

NOTES ON THE GENUS ASTRAGALUS L. (SECT. XIPHIDIUM BGE.) IN IRAN

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A revision of the genus *Astragalus* (Sect. *Xiphidium*) in Iran including key to the species, new records and new synonyms is presented. *A. binaludensis* is described as a new species from Khorasan. Four species are reported as new for the flora of Iran: *A. xiphidium*, *A. xiphidioides*, *A. sumbari* and *A. dendroproselius*. Three species *A. viridis*, *A. dendroproselius* and *A. triqueter* are excluded from the Sect. *Xiphidium* and transferred to the adjacent sections. Two new synonyms are recognized; *A. argyroides* is treated as a synonym of *A. angustatus* and *A. transhyrcanus* is considered as a synonym of *A. xiphidioides*.

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مطالعاتی درباره جنس گون (Astragalus) بخش Xiphidium در ایران

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مروری بر بخش *Xiphidium* از جنس گون در ایران انجام گرفته است. از مجموع گونه‌هایی که از این بخش تاکنون در ایران شناخته شده‌اند *A. binaludensis* به عنوان گونه جدید از خراسان نامگذاری و معرفی می‌گردد. گونه‌های زیربرای اولین بار برای فلورایران گزارش می‌شوند. *A. xiphidium*, *A. dendroproselius*, *A. xiphidioides* سه گونه *A. triqueter*, *A. viridis*, *A. dendroproselius* با داشتن صفاتی متفاوت نسبت به اعضای بخش مزبور از آن خارج شده، به بخش‌های دیگر منتقل شده‌اند. همچنین گونه *A. argyroides* مترادف با *A. angustatus* و گونه *A. transhyrcanus* مترادف با گونه *A. xiphidioides* تشخیص داده شده‌اند.

INTRODUCTION

The species of the genus *Astragalus* L. (Sect. *Xiphidium* Bge.) are widely distributed throughout the Russia and via the north-western and north-eastern borders penetrate into Iran. In the course of three years research on the taxonomy of the genus *Astragalus* L. (Sect. *Xiphidium* Bge.) in a project for M. S. degree by one of the authors (M. Pakravan) in Tehran University, twelve species were recognized for the flora of Iran. Results of this work are, introducing a new species, recognizing two species as synonyms and four new plant records. Furthermore two species are excluded from the Sect. *Xiphidium* and transferred to the other sections. The new species is described and another species are explained as new synonyms or new records. The specimens are preserved in the Herbarium of Research Institute of Forests & Rangelands. (TARI), Central Herbarium of Tehran University (TUH), and the Herbarium of Shahid Beheshti University.

KEY TO THE SPECIES

1. Inflorescence umbel like 2
- Inflorescence racemose 3
2. Stem short, 1-3 (-4) cm tall, dorsal view

of the pod sulcate

A. tolgorensis Sirj. & Rech. f.

- Stem more than 3 cm tall, dorsal view of the pod rounded *A. sumbari* M. Pop.
- 3. Half shrub or suffrutex, standard with auriculate-angular limb at the base, pod erect, more than 3.5 cm long 4
- Perennial, woody at the base, standard without auriculate-angular limb at the base, pod curved or \pm curved 6
- 4. Stem covered with canescens and dense hairs at the base, stipules triangular, wide and covered with black hairs

A. eburneus Bornm. & Gauba

- Stem without white and dense hairs at the base, stipules narrow, triangular or linear 5
- 5. Stem slender, slightly woody at the base, 1-6 cm tall, the branches 6-10 (30) cm tall, leaflets two forms, up to 30 mm long *A. xiphidioides* Fr. & Sint.
- Stem thick at the base, completely woody, 4-12 cm tall, the branches 15-40 cm long, leaflets linear, less than 20 mm long, dorsal part of the pod conspicuously sulcate *A. xiphidium* Bge.

- 6. Leaflets 1-2 pairs, standard with long appendage at the apex *A. sitiens* Bge.
- Leaflets more than 3 pairs, standard without long appendage at the apex 7

7. Pod more than 3 cm long, leaflets elliptic-oblong to ovate 8
 - Pod less than 3 cm long, leaflets linear and narrow 10
8. Floral parts small, standard less than 13 mm long, leaflets elliptic-ovate and obtuse *A. melanocalyx* Boiss. & Buhse
 - Floral parts \pm large, standard more than 18 mm long 9
9. Pod with stipe more than 2 mm long, dorsal part rounded, leaflets 3-4 (5) pairs *A. ruscifolius* Boiss.
 - Pod without stipe or stipe less than 2 mm long, dorsal part sulcate *A. angustatus* Bge.
10. Pod with a long beak, calyx covered with parallel bound of black and white hairs *A. binaludensis* Maassoumi & Pakravan
 - Pod without a long beak, calyx covered with bifurcate, long and semi- patent hairs 11
11. Leaflets covered with bifurcate and patent hairs, elliptic, stem slender and short, pod more than 20 mm long *A. pseudopendulinus* Sirj. & Rech. f.
 - Leaflets covered with bifurcate appressed hairs on the both sides, linear, stem more than 45 cm tall and 5 mm thick, pod less than 20 mm long *A. brachylobus* DC.

NEW SPECIES

Astragalus binaludensis Maassoumi & Pakravan, **sp. nov.**

Differt ab *A. subexcedens* Gontsch. caulis 15-16 mm longis (nec 22-30cm) dense pilosis (nec sparse), bracteis 2.5-3 mm longis (nec 5-7 mm), stipulis 3-4 mm longis (nec 8-10 mm), leguminibus dorso sulcatis (nec planis).

Planta perennis, 40-50 cm alta, caulibus basi ramosis, lignescentibus, erectis, cortice hepatico-griseo, caules hornotini, 15-20 cm longi, Pilis dense mediofixis albis appressime hirsutis. Stipulae petiolo vix adnatae, 2.5-3 mm longae, lineares lanceolatae, albo-nigrosque hirsutae. Folia 4-8 cm longa; petiolo sulcato, 0.5-2.5 cm longo, piloso, dense pilis medifixis et appresse obtectis; foliola 4-8 juga, anguste lineares, acuta, 10-20 mm longa, 0.75-1mm lata, utrinque densiuscule pilosa. Inflorescentiae axillares; pedunculi 5-10 cm longi, dense \pm appresse pilosi; racemo paucifloro ad 5-8 cm longo, 10-15 floro. Bractea 2-3 mm longae, anguste linearae, acutae, dense \pm appresse pilosae, pilis nigris. Pedicelli 3 mm longi. Calyx elongato tubulosus; 15-16 mm longus, appresse paralleliter piloso-striatus, striis alternatis.

corolla flava, glabra; vexillum 21 mm longum; lamina 14 mm longa, 7-10 mm lata, oblongi-ovata in unguem attenuata; ungue lamina brevior ca. 9 mm longo. Alae vexilla subaequilongae, 20 mm longae; lamina 8 mm longa, 1.5-2 mm lata, oblonga, apice angustata, basi breviter auriculata, ungue lamina longiore. Carina 18 mm longa; lamina 4 mm longa, 2.5 mm lata, fere triangulari-elliptica, apice rotundata, brevissime auriculata. Filamenta a basi et carinam connata. Ovarium sessile, pilosum, 7 mm longum, stylo 14 mm longo, apice curvato; stigma nudum. Legumen fere biloculare, linearis ca. 18 mm longum, 2.5-3 mm latum, apice rostro 4.5 mm longo dense appresse albo-pilosum, ventre carinato et dorso sulcato; semina reniformia, 2.5 mm longa et 1 mm lata.

Typus. Khorassan, Hezar-Masjed mountains, Sirzar, Saghafi 4951 (holotypus TARI).

NEW RECORDS TO IRAN

Astragalus xiphidium Bge.

A new record for Iran. Easily recognized by its habit from *A. xiphidioides* Fr. & Sint.

The closest locality to the Iranian gathering is in Caucasus. This species grows

only in Azerbaijan.

Selected specimens. Azerbaijan: Khalkhal, 1700 m, Yoosefy 2788; Tabriz, Meshkin to Noduz, 950-1000 m, Yoosefy 309; Kalibar, Babak, 2300 m, Yoosefy 10989, 2064; Hurand, 800 m, Yoosefy 7611; Kiamaky Dagh, 700 m, Yoosefy 17600.

Astragalus sumbari M. Pop.

It was previously known only from the former USSR and resembles *A. tolgorensis* which is endemic to Iran, but differs in having the sulcate legumes, short stems and smaller stipules. This species is new to Iran.

Selected specimens. Gorgan: Golestan National Park, Cheshmeh-Khan, 1000 m, Maassoumi, Pakravan & Nasseh 72316, 72325; Almesh between Sharloogh & Cheshmeh Khan 1350 m, Maassoumi 47555, 47593; Sulgerd. Eslamabad to Maraveh Tappeh, 800-1500 m, Maassoumi, Pakravan & Nasseh 72380.

Astragalus dendroproselius Rech. f.

This species was indicated only from Iraq (Townsend, 1968). Our record is new to Iran.

Selected specimen. Azarbaijan: 30 km S. Khalkhal, 1500 m, Forghandust 36132.

NEW SYNONYMS

***Astragalus angustatus* Bge.**

syn.: *A. argyroides* G.Beck.

It is distributed widely in Iran and extended from Shahrud and Semnan to Karaj, Gilan and Azarbayejan. The specimens of *A. angustatus* studied and compared with the specimens assignable to *A. argyroides*, which were collected from the type locality (Manjeel). Since no reasonable differences found out, *A. argyroides* G. Beck is considered as a synonym of *A. angustatus* Bge.

Selected specimens. Azarbayejan: 28 km from Mianeh to Khalkal, 1150 m. Maassoumi 56865. Gilan: Manjil, Kalaj, 1000 m, Sabeti 15789. Ghazvin: 24 km W. Takestn 1450 m, Pabot 2694. Tehran: 13 km from deviation Arak, Qum road to Ashtian, 1700 m, Mozaffarian & Maassoumi 48110. Semnan: 82 km from Sabzevar to Mayamey, before Abbasabad, 930 m, Assadi & Maassoumi 55899; Shahrud-Bastam, 14 km S Zeydar versus Biarjmand, in collibus arenosis, 1300 m, Rechinger 50283. Fars: Shiraz, 62- 66 km SE. Shiraz, 1520 m, Pabot 6223.

***Astragalus xiphidioides* Fr. & Sint.**

syn.: *A. transhyrcanus* M. Pop.

This species was known only from Turkemenistan. The Iranian localities are close to the localities in Turkemenistan. *A. transhyrcanus* M. Pop. was described from the former USSR and distinguished from *A. xiphidioides* only by the length of the leaflets and its legums. Since many intermediate forms are found, and also they share the same habitat, it seems that such differences are more ecological variations. Therefore we consider *A. transhyrcanus* as a synonym of *A. xiphidioides*.

Selected specimens. Gorgan: Maraveh Tappeh, Ghazanghayeh, east part, 300-800 m. Maassoumi, Pakravan & Nasseh, 72335, 72346, 72354, 72345; Golestan National Park, Cheshmeh-Khan 1700 m, Maassoumi, Pakravan & Nasseh 72316, 72323; Almesh, 1700 m, Maassoumi, Pakravan & Nasseh 72328, 72327; Sulegerd to Maraveh Tappeh, 800-1500m, Maassoumi, Pakravan & Nasseh 72334, 72298; Almesh 1350-1700 m, Mozaffarian et al. 59036; Almesh 1750 m, Wendelbo & Forughi 12607.

EXCLUDED SPECIES

Astragalus viridis Bge. was introduced for the first time from sect. *Cystodes* and then transferred to sect. *Xiphidium* by Boissier.

Astraglaus dendroproselius Rech. f. doubtfully introduced from sect. *Proselius*. Since these two species and members of the sect. *Cystodes* share the same characters and distinct characters such as villous legume and dilated calyx on the fruit are quite unlike those of sect. *Xiphidium* Bge., *A. dendroproselius* and *A. viridis* are transferred to sect. *Cystodes*.

Astragalus triqueter Sirj. & Rech. f. was introduced from sect. *Xiphidium*, but with

patent unequal bifurcate hairs on the legume which is quite different from those of the sect. *Xiphidium* Bge. Due to the close relationship with the sect. *Erioceras* this species is transferred to the sect. *Erioceras* Bge.

REFERENCE

Townsend, C. C. 1968: Contribution to the flora of Iraq 5. Notes on the leguminales Kew Bulletin. -21:435-458.