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A New Species of *Astragalus* (Leguminosae) from Northwestern Xinjiang, China

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ABSTRACT. *Astragalus baerlukensis* L. R. Xu, Zhao Y. Chang & Xiao L. Liu, a new species of Leguminosae, is described from northwestern Xinjiang, China. The new species is similar to *A. ellipsoideus* Ledeb. but differs by its notably long and filiform calyx teeth 6–8(–9) mm, oblong capitate racemes 2.5–3.5 cm long, and linear bracts 8–10 mm long. The latter taxon has shorter, subulate calyx teeth only to 3–4 mm, obovate capitate racemes 3–6 cm, and shorter, subulate-lanceolate bracts 5–6 mm long.

Key words: *Astragalus*, China, IUCN Red List, Leguminosae, Xinjiang.

The genus *Astragalus* L. (Leguminosae) consists of approximately 2500 species in the Old World, with ca. 400 species in 59 sections in China (Xu & Podlech, 2010). The species of *Astragalus* bear hair types with two kinds of attachments, either basifixed or medifixed (Farrokh, 2004). During field study on *Astragalus* in northwestern Xinjiang in May 2006, one of the present authors collected some specimens of *Astragalus* with medifixed hairs; the specimens were determined to belong to section *Laguropsis* Bunge based on the acaulescent, medifixed hairs, the calyx tubular at the beginning of anthesis but later lengthening as bladderlike and inflated, and the legumes mostly included in the calyx. However, these specimens also featured distinctly long and filiform calyx teeth that differed from those of other species in section *Laguropsis*. After careful examination of other morphological characters, we conclude that these specimens represent a new species, which is described here.

Astragalus baerlukensis L. R. Xu, Zhao Y. Chang & Xiao L. Liu, sp. nov. TYPE: China. Xinjiang: Yumin, Yumin-shuiku, on slope of Baerluke mtn., 46°37'N, 83°26'E, "clivis rupestribus in regione steppe," 900 m, 29 May 2006, L. R. Xu & Y. Zhang 2006-105 (holotype, WUK; isotype, PE). Figure 1A, C.

Haec species *Astragalo ellipsoideo* Ledeb. affinis, sed ab eo calycis dentibus filiformibus 6–8(–9) mm (vs. subulatis

3–4 mm) longis, racemis oblongis capitatis 2.5–3.5 cm (vs. obovatis capitatis 3–6 cm) longis atque bracteis linearibus 8–10 mm (vs. subulato-lanceolatis 5–6 mm) longis differt.

Perennial herbs, 15–25 cm tall, \pm acaulescent, caespitose, vegetation with medifixed, appressed white hairs; caudex strongly ligneous, divided into a pluricipital root-crown forming abbreviated stems 1–2.5 cm; stipules white, membranous, ranging from ovate on basal stems to narrowly triangular apically, 6–8 mm, adnate to petiole at base, densely pubescent. Leaves 15–25 cm; petiole 7–10 cm, stout, densely pubescent, with leaflets in 5 to 9 pairs; leaflet blades elliptic to oblong-obovate, (7–)10–15(–20) \times (4–)6–8(–10) mm, acute to obtuse, often mucronate, densely pubescent with appressed white trichomes on both surfaces. Peduncles slightly shorter than leaves, 8–15 cm, stout, with densely appressed, white trichomes; bracts white, membranous, linear to very narrowly lanceolate, 8–10 \times 1–1.5 mm, with mostly medifixed, white or mixed with sparse black hairs; racemes oblong capitate, 2.5–3.5 \times 1.5–2 cm, each raceme congested, with 12 to 15 flowers. Calyx in anthesis tubular, 15–18(–20) mm, later bladderlike and inflated, covered with dense white and scattered black, spreading, asymmetric, medifixed trichomes; calyx teeth filiform, 6–8(–9) mm, with dense, white and scattered black, medifixed trichomes; corolla petals yellow; standard 20–24 mm, with limbs oblong-obovate, 18–20 \times 7–8 mm, emarginate at apex, attenuate toward the base into a claw 2–3 mm; wings slightly shorter than standard, 19–21 mm, with limbs narrowly oblong, 6–7 mm, asymmetrically emarginate at apex, claw 1.5 \times as long as limb, auricle ca. 1 mm; keels slightly shorter than wings, 17–19 mm, with limbs obliquely elliptic 5–7 mm, claw 1.5 \times as long as limb, auricle 0.5–1 mm; stamen tube truncate at mouth; ovary subsessile, narrowly ellipsoid, with dense spreading, medifixed, white and scattered black trichomes, style glabrous. Legumes not seen.

Distribution and habitat. The new species generally occurs on gravel steppes predominated by *Caragana* Fabr., *Spiraea* L., and *Festuca* L. in

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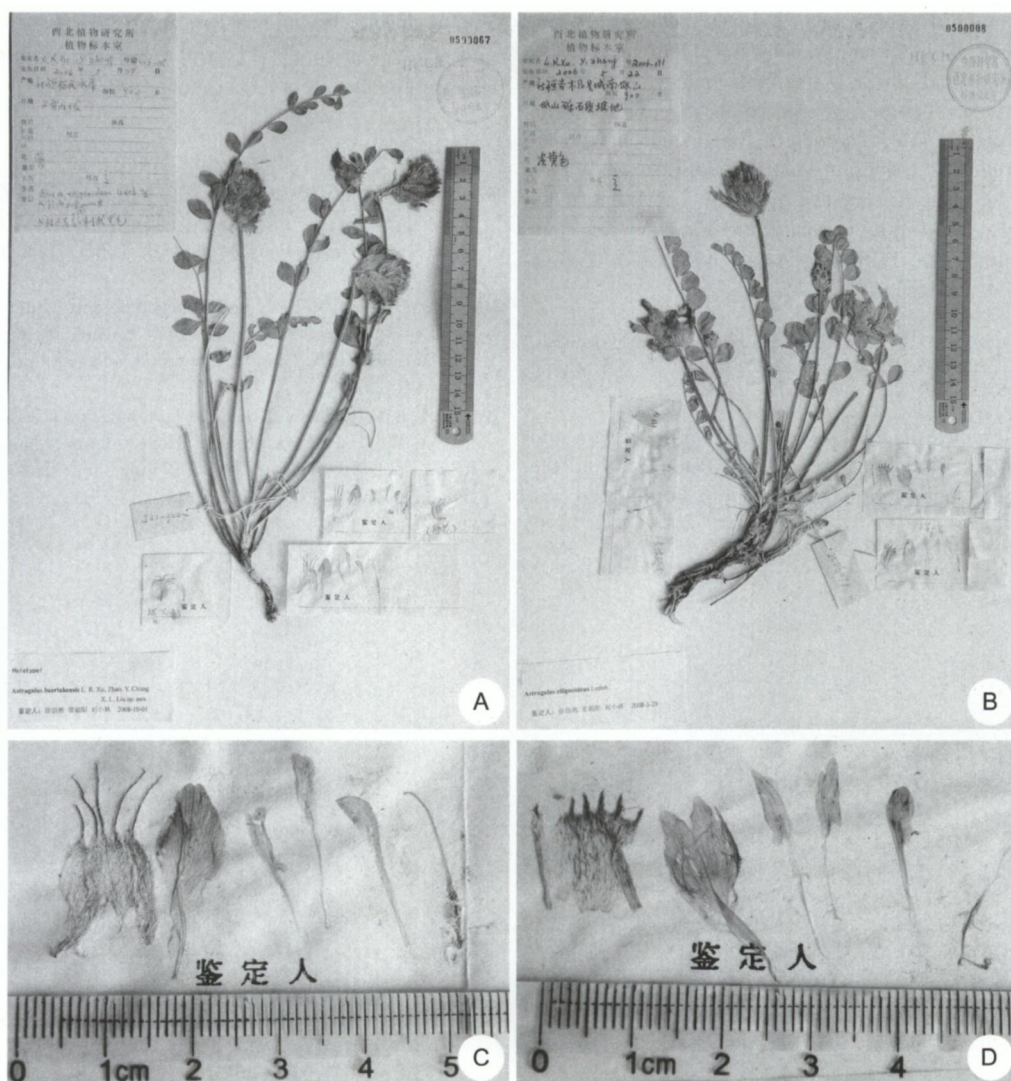


Figure 1. Comparison between the new species *Astragalus baerlukensis* L. R. Xu, Zhao Y. Chang & Xiao L. Liu and *A. ellipsoideus* Ledeb. —A, C. Holotype specimen of *A. baerlukensis* (L. R. Xu & Y. Zhang 2006-105, WUK). —B, D. *A. ellipsoideus* Ledeb., collected from Jimunai Co., Xinjiang, China, gravel hilly slope, 900 m, 22 May 2006 (L. R. Xu & Y. Zhang 2006-091, WUK).

mountainous regions of Yumin and E'min counties, at elevations of 900–1200 m.

IUCN Red List category. *Astragalus baerlukensis* is excellent forage for livestock, and its populations are severely threatened from overgrazing. Its conservation status is evaluated as Endangered (EN) according to IUCN Red List criteria (IUCN, 2001). Its distributional area is less than 500 km² and its known population sizes are small, with mature individuals numbering less than 2500 in each of the two populations. This suggests that the new species needs protection as an important germplasm resource.

Phenology. The new species is known to flower in May and June.

Etymology. The epithet is derived from Baerluke Mountain, located in Yumin County, Xinjiang, China, where the holotype of *Astragalus baerlukensis* was collected.

Discussion. *Astragalus baerlukensis* is similar to *A. ellipsoideus* Ledeb. in general morphology. Both species are acaulescent, have leaves with appressed, medifixed trichomes, and have yellow flowers. However, the new species differs from *A. ellipsoideus* by its notably long, filiform calyx teeth 6–8(–9) mm

(vs. subulate calyx teeth 3–4 mm), oblong capitate racemes 2.5–3.5 cm (vs. obovate capitate racemes 3–6 mm), and linear bracts 8–10 mm (vs. subulate-lanceolate bracts 5–6 mm). Both species belong to *Astragalus* sect. *Laguropsis* Bunge and have geographically disparate distributional ranges. This section has its greatest diversity in Afghanistan, China, Mongolia, Russia (Siberia), extending into Central Asia, Southwest Asia, and Eastern Europe (Xu & Podlech, 2010).

Paratypes. CHINA. **Xinjiang:** E'min, gravel steppes, Tarbaxatai mtn., 1200 m, 3 June 2006, L. R. Xu & Y. Zhang 2006-127 (WUK).

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