

# *Astragalus cephalotes* Banks & Sol. – a new species for the Republic of Azerbaijan

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## Abstract

New species *Astragalus cephalotes* Banks & Sol. is reported to the flora of the Republic of Azerbaijan. We sampled it in Safdara, Kechili village (Shahbuz district, Nakhchivan Autonomous Republic) in mountain xerophytic community in 2016. Considering species current status and distribution we suggested include it in the future edition of the Red Data Book of the Republic of Azerbaijan and Nakhchivan with status VU, A2c+3c and with IUCN status 2016-LC.

## Keywords

*Astragalus cephalotes*, Azerbaijan, Nakhchivan, new species

## Introduction

The plant genus *Astragalus* L. (Fabaceae) comprises approximately 3000 species worldwide. This genus thrives in cold, semiarid, and arid regions across the globe, with around 2400 species in the Old World, about 450 species in western North America, and roughly 100 species along the Andean Mountains in South America (Maassoumi 1998; Zarre, Podlech 2013). *Astragalus* section Hymenostegis was ini-

tially identified by Bunge (1868–1869) in his work "Generis *Astragali* species *Gerontogaeae*" within the subgenus *Calyphysa*. This section underwent further revisions by Rechinger et al. (1958) and was subsequently documented in the Flora of Turkey (Chamberlain and Matthews 1970), Flora of USSR (Gontscharov, 1946), and Flora of Iraq (Townsend 1974). Zarre and Podlech (1996) conducted the most recent revision of this section. *Astragalus* section *Macrophyllum* Boiss. was first described by Boissier in 1872.

The flora of the Nakhchivan Autonomous Republic (AR) includes 2 subgenera and 33 sections of 84 species belonging to the genus *Astragalus*. Of these species, 54 belong to *Astragalus*, and 30 belong to the subgenus *Cercidothrix* (Ganbarov 2021).

## Materials and methods

Starting in 2016, a comprehensive revision of the *Astragalus* genus involved extensive field surveys in Nakhchivan AR, resulting in the collection of a significant number of specimens. These specimens underwent thorough verification against the *Astragalus* descriptions provided in key literature sources, including Flora Uzbekistana (Borissova, 1955), Flora Tadzikistana (Borissova, 1937), Flora USSR (Borissova, 1946), and Flora Kavkaza (Grossheim, 1950). Herbarium material has been compared to plants kept in the Herbarium of the Iran (*A. cephalotes* Banks & Sol. (appressed hairy) East Azerbaijan: Oshnavieh to Orumieh, after Movana, 1669 m, 26.6.2009, Ranjbar & Assadi, BASU 17677, MAC77; *A. cephalotes* Banks & Sol. (spreading hairy) East Azerbaijan: Oshnavieh to Orumieh, after Movana, 1669 m, 26.6.2009, Ranjbar and Assadi; BASU 17678, MAC78).

As far as possible, descriptions of the species are based on herbarium specimens collected in the territory of Kechili Village (Shahbuz Region) and on personal data. Living plants and/or herbarium specimens were photographed. Newly gathered plant specimens were utilized to produce Herbarium sheets following the protocols outlined by Bridson and Forman (2010). Following the guidelines set by the IUCN criteria (IUCN 2017), we provide an evaluation and justification for the species conservation status. For the nomenclature of a recently discovered species, we have adhered to the regulations of the International Code of Nomenclature for algae, fungi, and plants (Turland et al. 2018).

Floristic and geobotanical studies were conducted in Kechili village of Shahbuz district of Nakhchivan AR (39°21'58"N, 45°42'47"E, 1742 m above sea level) in 2016–2023 resulting in new species discovering. This species is *Astragalus cephalotes* Banks & Sol. that was found in the Safdara area of Kechili village, Shahbuz district of Nakhchivan AR, in the middle mountain belt, on dry grassy slopes (Fig. 1).



**Figure 1.** *Astragalus cephalotes* Banks & Sol., a herbarium specimen.

## Results

Species was first published in A.Russell, Nat. Hist. Aleppo, ed. 2, 2: 260 (1794). The native range of this species is E & SE Türkiye to Lebanon and NW Iran. It is a subshrub and grows primarily in the temperate biome. Initially categorized in section Pterophorus by Boissier (1872) due to the presence of bracteoles, *A. cephalotes* was later reclassified by Zarre (2000) into section Macrophyllium based on its large and glabrous leaves. However, the Flora of Turkey assigns *A. cephalotes* to section Rha-cophorus (Chamberlain, Matthews 1970).

## Taxonomic Treatment

Superdivision: **Spermatophyta**

Division: **Angiospermae**

Class: **Dicotyledoneae**

Family: **Fabaceae**

Genus: ***Astragalus***

*Astragalus cephalotes* Banks & Sol., Russell, Nat. Hist. Aleppo, ed. 2: 260. 1794. Dis-tribution: Turkey, Georgia, Syria, Lebanon, Iran. Irano-Turanian element.

**Description:** *Astragalus cephalotes* is a thorny, cushion-forming perennial plant with stems that become more or less woody; it forms a loose mat of growth 20–50 cm tall. In optimal growing conditions (high humidity) the plant develops larger leaves. The flowers are sessile with 2–5 pieces inside each leaf.

**Phenology:** Flowering and seeding occur in May–July, and sometimes seed ripening occurs in the first ten days of August. Life form (Raunkiaer): chamaephyte, Spinescence: leaves, It is non-succulent, perennating, chamaephyte. flowers hermaphrodite only, homogeneous seeds-fruits, Leaf arrangement: alternate (one leaf per node), Leaf Type: pinnate, stipule: present. Habitat: Tragacanth shrub vegetation (Oro-Mediterranean), glycophyte, Synanthrop: obligate natural. Chorotype: Med-Irano-Turanian.

**Habitat and Associated Species:** This species is found in the middle mountain belt, on dry grassy slopes at elevation ranging from 1600 to 1750 m. It grows alongside associated species such as *Astragalus karjagini* Boriss., *A. microcephalus* Willd. (*A. pycnophyllus* Stev.; *A. andreji* Rzazade; *A. gurdathii* Al. Theod., Fed. et Rzazade), *A. lagopoides* Lam (*A. lagurus* Willd.), *A. cancellatus* Bunge, *A. conspicuus* Boriss., *A. mesites* Boiss., *Stachys inflata* Benth., *Phlomoides tuberosa* (L.) Moench, *Phlomis orientalis* Mill., *Rumex acetosa* L., *Cotoneaster integerrimus* Medik., *Helichrysum arenarium* (L.) Moench.

**Distribution:** East Mediterranean and west Irano-Turanian distribution.

**Conservation Status:** Based on the available information, this plant has been tentatively classified as Least Concern in accordance with the IUCN Red List Categories and Criteria (IUCN, 2017). The existing data for Azerbaijan, and the Nakhchivan Autonomous Republic is insufficient to evaluate the risk factor associated with this species. Here, the plant is known solely from its type locality. To comprehensively assess its distribution, population numbers, subpopulation numbers, further investigations are required in similar habitats adjacent to the known areas. We recommend to include this species in the new edition of the "Red Data Book" of Azerbaijan, and the Nakhchivan Autonomous Republic as a vulnerable species that is spreading in a limited range or area and is subject to negative effects –IUCN 2016-LC.

A copy of that species is kept in the herbarium fund of Nakhchivan State University. Materials of herbarium are given below:

1. Nakhchivan Autonomous Republic, Kechili Village of Shahbuz District, Safdara. Coordinates: 39°21'58"N, 45°42'47"E, 1742 m asl, middle mountain belt, dry grassy slopes, mountain-xerophytic community; D. Ganbarov, 23.07.2016.

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