

Notes on *Silene chustupica*, a new record and occurrence of *S. dianthoides* in Iran replacing with *S. marcowiczii*

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Abstract

The genus *Silene*, with more than 100 species in Iran is an important genus of Iranian flora. According to available data on the northwestern parts of Iran, including three provinces of Ardabil, East and West Azarbaijan are considered as a major diversity center of perennial species of the genus *Silene* in Iran. In the course of a revision of *Silene* in this area, some interesting specimens were collected which are new records from Iran. In this paper, occurrence of *Silene dianthoides* (sect. *Caespitosae*), and *S. chustupica* (sect. *Auriculatae*) are reported. The name *S. dianthoides* is used for previous records of *S. marcowiczii* which is more likely conspecific. Both species are growing in alpine zone. The previously evaluated threatened status of *S. chustupica* as critically endangered according to IUCN red list categories is discussed here. The taxonomical descriptions, geographical distribution and the ecology of the new records are provided and their photographs are also presented.

Keywords: Alpine, IUCN red list, sect. *Auriculatae*, sect. *Caespitosae*

یادداشتی بر *Silene chustupica*، گزارش جدید و جایگزینی *S. marcowiczii* با *S. dianthoides* در ایران

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خلاصه

جنس *Silene* (*Caryophyllaceae*)، با بیش از ۱۰۰ گونه، یکی از جنس‌های بزرگ فلور ایران محسوب می‌شود. مطابق اطلاعات موجود، شمال غرب ایران؛ استان‌های اردبیل، آذربایجان شرقی و غربی، از مراکز مهم تنوع گونه‌های چندساله این جنس در ایران محسوب می‌شوند. طی بازنگری گونه‌های این جنس در این منطقه، نمونه‌های جالبی جمع‌آوری شدند که گزارش‌های جدیدی برای فلور ایران هستند. در این مقاله *Silene dianthoides* و *S. chustupica* به ترتیب از بخش‌های *Caespitosae* و *Auriculatae* به عنوان گزارش جایگزین *S. marcowiczii* و دومی به عنوان گزارش جدید برای فلور ایران معرفی می‌شود. این گونه‌ها گیاهانی چندساله و پشته‌ای بوده و در نواحی کوهسری می‌رویند. موقعیت گونه *S. chustupica* در طبقه‌بندی لیست سرخ IUCN که این گونه را به شدت در خطر انقراض معرفی کرده، مورد بحث قرار می‌گیرد. شرح گیاه‌شناسی، پراکنش جغرافیایی، اکولوژی و تصاویر هر یک از گونه‌ها نیز ارائه شده است.

واژه‌های کلیدی: کوهسری، لیست سرخ IUCN، sect. *Caespitosae*، sect. *Auriculatae*

Introduction

Silene (*Caryophyllaceae*) in Iran is represented by ca. 110 species growing mainly in the mountainous areas (Melzheimer 1988, Gholipour & Sheidai 2009, Gholipour *et al.* 2010, Nejati Edalatian *et al.* 2011, Gholipour & Parsa Khanghah 2015). About half of the Iranian *Silene* species occur in northwestern provinces (Ardabil, East and West Azarbaijan); which are considered as a main diversity center of the genus in Iran. Based on about one decade taxonomic study of the genus in Iran, we expect occurrence of several unknown species in this area of the country. *S. mishudaghensis* Gholipour A. and Parsa Khanghah was recently described from this area (Gholipour & Parsa Khanghah 2015).

During some field works in the alpine zone of West Azarbaijan province in 2011–15, some interesting specimens were collected by the authors. Our efforts to identify these specimens using Flora Iranica (Melzheimer 1988) and checking existing material in Iranian herbaria was unsuccessful. *Silene dianthoides* Pers. and *S. chustupica* Nerserian were, therefore, identified using Flora of Turkey (Coode & Cullen 1966), Flora of the USSR (Shishkin 1936) and consulting with Anush Nersesian (Nersesian 2007) in addition to checking type specimen in the herbarium of Berlin Botanical Garden and Botanical Museum (B).

Materials and Methods

Materials used in this study, have been collected during field works from 2011 to 2015 in different parts of the northwestern Iran and herbarium visits in B, G, IRAN and W. The specimens are preserved in “IRAN” and Sari Payame Noor University (“SPNH”) herbaria.

Results

1. *Silene dianthoides* Pers. Syn. Pl. 1: 500. 1805 (Figs 1 & 2) (sect. *Caespitosae* Chowdhuri)
Syn.: *S. froedinii* Rech. f. in Bot. Jahrb.75: 350 (1951); *S. marcowiczii* Schischk., Bull. Mus. Géorgie 1: 11 (1920–22).

Perennial herb, Caespitose-pulvinate; stems erect or diffused, 2.5–8.5 cm long, puberulent, sometimes

viscid above. Basal leaves linear to linear-oblongate, pubescent, 10–13 × 1.5–2 mm. Cauline leaves linear-lanceolate, 5–10 × 0.3–1 mm, 1–2 pairs, shorter than internodes. Inflorescence cymose-panicle, branches terminating in single flower or subcapitate dichasia; bracts subulate-lanceolate; scarious at margin. Calyx 4–6 mm long, campanulate or obconical, glabrous or puberulent, with 10 parallel purplish veins; teeth rounded, scarious in the margin. Petals pink; claw 3–3.5 mm long; limb 1.5–2.5 mm long up to 1 mm cleft; coronal scales absent. Stamens 10, alternate and epipetalous filament 5 mm long. Anthophore 1–1.5 mm, glabrous. Capsule ovoid, 6 × 3 mm, included in the calyx. Seed asymmetrical reniform, brownish, 1–1.2 × 0.5–0.8 mm; flat in lateral and concave in dorsal face.

- Geographical distribution, ecology and taxonomy

Based on available information known from NW Iran, Armenia and Turkey, *Silene dianthoides* is an Irano-Turanian element (Fig. 5). This species occurs in alpine grassland on screes in elevation from 2600 to 3200 m (Fig. 1B). The flowering time of the species is from June to August.

Melzheimer (1988) in Flora Iranica, reported *Silene marcowiczii* Schischk. based on a specimen of Rechinger 44020-W from Ghoghe dagh mountain of Iran. Checking this specimen, confirms its name as *S. dianthoides*. As the author of Flora Iranica already explained and also based on the Caucasian Flora Conspectus (Lazkov 2012), *S. marcowiczii* Schischk. cannot be accepted as an independent species.

Specimens examined: Iran: West Azarbaijan, 5 km from Piranshahr to Naghadeh, Silveh, Gerdesor, Chighi Darreh mountain, 3260 m., 24 Jul. 2011, Gholipour, SPNH-4927; Piranshahr, Silveh, Zivke, Chighi Darreh mountain, 3130–3570 m., 4 Jul. 2012, Amini Rad & Torabi, IRAN-70676; Khoy, Firoragh road, Pasak, Hesar, Avrin mountain, 3143 m., 2 Jul. 2013, Gholipour & Amini Rad, SPNH-2483; Khoy, Pasak, Avrin mountain, 3060–3636 m., 2 Jul. 2013, Amini Rad & Torabi, IRAN-69130; Zur abad, Dibak, Mamish Khan mountain, 2800–3100 m., 9 Jul. 2015, Amini Rad &

Bahrami-Shad, IRAN-69521; Chaldoran, Saadal, Chokhor Kandi, 2900–3030 m, Amini Rad & Bahrami-Shad, IRAN-69522; Mako, between Sari-chaman and Guerkhalar, 2200–2600 m, Terme, E-14388 [under *Silene marschallii* C.A. Mey subsp. *sahendica* (Boiss. & Buhse) Melzh.]; West Bazargan, Gogeh Dag mountain, 2100–2350 m., Rechinger, W-44020 (under *S. marcowiczii*). Turkey: Van district, Geva, Artos Dag, 2600 m, Davis, G-22834.

2. *Silene chustupica* Nersesian, Fl. Rastitel'nost' Rastitel'nye Resursy Armen. 16: 104, 2007 (Figs 3 & 4)

Perennial herb, lax caespitose, gynodioecious; stems erect or ascending, 9–15 cm long, cover with simple hairs in the lower parts and dense glandular hairs in the upper parts. Basal leaves linear rarely lanceolate, 15–30 × 0.5–1 mm; acute. Cauline leaves 1–2 pairs, linear-lanceolate, sessile, 12–15 × 1.5–1.7 mm, acute. Inflorescence solitary rarely simple dichasia, pedicels 3–25 mm long, covered with glandular hairs. Bract linear-lanceolate; scarious in the margin. Calyx 7–19 mm long, cylindric-clavate in flowering phase and inflated in fruiting, with reticulate nerves; teeth broadly ovate-deltoid, 1.5 mm long; membranous and ciliate at margin. Petals pink or purple; claw 10–13 mm long with distinct auricles; limb 5.5–6.5 mm long up to 2.5–3 mm divided; coronal scale 1–1.5 mm long, oblong. Alternate stamens 6–9 mm long, epipetalous stamens 5–8 mm long. Capsule ovoid, 9–11 × 3.5–4.5 mm. Anthophore 5–9 mm

long, pubescent. Seeds reniform, brown, 1.7 × 1.2 mm, margin of testa cells denticulate, lateral surface flat.

- Geographical distribution and ecology

Silene dianthoides is an Irano-Turanian element and based on available information, it is known from NW Iran, Armenia and Turkey (Fig. 5). This species occurs in alpine grassland on screes in elevation from 2600 to 3200 m (Fig. 1B). The flowering time of the species is from June to August.

The species is listed as critically endangered in view of its restricted distribution in Armenia (Nersesian 2014). We collected the specimens from three localities in a restricted area in Avrin and Shahidan mountains of West Azarbaijan province (Fig. 5). Therefore, we believe that, its threatened status should be downgraded with additional studies. *Silene chustupica* grows on limestone cliffs in the alpine zone from 3050 to 3600 m (Fig. 3B). The flowering time of the species is from June to July.

Specimens examined: Iran: West Azarbaijan, Khoy, Ghotor, Habash, Sharifabad, Avrin mountain, 3160 m., 19 Jul. 2011, Gholipour SPNH-4928; Khoy, Firoragh road, Pasak, Hesar, Avrin mountain, 3368 m., 2 Jul. 2013, Gholipour & Amini Rad, SPNH-2488; 3060–3636 m, Amini Rad & Torabi, IRAN-70502; Urmia, Anhar, Marmisho, Shahidan mountain, 3590 m., 5 Jul. 2013, Gholipour & Amini Rad, SPNH-2324; 3320 m, Amini Rad & Torabi IRAN-70501; 3490–3612 m, Amini Rad & Torabi, IRAN-69996. Armenia: Zangezur, Khustup mountain, 3060–3195 m, 17 Jul. 2005, Gabrielian, E.T., Agababian, M.V. & Nersesian, A.A., B-161120.



Fig. 1. *Silene dianthoides*: A. Herbarium specimen (SPNH-4927), B. Plant habit in natural habitat, C. Basal leaf, D. Cauline leaf, E. Inflorescence, F. Flower, G. Capsule (Bar = 5 mm).

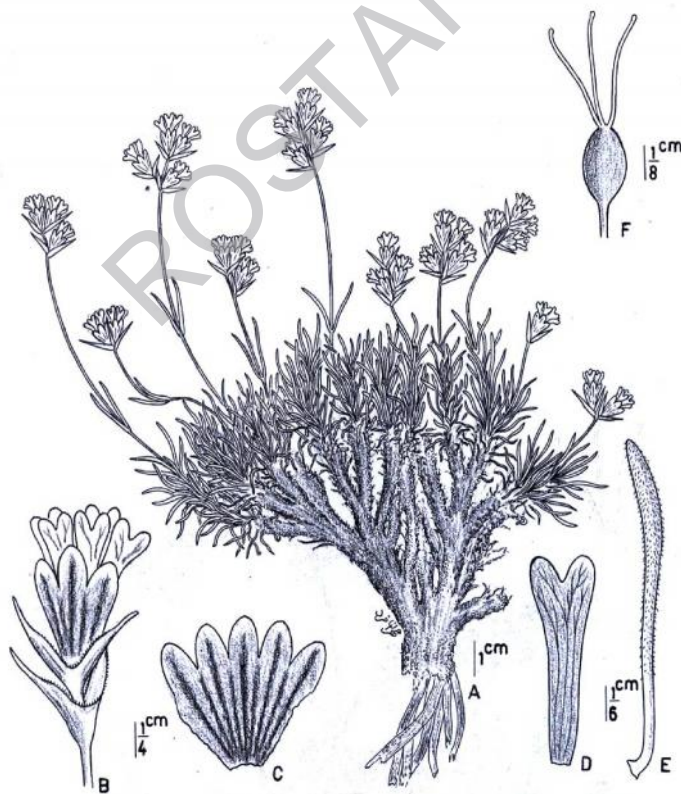


Fig. 2. *Silene dianthoides*: A. Plant habit, B. Flower, C. Expanded calyx, D. Petal, E. Basal leaf, F. Ovary and style.



Fig. 3. *Silene chustupica*: A. Herbarium specimen (SPNH-4928), B. Plant habit in natural habitat, C. Basal leaf, D. Cauline leaf, E. Flower, F. Capsule (Bar = 5 mm).

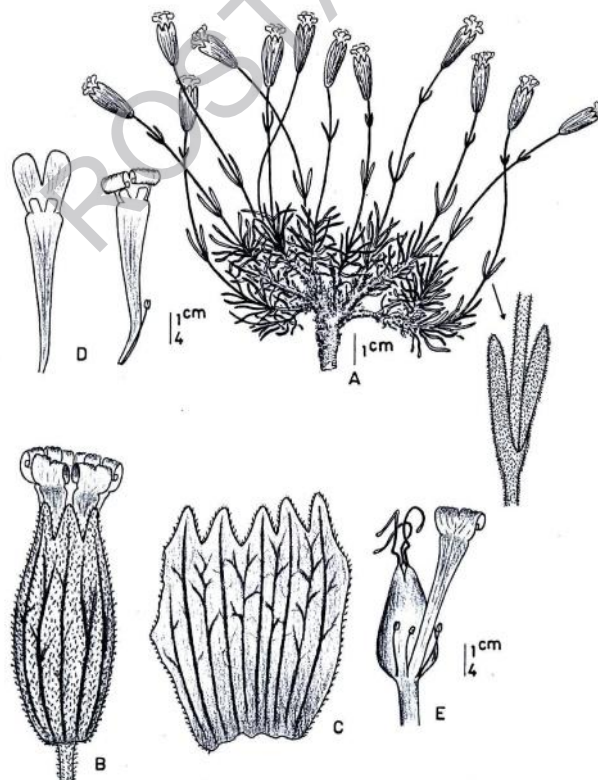


Fig. 4. *Silene chustupica*: A. Plant habit, B. Flower, C. Expanded calyx, D. Petal, E. Ovary.

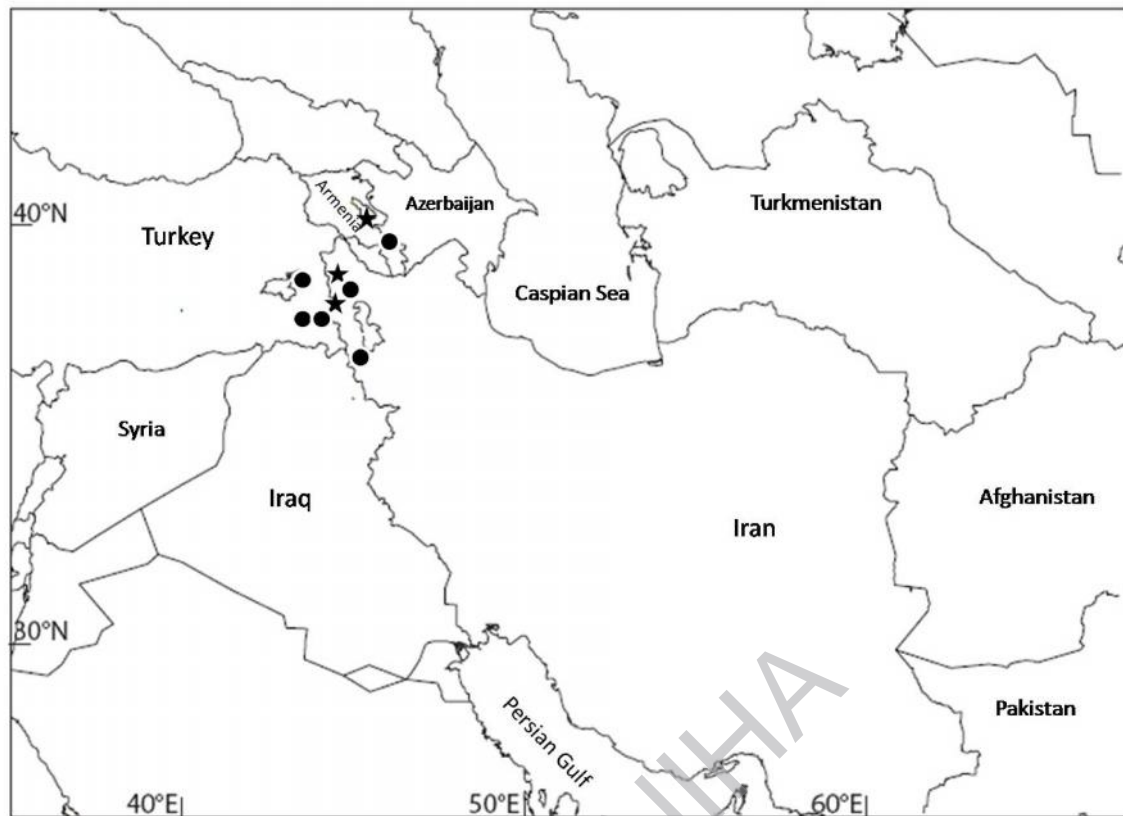


Fig. 5. Distribution map of *Silene dianthoides* (●) and *S. chustupica* (★).

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