

ADDITIONS TO THE GENUS *ASTRAGALUS* (PAPILIONACEAE) IN IRAN

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Eleven new species including *Astragalus capax*, *A. demonstratus*, *A. expetitus*, *A. ferominatus*, *A. fortuitus*, *A. gypsocolus*, *A. lamprocarpus*, *A. leptynticus*, *A. pediculariformis*, *A. platyfoliolatus* and *A. pseudo-brunsianus* are described from Iran belonging to the different sections. They are compared with their nearest relatives. The monotypic section *Lamprocarpa* is described as a new, the type of the section designated as *A. lamprocarpus*. Following species are reported for the first time from Iran: *A. fuhsii*, *A. maximowiczii*, *A. zohrabii*, *A. hirticalyx*, *A. laguriformis*, *A. velenowskyi*, *A. woronowii*, *A. uranolimneus* and *A. acantherioceras*. *A. sclerocladus*, *A. schystocalyx* and *A. pseudo-angustifolius* formerly known as synonymous, are designated as distinct species.

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گونه‌ها و اطلاعات جدیدی از جنس گون (*Astragalus*) در ایران
علی اصغر معصومی

یازده گونه جدید مشتمل بر *Astragalus capax* و *A. demonstratus* و *A. expetitus* و *A. ferominatus* و *A. fortuitus* و *A. gypsocolus* و *A. lamprocarpus* و *A. leptynticus* و *A. pediculariformis* و *A. platyfoliolatus* و *A. pseudo-brunsianus* متعلق به بخش‌های گوناگون از ایران معرفی می‌شوند، این گونه‌ها با نزدیک‌ترین خویشاوندان خود مقایسه گردیده‌اند.

بخش تک گونه‌ای *Lamprocarpa* بعنوان بخش جدید معرفی می‌گردد. از بخش *Hymenostegis* و بخش‌های مجاور آن تعداد نه گونه بعنوان گزارش جدید برای ایران

شناخته شده است که عبارتند از: *Astragalus maximowiczii* و *A. zohrabii* و *A. hirticalyx* و *A. laguriformis* و *A. velenowskii* و *A. woronowii* و *A. acantherioceras* و *A. uranolimneus* .
گونه‌های زیر که قبلاً مترادف قرار داده شده بودند، بعنوان گونه‌های مستقل از همدیگر تشخیص داده می‌شوند: *Astragalus schystocalyx* و *A. sclerocladus* و *A. pseudoangustifolius* .

INTRODUCTION

The genus *Astragalus* has been subject of studies by the author and some students in the Central Herbarium of Iran (TARI). The studies have been based on numerous herbarium specimens and field observations. Treatments of several sections have already been prepared. New species, new plant records to Iran are currently introduced for the genus *Astragalus* in Iran. In this paper, several new taxa are described, some new records are reported for the flora of Iran and few taxonomic errors are corrected.

NEW TAXA

Section *Lamprocarpa* Maassoumi sect.

nov. Type section *A. lamprocarpus* Maassoumi

Humile, similar to Sect. *Acanthophaea* Bunge, but differs from it in having ovoid inflated and unilocular (not bilocular) fruits, it also differs from Sect. *Anthylloidei* DC. with inflated maculate fruit and tubular (not inflated to bladder shaped) calyx.

Perennae, humilis, breviter caulescens. Stipulae lanceolatae, parte liberae acuminatae, pilosae, basi petiolo adnatae,

inter se liberae. Folia paripinnata; petiola lignoso-indurata, pungenta; foliola 14-15 juga, dense patenter piloso. Inflorescentiae pauciflorae, pedunculo folio brevior, curvato, dense albo patenter piloso, apicem sparse pilis nigris mixtis. Pedicelli deflexi, nigro pilosi. Bractae lanceolatae, albo-nigrosque pilosae. Calyx tubulosus, violaceus, dense albo-nigrosque pilosus, non inflatus; dentibus triangulare, intus pilosus. Corolla violacea, glabra. Vexillum ellipticum, antice emarginatum. Alae carinam aequantes. Legumen sessile, inflatum, ventro-dorso rotundatum, purpureo-maculatum, dense brevissime appresse pilosum, apice rostratum, uniloculare. Species unica.

***Astragalus lamprocarpus* Maassoumi, sp. nov.** e sect. *Lamprocarpa*

Plantae perennes, breviter caulescentes. Caulis ca. 4 cm longus. Stipulae lanceolatae, pilosae, ca. 6-8 mm longae, basi per 3 mm petiolo adnatae, inter se liberae. Folia paripinnata, spinosa, ca. 7 cm longa, sicut rachis dense patenter piloso; petioli lignosi, indurati ca. 2 cm longi; foliola ca. 14-15 juga, ovato-oblonga, vel elliptica, basali majori, apicem versus brevissimi, ca. 2-4 mm longa et 1-2 mm lata, antice mucronulata, utrinque dense patenter

pilosa. Inflorescentia solitaria, crassa, dense albo patenter pilosa, deflexa, 1-2 flora. Bracteae ovato-lanceolatae, albo-nigrosque pilosae. Pedicelli deflexi, manifest nigro pilosi. Calyx tubulosus, violaceus, dense albo-nigrosque patenter pilosus (non inflatus), dentibus triangularibus, basi latus, ca. 1.5-2 mm longus, intus pilosus. Corolla violacea, glabra. Vexillum ca. 27 mm longum; lamina oblongo-elliptica, basim attenuata. Alae ca. 19 mm longae; lamina oblongo-elliptica, apicem versus dilatata, antice leviter assymetricque emarginata, basi auriculata; auricula ca. 1 mm longa; ungue laminam aequantes. Carina ca. 17 mm longa; lamina triangularis, curvata, antice rotundata; ungue lamina paulo longiora. Ovarium pilosum. Legumen ovoideum, inflatum, ca. 27 mm longum et 16 mm latum, ca. 14 mm altum, dense brevissime albo-appresse pilosum; valvi coriacei, atropurpureo maculati; apicem versus attenuatum, basi sessili, dorso-ventro breviter rotundatum, uniloculare. Semina numerosa.

Holotypus. Lorestan, Ghali Kuh (E. of the pass on road Aligodarz-Shoulabad), 3100-3600 m, 1.7.1977, Runemark & Lazari 26506 (TARI).

***Astragalus platyfoliolatus* Maassoumi, sp. nov.** e sect. *Caprini* DC.

Differs from *A. pseudozagrosicus* Maassoumi & Podl. in following characters: calyx length ca. 16 mm long (not 7-8 mm); the teeth much shorter than the tube (not equal); pods ca. 27 mm long and unilocular (not 10-13 mm and bilocular); keel triangular and recurvate (not erect and elliptic); from *A. managethae* Sirj. & Rech. f. leaflets oblong-elliptic (not orbicular); pods unilocular, ovoid (not bilocular, ellipsoid).

Plantae perennes, acaules, ca. 40 cm altae, tota glabrae; caudex multiceps. Stipulae lanceolatae, ca. 16-17 mm longae, basi per 1-2 mm petiolo adnatae. Folia ca. 40 cm longa; foliola magna, leviter rubra, glabra, ca. 10 juga, oblongo-elliptica, ca. 25-40 mm longa et 15-27 mm lata, antice rotundata, basi oblique cordata. Inflorescentia radicale, pedunculo abbreviato, ca. 2 cm longo, 4-5 flores. Bracteae subulatae, ca. 9-10 mm longae. Calyx tubulosus, basi distincte gibbosus, rubrus, glabrus, ca. 16 mm longis, dentibus subulatis, ca. 3 mm longus. Corolla flava, glabra. Vexillum ca. 30 mm longum; lamina elliptica, antice rotundata, breviter emarginata, basim versus contracta. Alae ca. 25 mm longae;

lamina elliptica, ungue lamina duplo-longiore. Carina ca. 22 mm longa; lamina oblique elliptica. Ovarium glabrum, basi breviter stipitatum. Stigma punctata. Legumen glabrum, ovoideum, sessile, ca. 27 mm longum, 12 mm latum et 8 mm altum, apice rostratum, rostro ca. 7 mm longo, ventre rotundato, breviter carinatum, dorso appianato, sulcatum, uniloculare.

Holotypus. Kohgilouyeh and Boirahmad, road from Yasuj to Meimand, Tang-e Ravagh, to Dezak and Pareshkaft, 2050 m, 6.6.1992, Mozaffarian 71246 (TARI).

***Astragalus fortuitus* Maassoumi, sp. nov.**
e sect. *Caprini* DC.

Differs from *A. imbicillus* Maassoumi & Podl. in having the leaflets densely covered with appressed hairs (not glabrous); standard oblong-elliptic, ca. 27 mm long; pods stipitate at the base, densely covered with long hairs (not glabrous); from *A. adulterianus* Podl. leaflets 5-6 pairs (not 2-3 pairs); calyx tubular (not campanulate), teeth of the calyx ca. 3-4 mm long (not 7-8 mm); standard glabrous (not pilose on the outside), ca. 28 mm long (not 17 mm) and ovary stipitate (not sessile).

Plantae perennes, acaulis, ca. 10-11 cm altae. Stipulae membranaceae, oblongo-lanceolatae, basi ca. 1 mm petiolo adnatae, glabrae vel apicem versus pilosae. Folia ca. 4-5 cm longa, petiolo ca. 2-3 cm longo, sicut rachis dense patenter pilosa; foliola 5 juga, ovato-oblonga, apice rotundata, basi cordata, ca. 9-14 mm longa et 6-9 mm lata, utrinque dense argento appress pilosa. Inflorescentia radicales, ca. 5 flores. pedunculo ca. 10 mm longo, dense patenter piloso. Bractee lineares vel lanceolatae, ca. 7-8 mm longae, pilosae, pedicelli pilosi. Calyx tubulosus, basi manifeste gibbosus, dense patenter pilosus, ca. 14-16 mm longus. Vexillum anguste ellipticum, antice rotundatum, ca. 27 mm longum. Alae ca. 24 mm longae; lamina elliptica, antice rotundata, basi auriculata; auricula ca. 1 mm longa; ungue laminam duplo longiore. Carina ca. 23 mm longa; lamina oblique oblonga, antice leviter emarginata, basi breviter auriculata; ungue laminam duplo longiore. Ovarium pilosum, basi stipitatum; stipes ca. 5 mm longus. Legumen ignotum.

Holotypus. Kermanshah, Islam Abad-e Gharb, ca. 40 km from Islam Abad to Ilam, 1500 m, 14.4.1990, Fattahi, Tavakoli & Zanganeh 2591 (TARI).

Astragalus gypsocolus Maassoumi & Mozaffarian, **sp. nov** e sect. *Caprini* DC.

Differs from *A. kermanschahanensis* Bornm. in having the following characters: leaflets oblong-elliptic (not obovate), upper side densely covered with short appressed hairs (not glabrous), acaulescent (not caulescent); from *A. managethae* Sirj. & Rech. f. leaflets oblong-elliptic (not orbicular), pods pilose, ca. 30 mm long (not glabrous and much longer); from *A. rawianus* C. C. Townsend pods strongly stipitate (not sessile); petiole and peduncle densely covered with short spreading hairs (not appressed hairs).

Plantae perennes, acaules, ca. 30-40 cm altae, dense brevissime patenter pilosae. Stipulae lanceolatae, membranaceae, ca. 17 mm longae, basi per 3-5 mm petiolo adnatae, glabrae, margine ciliatae. Folia ca. 30-40 cm longa, petiolo ca. 7-11 cm longo, sicut rachis dense brevissime patenter piloso; foliola magna, ca. 10 juga, oblongo-elliptica vel ovato-oblonga, antice rotundata vel breviter truncata, ca. 25-45 mm longa et 15-30 mm lata, utrinque dense brevissime appresse pilosa. Inflorescentiae radicales, 6-8 florum, pedunculo ca. 7-8 cm longo, brevissime patenter piloso. Bractae lanceolatae, pilosae, ca. 3-4 mm longae

pedicelli pilosi, leviter deflexi. Calyx tubulosus, dense albo-pilosus, basi gibbosus, ca. 16-17 mm longus, dentibus linearibus, subulatis, ca. 4 mm longis. Corolla flava. Vexillum ca. 28 mm longum; lamina obovata, antice retusa, biloba, leviter emarginata, basi attenuata. Alae ca. 22 mm longae; lamina oblongo-elliptica, antice rotundata, basi auriculata; auricula ca. 2 mm longa; ungue lamina duplo-longiore. Carina ca. 22 mm longa; lamina oblique-elliptica; unguis ca. 14 mm longus. Ovarium pilosum, basi stipitatum; stipes ca. 5 mm longus. stigma punctata. Legumen ellipticum, ca. 30-40 mm longum et 10-15 mm latum et 10 mm altum, dense longe et brevissime patenter pilosum, apicem versus attenuatum, antice rostratum, rostro curvato, ca. 3 mm longo, basi stipitatum; stipes ca. 3 mm longus, ventro rotundato manifeste compressum, carinatum, dorso striato, leviter sulcatum, uniloculare. Semina reniformia, ca. 5 mm longa et 2-3 mm lata.

Holotypus. Khuzestan, ca. 25-30 km from Masjed Soleyman to Andica, against Karoon river, 500 m, 20.4.1990, Mozaffarian 70190 (TARI).

Astragalus capax Maassoumi, **sp. nov.**

e sect. *Hymenostegis* Bunge

Differs from *A. persicus* F. & M. in having the lax spike (not dense); stipules joined to one another for ca. 1 mm (not 3 mm); from *A. brunsianus* Bornm. with dense spreading hairs on the leaflets (not appressed hairs); bracts hairy on the midrib (not glabrous).

Plantae perennes, suffruticosae, caespitosae, dense ramosae, breviter erinaceae, hemisphaericae, adscendentes vel plerumque procumbentes, dense foliosae, villosae, ca. 22-26 cm altae et ca. 40 cm diametro; caules abbreviatis, ca. 5 cm longi. Stipulae lanceolatae, membranaceae vel papyraceo-hyalinae, marginibus ciliatae, parte liberae lanceolato-acuminatae, ca. 9 mm longae, basi ca. 10 mm petiolo adnatae, inter ca. 1 mm se connatae. Folia ca. 10-12 cm longa, petiolo 2-2.5 cm longo, sicut rachis dense patenter pilosa. Foliola 6-7 juga, anguste elliptica vel oblongo-lanceolata, apicem versus abrupte attenuata, mucronulata vel pungentia, mucrone ca. 2 mm longo, utrinque dense patenter pilosa, ca. 12-18 mm longa et 3 mm lata. Pedunculi folio superantes, ca. 14-15 cm longi, tenui, breviter deflexi, dense longe et brevissime albo patenter villosi. Inflorescentiae

terminales, laxiusculae, multiflorae, ovato-oblongae vel elongatae, ca. 5-7 cm longae et 2 cm latae. Bractee ovato-lanceolatae vel oblongo-lanceolatae chartaceo-membranaceae, apicem versus attenuatae, breviter aristatae, appresse pilosae vel in apicem et basim breviter pilosae vel in partim mediano pilosae, margine ciliatae, ca. 10-12 mm longae et 7-8 mm latae. Bracteolae nullae. Calyx flavus vel in apicem versus rubrus, ca. 14 mm longus et 4 mm latus, tubulosus, inflatus, dense molliter sericeo-pilosus, nervosus, dentibus subulatis, ca. 5 mm longis. Corolla glabra, purpureo-violacea. Vexillum ca. 16 mm longum; lamina oblongo-elliptica, antice obtusa, basim versus leviter dilatata, late auriculata vel angulata, acuta vel obtusa, ca. 9 mm lata. Alae ca. 15 mm longae; lamina oblonga vel elliptica, obtusa, basi auriculata; auricula ca. 1 mm longa; ungue ca. 9 mm longo. Carina ca. 14 mm longa; lamina oblongo-elliptica; ungue ca. 8 mm longo. Ovarium pilosum, ca. 5 mm longum, dense appresse pilosum; Stylus basi pilosus. Legumen ignotum.

Holotypus. Tehran. S. slope of Damavand mt., 3300-3800 m, 26.6.1988, Khatamsaz, Akhiani & Abouhamzeh 64734 (TARI).

***Astragalus demonstratus* Maassoumi, sp. nov.** e sect. *Hymenostegis* Bunge

Differs from *A. leucargyreus* Bornm. in having the inflorescence with many dense flowers, (not with 5-7 flowers), flowering parts much longer; stipules longer, joined to one another for ca. 4 mm (not 1.5 mm).

Plantae perennes, suffruticosae, caespitosae, dense ramosae et erinaceae, hemisphaericae, adscendentes, dense foliosae, appressissime vel subpatenter sericeo-argireo pilosae, ca. 13-17 cm altae et 20 cm diametro; caules abbreviati vel elongati, ca. 12 cm longi. Stipulae lanceolatae, membranaceae, papyraceae vel marginibus versus hyalinae, glabrae, marginibus ciliatae, parte liberae lanceolato-acuminatae, ca. 10 mm longae, basi ca. 8 mm petiolo adnatae, inter ca. 4 mm se connatae. Folia ca. 3-8 cm longa, petiolo 0.5-0.7 cm longo, sicut rachis dense subpatenter pilosa. Foliola 5-6 juga, anguste elliptica vel oblongo-lanceolata, acuta, mucronulata vel pungentia, mucrone ca. 2 mm longo, utrinque dense appresse pilosa, ca. 10-20 mm longa et 2-3 mm lata. Pedunculi foliis breviores, ca. 0.5-2 cm longis, erectis vel deflexis, dense longe et brevissime albo-patenter pilosis. Inflor-
escentiae terminales, dense multiflorae,

ovato-oblongae vel elongatae, ca. 3-4 cm longae et 3.5 cm latae. Bractee ovato-lanceolatae vel oblongo-lanceolatae chartaceo-membranaceae, apicem versus attenuatae, brevissime aristatae, glabrae, margine ciliatae, ca. 10-13 mm longae et 5-6 mm latae. Bracteolae nullae. Calyx flavus vel in apicem versus rubrus, ca. 16 mm longus et 7 mm latus, tubulosus, inflatus, dense molliter sericeo-pilosus, paralleliter nervosus; dentibus linearibus vel subulatis, ca. 7 mm longis. Corolla glabra, flava vel sulfurea vel purpureo-violacea. Vexillum ca. 23 mm longum; lamina oblongo-elliptica, antice obtusa, basim versus leviter attenuata, non auriculata vel sensim angulata, ca. 10 mm lata. Alae ca. 21 mm longae; lamina oblonga vel elliptica, obtusa, basi auriculata; auricula ca. 0.8 mm longa; ungue ca. 11 mm longo. Carina ca. 16 mm longa; lamina ovato-triangularis; ungue ca. 10 mm longo. Ovarium pilosum, ca. 5 mm longum, dense appresse pilosum. Stylus basi pilosus. Legumen ignotum

Holotypus. Zanjan, Mahneshan, ca. 10 km from Mahneshan to Pari, 2000 m, 24.5.1987, Maassoumi 64804 (TARI).

***Astragalus expetitus* Maassoumi, sp.**

nov. e sect. *Hymenostegis* Bunge

Differs from *A. brunsianus* in stipules with free portion ca. 10 mm (not 6 mm) and jointed to one another for ca. 5 mm (not 3 mm); peduncles and leaflets covered with spreading hairs (not appressed hairs); from *A. rubrostriatus* Bunge by peduncle with spreading hairs (not appressed hairs); inflorescence dense and spherical (not remote and lax).

Plantae perennes, suffruticosae, caespitosae, dense ramosae et erinaceae, hemisphaericae, adscendentes, dense foliosae, villosae vel foliolae juveniliae appressissime pilosae, ca. 22 cm altae et 40 cm diametro; caules abbreviati, ca. 7-8 cm longi. Stipulae lanceolatae, membranaceae, marginibus versus hyalinis, ciliatae, multinervae, parte liberae oblongae, lanceolatae, ca. 10 mm longae, basi ca. 10 mm petiolo adnatae, inter ca. 5 mm se connatae. Folia ca. 6-7 cm longa, petiolo ca. 2 cm longo, sicut rachis laxè patenter pilosa; foliola 6-7 juga, anguste elliptica vel oblongo-lanceolata, apicem versus abrupte attenuata, mucronulata vel pungentia, mucrone ca. 1 mm longo, supra glaberrima vel sparse villosa vel utrinque laxè patenter pilosa, ca. 10-14 mm longa et 4-5 mm lata. Pedunculi folio aequantes vel superantes,

ca. 8-9 cm longi, erecti, dense longe et brevissime albo patenter pilosi. Inflorescentiae terminales, multiflorae, ovato-oblongae, ca. 3-4.5 cm longae et 2.5 cm latae. Bracteae ovato-lanceolatae vel oblongo-lanceolatae, chartaceo-membranaceae, apicem versus attenuatae, breviter aristatae, glabrae, marginibus ciliatae, ca. 13 mm longae et 5-6 mm latae. Bracteolae nullae. Calyx purpureus vel rubrus, ca. 14-15 mm longus et 5 mm latus, tubulosus, breviter inflatus, dense molliter sericeo-pilosus, paralleliter purpureo-nervosus; dentibus linearibus vel subulatis, ca. 7-8 mm longis. Corolla glabra, purpurea. Vexillum ca. 18 mm longum; lamina oblongo-elliptica, antice obtusa, basim versus leviter dilatata, auriculata vel angulata, acuta, ca. 7 cm lata. Alae ca. 15 mm longae; laminae oblongae vel ellipticae, obtusae, basi auriculatae; auriculae ca. 1 mm longae; unguibus ca. 10 mm longis. Carina ca. 15 mm longa; lamina oblongo-elliptica, ungue ca. 10 mm longo. Ovarium pilosum, ca. 6 mm longum, dense appresse pilosum. Stylus 7 mm longus, ad parte mediano pilosus. Legumen ellipsoideum.

Holotypus. Azarbayejan, ca. 5 km S. W. Tekab, 2400 m, 5.6.1974, Wendelbo, Assadi

& Shirdelpur 12223 (TARI).

***Astragalus ferruminatus* Maassoumi, sp. nov.** e sect. *Hymenostegis* Bunge

Differs from *A. chrysostachys* subsp. *chrysostachys* in having the calyx with double induments, stipules coriaceous (not membranaceo-papyraceous), bracts broadly ovate and densely hairy on the midrib (not glabrous).

Plantae perennes, suffruticosae, caespitosae, ramosae et erinaceae, adscendentes, dense foliosae, appressissime sericeo-argireo pilosae, ca. 17 cm altae et 15 cm diametro; caules abbreviatis ca. 3 cm longi. Stipulae lanceolatae, chartaceae vel marginam versus hyalinae, glabrae, marginibus ciliatis, parte liberae lanceolato-acuminatae, ca. 7 mm longae, basi ca. 7 mm petiolo adnatae, inter ca. 2 mm se connatae. Folia ca. 2.5-6 cm longa, petiolo 5-10 cm longo sicut rachis dense appresse pilosa. Foliola 5-6 juga, anguste elliptica vel oblongo-lanceolata, apicem versus abrupte attenuata, mucronulata vel pungentia, mucrone ca. 1 mm longo, utrinque dense appresse pilosa, ca. 7-12 mm longa et 1-3 mm lata. Pedunculi folio superantes, ca. 8-12 cm longi, erecti, dense longe et brevissime appresse pilosi. Inflorescentiae

terminales, dense multiflorae, ovato-ellipticae, ca. 3 cm longae et 2 cm latae. Bracteae ovatae, chartaceo-membranaceae, apicem versus attenuatae, breviter aristatae, dense appresse pilosae vel in partim mediano pilosae, marginibus ciliatae, ca. 10 mm longae et 7 mm latae. Bracteolae nullae. Calyx flavus, ca. 15 mm longus et 7 mm latus, tubulosus, inflatus, dense molliter sericeo-pilosus, paralleliter nervosus; dentibus linearibus, ca. 6 mm longis. Corolla glabra, flava. Vexillum ca. 15 mm longum; lamina oblongo-elliptica, obtusa, basim versus leviter dilatata, auriculata vel angulata, acuta, ca. 5 mm lata. Alae ca. 14 mm longae; laminae oblongae, acutae, basi auriculatae, unguibus ca. 9 mm longis. Carina ca. 12 mm longa; lamina oblongo-elliptica, ungue ca. 7 mm longo. Ovarium pilosum, ca. 5 mm longum, dense appresse pilosum. Stylus 5 mm longus, basi pilosus. Legumen ellipsoideum, ca. 8 mm longum et 3 mm latum, dorso-ventro comperssum, basi breviter stipitatum.

Holotypus. Lorestan, ca. 40 Km N. W. of Ilam, Shahabad road, 1510 m, 27.7.1965, Seraj 24706 (TARI).

Other specimen. Lorestan, ca. 102 km N. E. of Ilam, Shahabad road, 1970 m, 26.6.1965,

Seraj 24680 (TARI).

***Astragalus leptynticus* Maassoumi, sp. nov.** e sect. *Hymenostegis* Bunge

Differs from *A. chrysostachys* Boiss. subsp. *chrysostachys* in following characters: calyx short, with parallel nerves, bracts caducous, very small, glabrous, corolla in upper parts purpurea, inflorescence remotely flowered.

Plantae perennes, suffruticosae, caespitosae, dense ramosae et erinaceae, hemisphaericae, adscendentes, dense foliosae, appressissime sericeo-argireo pilosae, ca. 15-22 cm altae et 30-40 cm diametro; caules abbreviati, ca. 3 cm longi. Stipulae lanceolatae, membranaceae, papyraceae vel hyalinae, glabrae, marginam ciliatae, parte liberae lanceolato-acuminatae, ca. 7 mm longae, basi ca. 6-7 mm petiolo adnatae, inter ca. 2-2.5 mm se connatae. Folia ca. 4-5 cm longa, petiolo 1-1.5 cm longo, sicut rachis dense appresse pilosa. Foliola 4-5 juga, anguste elliptica, apicem versus abrupte attenuata, mucronulata vel pungentia, utrinque dense appresse pilosa, ca. 8-13 mm longa et 2-3 mm lata. Pedunculi folio superantes, ca. 6-10 cm longi, tenui, erecti, dense longe et brevissime albo patenter pilosi. Inflorescentiae terminales, laxae, multiflorae,

ovato-oblongae vel elongato-cylindricae, ca. 3-6 cm longae et 2-2.5 cm latae. Bracteae caducae, oblongo-lanceolatae chartaceo-membranaceae, apicem versus attenuatae, non aristatae, glabrae vel in basim breviter pilosae, margine leviter ciliatae, ca. 12 mm longae et 6 mm latae. Bracteolae nullae. Calyx purpureus vel in apicem versus intense rubrus, ca. 13 mm longus et 4 mm latus, tubulosus, breviter inflatus, dense molliter sericeo-pilosus, paralleliter rubro-nervosus; dentibus linearibus, ca. 5 mm longis. Corolla glabra, flava vel in apicem purpureo-violacea. Vexillum ca. 20 mm longum; lamina oblongo-elliptica, antice acuta, basim versus leviter dilatata, auriculata vel angulata, ca. 6 mm lata. Alae ca. 17 mm longae; laminae oblongae vel ellipticae, acutae, basi auriculatae; auriculae ca. 1 mm longae, unguibus ca. 10 mm longis. Carina ca. 15 mm longa; lamina oblongo-elliptica, ungue ca. 10 mm longo. Ovarium pilosum, ca. 4-5 mm longum, dense appresse pilosum. Stylus basi pilosus. Legumen ignotum.

Holotypus. Semnan, Semnan to Firuzkuh, 33 km N. W. of Semnan, 2450 m, 24.6.1974, Wendelbo & Foroughi 13014 (TARI).

Other specimens. Semnan, 35 km from

Shahmirzad to Fuladmahaleh, 2300 m, 27. 7. 1982, Assadi & Mozaffarian 40443 (TARI); Tehran, ca. 13 km from Firuzkuh to Semnan, 2000 m, 9.6.1981, Assadi & Mozaffarian 35301 (TARI).

***Astragalus pediculariformis* Maassoumi, sp. nov. e sect. *Hymenostegis* Bunge**

Differs from *A. rubriflorus* Bunge in having the peduncle with spreading hairs, inflorescence much longer, lax. flowers bigger, standard much longer with obtuse angles at the base, bracts glabrous (non pilose).

Plantae perennes, suffruticosae, caespitosae, erinaceae, pulvinatae, adscendentes, dense foliosae, appressissime sericeo-argireo pilosae, ca. 9-13 cm altae; caules abbreviatis vel elongatis, ca. 4-7 cm longis. Stipulae lanceolatae, membranaceae, papyraceae vel hyalinae, glabrae, marginibus non ciliatis, parte liberae lanceolato-acuminatae, ca. 12 mm longae, basi ca. 10 mm petiolo adnatae, inter ca. 4 mm se connatae. Folia ca. 7 cm longa, petiolo 1-2 cm longo, sicut rachis dense appresse pilosa. Foliola 6 juga, anguste elliptica vel oblongo-lanceolata, apicem versus attenuata, mucronulata vel pungentia, mucrone ca. 2 mm longo,

utrinque dense appresse pilosa, ca. 10-18 mm longa et 3-5 mm lata. Pedunculi folio breviores, ca. 2-3 cm longi vel nulli, erecti, dense longe et brevissime albo patenter pilosi. Inflorescentiae terminales, dense multiflorae, ovato-oblongae vel raro laxiusculae, ca. 2-6 cm longae et 2-4 cm latae. Bractae ovato-lanceolatae, chartaceo-membranaceae, apicem versus attenuatae, brevissime aristatae, glabrae, marginibus ciliatis, ca. 10-13 mm longae et 5-6 mm latae. Bracteolae nullae. Calyx purpureus, ca. 16 mm longus et 6-7 mm latus, tubulosus, manifeste inflatus, dense molliter sericeo-pilosus, paralleliter purpureo-nervosus; dentibus subulatis, ca. 6 mm longis. Corolla glabra, flava vel purpureo-violacea. Vexillum ca. 18-24 mm longum, lamina oblongo-elliptica, antice rotundata, basim versus contracta, leviter dilatata, auriculata vel angulata, obtusa, ca. 8 mm lata. Alae ca. 20 mm longae; laminae oblongae vel ellipticae, acutae, basi auriculatae; auriculae ca. 1.5 mm longae, ungue ca. 10 mm longo. Carina ca. 17 mm longa; lamina ovato-triangularis, ungue ca. 10 mm longo. Ovarium dense appresse pilosum. Stylus a basi pilosus. Legumen ovoideum, ca. 6 mm longum et 3 mm latum, dorso-ventro compressum. Semina unica, reniforma, brunea, ca. 3 mm longa et

2-2.5 mm lata.

Holotypus. Zanjan, Soltanieh, Arjin village, Kuh-e Sheikh-Serri, 2100-2250 m, 2.7.1991, Ranjbar, Ghahremani & Zarre 69603 (TARI).

Astragalus pseudobrunsianus
Maassoumi, **sp. nov.** e sect. *Hymenostegis*
Bunge

Differs from *A. leucargyreus* Bornm. in following characters: peduncle longer than the leaves (not shorter); standard limb orbicular (not broadly elliptic); from *A. paralurges* Bunge with standard not acute angulate; from *A. rubrostriatus* Bunge with linear leaflets and oblong-elliptic standard (not angulate standard).

Plantae perennes, suffruticosae, caespitosae, erinaceae, hemisphaericae, adscendentes, dense foliosae, appressissime sericeo-argyreo pilosae, ca. 13 cm altae et 20 cm diametro; caules abbreviati, ca. 2-3 cm longi. Stipulae lanceolatae, membranaceae, papyraceo-hyalinae, glabrae, marginibus non ciliatis, parte liberae lanceolato-acuminatae, ca. 6 mm longae, basi ca. 5 mm petiolo adnatae, inter ca. 1.5 mm se connatae. Folia ca. 2-2.5 cm longa, petiolo 5 mm longo, sicut rachis appresse pilosa. Foliola 4-5 juga, anguste elliptica vel

linearo-lanceolata, apicem versus abrupte attenuata, mucronulata vel pungentia, utrinque dense appresse pilosa, ca. 7-8 mm longa et 1-1.5 mm lata. Pedunculi folio superantes, ca. 5-6 cm longi, tenui, erecti, dense longe et brevissime albo appresse pilosi. Inflorescentiae terminales, laxae, multiflorae, ovato-oblongae, ca. 4 cm longae et 2.5 cm latae. Bracteae ovato-lanceolatae vel oblongo-lanceolatae, chartaceae, apicem versus attenuatae, acutae, breviter rubri aristatae, glabrae vel in apicem laxiusculi brevissime pilosae, in partim mediano glabrae, marginibus ciliatae, ca. 14 mm longae et 5-7 mm latae. Bracteolae nullae. Calyx flavus vel in apicem versus rubrus, ca. 14 mm longus et 5 mm latus, tubulosus, breviter inflatus, dense molliter sericeo-pilosus, paralleliter nervosus; dentibus linearibus ca. 6-8 mm longis. Corolla glabra, purpureo-violacea. Vexillum ca. 14 mm longum; lamina orbicularis, antice obtusa, basim versus leviter attenuata, non auriculata. Alae ca. 14 mm longae; laminae oblongae vel ellipticae, apicem versus dilatatae, obtusae, basi auriculatae; auriculae ca. 1 mm longae, unguibus ca. 8 mm longis. Carina ca. 23 mm longa; lamina oblongo-elliptica vel ovato-triangularis, ungue ca. 6 mm longo. Ovarium pilosum, ca. 5 mm longum, dense

appresse pilosum. Stylus basi pilosus.
Legumen ignotum.

Holotypus. Tehran, S. of Tehran, Kuh-e
Bibi Shahrbanou, 1350 m, 24.6.1973,
Babakhanlou & Amin 15215 (TARI).

NEW RECORDS

Section *Acantherioceras* Rech. f.

Astragalus acantherioceras Rech. f.

Khorassan: 100 km E. of Birjand,
Ahangaran mts., N. and W. of the village
Zeidan 1900-2100 m, 2.6.1977 Runemark &
Sardabi 23749; 100 km E. of Birjand,
Ahangaran mts., 7 km NNW. of Zeidan,
2000-2300 m, 1.6.1977 Runemark &
Sardabi 23731; Birjand, Moud, before the
village Ebrahimabad, 1840 m, 1.9.1993,
Maassoumi & Zarre 71962.

This species was collected from S.
Khorassan, on silicious or serpentine rocks,
on the base of this taxon the section
Acantherioceras is recorded from E. of
Iran, this section is closely related to the
section *Leucocercis* Bunge, but distin-
guishable by the shape of the pods habit.

Section *Anthylloidei* DC.

Astragalus fuhsii Freyn & Sint.

Khorassan: N. of Bojnoord, Gifan,
Misynow mt. 1800-2000 m, 27.3.1970
Mashhad herbarium staff (s. n.).

Section *Eremophysa* Bunge

Astragalus maximowiczii Lipsky.

Khorassan: Torbat-e Jam, 10 km Fariman,
1150 m, 23.5.1972 Foroughi 6046; Sarakhs,
between Sangar and Shir Tappeh, margin
of Harirud, 330 m, 27.4.1989 Mozaffarian
67666.

Section *Hymenostegis* Bunge

Astragalus hirticalyx Boiss. ex Bunge.

Azarbayejan: Arasbaran protected area,
Doghrun mountain, 2500 m, 15.7.1977,
Assadi & Sardabi 23882; Arasbaran
protected region, western part of Makidi,
2400 m 8.6.1976 Assadi & Maassoumi
20216; Uroumijeh, Silvana, Mavana, Kuh-e
Khizan Bardarash, 2600-3000 m 6.7.1991
Mozaffarian 69888; Km 29 Sarab to
Ardabil, 2000 m, 5. Jul. 1965, Babakhanlou
19980; Ahar to Kallibar, 8 km to Kallibar,
Arasbaran protected area, 1900 m, 8.7.1991
Ranjbar, Ghahremani & Zarre 69610; Jolfa
to Marand, after Marand, between Zonouz
and Kuh-e Kamar, 1950 m, 7.7.1991,
Ranjbar, Ghahremani & Zarre 69607; ca.
25 km SE. of Jolfa, Kiamaki protected

area, Gheshlagh village, Kuh-e Ghelenj, 2100-2700 m, 19.6.1988, Assadi & Shahsavari 65735; ca. 20 km W. of Marand, mountains above the village Orlan, Mishoudagh, 2000-2500, 15.6.1988, Assadi & Shahsavari 65468; ca. 17 km from Zonouz to the village Kuh-e Kamar, 2300 m, 16.6.1988, Assadi & Shahsavari 65588; Jolfa to Marand, after Zonouz, between Zonouz and Kuh-e Kamar, 2000 m, 7.7.1991, Ranjbar, Ghahremani & Zarre 69606.

***Astragalus laguriformis* Freyn.**

Bakhtaran: N. of Kerend Gharb; Darband, kuh-e Zardah, 1570-1980 m, 20.6.1987, Hamzehee & Hatami 1319; 14 km N. of Kerend, 1800-2000 m, 21. 6. 1987, Assadi 60895; 18 km N. of Kerend Gharb, Lotfeh village, 1760 m, 21.6.1987, Hamzehee & Hatami 1422; road of Bisotun to Songhor, Karkasar, Mooineh village, Dalakhani mts., 1800 m, 8.6.87, Hamzehee & Hatami 1096; Assadabad pass, 2250-2750 m, 9.7.1956, Javidi & Amini 33309 (TARI); Nahavand, Borzol, Gian, Sarab-e Gian, Kuh-e Garrin, 1950-2700 m, 14.7.1988, Mozaffarian 65067.

***Astragalus uraniolimneus* Boiss.**

Azərbaycan: Urumieh, Silvana, Movana, Kuh-e Khizan (Bardarash), 2600-3000 m, 6.7.1991, Mozaffarian 69902; Urumieh, Silvana, Bardeh Su, 1800-2200 m, 4.7.1974, Siami & Zehzad 5307; Urumieh, pissan, 2000-2200 m, 1.7.1974, Zehzad 2844; Urumieh, Razhan, 2500-3000 m, 3.7.1974, Zehzad 2716; Targavar valley, Kay village to Germi, Sei-Soe, 2000-2100 m, 4.7.1991, Ranjbar, Ghahremani-nejad & Zarre 69605.

***Astragalus velenovskiyi* Nabelek.**

Azərbaycan: ca. 5 km S. of Tabriz to Sperkhan, 1600 m, 3.7.1991, Mozaffarian 69853.

***Astragalus woronowii* Bornm.**

Azərbaycan: Arasbaran protected region, western part of Makidi, 2400 m, 8.6.1976, Assadi & Massoumi 20216; Salmas, W. of salmas, Pareskhoran, 2100 m, 8.7.1991, Mozaffarian 69939; N. W. of Khoy, mountainous borderline of Turkey from Zourabad, Ghezelve, Kelisa to Dizaje Aland, 2750 m, 10.7.1991, Mozaffarian 69978.

***Astragalus zohrabii* Bunge.**

Azarbayejan, Uroumīyeh, Gardan-e Ghushchi, 1700-2000 m, 16.7.1991, Mozaffarian 70087; Uroumīyeh, road from Darre-e Ghasemlo to Oshnaviyeh, deviation to Zeiveh, 1800 m, 12.7.1991, Mozaffarian 70038.

CONFIRMATION OF THE OLD RANKS

Deml (1972) in the revision of the section *Acanthophace* without observing the holotype of *A. schystocalyx* Bunge treated it as an infraspecific rank of *A. sclerocladus* Bunge, transferring some of the relatives such as *A. pseudoangustifolius* Sirj. & Rech. f. and *A. syrtschensis* Bunge as the synonymy of it. It is necessary to mention that *A. sclerocladus* Bunge only known from an isolated locality in a limited area, pass between Kashan and Ghohrud, (Bunge 1969). Several collections were made from the type locality of this taxon but not anywhere else. *A. schystocalyx* Bunge with a cushion habit, distributed in the central part of the country, penetrating to Kerman, Yazd, Khorassan and Esfahan provinces, but nearly close the type locality of *A. schystocalyx*, these two taxa grow together. The author in a revision of the complex, compared these two taxa in the

type locality of *A. sclerocladus*, they are in habit and in morphological characters extremely different. Deml's table (1972) in comparing the taxa show very few characters on the sexual and vegetative parts, these characters in the sect. *Acanthophace* are not reliable to distinguish the related taxa. Based on the information in the distribution, habitat and soil composition, *A. sclerocladus* with cushion habit and densely branched stems is not comparable with *A. sclerocladus*, with ascending habit, therefore the two taxa are designated as distinct species. *A. pseudoangustifolius* Sirj. & Rech. f., another synonymy in Deml's treatment (1972) is known as a distinct species.

Astragalus sclerocladus Bunge, Mem. Acad. Imp. Sci. Saint-Petersbourg, ser. 7, 15/1: 75 (1869). Typus: Kashan, inter Esfahan und Tehran, Maj 1859, s. n. (G-Boiss. ; W.)

Specimens seen: Esfahan: ca. 2 km from deviation of Ghamsar on the road to Ghohrud, 1800 m, 4.9.1993, Maassoumi & Zarre 72018 (loc. clss.); Kashan, on the road to Ghohroud, ca. 12 km to Ghohroud, 1800 m, 11.3.1990, Zarre 69116 (loc. class.); Kashan, Ghamsar, Kuh-e Ghebleh,

1900-2250 m, 28.5.1982, Mozaffarian 42146.

Astragalus pseudoangustifolius Sirj. & Rech. f., Österr. Akad. Wiss. , Math-Naturwiss. kl. Anz. 6. 119 (1953). Typus: Khorassan, Kuh-e Bizg, near Turbat-e Shaik Djam, 17 Jun, 1885, 5000 ft, Aitchinson 666.

Specimens seen: Korassan, ca. 50 km NNE Kashmar, Kuh-e Bizgh (FE4), 1900-2500, 13.6.1981, Assadi & Mozaffarian 35753 (loc. class.).

The young plants are similar to *A. schystocalyx* Bunge, but fruiting specimens with much bigger fruits, coriaceous valves, with rugose surface and dorso-ventral carinate pods are easily seperable from its nearest relative, *A. schystocalyx* Bunge.

Astragalus schystocalyx Bunge, Mem. Acad. Imp. Sci. Saint-Petersbourg, ser. 7. 15/1:75 (1869). Typus: Super fragmina lapidum in praeruptis alpinis inter Nischapur et Mesched, province Choras-san, Persia bor. Bunge & Bienert.

Specimens seen: Esfahan, Natanz, above the village Abianeh, 2600 m, 29.7.1993, Maassoumi, Abouhamzeh & Meighani 71919; Varian, near Ardestan, 2400 m, 25.6.1975, Foroughi & Assadi 18039; ca. 5

km from Natanz to Kashan, 1750 m, 7.6.1986, Assadi & Bazgosha 56590; Nain, Kuh-e Karkas, 2770 m, 15.7.1971, Foroughi 1870; before Meymeh, on the road of Soh, before Delhor village, 2100 m, 4.9.1993, Maassoumi & Zarre 72013; Natanz, Karkas, 2820 m , 9.7.1972, Foroughi 6360; Surrounding of Taleghan, ca. 30 km SW of Ardestan, 2000 m, 15.5.1974, Wendelbo & Foroughi 11530; Yazd, S. of Deh-Bala, Sarkuh mountain, 3000 m, 22.6.1976, Foroughi & Assadi 17993; Shir Kuh, 20 km SSW of Taft, 2700 m, 25 May 1977, Aryavand, Edmonson & Miller 1427; Deh Bala, Shir Kuh mountain, 3500 m, 21.6.1975, Foroughi & Assadi 17963. Kerman, Kuh-e Lalezar, Zarda vally, 3000-3500 m, 17.6.1975, Foroughi & Assadi 16284; Ibidem, Foroughi & Assadi 16332; 40 km from Jiroft on the road to Kerman, Kuh-e Sarzeh, 3000-3300 m, 13.6.1977, Assadi & Miller 25360, Khorassan, Mashhad, N. slope of Binalod mts. above Zoshk village, Rudkhaneh Abdollah, 2100-3000 m, 3.4.1984, Mozaffarian 48878; ca. 20 km N. of Neyshabur, Mirabad, 1800-2000 m, 13.7.1976, Assadi & Maassoumi 21256; Nishabour, Kuh-e Binaloud from Bojan village, 1500-2700 m, 4.7.1984, Mozaffarian 49012; ca. 50 km NNE of Kashmar, near the village Bezgh,

1900 m, 14.6.1981, Assadi & Mozaffarian 35802; Mountains NW of Neyshabour, above Mirabad, 1600-1900 m, 17.6.1981, Assadi & Mozaffarian 36073.

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