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# *CHEILOLEJEUNEA OCCLUSA* RARE AND LITTLE-KNOWN SPECIES NEW ADDITION TO BRYOFLORA OF INDIA

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**ABSTRACT**

During a field exploration to Andaman and Nicobar Islands in December 2023 to January, 2024 first author Shashi Kumar has been collected Liverworts and Hornworts specimens. Later study of those specimens encountered the specimen of *Cheilolejeunea* which is interesting and new to India. The same has been described and illustrated as a new to India. *Cheilolejeunea occlusa* (Herzog) T. Kodama & N. Kitag., is recorded for the first time in Indian bryoflora from Andaman and Nicobar Islands, earlier known from Indonesia (Sumatra and Borneo) and Fiji Islands.
***Keywords*** **:** *Cheilolejeunea occlusa,* new record, India.

## Introduction

The genus is represented by about 170 taxa (incl. 10 Incertae sedis taxa) in the world belonging to four subgenera namely, *Cheilolejeunea* (Spruce) Steph., *Euosmolejeunea* (Spruce) Kachroo, *Renilejeunea* R.M. Schust. and *Xenolejeunea* Kachroo & R.M. Schust. (Söderström *et al*., 2016). In India, the genus is represented by 23 species and one variety, of which 6 species occur in the Andaman and Nicobar Islands including present study (Kumar & Singh, 2016; Singh *et al*., 2016). The Indian species belongs to three subgenera *Cheilolejeunea* (Spruce) Steph. (8 species), *Euosmolejeunea* (Spruce) Kachroo (10 species) and *Xenolejeunea* Kachroo & R.M. Schust. (5 species).

### Taxonomic Treatments

***Cheilolejeunea occlusa*** (Herzog) T. Kodama & N. Kitag., Bull. Osaka Mus. Nat. Hist. 28: 40. 1974; Mizut., J. Hatt. Bot. Lab. 47: 323. 1980; T. Pócs, *et al*., Telopea 13(3): 457. 2011. *Strepsilejeunea occlusa* Herz., Trans. Brit. Bryol. Soc. 1: 320. 1949. (**Figs. 1, 2)**

**Type:** Malaysia (Sarawak), "Dulit Ridge, c. 1230 m, rambling on *Chiloscyphus aselliformis* var. *neesii*, on tree trunks in open 'Mossy Forest'', no. 2200 p.p."

**Plants** small, olive green when fresh, brown or reddish brown in herbarium; shoots 5–10 mm long, 0.45–0.70 mm wide; branching irregulary, transvers-section of stem subglobose in outline, 67.5–75.0 × 62.5–70.0 µm, 5–6 cells across the diameter; cortical cells in a layer of 7 cells, subquadrate–rectangular, 15.0–17.5 × 10.0–17.5 µm, thick-walled; medullary cells 9–10, polygonal, 7.5–12.5 × 5.0–10.0 µm, thick-walled; ventral merophyte of the stem 2 cells wide. **Leaves** imbricate, obliquely–widely spreading, leaf lobes oblong, 0.33–0.40 mm long, 0.27–0.28 mm wide, antical margin arched, postical margin straight or sometimes curved, apex rounded, margin entire; marginal leaf cells towards apex small, subquadrate–quadrate, 7.5–12.5 × 5.0–10.0 µm; median leaf cells polygonal, 17.5–25.0 × 12.5–17.5 (–20.0) µm; basal leaf cells elongated hexagonal–polygonal, 17.5–32.5 × 12.5–22.5 µm, cells thin-walled with large nodular trigones and 0–1 intermediate thickenings present in median and basal leaf cells of each cell wall; vitta absent; cuticle smooth or slightly mammillose. **Leaf lobules** inflated, triangular, 1/2 as long as the lobe, 0.19–0.21 mm long, 0.07–0.1 mm wide, free margin slightly incurved, apex strongly constricted, first tooth obsolete, second tooth elongated, apical tooth 3–4 cells long in a row, 1–2 cells wide at base and strongly

curved and looks like a ring, hyaline papilla small, present at the distal side of second tooth; keel straight or slightly curved. **Under leaves** distant, 2 times as wide as the stem, suborbicular, 0.16–0.18 mm long, 0.17–0.20 mm wide, bilobed to 1/2 of its length, lobes triangular, apex acute, sinus "V"-shaped, margin entire.

Dioicous. **Gynoecia** terminal on short lateral branches, without subfloral innovation; bract lobes oblong-ovate, 0.43–0.45 mm long, 0.24–0.26 mm wide, apex rounded, margin entire; bract lobules rectangular, 2/3–3/5 as long as the bract lobe length, 0.25–0.30 mm long, 0.07–0.09 mm wide, margin entire; bracteoles obovate, 0.34–0.38 mm long, 0.22–0.24 mm wide, bilobed to 1/3–1/4 of its length, margin entire. Perianth obovate, 0.36–0.50 mm long, 0.26–0.36 mm wide, 5–keeled (2 lateral, 2 ventral, 1 dorsal). Mature sporophytes not seen.

**Habitat:** Corticolous, growing in moist and shady places in association with *Cheilolejeunea trapezia* (Nees) Kachroo & R.M. Schust., *Cololejeunea floccosa* (Lehm. & Lindenb.) Steph., *Drepanolejeunea pentadactyla* (Mont.) Steph.

**Distribution:** India [Andaman and Nicobar Islands – Present study], Indonesia (Sumatra and Borneo) (Mizutani, 1980), Fiji Islands (Pócs *et al.*, 2011).

**Specimen Examined:** India, Andaman & Nicobar Islands, North Andaman Island, Diglipur, Lamiya Bay, Shaddle Peak Mountains, 13°09'18.93" N, 93°00'38.94" E, 725 m, 25.12.2023, Shashi Kumar 101892 (CAL).

## Discussion

*Cheilolejeunea occlusa* (Herzog) T.Kodama et N. Kitag. is very rare and little-known species. The species is earlier known from Indonesia (Sumatra and Borneo) (Mizutani, 1980), Fiji Islands (Pócs *et al.*, 2011). *C. occlusa* closely resembles *C. ceylanica* (Gottsche) R.M. Schust. & Kachroo in shape and size of leaf, underleaves and dioicous nature of the plants. However, *C. occlusa* can be easily distinguished from the latter which has rectangular leaf lobule with an elongate apical tooth, composed of 5–6 uniseriate cells (as compared to triangular leaf lobule with a large apical tooth, composed of 3–4 cells long, 1–2 cells wide at base and strongly curved), and the median and basal cells of leaf lobe forming a vitta (as *C. occlusa* the vitta cells are absent) (See Mizutani, 1980).

*C. occlusa* also closely allied with *C. nipponica* (S. Hatt.) S. Hatt. in having similar arrangement of leaf and underleaves, shape and size of leaf and leaf cells and absence of vitta cells. However, the latter differs from former in having leaf lobe cells with small trigones and absence of intermediate thickenings, leaf lobule ovate, apical tooth comparatively smaller, triangular, 1–2 cells long and wide and having monoicous (autoicous) sexuality (Mizutani, 1982).

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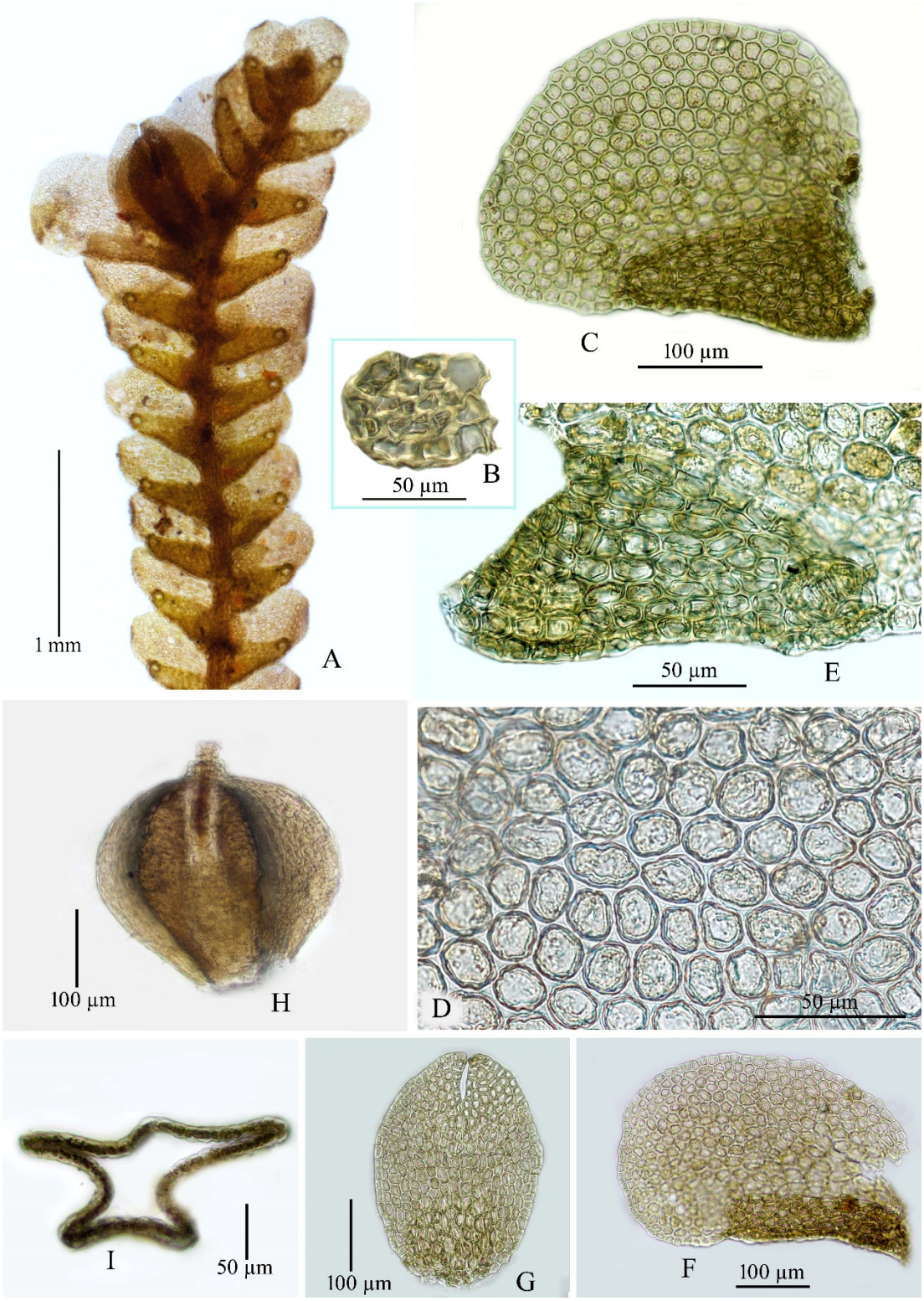


**Figure - 1.** ***Cheilolejeunea occlusa*** (Herzog) T. Kodama & N. Kitag. **A.** A portion of plant in ventral view bearing gynocial branch. **B.** Transverse section of stem. **C.** Leaf. **D.** Median leaf cells. **E.** A leaf lobule. **F.** Female bracts. **G.** A female bracteole. **H.** A perianth. **I.** Transverse-section of perianth (All microphotographs by S. Kumar from 101892).

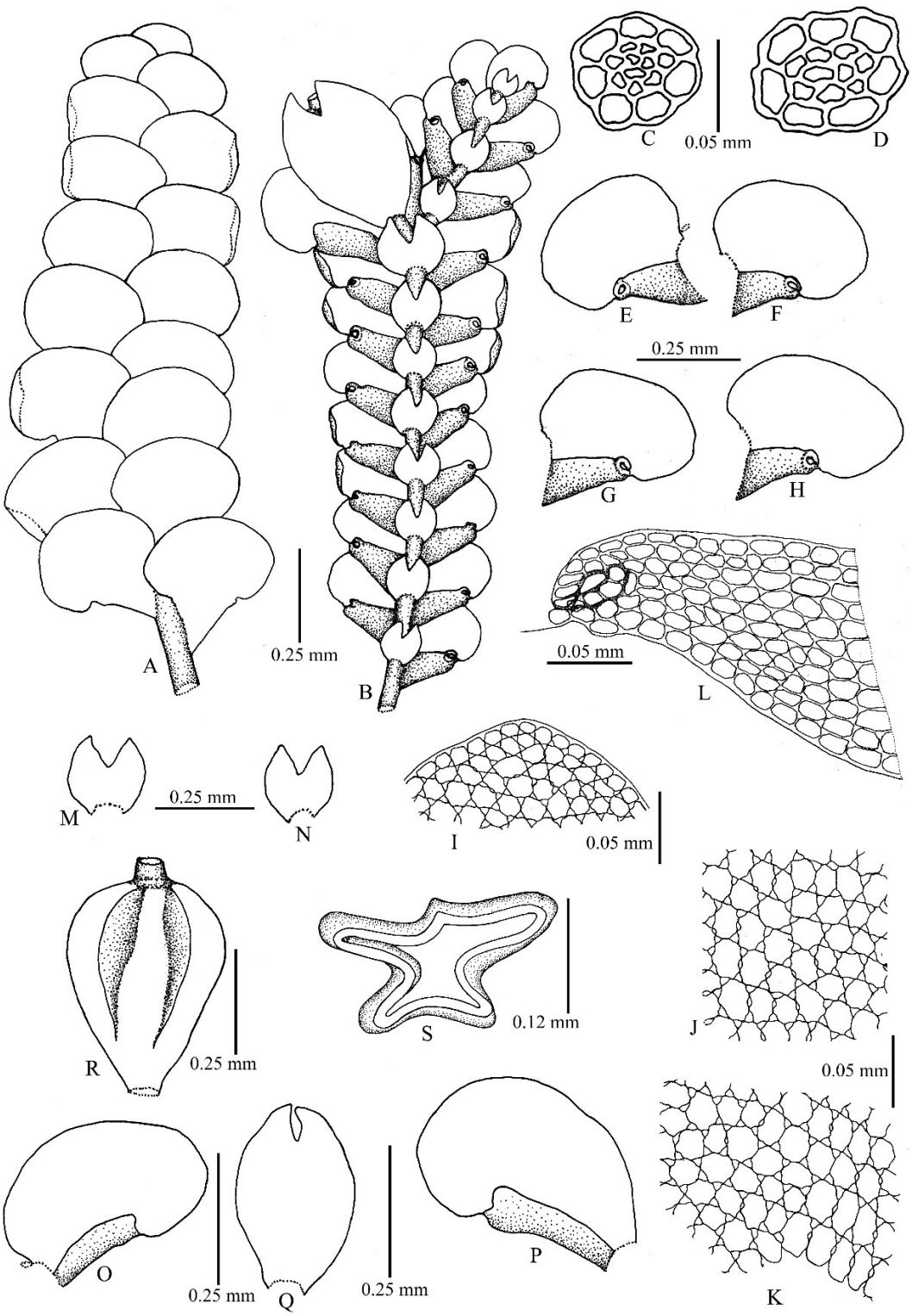


**Figure - 2.** ***Cheilolejeunea occlusa*** (Herzog) T. Kodama & N. Kitag. **A.** A portion of plant in dorsal view. **B.** A portion of plant in ventral view bearing gynocial branch. **C, D.** Transverse sections of stem. **E–H.** Leaves. **I.** Apical leaf cells. **J.** Median leaf cells. **K.** Basal leaf cells. **L.** A leaf lobule. **M, N.** Under leaves. **O, P.** Female bracts. **Q.** A female bracteole. **R.** A perianth. **S.** Transverse section of perianth (All figures drawn by S. Kumar from 101892).