

Plagiochila meghalayensis sp. nov. from Meghalaya, India

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Plagiochila meghalayensis sp. nov. described from Elephant falls, Shillong (Meghalaya) differs from the closely allied species *P. gymnoclada* S. Lac. in colour, never ampliate leaf margin, exposed ventral stem surface and perianth shape.

Key-words – Hepaticae, Jungermanniales, *Plagiochila*, *P. meghalayensis*, morphotaxonomy.

MITTEN (1861) listed about 36 taxa of *Plagiochila* from the Indian subcontinent under 4 divisions and 9 subdivisions. Stephani (1901-1905, 1917-1924), Carl (1931), Kashyap (1932), Herzog (1939), Chopra (1943), Parihar (1961-62), Inoue (1965), Hattori (1966) and Parihar *et al.* (1994) recorded several plagiochilean taxa from India. In recent years, some systematic attempts have been made to develop taxonomic concepts on Indian species of the genus (Srivastava & Dixit 1993, 1994, Dixit 1995; Srivastava *et al.* 1994, 2000; So, 2001; So & Grolle 1999, 2000a, 2000b).

In India, the genus *Plagiochila* is represented by three subgenera, viz. *Paraplagiochila*, *Metaplagiochila* and *Plagiochila*. *Metaplagiochila* is confined to southern India; *Paraplagiochila* is restricted to eastern Himalayan territory and *Plagiochila* is distributed in eastern and western Himalaya as well as South India (Rawat 2003). In a collection from eastern Himalaya, plants of *Plagiochila* belonging to section *Plagiochila* of subgen. *Plagiochila*, differing from earlier known species of the section *Plagiochila* have been discovered. The plants resemble *P. gymnoclada* S. Lac (known from Java) to some extent and is the only species of the section *Plagiochila* under subgen. *Plagiochila*. A detailed study of the type and authentic specimens of *P. gymnoclada* clearly indicates the remarkable nature of the Indian plants treated here as a new species, *P. meghalayensis* sp. nov.

Plagiochila meghalayensis sp. nov.

Plate 1: Figs. 1-19, Plate 2: Fig. 1-13

Plantae mediocris, 25-36 mm longa et 3-4 mm lata, flavidus – fuscus, cellulae corticalis 2 (3) stratus, paraphyllia absens, folia laxe imbricatus, marginae ventralis haud ampliatus, dentibus 16-38, cellulae apicalis crassiparietibus, trigones magnis, protuberans nodulosus. Perianthium longus cylindricus.

Typus: India – Meghalaya: Shillong (Elephant falls); 23.02.1988; D. Sharma; LWU 9441/88.

Plants pale brown in dry herbarium specimens; medium sized, 25 – 36 mm long and 3 – 4 mm wide; branching lateral – intercalary; creeping rhizome not found; rhizoids absent on ventral surface of stem; paraphyllia absent. Stem 15 – 16 cells wide; cortical region 2 (-3) layered, cells thick walled, 19 – 27 x 11-19 μm ; medullary cells thin walled, 23 – 38 x 23 – 27 μm . Leaves rigid, loosely imbricate, oblong – ovate, 14 – 19 x 10 -12 mm, length: width ratio 1.4 – 1.6: 1.0, distinctly longer than wide; leaf apex rounded to truncate; margins slightly arched, ventral margin not ampliate at base; dorsal leaf base moderately decurrent; ventral leaf base short decurrent; marginal teeth 16-38 per leaf, present at apex, ventral margin and anterior half of the dorsal margin, spinose, 1-4 (6) cells long, 1-3 (4) cells uniseriate at apex and 1-3 (4) cells broad at base; apical cells thick walled, 23 – 34 x 11 – 15 μm , subapical cells thick walled, 23 – 34 x 19 – 27 μm , median cells thin walled, (19)

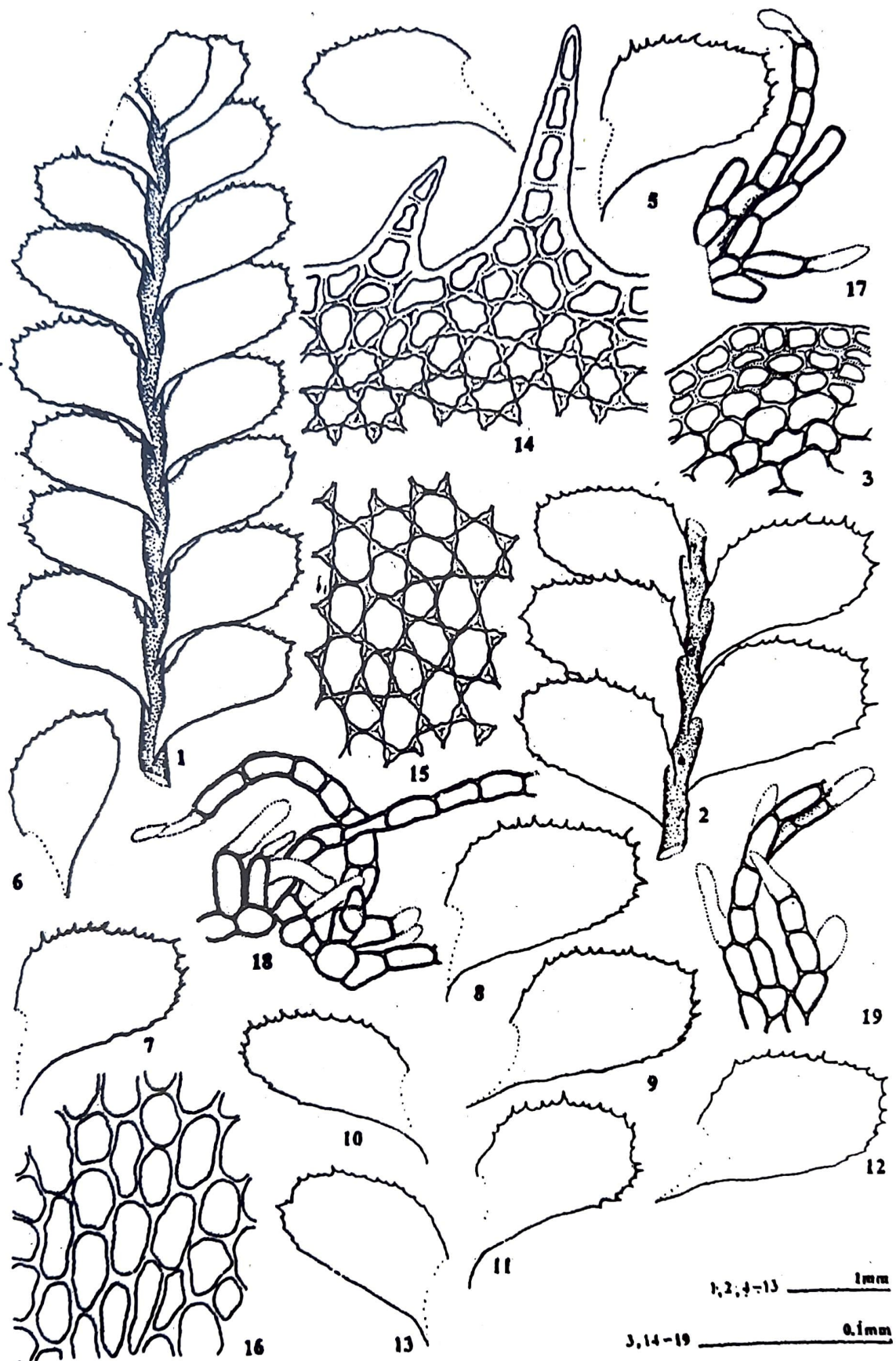


PLATE 1

1-19. *Plagiochila meghalayensis* sp. nov. 1. Plant, dorsal view, 2. Plant, ventral view, 3. Stem T.S., a portion, 4-13. Leaves, 14. Apical cells of leaf, 15. Median cells of leaf, 16. Basal cells of leaf, 17-19. Underleaves. (Figures drawn from LWU 9441/88)

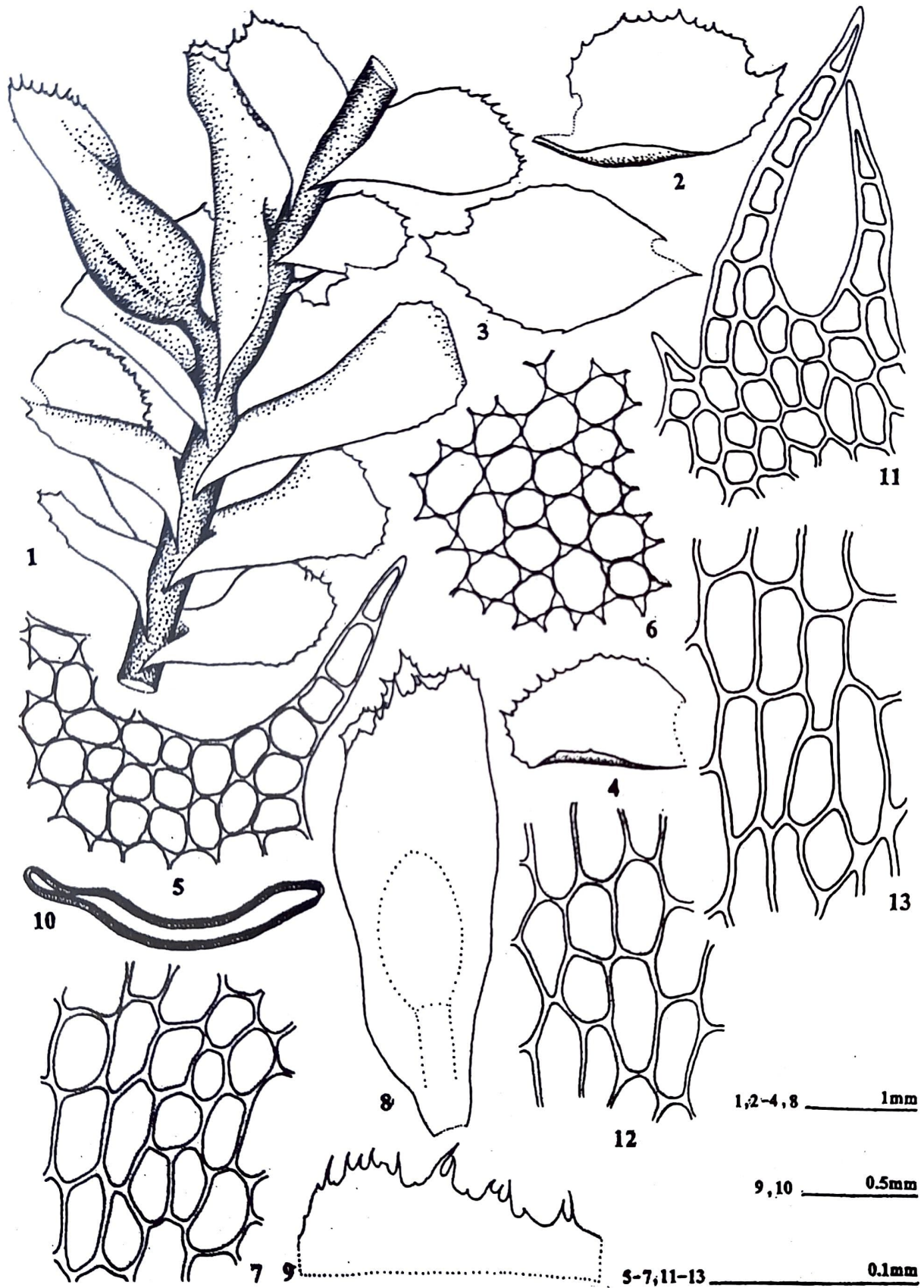


PLATE 2

1-13. *Plagiochila meghalayensis* sp. nov. 1. Female plant, with gynoecium, 2-4. Female bract, 5. Apical cells of female bract, 6. Median cells of female bract, 7. Basal cells of female bract, 8. Perianth, 9. Perianth mouth, enlarged, 10. T.S. of perianth, 11. Apical cells of perianth, 12. Median cells of perianth. 13. Basal cells of perianth. (All figures drawn from LWU 9445/88)

27–38 x 19–30 μm and basal cells thin walled, (19) 34–46 x 19–23 μm ; trigones large nodulose, bulging; vitta absent. Underleaves present, vestigial, made up of ciliary segments ending into slime papillae.

Discussion Male plants not found. Gynoecia terminal on main axis, without innovations; bracts 1 pair, similar to vegetative leaves, 2.4 x 1.6–1.8 mm; apical cells 27–38 x 11–15 μm , subapical cells 19–34 x 11–23 μm , median cells 23–30 x (11) 23–30 μm , trigones small, nodulose, basal cells 27–57 x 19–27 μm , trigones indistinct. Perianth cylindrical, laterally compressed, mouth broad, arched, spinose dentate; apical cells 30–49 x 11–15 μm , subapical cells 19–30 x 15–19 μm , median cells 30–57 x 19–27 μm and basal cells 42–76 x 23–38 μm , cells slightly thick walled; trigones indistinct. Sporophyte not observed.

Type : Eastern Himalaya: Meghalaya – Shillong (Elephant falls); 23.02.1988; D. Sharma; Herb. LWU 9441/88 (Holotype).

Habitat and Distribution : Growing as epiphyte either in pure patches or intermixed with *Herbertus* sp., *Plagiochila assamica*, *P. fruticosa*, *P. semidecurrans* and mosses. Endemic to India: Eastern Himalaya: Meghalaya - Shillong (Elephant falls).

Characteristics of the species : (1) Leaves imbricate, oblong–ovate, dorsal base moderately decurrent, ventral base shortly decurrent, both margins arched, not ampliate at base. (2) Apical and subapical cells thick-walled. (3) Trigones large nodulose, bulging. (4) Teeth 16–38, spinose, at apex as well as ventral margin and anterior half of dorsal margin. (5) Perianth terminal, cylindrical.

Specimens examined: India: Eastern Himalaya: Meghalaya – Shillong (Elephant falls); 23.02.1988; D. Sharma; Herb. LWU 9445/88.

Java: *Plagiochila gymnoclada* S. Lac.; Herb. F. Verdoon; Herb. FH (ISOTYPE). Java; *Plagiochila gymnoclada* S. Lac.; Herb. V. Schiffner; Herb. FH. India Assam; 15.10.1835; Herb. NY. Meghalaya: Khasia Mts.; 5-6000 ft.; as *Plagiochila trapezoidea*; Herb. W. Mitten, 1618; Herb. NY (Syntype of *P.*

uniformis Mitt.) Khasia Mts.; *Plagiochila trapezoidea*; Herb. W. Mitten, 1624; Herb. NY (Syntype of *P. uniformis* Mitt.)

Plagiochila meghalayensis is closely related to *P. gymnoclada* S. Lac. of the same section in having large nodulose, bulging to confluent trigones and thick-walled apical and subapical cells, however, it sharply differs in colour (deep brown in *P. gymnoclada* and pale brown in *P. meghalayensis*), ventral leaf margin (ampliate in *P. gymnoclada* and never so in *P. meghalayensis*), ventral stem surface (exposed in *P. meghalayensis* and covered by ampliate leaf bases in *P. gymnoclada*) and perianth shape (obovate in *P. gymnoclada* and long cylindrical in *P. meghalayensis*).

Plagiochila meghalayensis also shows some resemblance with *P. uniformis* in habit, leaf shape and marginal teeth. However, *Plagiochila meghalayensis* can be distinguished due to rigid texture of leaf (delicate in *P. uniformis*), thickened apical leaf cells (throughout thin walled in *P. uniformis*) and large nodulose, bulging to confluent trigones (small, nodulose in *P. uniformis*). Strikingly *P. meghalayensis* possesses conspicuous underleaves while *P. uniformis* lacks in this character.

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