

A NEW RECORD OF THE GENUS MYOSOTIS (BORAGINACEAE) FOR THE FLORA OF IRAN: REDISCOVERY OF A RARE PLANT

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Myosotis diminuta Grau (Boraginaceae) is recorded for the first time for the flora of Iran. It was rediscovered in 2013 in Zanjan Province, NW of Iran, in a wetland habitat far from its previously known habitat after not being documented for more than 100 years. A detailed taxonomic description and photographs are provided to facilitate its identification in the field. Also diagnostic characters to define *Myosotis diminuta* from its close relatives are provided.

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Key words: distribution; rare species; Damirli Mt.; subalpine; wetland; extinction; Zanjan province; Iran

گزارش گونه جدیدی از جنس *Myosotis* از تیره **Boraginaceae** برای فلور ایران: کشف مجدد یک گونه نادر

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گونه *Myosotis diminuta* برای اولین بار برای ایران گزارش می‌شود. این گونه در سال ۱۳۹۲ بعد از گذشت بیش از صد سال از آخرین مشاهده مستند آن در جهان، در تالابی کوهستانی در منطقه دمیرلی زنجان واقع در شمال غرب ایران مشاهده شد. جزئیات آرایه‌شناختی و تصاویر گیاه به منظور تسهیل شناسایی صحرائی آن و همچنین ویژگی‌های خاص برای تشخیص از گونه‌های خویشاوند ارائه گردیده است.

INTRODUCTION

Myosotis L. with c. 100 species distributed mainly in the temperate zones of both hemispheres, with a few taxa occurring in alpine regions of the tropics (Winkworth & al. 2002). Western Eurasia with about 60 taxa (Al-Shehbaz 1991) is one of the two main centers of diversity of *Myosotis*. The second main center of diversity, with more than 35 taxa, is New Zealand (Winkworth & al. 2002). Riedl (1967) had introduced 13 species of *Myosotis* for Iran and later the number of species represented in Iran increased to 17 (based on Khatamsaz 2002).

M. diminuta introduced as *M. caespitosa* Schultz var. *nana* Stadlmann (Stadlmann 1906) and later it was promoted to species *M. diminuta* (Riedl 1963).

Myosotis diminuta for many years was known only from five collections (table 1 & fig. 4), four localities in Turkey (Stadlmann 1906, Riedl 1963; Grau 1978) and one locality (Algurd Dagh) in NE of Iraq (Riedl, 1967). After not being observed for more than 100 year *M. diminuta* was rediscovered in 2013 by first author. It is currently known from a population in a subalpine wetland habitat in Zanjan Province, NE of Iran, far from previously known distribution area, in an altitude of 2510 m asl.

Myosotis diminuta Grau ex H. Riedl in Öst. Bot. Zeitschr. 110:521 (1963).

Syn: *Myosotis caespitosa* Schultz var. *nana* Stadlmann. in Feddes Rep. 2:165 (1906).

Table 1. The known sites, elevation ranges and the last observation dates of *Myosotis diminuta*.

Known sites	Herbarium voucher	Elevation (m)	Last obs.
Turkey: Kayseri, Erciyes dagi Mt. on wet places in the Tekir plateau.	Zederbauer 767(holo. W! iso. M)	2200	July 1902
Turkey: Hakkari, above Hasitha (Aşutka).	Nâbelek 548 (SVS)	1700	c. 1910
Turkey: Sivas, in humid alpine region of Yıldız Dagħ Mt.	Bornmuller	1800	1889
Turkey: Rize, İkizdere, Gölyayla, Djimil valley.	Balansa	up to 2000	Jul 1866
Iraq. Kurdistan: Riwandous, near the border with Iran, in alpine region of Helgurd Mt.	Bornmuller 1622 (W!, WU, M)	3000	June 1893
Iran: Zanjan province: 45 m on the road from Zanjan to Dandi, Morassa village, 8 km toward summit of Damirli Mt., near abandoned mine.	Mahmoodi 99889 (TARI!, T!)	2510	June 2013

Type: Erdschias-dagh, Tekir-Jaila, 2200 m, Zederbauer 767 (holo. W iso. M).

Annual, up to 4 cm high. Stem delicate, unbranched, erect, glabrous to sparsely adpressed pilose, with only a few leaves. Leaves alternate, light green, 6-9 × 1-2.5 mm, oblong, obtuse to elliptic, on both surfaces sparsely adpressed pilose. Basal leaves 1-2, indistinctly petiolate, stem leaves 3-4(-5), subsessile and narrowly oblong. Inflorescence with only 1-2 and rarely 3 flowers, flowers terminal, rarely on the axis of upper leaves. Pedicels thin, erect, up to 10 mm, at the flowering time much longer than the calyx. Calyx campanulate, up to 3 mm, sparsely adpressed pilose especially at the base; teeth up to 1.5 mm, triangular to elliptic, obtuse, with antrorse setae on margins. Corolla bright blue, up to 4 mm in diameter, inclosing stamens; limb saucer-shaped; tube equal with calyx. Nutlets ovoid, c. 1.5 × 0.8 mm, brown, obtuse, attachment scar roundish to elliptic.

Specimen examined: Zanjan province: 45 km on the road from Zanjan to Dandi, Morassa village, 8 km toward summit of Mount Damirli, near abandoned mine, 2510 m, Mohammadi, 99889 (TARI!, T!).

Taxonomic remarks: *Myosotis diminuta* by having sparse, none hooked and appressed hairs is related to *M. caespitosa* Schultz, *M. palustris* (L.) Nathh. and *M. Koelzii* Riedl, among the Iranian species. But because of annual habit it is different from *M. caespitosa* and *M. palustris*. Also referring to habit, small size, unbranched stem, having 1-2 and rarely 3 flowers; very long peduncle and short calyx is easily distinguishable from the above mentioned species (figs. 1 & 2).

Distribution: according to documented observation (table 1 & fig. 4), *Myosotis diminuta* is an Irano-Turanian element (Zohary 1973). [Turkey, N. Iraq. and NW. Iran]

Flowering time: June

Habitat: mountainous wet places, at an altitude from 1300 to 3000 m (fig. 3.)

According to data available to the authors this species has not been observed for more than 100 years. Referring to insignificant number of global observations, it may be considered as a rare species. Furthermore with the declining trends in wetland habitats in Iran, *Myosotis diminuta* can possibly be categorized as vulnerable in Iran.

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Fig. 1. *Myosotis diminuta*. Herbarium specimen showing habit of individuals and a flower, Mohammadi 99889 (TARI, T).



Fig. 2. *Myosotis diminuta*. Habitate and individuals. – Photographs taken at Damirli Mt., 4 June 2013, by M. Mahmoodi.



Fig. 3. A general view of the habitat of *Myosotis diminuta*. Dominant companion species: *Dactylorhiza umbrosa* (Kar. & Kir.) Nevski, *Ranunculus kotschyi* Boiss. and *Pedicularis sibthorpii* Boiss. – Photograph taken at Damirli Mt., 4 June 2013, by M. Mahmoodi.

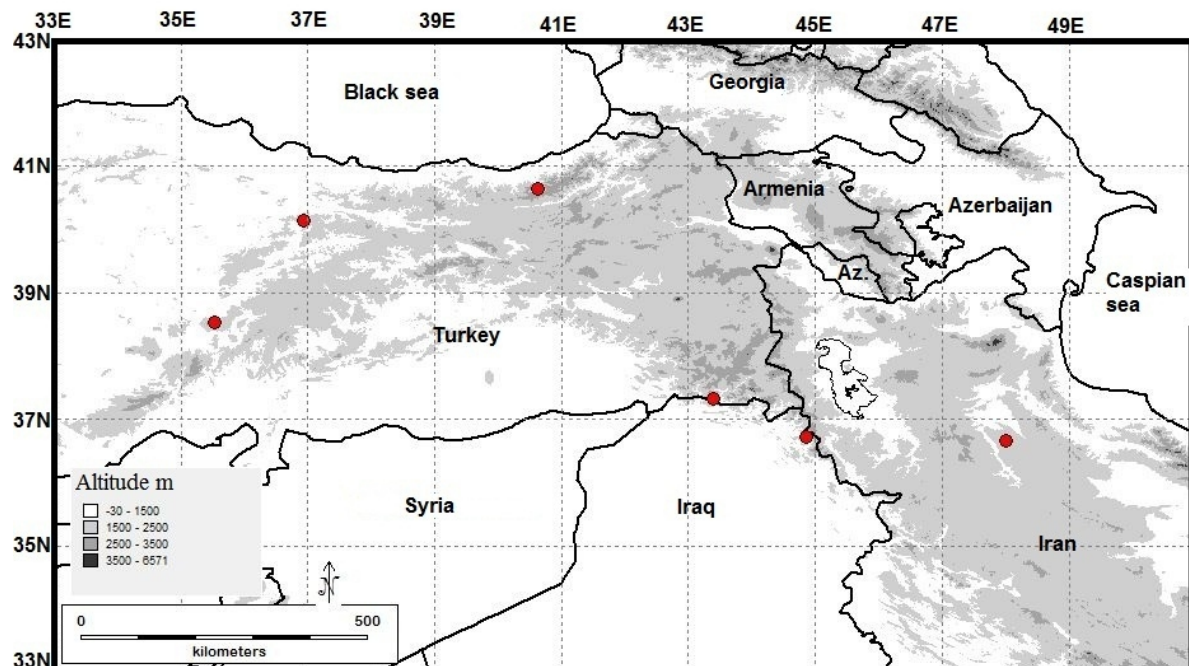


Fig. 4. Current distribution range of *Myosotis diminuta*.