

Cyanus Tabrizianus Ranjbar & Negaresh (Asteraceae), a New Species from Iran

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Cyanus tabrizianus Ranjbar & Negaresh (Asteraceae), a new species from Iran

Massoud Ranjbar, Kazem Negaresh & Roya Karamian

Abstract

RANJBAR, M., K. NEGARESH & R. KARAMIAN (2013). *Cyanus tabrizianus* Ranjbar & Negaresh (Asteraceae), a new species from Iran. *Candollea* 68: 187-192. In English, English and French abstracts.

Cyanus tabrizianus Ranjbar & Negaresh (Asteraceae), a new species from East Azerbaijan Province in NW Iran, is described and illustrated. The new species is closely and mainly related to *Cyanus cheiranthifolius* (Willd.) Soják, but differs from it by the habit, the stem leaves, the upper stem leaf apex, and the involucre.

Key-words

ASTERACEAE – *Centaurea* – *Cyanus* – Iran – Taxonomy

Résumé

RANJBAR, M., K. NEGARESH & R. KARAMIAN (2013). *Cyanus tabrizianus* Ranjbar & Negaresh (Asteraceae), une nouvelle espèce d'Iran. *Candollea* 68: 187-192. En anglais, résumés anglais et français.

Cyanus tabrizianus Ranjbar & Negaresh (Asteraceae), une nouvelle espèce de la Province Est de l'Azerbaïdjan dans le NO de l'Iran, est décrite et illustrée. La nouvelle espèce est proche principalement de *Cyanus cheiranthifolius* (Willd.) Soják, mais en diffère par le port, les feuilles de la tige, l'apex foliaire des feuilles du haut de la tige et les involucre.

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Introduction

Centaurea s.l. (*Asteraceae*) is one of the largest genera of the family. Depending on the classification used, the genus comprises between 400 and 700 species (BORISOVA, 1963; WAGENITZ, 1975, 1980; DOSTÁL, 1976; BREMER, 1994; HELLWIG, 2004; BANCHEVA & GREILHUBER, 2006). According to the revised system, *Centaurea* has been divided into four genera including *Centaurea* s.str., *Psephellus* Cass., *Cyanus* Mill. and *Rhaponticoides* Vaill. (WAGENITZ & HELLWIG, 2000; GREUTER, 2003a, 2003b; HELLWIG, 2004).

Cyanus includes ca. 25 species in the world (HELLWIG, 2004). In WAGENITZ (1980), *Centaurea* sect. *Cyanus* (Mill.) DC. is represented by five species in Iran, of which one, namely *C. elbrusensis* Boiss. & Buhse is endemic. Plants of the genus are annual and perennial herbs have blue or purplish blue florets (with only a few exceptions of cream or pale pink-flowered taxa), which are extremely unusual color for the subtribe *Centaureinae*. Nevertheless, the structure of phyllary is the most unique characteristic. They have pectinate-ciliate, spineless appendages that are decurrent nearly to the base of phyllaries (WAGENITZ & HELLWIG, 1996; GARCIA-JACAS & al., 2001; HELLWIG, 2004; SUSANNA & GARCIA-JACAS, 2007; BORŠI & al., 2011).

This article follows previous studies conducted on *Centaureinae* in Iran (RANJBAR & al., 2012a, 2012b, 2012c; RANJBAR & NEGARESH, 2012). During our field excursions in Iran, we collected some specimens belonging to the genus from NW Iran and then identified according to WAGENITZ (1980). The collected plants represent similarity with *Cyanus cheiranthifolius* (Willd.) Soják, however some important morphological differences allow us to treat them as a new distinctive species from Iran.

***Cyanus tabrizianus* Ranjbar & Negaresh, spec. nova** (Fig. 1).

Typus: IRAN. Prov. East Azerbaijan: Varzaghan to Tabriz, Galujeh village, 2050 m, 8.VI.2008, Ranjbar & Negaresh 21956 (holo-: BASU).

Affinis C. cheiranthifolius, sed folia basalia lineari et integra (nec lanceolata, integra vel lobis aut segmentis utrinque 1-2 (-3) provisa), folia caulina non decurrentia et integra (nec breviter decurrentia, integra vel dentibus paucis), involucrem cylindricum, cylindricum-cupuliforme, 13-18 × 10-20 mm (nec cupuliforme ad subglobosum, 18-25 × 15-25 mm), phylla exteriora laxe pubescentia (nec glabrescentia), margini scarioso 0.2-0.8 mm (nec 1-1.5 mm) lato differt.

Perennial plant, whole usually grayish-white, wiry appearance, 35-40 cm tall, root unknown, flowering stem terminal out of central of rosette and never arising at their base. *Stems* branched often from median to upper parts, sparingly branched

at the base, with 3-5 capitula. *Branches* up to 23 cm long, ± unequal in length, rigid, striate, ca. 3 mm in diam. at the base. *Stem and leaves* densely covered with appressed floccose-tomentose hairs, somewhat thickened at the base, usually not forming basal rosette at flowering. *Basal leaves* petiolate, linear, ca. 6 × 0.3 cm, acute at apex, entire. *Lower stem leaves* sessile, linear to narrowly linear, 6.5-11 × 0.3-0.45 cm, acuminate at apex, entire. *Median stem leaves* sessile, linear to narrowly linear, sometimes linear-lanceolate, 4-6 × 0.26-0.36 cm, acuminate at apex, entire. *Upper stem leaves* increasingly smaller, sessile, linear to linear-filiform, mucronate, sometimes squarrose at apex, entire. *Capitula* solitary on each branch, peduncles up to 11 cm long, sometimes with bracts similar to phyllaries. *Involucres* cylindrical, cylindrical-cupuliform, 13-18 × 10-20 mm. *Phyllaries* coriaceous, imbricate, green. *Outer phyllaries* triangular, 1-2.5 × 1-2 mm, loosely covered with pubescent hairs. *Median phyllaries* lanceolate, 6.2-8 × 2.8-3.5 mm, glabrous, sometimes sparsely covered with pubescent hairs. *Inner phyllaries* lanceolate-oblong, narrowly oblong, 11-13 × 2-3 mm, glabrous, margins membranous. *Appendages* totally concealing basal to median parts of phyllaries, triangular, moderately imbricate, strongly decurrent, blackish, scarious margin (without cilia) 0.2-0.8 mm wide; *cilia* numerous, 4-18 on each side, 0.5-4 mm long, upper part white straw, base brownish, narrowly triangular, never with a spine, slightly scabrous. *Flowers* white, in dry state yellow; central florets hermaphroditic, ca. 16 mm long, corolla tube ca. 6.5 mm long, anther tube pink, sometimes brownish, stigma bifid, covered with pubescent hairs, 20-25 central florets in each capitulum; peripheral florets without staminodes, strongly radiant, ca. 29 mm long, corolla tube ca. 16 mm long, 5-lobed, lobes linear-lanceolate, ca. 10 mm long, 8-12 peripheral florets in each capitulum. *Achenes* oblong-elliptical or oblong, sometimes lanceolate-oblong, ± 5.5 mm long, 2-2.5 mm wide, solar bronze to brownish, covered with appressed hairs, hilum lateral, hairy, yellow, ca. 1.8 mm long, apically rounded. *Pappus* persistent, barbelate, brown, 2-2.3 mm long, innermost series not longer than others.

Etymology. – The specific epithet refers to Tabriz city, where the new species is found.

Phenology. – Flowering in May to June; fruit ripening from June to July.

Taxonomic and distribution remarks. – *Cyanus tabrizianus* is a rare endemic to NW Iran and known only from the meadows in mid-montane zone around Galujeh in East Azerbaijan Province, NW Iran (Fig. 2). This region has special position in Azerbaijan and its most species are endemic (RANJBAR & al., 2004). *Cyanus tabrizianus* can be expected grow on rocky, at 2000-2500 m elevation. The species is similar to *C. cheiranthifolius* in the color of phyllaries and appendages and also size of achenes. However, as shown in Table 1, *C. tabrizianus*

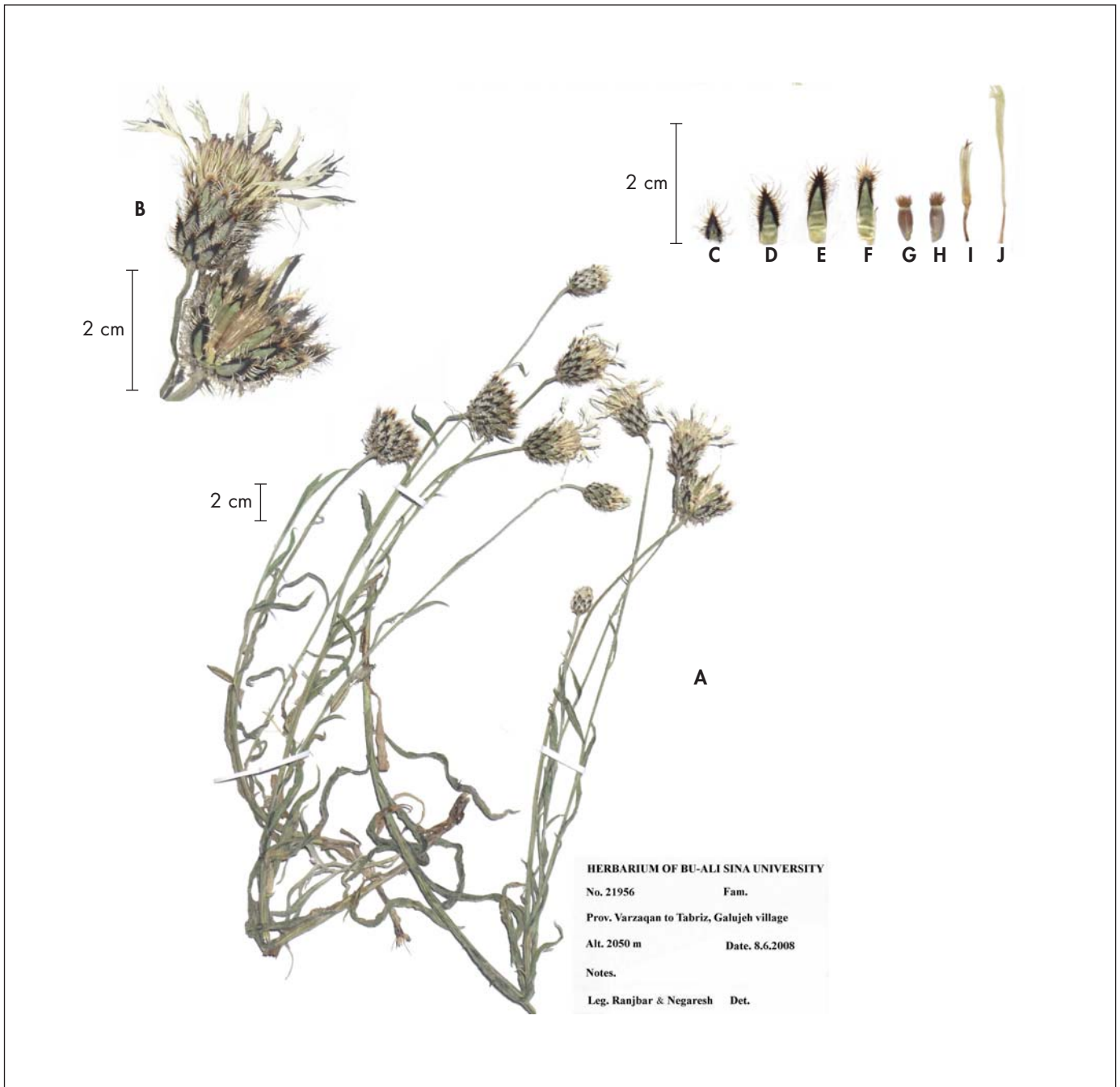


Fig. 1. – *Cyanus tabrizianus* Ranjbar & Negaresh. **A.** Habit; **B.** Capitula; **C.** Outer phyllary; **D-E.** Median phyllaries; **F.** Inner phyllary; **G-H.** Achenes with pappus; **I.** Central floret; **J.** Peripheral floret.

[Ranjbar & Negaresh 29156, BASU] [© Bu-Ali Sina University. Reproduced with permission]

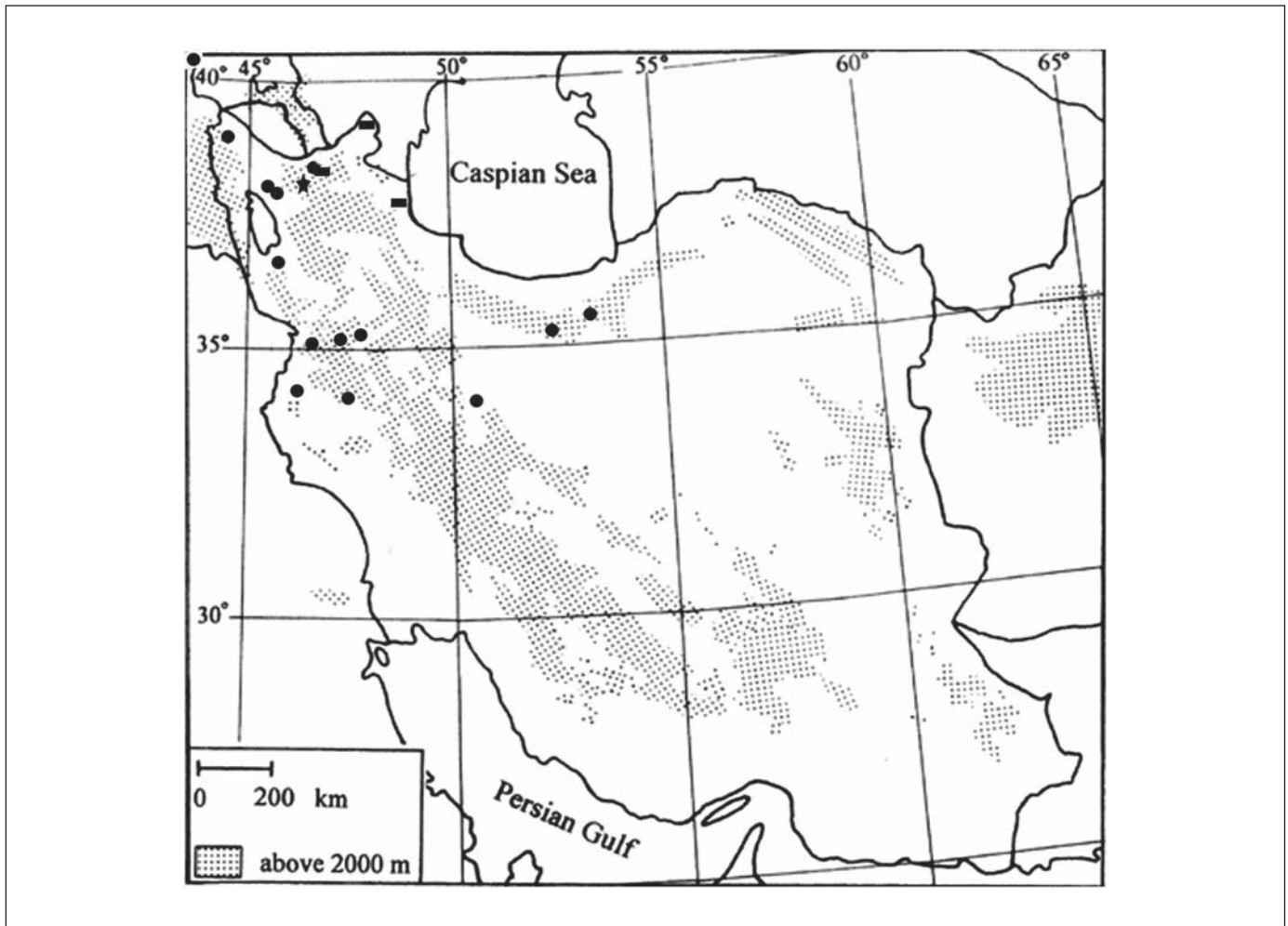


Fig. 2. – Distribution of *Cyanus tabrizianus* Ranjbar & Negaresh (★), *C. cheiranthifolius* (Willd.) Soják (■) and *C. triumfetti* (All.) Á. Löve & D. Löve (●).

differs from other related species, f.i. from *C. cheiranthifolius* by having linear leaves. In addition, the new species is like to *C. triumfetti* (All.) Á. Löve & D. Löve especially because of similarities in the shape and color of phyllaries, shape of achene and pappus, but differs from it by having white flowers. The new species is also related to *C. willdenowii* (Czerep.) Soják, endemic to Caucasus (BORISOVA, 1963), in some characters like the shape, color and width of appendages and achene. However, it differs well by having small capitule and white flowers. *Cyanus tabrizianus* is also related to *C. nigri-fimbrius* (K. Koch) Soják, native to Asia minor (Caucasus and NE Turkey) especially because of the leaves indumentum, shape and color of phyllaries and appendages and size of achene. However, it differs well by having linear leaves and white flowers.

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Table 1. – Morphological comparison of *Cyanus tabrizianus* Ranjbar & Negaresh with *C. cheiranthifolius* (Willd.) Soják, *C. triumfetti* (All.) Á. Löve, *C. wilddenowii* (Czerep.) Soják and *C. nigrifimbrius* (K. Koch) Soják.

	<i>C. tabrizianus</i>	<i>C. cheiranthifolius</i>	<i>C. triumfetti</i>	<i>C. wilddenowii</i>	<i>C. nigrifimbrius</i>
Stem	branched often from median to upper parts, sparingly branched at the base	simple or with few short branches in upper part, decumbent to ascending	simple or with few branches rarely ascending	erect simple, ascending-arcuate, sometimes erect	usually simple sometimes with few short branches in upper part, erect or ascending
Leaves indumentum	floccose-tomentose	floccose to villose-tomentose	tomentose sometimes glabrescent	arachnoid-tomentose	floccose-tomentose
Stem leaves	not decurrent, entire	narrowly decurrent, entire or with few coarse teeth	narrowly decurrent, entire or rarely pinnatifid	narrowly decurrent, sometimes broadly decurrent, entire to deeply sinuate or pinnatifid	broadly decurrent sometimes forming 3-6 mm wide wings at the place of attachment of lamina, entire
Basal leaves	linear and entire	lanceolate, entire or with 1-2(-3) pairs of lobes or with coarse teeth	broadly lanceolate to linear-lanceolate, entire or rarely with coarse teeth	lanceolate, oblong-lanceolate, entire to deeply sinuate or pinnatifid	oblong-lanceolate and entire
Upper stem leaves	linear to linear-filiform	lanceolate to linear-lanceolate	broadly lanceolate to linear-lanceolate	lanceolate-oblong to linear	lanceolate
Upper stem leaves apex	mucronate, sometimes squarrose	short acuminate to subobtuse	obtuse or acute	short acuminate to obtuse	acuminate, sometimes short cuspidate
Involucres [mm]	cylindrical, cylindrical-cupuliform, 13-18 × 10-20	cupuliform to subglobose, 18-25 × 15-25	cupuliform, 15-22 × (13-)15-20	ovoid or globose-ovoid, 18-22[25] × 12-15(-18)	cup-shaped or ovate-oblong, 17-22 × 13-17
Outer phyllaries indumentum	loosely pubescent	glabrescent	glabrescent	glabrescent	subglabrescent
Phyllaries appendage: width of scarious margin without cilia [mm]	0.2-0.8	1-1.5	0.5-1.5	–	1-1.5
Peripheral floret color and length [mm]	white, ca. 2.9	white or purple-violet, 30-40(-45)	blue, rarely pink or violet-purple, 35-40	purple or pinkish-purple, 28-37(-40)	blue, (30-)35-40

References

- BANCHEVA, S. & J. GREILHUBER (2006). Genome size in Bulgarian *Centaurea* s.l. (Asteraceae). *Pl. Syst. Evol.* 257: 95-117.
- BORISOVA, A. G. (1963). *Centaurea* L. In: BOBROV, E. G. & S. K. CZEREPANOV (ed.), *Fl. CCCP* 28: 468-729. Izdatel'stvo Akademii Nauk USSR, Moskva Leningrad.
- BORŠI, 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.
- BREMER, K. (1994). *Asteraceae: Cladistics and Classification*. Timber Press.
- DOSTÁL, J. (1976). *Centaurea* L. In: TUTIN, T. G., V. H. HEYWOOD, S. M. WALTERS & D. A. WEBB (ed.), *Fl. Eur.* 4: 254-301. Cambridge University Press.
- GARCIA-JACAS, N., A. SUSANNA, T. GARNATJE & 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. (2003a). The Euro+Med treatment of *Cardueae* (Compositae) - generic concepts and required new names. *Willdenowia* 33: 49-61.
- GREUTER, W. (2003b). The Euro+Med treatment *Senecioneae* and the minor *Compositae* tribes - generic concepts and required new names, with an addendum to *Cardueae*. *Willdenowia* 33: 245-250.
- HELLWIG, H. (2004). *Centaureinae* (Asteraceae) in the Mediterranean - History of ecogeographical radiation. *Pl. Syst. Evol.* 246: 137-162.
- RANJBAR, M., H. AMIRABADIZADEH, R. KARAMIAN & M. A. GHAHREMANI (2004). Notes on *Onobrychis* sect. *Heliobrychis* (Fabaceae) in Iran. *Willdenowia* 34: 187-190.
- RANJBAR, M., K. NEGARESH (2012). A note on the genus *Cyanus* (Asteraceae, *Cardueae*) from Iran. *Biol. Diversity & Conservation* 5: 18-23.
- RANJBAR, M., K. NEGARESH & R. KARAMIAN (2012a). Taxonomic notes on the *Klasea calcarea* group (Asteraceae) from Iran. *Feddes Repert.* 122: 465-471.
- RANJBAR, M., NEGARESH, K. & R. KARAMIAN (2012b). *Centaurea regia* subsp. *javanroudense*, a new subspecies of *Centaurea* sect. *Cynaroides* (Asteraceae), from flora of Iran. *Biol. Diversity & Conservation* 5: 5-10.
- RANJBAR, M., K. NEGARESH, R. KARAMIAN & M. R. JOHARCHI (2012c). *Klasea nana* (Asteraceae), a new species from NE Iran. *Ann. Bot. Fenn.* 49: 402-406.
- SUSANNA, A. & N. GARCIA-JACAS (2007). Tribe *Cardueae*. In: KANDEREIT, J. W. & C. JEFFERY (ed.), *The families and genera of vascular plants* 8: 123-146. Springer Verlag, Berlin.
- WAGENITZ, G. (1975). *Centaurea* L. In: DAVIS, P. H. (ed.), *Fl. Turkey & E. Aegean Island* 5: 465-585. Edinburgh University Press.
- WAGENITZ, G. (1980). *Centaurea* L. In: RECHINGER, K. H. (ed.), *Fl. Iran.* 139b: 313-420. Akademische Druk, Verlagsanstalt, Graz.
- 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, Proceedings of the International Compositae Conference*: 491-510. Royal Botanic Gardens, Kew.
- WAGENITZ, G. & F. H. HELLWIG (2000). The genus *Psephellus* Cass. (Composite, *Cardueae*) revisited with a broadened concept. *Willdenowia* 30: 29-44.