
New Species and Combinations in *Astragalus* (Leguminosae) from China and the Himalayas

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ABSTRACT. Ten new species of *Astragalus* are described here. They belong to the following sections: section *Alopecuroidei*: *A. burqinensis*; section *Brachycarpus*: *A. barclayanus*, *A. golubojensis*, *A. mieherorum*, *A. nanshanicus*, *A. pseudojagnobicus*, *A. sagastaigolensis*; section *Hemiphaca*: *A. nigro-dentatus*; section *Polycladus*: *A. tibeticola*; section *Skythropos*: *A. griersonii*. Furthermore, six taxa are raised in rank.

Key words: *Astragalus*, Bhutan, China, Leguminosae, Nepal.

In preparing the treatment of *Astragalus* L. for the English version of the *Flora of China*, several new species could be detected and furthermore some taxa, formerly described as varieties, were found to be good species. In the present paper the new species are described and the formal combinations are made. The flora of China is very rich in *Astragalus* species. In the *Flora*, 357 species, of which 189 are endemic in China, will be treated.

***Astragalus* L. sect. *Alopecuroidei* DC., Prodr. 2: 294. 1825. TYPE: *Astragalus alopecuroides* L.**

***Astragalus burqinensis* Podlech & L. R. Xu, sp. nov. TYPE: China. Prov. Xinjiang: Burqin, 600 m, 24 July 1998, L. R. Xu 2029 (holotype, MSB).**

Differt ab *A. alopecuro* planta in partibus vegetativis glabra vel sub stipulis tantum sparse pilosa, petiolo 2.5–7 cm (nec 1–3 cm) longo, foliis 13–15-jugis (nec 17–27-jugis), late ovatis, 12–30 × 10–22 mm, apice rotundata vel leviter emarginata (nec anguste ovata, (10–)20–35(–40) × (6–)10–13(–20) mm, apice obtusa ad subacuta), bracteolis deficientibus, vexillo 27–28 mm longo, dorso piloso (nec ca. 20 mm longo, glabro), laminis carinae ca. 15 × 8–9 mm (nec 7 × 3.5 mm), leguminibus ca. 14 mm (nec ca. 7 mm) longis, ab *A. pseudovulpino* planta in partibus vegetativis glabra vel sub stipulis tantum sparse pilosa, bracteolis deficientibus, laminis carinae 8–9 mm (nec 4–5 mm) latis.

Plants more than 30 cm tall (lower parts are missing). Stem erect, finely sulcate, glabrous or just below the stipules and at the base of stipules sparsely hairy. Stipules ca. 15 mm long, narrowly triangular, shortly adnate to the petiole. Leaves 20–30 cm long; petiole 2.5–7 cm long, finely striate-sulcate. Leaflets in 13 to 15 pairs, widely ovate, 12–30 × 10–22 mm, at the apex rounded to slightly emarginate. Peduncle very short, up to 1 cm long, densely covered with spreading hairs 1–2 mm long. Racemes (in fruit) cylindric, 7–9 cm long, densely many-flowered; axis loosely covered with spreading hairs. Bracts linear-acute, 12–18 mm long, ciliate at the margins with spreading hairs 1.5–2.5 mm long. Bracteoles absent. Flowers sessile. Calyx 12–19 mm long, campanulate, densely covered with ascending to spreading hairs 2–5 mm long; teeth subulate, 5–7 mm long. Petals yellow. Standard 27–28 mm long; blade elliptic, ca. 9 mm wide, emarginate at the apex, at the base subabruptly narrowed into the long claw. Wings unknown. Keel ca. 27 mm long; blades triangular, with gibbously curved lower edge and ± straight upper edge, obtuse at the apex, ca. 15 × 8–9 mm; auricle acute, ca. 1 mm long, claw ca. 13 mm long. Legumes sessile, oblong, 12–14 mm long, 7–9 mm high and 4–7 mm wide, obtusely carinate ventrally, slightly grooved dorsally, abruptly contracted at the apex into a beak ca. 2 mm long, bilocular; valves netlike rugulose, loosely covered with subappressed soft hairs up to 3 mm long. Seeds 3 × 2–3 mm, dark brown, smooth.

Astragalus burqinensis differs from *A. alopecurus* Pallas by having vegetative parts glabrous or sparsely hairy only, by the petiole 2.5–7 (vs. 1–3) cm long, the leaflets in 13 to 15 (vs. 17 to 27) pairs, widely ovate, 12–30 × 10–22 mm, rounded or slightly emarginate (vs. narrowly ovate, (10–)20–35(–40) × (6–)10–13(–20) mm, obtuse to sub-

acute), bracteoles absent, standard 27–28 mm long, hairy on the back-side (vs. ca. 20 mm long, glabrous), limbs of keel ca. 15×8 –9 mm (vs. 7×3.5 mm), legumes ca. 14 (vs. ca. 7) mm long, from *A. pseudovulpino* N. Ulziykhutag by being in vegetative parts glabrous or only below the stipules sparsely hairy, bracteoles absent and limbs of keel 8–9 (vs. 4–5) mm wide.

Astragalus* sect. *Ammodendron Bunge, Mém.

Acad. Imp. Sci. Saint Pétersbourg 11(16): 128.

1868. TYPE: *Astragalus ammodendron* Bunge.

Astragalus macrostephanus (S. B. Ho) Podlech & L. R. Xu, stat. nov. Based on *Astragalus iliensis* Bunge var. *macrostephanus* S. B. Ho, Bull. Bot. Res. North-East. Forest. Inst. 3(1): 68. 1983. TYPE: [China.] Xinjiang: Kazak Zizhizhou, Huocheng Xian, Sandohezi, 540 m, 14 June 1959, A. R. Li & J. N. Zhu 10619 (holotype, PE; isotype, WUK).

Because of the very short original diagnosis of this taxon a complete description is given here.

Astragalus macrostephanus differs from *A. iliensis* by stems of the current year up to 30 (vs. up to 20) cm long, leaves 8–12 (vs. 3–5) cm long, petiole 4–5 (vs. 0.5–1) cm long, leaflets in 3 pairs (vs. in 1 or 2 pairs), 12–25 (vs. 20–40(–50)) mm long, peduncles 6–10 (vs. 2–5) cm long, calyx 5–6 mm long, rather densely covered with medifixed, appressed hairs 0.3–0.4 mm long (vs. 3–4 mm long, densely covered with partly flexuose, asymmetrically bifurcate, subappressed to slightly ascending hairs), petals longer, standard ca. 13 (vs. 8–9) mm, wings 12 (vs. 7–8) mm, keel 10 (vs. 6–7) mm long, legumes 10–12 (vs. 4–5) mm long, 4–5 (vs. ca. 2) mm high and wide.

Plants suffruticose, ca. 35 cm tall, covered with medifixed, appressed white hairs. Caudex divided, with long subtterranean stolons, covered with gray-brownish bark. Stems erect, branched, very densely covered with white hairs 0.3–0.6 mm long, shoots of the current year up to 30 cm long. Stipules whitish to pale brownish hyaline, 2–4 mm long, obliquely triangular, acute, adnate to the petiole for ca. 1 mm, the lower ones distinctly vaginate-connate behind the stem, the upper ones mostly free, sparsely to loosely hairy, at the margins with strongly asymmetrically bifurcate to basifixed hairs, sometimes glabrescent with age. Leaves 8–12 cm long; petiole 4–5 cm long, like the rachis stout, at the base up to 1.5 mm thick, hairy like the stem. Leaflets in 3 pairs, narrowly elliptic to narrowly ovate, 12–25 \times 3–5 mm, acute at the apex, on upper side loosely covered with hairs 0.6–0.8 mm

long, on underside loosely to rather densely covered with somewhat shorter hairs. Peduncle 6–10 cm long, hairy like the stem. Raceme 5–12 cm long, very remotely 10- to 12-flowered. Bracts whitish to pale brownish hyaline, 1–1.5 mm long, narrowly triangular to narrowly ovate, sparsely white hairy. Pedicels ca. 1 mm long, hairy. Calyx 5–6 mm long, campanulate, rather densely covered with white hairs 0.3–0.4 mm long; teeth subulate, ca. 1 mm long. Standard ca. 13 mm long; blade ca. 5 mm wide, widely elliptic, emarginate at the apex, below the middle subabruptly contracted into the widely cuneate claw longer than the blade. Wings ca. 12 mm long; blades narrowly oblong, round-tipped, 6×1.5 mm; auricle short, claw ca. 6 mm long. Keel ca. 10 mm long; blades obliquely elliptic-curved, with widely curved lower edge and concave upper edge, obtuse at the apex, 4.5×2 mm; auricle short, claw 5.5 mm long. Ovary sessile, ovoid, densely hairy; style glabrous. Legumes sessile, ovoid, 10–12 mm long, 4–5 mm high and wide, obtusely carinate ventrally, widely grooved dorsally, acuminate at the apex into a curved beak ca. 1 mm long, nearly fully bilocular; valves thin but tough, densely villous with subbasifixed, \pm spreading, tangled, fine, soft white hairs 2–3 mm long, mostly sitting on depressed tubercles.

Astragalus* sect. *Brachycarpus Boriss., Fl. URSS

12: 877. 1946. TYPE: *Astragalus melanotachys* Benth (lectotype, designated by Podlech (1990: 466)).

Astragalus barclayanus Podlech, sp. nov. TYPE:

Nepal. Tilicho Pass path, 4820 m, 7 June 1971, C. Barclay & P. M. Synge 2620 (holotype, K).

Differt ab *A. chateri* planta pilis albis nigris immixtis 0.2–0.3(–0.5) mm longis, in inflorescentiis nigris ad 0.7 mm longis (nec pilis mere albis 0.3–0.8 mm longis) oblecta, stipulis 3–4 (nec 4–6) mm longis, breviter connatis vel superioribus liberis (nec ad medium connatis), foliis supra glabris (nec sparse ad laxe pilosis), bracteis angustissime triangularibus, 2.5–3 mm longis (nec ovati-acuminatis, 3–5 mm longis), calyce 4 (nec 5–6) mm longo, pilis ascendentibus ad patentibus (nec subappressis) oblecto, vexillo 5–6 (nec 7–8) mm longo, ovario glabro (nec piloso).

Plants 7–12 cm tall, covered with subappressed to slightly ascending hairs 0.2–0.3(–5) mm long, in the inflorescence up to 0.7 mm long. Caudex with slightly elongated stolons provided with stipule-like bracts. Stems short, 3–5 cm long, prostrate to ascending, in lower part (the stolon part) glabrous, pale yellowish, in upper part (stem of the current year) rather densely covered with \pm straight, subappressed to slightly ascending hairs, at the lowest

internode with mostly spreading white hairs, with a few black hairs mixed in. Stipules greenish, 3–4 mm long, the lower ones shortly connate behind the stem, the upper ones free. Leaves 2.5–4 cm long; petiole 0.5–1 cm long, like the rachis loosely covered with tangled, subappressed to ascending white and also black hairs. Leaflets in 7 to 9 pairs, narrowly elliptic, 4–7 × ca. 2 mm, at the apex mostly rounded, on upper side glabrous, on underside rather densely to densely covered with subappressed hairs up to 0.5 mm long, at the midvein and the tip often with black hairs mixed in. Peduncle 3–5 cm long, rather densely to densely covered with subappressed to ascending hairs, at the base mostly with white, in upper part mostly with predominantly black hairs. Raceme globular to ovoid, densely many-flowered, ca. 1.5 cm long. Bracts membranous, very narrowly triangular, 2.5–3 mm long, black hairy. Pedicels 0.5–1 mm long, black hairy. Calyx 4 mm long, campanulate, densely covered with ascending to spreading, tangled black hairs up to 0.6 mm long; teeth narrowly triangular, 1.5–2 mm long, densely black hairy on inner side. Petals pale pink and white. Standard 5–6 mm long; blade ca. 3.5 mm wide, widely elliptic, shallowly emarginate at the apex, very shortly narrowed at the base without distinct claw. Wings 4.5 mm long; blades obovate-spathulate, widely rounded at the apex, ca. 3 × 2 mm; auricle ca. 0.5 mm long, claw 1.5 mm long. Keel 4 mm long; blades oblique-elliptic, with widely curved lower edge and slightly curved upper edge, subacute at the apex, 2.5 × 1.5 mm; auricle indistinct, claws 1.5 mm long, connate for nearly the entire length. Stamen tube obliquely cut at the mouth. Ovary subsessile, ovoid, glabrous; style short. Legume unknown.

Astragalus barclayanus differs from *A. chateri* Vassilczenko by the indumentum of white and black hairs 0.2–0.3(–0.5) mm long, in the inflorescence of black hairs up to 0.7 mm long (vs. of only white hairs 0.3–0.8 mm long), by stipules 3–4 (vs. 4–6) mm long, shortly connate or the upper ones free from each other (vs. all connate for half of the length), leaflets glabrous (vs. sparsely to loosely hairy) on upper side, bracts very narrowly triangular, 2.5–3 mm long (vs. ovate-acuminate, 3–5 mm long), calyx 4 (vs. 5–6) mm long, covered with ascending to spreading (vs. subappressed) hairs, standard 5–6 (vs. 7–8) mm long, ovaries glabrous (vs. hairy).

Astragalus golubojensis Podlech & L. R. Xu, sp. nov. TYPE: [China.] Prov. Xizang [Qinghai ?]: Kam [Qamdo], river Kam, river Goluboj, near Nry-tschgo, 3590 m, 25 July 1900, *Ladygin* 358 (holotype, LE).

Differt ab *A. densifloro* planta pilis 0.2–0.3 mm (nec 0.4–0.5 mm) longis obtecta, caulibus ad 18 cm (nec 2–5(–7) cm) longis, sparsissime pilis albis nigrisque (nec laxe ad densiuscule pilis albis) obtectis, dentibus calycis anguste triangularibus 1–1.5 mm longis (nec subulatis, 1.5–2 mm longis), petalis in sicco albidis (nec pallide violaceis), vexillo ca. 8 mm longo et 5 mm lato (nec 6–7 mm longo et 3–3.5 mm lato), alarum laminae apice oblique emarginate (nec obtusa), ovario glabro (nec piloso).

Plants ca. 25 cm tall, covered with appressed hairs 0.2–0.3 mm long. Caudex up to 15 mm thick, branched. Stems up to 18 cm long, slender, prostrate to ascending or erect, angular-sulcate, furnished with scattered appressed white and black hairs. Stipules narrowly triangular, 3–4 mm long, very shortly adnate to the petiole, shortly vaginate-connate behind the stem, with scattered black hairs, at the margins with minute sessile glands. Leaves 2.5–4 cm long, sessile; rachis distinctly grooved on upper side, loosely covered with appressed white hairs. Leaflets in 5 or 6 pairs, narrowly elliptic, 6–14 × 1–3 mm, obtuse to minutely emarginate at the apex, on upper side glabrous, on underside sparsely to loosely hairy, nearly always with uprolled margins or folded, often curved. Peduncle 3–9 cm long, sulcate, sparsely but below the raceme more densely white and predominantly black hairy. Raceme capitate to somewhat elongated, densely many-flowered. Bracts whitish membranous, narrowly triangular, 2–3 mm long, with subappressed to ascending predominantly black hairs. Flowers nearly sessile. Calyx ca. 3 mm long, campanulate, rather densely to densely covered with subappressed to slightly ascending predominantly black hairs; teeth narrowly triangular, 1–1.5 mm long. Petals in dry state whitish. Standard ca. 8 mm long; blade ca. 5 mm wide, widely elliptic, slightly emarginate at the apex, at the base narrowed without distinct claw. Wings ca. 7 mm long; blades narrowly oblong, obliquely laterally incised at the apex, 4.5 × 1.2 mm; auricle ca. 0.5 mm long, claw 2 mm long. Keel 5 mm long; blades obliquely obovate, with lower edge rectangularly curved in distal part and upper edge straight, subobtusate at the apex, 3 × 1.5 mm; auricle ca. 0.3 mm long, claw 2 mm long. Stamen tube truncate at the mouth. Ovary shortly stipitate, glabrous. Legume unknown.

Astragalus golubojensis differs from *A. densiflorus* Karelin & Kirilow by hairs 0.2–0.3 (vs. 0.4–0.5) mm long, the stems up to 18 (vs. 2–5(–7)) cm long, covered very sparsely with white and black hairs (vs. loosely to rather densely with only white hairs), petals whitish (vs. pale violet) when dry, standard ca. 8 × 5 mm (vs. 6–7 × 3–3.5 mm), limbs of

wings obliquely emarginate at the tip (vs. obtuse) and the ovaries glabrous (vs. hairy).

Astragalus mieheorum Podlech & L. R. Xu, sp. nov. TYPE: China. Prov. Qinghai: Kunlun Shan, Kunlun Shankou, SW of Golmud, 4690 m, 35°41'N, 94°03'E, 2 Aug. 1993, G. & S. Miede 9392/08 (holotype, MSB).

Differt ab *A. densifloro* caule, rachidibus pedunculisque pilis oblique patentibus ad patentibus (nec appressis) 0.5–0.8 mm longis (nec 0.4–0.5 mm longis) obtectis, foliolis subtus pilis ascendentibus (nec appressis) obtectis, calyce 5–6 (nec 3–5) mm longo, vexillo late ovato, 8–9.5 mm longo et 5–6.5 mm lato (nec elliptica, 6–7 mm longa et ad 3.5 mm lata).

Plants 7–12 cm tall. Caudex with ± elongated, slender stolons partly subterranean, partly aerial. Stems 1–2 cm long, slender, prostrate to ascending, densely covered with ascending to spreading, white or black and white hairs 0.5–0.8 mm long. Stipules greenish, narrowly triangular, 3–6 mm long, adnate to the petiole for ca. 1 mm, the lower ones shortly vaginate-connate behind the stem, the upper ones nearly free from each other, sparsely predominantly black hairy, at the base of margins with minute sessile glands. Leaves 2–4(–5.5) cm long; petiole 0.5–1 cm long, with the rachis loosely to rather densely hairy like the stem. Leaflets in (3)4 to 6 pairs, narrowly elliptic, 5–14 × 1.5–4.5 mm, obtuse to acute at the apex, glabrous on upper side, on underside rather densely covered with tangled, ascending white hairs up to 1 mm long. Peduncle 2–4 cm long, densely covered with ascending to spreading, tangled white or black and white, sometimes only black hairs up to 1 mm long. Raceme ovate, 1.5–3 cm long, densely many flowered. Bracts white-membranous, linear-acute, 4–6 mm long, black hairy. Flowers nearly sessile. Calyx 5–6 mm long, campanulate, ± densely covered with ascending to nearly spreading, tangled black hairs up to 1 mm long; teeth subulate, (1.5–)2–3.5 mm long. Petals violet, in dry state often pale yellowish brown. Standard 8–9.5 mm long; blade widely ovate, 5–6.5 mm wide, widely retuse to slightly emarginate at the apex, at the base subabruptly narrowed into the cuneate claw. Wings 6.5–7(–8) mm long; blades narrowly oblong, gradually widened toward the truncate-incised apex, 4–4.5 × 2–2.2 mm; auricle minute, claw 2.5–3 mm long. Keel 5.5–6 mm long; blades oblique-obovate, with widely nearly rectangular-curved lower edge and nearly straight upper edge, subacute at the apex, ca. 3 × 2 mm; auricle minute, claws 2.5–3 mm long, connate for nearly the entire length. Stamen tube truncate at the mouth. Ovary sessile to subsessile, widely ovate to

nearly globular, white hairy; style thick, short, glabrous. Legume sessile, globose, ca. 4 mm thick, rounded at the apex without beak but with the persistent glabrous style, bilocular; valves densely covered with ascending to spreading, tangled, partly straight partly curly white and black hairs up to 1 mm long. Seeds probably two.

Astragalus mieheorum differs from *A. densiflorus* Karelín & Kirilow by the stem, rachis, and peduncle covered with ascending to spreading hairs 0.5–0.8 mm long (vs. by appressed hairs 0.4–0.5 mm long), by leaflets covered on the underside with ascending (vs. appressed) hairs, by the calyx 5–6 (vs. 3–5) mm long, and by the standard widely ovate, 8–9.5 mm long and 5–6.5 mm wide (vs. elliptic, 6–7 mm long and up to 3.5 mm wide).

Etymology. Named after Prof. G. Miede and Mrs. S. Miede, University of Göttingen, explorers of the vegetation of Tibet.

Paratypes. CHINA. **Qinghai:** Kunlun Shan, Kunlun Shankou, SW of Golmud, 4870 m, 35°40'N, 94°03'E, 3 Aug. 1993, G. & S. Miede 9394/06 (MSB); Kunlun Shan, E of Kunlun Shankou, SW of Golmud, 4820 m, 35°41'N, 94°14'E, 1 Aug. 1993, G. & S. Miede 9374/14 (MSB); NE Tibet, Northeastern Plateau along Golmud–Lhasa highway, Kunlun Shankou-Qumar Heyan, 4570 m, 35°30'N, 93°45'E, 3 Aug. 1993, G. & S. Miede 9403/12 (MSB); between Madoi and Bayanka La, 4450 m, 34°20'N, 97°55'E, 3 Aug. 1998, G. Miede, J. Q. Liu & Sonamco 98-35221 (MSB).

Astragalus nanshanicus Podlech & L. R. Xu, sp. nov. TYPE: China. Prov. Qinghai: Qinghai Nan Shan, Caka Basin, 36°40'N, 98°45'E, 3520 m, 27 July 1993, G. & S. Miede 9329/07 (holotype, MSB).

Differt ab *A. longiracemoso* stipulis 2.5–3 (nec 3–7) mm longis, foliis 2–4.5 (nec 3–8) cm longis, 4–6 (nec 6–9) jugis, foliolis 4–8 × 1–3 (nec 9–27 × 2–7) mm, pedunculo mere albi-piloso (nec in parte superiore saepissime mere nigri-piloso), axi inflorescentiae albi-piloso (nec praecipue nigri-piloso), vexillo ca. 7 (nec 8–10) mm longo.

Plants tall, up to 30 cm or more, basal parts unknown. Stem up to 30 cm long, slender, loosely to rather densely covered with irregularly spreading white hairs and sometimes below the nodes with few black hairs 0.15–0.3 mm long. Stipules greenish, narrowly triangular, 2.5–3 mm long, free from petiole, loosely to rather densely covered with ascending to nearly spreading white, at the base also black hairs, at the base of margins with minute, sessile glands. Leaves 2–4.5 cm long; petiole 0.3–1 cm long, together with the rachis white hairy like the stem. Leaflets in 4 to 6 pairs, narrowly elliptic to narrowly ovate, 4–8 × 1–3 mm, rounded to slightly emarginate at the apex, on upper side gla-

brous, on underside rather densely covered with subappressed to ascending hairs up to 0.3 mm long, mostly folded. Peduncles 1–6 cm long, white hairy like the stem. Racemes at anthesis short, densely many-flowered, distinctly elongating in fruit; axis white hairy. Bracts whitish membranous, narrowly triangular, 2–2.5 mm long, sparsely black hairy. Pedicels 0.3–0.5 mm long, black hairy. Calyx 3 mm long, campanulate, obliquely cut at the mouth, rather densely covered with subappressed, black and white hairs up to 0.5 mm long; teeth narrowly triangular, 1–1.5 mm long, densely white hairy on inner side. Petals violet with darker tip of keel. Standard ca. 7 mm long; blade ca. 4.5 mm wide, widely elliptic, emarginate at the apex, gradually shortly narrowed at the base without a distinct claw. Wings ca. 5.5 mm long; blades obovate, widened toward the rounded apex, 3.5×2 mm; auricle 0.5 mm long, claw ca. 2 mm long, curved. Keel ca. 4 mm long; blades half-circular, with widely curved lower edge and straight upper edge, subacute at the apex, 2.5×1.5 mm; auricle minute, acute, claws ca. 1.5 mm long, connate for nearly the whole length. Stamen tube \pm truncate at the mouth. Ovary sessile, nearly globular, glabrous; style thick, short. Legumes unknown.

Astragalus nanshanicus differs from *A. longiracemosus* N. Ulziykhutag by stipules 2.5–3 (vs. 3–7) mm long, leaves 2–4.5 (vs. 3–8) cm long, leaflets in 4 to 6 (vs. 6 to 9) pairs, $4-8 \times 1-3$ (vs. $9-27 \times 2-7$) mm, peduncles only white hairy (vs. in upper part mostly merely black hairs), inflorescence axis white (vs. predominantly black) hairy, standard ca. 7 (vs. 8–10) mm long.

Astragalus pseudojagnobicus Podlech & L. R. Xu, sp. nov. TYPE: China. Kaschgaria, Ugu, Ulug-tuz, valley of river Tscharym, 28 June 1909, *Divanogorskaja 284* (holotype, LE).

Differt ab *A. jagnobico* stipulis petiolo vix adnatis, basalibus alte vaginanti-connatis (nec petiolo per 0.5–1 mm adnatis, inter se liberis), foliolis 4–6 (nec 6–9) jugis, vexillo ca. 10 mm longo et 5 mm lata (nec 5–6 mm longo et 2.2–2.5 mm lata), lamina alarum obovata, $4.5-5 \times 2$ mm (nec anguste oblonga, ca. 3×2 mm).

Plants up to 25 cm tall, with appressed to subappressed hairs 0.1–0.3 mm long. Caudex up to 15 mm diam., with a pluricipital root-crown. Stems several, prostrate to ascending, slender, striate-sulcate, sparsely to loosely covered with white, below the nodes also with black hairs. Stipules greenish, ovate to triangular, white and black hairy, nearly free from the petiole, the lower ones highly connate behind the stem, the middle and upper ones free from each other. Leaves 4–7 cm long; petiole 1–2.5

cm long, like the rachis slender, loosely covered with white and interspersed black hairs. Leaflets in 4 to 6 pairs, narrowly elliptic to elliptic, $5-12 \times 3-6$ mm, rounded to distinctly retuse at the apex, on upper side glabrous, on underside loosely to rather densely appressed white hairy. Peduncles 6–10 cm long, slender, ascending-curved, striate-sulcate, loosely covered in lower part with merely white hairs, in upper part also with increasing black hairs. Raceme at first globose-ovoid, soon elongating and up to 4 cm long, many-flowered. Bracts whitish membranous, narrowly triangular, 1.5–2 mm long, black hairy. Pedicels ca. 0.5 mm long, densely black hairy. Calyx 3–4 mm long, campanulate, obliquely cut at the mouth, loosely to rather densely covered with black and few white hairs; teeth narrowly triangular, 1.2–1.5 mm long. Petals in dry state whitish to slightly pale-violet-suffused, standard sometimes with pale violet longitudinal nerves, keel in upper part mostly violet. Standard ca. 10 mm long; blade slightly obovate, ca. 5 mm wide, slightly emarginate at the apex, gradually narrowed at the base. Wings 7 mm long; blades obovate, widely rounded at the apex, $4.5-5 \times 2$ mm; auricle short, claw 2.5 mm long. Keel 5 mm long; blades obliquely obovate, lower edge curved in distal part and upper edge \pm straight, subobtuse at the apex, 3.5×2 mm; auricle indistinct, claw ca. 1.5 mm long. Ovary ovoid. Legumes unknown.

Astragalus pseudojagnobicus differs from *A. jagnobicus* Lipsky by the stipules scarcely adnate to the petiole, the lower ones vaginate-connate high up (vs. adnate to the petiole for 0.5–1 mm, free from each other), leaflets in 4 to 6 (vs. 6 to 9) pairs, standard ca. 10×5 (vs. $5-6 \times 2.2-2.5$) mm, limbs of wings narrowly obovate, $4.5-5 \times 2$ mm (vs. narrowly oblong, ca. 3×2 mm).

Astragalus sagastaigolensis N. Ulziykhutag ex Podlech & L. R. Xu, sp. nov. TYPE: [China. Prov. Qinghai:] Dzhungaria, Sagastaigol, 2740 m, 5 Sep. 1879, *A. Regel* (holotype, LE).

Differt ab *A. imetensi* stipulis inter se liberis (nec foliorum inferiorum alte vaginati-connatis) foliolis 6–9-juga (nec 5–6-juga), bracteis 4–5 (nec 3) mm longis, vexillo 8.5–9.5 (nec 6–7) mm longo, lamina alarum obtriangulari apice distincte emarginata, ca. 2.5 mm lata (nec anguste oblonga apice obtusa, ca. 1.5 mm lata).

Plants ca. 15 cm tall. Caudex strong, up to 15 mm thick, with a pluricipital root-crown, with short branches. Stems many, up to 10 cm long, prostrate to ascending or erect, rather densely covered with appressed to subappressed white hairs 0.4–0.6 mm long, with some black hairs mixed in especially at

the nodes, glabrescent with age. Stipules whitish to slightly greenish, 4–6 mm long, free from the petiole and from each other, sparsely to loosely covered with subappressed, predominantly black hairs, at the margins with minute, sessile glands. Leaves 3–6 cm long, subsessile; rachis hairy like the stem. Leaflets in (5)6 to 9 pairs, narrowly elliptic, 8–15 × 2–5 mm, rounded to narrowly obtuse at the apex, on upper side glabrous, on underside rather densely covered with appressed white hairs 0.3–0.5 mm long. Peduncle 2.5–5 cm long, slightly angular-sulcate, white hairy like the stem, toward the raceme with increasing black hairs. Racemes 2–3 cm long, densely many-flowered; axis with ascending black hairs. Bracts whitish membranous, narrowly triangular, acuminate, 4–5 mm long, with subappressed to ascending, predominantly black hairs. Pedicels ca. 1 mm long, recurved, black hairy. Calyx 4–4.5 mm long, campanulate, loosely to rather densely covered with subappressed to ascending black hairs ca. 0.5 mm long; teeth subulate, ca. 2 mm long, black hairy on inner side. Petals whitish when dry. Standard 8.5–9.5 mm long; blade elliptic, ca. 4 mm wide, rounded at the apex, at the base subabruptly narrowed into the short claw. Wings ca. 7 mm long; blades obtriangular, distinctly dilated to the unequally widely emarginate apex, 4.5 × 2.5 mm; auricle ca. 0.3 mm long, claw 2 mm long. Keel 5 mm long; blades oblique-elliptic, with widely rectangular-curved lower edge and slightly curved upper edge, subobtuse at the apex, ca. 3 × 2 mm; auricle minute, claw 2 mm long. Ovary shortly stipitate, densely white hairy; style glabrous. Legumes sessile, globose, ca. 3 mm diam., rounded ventrally, deeply grooved dorsally, rounded at the apex, beakless, bilocular; valves pale brownish, rather densely covered with subappressed to slightly ascending white and black hairs up to 0.8 mm long. Seeds one in each locule, 2–2.5 mm long, pale brownish, smooth.

Astragalus sagastaigolensis differs from *A. imentensis* Borissova by the stipules all free from each other (vs. those of lower leaves vaginate-connate high up), leaflets in 6 to 9 (vs. 5 or 6) pairs, bracts 4–5 (vs. 3) mm long, standard 8.5–9.5 (vs. 6–7) mm long, limbs of wings obtriangular, distinctly emarginate, ca. 2.5 mm wide (vs. narrowly oblong, obtuse, ca. 1.5 mm wide).

Astragalus L. sect. ***Cenantrum*** Bunge, Mém. Acad. Imp. Sci. Saint Pétersburg 11(16): 23. 1868. TYPE: *Astragalus frigidus* (L.) A. Gray (lectotype, designated by Podlech (1990: 468)).

Astragalus purpurinus (Y. C. Ho) Podlech & L. R. Xu, stat. nov. Based on *Astragalus membranaceus* Bunge var. *purpurinus* Y. C. Ho, Bull. Bot. Lab. North-East. Forest. Inst. 1980(8): 54. 1880. TYPE: [China.] Gansu: Xiaho Xian [Hsiaohsien], 2600 m, 1 July 1937, *T. P. Wang* 6925 (holotype, WUK).

Because of the short original diagnosis of this taxon a complete description is given here.

Astragalus purpurinus differs from *A. mongolicus* Bunge by the strong stem up to 8 (vs. 2.5–3) mm diam., shorter (4(–5) vs. 5–9 mm long) and more densely hairy calyx with shorter teeth (0.3–1 vs. 0.5–1.5 mm long), purple petals and legumes with a stipe only 4–5 (vs. 6–15) mm long.

Plants at least 60–70 cm tall, covered with hairs 0.3–0.5(–1.5) mm long. Stem erect, at the base up to 8 mm diam., angular-sulcate, glabrous or with scattered spreading hairs up to 1.5 mm long. Stipules green, very narrowly to narrowly triangular, free, the lower ones 8–10, the upper ones 4–5 mm long, glabrous or ciliate at the margin. Leaves 5–9 cm long, nearly sessile; rachis grooved on upper side, sparsely covered with spreading hairs up to 1 mm long. Leaflets in 3 to 9 pairs, narrowly ovate to narrowly elliptic, rounded to minutely acuminate at the apex, 10–17 × 3–7 mm, on upper side loosely covered with appressed to subappressed hairs 0.3–0.5 mm long, on underside loosely with appressed to subappressed hairs 0.5–1 mm long. Peduncles 5–13 cm long, sparsely to loosely covered with appressed to ± spreading white hairs. Racemes loosely many-flowered, 4–5 cm long, soon elongating and at least up to 10 cm long; raceme axis black hairy. Bracts green, linear-subulate, 5–8 mm long, ca. 0.5 mm wide, loosely mainly white ciliate. Pedicels 1–1.5 mm long, later on elongating and up to 3 mm long, with minute black hairs. Bracteoles whitish, linear, 0.5–1 mm long, in upper part of the pedicel. Calyx campanulate, 4(–5) mm long, slightly gibbous at the base, strongly obliquely cut at the mouth, the tube loosely covered with short black subappressed hairs up to 0.3 mm long and with few long white hairs, at the upper margin and the teeth more densely black hairy; teeth narrowly triangular to triangular, 0.3–1 mm long. Petals lilac or dark purplish at the apex and whitish at the base. Standard 13 mm long; blade distinctly recurved, obovate, 7 mm wide, emarginate at the apex, gradually and shortly cuneately narrowed at the base. Wings 13 mm long, distinctly bent at the base of the blade; blades narrowly oblong, rounded at the apex, 5 × 1.5 mm; auricle 0.8 mm long, claw 7–8 mm long, straight. Keel 12 mm long; blades strong-

ly curved-elliptic, with widely and nearly rectangularly curved lower edge and distinctly concave upper edge, obtuse at the apex, 5×2 mm; auricle ca. 0.3 mm long, claw 7 mm long. Stamen tube obliquely cut at the mouth. Ovary with a stipe ca. 5 mm long, densely white hairy. Legume with a slender stipe 4–5 mm long, narrowly elliptic, acuminate at both ends; valves loosely to densely covered with subappressed white and black hairs ca. 0.3 mm long, glabrescent with age and sometimes subglabrous.

Other specimen seen. CHINA. **Gansu:** Yuzhong, 2750 m, 8 Aug. 1959, *Y. He 5864* (WUK).

Astragalus xitaibaicus (K. T. Fu) Podlech & L.-R. Xu, stat. nov. Based on *Astragalus monadelphus* Bunge subsp. *xitaibaicus* K. T. Fu, Acta Bot. Bor.-Occ. Sin. 1(2): 17. 1981. TYPE: [China.] Shaanxi: Xitaiba Shan, Ding-pengshan, 3300 m, *Fu Kun-tsun 10321* (holotype, WUK).

Because of the short original diagnosis of this taxon a complete description is given here.

Astragalus xitaibaicus differs from *A. monadelphus* by being totally glabrous with the exceptions of the inner side of the calyx teeth and sometimes the bracts (vs. at least hairy on underside of leaflets, calyx, and legumes) and by the presence of stipel-like entire or fringed, linear to narrowly triangular emergences 0.5–2.5 mm long and/or of distinctly stalked minute glands at the base of the leaflets.

Plants 12–22 cm tall, totally glabrous with the exception of the inner side of the calyx teeth and sometimes the bracts. Caudex strong, 15 mm thick, with a pluricipital root-crown. Stems several, ascending to erect, up to 4 mm thick, angular-striate, 10–17 cm long. Stipules greenish membranous with narrowly hyaline margins, ovate, obtuse, 12–15 mm long and up to 10 mm wide, connate at the base, free from the petiole. Leaves 4–8 cm long; petiole 0.7–2 cm long, at the base of the leaflets with stipel-like entire or fringed, linear to narrowly triangular emergences 0.5–2.5 mm long and/or with distinctly stalked minute glands. Leaflets in 5 to 7 pairs, ovate to elliptic, 10–18 \times 5–9 mm, at the apex rounded and sometimes minutely mucronulate. Peduncles 4–7.5 cm long. Racemes 8- to 11-flowered. Bracts narrowly ovate, acute, ca. 10 mm long, sometimes sparsely ciliate at the margins. Pedicels 2–3 mm long. Calyx campanulate, 7.5–9 mm long; teeth subulate, 2.5–3 mm long, hairy on inner side. Petals yellow. Standard ca. 11 mm long; blade obovate, 5–6 mm wide, emarginate at the

apex, at the base subabruptly contracted into the rather long claw. Wings ca. 11 mm long; blades narrowly oblong, obtuse at the apex, ca. 4×1.5 mm; auricle short, claw 6.5–7 mm long. Keel ca. 10 mm long; blades obliquely elliptic, ca. 3.5×2 mm; auricle indistinct, claw ca. 6.5 mm long. Stamen tube closed (monadelphous), slightly obliquely cut at the mouth. Ovary stipitate, hairy. Legumes with a stipe 5–6 mm long, narrowly elliptic, shortly attenuate at both ends, ca. 15 mm long, unilocular; valves hairy.

Paratype. CHINA. **Shaanxi:** Xitaiba Shan, Hun-renping, in summo alpino, 3300 m, 4 July 1959, *Yang Jinxiang 645* (WUK).

Astragalus* sect. *Corethrums Bunge, Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 98. 1868. TYPE: *Astragalus scoparius* C. A. Meyer (lectotype, designated by Podlech (1990: 471)).

Astragalus chaidamuensis (S. B. Ho) Podlech & L. R. Xu, stat. nov. Based on *Astragalus kronenburgii* B. Fedtschenko var. *chaidamuensis* S. B. Ho, Bull. Bot. Res. North-East. Forest. Inst. 3(1): 42. 1983. TYPE: [China.] Qinghai: Haixi Mongolzu Zangzu, Kazakzu Zizhizhou, Delingha, 3290 m, 21 July 1959, *Exped. Gansu et Qinghai Acad. Sin. 805* (holotype, WUK).

Because of the very short original diagnosis of this taxon a complete description is given here.

Astragalus chaidamuensis differs from *A. kronenburgii* B. Fedtschenko by stipules triangular, 2 mm long (vs. narrowly triangular, 3–5 mm long), adnate to the petiole for 0.5 (vs. 1–2) mm, densely hairy (vs. subglabrous to loosely hairy), leaflet in up to 4 (vs. in 3 to 6) pairs, peduncles 5–14 (vs. 9–22) cm long, only white (vs. toward the raceme increasingly black) hairy, raceme very short, 3- to 7-flowered (vs. 3–5 cm long, 10- to 16-flowered), bracts 1–2 (vs. 3–4) mm long, calyx 10 (vs. 5–6) mm long, teeth 2.2–3 (vs. 1–2) mm long.

Plants ca. 18 cm tall, nearly acaulescent, caespitose, covered in vegetative parts with medifixed, appressed white hairs 0.3–1 mm long. Caudex ca. 8 mm diam., at the apex strongly divided with short branches, covered with brown bark. Stems branched at the base, parts of the current year, if developed, up to 0.5 cm long, densely hairy. Stipules ca. 2 mm long, triangular, adnate to the petiole for ca. 0.5 mm, densely hairy. Leaves of sterile shoots 1–2 cm long; petiole 0.5–1 cm long, with 1 or 2 pairs of small leaflets, 2–3 mm long. Leaves of the flowering shoots 3–7 cm long; petiole 1–2 cm long, like the rachis slender, densely hairy. Leaflets in (2)3 to 4 pairs, linear, 10–15 \times 1–1.5 mm,

acute-tipped, on both sides rather densely to densely hairy. Peduncles 5–14 cm long, loosely to rather densely white hairy. Racemes short, subumbellate, 3- to 7-flowered. Bracts membranous, narrowly triangular, 1–2 mm long, sparsely furnished with mostly basifixed white and black hairs. Pedicels ca. 0.5 mm long, white and black hairy. Calyx ca. 10 mm long, tubular, obliquely cut at the mouth, loosely to rather densely covered with medifixed appressed white hairs 0.5–1 mm long and mostly slightly shorter black hairs; teeth subulate, 2.2–3 mm long. Petals probably yellow. Standard 15–17 mm long, elliptic, 6–7 mm wide, emarginate at the apex, with a very short, indistinct claw. Wings 15 mm long; blades narrowly oblong, at the apex deeply incised, 7 × 2 mm; auricle 0.5 mm long, claw 8 mm long. Keel ca. 12 mm long; blades obliquely obovate, with rectangular-curved lower edge, and nearly straight upper edge, subacute at the apex, 5 × 2.5 mm; auricle acute, 0.3 mm long, claw 7 mm long. Stamen tube obliquely cut at the mouth. Ovary with a stipe ca. 2 mm long, linear, white hairy; style glabrous. Legumes unknown.

Astragalus* sect. *Hemiphaca Bunge, Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 20. 1868.
TYPE: *Astragalus hemiphaca* Karelin & Kirilow.

Astragalus nigrodentatus N. Ulziykhutag ex Podlech & L. R. Xu, sp. nov. TYPE: China. Prov. Xizang: Distr. Kam, Dabo-Shan pass, 18 July 1893, *G. N. Potanin* (holotype, LE).

Differt ab *A. alaschano* indumento e pilis 0.6–0.8(–1) mm (nec 0.1–0.3 mm) longis consistente, stipulis 6–7 (nec 2–3) mm longis, foliis anguste ovatis ad anguste ellipticis, 5–14 × 2.5–5 mm (nec ellipticis ad obovatis, 3–7 × 2–5 mm), bracteis 4–6 mm (nec 0.8–1 mm) longis, calyce ca. 5 mm (nec 2.5–3 mm) longis.

Plants 8–10 cm tall, covered in vegetative parts with flattened, long-acuminate white hairs widest near the base and elsewhere with slender black hairs mixed in. Stems ascending, at the base pale, stolon-like, glabrous, with few, remote leafless stipules, in upper part sulcate, loosely to rather densely covered with stiff, tangled, ascending to spreading white, toward the nodes mostly black hairs 0.6–0.8 mm long. Stipules greenish, 6–7 mm long, narrowly triangular to triangular, free from the petiole, those without developed leaves connate up to the middle, the other ones free from each other, the lower ones glabrous, the upper ones loosely or, especially toward the margins and tip, densely white and partly also black hairy. Leaves 3–5 cm long; petiole 0.8–1.5 cm long, distinctly grooved on the upper side, similar to the rachis loosely white hairy like the

stem. Leaflets in 6 to 8 pairs, narrowly ovate to narrowly elliptic, 5–14 × 2.5–5 mm, obtuse at the apex, on upper side glabrous but with densely white hairy margins, on underside loosely covered with appressed hairs 0.2–0.5 mm long. Peduncles 1.5–3.5 cm long, sulcate, loosely to densely covered with subappressed black hairs 0.3–1 mm long, at the base with some white hairs mixed in. Racemes short, densely many-flowered. Bracts whitish membranous, narrowly triangular, 4–6 mm long, with predominantly black hairs, at the base with sessile, minute glands. Flowers subsessile. Calyx ca. 5 mm long, campanulate, densely covered with ascending to partly nearly spreading black hairs 0.3–0.6 mm long; teeth very narrowly triangular, ca. 2 mm long, hairy on inner side. Petals probably violet in life, pale yellowish brown when dry. Standard ca. 9 mm long; blade ca. 4 mm wide, oblong, at the apex widely and deeply incised, at the base cuneately narrowed without distinct claw. Wings ca. 7.5 mm long; blades obtriangular, widest at the widely and deeply incised apex, 4.5 × 2 mm; auricle 0.3–0.4 mm long, claw 3 mm long, curved. Keel 6.5 mm long; blades oblique-elliptic, with widely curved lower edge and straight upper edge, subacute at the apex, 3.5 × 2 mm; auricle ca. 0.3 mm long, acute, claw ca. 3 mm long. Stamen tube truncate at the mouth. Ovary subsessile, minute, elliptic, glabrous, 2-ovulate. Legumes unknown.

Astragalus nigrodentatus differs from *A. alaschano* Bunge by the hairs 0.6–0.8(–1) (vs. 0.1–0.3) mm long, stipules 6–7 (vs. 2–3) mm long, leaflets narrowly ovate to narrowly elliptic, 5–14 × 2.5–5 mm (vs. elliptic to obovate, 3–7 × 2–5 mm), bracts 4–6 (vs. 0.8–1) mm long, calyx ca. 5 (vs. 2.5–3) mm long.

This collection was named *Astragalus nigrodentatus* by Ulziykhutag in the herbarium at St. Petersburg (LE) without description.

Astragalus* sect. *Laguropsis Bunge, Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 137. 1868.
TYPE: *Astragalus laguroides* Pallas (lectotype, designated by Podlech (1990: 479)).

Astragalus novissimus Podlech & L. R. Xu, nom. et stat. nov. Based on *Astragalus laguroides* Pallas var. *micranthus* S. B. Ho, Bull. Bot. Res. North-East. Forest. Inst. 3(4): 57. 1983 “non *A. micranthus* Desv., 1814.” TYPE: [China.] Nei Mongol, Baganmaotasum (patria ignota), 29 May 1931, *T. N. Liou 2147* (holotype, WUK). Figure: Ho (1983: 66, fig. 5; as *A. laguroides* var. *micranthus*).

Because of the short original diagnosis of this taxon a complete description is given here.

Plants 8–12 cm tall, acaulescent, with merely white, in vegetative parts distinctly warty, hairs. Caudex slender, simple or with a pluricipital root-crown. Stipules whitish, 3–4 mm long, triangular, nearly free from the petiole, appressed hairy, at the margins with basifixed hairs. Leaves 3–6 cm long; petiole 1–3 cm long, like the rachis slender, loosely to rather densely covered with medifixed, appressed hairs 0.5–1 mm long. Leaflets in 2 to 4 pairs, in the basal leaves often only in 1 or 2 pairs, narrowly elliptic to elliptic, 7–12 × 3–5 mm, acute at the apex, on both sides rather densely to densely covered with medifixed, appressed hairs 1.5–2(–3) mm long. Peduncles 3.5–6 cm long, slightly angular-sulcate, loosely to rather densely covered with medifixed, appressed hairs 0.5–1 mm long, partly glabrescent with age. Racemes ovoid, 3–5 cm long, densely many-flowered. Bracts whitish, ca. 2 mm long, narrowly triangular, covered with mostly basifixed hairs. Flowers subsessile. Calyx 11–12 mm long, tubular at beginning of anthesis, soon ovoid-inflated, rather densely covered with subbasifixed to basifixed, rigid, spreading, straight white hairs 2–3 mm long; teeth subulate, 3–4 mm long. Standard ca. 14 mm long; blade ca. 5 mm wide, elliptic, narrowly triangular toward the slightly emarginate apex, slightly constricted below the middle, at the base obtusely angularly passing into the claw. Wings 13 mm long; blades narrowly oblong, round-tipped, ca. 5 × 1.5 mm; auricle 0.5 mm long, claw 8 mm long. Keel 12 mm long; blades obliquely obovate, with rectangular-curved lower edge and nearly straight upper edge, acute-tipped, 3.5 × 1.5 mm; auricle acute, 0.5 mm long, claw ca. 8 mm long. Stamen tube truncate at the mouth. Ovary sessile, hairy. Legumes unknown.

Astragalus sect. **Polycladus** Y. C. Ho, Bull. Bot. Res. North-East. Forest. Inst. 1(3): 107. 1981.
TYPE: *Astragalus polycladus* Bureau & Fran-
chet.

The following species was proposed as a new species in *Sentdnerna* 7: 198. 2001, but unfortunately without a Latin diagnosis.

Astragalus tibeticola Podlech & L. R. Xu, sp. nov. TYPE: China. Prov. Xizang: S Tibet, Chayul Dzong, Loro Chu, 23 Apr. 1936, *F. Ludlow* & *G. Sherriff* 1326 (holotype, BM).

Differt ab *A. monbeigii* caulibus pilis 0.4–0.7 mm (nec 0.1–0.3 mm) longis obtectis, calyce 4–5 mm longo dentibus ejus 1.5–2 mm longis (nec 5–6 mm longo dentibus

ejus 2.5–4 mm longis), vexillo ca. 6 mm longo et 5 mm lato, lamina transverse elliptica (nec ca. 10.5 mm longo, lamina late obovate), ovario sessile (nec stipite 1.5–2 mm longo suffulto).

Plants 15–25 cm tall. Stems 10–17 cm long, branched at the base, ascending to erect, striate-sulcate, sparsely to loosely covered with appressed to subappressed white, at the nodes also black, hairs 0.4–0.7 mm long. Stipules green, 6–9 mm long, ovate-acuminate to narrowly triangular, free from the petiole, behind the stem high up vaginate-connate, sparsely to loosely covered with appressed white and sometimes also with some black hairs. Leaves 6–12 cm long; petiole 1–3 cm long, like the rachis loosely covered with appressed white hairs 0.2–0.5 mm long. Leaflets in 9 to 11 pairs, narrowly elliptic to elliptic, 7–17 × 3–6 mm, rounded to slightly emarginate at the apex, on upper side glabrous, on underside sparsely and mainly at the midrib furnished with appressed white hairs 0.5–1 mm long. Peduncles 5–6 cm long, hairy like the stem but in upper part with predominantly black hairs. Racemes ovoid, rather loosely 7- to 15-flowered. Bracts whitish, linear-acute, 2.5–3 mm long, predominantly black hairy. Pedicels ca. 1 mm long, black hairy. Calyx campanulate, 4–5 mm long, slightly oblique at the base, slightly obliquely cut at the mouth, rather densely covered with appressed black hairs 0.2–0.3 mm long and with fewer, slightly longer white hairs; teeth subulate, 1.5–2 mm long. Petals mauve with whitish center, keel purplish mauve. Standard ca. 6 mm long; blade 5 mm wide, transverse-elliptic, deeply incised at the apex, at the base subabruptly contracted into the very short claw. Wings ca. 6 mm long; blades oblong, rounded at the apex, 3.5 × 2 mm; auricle wide, ca. 0.5 mm long, claw 2.5 mm long. Keel 5 mm long; blades oblique-elliptic, rounded at the apex, 3 × 2 mm; claw 2 mm long. Stamen tube truncate at the mouth. Ovary sessile, white-hairy; style glabrous. Legumes unknown.

Astragalus tibeticola differs from *A. monbeigii* N. D. Simpson by stems covered with hairs 0.4–0.7 (vs. 0.1–0.3) mm long, calyx 4–5 mm long with teeth 1.5–2 mm long (vs. 5–6 mm long with teeth 2.5–4 mm long), standard ca. 6 × 5 mm, the limb transversely elliptic (vs. ca. 10.5 mm long, the limb widely obovate), ovaries sessile (vs. with a stipe 1.5–2 mm long).

Astragalus sect. **Skythropos** N. D. Simpson, Notes Roy. Bot. Gard. Edinburgh 8: 255. 1915.
TYPE: *Astragalus skythropos* Bunge (lectotype, designated by Podlech (1990: 488)).

Astragalus griersonii Podlech, sp. nov. TYPE: Bhutan, Me La, 27°58'N, 91°37'E, 14,000 ft., 7 Aug. 1933, *F. Ludlow & G. Sherriff 429* (holotype, BM).

Differt ab *A. kongrensis* plantis 20–25 (nec 6–14) cm altis, in partibus vegetativis pilis praecipue nigris (nec mere albis) obtectis, calyce ca. 8 (nec 9–12.5) mm longo, campanulati-tubuloso (nec tubuloso), dentibus 3–4 (nec 4–7) mm longis, petalis brevioribus.

Plants 20–25 cm tall, with subappressed to ± spreading, thin, long white and black hairs. Caudex with rather long stolons up to 10 cm long, furnished with leafless, pale, scale-like stipules. Stems erect, short, terete to angular-sulcate, loosely to rather densely covered with subappressed to mostly ± spreading, predominantly black hairs 0.3–1 mm long. Stipules 8–12 mm long, dirty whitish to slightly greenish, ovate-acuminate, free from the petiole and from each other, sparsely to loosely covered with tangled, subappressed to ascending white and black hairs, sometimes subglabrous. Leaves 9–16 cm long; petiole 3–5 cm long, like the rachis sulcate, black hairy like the stem. Leaflets in 9 to 11 pairs, elliptic to nearly orbicular, 5–12 × 4–9 mm, emarginate at the apex, on upper side sparsely, on underside loosely covered with subappressed white or white and black hairs 0.5–1 mm long. Peduncle 10–12 cm long, in lower part distinctly, in upper part slightly angular-sulcate, rather densely covered with ascending to spreading blackish hairs 0.5–1.5 mm long. Racemes short, often globose, ca. 3 cm long, rather densely 9- to 12-flowered; axis black villous. Bracts whitish, narrowly oblong to narrowly elliptic, 5–6 mm long, 1–1.5 mm wide, on outer side rather densely covered with tangled black hairs up to 1.5 mm long, on inner side (upper side) sparsely hairy. Pedicels 1.5–2 mm long, very densely black hairy. Bracteoles absent. Calyx ca. 8 mm long, campanulate-tubular, truncate at the mouth, rather densely to densely covered with subappressed to ascending black hairs 0.3–1 mm long; teeth narrowly triangular, 3–4 mm long, sparsely hairy on inner side. Petals purple to bluish white. Standard ca. 16 mm long; blade ca. 7 mm wide, widely rectangular, distinctly emarginate at the wide apex, at the base with a cuneate claw of equal length. Wings ca. 15 mm long; blades narrowly oblong, rounded at the apex, 8 × 3 mm; auricle narrow, 2.5–3 mm long, claw ca. 7 mm long. Keel ca. 16 mm long; blades oblique-obovate, with lower edge rectangularly curved in distal part and upper edge nearly straight, subobtuse at the apex, ca. 8.5 × 4 mm; auricle ca. 1 mm long, claw ca. 8 mm long. Staminal tube ± truncate at the mouth. Ovary

with a stipe ca. 4 mm long, densely covered with subappressed white and predominantly black hairs ca. 1 mm long; style thickish, hairy in lower half. Legumes unknown.

Astragalus griersonii differs from *A. kongrensis* Baker by being 20–25 (vs. 6–14) cm tall, in vegetative parts with predominantly black (vs. merely white) hairs, calyx ca. 8 (vs. 9–12.5) mm long, with teeth 3–4 (vs. 4–7) mm long, standard ca. 16 (vs. 16–21) mm long.

Astragalus* sect. *Trachycercis Bunge, Mém. Acad. Imp. Sci. Saint Pétersbourg 11(16): 114. 1868. TYPE: *Astragalus humilis* M. Bieberstein (lectotype, designated by Podlech (1990: 490)).

Astragalus lang-ranii Podlech, nom. et stat. nov. Based on *Astragalus salsugineus* Karelin & Kirilow var. *multijugus* S. B. Ho, Bull. Bot. Res. North-East. Forest. Inst. 3(1): 52. 1983, non *Astragalus multijugus* DC. TYPE: [China.] Ningxia: Yinchuan, prope viam ferream, 1200 m, 14 May 1959, *Y. C. Ho 2135* (holotype, WUK; isotype, PE).

Because of the short original diagnosis of this taxon a complete description is given here.

Astragalus lang-ranii is near to *A. alaschanensis* H. C. Fu, but differs by smaller leaflets (3–4 × 1.3 mm vs. 5–15 × 3–7 mm), shorter bracts (4–6 mm vs. 10–15 mm long), shorter calyx (12–13 mm vs. 15–18 mm long; teeth 2.5–4 mm vs. 5–9 mm long).

Plants ca. 10 cm tall, shortly caulescent, densely covered with symmetrically to asymmetrically bifurcate, spreading white hairs, the branches up to 1 mm long. Caudex slender, simple or shortly branched. Stems up to 5 cm long, densely tomentose. Stipules whitish, adnate to the petiole for 2–4 mm, the lower triangular, 3–4 mm long, the upper narrowly triangular-acuminate 5–7 mm long, all densely hairy. Leaves 8–12 cm long; petiole 3–4 cm long, like the rachis slender, flexuous or curved, rather densely hairy. Leaflets in 11 to 13 pairs, elliptic, 3–6 × 1.5–3 mm, rounded to acute at the apex, on both sides covered with tangled, ± spreading hairs. Peduncles 1–1.5 cm long, hairy like the stem. Raceme loosely 4- to 6-flowered. Bracts whitish, 4–6 mm long, ovate-acuminate, loosely white-hairy, partly with basifixed hairs. Pedicels 2–3 mm long, hairy. Calyx 12–13 mm long, tubular, obliquely truncate at the mouth, densely covered with short to long spreading, tangled hairs; teeth subulate, 2.5–4 mm long. Petals pale purple. Standard 20–22 mm long; blade ca. 7 mm wide, narrowly ovate, ± rounded at the apex, very shortly

narrowed at the base. Wings ca. 19 mm long; blades narrowly obovate, obliquely slightly incised at the apex, 10×3 mm; auricle 1 mm long, claw 9 mm long. Keel 15 mm long; blades obliquely elliptic-triangular, with widely curved lower edge and nearly straight upper edge, obtuse at the apex, 6×3 mm; auricle short, claw 9 mm long.

Etymology. Named after Prof. Xu Lang-Ran, co-worker on the *Flora of China*, who has recog-

nized the distinctness of this species. The hyphen in the Latin name *lang-ranii* must be retained because two forenames are combined.

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