

New combinations in some Balkan *Centaurea* taxa

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Received: May 14, 2020 ▷ Accepted: August 03, 2020

Abstract. Some new taxa recently published as members of the *Cyanus tuberosus* group are recombined under *Centaurea*. New Greek localities and further references are provided.

Key words: *Centaurea*, *Cyanus*, Greece

Cyanus Mill. is variously regarded as a separate genus or as a subgeneric entity within *Centaurea* L. (*Centaurea* sect. *Cyanus* (Mill.) W.D.J. Koch; *Centaurea* subg. *Cyanus* (Mill.) Hayek). The latter option is preferred in the recent Greek Checklist (Dimopoulos & al. 2013, 2016), the *Atlas of the Aegean Flora* (Strid 2016), the *Flora of Greece* Web (<http://portal.cybertaxonomy.org/flora-greece/intro>), and practically in all other taxonomic and floristic literature relevant to Greece. See also Assyov & Petrova (2012), Buttler & al. (2018) and Boršić & al. (2011: 238).

Olšavská & al. (2016) and Skokanová & al. (2019) have revised the *Cyanus tuberosus* group (*Centaurea tuberosa* group in *Centaurea* subg. *Cyanus*) based on the comprehensive study of the molecular, karyological, morphological, and ecological variation of its populations in the Balkan Peninsula, describing some new species and subspecies in *Cyanus*. The following new combinations are proposed under *Centaurea*:

Centaurea austrobalcanica (Skokanová) Raus & Strid, **comb. nov.** ≡ *Cyanus austrobalcanicus* Skokanová in Pl. Syst. Evol. 305: 590.

Centaurea austrobalcanica subsp. ***prisadana*** (Skokanová) Raus & Strid, **comb. nov.** ≡ *Cyanus austrobalcanicus* subsp. *prisadanus* Skokanová in Pl. Syst. Evol. 305: 592.

Centaurea vichrenensis (Skokanová) Raus & Strid, **comb. nov.** ≡ *Cyanus vichrenensis* Skokanová in Pl. Syst. Evol. 305: 590.

Centaurea vorasana (Skokanová) Raus & Strid, **comb. nov.** ≡ *Cyanus vorasanus* Skokanová in Pl. Syst. Evol. 305: 587.

In their recent study Skokanová & al. (2019: 588) concluded that *Centaurea velenovskyi* Adamović (≡ *Cyanus velenovskyi* (Adamović) Wagenitz & Greuter) is endemic to a small area in Serbia (i.e. Mt Midžor in the western part of Stara Planina). *Centaurea napulifera* Rochel (≡ *Cyanus napulifer* (Rochel) Soják) is not closely related to the former. In the Balkans, the distribution of *C. napulifera* is restricted to the Bulgarian part of Stara Planina (i.e. in the vicinity of the town of Sliven; see lectotypification by Skokanová & al. 2019: 594) and parts of E Bulgaria and SE Romania. Judged by the results of Olšavská & al. (2016), it could be conspecific with *Centaurea thirkei* Schultz Bip. (≡ *Cyanus thirkei* (Schultz Bip.) Holub) described from N Anatolia and, consequently, may have an even wider distribution including European and Asiatic Turkey. Lastly, *Centaurea tuberosa* Vis. (≡ *Cyanus tuberosus* (Vis.) Soják) is endemic to Croatian and Bosnian Dalmatia (Skokanová & al. 2019: 572, 592).

Against this background, the designations “*Centaurea napulifera* subsp. *velenovskyi*” and “*Centaurea napulifera* subsp. *tuberosa*” sensu Strid & Tan (1991: 523) and Dimopoulos & al. (2013: 56, 179) are definitely misapplied in Greece and, in fact, refer to populations of two newly described species: *Centaurea vorasana* (= *Cyanus vorasanus*) and *Centaurea austrobalcanica* (= *Cyanus austrobalcanicus*), respectively. Both taxa are range-restricted and confined to the Republic of North Macedonia and adjacent N Greece, the latter taxon just extending to southernmost Bulgaria (Slavyanka Mts., southern Pirin Mts.; distribution map in Skokanová & al. 2019: 572).

Centaurea austrobalcanica subsp. *austrobalcanica* (= *Cyanus austrobalcanicus* subsp. *austrobalcanicus*) was mapped by Skokanová & al. (2019: 572). We can confirm its occurrence in North Greece and add some localities. It is now known to occur in the phytogeographical regions of North Pindos (NPi), South Pindos (SPi), North Central (NC) and North East (NE) as defined in Strid & Tan (1997: xii), comprising the Nomoi of Drama, Evros, Grevena, Imathia, Kavalla, Kilkis, Kozani, Larisa, Pella, Pieria, Serres, Thessaloniki, Trikkala, and Xanthi. *Centaurea austrobalcanica* subsp. *prisadana* (= *Cyanus austrobalcanicus* subsp. *prisadanus*) is chiefly confined to the Republic of North Macedonia (Skokanová & al. 2019: 572), but possibly extends to Mt Tzena in northernmost Greece (NC, Nomos Pella), where at least transitional material between the two subspecies has been collected on the Greek side of the border (Schuler s.n., B!, *vide* Skokanová & al. 2019, online-resource 3: 9).

For *Centaurea vorasana*, Skokanová & al. (2019, l. c.) mention the following Greek localities based on herbarium material seen by them: Mt Varnous (Kalo Nero), Mt Voras (Kaïmaktsalan), and Mt Pieria in NC (Nomoi of Florina, Kozani, Pella and Pieria). We can add also Mt Gramos in NPi (Nomos Ioannina) as a further locality, extending the distribution range of the species somewhat to the southwest; the substantiating collection (Strid & al. 27583, C, G. UPA, det. Wagenitz in 1985 as “*Centaurea napulifera* subsp. *velenovskyi*”, see Gamal-Eldin & Wagenitz 1991: 523) matches *Cyanus vorasanus*, as described and keyed out by Skokanová & al. (2019).

Centaurea vichrenensis (= *Cyanus vichrenensis*) is endemic to the central part of the Pirin Mts in Bulgaria (Skokanová & al. 2019: 590). In earlier Bulgarian floristic sources it had been designated as *Centaurea napulifera* subsp. *napulifera* f. *albida* (Ces.) Stoj. &

Acht. (Stojanov & al. 1967: 1137) or *Cyanus orbelicus* (Velen.) Soják (Bancheva & Raimondo 2003); the latter, however, is absent from the Pirin Mts (see Skokanová & al. 2019: 572, 587).

Greek records of the group have been reported in earlier literature as follows:

Centaurea napulifera (= *Cyanus napulifer*): Goulimis (1960: 15), Quézel & Contandriopoulos (1968: 35), Dostál (1976: 300), Pavlidis (1985: 181), Karagiannakidou & Raus (1996: 50), Willing & Willing (2004b: 47), Willing (2020: 73).

Centaurea nissana [“*nyssana*”] Petrović (= *Cyanus nissanus* (Petrović) Soják): Goulimis (1956: 11), Dostál (1976: 300), Voliotis (1983: 162), Karagiannakidou & Kokkini (1987: 273), Athanasiadis & Eleftheriadou (1995: 149) Willing & Willing (2004a: 76, 2004b: 48, 2010: 83, 2013: 67).

Centaurea orbelica Velen. (= *Cyanus orbelicus* (Velen.) Soják): Charrel (1892: 340), Goulimis (1956: 19), Rechinger (1939: 524), Bancheva & Raimondo (2003: 516).

Centaurea pseudoaxillaris Stef. & Georgiev (= *Cyanus pseudoaxillaris* (Stef. & Georgiev) Holub): Athanasiadis & Drossos (1990: 61), Korakis & al. (2006: 20).

Centaurea tuberosa Vis. (= *Cyanus tuberosus* (Vis.) Soják): Kitanov (1943: 282), Goulimis (1960: 15), Bancheva & Raimondo (2003: 520), Willing & Willing (2003: 75).

All these records are erroneous and represent either *Centaurea austrobalcanica* or *Centaurea vorasana*. The two species are largely allopatric, but both occur in the Pieria Mts (NC, Nomos Kozani and Nomos Pieria); literature records from this area cannot be assigned to either taxon, unless substantiated by revised herbarium material.

Some more perennial species of *Centaurea* subg. *Cyanus*, differing from the *Centaurea tuberosa* group by the lack of thickened, oblong to fusiform roots (Gamal-Eldin & Wagenitz 1991), are known to occur in Greece, such as *Centaurea axillaris* Willd. nom. cons. propos. (= *C. triumfetti* auct. balcan., non All., see Skokanová & Koutecký 2018), *C. baldaccii* Bald., *C. epirota* Halácsy, *C. pichleri* Boiss. and *C. pindicola* (Griseb.) Boiss. The evolutionary history of some of them has been recently addressed biosystematically (Olšavská et al. 2016, as *Cyanus epirotus* (Halácsy) Holub), *Cyanus pichleri* (Boiss.) Holub and *Cyanus pindicola* (Griseb.) Soják).

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