On the taxonomic identity of five Senecio species (Compositae) described by Candolle on material collected by Haenke during the Malaspina Expedition

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Abstract

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The collections made by the Bohemian botanist Thaddeus Haenke in America during the Malaspina Expedition (1789–1794) served Augustin-Pyramus de Candolle for describing numerous new species published in the *Prodromus*. Within the large Neotropical genus *Senecio* L. (*Compositae*), Candolle described 22 new taxa based on Haenke's material. The unfortunate mislabeling of some specimens led Candolle to provide inaccurate locotype indications, which entailed subsequent misinterpretations or uncertainty upon the respective species. Herein, we provide historical and taxonomic insights to clarify the provenance and taxonomic identity of the species *S. adscendens* DC., *S. scrobicarioides* DC., *S. sternbergianus* DC., and *S. tridentatus* DC., as well as a new circumscription for *S. micropifolius* DC. In terms of nomenclature, the aforementioned five names are lectotypified and four new synonyms are proposed.

Resumen

CALVO, J. & A. GRANDA (2022). Acerca de la identidad taxonómica de cinco especies de Senecio (Compositae) descritas por Candolle sobre la base de material recolectado por Haenke durante la Expedición Malaspina. *Candollea* 77: 145–158. En inglés, resúmenes en inglés y español. DOI: http://dx.doi.org/10.15553/c2022v772a2

Las recolecciones realizadas por el botánico bohemio Thaddeus Haenke en América durante la Expedición Malaspina (1789–1794) sirvieron a Augustin-Pyramus de Candolle para describir numerosas nuevas especies publicadas en el *Prodromus*. Dentro del vasto género neotropical *Senecio* L. (*Compositae*), Candolle describió 22 nuevos táxones a partir del material de Haenke. Los desafortunados errores de etiquetado de algunos especímenes llevaron a Candolle a señalar indicaciones locotípicas inexactas, lo cual acarreó subsiguientes malinterpretaciones o incertidumbres acerca de las respectivas especies. En el presente trabajo, aportamos argumentos taxonómicos e históricos para esclarecer la procedencia e identidad de las especies *S. adscendens* DC., *S. scrobicarioides* DC., *S. sternbergianus* DC. y *S. tridentatus* DC., así como una nueva circunscripción de *S. micropifolius* DC. En cuanto a la nomenclatura, los mencionados nombres son lectotipificados y cuatro nuevos sinónimos propuestos.

Keywords

ASTERACEAE – *Senecio* – Neotropic – Augustin-Pyramus de Candolle – Thaddeus Haenke – History of botany – Malaspina Expedition

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Introduction

Augustin-Pyramus de Candolle (1778–1841) described 20 species and two varieties of Neotropical *Senecio* L. (*Compositae*) on the basis of Haenke's specimens collected during the Malaspina Expedition (1789–1794). These taxa were published in the sixth volume of the *Prodromus* (Candolle, 1838) and placed in "ser. XII. Chilenses, ser. XIV. Peruviani, or ser. XV. Mexicani" according to the provenance of the original material.

The Expedition was commanded by Alessandro Malaspina under the auspices of Carlos III, King of Spain, and was addressed to pursuit scientific and geopolitical goals. The original proposal covered the circumnavigation of the globe, but they finally toured the coast of the Americas from Buenos Aires to Alaska, sailed to Philippines, New Zealand, Australia, Vava'u Islands (Tonga), and crossed again the Pacific Ocean to get El Callao in Peru and undertake the homeward journey. The lead naturalist of the Expedition was Antonio Pineda y Ramírez, who was responsible of the engagement of Luis Née (1734–1807) to cover the discipline of Botany. To complete the team, and due to a combination of diplomatic arrangements and other circumstances that took place somewhat hurriedly, the Bohemian naturalist and experienced botanist Thaddeus Haenke (1761–1816) joined the Expedition. However, he did not embark from the beginning in Spain because he arrived at Cádiz (30 July 1789) when the Expedition had left. Facing this situation, he had to take the merchant ship "Nuestra Señora del Buen Viaje" that covered the route Cádiz-Montevideo (Malaspina & Bustamante, 1885; Muñoz Garmendia, 1992, 1994). The night of 23 November the ship wrecked in Punta Carretas near Montevideo (Haenke's letter from 7 December 1789; Kohl, 1911). After surviving this event, he remained in the region of Río de la Plata until 24 February 1790, date when he left Buenos Aires and headed toward the port of Valparaíso on the Pacific Coast by land and crossing the Andes (compiling c. 1,400 collections during this long passage; Malaspina & Bustamante, 1885). Finally, Haenke joined the Expedition in Santiago de Chile on 2 April 1790 and a week after they were in Valparaíso to continue the voyage up north to Coquimbo. After almost circumnavigating the Pacific, they returned to El Callao in July 1793. At this point, Haenke was commissioned to carry out an inland trip to Buenos Aires for visiting the mainland of Peru and Bolivia, however, he remained in this region the rest of his earthly life.

Haenke and Née voyaged separately, the former on board of the corvette the "Descubierta" along with Pineda, whereas the latter sailed on the "Atrevida". It has been reported that they botanized independently, and partially, in different locations (Groussac, 1900; Muñoz Garmendia, 1992). The shipments of specimens and other materials to Cádiz were also made as separate herbaria. Although such way of working, they exchanged duplicates of some collections (Muñoz Garmendia, 1992). This might be the case of *Senecio haenkei* DC.; one specimen identified such as and attributed to Née at MA is identical to the original material at PR and G-DC (Fig. 1, 2A). Although most insights suggest that these specimens likely are duplicates from the same collection, the modus operandi of the botanists and the lack of explicit indications lead us to treat them as different gatherings.

The vicissitudes of Haenke's herbarium are quite well known. During the Expedition (until disembarking in El Callao in 1793), Haenke compiled a herbarium parallel to the one that was officially being shipped to Cádiz (and devoted to the Spanish institutions). He sent his "personal herbarium" to the company Hiecke, Rautenstrauch, Zincke und Ko. in Cádiz by means of the American headquarters of the same company (Muñoz Garmendia, 1992). After his death, it was moved to Hamburg and the Haenke family put the herbarium in auction and was acquired in 1821 by the National Museum of Prague, founded in 1818 by Count Kaspar Maria von Sternberg (1761–1838). It is estimated that this herbarium contained around 15,000 specimens representing c. 4,000 species (Maiwald, 1904; Gicklhorn, 1972; Sterling, 1997). During the winter 1821–22, the collection was revised and provisionally classified by plant family by Sternberg. Likewise, Karel B. Presl labeled the specimens according to the localities indicated by Haenke on the packets (Presl, 1825–1830).

The *Compositae* of Haenke's herbarium were sent to Christian G.D. Nees von Esenbeck (1776–1858) for their study in 1822 or 1823 (Sternberg, 1831a, 1831b). Around 1831, it seems that Candolle started planning the treatment of the family *Compositae* for his magnificent *Prodromus*, and being aware of the Haenke collections value, asked to Sternberg for the specimens belonging to this group. Sternberg wrote to Candolle that these plants were "on loan" to Nees von Esenbeck, who agreed to send them back because after eight years he did not have enough time to work on them: "Vous pouvez vous tranquilliser sur l'envoi des plantes de l'herbier de Haenke, tout a été arrangé à l'amiable avec M. Nees d'Esenbeck qui chargé d'un autre travaille qui ne lui a pas permis de toucher aux composées qu'il avait depuis bien 8 ans chez lui, me les a cédé pour vous, et je lui ai donné en revanche les familles dont il s'occupe maintenant [You can rest assured that the plants from Haenke's herbarium will be sent to you, as this has amicably been arranged with Mr. Nees of Esenbeck, who has another task that does not allow him to touch the *Compositae*, which he has had at home for eight years, so he has given them to me for you, and I have instead lent him the families he is currently working on]." (Sternberg, 1831b; Fig. 3).

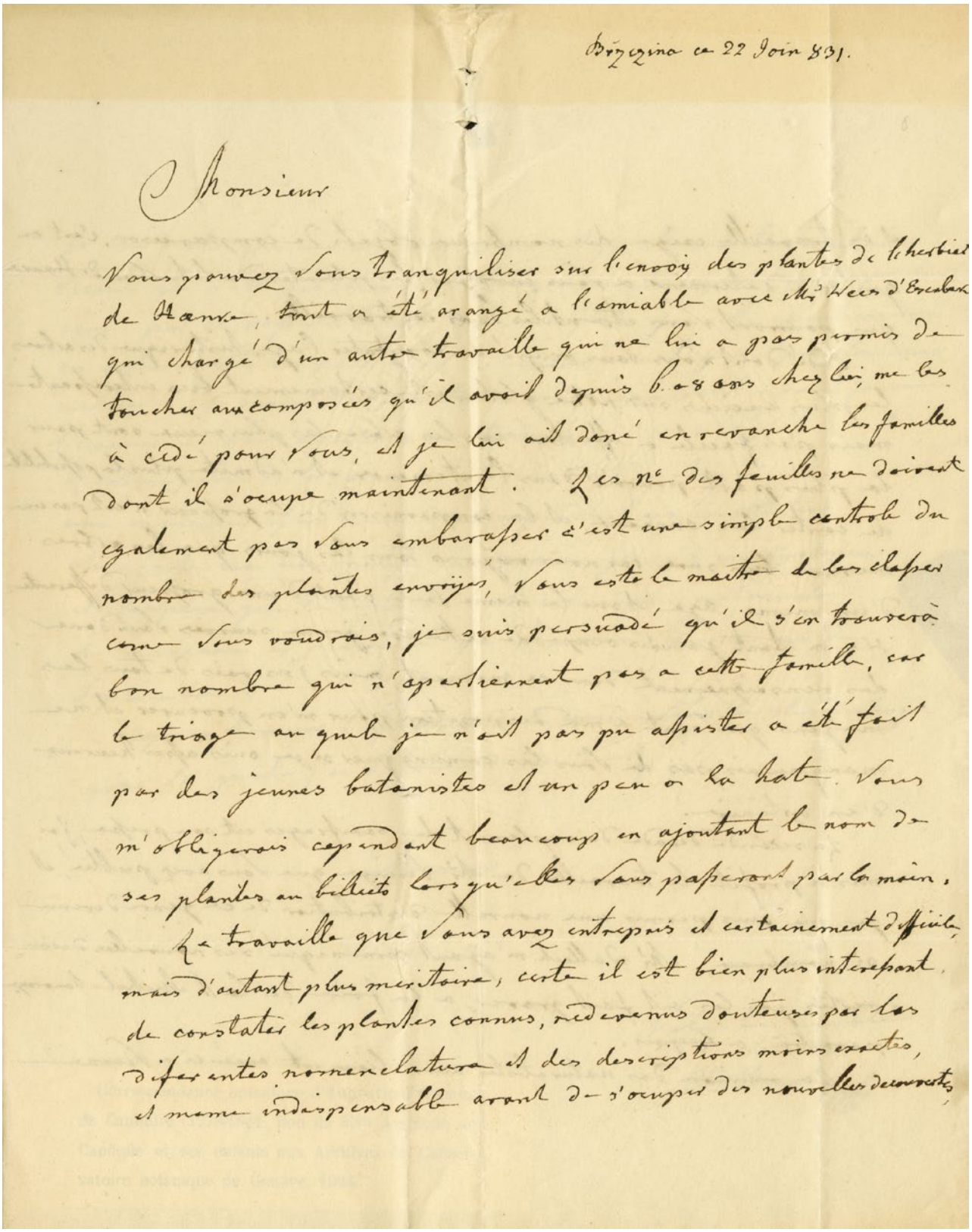
Such material was certainly sent to Candolle and served to describe numerous new species. After Candolle's study, the specimens were diligently returned to Prague and only occasionally he kept fragments for his personal herbarium (now G-DC), which should be considered as isotypes or isolectotypes if Candolle explicitly indicated "v. s. in h. Haenke à cl. de Sternberg miss." in the protologues. In Prague, the collection



Fig. 1. – *Senecio haenkei* DC. **A.** Née's specimen at MA; **B.** Haenke's specimen at G-DC.
[**A:** *Née s.n.*; **B:** *Haenke s.n.*] [**A:** MA00232340, © Real Jardín Botánico, scanned in G; **B:** G00487092, Conservatoire et Jardin botaniques de Genève]



Fig. 2. – *Senecio haenkei* DC. **A.** Haenke's specimen at PR; **B.** Haenke's specimen at P.
[**A, B:** *Haenke s.n.*] [**A:** PR-612163, © National Museum in Prague; **B:** P01816943, © Muséum national d'Histoire naturelle]



Brzezina ce 22 Juin 831.

Monsieur

Vous pouvez vous tranquiliser sur l'envoi des plantes de Cherbiez de Genève, tout a été arangé a l'amiable avec Mr Heer d'Eschen qui chargé d'un autre travaille qui ne lui a pas permis de toucher aux composées qu'il avoit depuis bien des années chez lui, me les a cédé pour vous, et je lui ait donné en revanche les familles dont il s'occupe maintenant. Les Nos des feuilles ne doivent également pas vous embarasser c'est une simple controle du nombre des plantes envoiyés, vous este le maitre de les clasper comme vous voudrais, je suis persuadé qu'il s'en trouvera bon nombre qui n'appartiennent pas a cette famille, car le triage au quel je n'ait pas pu assister a été fait par des jeunes botanistes et un peu a la hate. Vous m'obligerais cependant beaucoup en ajoutant le nom de ces plantes au billets lors qu'elles vous passeront par la main.

Le travaille que vous avez entrepris et certainement difficile, mais d'autant plus meritoire, certe il est bien plus interessant de constater les plantes connues, rendevenus douteuses par les differentes nomenclatures et des descriptions moins exactes, et meme indispensable avant de s'occuper des nouvelles decouvertes,

Fig. 3. – First page of a letter from Kaspar Maria von Sternberg to Augustin-Pyramus de Candolle, dated 22 June 1831. [Archives, Conservatoire et Jardin botaniques de Genève]

was incorporated to the National Museum (PR) and an important set was purchased by the University of Prague (now preserved in PRC). These specimens usually correspond to duplicates and bear an original label handwritten by Candolle, as well as the set at PR, which makes very infrequent the existence of holotypes but usually necessary designating a lectotype. To a lesser extent, duplicates were also distributed from PR to B, M, and W (Candolle, 1880; Ibáñez Montoya, 1994).

On the other hand, all insights indicate that Nees von Esenbeck sent the material to Candolle but kept one duplicate with him (Haenke's collections seem that were generous in duplicates). In a way unknown to us, these specimens were, in 1854, donated to or bought by his compatriot and *Compositae* specialist Schultz Bipontinus (1805–1867). Upon his death in 1867, his priceless *Compositae* herbarium was bought by French botanist Ernest St.-Ch. Cosson (1819–1889) as it was announced in 1869 by the *Société botanique de France* (Fournier, 1869; Candolle, 1880). Finally, in 1904, Cosson's herbarium was incorporated in P (Stafleu & Cowan, 1976; Bonifacino et al., 2009). These specimens were certainly not studied by Candolle but represent duplicates of the original material. Most of them were annotated by Schultz Bipontinus using Candolle's names published in the *Prodromus* (Fig. 2B).

Finally, it is interesting to note that the mislabeling in Haenke's specimens was more frequent than desired, which becomes understandable after the vicissitudes suffered by the material and the rough way of packing and labeling performed in situ by Haenke. This has extensively been reported by several authors (Blake, 1930; Veldkamp, 1996; Fernández-Alonso & Morales, 2013; Granda & Calvo, 2021). In the specific case of the *Senecio* species described in the *Prodromus*, the mislabeling entailed that Candolle ascribed species to a region far from the actual provenance of the material. After almost 200 years, some of these species remain mistakenly recorded in regional catalogues or remain as doubtful species.

Herein, we present a taxonomic and historical survey to clarify the taxonomic entity and the provenance of five *Senecio* species from South America. When applicable, the nomenclatural implications raised from retrieving these names are discussed and presented.

Nomenclature and taxonomy

1. *Senecio adscendens* DC., Prodr. 6: 423. 1838 [nom. illeg., non Bojer ex DC., 1838].

   ≡ *Senecio andinus* H. Buek, Gen. Sp. Synon. Cand. 2: VI. 1840 [nom. nov.]. ≡ *Senecio floccoso-araneosus* Steud., Nomencl. Bot. (Ed. 2) 2: 560. 1841 [nom. illeg. superfl.], **syn. nov. Lectotypus** (designated here): **Argentina/Uruguay:** "Peruano montano" [mislabeling], s.d., *Haenke s.n.* (PR-612170 image!; isolecto-: PRC [PRC453196] image!) (Fig. 4).

   = *Senecio cuspidatus* DC., Prodr. 6: 419. 1838. **Lectotypus** (designated by Freire et al., 2014: 153): **Brazil. Rio Grande do Sul:** province de Rio-Grande, 1833, *Gaudichaud 920* (P [P01816675] image!; isolecto-: G-DC [G00487165]!, P [P01816674] image!).

   = ***Senecio montevidensis*** (Spreng.) Baker, Fl. Bras. 6(3): 307. 1884. ≡ *Cineraria montevidensis* Spreng., Syst. Veg. [Sprengel, editio 16] 3: 548. 1826. **Lectotypus** (designated by Freire et al., 2014: 153): **Uruguay. Dept. Montevideo:** Montevideo, s.d., *Sellow s.n.* (P [P01816677] image!).

Notes. – *Senecio adscendens* DC. [1838: 423], presumably from Peru, was published simultaneously with *S. adscendens* Bojer ex DC. [1838: 378], a species from Madagascar. Two years later, Buek (1840) provided the replacement name *S. andinus* H. Buek for the Andean species, hence, treated *S. adscendens* Bojer ex DC. as having priority over *S. adscendens* DC. (Turland et al., 2018: ICN Art. 53.5).

Senecio andinus was recorded for the Peruvian flora by Dillon & Hensold (1993) and Vision & Dillon (1996), but without further information concerning its distribution. The protologue of *S. adscendens* certainly indicates Peru as the provenance of this species, but its morphology does not match any of the known species from this region. The study of the original material allows us to identify *S. adscendens* as conspecific with *S. montevidensis* (Spreng.) Baker, a species distributed in C and NE Argentina, SE Brazil, and Uruguay that usually thrives in dunes and sandy soils (Freire et al., 2014). Such mismatch can be explained by a mislabeling of the original material as in other cases documented here and in numerous works (see Introduction).

Due to an epistle sent by Haenke to the company Hiecke & al. in Cádiz, dated 7 December 1789 in Montevideo, we know that he shipped a box with dried plants to be kept in Cádiz until his return (Kohl, 1911). These plants were most probably collected in Montevideo, however, it is quite striking that he was able to collect and process the specimens within a period of two weeks after the shipwreck. No trace on specimen labels supports the existence of collections coming from Río de la Plata, but Haenke remained almost three months between Montevideo and Buenos Aires and it is expected that he would have collected plants. On the other side, it is also feasible to think that plants from this region were collected in the beginning of his journey to Valparaíso when he left Buenos Aires; actually, it is known that he collected a great amount of plants during this period (Malaspina & Bustamante, 1885). Leaving aside this issue, *Senecio montevidensis* is frequent in central and northeastern Argentina (Arechavaleta, 1906; Cabrera, 1963; Freire et al., 2014), and therefore, one can assume that the original material of *S. adscendens* comes from this area.



Fig. 4. – Lectotype of *Senecio adscendens* DC.
[*Haenke s.n.*] [PR-612170; © National Museum in Prague]

Senecio montevidensis is characterized by having leaves linear to linear-oblanceolate, entire or with some teeth on the upper half, gray tomentose; capitula radiate; involucres composed of 16–20 involucral bracts; and achenes shortly but densely pilose. It is similar to *S. ceratophylloides* Griseb., from which it can be differentiated by the smaller involucres (9–10 mm vs. 12–15 mm long) and the leaves narrower and less dentate (Cabrera, 1963; Cabrera & Freire, 1999). With regard to the lectotypification made by Freire et al. (2014), we exclude P01816676 from type material because the locality differs from the lectotype.

2. ***Senecio micropifolius*** DC., Prodr. 6: 413. 1838.

Lectotypus (designated here): **Chile. Reg. Valparaíso:** "Cordillères du Chili", s.d. [III.1790], *Haenke s.n.* (G-DC [G00487011]!; isolecto-: LP [LP002431 fragm.] image!, P [P01816669] image!, PR-616634 image!). **Syntypus: Chile. Reg. Valparaíso:** sine loco ["ex Andium tractu Portillo dicto"], s.d. [II.1794], *Née s.n.* (G-DC [G00487002]!, LP [LP002432 fragm.] image!, MA [MA00232361]!).

= *Senecio looseri* Cabrera in Lilloa 15: 152. 1949, **syn. nov. Holotypus: Argentina. Prov. Mendoza:** entre Las Cuevas y El Cristo, II.1934, *Ragonese 238* (LP [LP000556] image!).

Notes. – As currently circumscribed, *Senecio micropifolius* is a suffrutescent plant reaching 40 cm tall with ascendant or erect branches and 2–5 discoid, erect capitula arranged in terminal, corymbiform synflorescences (Cabrera, 1949). The species is treated as endemic to the Andes of Atacama and Coquimbo. The study of the type material, and especially the most complete duplicate kept at P, reveals that it is a rather prostrate plant with branches not exceeding 10 cm long. The capitula are terminal and discoid, but solitary or up to two, and the indumentum is lanate but not much dense as in *Johnston 6220* (type material of *S. pelolepis* I.M. Johnst., synonymized with *S. micropifolius* by Cabrera in 1949).

The original material of *Senecio micropifolius* perfectly matches the taxonomic entity currently known under the name *S. looseri* Cabrera, a species described from Los Libertadores Pass with a distribution area restricted to the central Andes next to Santiago and Mendoza (Cabrera, 1949). This agrees the fact that Haenke did not actually explored the high Andes of the Coquimbo Region (see below). According to Muñoz Garmendia (1994) the Expedition arrived at Coquimbo (from Valparaíso) on 18 April 1790 and rested there until 30 April, when the "Atrevida" (with Née) sailed northward to Arica and the "Descubierta" (with Haenke) headed to Desventuradas Islands. During the sojourn in Coquimbo, they botanized in its proximities, and Haenke, together with Pineda and Quintano, made a seven-day trip for visiting the gold mines of Andacollo (30°13'40"S 71°04'59"W) and the mercury mines of Punitaqui (30°51'42"S 71°14'07"W). Collections of *S. micropifolius* in Cabrera's sense are not known from this region, which is not far from the coast and the mountains are barely higher than 1000 m. In contrast, as commented in the Introduction, Haenke passed through Los Libertadores Pass sometime in March 1790 to join the Expedition in Valparaíso after crossing the continent from Buenos Aires. *Senecio looseri* was described upon material collected from this region, and we believe that the original material of *S. micropifolius* most probably comes from this area too. It is interesting to note that the syntype of *S. micropifolius* at MA [MA00232361] (Fig. 5), which is in flower, very complete and well-preserved, bears a label with the locality "ex Andium tractu Portillo dicto"; El Portillo being located just before Los Libertadores Pass in the Chilean side. Née visited this locality at the end of February 1794, when left Santiago toward Buenos Aires. Then, over a four-year period and in opposite directions, Née and Haenke crossed Los Libertadores Pass around the same time, and all insights indicate that both collected the species treated here.

For all these reasons, we believe that Cabrera (1949) misinterpreted the species concept of *Senecio micropifolius*, which was mostly based on a small fragment kept at LP that does not provide information about the plant habit. Cabrera stated that the fragment of the type material at LP corresponded to a plant with contracted synflorescence, identical to his own collection *Cabrera 3559* from Baños del Toro in Coquimbo (c. 29°50'S 70°01'W, 3600 m). However, this latter collection does not match the morphology of the type because it contains plants densely branched with clearly erect, 10–25 cm long stems; it is here ascribed to *S. pelolepis* (see below). In contrast, the name *S. micropifolius* [1838] is referred to the species restricted to the Andes of Santiago and Mendoza, thus far named *S. looseri* [1949].

In the protologue of *Senecio micropifolius* two collections are cited, one from an undetermined place collected by Née and the other by Haenke from Chile. This perfectly fits with the two specimens kept at G-DC that are mounted on the same sheet: (1) G00487002 consists of a sterile plant bearing a label that reads "voy. de Née; h. Thibaud" [Née's voyage; Thibaud herbarium]; (2) G00487011 consists of a flowering plant bearing a label that shows "Cordillères du Chili. Haenke". Since Haenke's collection is in flower, it is much more taxonomically informative. There is a specimen kept at PR identified in Candolle's hand but the capitula are ruined. For this reason, we designate here the specimen kept in G-DC [G00487011] as the lectotype of the name *S. micropifolius* because it is in best conditions and bears the species diagnostic characters.

Additional specimens examined. – **Argentina. Prov. Mendoza:** Las Heras, Puente del Inca, quebrada de Los Horcones, camino a Plaza de Mulas, 3200–3500 m, 31.XII.1988, *Cardiel et al. 149* (MA); Las Cuevas, 3300 m, *Pennington 8* (G). **Chile. Reg. Valparaíso:** Estación Portillo Ferrocarril Transandino, 2800 m, 14–16.IV.1933, *Looser 3152* (LP).



Fig. 5. – Syntype of *Senecio micropifolius* DC.
[*Née s.n.*] [MA00232361; © Real Jardín Botánico, scanned in G]

A resurrected name for the Chilean flora

Senecio pelolepis I.M. Johnst. in Contr. Gray Herb. 85: 169. 1929.

Holotypus: Chile. Reg. Atacama: Vallenar, river valley below Paso de Sancarrón, Junta del Medio, 29°22'S 70°05'W, 2900 m, 16.I.1926, *Johnston 6220* (GH [GH00012175] image!; iso-: K [K000484050] image!).

Notes. – The name *Senecio pelolepis* is retrieved for the taxonomic entity hitherto known as *S. micropifolius*. This species is distributed in the Andes of Coquimbo and expected in southern Atacama.

Additional specimens examined. – **Chile. Reg. Atacama:** Vallenar, below Los Cuartitos [corresponds to Reg. Coquimbo], 29°38'S 70°10'W, 3300 m, 17.I.1926, *Johnston 6231* (US). **Reg. Coquimbo:** cordillera de la provincia de Coquimbo, Baños del Toro, quebrada del Toro, 3600 m, 20.I.1936, *Cabrera 3559* (LP); Ovalle, cordillera del río Hurtado, 3000 m, I.1933, *Iribarren s.n.* (G); sine loco, s.d., *Gay s.n.* (G).

3. ***Senecio scrobicarioides*** DC., Prodr. 6: 430. 1838.

Lectotypus (designated here): **Peru:** sine loco, s.d., *Haenke s.n.* (PRC [PRC453170] image!; isolecto-: G-DC [G00487062]!, PR-514867 image!; P [P01816514] image!).

Notes. – Candolle (1838) described *Senecio scrobicarioides* based on a Haenke collection whose provenance was uncertain as the locotype indication reveals: "in Mexico ad Real del Monte ? aut fortè in Peruviâ legit cl. Hænke", but he placed it in "ser. XV. Mexicani". The species is currently widely accepted as Peruvian (Smith, 1988; Dillon & Hensold, 1993; Vision & Dillon, 1996; Beltrán, 2018), which coincides with the fact that no works dealing with the Mexican flora record the species (Villaseñor, 2016; Pruski, 2018).

The delimitation of *Senecio scrobicarioides*, however, remains ambiguous and this name has often been applied to specimens belonging to *S. bonplandianus* DC. or *S. sulinicus* Cabrera (Calvo, 2022a). These species are certainly very similar but differ in capitulum type (radiate in *S. scrobicarioides* vs. discoid in *S. bonplandianus* and *S. sulinicus*). They belong to a taxonomically complex assembly of taxa from the high-Andes of Peru and Bolivia centered around *S. hohenackeri* Sch. Bip., which includes, among others, *S. crassilodix* Cuatrec., *S. octophyllus* Sch. Bip. ex Rusby, *S. pavonii* (Wedd.) Cuatrec., *S. saxipunae* Cuatrec., *S. sublutescens* Cuatrec. Because of the radiate capitula with short ray florets, *S. scrobicarioides* seems to be closer to *S. saxipunae* but if one rather focuses on the foliar morphology, it resembles to *S. bonplandianus* as aforementioned. For the time being, the particular combination of characters of *S. scrobicarioides* leads us to treat it as a distinct species, however, a comprehensive revision of this group is essential to understanding the variability of each species. Our preliminary approach suggests that some names would fall in synonymy.

Concerning the type material, we located duplicates of the Haenke collection at G-DC, P, PR, and PRC. Although there is a specimen kept at G-DC, we prefer to typify the name on the material in Prague as it was the main set studied by Candolle. The specimen at PRC is more complete than that at PR, and for this reason the former one is designated here as the lectotype.

It is noteworthy that we found at MA [MA-232356] a specimen attributed to Née that undoubtedly corresponds to the Peruvian species *Senecio scrobicarioides*. The specimen bears a handwritten label (unknown hand) with the following information: "Cineraria / ex Chalma in Nov. Hispania / Nee iter". Chalma is a village located in the Mexico State not far from Mexico City known for the homonym XVII century sanctuary, which was visited by Née in August 1791 (Madulid, 1989; Muñoz Garmendia, 1994). However, we believe that this is another case of mislabeling (see above). Indeed, it is striking the great similarity of this specimen with the type material of *S. scrobicarioides* (same size, habit, morphology, phenology, and preservation conditions). On this basis, it is feasible to think that all these specimens belonged to the same collection, that were shared between Haenke and Née, and later mislabeled in Prague and Madrid, respectively. However, these are conjectures that remain beyond the scope of the present study.

4. *Senecio sternbergianus* DC., Prodr. 6: 425. 1838, **syn. nov.**

Lectotypus (designated here): **Chile:** sine loco, s.d., *Haenke s.n.* (PR-495639 image!; isolecto-: PRC [PRC453192] image!) (Fig. 6).

= ***Senecio fistulosus*** Poepp. ex Less. in Linnaea 6(2): 246. 1831. **Lectotypus** (designated by Freire et al., 2014: 112): **Chile. Reg. Valparaíso:** in paludos. ad "Lagunas de Quintero", s.d. [1827–1829], *Poeppig 230 [pl. Chil. I.]* (P [P01816804] image!; isolecto-: HAL [HAL0111053] image!, NY [NY00259169] image!, P [P01816803] image!).

Notes. – The locotype indication of *Senecio sternbergianus* reads: "in montibus Peruanis legit cl. Haenke". There is original material of this species at PR and PRC, both identified by Candolle's hand, who also annotated "P.m." on the label of the specimen PRC453192, most likely referring to Peruvian mountains. These specimens are not in the best condition, however, they show herbaceous plants with basal leaves quite large and lengthy petiolate, cauline leaves abruptly decreasing in size up the stem and becoming semiamplexicaul, and synflorescences terminal, corymbiform, composed of radiate capitula. There is little doubt that the species belongs to *Senecio* sect. *Hualtatini*



Fig. 6. – Lectotype of *Senecio sternbergianus* DC.
[*Haenke s.n.*] [PR-495639; © National Museum in Prague]

(DC.) Cabrera, which comprises c. 15 species distributed in Argentina, Chile, Bolivia, Paraguay, Uruguay, and SE Brazil (Cabrera, 1950; Freire et al., 2014). No species of this group are known from the Peruvian territory, which appears to have the northern limit of distribution in Bolivia.

Dillon & Hensold (1993) treated *Senecio sternbergianus* as a synonym of *Aequatorium stellatopilosum* (Greenm. & Cuatrec.) C. Jeffrey, but this is a tree with long-petiolate leaves and no basal leaves. Later, Vision & Dillon (1996) did not mention it in their checklist of the Peruvian *Senecio*. In our opinion, this is clearly another case of species described upon mislabeled Haenke's specimens. Although the original material is not well-preserved, the specimens are very similar to *Senecio fistulosus* Poepp. ex Less. This species is distributed in central-southern Chile and the bordering areas in Argentina, thriving in wet and boggy places. Because it grows in marshes and swamps nearby the main historical Chilean ports (i.e. Concepción, Valparaíso, Coquimbo), *S. fistulosus* has been collected by most naturalists that participated in the early botanical expeditions to the New World, e.g., H. Ruiz-J. Pavón-J. Dombey in 1782 (Calvo, 2022b), A. von Chamisso in 1816, C.G. Bertero in 1828, etc. Indeed, we found a Née collection kept at MA corresponding to this species that bears a label with the information: "780 Valparaiso & Coquimbo". Muñoz Garmendia (1994) reported that Haenke joined the Expedition in Santiago de Chile in 2 April 1790 (from Buenos Aires) and they remained in Valparaíso until 14 April, when sailed to Coquimbo. Therefore, the possibility that Haenke collected the original material of *S. sternbergianus* nearby Valparaíso or Coquimbo exists.

On the basis of the morphology of the type material and because we are aware of the vicissitudes behind the Haenke material, we here synonymize the name *Senecio sternbergianus* with *S. fistulosus*.

5. *Senecio tridentatus* DC., Prodr. 6: 424. 1838, **syn. nov.**

   Lectotypus (designated here): **Argentina/Uruguay:** sine loco, s.d., *Haenke s.n.* (PRC [PRC453191] image!; isolecto-: P [P01816571] image!, PR-616648 image!).

   = ***Senecio crassiflorus*** (Poir.) DC., Prodr. 6: 412. 1838. ≡ *Cineraria crassiflora* Poir., Encycl., Suppl. 2(1): 267. 1811. **Holotypus: Argentina. Prov. Buenos Aires:** Buenos Aires, s.d., *Commerson s.n.* (P-LA [P00342427] image!).

Notes. – Candolle (1838) indicated "Peruviâ" as the provenance of the original material of *Senecio tridentatus*. Any information in this regard lacks in the three type specimens we studied. Dillon & Hensold (1993) stated that the presence of this species in Peru remained to be confirmed and Vision & Dillon (1996) recorded it with no information about its distribution. The study of the type material reveals that *S. tridentatus* is identical to *S. crassiflorus*, a very distinctive species frequent in the sandy shore habitats of SE Brazil, Uruguay, and E Argentina (Freire et al., 2014). It is a rhizomatous perennial herb characterized by having whitish-lanate indumentum covering most parts of the plant, leaves oblanceolate, attenuate at base, dentate at upper half to tridentate at apex (sometimes entire or almost so), capitula radiate, large, arranged in lax corymbiform synflorescences or solitary, composed of 21–25 involucral bracts, and achenes c. 5 mm long, pubescent.

As in the case of *Senecio adscendens* (see above), the species *S. crassiflorus* is not rare in the region of Río de la Plata (Arechavaleta, 1906; Cabrera, 1963; Freire et al., 2014). Then, Haenke most probably collected it during the three months that he remained between Montevideo and Buenos Aires or when he left the latter city westward to Mendoza, Santiago, and Valparaíso. Mislabeling in Haenke's specimens is well documented, and therefore, the name *S. tridentatus* is included in the synonymy of *S. crassiflorus*.

The type material of *Cineraria crassiflora* Poir. is known from a single specimen in P-LA collected by Philibert Commerson (1727–1773) in Buenos Aires. Another collection by Commerson made in November 1767 shows the locality Montevideo; in disagreement with Freire et al. (2014), we prefer do not consider it as original material because of the mismatch in the locality.

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