www.biodicon.com Biological Diversity and Conservation

ISSN 1308-8084 Online; ISSN 1308-5301 Print 5/3 (2012) 18-23

Research article/Araştırma makalesi

A note on the genus *Cyanus* (Asteraceae, Cardueae) from Iran

Massoud RANJBAR [*1], Kazem NEGARESH [1]

[1] Department of Biology, Herbarium division, Bu-Ali Sina University, P. O. Box 65175/4161, Hamedan, Iran

Abstract

Cyanus persicus Ranjbar & Negaresh sp. nova (Asteraceae) is described and illustrated from Hamedan Province, W Iran. The new species is closely related to *C. depressus*, but differs from it by the length of internodes of median stem leaf (4–6 cm vs. 0.5–1 cm), color of flowers (white vs. blue or violet), color of appendages (white vs. brown or deeply brown), and also indumentum of achenes (glabrous vs. pubescent).

Key words: Asteraceae, *Centaurea*, *Cyanus*, Iran, Taxonomic

1. Introduction

Centaurea L. s.l. is one of the largest genera of the family Asteraceae. It is a taxonomically difficult genus and depending on the classification adopted comprises between 400 and 700 species (Wagenitz, 1975; Dittrich, 1977; Bremer, 1994; Wagenitz and Hellwig, 1996). The unnatural circumscription of *Centaurea* is a very old problem (Wagenitz, 1975; Dittrich, 1977). Taxonomic complexity arises from the extensive morphological, karyological and pollen diversity (Bremer, 1994; Susanna et al., 1995; Gabrielyan, 1995; Wagenitz and Hellwig, 1996, Kaya et al., 1996; Türkoglu et al., 2003, Duran and Hamzaoglu, 2002; Özuslu and Tel, 2008; Duran et al., 2009, Aslan et al. 2011, Ranjbar et al., 2012a, 2012b, 2012c, 2012d, 2012e). Because of *Centaurea* s.l. is considered as a taxonomically unnatural group, recent approaches have separated this taxon into more natural genera, namely *Centaurea* s. str., *Cyanus* Mill., *Psephellus* Cass. and *Rhaponticoides* Vaill. (Wagenitz and Hellwig, 2000; Greuter, 2003a, 2003b; Hellwig, 2004).

Cyanus Mill. comprises ca. 27 species in the world (Hellwig, 2004; Kaya and Bancheva, 2009; Ranjbar et al. 2012e). It 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 Flora Iranica (Wagenitz, 1980), the genus is represented by 5 species, of which one is endemic namely *C. elbrusensis* (Boiss. & Bushe) Wagenitz & Greuter. This article follows previous studies conducted on Centaureinae in Iran (Ranjbar et al., 2011, 2012a, 2012b, 2012c, 2012d, 2012e, 2012f).

2. Materials and methods

During our field excursions in Iran, we collected some specimens belonging to the genus from W Iran. In addition, several sheets were examined from the herbaria BASU, FUMH, B, G and W. The collected *Centaurea* specimens were identified according to the Flora Iranica (Wagenitz, 1980). The collected species showed similarity with *C. depressus* (M.Bieb.) Soják, however some important morphological differences allow us to treat them as a new species from Iran.

3. Results and discussion

3. 1. Description of new species

Cyanus persicus Ranjbar & Negaresh, sp. nova. (Figure 1)

* *Corresponding author* / Haberleşmeden sorumlu yazar: Tel.: 0098 811 8271541; Fax.: 0098 811 8381172; E-mail: massoud.ranjbar80@gmail.com
 BioDiCon. 248-0612

Affinis *C. depressus*, sed folia caulina media apice acuta, internodiis 4 – 6 cm longis (nec mucronulata, internodiis 0.5 – 1 cm longis), folia caulina superiora internodiis 1 – 3.5 cm (nec 0.2 – 0.5 cm) longis, flores centrales albidi (nec violacei), flores marginales albidi (nec cyanei), tubus antherarum albus (nec atroviolaceous), appendices albidi (nec brunneae vel atrobrunneae), achaenium glabroum (nec puberulum) differt.

Figure 1. Holotype of *Cyanus persicus* Ranjbar & Negaresh. (A) habit, (B) achene with pappus (glabrous). Scale A = 2 cm, B = 2 mm.

Type: Iran, Prov. Hamedan, Razan, 2450 m, *Ranjbar* & *Negaresh 12339* (holotype: BASU, photo: B,).

Annual, whole usually green, wiry appearance, up to 45 cm tall. Stems branched often near base or slightly above, with upward spreading, simple or less branched, scabrous branches, with 5 – 10 capitula. Branches up to 38 cm long, unequal in length, erect or ascending, rigid, striate, ca. 5 mm in diam. at the base. Stem and leaves densely covered with adpressed floccose-tomentose, and glandular hairs, usually not forming basal rosette at flowering. Median stem leaves sessile, oblong or oblong-lanceolate, 4 – 5 × 0.4 – 1 cm, acute at apex, entire, sometimes serrulate, internodes 4 – 6 cm long. Upper stem leaves smaller, sessile, oblong or oblong-linear, 1 – 3.5 × 0.3 – 0.9 cm, acuminate or mucronate at apex, entire, rarely margin revolute, internodes 1 – 3.5 cm long. Capitula solitary on each branch, peduncles up to 5 cm long or subsessile. Involucre cupuliform, ca. 15 – 16 × 15 – 17 mm. Phyllaries coriaceous, imbricate, green, glabrous. Outer phyllaries triangular, 2.5 – 4.2 × 2 – 3 mm. Median phyllaries lanceolate or lanceolate-oblong, 5 – 6.5 × 3.2 – 3.8 mm. Inner phyllaries oblong, ca. 9.5 – 10 × 2.5 – 3.2 mm, margins membranous. Appendages concealing basal to median parts of phyllaries, triangular, moderately imbricate, white; cilia numerous, 4 – 10 on each side, 1 – 2 mm long, narrowly triangular. Flowers white; corolla of central florets hermaphroditic, ca. 10 mm long, corolla tube ca. 4 mm long, 20 – 25 central florets in each capitulum; corolla of peripheral florets without staminodes, radiant, ca. 22 mm long, corolla tube ca. 14 mm long, 6 lobed, lobes lanceolate, ca. 3.5–4.5 mm long, 8 – 10 peripheral florets in each capitulum. Achenes oblong-lanceolate, 5.2 – 5.5 mm long, ca. 2.3 mm wide, brownish, glabrous, hilum lateral, yellow, ca. 2.6 – 2.8 mm long, apically rounded. Pappus persistent, multiseriate, scabrous, whitish, 5.2 – 5.6 mm long, innermost series not longer than others.

3. 2. Examined specimen

Paratype: Iran, Prov. Khorasan, Fariman, Bakherz, 1900 m, 15. 5. 1984, *Ayatollai & Mahvan 11097* (FUMH!), Figure 2.

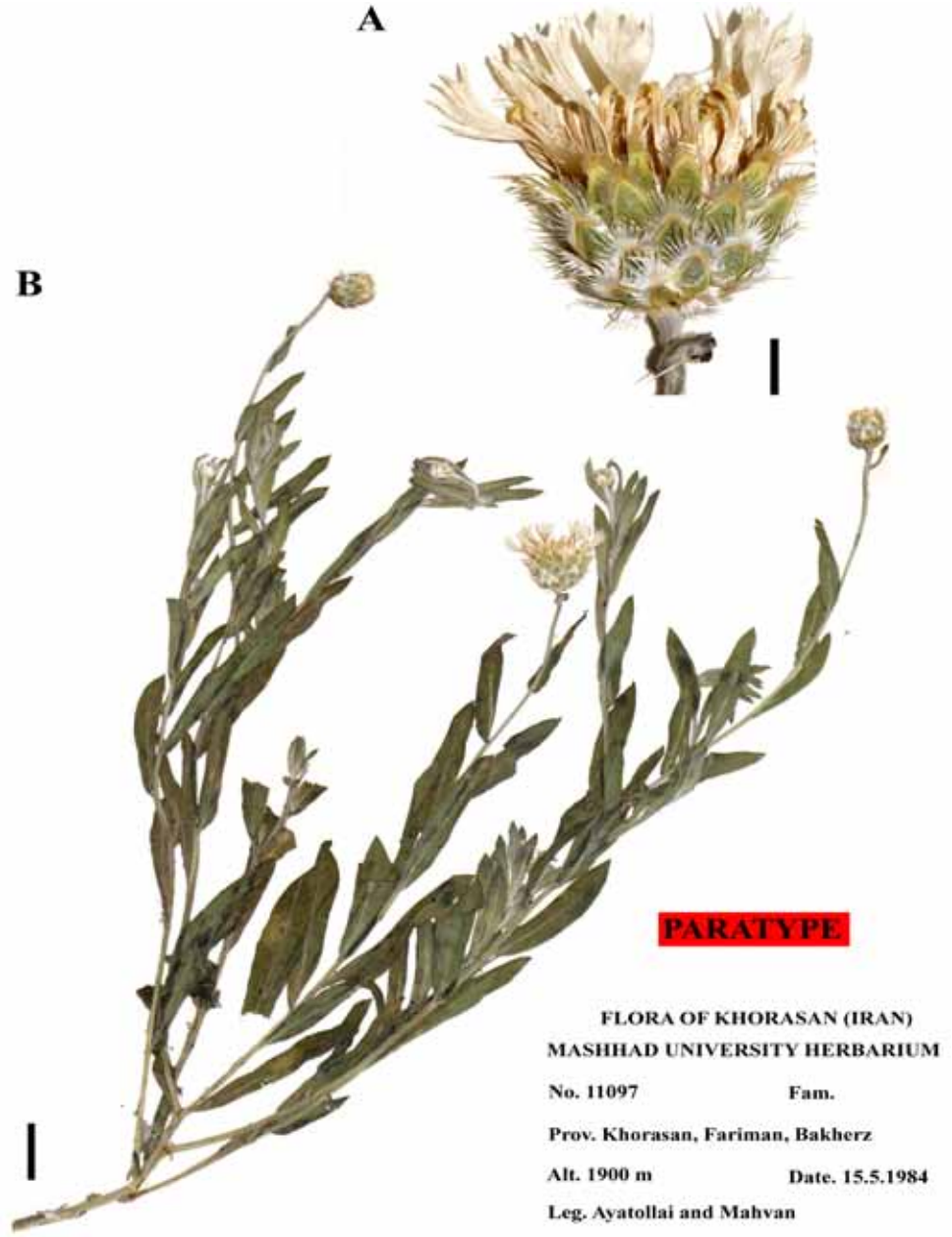

Figure 2. Paratype of *Cyanus persicus*. (A) capitulum, (B) habit. Scale A = 5 mm, B = 2 cm

3. 3. Etymology

The specific epithet is ancient named after the country Iran, where the new species is collected.

3. 4. Taxonomic and distributional remarks

Cyanus persicus is a rare endemic to W Iran and grows in field around Razan in Hamedan Province, W Iran (Figure 3). It is similar to *C. depressus* in the indumentum of habit and shape and size of involucre (Figure 4), but differs from it by some important characters (Table 1) such as median stem leaves internodes 4–6 cm long, acute at apex (vs. internodes 0.5 – 1 cm long, mucronate at apex), upper stem leaves internodes 1 – 3.5 cm (vs. 0.2 – 0.5 cm) long, peduncle up to 5 cm long or subsessile (vs. sessile or subsessile), central floret white (vs. violet), peripheral floret white (vs. blue), anther tube white (vs. deeply violet), appendages white (vs. brown or deeply brown), and also achenes glabrous (vs. puberulous), Figure 4.

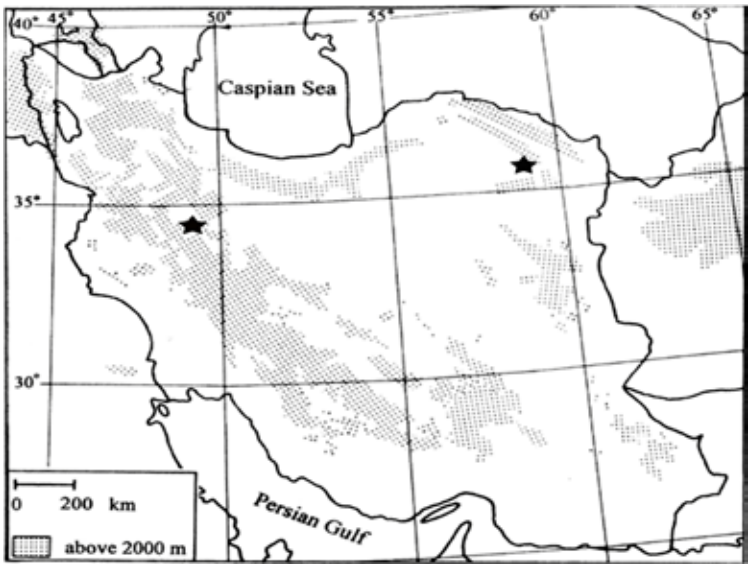

Figure 3. Distribution of *Cyanus persicus* (star) of Iran.

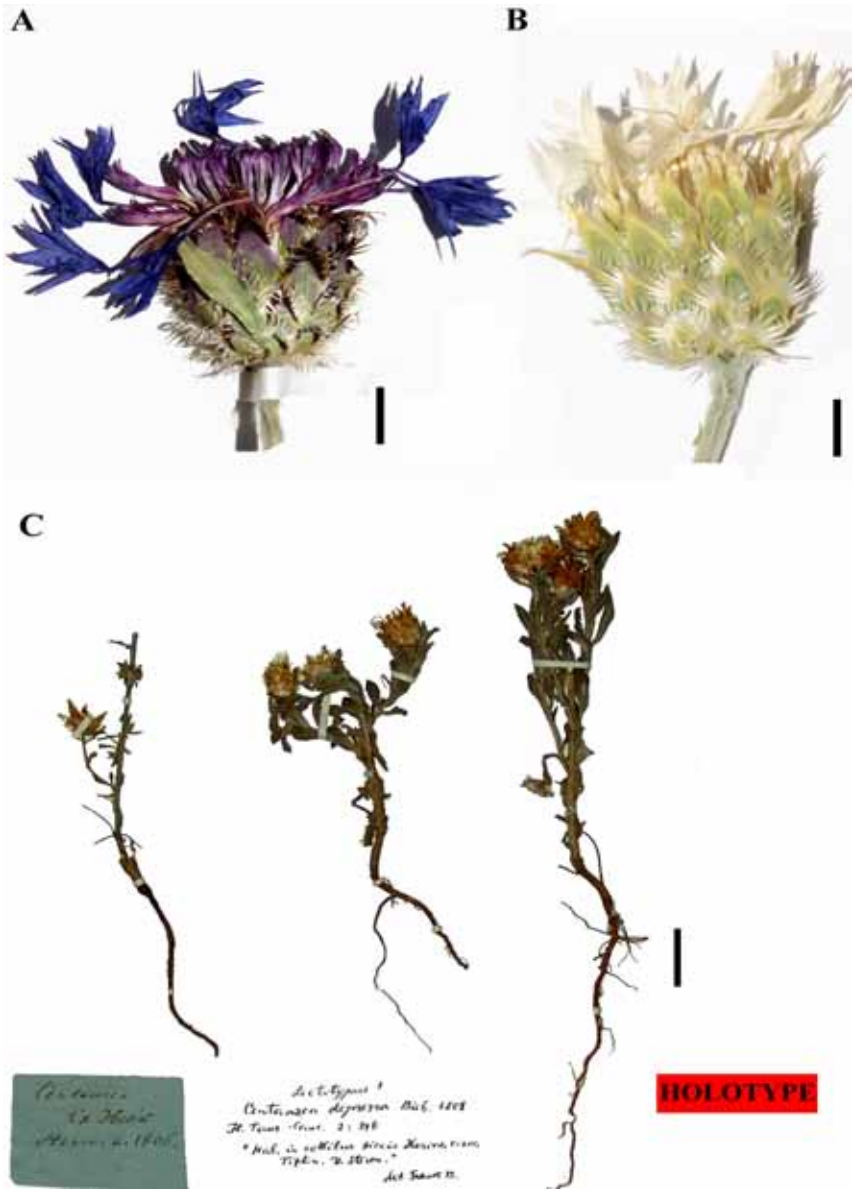

Figure 4. (**A**) close up of capitulum of *C. depressus*, (B) close up of capitulum of *C. persicus*, type of *Cyanus depressus* (M.Bieb.) Soják, provided by LE. Scale A and B = 5 mm, C = 2 cm.

Table 1. Morphological comparison of *Cyanus persicus* and *C. depressus*.

	C. persicus	*C. depressus*
Central floret color	white	violet
Peripheral floret color	white	blue
Anther tube color	white	deeply violet
Appendages color	white	brown or deeply brown
Achenes	glabrous	puberulous

4. *Key to the genus Cyanus in Iran*

1a - Annual…….2
1b - Perennial……..4
2a - Upper stem leaves linear or linear-filiform; involucre 5 – 10 mm wide; cilia 0.5 – 1 mm long; pappus 2 – 3 mm long…….*C. segetum*
2b - Upper stem leaves lanceolate-linear or oblong-linear; involucre (8–) 10 – 15 (–17) mm wide; cilia 1 – 2 (–3) mm long; pappus 5 – 8 mm long……3
3a - Peripheral floret blue; central floret violet; achenes puberulous……..*C. depressus*
3b - Peripheral floret white; central floret white; achenes glabrous……*C. persicus*
4a - Flowering central; stem erect……*C. triumfettii*
4b - Flowering lateral; stem ascending or ascending-arcuate to decumbent……5
5a - Median stem leaves pinnatifid or pinnatisect; involucre 12 – 15 mm wide..*C. elbrusensis*
5b - Median stem leaves entire or dentate or with few coarse teeth; involucre 15 – 20 mm wide.....*C. cheiranthifolius*

Acknowledgements

The great helps of Dr. Vitek, Dr. Wallnöfer, Dr. Till and Dr. Sida during our visit from Herbaria W, WU and PR in Vienna and Praha are much appreciated. We are kindly grateful to Dr. Zafer Kaya for his helps. And also we thank the director of the herbarium of Ferdowsi University of Mashhad for making the herbarium facilities available for our study for the processing and loan of herbarium specimens. The field work in Iran was supported by grants from the Bu-Ali Sina University.

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(Received for publication 18 April, 2012; The date of publication 15 December 2012)