گزارش جدید گونه‌ای بارهنگ از تیره بارهنگیان برای فلور ایران

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چکیده. *Plantago lagocephala* به عنوان یک گونه جدید برای فلور ایران از استان خراسان رضوی گزارش می‌گردد. این گونه با گونه‌های نزدیک به آن از جمله *P. lachnantha*، *P. ciliata* و *P. psammophila* مقایسه شده‌است. علاوه بر این، ویژگی‌های ریخت‌شناسی متمایزکننده و نقشه پراکنش نیز ارائه شده‌است. وضعیت حفاظتی گزارش جدید براساس رده‌بندی و معیارهای IUCN ارزیابی شده است.

واژه‌های کلیدی. خراسان، ریخت شناسی، گونه‌های خویشاوند، نقشه پراکنش، وضعیت حفاظتی

Plantago lagocephala (Plantaginaceae), a new record for the flora of Iran

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Abstract. *Plantago lagocephala* is recorded as a new species for the flora of Iran from Razavi Khorassan Province. It is compared with the closely related species including *P. lachnantha*, *P. ciliata* and *P. psammophila*. Moreover, the diagnostic morphological characters and a distribution map are provided. The conservation status of the new record is evaluated based on the IUCN red list categories and criteria.

Keywords. conservation status, distribution map, Khorassan, morphology, related species

INTRODUCTION

Plantago L. (Plantaginaceae) comprises nearly 250 species in the world and its main centers of diversity are located in the temperate zone and also in high-elevations of the tropical regions, ranging from cosmopolitan weeds to extremely narrow endemics (Pilger, 1937; Rahn, 1996; Hassemer, 2016). The morphology and taxonomy of this genus are complex, and still present uncertainties regarding its phylogenetic relationships and species delimitations (Hassemer, 2016). It encompasses 28 species in the Flora Iranica area and 24 species in Iran, of which 5 species are endemics (Patzak & Rechinger, 1965; Mozaffarian, 2007; Mohsenzadeh *et al.*, 2007, 2010; Hassemer, 2018). Although botanists have visited most parts of Iran, some areas are unexplored yet. During the field investigations in the mountains of Zarrin Kuh Protected Area (ZPA), Razavi Khorassan Province (NE Iran) we found some peculiar populations of a *Plantago* species. A closer study of living material and herbarium specimens suggested that the specimens were similar to *P. lachnantha* Bunge, *P. ciliata* Desf. and *P. psammophila* Agnew & Chal.-Kabi.

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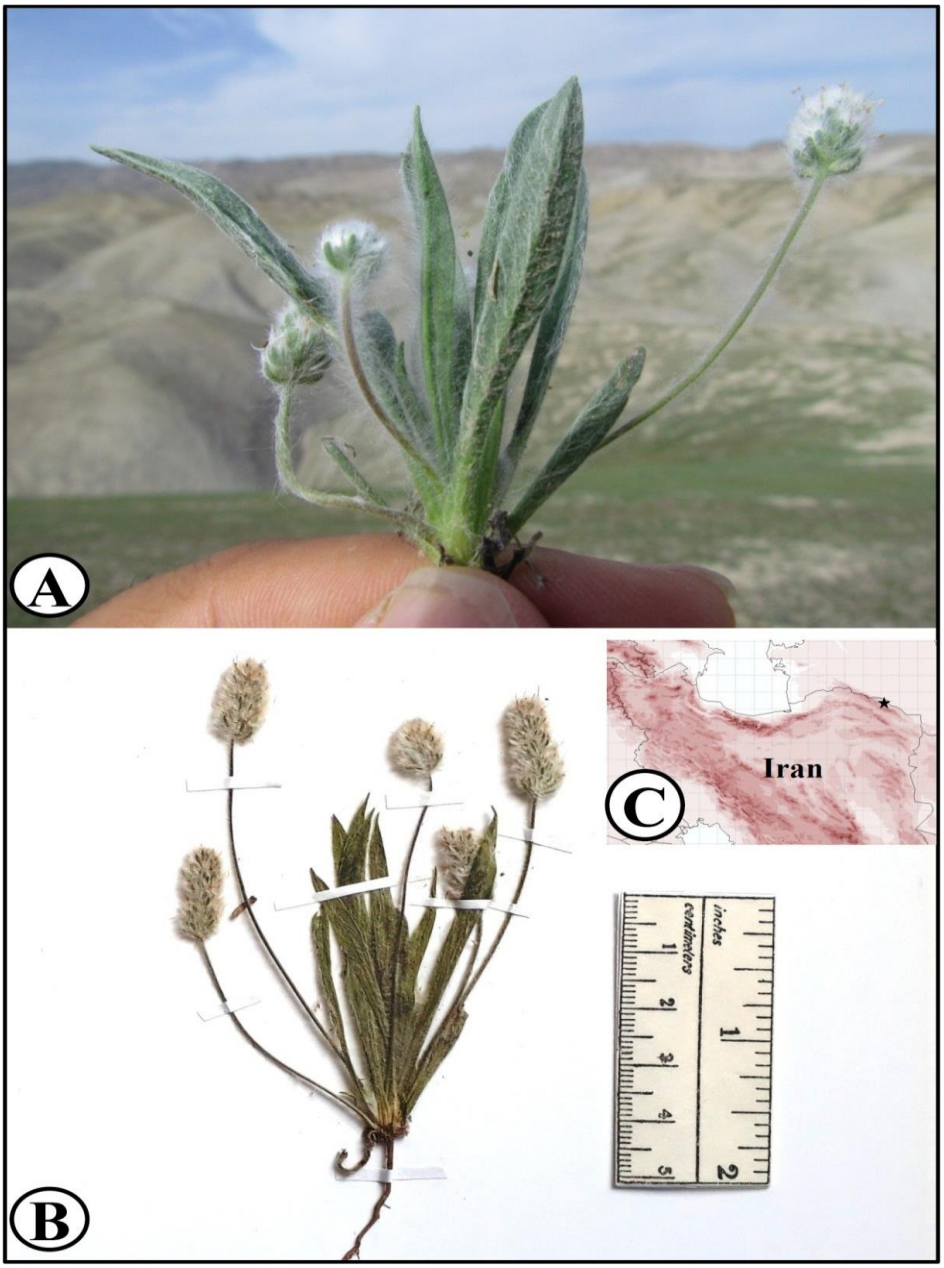


Fig. 1. *Plantago lagocephala*: **A:** in natural habitat, Zarrin Kuh Protected Area; Photograph taken by M.S. Amiri. **B:** herbarium specimen (Joharchi & Memariani 45716-FUMH); **C:** distribution map of the new record in NE Iran.

However, there were also several morphological differences. After examining the specimens carefully, they were identified to be a new record for the genus, namely *Plantago lagocephala* Bunge for the flora of Iran. Morphological features (i.e. leaf shape and the length of spike peduncle, bracts and corolla lobes) in this taxon are good characters for the separation of these closely related species (Table 1). In this paper, the diagnostic characters of this taxon, its distribution map and its conservation status, based on the IUCN Red list categories, are discussed.

MATERIALS AND METHODS

The herbarium specimens were collected from Zarrin Kuh Protected Area in Razavi Khorassan Province, NE Iran during 2015-2017 in flowering and fruiting periods. The vegetative and reproductive characteristics of the specimens were studied by means of a stereomicroscope. Descriptions of the new record and its close relatives were compared using the relevant Flora, especially the Flora Iranica (Patzak & Rechinger, 1965). The plant specimens are deposited in the herbarium of the Ferdowsi University of Mashhad (FUMH). The International Plant Names Index (http://ipni.org) was consulted for the standard scientific and author names of the plant species.

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Table 1. Comparison of diagnostic morphological characters of *Plantago lagocephala* with its closely related species.

Taxon → Character ↓	*Plantago lachnantha*	*Plantago lagocephala*	*Plantago ciliata*	*Plantago psammophila*
Leaves shape and size (cm)	narrowly linear, 3-5 cm	narrowly lanceolate, 2-5 cm	obovate or lenceolate-spathulate, 3-4 cm	linear-lanceolate or oblong, 3-6 cm
Spike peduncle length (cm)	1.5-2 cm	4-8 cm	1-7 cm	3-8 cm
Bracts length (mm)	4.5-5 mm	3 mm	3.5 mm	4-5 mm
Corolla lobes length (mm)	1.5-1.75 mm	up to 1 mm	1.5 mm	3 mm

RESULTS AND DISCUSSION

Plantago lagocephala **Bunge,** Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 7: 445 (1851). (Fig.1).

Annual herbs, small to 8-10 cm tall. Leaves rosettes, erect, papery, 2-5 cm long, 2-5 mm broad, narrow-lanceolate, obtuse. Spike peduncle 4-8 cm long, arcuate-ascendent, villose. Spikes dense, ovoid, 8 mm long in flower, later in fruits cylindrical, up to 20 mm long. The bracts broadly ovate, ciliate, up to 3 mm long, keeled. Sepals lanceolate-ovate, 3 mm long, keeled. Corolla tube glabrous; corolla lobes ovate, hairy, up to 1 mm long. Capsule ellipsoid; seeds 2, yellowish-brown, elliptic to narrow ovate-elliptic.

Specimen seen: Iran: Razavi Khorassan province, NW Dargaz, *ca.* 5 km NE Nokhandan, northern foothills of Zarrin Kuh Protected Area, 490-550 m, 26 April 2016, Joharchi & Memariani 45716 (FUMH).

General distribution: An Aralo-Caspian species distributed mainly in Kara-Kum, Kyzyl-Kum, and Amu-Darya (Turkmenistan, Kazakhstan, Uzbekistan, Tajikistan) (Shishkin, 1958), and also in N-NE Afghanistan (Baghlan and Bamian) (Podlech, 2012), Pakistan (Balochistan) (Patzak & Rechinger, 1965), China (N Xinjiang) (eFloras, 2018), and NE Iran (the present work).

Habitat and ecology

Plantago lagocephala occurs in elevations ranging from 490 to 550 m, on the foothills of Zarrin Kuh. Biogeographically, the area belongs to the central part of Khorassan-Kopet Dagh floristic province. It grows on clay-gypsum and marl hills. The vegetation in such habitats is very sparse and usually species-poor. The carbonate-rich soil and gypsum, very dry substrate, and lack of organic material represent stressful conditions for many plant species. Therefore, highly specialized xerophilous species, known as gypsophilous or calciphilous species, grow on such soils (Memariani *et al.*, 2016). The following taxa exist abundantly in its locality: *Galium tricornutum* Dandy, *Zygophyllum atriplicoides* Fisch. & C. A. Mey., *Cephalorhizum turcomanicum* Popov, *Heterocaryum szovitsianum* (Fisch. & C.A.Mey.) A.DC., *Valerianella dufresnia* Bunge ex Boiss., *Holosteum umbellatum* L. subsp. *glutinosum* (M. Bieb.) Nyman, *Gypsophila heteropoda* Freyn & Sint. and *Alyssum desertorum* Stapf.

Conservation status

This species was very rare in the area and was found only in a few localities, where its habitat had recently been greatly affected by road construction and intensive grazing. Concerning the small extent of occurrence and the low number of *P. lagocephala* in this area, the recommended IUCN Red category of this species is evaluated as regionally Critically Endangered (CR).

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