

A new combination in the genus *Cyanus* (Asteraceae: Cardueae, Centaureinae)

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Abstract

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Cyanus raimondoi (Bancheva & Kaya) Negaresh is proposed as a new combination. It is morphologically similar to *Cyanus eflanensis* Kaya & Bancheva, but differs from it by the indumentum, the flowering stem, the cauline leaves, and the achenes dimension.

Keywords

ASTERACEAE – *Cardueae* – *Centaurea* – *Cyanus* – New combination – Taxonomy

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Introduction

The *Cyanus* group was first described by MILLER (1754) as a genus. Subsequently, CANDOLLE (1838) reduced this genus to a section of *Centaurea* L., a position followed by some botanists (BENTHAM, 1873; BOISSIER, 1875; HOFFMANN, 1893; STEFANOV & GHEORGHIEV, 1931; DITTRICH, 1968; WAGENITZ, 1975). Others recognized it as a subgenus of *Centaurea* (CZEREPANOV, 1963; DOSTÁL, 1976). Molecular studies of *Centaureinae* by GARCIA-JACAS et al. (2001) and WAGENITZ et al. (2006) have shown that the *Cyanus* group is sister to the genus *Centaurea* s.s. Currently the most widely-accepted taxonomic position recognizes *Cyanus* as a separate genus (SOJÁK, 1972; HOLUB, 1977; DOSTÁL, 1984; BANCHEVA & RAIMONDO, 2003; GREUTER, 2003, 2008; HELLWIG, 2004; BANCHEVA & GREILHUBER, 2006; WAGENITZ, 2006; BANCHEVA & STOYANOV, 2009; KAYA & BANCHEVA, 2009; OLŠAVSKÁ et al., 2009, 2011; RANJBAR & NEGARESH, 2012; OLŠAVSKÁ et al., 2013; RANJBAR et al., 2013a, 2013b; STOYANOV, 2016).

Cyanus Mill. is distributed throughout central and southern Europe, North Africa, Asia Minor, and the Caucasus, with some species appearing as far east as Iran and Afghanistan and currently includes 32 species (HELLWIG, 2004; BANCHEVA & STOYANOV, 2009; KAYA & BANCHEVA, 2009; BORŠIĆ et al., 2011; RANJBAR & NEGARESH, 2012; OLŠAVSKÁ et al., 2013; RANJBAR et al., 2013a, 2013b; STOYANOV, 2016). The genus is distinct within the *Centaureinae* by phyllaries with scarious and spineless appendages that are decurrent nearly to the phyllary base, and by blue or purplish blue florets (with only a few exceptions of cream- or pale pink-flowered taxa) (WAGENITZ & HELLWIG, 1996; BORŠIĆ et al., 2011). This genus has been divided into annual group containing 6 species and perennial group containing 26 species (OLŠAVSKÁ et al., 2013). Annual species show a complex dysploid chromosome series with gametic chromosome numbers $x = 8, 9, 10$ and 12, whereas perennial species are more uniform in their gametic chromosome numbers, with $x = 10$ or 11 (WAGENITZ & HELLWIG, 1996; UYSAL et al., 2009; BORŠIĆ et al., 2011; OLŠAVSKÁ et al., 2013).

Recently, BANCHEVA & KAYA (2015) described *Centaurea raimondoi* Bancheva & Kaya as a new species for the flora of Turkey. They did correctly place it in *Cyanus* but, as they did not recognize that genus, they included it in *Centaurea*. According to them, it is closely related to *Cyanus eflanensis* Kaya & Bancheva. A detailed comparison of the description and type photograph confirms that *Centaurea raimondoi* belongs to the *Cyanus* because of its violet-blue florets, peripheral florets radiant and devoid of staminodes, phyllary appendages spineless with scarious margin decurrent nearly to the base. Indeed, in agreement with Bancheva & Kaya's treatment (BANCHEVA & KAYA, 2015) and the current concept of *Cyanus*, we propose the new combination. With this species included, the total number of species in *Cyanus* increases to 33.

Nomenclature and taxonomy

Cyanus raimondoi (Bancheva & Kaya) Negaresh, **comb. nova.**

≡ *Centaurea raimondoi* Bancheva & Kaya in Fl. Medit. 25(special issue): 306. 2015.

Holotypus: TURKEY: A3 Bolu: between the cities of Mengen and Pazarköy, on rocky places, 40°55'25"N 32°08'12"E, 13.VI.2012, *Bancheva & Kaya 171075* (SOM!; iso-: PAL).

Notes. – *Cyanus raimondoi* resembles *C. eflanensis*, which is endemic to Turkey, in life form, involucre size and width of the undivided portion of the scarious phyllary margin, but differs in some important characters such as a densely lanate indumentum, a thickened, 0.7–0.9 cm wide taproot, flowering stem arising laterally at the base of a leaf rosette (vs loosely villous or subglabrous indumentum, a thickened, 1–1.5 cm wide taproot, flowering stem terminal, arising from the centre of a leaf rosette), lower cauline leaves entire to pinnatifid, with 1–2 pairs of lanceolate segments, usually forming a basal rosette at flowering time (vs pinnatifid to pinnatipartite, with 2–4 pairs of lanceolate segments, or entire, usually not forming a basal rosette at flowering time), flowers violet (vs purplish-violet), and achenes 2.8–3.5 mm (vs 4–4.5 mm) long (BANCHEVA & KAYA, 2015).

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References

- BANCHEVA, S. & F.M. RAIMONDO (2003). Biosystematic studies of seven Balkan species from genus *Cyanus* (Compositae). *Bocconea* 16: 507-527.
- BANCHEVA, S. & J. GREILHUBER (2006). Genome size in Bulgarian *Centaurea* s.l. (Asteraceae). *Pl. Syst. Evol.* 257: 95-117.
- BANCHEVA, S. & S. STOYANOV (2009). A new species of *Cyanus* (Asteraceae, Centaureinae) from southeastern Bulgaria. *Novon* 9: 421-425.
- BANCHEVA, S. & Z. KAYA (2015). *Centaurea raimondoi*, a new species from Asteraceae. *Fl. Medit.* 25(special issue): 305-310.
- BENTHAM, G. (1873). Compositae. In: BENTHAM, G. & J.D. HOOKER (ed.), *Gen. Pl.* 2(1).
- BOISSIER, E. (1875). *Centaurea*. *Fl. Orient.* 3: 614-695.
- BORŠIĆ, I., A. SUSANNA, S. BANCHEVA & N. GARCIA-JACAS (2011). *Centaurea* sect. *Cyanus*: nuclear phylogeny, biogeography, and life-form evolution. *Int. J. Pl. Sci.* 172: 238-249.
- CANDOLLE, A.P. DE (1838). *Centaurea*. *Prodr.* 6: 565-605.
- CZEREPAKOV, S.K. (1963). *Centaurea* subgenus *Cyanus*. In: BOBROV, E.G. & S.K. CZEREPAKOV (ed.), *Fl. CCCP* 28.
- DITTRICH, M. (1968). Morphologische Untersuchungen an den fruchtender Subtribus Cardueae-Centaureinae (Compositae). *Willdenowia* 5: 67-107.
- DOSTÁL, J. (1976). *Centaurea* L. In: TUTIN, T.G. et al. (ed.), *Fl. Eur.* 4.
- GARCIA-JACAS, N., A. SUSANNA, T. GRANTAJE & R. VILATERSANA (2001). Generic delimitation and phylogeny of the subtribe Centaureinae (Asteraceae): a combined nuclear and chloroplast DNA analysis. *Ann. Bot.* 87: 503-515.
- GREUTER, W. (2003). The Euro+Med treatment of Cardueae (Compositae) - generic concepts and required new names. *Willdenowia* 33: 49-61.
- GREUTER, W. (2008). *Med-checklist: a critical inventory of vascular plants of the circum-Mediterranean countries* 2. Dicotyledones (Compositae). OPTIMA, Palermo et Conservatoire Botanique de la Ville de Genève, Geneva.
- HELLWIG, F.H. (2004). Centaureinae (Asteraceae) in the Mediterranean - history of ecogeographical radiation. *Pl. Syst. Evol.* 246: 137-162.
- HOFFMANN, O. (1893). Compositae - Centaureinae. In: ENGLER, A. & K. PRANTL (ed.), *Nat. Pflanzenfam.* IV(5): 324-333. Engelmann, Leipzig.
- HOLUB, J. (1977). New names in Phanerogamae 5. *Folia Geobot. Phytotax.* 12: 293-311.
- KAYA, Z. & S. BANCHEVA (2009). A new species of *Cyanus* (*Centaurea* p.p.) sect. *Napuliferi* (Asteraceae) from Turkey. *Novon* 19: 175-177.
- MILLER, P. (1754). *The gardener's dictionary* 4. London.
- OLŠAVSKÁ, K., M. PERNÝ, P. MÁRTONFI & I. HODÁLOVÁ (2009). *Cyanus triumfetti* subsp. *triumfetti* (Compositae) does not occur in the western Carpathians and adjacent parts of Pannonia: karyological and morphological evidence. *Nordic J. Bot.* 27: 21-36.
- OLŠAVSKÁ, K., M. PERNÝ, J. KUČERA & I. HODÁLOVÁ (2011). Biosystematic study of the *Cyanus triumfetti* group in Central Europe. *Preslia* 83: 99-110.
- OLŠAVSKÁ, K., M. PERNÝ, C.J. LÖSER, R. STIMPER & I. HODÁLOVÁ (2013). Cytogeography of European perennial species of *Cyanus* (Asteraceae). *Bot. J. Linn. Soc.* 173: 230-257.
- RANJBAR, M. & K. NEGARESH (2012). A note on the genus *Cyanus* (Asteraceae, Cardueae) from Iran. *Biol. Diversity & Conservation* 5(3): 18-23.
- RANJBAR, M., K. NEGARESH & R. KARAMIAN (2013a). *Cyanus ouramanicus* (Asteraceae), a new species from Iran. *Ann. Bot. Fennici* 50: 160-164.
- RANJBAR, M., K. NEGARESH & R. KARAMIAN (2013b). *Cyanus tabrizianus* Ranjbar & Negaresh (Asteraceae), a new species from Iran. *Candollea* 68: 187-192.
- SOJÁK, J. (1972). Nomenklatorické poznámky (Phanerogamae). *Čas. Nár. Mus., Odd. Přír.* 140: 127-134.
- STEFANOV, B. & T. GHEORGHIEV (1931). Contribution to distinction of the species of genus *Centaurea* (L.) sect. *Cyanus* (DC.). *Proc. Bulg. Acad. Sci.* 44: 133-193.
- STOYANOV, S.S. (2016). Reinstatement of *Centaurea cyanomorpha* (Asteraceae), an endemic species from southeastern Bulgaria. *Phytotaxa* 268: 46-56.
- UYSAL, T., K. ERTUĞRUL, A. SUSANNA & N. GARCIA-JACAS (2009). New chromosome counts in the genus *Centaurea* (Asteraceae) from Turkey. *Bot. J. Linn. Soc.* 159: 280-286.
- WAGENITZ, G. (1975). *Centaurea* L. In: DAVIS, P.H. (ed.), *Fl. Turkey* 5.
- WAGENITZ, G. & F.H. HELLWIG (1996). Evolution of characters and phylogeny of the Centaureinae. In: HIND, D.J.N. & H.J. BEENTJE (ed.), *Compositae: Systematics*: 491-510. Royal Botanic Gardens, Kew.
- WAGENITZ, G. (2006). A revision of *Centaurea* (Compositae-Cardueae) in the flora of Iraq. *Rostaniba* 7 (suppl. 2): 343-394.
- WAGENITZ, G., F.H. HELLWIG, G. PAROLLY & L. MARTINS (2006). Two new species of *Centaurea* (Compositae, Cardueae) from Turkey. *Willdenowia* 36: 423-435.