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TWO NEW ADDITIONS TO THE GENUS *ASTRAGALUS* L. (LEGUMINOSAE-PAPILIONOIDEAE) OF INDIA

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ABSTRACT

The present paper reports two species of *Astragalus viz., A. bakaliensis* and *A. pseudo-beckii* as new to India from Jammu & Kashmir region. Both the species are described and illustrated for easy identification.

INTRODUCTION

While studying the specimens of *Astragalus* L. received on loan from British Museum London (BM) in connection with the revisionary study of Indian *Astragalus,* the authors came across some unidentified and misidentified specimens of *Astragalus* collected from Jammu & Kashmir. On critical examination they were found to represent *A. bakaliensis* Bunge and *A. pseudo-beckii* Sirj. & Rech. fil. A survey of literature (Baker, 1876; Blatter, 1928; Ali, 1961, 1977; Kachroo *& al.,* 1977; Dhar & Kachroo, 1983; Sanjappa, 1992; Chaudhary & Rao, 2002) revealed that these species were not reported earlier from the present political boundary of India and therefore, recorded here with detailed descriptions and illustrations and also the phenology, distribution, specimens examined etc. are also provided.

1. **Astragalus bakaliensis** Bunge in Arb. Naturf. Vir. Riga 1 : 249. 1847, t. 14. f. 2. 1848; Boiss., Fl. Or. 2 : 13. 1872; Ali in Biologia 7 : 13. 1962 & in Nasir & Ali, Fl. W. Pakistan 100 : 127, f. 17 C. 1977. (Fig. 1)

Prostrate to erect herb, 3-18 cm long, several branches arising from the base, stem slender, velutinous with adpressed, white hairs. Stipules *ca* 1.5 × 1 mm, free, triangular-lanceolate with acute to acuminate tip, glabrous, ciliate. Leaves 1.0-3.5 cm long, imparipinnate; petioles to 8 mm long; rachis 9-25 mm long, hairy; leaflets 9-15, 3-8 × 1-4 mm, subsessile, close, opposite, oblong or narrowly ovate, acute at apex, velutinous with spreading, white hairs. Racemes axillary, (1-) 2-4-flowered; peduncles 1.5-2.5 cm long, hairy; brackts minute, persistent, ciliate with white or mixed black and white hairs. Flowers 5.5-6.5 mm long, subsessile, purplish red; pedicels less than 1 mm long, pubescent with white or mixed white and black hairs. Calyx 2-3 mm long, persistent, campanulate, strigose with adpressed,

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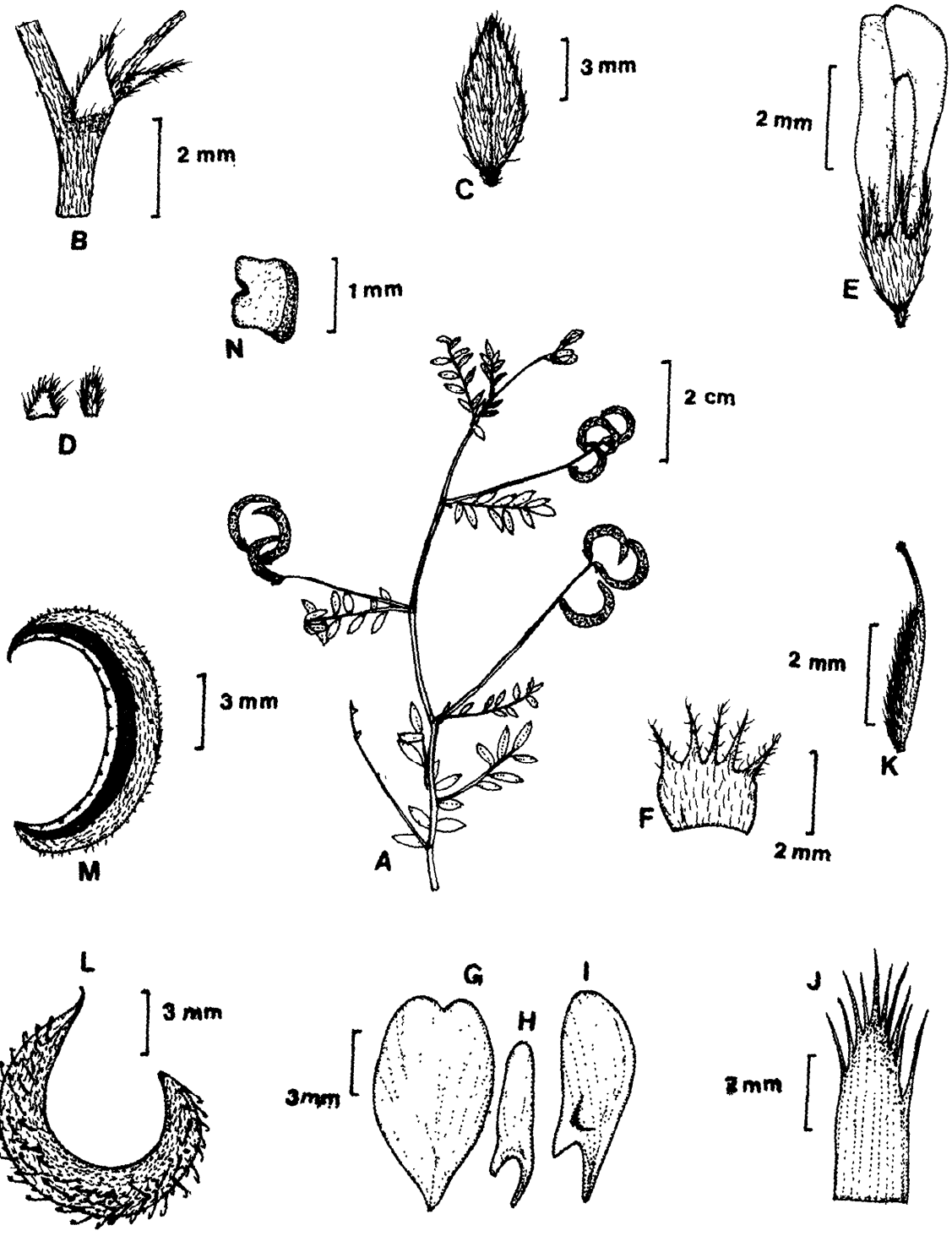


Fig. 1. *Astragalus bakaliensis* Bunge: A. Twig of plant; B. Stipules; C. Leaflet (dorsal surface); D. Bracts; E. Flower; F. Calyx (split); G. Standard; H. Wing; I. Keel; J. Stamens; K. Carpel; L. Pod; M. Pod (with only one halve showing septum); N. Seed (A-E, L–N from *Clarke* 30052 B; F–K from *Ludlow* 316).

mixed black and white hairs outside, tube *ca* 1.5 mm long, lobes *ca* 1.5 mm long. Corolla glabrous; standard 5.5-6.5 × 3.5 mm, oblong-elliptic narrowed at base into a claw and emarginate tip; wing petals 3-4.5 mm long, distinctly shorter than standard and keel petals, lamina oblong *ca* 3 × 1 mm, obtuse or tip, upper auricle minute, claw *ca* 1.5 mm long; keel petals 6.5 mm long, lamina 0.4.5 × 2 mm, upper auricle minute, claw 0.2 mm long. Stamens diadelphous (9 + 1); vexillary filament attached to staminal sheath; staminal sheath 0.3.5 mm long, free filaments 2-2.5 mm long. Ovary *ca* 3 mm long, subsessile, strigose with white hairs; stigma minutely penicillate. Pods 8-10 × 2 mm, sessile, falcate, turgid, partially bilocular with less than 1 mm wide septum, hairs scabrous, unequal, uncinate, white, spreading on ventral side, strigose, adpressed, white on dorsal side.

Fl. & Fr. : April May.

Distribution : India : (Jammu & Kashmir), Pakistan, Afghanistan, Persia, C.I.S.

Specimens examined: India : Jammu & Kashmir: Bragicha, 8000 ft, 26.5.1928, *F. Ludlow* 316 (BM); Hushe nallah, Khare, 9500 ft., 18.6. 1828, *F. Ludlow* 361, pp-specimen marked as A (BM); Shigar, 7700 ft., 5.7. 1876, *C. B. Clarke* 30052 B (BM).

Note : A. bakaliensis belongs to section *Falcinellus* under the subgenus *Pogonophace.* It is allied to *A. subumbellatus* and *A. scorpiurus,* but differs in having sessile and partially bilocular pods with two types of hairs.

Unlike other *Astragalus* species the vexillary filament in this species has been found attached with the staminal sheath. There is a need for study of more specimens to confirm whether it is a constant character or an aberration.

2. **Astragalus pseudo-beckii** Sirj. & Rech. f. in Biol. Skr. Dan. Vid. Selsk, 9 (3) : 40. 1958; Ali in Kew Bull. 28 (2) : 300. 1973 & in Nasir & Ali, Fl. W. Pakistan 100 : 181, f. 27 G-J. 1977. (Fig. 2)

Erect herb. Stem striate, sparesely pilose with adpressed, mixed black and white hairs. Stipules 5-7 × 2-3 mm, connate up to the middle and encircling the stem towards base of the plant, free towards apices of the plant, triangular, acute to acuminate at tip, almost glabrous, sometimes with only a few hairs along margins. Leaves 5.5-6.5 cm long, imparipinnate; petioles 1-2 cm long; rachis 3-4 cm long, channelled above, hairy; leaflets 14-18, 10-18 × 5-6 mm, opposite to alternate, elliptic, ovate, ovate-elliptic or oblong, cuneate at base, acute or obtuse at apex, pilose beneath with white adpressed hairs, glabrous to glabrescent above, midrib raised beneath. Racemes 7-10 cm long, axillary, many-flowered; peduncles 4.5-6 cm long; rachis 3.5 cm long, rachis and peduncles pilose with adpressed, mixed black and white hairs; bracts *ca* 8 × 2 mm, deciduous, linear-lanceolate, pilose with spreading, mixed black and white hairs; bracteole 1, 1.5-4 mm long, attached to pedicel at the base of calyx, linear, ciliate with spreading black hairs. Flowers 1.6-1.8 cm long, nodded at maturity; pedicels 1-2 mm long, densely hairy with half spreading, black or mixed with few white hairs. Calyx *ca* 9 mm long, campanulate, pilose outside with spreading black and white hairs, glabrous inside except at throat, tube *ca* 5 mm long, lebes unequal, linear, dorsal one *ca* 2 mm long, ventral one *ca* 4 mm long. Corolla

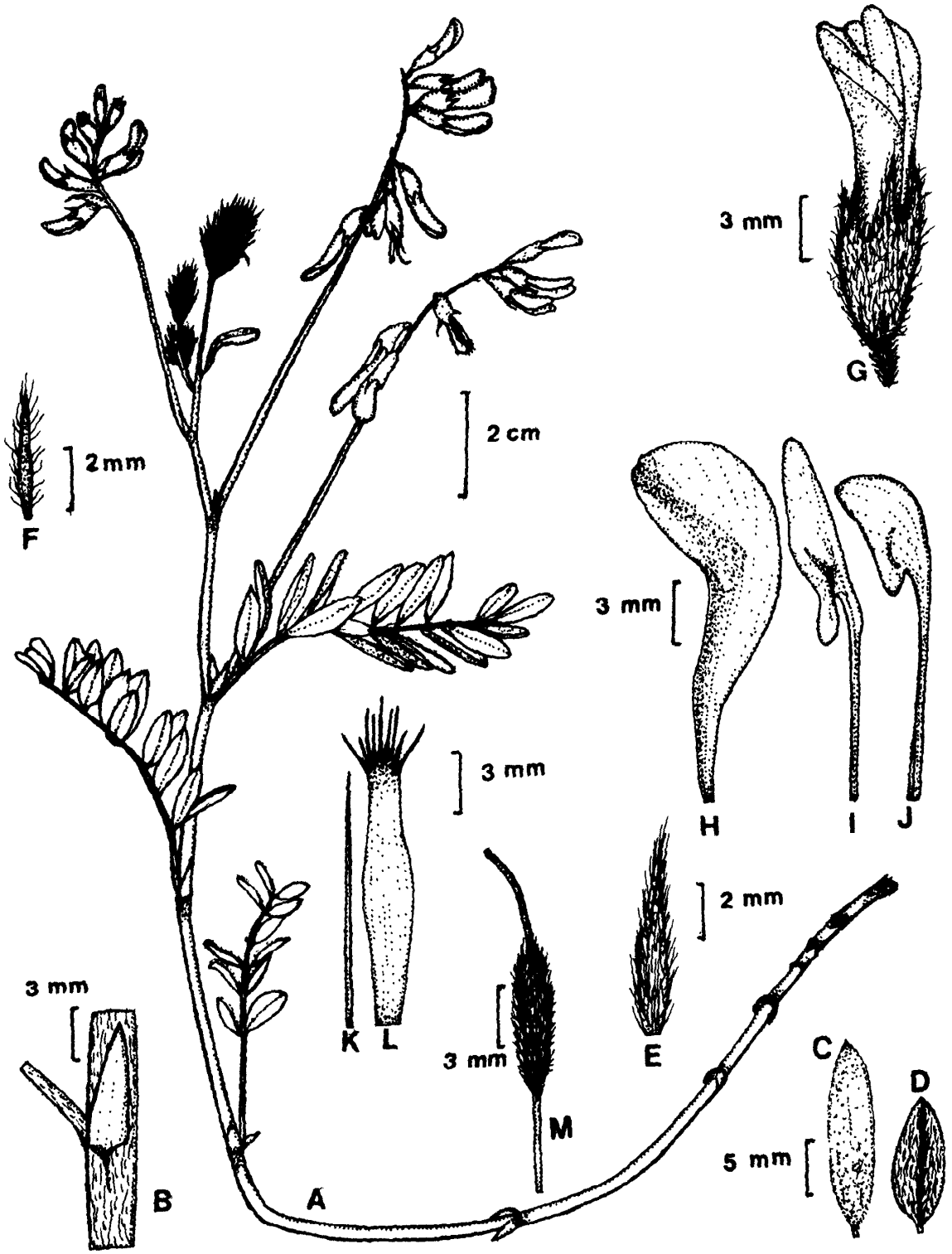


Fig. 2. *Astragalus pseudo-beckii* Sirj. & Rech. f. A. Habit; B. Stipule; C. Leaflet (ventral surface); D. Leaflet (dorsal surface); E. Bract; F. Bracteole; G. Flower; H. Standard; I. Wing, J. Keel; K. Vexillary filament; L. Staminal sheath (split); M. Carpel (A–M) from *Clarke* 29302 B).

glabrous; standard *ca* 16 mm long, obovate, lamina *ca* 12 × 6 mm, claw *ca* 4 mm long; wing petals *ca* 18 mm long, almost equal to standard, lamina *ca* 9 × 2 mm, oblong, obtuse at tip, upper auricle 2.5 × 1 mm, lateral pockets present, claw *ca* 9 mm long; keel petals *ca* 15 mm long, slightly shorter than standard and wing petals, lamina *ca* 5 × 3 mm, upper auricle minute, lateral pockets present, claw *ca* 10 mm long. Stamens diadelphous (9+1); vexillary filament *ca* 15 mm long, free; staminal sheath *ca* 14 mm long, free filaments 2-3 mm long, alternately shorter and longer. Ovary *ca* 6 mm long, densely hairy with white, adpressed hairs, stipe *ca* 6 mm long; style *ca* 5 mm long, glabrous; stigma capitate, glabrous. Pods not seen (young pods densely tomentose with mixed black and white hairs).

Fl. : July.

Distribution : India (Jammu & Kashmir); Pakistan, Afghanistan.

Specimens examined : India : Jammu & Kashmir: Tragbol, 10400 ft., 20.7.1876, *C. B. Clarke* 293302 B (BM).

Note : It is a member of section *Malacothrix* under the subgenus *Phaca* and chiefly characterized by connate stipules towards basal part of the plant, bracts longer than pedicels, more or less equal calyx lobes to tube, equal standard and wing petals and densely hairy ovary.

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भारत के जीनस *एस्ट्रेगेलस* एल (लेगुमिनॉसी–पेपिलिओन्वाइडी) में दो नये अभिलेख

एल.बी. चौधरी व जेड. एच. खान

सार संक्षेप

प्रस्तुत आलेख में जम्मू–कश्मीर क्षेत्र से भारत के लिए *एस्ट्रेगेलस* की दो नई जातियों *ए. बकलिएंसिस* एवं *ए. स्युडो–बेकी* के वर्णन हैं। आसान अभिनिर्धारण के लिए दोनों जातियों के विवरण दिए गए है।