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NOTE

An Insight into *Pedicularis cheilanthifolia* Schrenk Complex (Scrophulariaceae)

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ABSTRACT: The taxonomy complexity of *Pedicularis cheilanthifolia* Schrenk along with its three varieties *viz*. var. *cheilanthifolia*, var. *purpurea* (Pennell) Tsoong ex Garg and var. *albida* (Pennell) Tsoong is elucidated and resolved. Key to varieties, morphology, distribution, phenology and ecology is provided to differentiate the varieties. Diagnostic morphological characters supported the transfer of *P. purpurea* (Pennel) Tsoong to *P. cheilanthifolia*, hence the new combination is made.

KEY WORDS: *Pedicularis cheilanthifolia*, var. *cheilanthifolia*, var. *purpurea*. var. *albida*, Scrophulariaceae.

INTRODUCTION

The genus *Pedicularis* L. was first described by Linnaeus in 1737. The generic name *Pedicularis* originated from the Latin word 'Pediculus' meaning louse, as the decoction of plants was used to destroy lice in domestic animals in some areas of central Europe. The members of this genus are therefore, commonly known as 'louse-wort'. 'Hemi-parasatism' is a commonly encountered character of most of the species of *Pedicularis* L., where the roots penetrate those of the other plants growing within their microhabitat, and imbibe secondary metabolites from them.

Pedicularis cheilanthifolia Schrenk, belonging to the only section Anodontae of subgenus Erostres of the genus, was understood as an extremely variable species which 'constitutes a single large section containing the whole of the forms with corollas showing what appears to be the most archaic type of structures' (Prain, 1890).

During the course of revisionary studies on the genus *Pedicularis* L. in India, the author critically examined the taxonomic characters of some specimens from BM, CDRI and BSD which were determined as *Pedicularis purpurea* Pennell, *Pedicularis cheilanthifolia* Schrenk var. *cheilanthifolia* and *P. cheilanthifolia* var. *albida* (Pennell) Tsoong. Of these, the var. *albida* was considered as an independent species by Pennell (*l.c.)*, but was abridged as a variety under *P. cheilanthifolia* by Tsoong (1955). According to him the difference between *Pedicularis albida* Pennell and *P. cheilanthifolia* Schrenk was not so much marked that *P. albida* could be given the status of a species. Further, he stated "Pennell did not have enough material at hand. After having seen many specimens from Dzungaria, I am content to regard *P. albida* as merely a variety of *P. cheilanthifolia*". Tsoong's (*l.c.*) observation is corroborated here as it in accordance with the specimens examined by the author.

Pennell (*l.c.*) recognized three segregates from *P. cheilanthifolia* from western Himalayas *viz. P. svenhedinii*, *P. albida* and *P. purpurea*. While *P. svenhedinii* Paulsen is out of scope of our discussion as it exists as a separate entity, *P. albida* occupies a varietal status under *P. cheilanthifolia* as discussed above. The species *purpurea* of Pennell (*l.c.*) was critically examined by the author mainly for the diagnostic characters. Also a duplicate of one of the specimens from Mt. Kardang (Mt. Kardang, *Drummond* 8907 (UCLA)) which was studied by Pennell in 1942, bearing his determination and also cited in his work, was examined by the author (Mt. Kardang, *Drummond* 8907 (CAL)). On comparing this specimen (Fig. 1) with that of *P. cheilanthifolia* (Fig. 2), it was noticed that the characters of Pennell's *P. purpurea* were by no means distinct from those of *P. cheilanthifolia* except in that the galea was twice longer than calyx in the latter species, with calyx hairy along veins and labium with almost equal, rounded lobes whereas in the first species, the galea was one and half times longer than calyx with pubescent calyx and having broader, flatly rounded lateral lobes of labium with longer and narrower median lobe. Most other vital characters such as those of stem, inflorescence, pedicel, color of corolla, galea features including rostrum, stamens including staminal insertion on corolla tube and the gynoecium of the two species were all quite overlapping. Further critical studies of several specimens and perusal of the literature could not reveal clear cut diagnostic differences between the two species reliable enough to support the specific status of the *P.*

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purpurea. The perceptible differences did not warrant the retention of a specific rank to *P. purpurea*. The author therefore, is content to regard *P. purpurea* merely as a variety of *P. cheilanthifolia*. Hence, new combination is made.

The detailed morphological description of all infraspecific taxa along with their nomenclatural citations, types, common names, flowering and fruiting time, distribution, ecology, and notes is provided for ready reference. A key to the varieties is also provided along with the distributional maps of the taxa.

TAXONOMIC TREATMENTS

Pedicularis cheilanthifolia Schrenk in Bull. Phys.-Math. Acad. Sci. St. Petersb. 1: 79. 1842; Walper, Rep. Bot. Syst. 3: 939. 1844; Benth. in DC., Prodr. 10: 562. 1846; Hook. f. in Hook. f., Fl. Brit. Ind. 4: 308. 1884; Prain in Ann. Royal Bot. Gard. Calcutta 3: 171. t. 32, A-B. 1890; Tsoong in Bull. Brit. Mus. Nat. Hist. (Bot. Series) 2: 31.1955; Polunin & Stainton, Fl. of Himalaya 300. 1984; Blatter, Beaut. Flowers Kash. 2: 98. 1984. Fig. 3

Common name : Cheilanthus-leafed Lousewort.

Erect or decumbent herbs, 10-30 cm tall; stems several, loosely villous over entire surface or the hairs shorter and in 4 lines. Leaves pinnatifid; radical leaves 2.5-10 x 0.5-1 cm, long petioled, densely tufted, finely pubescent; cauline leaves 1-4 cm long, in whorls of 3-6, sessile or sub-sessile, glabrous; rachis narrowly winged; lamina irregularly toothed, with 2-3 pairs of callose-cuspidate pairs of pinnae; pinnae 2-3 mm long, 9-15 pairs. Inflorescence of 3-5 fascicles, villous, often so congested as to appear a single head-like cluster. Flowers 2-2.3 cm long, almost stalkless or pedicellate; pedicel 2-5 mm long, glabrous; bracts lowest sometimes leaf-like, upper smaller lanceolate, hairy. Corolla 18-20 mm long, white, pink or purplish, glabrous; tube 10-11 mm long, decurved about 30-45 degrees from the calyx, glabrous, equal or longer than the calyx; galea non-beaked, 8-12 mm long, recurvingly-arched above the lower lip, much longer than the labium, distal part rounded encasing the anthers ending in a more or less rounded or acute apex; labium very short 5-7 mm long, 3-lobed, glabrous, lateral lobes wider than long and spreading laterally. Calyx tube 6-10 mm long, sparsely or densely hairy, 4-5-lobed, dentate, often cleft up to1/3rd depth; lobes short, obtuse, irregularly developed, the mid-posterior short or lacking, the posterio-laterals longest and with lobulate margin, margin straight or recurved to expose the inner cilia. Stamens fixed opposite the middle of the ovary; anthers 1.5-2 mm long, cells acute at the base; filaments all glabrous minutely pubescent at the base; style simple protruding out of galea, glabrous; stigma capitate.

Identification key to varieties of *P. chielanthifolia*

1. Corolla white; calyx margin recurved exposing the inner cilia ……. ……..…..……..…… 1. var. *albida*
1. Corolla pink or purple; calyx margin straight …….. 2
2. Galea twice longer than calyx; lateral lobes of labium rounded, median lobe rounded almost equal to lateral lobes; calyx sparsely hairy along veins ……..…..… 2. var. *cheilanthifolia*
2. Galea one and half times longer than calyx; lateral lobes of labium broadly rounded, median lobe longer and narrower; calyx pubescent throughout more at veins …… 3. var. *purpurea*

1. **var. *albida*** (Pennell) Tsoong in Acta Phytotax. Sin. 33 (3): 312-313, 332 1955; et Bull. Brit. Mus. Nat. Hist. (Bot. Ser.) 2: 31. 1955. Fig. 4A

P. albida Pennell in Acad. Nat. Sci. Philadelphia, Monogr. 5: 123. t. 19A. 1943; Chowdhery & Wadhwa, Fl. Himachal Pradesh 2: 523. 1984; Aswal & Mehrotra, Fl. Lahaul-Spiti 475. 1994; Dhaliwal & Sharma, Fl. Kullu Dist. 483. 1999.

Type: Meadow, 3700 m, Shigar Nulla, Baltistan, August 22, 1936, *Walter Koelz* 9731 (holo.: PH-*n.v.*).

Flowering and Fruiting: July-August.

Distribution: India (Jammu & Kashmir, Himachal Pradesh); Pakistan; China (Tibet).

Ecology: Moist places on alpine slopes; 3300-3700 m.

Notes: This variety is endemic in dry Western Himalayan zone.

Specimens examined: Jammu & Kashmir: Leh, Ladakh, 3400 m, 23.8.1986, *B.S. Aswal 16249* (CDRI); Karpuche valley, *Duthie 11962* (DD); Lamiran Nullah, above Dras, Duthie *13785* (DD). Himachal Pradesh: Spiti, Jah, 3300 m, 18.8.1933, *H.A.C. Gill 2042* (DD).

2. **var. *cheilanthifolia*** Figs. 1 & 4B

Type: Lecta in Monte Ispuli (Songaria), d. 16 Julii m-*n.v.*

Flowering and Fruiting: July-August

Distribution: India ((Jammu & Kashmir, Himachal Pradesh); Pakistan, N. Tibet, N. China, C. Nepal.

Ecology : Common on alpine slopes, screes and meadows; at altitudes ranging from 3000 to 5000 m.

Specimens examined: Jammu & Kashmir: Deotsu, 24.7.1947, *Strachey & Winterbottom 876* (DD); N. West edge of Deosai plains, 4500 m, 21.7.1892, *J.F. Duthie s.n.* (DD). Himachal Pradesh: Lahaul: Sissu, 4330 m, 3.7.1938, *N.L. Bor 12357* (DD).

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Fig. 1. *Pedicularis cheilanthifolia* Schrenk var. *cheilanthifolia*.

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Fig. 2. *Pedicularis cheilanthifolia* Schrenk var. *purpurea* (Pennell) A. Garg.

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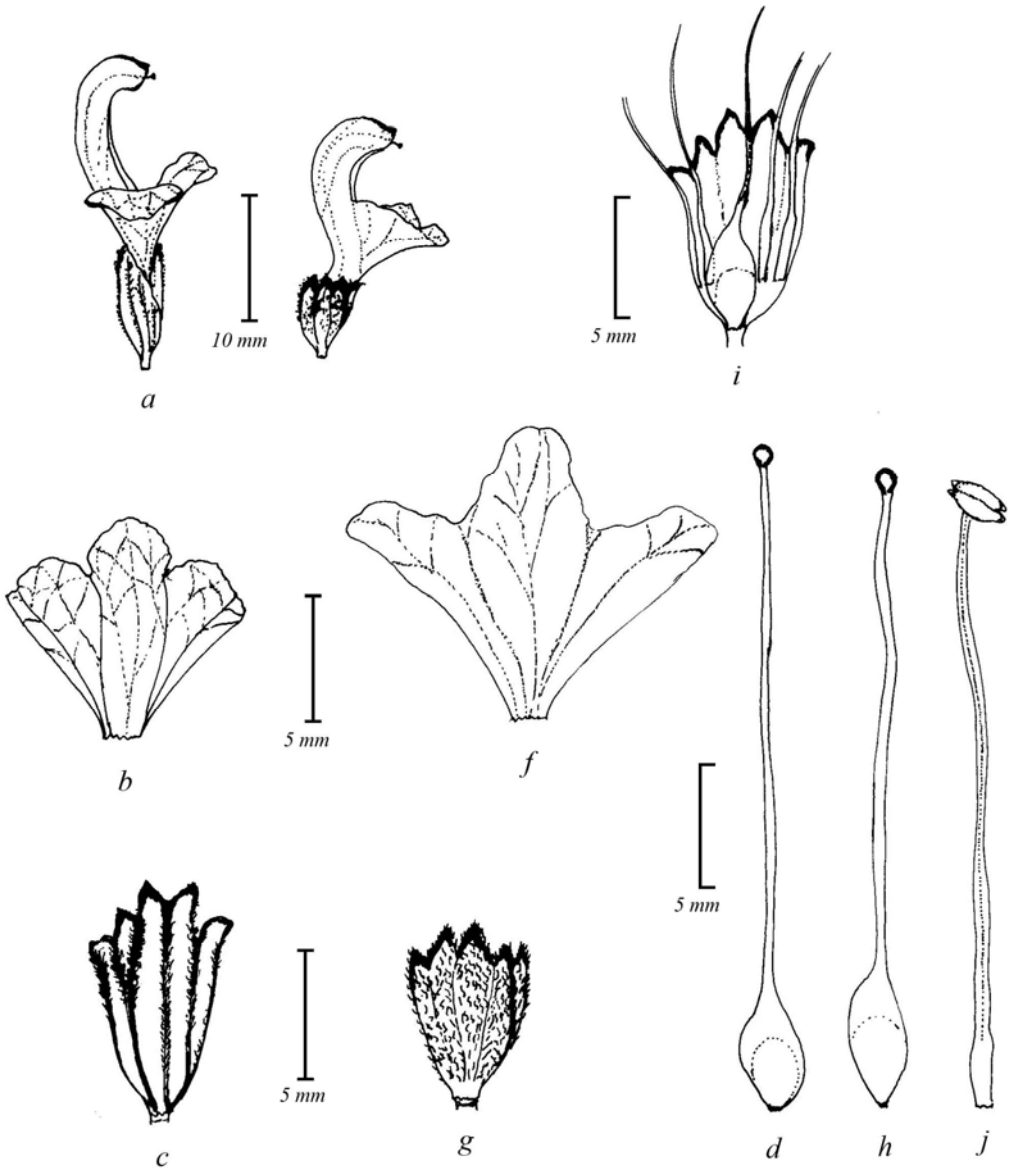


Fig. 3. a-d: *Pedicularis cheilanthifolia* Schrenk. a: Flower in lateral view. b: Labium. c: Calyx split open. d: Gynoecium. e-h: *Pedicularis cheilanthifolia* Schrenk var. *purpurea* (Pennell) A. Garg. e: Flower in lateral view. f: Labium. g: Calyx split open. h: Gynoecium. i-j: *P. cheilanthifolia* Schrenk, i: Calyx split open to show the point of attachment of stamens. J: One stamen.

3. **var. *purpurea*** (Pennell) Tsoong ex Garg *comb. nov.* Figs. 2, 3 & 4C

P. purpurea Pennell in Acad. Nat. Sci. Philadelphia, Monogr.5:125.t. 19B.1943; Rau, High Alt. Flow. Pls. 162. 1975; Dhar & Kachroo, Alpine Fl. Kash. Himal. 239. 1983; Chowdhery & Wadhwa, Fl. Himachal Pradesh 2: 527. 1984; Aswal & Mehrotra, Fl. Lahaul-Spiti 481.1994.

Type: Himachal Pradesh, Lahaul, Dropko Gongma, 4600m, 29-30 Aug. 1933, *Walter Koelz* 6895 (holo.: US- *n.v.*; iso.: PH- *n.v.*).

Flowering and Fruiting: July-September.

Distribution: India (Jammu & Kashmir to Himachal Pradesh).

Ecology: On moist slopes in gullies and also on moist plain; 3500-5500 m.

Notes: This variety is endemic to North-West Himalaya.

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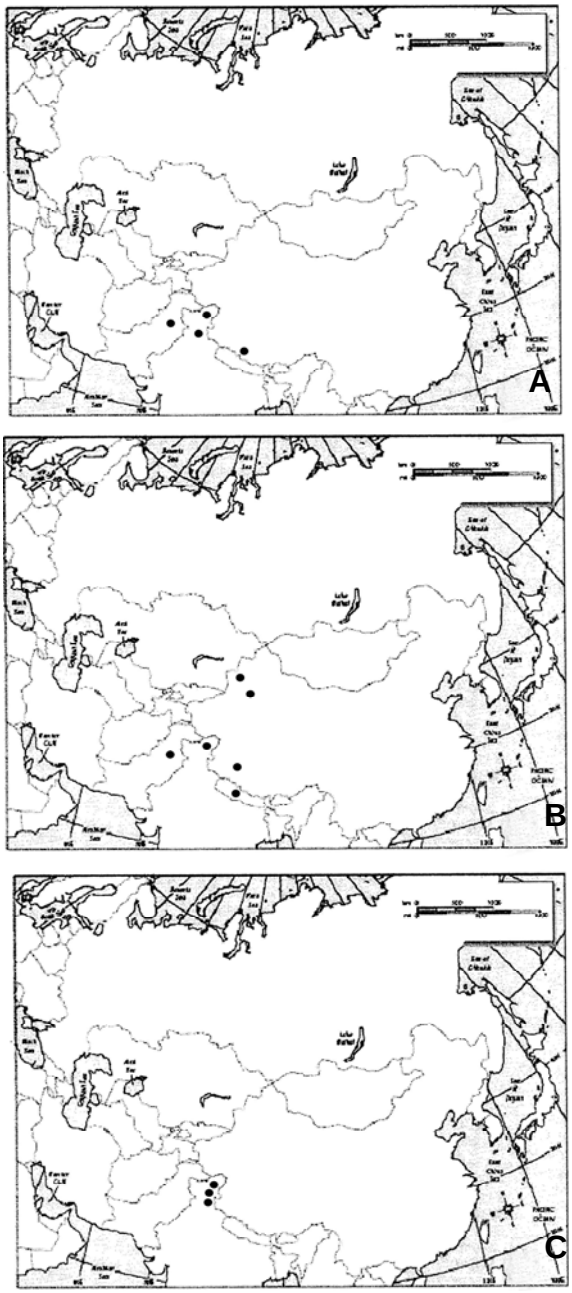


Fig. 4. Distribution Maps. A: *Pedicularis cheilanthifolia* Schrenk var. *albida* (Pennell) Tsoong. B: *Pedicularis cheilanthifolia* Schrenk var. *cheilanthifolia*. C: *Pedicularis cheilanthifolia* Schrenk var. *purpurea* (Pennell) A. Garg.

Specimens examined: Jammu & Kashmir: Ladakh: Lakong, 4500 m, 23.7.1973, *U.C. Bhattacharyya 52169* (BSD); Kashmir, Pushwari, 22.7.1946, *s.l. 882* (LWG). Himachal Pradesh: Lahaul Valley: Chotadhara, 3500 m, 20.7.1977, *B.S. Aswal 6842* (CDRI); Rohtang slope, 3600 m, 13.7.1979, *B.S. Aswal 10187* (CDRI); Pangi, 3700-5500 m, 1879, *A.W. Heyde s.n.* (BM).

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印度玄參科碎米蕨葉馬先蒿複合群

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摘要：本文闡述碎米蕨葉馬先蒿 (*Pedicularis cheilanthifolia*) 複合群以及其三變種－ var. *cheilanthifolia*, var. *purpurea* (Pennell) A. Garg 與 var. *albida* (Pennell) Tsoong。文中提供分辨此三變種之檢索表、形態、分布、物候與生態資料。重要形態鑑別特徵支持將 *P. purpurea* Pennell 轉移為碎米蕨葉馬先蒿之變種，因之本文乃成立一個新組合名稱。

關鍵詞：碎米蕨葉馬先蒿 、 var. *albida* , var. *cheilanthifolia*, var. *purpurea* 、玄參科。

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