

TWO NEW SPECIES OF COUSINIA CASS. SECT. PUGIONIFERAE BUNGE (ASTERACEAE, CARDUEAE), FROM EAST AND SOUTHEAST OF IRAN

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Cousinia ghahremanii and *C. longibracteata* are described and illustrated as new species from southeast and east of Iran. These species belong to the sect. *Pugioniferae* Bunge based on the habit, shape of capitula and bracts, corolla color, decurrent leaves and subcorymbose synflorescence. The related species to *C. ghahremanii* is *C. calcitrapa* var. *calcitrapa* which distinguishing characters of the two species are: number of flowers and bracts, size of capitula, length of corolla and shape of basal leaves. *C. longibracteata* based on morphological characters and geographical distribution is distinct from the other species of sect. *Pugioniferae*, but the closest species to it is *C. macroptera* which distinguish it by long cylindrical bracts, length of corolla, number of flowers and bracts.

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دو گونه جدید از جنس *Cousinia* بخش *Pugioniferae* (خانواده کاسنی، طایفه سیناره) از شرق و جنوب شرق ایران فریده عطار، دانشیار دانشکده زیست شناسی دانشگاه تهران.

سید منصور میرتاج الدینی، مربی گروه زیست شناسی دانشگاه شهید باهنر کرمان.

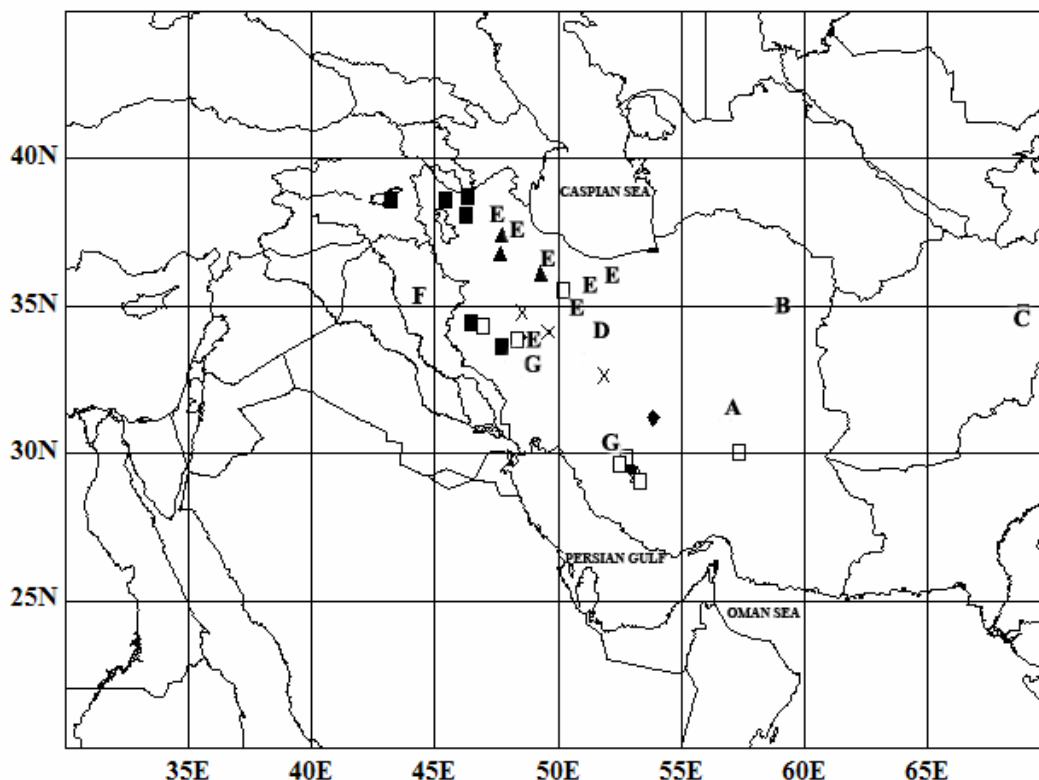
دو گونه جدید از بخش *Pugioniferae* به نامهای *Cousinia ghahremanii* و *C. longibracteata* به عنوان گونه های جدید از جنوب شرق و شرق ایران شرح داده شده، و تصاویر آنها نیز ارائه می شود. این دو گونه بر اساس سیمای رویشی، شکل کپه و برگکها، رنگ گلها، برگهای کشیده بر ساقه و مجموعه گل آذینی تقریباً دیهیمی در بخش *Pugioniferae* قرار می گیرند. نزدیک ترین گونه به گونه *C. ghahremanii* گونه *calcitrapa* var. *calcitrapa* تشخیص داده شده است، صفات جدا کننده دو گونه تعداد گلها و برگکها، اندازه کپه، طول جام و شکل برگهای قاعده ای است. گونه *C. longibracteata* بر اساس صفات ریخت شناختی و انتشار جغرافیائی گونه ای تقریباً جدا از سایر گونه هاست ولی نزدیکترین گونه نسبت به سایر گونه ها، گونه *C. macroptera* بوده، مهمترین صفات جدا کننده آنها طول برگک های استوانه ای آن، طول جام، تعداد گلها و برگکهاست.

Introduction

Cousinia Cass. is the largest genus of Asteraceae in Iran. This genus contains about 250 species (Attar & Ghahreman, 2006; Djavadi & Attar, 2006) and 43 sections in Iran (Rechinger, 1972 & 1979). *Cousinia* Sect. *Pugioniferae* Bunge includes 15 taxa (including the new species) which 13 species occur in Iran. Among Iranian species 12 taxa are endemics.

General distribution of the sect. *Pugioniferae* is Iran, Turkey, Transcaucasia, Syria, Iraq and Afghanistan. Its diversity center is northwest and west of Iran (Map 1). The two new species are cited at two locations about 300 km far from each other, *C. ghahremanii* at southeast and *C. longibracteata* at east of Iran.

The general characters of sect. *Pugioniferae* according to Rechinger (1972) are: biennial or monocarpic perennials, leaves herbaceous-coriaceous, stems



Map. 1. Distribution map of species of *Cousinia* sect. *Pugioniferae* in the world: ■: *C. macroptera*; ▲: *C. chrysacantha*; △: *C. contumax*; ◆: *C. platyptera*; ◇: *C. sakawensis*; □: *C. calcitrapa* var. *calcitrapa*; ×: *C. calcitrapa* var. *interrupta*; A: *C. ghahremanii*; B: *C. longibracteata*; C: *C. tirinensis*; D: *C. pugionifera*; E: *C. belangeri*; F: *C. wesheni*; G: *C. gracilis*.

winged (continuous or interrupted), synflorescence corymbiform, flowers 8-50, bracts 7-35, spreading, flat or three-angled with sharp acumen, capitula often caducous, corolla red or purple, anther tube red or purple and glabrous.

For this study the material of TUH, IRAN Herbaria and type photos of Kew Herbarium were studied.

On the basis of studies on mentioned specimens, number of flowers and bracts exceeded more than 50 and 35 respectively. For example *Cousinia belangeri* has 55-60 flowers and ca. 40-50 bracts. Although bristles in sect. *Pugioniferae* are smooth, but in *C. longibracteata* are scabrous.

Iranian species of sect. *Pugioniferae* are divided into two groups: few-flowered including *Cousinia incompta* DC., *C. contumax* C. Winkl. & Bornm., *C. sakawensis* Boiss. & Hausskn. and multiflowered including: *C. belangeri* DC., *C. macroptera* C. A. Mey., *C. gracilis* Boiss., *C. chrysacantha* Jaub. & Spach, *C. platyptera* Bornm. & Winkl., *C. calcitrapa* Boiss. and *C. washeni* Post (with unwinged stems known from Iraq), and the

two new species *C. ghahremanii* Mirtadzadini & Attar and *C. longibracteata* Mirtadzadini & Attar.

Cousin ghahremanii Mirtadzadini & Attar, **sp. nov.** (Fig. 1).

Typus: Iran, Kerman, Ravar to Kuhbanan, Rudkor valley, 2700 m, June 17th 2004, Mirtadzadini, 35177 (holotypus TUH).

Perennis, monocarpica, 40-70 cm alta, arachnoideotomentosa, cinereo-viridia, collo residuis petiolorum comoso incrassato. Caulis solitarius, medio ramosus. Folia herbacea discoloria, subtus dense arachnoideotomentosa, cinereo-albida, supra laxe arachnoidea, cinereo-viridia, nervatio pinnata; costa mediana supra leviter purpurea; folia basalia rosularia, simplicia; petiolis c. 1.5 cm longis; lamina obovata, 6-8 cm longa, 4-5 cm lata, magnopere dentata; dentes magni in spinas terminales 4-5 mm longas excurrentes; folia caulina inferiora elliptica, dentata, sessilia, acuta; dentes in spinas terminales excurrentes; folia mediana lanceolata vel oblongo-elliptica, continue decurrentia,

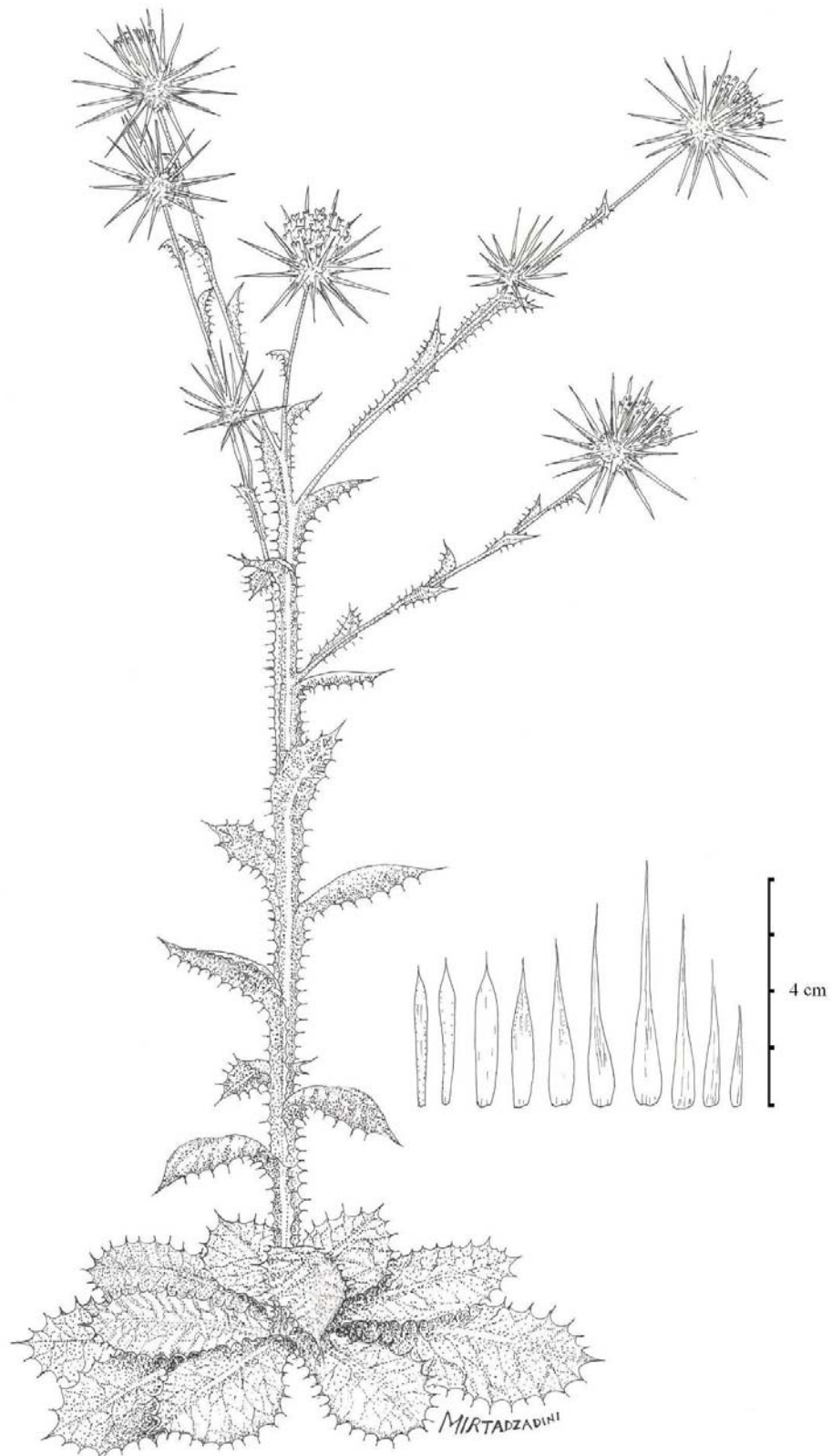


Fig. 1. *Cousinia ghahremanii*, habit ($\times 0.4$) & bracts of capitula. Drawn from the holotype.

omnia in alas 1.5-4 mm latas decurrentia. Folia summa minora, incomplete decurrentia, capitulo remoto. Capitula singularia, dense arachnoidea, involucri spinis inclusis 6-7 cm, exclusis spinis 1.5 cm diametro; phylla c. 80, margine integra; exteriora 7-12 mm longa, apicem versus attenuata, acuta; intermedia triquetra, longe acuminata, 27-40 mm longa, in spinas sensim attenuatas, basibus late ovatis, supra basibus leviter constrictis; interiora erecta, lata, membranacea, 22-25 mm longa, 3.5-4 mm lata, marginibus integris, abrupte contracta in rostra longas acuminatas abeuntibus, margine superiore anguste bruneo; intima recta, linearia, membranacea. Receptaculi setae laeves. Corolla rosea, c. 110, 18-20 mm longa; tubus limbo aequilongus vel brevior. Tubi antherarum rosei. Achaenia matura ignota.

Monocarpic perennial, 40-70 cm high, arachnoid-tomentose, grayish-green; Caudex thickened, often with dried petioles of former leaves. Stem solitary, more or less divaricately branched from the middle. Leaves herbaceous, discolored, on the lower surface grey-white, densely arachnoid-tomentose, upper surface grayish-green, loosely arachnoid, nervation pinnate; midrib slightly purple on upper surface; basal leaves rosette, simple, obovate, 6-8 cm long 4-5 cm wide, with c. 1.5 cm long petioles, largely dentate; large teeth terminating to a 1-4 mm long spine; lower stem leaves elliptic, dentate, sessile, acute; teeth terminating to a 6 mm long spine; median leaves lanceolate or oblong-elliptic, continuously decurrent, forming 1.5-4 mm wide wings; uppermost leaves smaller, forming interrupted wings, remote. Capitula single, in nearly corymbose synflorescence, densely arachnoid; involucre including spines 6-7 cm in diam. without spines 1.5 cm; bracts c. 80; outers 7-12 mm long, gradually attenuate toward the apex, acute; median bracts three-angled, 27-40 mm long, spreading, long acuminate, broadly ovate at the base, slightly constricted above the base; inner bracts erect, broad, membranous, 22-25 mm long and 3.5-4 mm wide, margin entire, abruptly constricted into a long beak above, with narrow brown margin above; innermost bracts erect, linear, membranous. Receptacle bristles smooth. Corolla pink, c. 110, 18-20 mm long; tube as long as or shorter than the limb; lobes 2-2.5 mm long, anther tube pink. Matured achenes not seen.

Ethymology.-The specific epithet refers to the name of Dr. Ahmad Ghahreman, the late Professor of Botany at the University of Tehran.

Habitat. Rocky slopes of high mountains, in the steppe of *Artemisia aucheri*.

Other specimens seen. Iran, Kerman: east Zarand, Hotkan, 2750 m, 9 August 2002, Mirtadzadini, 35179-

TUH; West Ravar, Feizabad fall, 2900 m, April 21 2004, Mirtadzadini, 35178-TUH.

The related species to *C. ghahremanii* is *C. calcitrapa* Boiss. var. *calcitrapa* which differs from it by the following characters: flowers 110 (not ca. 25), bracts 80 (not 30-35), corolla 18-20 mm (not 7-9 mm), tube equaling or slightly shorter than the limb (not tube shorter than the limb).

***Cousinia longibracteata* Attar & Mirtadzadini, sp. nov. (Fig. 2).**

Typus. Iran: Khorasan: between Qayen and Gonabad, Ghahreman & Attar, 5.1999, (holotypus 21764-TUH). Biennis vel perennis monocarpica, 80 cm alta, Caulis erectus, robustus, longitudine striatus, araneosus, late alatus, aliis cuneatis usque ad 0.5-2 cm latis, dentatis, spinosis, spinis usque ad 5 mm longis. Folia complete decurrentes, discoloria, indumento canescento-araneoso, subtus viridia, supra minute araneosa; basalia rosularia, elliptica vel oblonga, lobato-sinuata, 16x6-7 cm, rotundato-apiculata, attenuata; nervatura prominente pinnato-reticulata. Capitula singularia, ± 80-flora, spinis inclusis 4.5-6 cm diam., floribus inclusis 2.5 cm longis; involucre ovatum, absque spinis 1.5 cm diam., constrictum; phylla 40-50, exappendiculata, basi ovata, valde appressa; appendices basi ovatae, 3.5 (in phylla exteriora) - 5 mm (in phylla intermedia) latae, marginibus integris; appendices exteriores reflexae, intermediae validae, in spinam terminalem patulam usque ad 2-3 mm longam edentes; phylla interiora recta, lanceolata, acuminata; Phylla intima recta. Receptaculi setae scabrae. Corolla rosea, 19-21 mm longa, tubo 10-11, limbo 9-10, laciniis 4-5 mm longis. Antherarum tubi glabri, concolor. Achaenia 3.5x1.6 mm, obovata, griseo-brunescentia, costata, superne subindistincte denticulata.

Biennial or perennial monocarpic, up to 80 cm high, arachnoid. Stem erect, robust, longitudinally striate, arachnoid, with few divaricate branches, especially above the middle, completely winged; wings 0.5-2 cm broad, dentate at the margin, each tooth terminating to a 1-6 mm long spine; lateral peduncles longer than the centrals. Leaves discolored, densely canescent-arachnoid, in lower surface green, finely arachnoid above; basal leaves rosette, long elliptic to oblong lobed-sinuate, 16x6-7 cm, rounded at the tip, apiculate; midrib prominent in lower surface, pinnate-reticulate; cauline leaves decurrent, attenuate toward the base, below each branch interrupted, reduced to the apex, remote. Capitula single, ± 80-flowered, including spines 4.5-6 cm in diam., 2.5 cm long (including flowers); involucre ovate, excluding spines 1.5 cm in diam., constricted above; bracts 40-45,



Fig. 2. *Cousinia longibracteata*, habit ($\times 0.65$), bracts and achene. Drawn from the holotype.



Fig. 2. Continued.

exappendiculate, appressed in basal part, free in upper part, hardened at the base, smooth at the margin; basal part of outer bracts 3.5 mm broad, attenuate toward the apex into three-angled 7 mm long spine, spreading, sometimes reflexed; intermediate bracts 5 mm broad at base, terminating to a 2-3 cm long spreading spine; inner bracts erect, lanceolate, acuminate; innermost bracts erect, straight, included. Receptacle bristles

scabrous. Corolla pink, 19-21 mm long, tube 10-11, limb 9-10, lobes 2-3 mm long, anther tube concolored, glabrous. Achenes 3.5x1.6 mm, obovate, grayish brown, longitudinally striate, obtusely denticulate above.

Other specimen. Khorasan, Qayen, 12 km Haji-abad to Ahangaran, 29.5.2007, Eskandari & Torabi 11468-IRAN.

Habitat. Desertic regions.

Although *C. longibracteata* from phytogeographical point of view and morphological aspects is quite different from the other species of the section, its closest relative may be *C. macroptera*. *C. longibracteata*, is distributed in E Iran (Province Khorasan), but *C. macroptera* occurs in NW Iran (Province Azerbaijan).

Cousinia longibracteata is distinguished from *C. macroptera* by some characters: flowers 80 (not 40-50), bracts 40-50 (not 25-40), capitula 4.5-6 cm in diam. (not 1-4 cm in diam.), plant 80 cm or more (not up to 45 cm).

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