

Lejeunea alata Gottsche (Lejeuneaceae) – A new record for Indian bryoflora from Arunachal Pradesh

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Lejeunea alata Gottsche, a taxon so far known from Africa, China, Indonesia, Malaysia, Papua New Guinea, Polynesia, Samoa and Vietnam, is being reported for the first time in India from the Lower Dibang Valley District, Arunachal Pradesh.

Key-words—*Lejeunea alata*, New record, Bryoflora, Arunachal Pradesh, India.

INTRODUCTION

THE genus *Lejeunea* Lib. is represented in India by 21 species (Singh, 2001), of which 19 species are known from Eastern Himalaya (Bapna & Kachroo, 2000). Of these, only two species viz., *Lejeunea discreta* Lindenb. and *Lejeunea ulicina* (Taylor) Taylor are known to occur epiphyllously in India (Lal, 2003). During a recent study on the epiphyllous liverworts of Eastern Himalaya, the authors came across some interesting specimens of the genus which do not match with any of the species so far known from India. A subsequent critical investigation of the specimens and literature review (Mizutani, 1963, 1971; Zhu & So, 2001) revealed it to be *Lejeunea alata* Gottsche, a species so far known to occur only in Africa, China, Indonesia, Malaysia, Papua New Guinea, Polynesia, Samoa and Vietnam (Zhu & So, 2001). A detailed description and illustration of the same has been provided in the present communication.

SYSTEMATIC DESCRIPTION

Lejeunea alata Gottsche in Gottsche *et al.*, Syn. Hepat. 406 (1845).

(Text-figs 1-33)

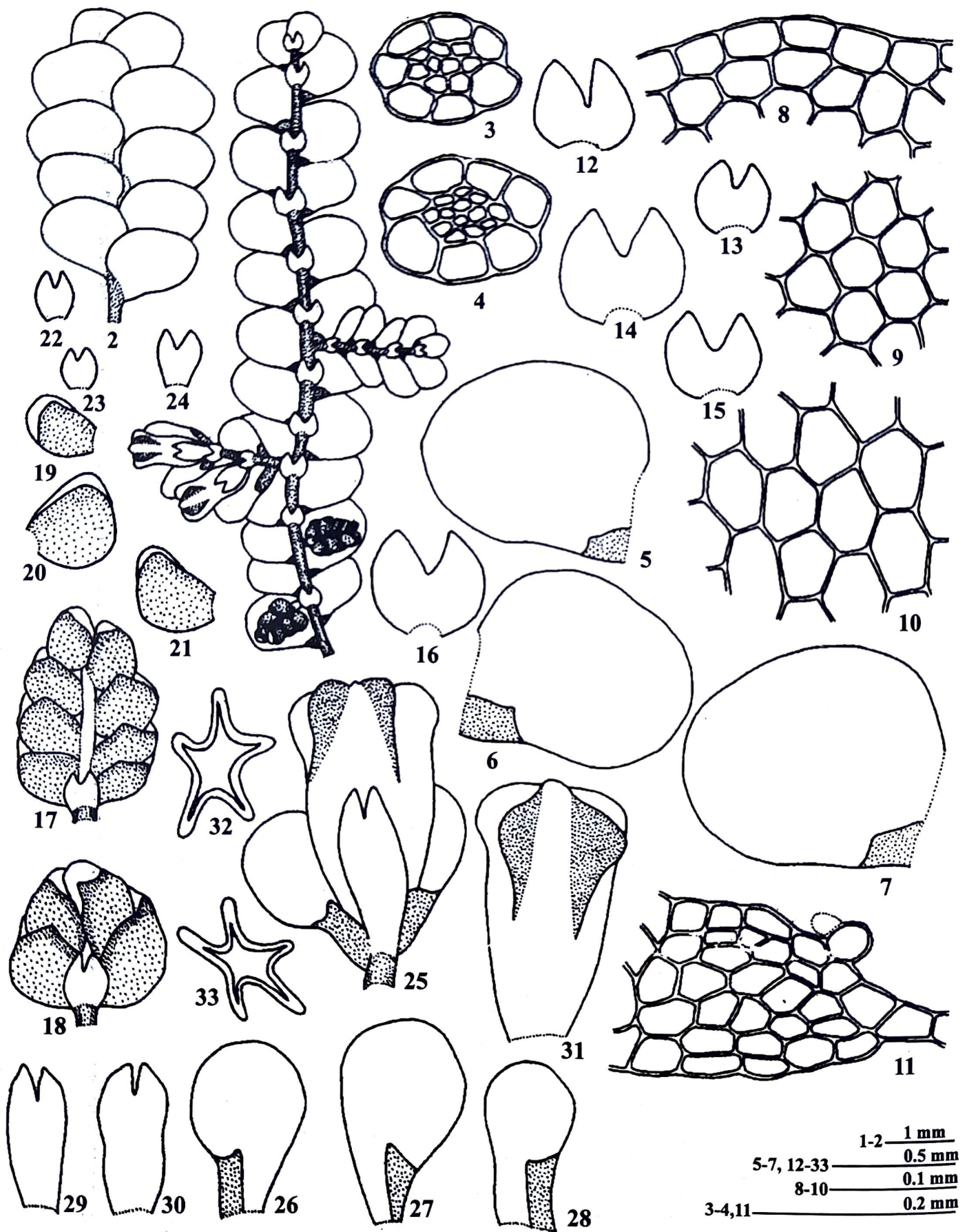
Description : Plants light green when fresh, yellowish green in herbarium, closely appressed to substratum; shoot 4–15 mm long, 1.1–1.5 mm wide. Stem 87.5–110 x 75–95 µm in cross-section, 5–7 cells across; cortical cells 7, sub-quadrate–sub-orbicular, 22.5–40 x 15–30 µm; medullary cells 9–13, polygonal, 10–20 x 6.2–15 µm. Rhizoids numerous, fasciculate at base of underleaves; rhizoid disc absent. Leaves imbricate–contiguous, widely spreading; leaf lobe ovate–sub-orbicular, 0.58–0.83 mm long, 0.5–0.68 mm wide, apex rounded, margin entire; marginal leaf cells sub-quadrate–rectangulate,

20–27.5 x 12.5–22.5 µm; median leaf cells hexagonal, 30–45 x 22.5–35 µm; basal leaf cells elongated, hexagonal, 37.5–57.5 x 22.5–35 µm; walls thin, trigones small, intermediate thickenings absent; leaf lobule small, 1/6–1/4 as long as the lobe, oblong–ovate, 0.17–0.22 mm long, 0.11–0.15 mm wide, bi-dentate, first tooth small, unicellular, hyaline papilla at the proximal side of first tooth, second tooth obsolete. Underleaves distant, 2–3 times as wide as the stem, sub-orbicular, 0.18–0.3 mm long, 0.16–0.28 mm wide, bilobed to 1/2 underleaf length, margin entire, sinus narrow–wide. Monoecious. Androecia terminal on short lateral branches, 0.4–0.55 mm long, 0.3–0.43 mm wide; bracts in 2–4 pairs, densely imbricate, obliquely spreading, 0.23–0.28 mm long, 0.15–0.24 mm wide; bracteole 1, 0.09–0.14 mm long 0.08–0.1 mm wide, present only at the base of androecium. Gynoecia on short or long branches, bearing an innovation; innovation sometimes again bearing a gynoeical innovation; bract lobe oblong–ovate, 0.45–0.6 mm long, 0.25–0.41 mm wide, apex rounded, margin entire; bract lobule oblong–rectangular, 1/3–1/2 as long as the bract lobe; bracteole oblong, 0.33–0.4 mm long, 0.15–0.19 mm wide, bilobed to 1/5–1/4 bracteole length, margin entire. Perianth pyriform, 0.68–0.85 mm long, 0.22–0.35 mm wide; keels 5, large, equal, smooth, wing like at apex; beak 1–2 cells long.

Distribution: India (Arunachal Pradesh – nov.); Africa, China, Indonesia, Malaysia, Papua New Guinea, Polynesia, Samoa, Vietnam (Zhu & So, 2001).

Specimens examined: Epiphyllous, densely growing all over the surface of leaves in moist and shady places. Arunachal Pradesh: Tiwarigaon (ca 1200 m), 20.02.2006, M. Dey & S. Das 38657, 38663 (CAL).

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Text-Figs 1-33. *Lejeunea alata* Gottsche 1. A portion of plant in ventral view. 2. The same in dorsal view. 3,4. Cross-section of stem. 5-7. Leaves. 8. Apical cells of leaf. 9. Median cells of leaf. 10. Basal cells of leaf. 11. Leaf lobule. 12-16. Underleaves. 17,18. Male branches. 19-21. Male bracts. 22-24. Male bracteoles. 25. A female branch. 26-28. Female bracts. 29,30. Female bracteoles. 31. A Perianth. 32,33. Cross-section of perianth.

DISCUSSION

The major distinguishing characters of *Lejeunea alata* Gottsche are small leaf lobule, thin walled leaf cells with very small trigones, lacking intermediate thickenings, distant underleaves and pyriform perianth with five large, equal, smooth, wing like keels at apex. Among the Indian species, *L. alata* is somewhat similar to *Lejeunea obscura* Mitt., both having small leaf lobule, distant underleaves bilobed to 1/2 their length and monoecious sexuality. However, the latter differs in the stem anatomy, having greater number of medullary cells (11–18); larger size of leaves and underleaves; female bracteole bilobed to 1/3 their length and obovate perianth with five keels extending to half perianth length (Zhu & So, 2001).

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