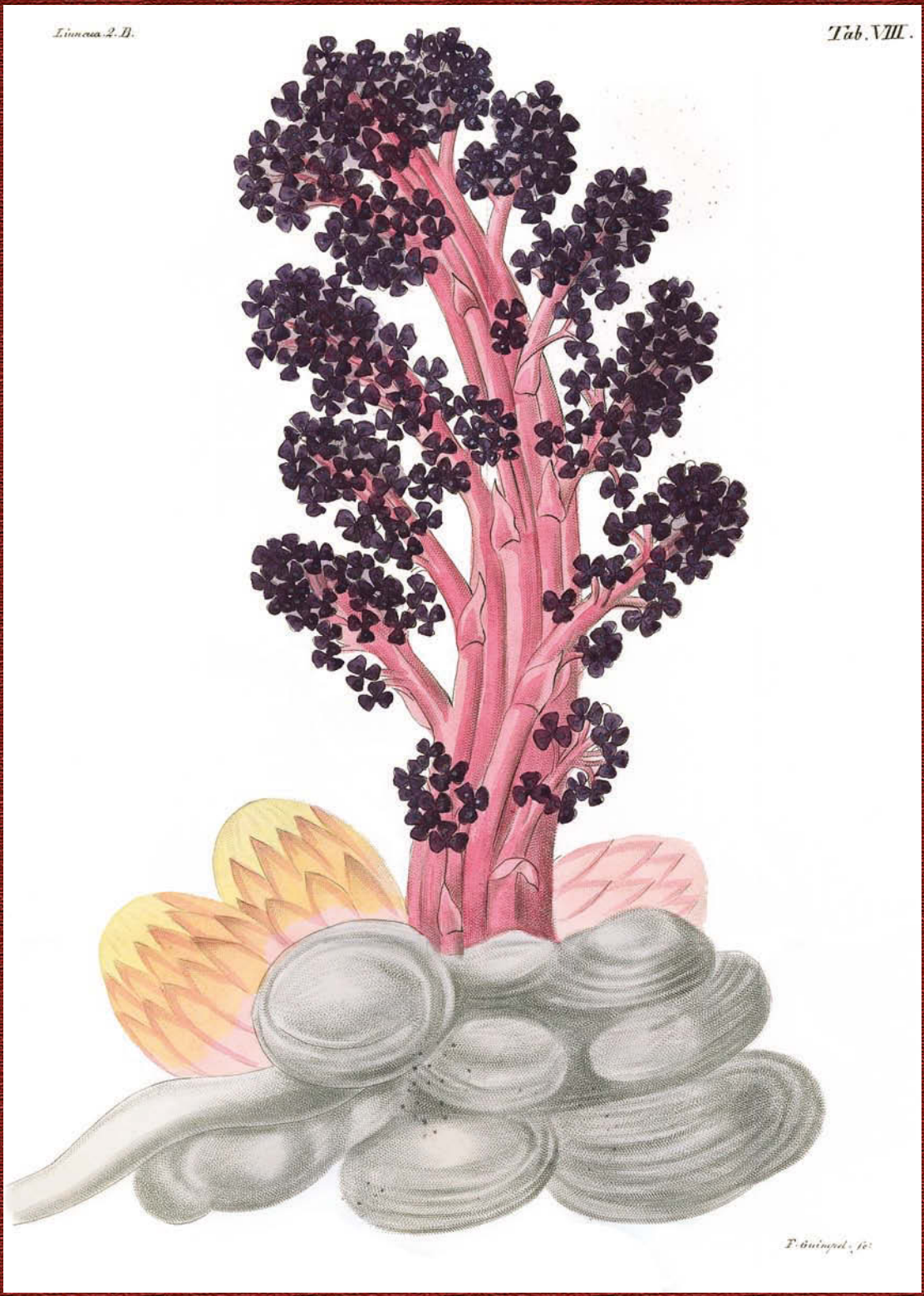

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