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ASTRAGALUS CHORIZANTHUS (SECT. DISSITIFLORI DC.), AS A NEW RECORD FROM NE IRAN

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Abstract
This paper presents a new record of *Astragalus chorizanthus* Rech. f. & Gilli from section *Dissitiflori* DC. The species, which occurs in northeastern Iran (Khorasan Razavi Province), had previously been reported only from Afghanistan and Pakistan. The discovery of this specimen demonstrates that the species' distribution range extends farther west than previously recognized, thereby broadening its overall range. Nevertheless, despite this new record from Iran, the species is still assessed as Endangered (EN) under IUCN criteria. Here, we provide images of the herbarium specimen, a conservation status map, and a description of the species based on the material collected in Iran.

Keywords: *Astragalus*; conservation status; Khorasan Razavi; Leguminosae; new record

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یک گزارش جدید از شمال شرقی ایران (Sect. Dissitiflori DC.) *Astragalus chorizanthus*

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چکیده: در این مقاله، گزارش جدیدی از گونه *Astragalus chorizanthus* Rech. f. & Gilli از بخش *Dissitiflori* DC. ارائه می‌گردد. این گونه که در شمال‌شرق ایران (استان خراسان رضوی) یافت شده است، پیش‌تر تنها از افغانستان و پاکستان گزارش شده بود. کشف این نمونه نشان می‌دهد که گستره پراکنش این گونه به سمت غرب فراتر از آنچه پیش‌تر شناخته شده بود، امتداد دارد و محدوده پراکنش آن وسیع‌تر است. با این حال، علیرغم این گزارش جدید از ایران، وضعیت حفاظتی گونه بر اساس معیارهای IUCN، در معرض خطر (EN) ارزیابی می‌شود. در اینجا تصاویر نمونه هرباریومی، نقشه وضعیت حفاظتی و شرح گونه بر اساس نمونه جمع‌آوری‌شده در ایران ارائه شده است.

INTRODUCTION

The genus *Astragalus* L. (known in Persian as "Gavan"), with nearly 3,066 accepted species worldwide (POWO 2025) and more than 850 species recorded in Iran (Ghahremaninejad & al., 2022), is the largest angiosperm genus both in Iran and globally. This genus has traditionally been divided into several sections. Although molecular evidence indicates that the current subgeneric classifications are often artificial (Azani & al., 2017; Maassoumi 2018, 2020), they remain useful for species identification. At present, *Astragalus* is recognized in 136 sections across the Old World (Podlech & Zarre, 2013).

Astragalus is thought to have originated in Western Asia, and Iran is likely one of the most important centers of genetic diversity for the genus (Folk & al. 2024a). For instance, the Alborz Mountains in northern Iran harbor the most phylogenetically distinct assemblage of *Astragalus* species worldwide. They are recognized as one of the two principal centers of paleoendemism (Folk & al., 2024b).

In Iran, *Astragalus* includes 592 endemic species distributed across 51 sections, making it the largest genus in terms of endemic richness (Ghahremaninejad & al., 2025a). The new record presented in this paper concerns a species of the section *Dissitiflori* DC. from Khorasan Razavi Province. This section comprises approximately 169 species worldwide, of which 60 occur in Iran. Among these, 15 species are endemics to the country (Ghahremaninejad & al., 2025b, 2022; Podlech & Zarre, 2013). Below is an alphabetical list of the species in this section, including the new report, occurring in the Northeast of Iran (Khorasan Provinces).

1. *Astragalus ahangarensis* Zarre & Podlech
2. *A. argyroides* Beck
3. *A. chorizanthus* Rech. f. & Gilli
4. *A. ferdowsi-toosii* F.Ghahrem., Joharchi & Memariani
5. *A.ghouchanensis* Souzani, Zarre & Maassoumi
6. *A. juratzkanus* Freyn & Sint.
7. *A. nigriceps* Popov
8. *A. nigrolineatus* Širj. & Rech.f.
9. *A. ruscifolius* Boiss.
10. *A. sitiens* Bunge
11. *A. sumbari* Popov

A short description for the section follows (Ghahremaninejad 2004):

Astragalus* sect. *Dissitiflori DC., Prodr. 2: 284. 1825.
= *Pedina* Steven, Bull. Soc. Imp. Naturalistes Moscou 29: 144. (1856).
= *A.* sect. *Pedina* (Steven) Bunge, Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 96. (1868).
= *A.* sect. *Xiphidium* Bunge in Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 123. (1868).
= *A.* sect. *Cystodes* Bunge, Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 133. (1868).
= *A.* sect. *Tricholobos* Freyn, Bull. Herb. Boiss., sér. 2, 5: 560. (1905).

Herbaceous to subshrubby plants, usually with elongated stems. Stipules distinct and free. Leaves imparipinnate; petiole often persistent. Inflorescence generally loose, occasionally compact, and usually borne on a long peduncle. Bracteoles lacking. Calyx tubular-cylindrical, never inflated. Fruit a pod, either sessile or stalked, containing many seeds; bilocular, leathery in texture, exceeding the calyx in length, and typically clothed with appressed hairs.

This study reports *A. chorizanthus* for the first time from Iran, marking it as a new addition to the country's flora (Podlech & Zarre 2013).

MATERIALS AND METHODS

Specimen identification was performed using a range of authoritative floristic references, including Flora Orientalis (Boissier, 1872), Flora Iranica (Podlech, 2010), Flora of the USSR (Shishkin, 1946), A taxonomic revision of the genus *Astragalus* L. (Podlech & Zarre, 2013), and Flora of Iran (Maassoumi, 2018). These works provided the primary framework for species-level determination.

To ensure accuracy and consistency, updated online databases such as the Global Biodiversity Information Facility (GBIF 2025), the International Plant Names Index (IPNI 2025), and Plants of the World Online (POWO 2025) were also consulted. These resources were used to verify the latest taxonomic concepts, nomenclatural updates, and distribution records.

The morphological features of the specimen were studied in detail. Diagnostic traits were carefully examined and compared with authenticated herbarium material. In addition, digital resources from virtual herbaria (e.g., JACQ) were reviewed to supplement direct observations and provide access to type material where possible. The voucher specimen is housed in the Tehran Herbarium (T) at Kharazmi University, where it was deposited.

RESULTS

A. chorizanthus Rech.f. & Gilli, Biol. Skr. 9(3): 138. 1958.

Holotype: Afghanistan: Koh-i-Tschelsotun bei Kabul, 24.5.1950, A. Gilli 1510 (W!).

= *A. virgaeformis* Širj. & Rech.f., Biol. Skr. 9(3): 139. (1958).
= *A. chamaesarathron* Rech.f., Biol. Skr. 9(3): 137. (1958).
= *A. droshensis* Ali, Phyton: 12: 180. (1967).

Description (based on our new record from Iran)

Plants subshrubby, 17-45 cm tall, covered with medifixed, appressed white and black hairs, also present in the inflorescence. Rootstock up to 4 mm thick. Stems several, branched at the base; current-year parts 2-13 cm, densely hairy. Stipules greenish, ca. 3 mm, mostly reflexed, narrowly triangular, adnate to the petiole for 1 mm, sparsely to densely hairy. Leaves 7-12 cm; petiole 3.2-5.5 cm, like the rachis loosely hairy. Leaflets 2-4 pairs, very remote, linear to filiform, often curved, 10-22 × 1-1.5 mm, subacute, on both sides loosely to rather densely hairy, often folded. Peduncles 10-25 cm, strictly erect, rather densely white hairy. Racemes 8-10-flowered, lax; axis white hairy. Bracts greenish, 1.5-2 mm, narrowly triangular, with white and black hairs. Pedicels 1-2 mm, with densely white and black hairs. Calyx 15-16 mm, tubular, obliquely gibbous at the base, obliquely cut at the mouth. Petals turn brownish when dried. Standard 20-21 mm; blade 6-7 mm wide, elliptic. Wings ca. 20 mm; blades narrowly oblong and slightly dilated toward the tip to obovate, rounded to slightly obliquely emarginated, 6-7 × 2-2.5 mm; auricle c. 1 mm, claw ca. 13 mm. Keel 14-15 mm; blades obliquely oblong-curved, 4.5-5 × c. 3 mm; auricle c. 0.5 mm, claw 9-10 mm. Staminal tube 17-18 mm, truncate at the mouth. Ovary subsessile, linear, sparsely hairy; style long, glabrous. Legumes linear, up to 30-40 mm long, 2-3 mm wide, beak 3-4 mm, bilocular, gradually becoming glabrescent with age.

Examined specimen: Iran. Khorasan Razavi province: Between Zoshk and Jagharq, c. 1 km east of Zoshk, on NE-facing rocky slope above the river valley, 36°16′70″N, 59°07′10″E, 2405 m, 9.VII.2001, Ghahremaninejad 380 (T!), (Figs. 1,2,3).

Note on the label: Cold semi-arid montane climate with high diurnal variation, dry summer, and light afternoon winds.

Conservation status: The conservation status of *A. chorizanthus* was assessed according to the IUCN Red List Categories and Criteria (IUCN 2021), based on criterion B (geographic range). Estimates of Area of Occupancy (AOO) and Extent of Occurrence (EOO) were calculated using GeoCAT (GeoCAT 2025). The AOO-based assessment classifies the species as Endangered (EN), while its broader EOO, encompassing Iran, Afghanistan, and Pakistan, corresponds to the Least Concern (LC) category (Fig. 4). This contrast highlights the importance of local-scale assessments and the urgent need for targeted conservation measures in Iran.

Fig. 1. The parts of an opened flower (including the calyx, standard, keel, wings, stamens, and pistil) of the herbarium specimen (F. Ghahremaninejad 380T) of *Astragalus chorizanthus*.

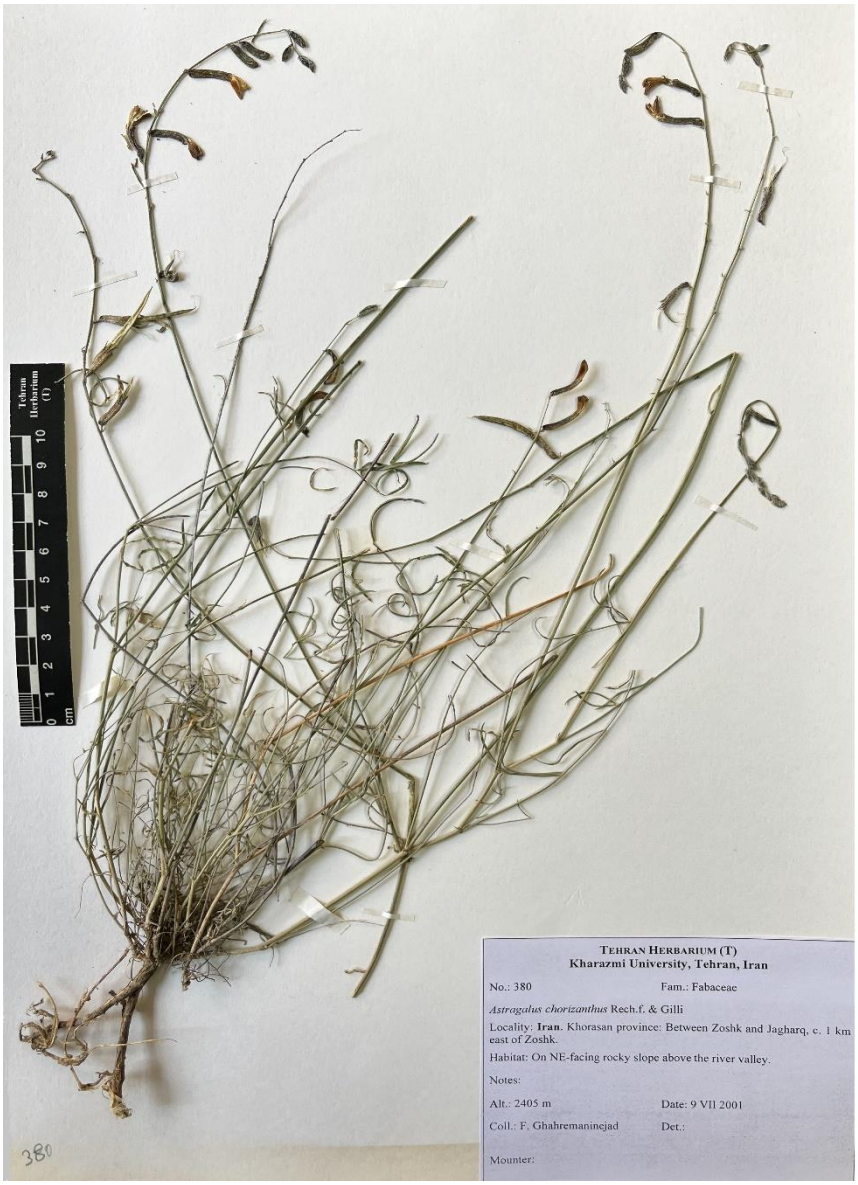

Fig. 2. The herbarium specimen of *Astragalus chorizanthus* (Ghahremaninejad 380 T).

The Iranian specimen of *Astragalus chorizanthus* agrees well with the original description by Rechinger and Gilli (Podlech, 2010: 237) and with material from Afghanistan and Pakistan (Podlech & Zarre, 2013). However, it exhibits several morphological differences, including a higher number of flowers per raceme, narrower leaflets, and longer legumes. Within section *Dissitiflori*, the species is morphologically close to *A. sitiens* and *A. moussavii*, but differs from both in overall plant height, flower coloration, leaflet morphology, indumentum characteristics, and legume form and orientation. The occurrence of *A. chorizanthus* in Khorasan Razavi extends its known distribution approximately 500 km westward, indicating that the species' range is broader than previously recognized and suggesting that the northeastern Iranian mountains may act as a biogeographical link between the floras of Afghanistan and Iran.

In general, the plants of this section are herbaceous to subshrubs with elongated stems, distinct stipules, and imparipinnate leaves, bearing loose racemes and developing leathery bilocular pods that exceed the calyx in length.

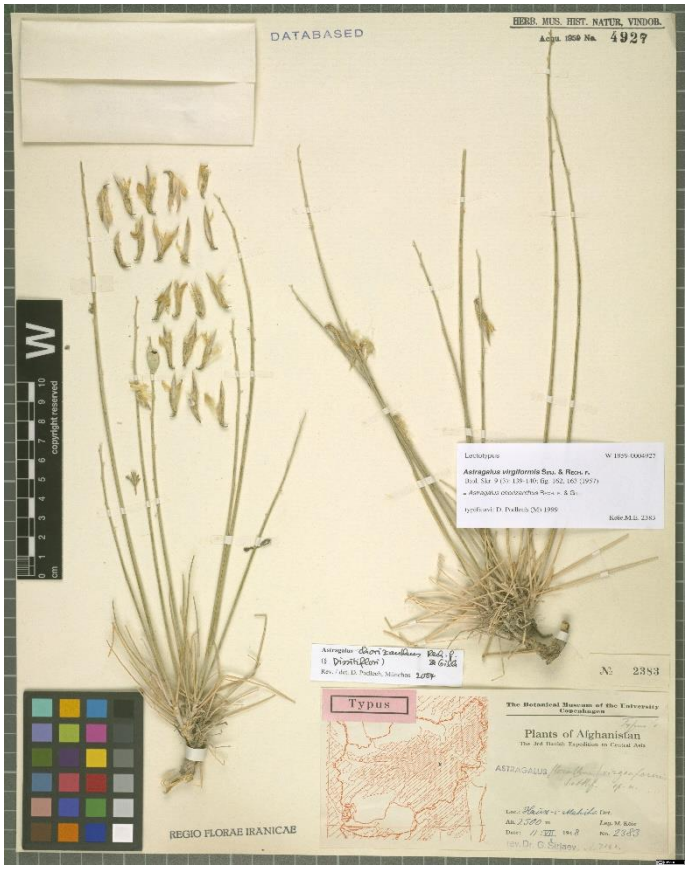

Fig. 3. Scanned image of the lectotype specimen of *Astragalus chorizanthus* preserved in W (W 1959-0004927) (JACQ 2025).

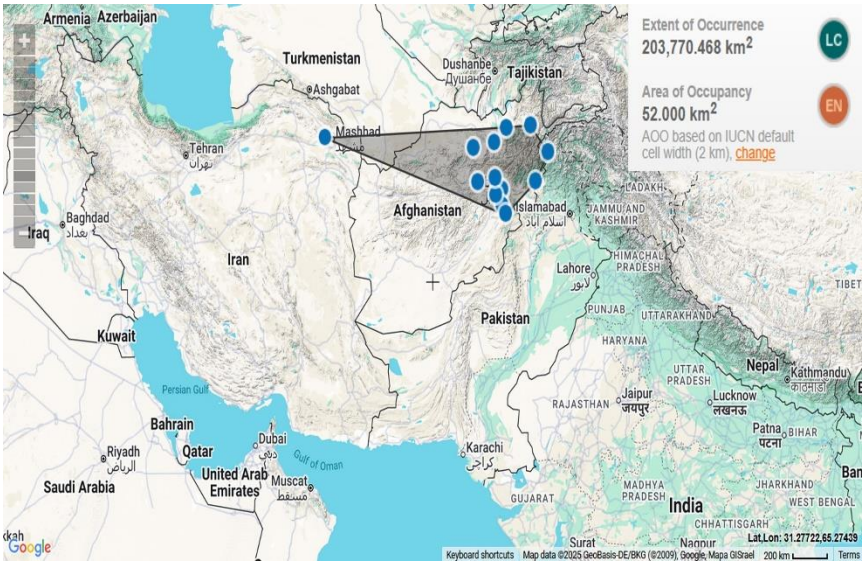

Fig. 4. The map showing the conservation status of *Astragalus chorizanthus* in Iran, Afghanistan, and NW. Pakistan (GeoCat 2025).

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