

Manoj SINGH<sup>1</sup>, Harish NEGI<sup>1</sup> and S.K.SINGH<sup>2,\*</sup>: *Utricularia furcellata* (*Lentibulariaceae*)—A Rare Species Newly Recorded from Western Himalaya, India

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**Summary:** *Utricularia furcellata* Oliv. (*Lentibulariaceae*), a rare carnivorous species, was recorded from Chamoli, Uttarakhand, Western Himalaya, India. It shows resemblance to *U. striatula* Sm., but can be distinguished easily by corolla with 4-lobed lower lip, seeds tangentially attached to placentum, and lateral hilum without glochidia which are confined to distal portion only. Description and photoplates are provided here to facilitate its future identification.

*Utricularia* L. is the most diverse genus of the carnivorous family *Lentibulariaceae*. The members of the genus are commonly known as bladderworts. They are semi-aquatic, terrestrial, lithophytic or epiphytic (Gyeltshen and Dema 2020) and widely distributed in tropical and subtropical and a few in temperate regions of the world (Janarthanam and Henry 1992). Taylor (1989) in his monumental monograph of the genus *Utricularia*, recognized 214 species. According to recent estimate the genus is represented by 220 species in the world (Mabberley 2017). In India, the genus is represented by 40 species (Janarthanam and Henry 1992, Yadav et al. 2000, 2005, Naveen Kumar et al. 2018) with preponderance in hills of Western Ghats and Northeast India. Of these, 14 species are endemic to India and majority of them are confined to Southern India namely: *Utricularia albocoerulea* Dalzell, *U. ceciliae* P.Taylor, *U. janarthanamii* S.R. Yadav,

Sardesai & S.P.Gaikwad, *U. lazulina* P.Taylor, *U. malabarica* Janarth. & A.N.Henry, *U. naikii* S.R.Yadav, Sardesai & S.P.Gaikwad, *U. nayarii* Janarth. & A.N.Henry, *U. praeterita* P.Taylor, *U. purpurascens* J.Graham, *U. smithiana* Wight, *U. subramanyamii* Janarth. & A.N.Henry, *U. sunilii* Naveen Kum. & K.M.P.Kumar, *U. wightiana* P.Taylor, while two species *U. furcellata* Oliv. and *U. subulata* L., are endemic to Northeast India.

During survey and exploration of remote localities of Garhwal Himalaya, we collected a few specimens of *Utricularia* from Mandal Valley, Chamoli dist. Uttarakhand, September 2021. A thorough scrutiny of literature (Oliver 1859, Clarke 1884, Joseph and Joseph 1986, Taylor 1989, Janarthanam and Henry 1992) and comparison with known species of Western Himalaya, the specimens were identified as *U. furcellata*, a rare species, known to occur in Meghalaya, Sikkim and West Bengal (Darjeeling), China, Malaysia, Thailand and Bhutan (Gyeltshen and Dema 2020) but hitherto unrecorded from the Western Himalaya. It is interesting to note that after Joseph and Joseph (1986) this species could not be collected from any parts of India. Thus, this species is described and illustrated with the help of photomicrograph in the present paper. The studied Voucher specimens are deposited at the Botanical Survey of India Northern Regional Centre Dehradun (BSD), Uttarakhand.

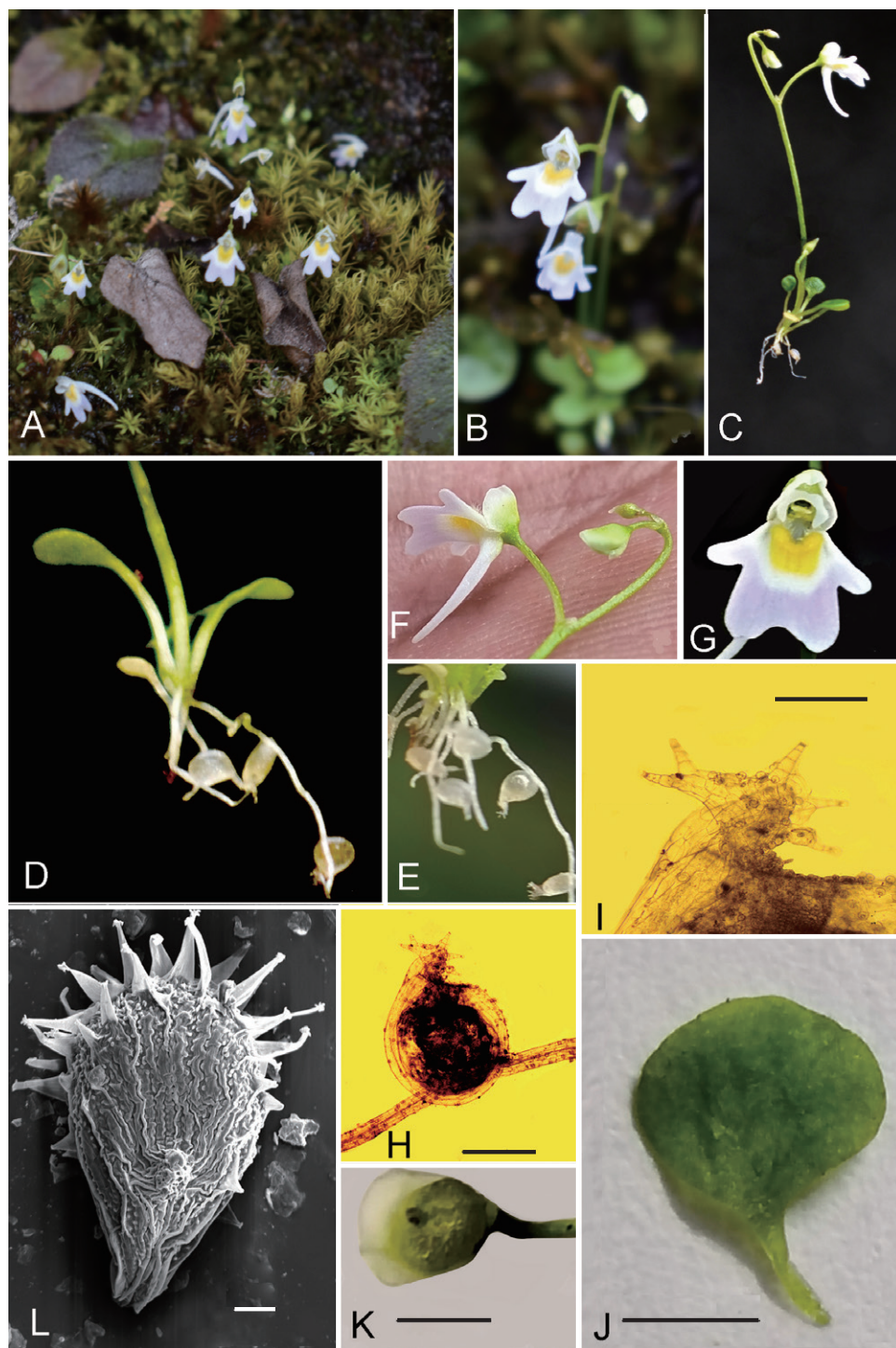


Fig. 1. *Utricularia furcellata* Oliv. A. Habitat. B. Inflorescence. C. Flower bearing plant. D, E. Portions of plant with traps on rhizoid. F. Side view of flower. G. Front view of flower. H, I. Trap morphology and their appendage hairs respectively. J. Leaf. K. Capsule. L. Seed (SEM image). Scales: 500  $\mu\text{m}$  (H), 200  $\mu\text{m}$  (I), 2 mm (J, K) and 40  $\mu\text{m}$  (L).

*Utricularia furcellata* Oliv. in J. Proc. Linn. Soc., Bot. 3: 189 (1859); C.B. Clarke in Hook. f., Fl. Brit. India 4: 334 (1884); Joseph & Joseph, Insect. Pl. Meghalaya: 34 (1986); Taylor in Kew Bull. Add. Ser. 14: 476 (1989).

[*U. furcellata* var. *minor* C.B. Clarke in Hook. f., Fl. Brit. India 4: 334 (1884), nom. illeg.]

Small epiphytic, or lithophytic annual herbs; rhizoids 1–2.5 cm long, simple or sparsely branched; stolons absent or very diminished. Leaves making rosette; petiole 1–3 mm long, pale green; lamina orbicular or reniform to obovate, 2–5 × 2–6 mm, fleshy, margin entire, apex rounded, base truncate to rounded, veins dichotomous. Traps few on rhizoids, ovoid, subsessile to minutely stalked 1 mm long, the mouth lateral with dorsal bifid appendages, with eight short multicellular stipitate glands. Inflorescence erect, clumped, 1–2 cm long; peduncle glabrous, 1–3-flowered; scale absent. Bracts attached just above the base, lanceolate, ca. 0.5 mm long, apex and base acute; bracteole similar to and slightly larger than bracts. Pedicels 1–3 mm long, terete, erect in flower, spreading in fruit. Calyx-lobes purplish red, unequal; the upper one much larger, ca. 2 mm long on flowering, circular with emarginate apex. Corolla pale purple or white with a narrow white horseshoe-shaped band and a yellow patch at the base of the lower lip; upper lip deltoid, 2-nerved, emarginate at apex, ca. 1 mm long; lower lip depressed obovate in outline, 4-lobed, hairy in throat, ca. 3 × 4 mm, the lateral lobes distinctly smaller than the apical pairs; palate with a slightly raised rim, fringed with hairs; spur ca. 5 mm long, short, subulate, with acute apex, straight or slightly curved. Stamens ca. 0.5 mm long. Ovary globose, style very short. Capsule globose with a ventral keel, ca. 1.5 mm long. Seeds obovoid, ca. 0.1 mm long, covered with minute glochidiate hairs; hilum lateral.

Ecology: Growing on damp rocks, associated

with mosses along with other associated species like *Didymocarpus aromaticus* Wall. ex D. Don, *Bergenia ciliata* (How.) Sternb. and *Platystemma violoides* Wall. etc. Fl. & Fr. (at Chamoli) September–October.

Specimen examined: INDIA. Western Himalaya, Chamoli district, on the way to Chopta, Mandal Valley, 30°27'18"N, 79°15'30"E, 2151 m, 19 Sept. 2021, Manoj Singh s.n. (BSD).

Distribution: India (Assam, Mizoram, Sikkim, Meghalaya, Uttarakhand and West Bengal–Darjeeling), Bhutan, China, Malaysia, Thailand (Taylor 1989, Janarthanam and Henry 1992, Suksathan and Parnell 2010, Chew and Haron 2011, Yee et al. 2012, Pandey et al. 2013, Gyeltshen and Dema 2020).

Identification and conservation status: *Utricularia* sect. *Phyllaria* (Kurz) Kamienski to which *U. furcellata* belongs is characterized by its rosulate petiolate leaves (on stolons) with obovate to reniform lamina; traps with a single dorsiventrally flattened dorsal appendage with rounded, truncate or more or less deeply bifid apices and always fringed with gland-tipped trichomes; inflorescence racemose, with spirally arranged flowers; upper calyx lobe much larger than the lower and with emarginate or retuse apex; upper corolla lip shorter than the upper calyx lobe or if longer then plant with moniliform tubers (Taylor 1989). In having rosulate petiolate leaves with the obovate to reniform lamina, racemose inflorescence, traps dorsiventrally flattened and flabellate, mouth lateral with bifid appendage and fringed with 8 short multicellular stipitate glands, *U. furcellata* belongs to sect. *Phyllaria*.

Of the known species under sect. *Phyllaria* from Western Himalaya, *U. furcellata* shows affinity with *U. kumaonensis* Oliv. and *U. striatula* Sm. However, both are distinct from *U. furcellata* in having 5 corolla lobes and many other distinctive features (Table 1). The present report extends its range of distribution westward. This species was considered to be critically endangered in Peninsular Malaysia

Table 1. Comparison of the key characters among *Utricularia furcellata*, *U. kumaonensis* and *U. striatula*.

	<i>U. furcellata</i>	<i>U. kumaonensis</i>	<i>U. striatula</i>
Stolon	absent or diminished	present	present
Upper lip of corolla	deltoid, 2-nerved, apex emarginate	deltoid, apex truncate or obscurely bilobed	suborbicular to deltoid, apex truncate or irregular
Lower lip of corolla	4-lobed	5-lobed	3- or 5-lobed
Traps	mouth lateral, with a dorsal bifid appendage, fringed with 8 short multicellular stipitate glands	mouth lateral with a dorsal flabellate appendage, fringed with 7 multicellular, stipitate glands	mouth lateral, with a dorsal, deeply-bifid appendage, fringed with 10 long and 15 to 30 shorter multicellular stipitate glands
Seeds	obovoid, hilum lateral	ellipsoid, with a tuft of hairs arising at each end	narrowly to broadly obovoid, hilum terminal
Spur	subulate, with acute, straight or slightly curved apex	shortly cylindrical, with obtuse apex	subulate, with acute, straight or curved apex

(Chew and Haron 2011), while Gyeltshen and Dema (2020) put it under the data deficient category in Bhutan. Based on earlier limited collections from Northeast India and the present report based on a small size of population (200 individuals), we consider it a Vulnerable species in Garhwal Himalaya as this species is facing heavy biotic pressure within a tourist spot and needs immediate attention towards its in-situ protection.

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M.Singh<sup>1</sup>, H.Negi<sup>1</sup>, S.K.Singh<sup>2</sup>: インド・西ヒマラヤ  
から見いだされた稀産種 *Utricularia furcellata* (タヌキ  
モ科)

インドには 40 種のタヌキモ属 *Utricularia* (タヌキモ  
科) が知られており、そのうち 14 種がインド固有種  
で、多くがインド南部に分布している。2021 年になっ  
て、Uttarakhand 州の西ヒマラヤ (Garhwal Himalaya)  
から、希少な食虫植物である *U. furcellata* Oliv. が記録  
された。本種は *Phyllaria* 節に属し、*U. striatula* Sm. や

*U. kumaonensis* Oliv. に似ているが、花冠に 4 裂する下  
唇がある点などで区別される。

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