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***Lejeunea parva* (S. Hatt.) Mizut. [Lejeuneaceae: Marchantiophyta] new to bryoflora of Manipur, India**

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Abstract- *Lejeunea parva* (S. Hatt.) Mizut. is reported for the first time from Yangoupokpi Lokchao Wildlife Sanctuary of Manipur, India. Of which, the taxonomic description and illustrations of all are provided in present communication.

Key words: *Lejeunea parva* (S. Hatt.) Mizut., New record, Taxonomy, Manipur, India.

INTRODUCTION

The genus is represented by ca. 407 taxa (incl. 71 incertae sedis taxa) in the world belonging to four subgenera namely, *Lejeunea* Lib., *Nanolejeunea* R.M. Schust., *Neopotamolejeunea* (M.E. Reiner) Gradst. & M.E. Reiner and *Papillolejeunea* (Pócs) R.M. Schust.¹⁻⁴ In India, the genus is represented by 54 taxa^{3,5,6} of which 41 species occur in Northeast India.^{3,5,6} The liverworts and hornworts of manipur are 120 taxa are recorded from the state, of which 31 species belonging to family Lejeuneaceae and 16 species are Schizostipus.⁷⁻¹⁰

During the course of taxonomic studies on Lejeuneaceae (Schizostipae) Marchantiophyta in Northeast India including Sikkim, one species *Lejeunea parva* (S. Hatt.) Mizut. have been identified of the family Lejeuneaceae. The same have been described and illustrated for their easy identification in Indian bryoflora. The specimens studied are deposited in the herbarium of

Botanical Survey of India, Eastern Regional Centre, Shillong (Assam).

MATERIALS & METHODS

Plant specimens were collected from different part of Yangoupokpi Lokchao Wildlife Sanctuary (WLS), Manipur, Northeast India. We have collected numerous samples of Lejeuneaceae taxa. Fresh specimens were collected from tree trunks, branches and twigs of flowering plant with the help of knife, while in case of epiphyllous specimens, whole leaves were collected. The morphotaxonomic investigation of the specimens was carried out under microscope. The dissection was made with help of binocular Olympus SZ 51 Stereozoom microscope. The plant characters were observed under trinocular Nikon Eclipse 50i and Olympus CX 41 microscope. The prepared slides were studied under suitable magnification of trinocular microscope and detailed line drawing illustrations of the dissected parts of each species were drawn using camera lucida. All the characters of plants dissected parts were measured length

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and wide. The measurements recorded are an average of at least 20–25 counts. The specimens were identified based on the literature. Line drawing illustration with the help of camera lucida was done for easy identification.

TAXONOMIC DESCRIPTIONS

1. *Lejeunea parva* (S. Hatt.) Mizut., Misc. Bryol. Lichenol. 5: 178. 1971; S.K. Singh, T. Pócs & Sh. Kumar, Acta Bot. Hung. 57 (3 – 4): 414. 2015; Sh. Kumar, S.K. Singh & S.L. Bondya Indian J. Forest. 41 (2): 172. 2018. *Microlejeunea rotundistipula* Steph., Bull. Tokyo Sci. Mus. 11: 123. 1944.

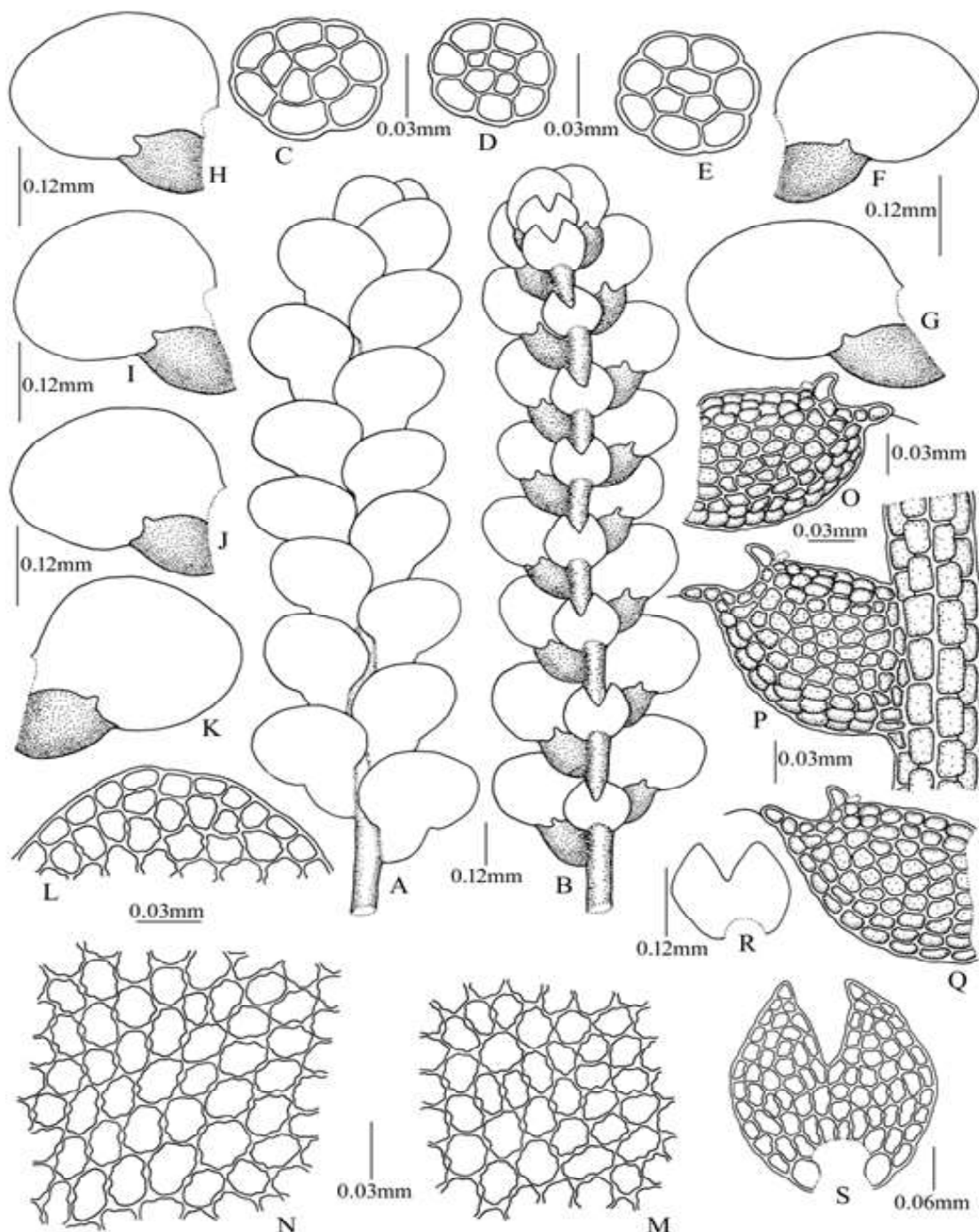


Fig. 1. *Lejeunea parva* (S. Hatt.) Mizut.: A. A portion of plant in dorsal view; B. The same in ventral view (rhizoids not drawn); C–E. Cross-sections of stem; F–K. Leaves; L. Marginal leaf cells towards apex; M. Median leaf cells; N. Basal leaf cells; O–Q. Leaf lobules; R, S. Underleaves.

Plants light green when fresh, pale yellowish in herbarium; shoots 6–12 mm long, 0.35–0.60 mm wide; branching irregular, *Lejeunea*-type. Stem suborbicular in cross-sections, $45.0\text{--}70.0 \times 50.0\text{--}60.0 \mu\text{m}$, 4 cells across the diameter; cortical cells in a layer of 7 cells, subquadrate–rectangular, $12.5\text{--}27.5 \times 10.0\text{--}15.0 \mu\text{m}$, thin-walled; medullary cells 3–4, polygonal, $7.5\text{--}20.0 \times 7.5\text{--}12.5 \mu\text{m}$, thin-walled; ventral merophyte 2 cells wide. Leaves imbricate–contiguous, obliquely–widely spreading; leaf lobes ovate, 0.2–0.3 mm long, 0.20–0.25 mm wide, apex rounded, margin entire, antical and postical margin arched; leaf cells usually uniform, gradually becoming smaller towards the leaf margin; marginal leaf cells towards apex subquadrate rectangular or pentagonal, $10.0\text{--}20.0 \times 7.5\text{--}15.0 \mu\text{m}$; median leaf cells pentagonal–hexagonal, $15.0\text{--}30.0 \times 10.0\text{--}22.5 \mu\text{m}$; basal leaf cells slightly elongated, pentagonal–hexagonal, $15.0\text{--}32.5 \times 15.0\text{--}22.5 \mu\text{m}$; cells thin-walled, with small–large subnodular trigones and 0–1 intermediate thickenings present on each cell-wall; cuticle verrucose; leaf lobules inflated, ovate or rectangular, $1/2\text{--}1/3$ as long as lobe, 0.10–0.15 mm long, 0.08–0.12 mm wide, bidentate, first tooth unicellular with a hyaline papilla at the proximal base, second tooth obsolete. Underleaves remote, suborbicular, 2–3 times as wide as stem, 0.12–0.15 mm long, 0.16–0.20 mm wide, bilobed to $1/2$ of its length, lobe triangular, 5–6 cells long and 5–7 cells wide at base, margin entire, sinus “U” or “V”-shaped, apex acute–subacute. Androecial and gynoecial branches not observed.

Type: Japan, *Miyoshi* 22 p.p. (Holotype: G-21911).

Habitat: Epiphyllous or epiphytic, in pure population or in association with *Cheilolejeunea* sp.; *Cololejeunea* sp.; *Lejeunea tuberculosa* Steph., etc., in moist and shady places at elevation between 300–2000 m asl.

Distribution: India (Arunachal Pradesh, Assam, Manipur. Present study:- Meghalaya, Nagaland, Tripura, West Bengal), China, Japan, Korea, Singapore, Taiwan, Thailand.^{5,6,11,12}

Specimens examined: INDIA, Manipur, Tengnoupal dist., Yangoupokpi Lokchao Wildlife Sanctuary, H. Mongjang, $24^{\circ}17'62.2''$ N, $94^{\circ}17'32.2''$ E, 519 m, 14.06.2014, *Shashi Kumar*, TSLI–86; B. Bongjang, $24^{\circ}18'45.9''$ N, $94^{\circ}19'15.9''$ E, 228 m, 14.06.2014, *Shashi Kumar*, TSLI–101B; Mantum Forest, $24^{\circ}15'41''$ N, $94^{\circ}17'02''$ E, 435 m, 18.06.2014, *Shashi Kumar*, TSLI–139; $24^{\circ}15'41''$ N, $94^{\circ}17'02''$ E, 435 m, 18.06.2014, *Shashi Kumar*, TSLI–141A; $24^{\circ}15'41''$ N, $94^{\circ}17'02''$ E, 435 m,

18.06.2014, *Shashi Kumar*, TSLI–142B; $24^{\circ}15'41''$ N, $94^{\circ}17'02''$ E, 435 m, 18.06.2014, *Shashi Kumar*, TSLI–144C, 145, 148; Lokchao, $24^{\circ}19'24.5''$ N, $94^{\circ}13'51.3''$ E, 351 m, 18.06.2014, *Shashi Kumar*, TSLI–173C; Pung–Pung river side, $24^{\circ}19'09.2''$ N, $94^{\circ}16'14.2''$ E, 361 m, 20.06.2014, *Shashi Kumar*, TSLI–189; Hollen phai, $24^{\circ}12'55.6''$ N, $94^{\circ}16'59.4''$ E, 214 m, 21.06.2014, *Shashi Kumar*, TSLI–251, 252.

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