

Cyanus ouramanicus (Asteraceae), a new species from Iran

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Cyanus ouramanicus Ranjbar & Negaresh *sp. nova* (Asteraceae) is described and illustrated from Kermanshah Province, W Iran. It resembles *C. woronowii*, but differs from it by having an erect to ascending stem, branched at the base and often from median to upper parts, elliptic to oblanceolate or oblong, rarely linear or oblanceolate stem leaves, lower and median stem leaves with entire margins, pubescent phyllaries, and lanceolate peripheral floret lobes.

The genus *Centaurea*, with nearly 200–250 species (Bremer 1994, Wagenitz & Hellwig 1996, Hellwig 2004, Garcia-Jacas *et al.* 2006, Susanna & Garcia-Jacas 2007, López *et al.* 2011), has traditionally been considered taxonomically problematic. The generic circumscription is a very old problem, and the taxonomic complexity arises from the extensive morphological, karyological and pollen-morphological diversity (Wagenitz 1975, Dittrich 1977, Bremer 1994, Susanna *et al.* 1995, Gabrielyan 1995, Wagenitz & Hellwig 1996, López *et al.* 2011, Dinç & Doğu 2012). *Centaurea s. lato* is considered a non-monophyletic group and has recently been divided into several, more monophyletic genera, namely *Centaurea s. stricto*, *Cyanus*, *Psephellus* and *Rhaponticoides* (Wagenitz & Hellwig 2000, Greuter 2003a, 2003b, Hellwig 2004). In *Flora Iranica*, 70 *Centaurea* species in 28 sections were accepted from Iran (Wagenitz 1980). Since then six new species, one new subspecies and one new record have been added to the flora of Iran (Wagenitz & Esfandiari 1983,

Ranjbar & Negaresh 2012, Ranjbar *et al.* 2012).

Cyanus includes ca. 25 annual and perennial herbs. They have blue or purplish-blue florets (with few exceptions of cream- or pale-pink-flowered taxa), which are extremely unusual colors for the subtribe Centaureinae. They have pectinate-ciliate and spineless appendages that are decurrent nearly to the base of phyllaries, marginal sterile florets without staminodes and smooth pollen grains associated with a reaction pollen presentation mechanism (Wagenitz & Hellwig 1996, Garcia-Jacas *et al.* 2001, Hellwig 2004, Susanna & Garcia-Jacas 2009, Boršič *et al.* 2011). The genus 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 (Wagenitz 1975, Dostál 1976, Czerepanov 2001). In Iran, *Cyanus* species are found on grassy slopes, montane and shrub steppe, alpine and subalpine dry meadows, pastures or fields between 800 and 3000 m a.s.l.

During our field excursions in Iran, some specimens belonging to the genus *Cyanus* were

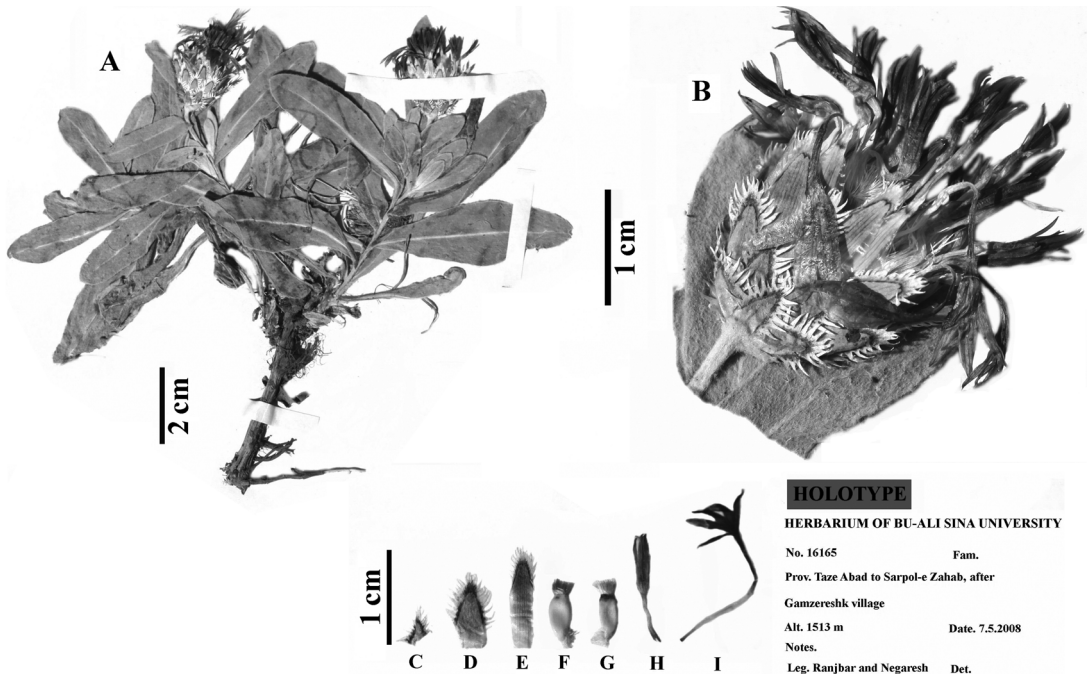


Fig. 1. *Cyanus ouramanicus* (from the holotype). — **A:** Habit. — **B:** Close up of capitulum. — **C:** Outer phyllary. — **D:** Median phyllary. — **E:** Inner phyllary. — **F and G:** Achenes with pappus. — **H:** Central floret. — **I:** Peripheral floret.

collected and then identified according to *Flora Iranica* (Wagenitz 1980). Some clear morphological differences between the collected plants and *C. woronowii* allow us to describe a new species.

***Cyanus ouramanicus* Ranjbar & Negaresh, *sp. nova* (Fig. 1)**

HOLOTYPE: Iran. Kermanshah: Taze Abad to Sarpol-e Zahab, after Gamzerezhk village, 1513 m, 7 May 2008 *Ranjbar & Negaresh 16165* (holotype BASU!; photo B, W).

ETYMOLOGY: The specific epithet refers to Ouraman mountains, where the new species is found.

Perennial herbs, all over usually pale green, 9–15 cm tall, tomentose, rootstock creeping, with a long woody rhizome bearing string-like roots, wiry appearance, up to 6 cm long; flowering stem terminal out of centre of leaf rosette. Stem erect to ascending, branched at base and often from median to upper parts, densely tomentose by appressed, white hairs. Branches up to 6.5 cm long, ± equal in length, rigid, striate, densely leafy throughout, up to 2.5 mm in

diam. at base. Leaves coriaceous, loosely tomentose by appressed hairs, midrib whitish, margins entire. Basal and lower leaves simple, elliptic to oblanceolate, 6.5–8 × 0.8–1.7 cm, subacute to obtuse at apex, petiole up to 4 cm long. Median stem leaves sessile, elliptic, elliptic to oblong or oblong, 5.6–8 × 1–1.4 cm, subacute to obtuse at apex, decurrent up to 20 mm along stem. Upper stem leaves successively smaller, sessile, oblong, oblong to elliptic, rarely linear or oblanceolate, 1.5–7 × 0.32–0.85 cm, obtuse or rarely mucronate at apex, decurrent up to 15 mm along stem, sometimes not decurrent. Capitula 3–5 on 3–25 mm peduncles, solitary at end of branches, sometimes sessile. Involucres cylindrical or cylindrical-cupuliform, 14–16 × 10–16 mm. Phyllaries multiseriate, coriaceous, imbricate, greenish, loosely pubescent. Outer phyllaries triangular, 2.5–6.5 × 1.5–2.5 mm. Median phyllaries lanceolate, lanceolate-oblong, 6.5–10 × 2.5–3 mm, margin sometimes membranous. Inner phyllaries oblong to narrowly oblong, margin membranous, upper part purplish, 10.5–12 × 2.5–4 mm. Appendages concealing basal part of phyllaries, triangular, moderately imbricate, strongly

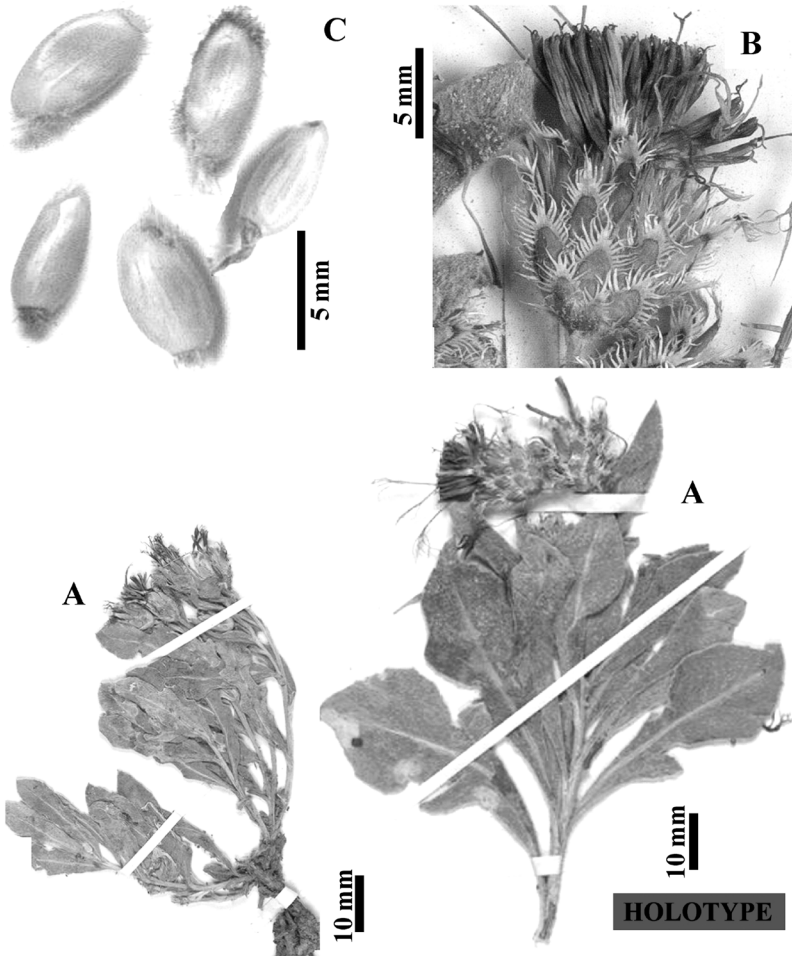


Fig. 2. *Cyanus woronowii* (holotype). — A: Habit. — B: Close up of capitulum. — C: Close up of achenes with pappus. Photograph through the courtesy of B.

decurrent, brownish, rarely blackish, scarious margin (without cilia) 0.1–0.3 mm wide; cilia numerous, narrowly triangular, 9–13 on each side, 1.5–2.5 mm long, whitish, scabrous, without nerves, spineless. Flowers purple, blackish-violet; central florets hermaphrodite, ca. 13 mm long, 15–20 central florets in each capitulum; peripheral florets radiant, without staminodes, ca. 24 mm long, 4–5-lobed, limb lobe lanceolate, 3–4 mm long, 8(–10) peripheral florets in each capitulum. Achenes ovate-oblong, \pm 5.5 mm long, 2–2.5 mm wide, yellow, smooth, shining, loosely covered with appressed hairs; hilum lateral, densely hairy, up to 1.5 mm long, apically rounded. Pappus persistent, barbellate, whitish, sometimes yellowish, \pm 2 mm long, innermost series not longer than others.

Cyanus ouramanicus is a rare endemic in W Iran and known only from the dry-steppe zones of Ouraman mountains between Tazeh Abad and Sarpol-e Zahab in Kermanshah Province, W Iran. The high temperatures of this region in the spring cause early maturation of many endemic plants. The new species is similar to *C. woronowii*, endemic in E Turkey (Wagenitz 1975), in some important characters such as plant height, indumentums of leaves and color of appendages (Fig. 2). The *Cyanus woronowii* group is characterized by short plants (up to 20 cm), leaves \pm densely gray-tomentose, the uppermost ones entire, appendages decurrent with a narrow brown border, and also flowers purple to blackish-violet (Wagenitz 1975), and *C. ouramanicus* differs by some important characters (Table 1).

Table 1. Diagnostic morphological characters of *Cyanus ouramanicus* and *C. woronowii*.

Species	<i>C. ouramanicus</i>	<i>C. woronowii</i>
Stem shape	erect to ascending, branched at the base and often from median to upper parts	erect or ascending-arcuate, sometimes decumbent, simple or often with several branches as long as stem
Stem leaf shape	elliptic, elliptic to oblanceolate, oblong, rarely linear or oblanceolate	lanceolate or spathulate
Median and upper stem leaves	broadly decurrent up to 20 mm	not decurrent
Lower and median stem leaves	entire	pinnatifid to lyrate with 2–5 pairs of lobes or repand-dentate or partly entire
Involucre shape	cylindrical or cylindrical-cupuliform	subcylindrical to cup-shaped
Involucre size	14–16 × 10–16 mm	13–17 × 7–12 mm
Phyllary indumentum	pubescent	glabrescent
Phyllary appendages: width of scarious margin without cilia	0.1–0.3 mm	0.2–0.5 mm
Peripheral floret length	ca. 24 mm	23–28 mm
Peripheral floret lobe shape	lanceolate	linear to filiform
Achene shape and color	ovate-oblong and yellow	oblong-elliptical and solar bronze
Achene indumentum	loosely hairy	sparsely hairy
Pappus color	white	brown
Pappus length	± 2 mm	0.5–1 mm

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