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Notes on Scarcely Collected Indian Liverworts III. *Plagiochila kurzii* (Plagiochilaceae, Marchantiophyta)

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ABSTRACT: *Plagiochila kurzii* Steph. is known in Indian bryoflora from South Andaman and Katchall Islands in Andaman & Nicobar. The species, last collected from Indian territory towards the close of nineteenth century, is recently rediscovered in the country from South Andaman Island after a gap of over eleven decades.

KEYWORDS: Andaman & Nicobar Islands, *Plagiochila kurzii*, Rediscovery

INTRODUCTION

Plagiochila kurzii Steph. was established on the basis of specimens collected by Wilhelm S. Kurz from South Andaman sometimes between 1867 and 1875. The species, belonging to subgenus *Metaplagiochila* Inoue, is characterized by a tubular sac on the ventral leaf base with entire margin, triangular-acuminate teeth along leaf margin, absence of paraphyllia and small underleaves restricted towards growing point. Between 1867 and 1895, the species was repeatedly collected from different places in South Andaman and Katchall Islands in Andaman & Nicobar by Kurz and E.H. Man. But, thereafter the species could never be collected from these islands, or anywhere else in India, though South Andaman Island, especially Port Blair and its environs have received considerable attention of Indian bryologists since independence. In the present state of our knowledge, the species is distributed in China, India (Andaman & Nicobar Islands), Indonesia, Malaysia, Sri Lanka and Taiwan (So, 2001a, b; Södeström *et al*., 2010; Chuah-Petiot, 2011; Wang *et al*., 2011; Long & Rubasinghe, 2014; Singh *et al*., 2016a, b). During an intensive exploration carried out in Andaman & Nicobar Islands in 2014, one of us (DKS) collected *P. kurzii* from South Andaman after its last collection from these Islands towards the close of the nineteenth century. The same is described and illustrated, based on fresh collections, to facilitate its easy identification.

DESCRIPTION AND DISCUSSION

Plagiochila kurzii Steph., Bull. Herb. Boissier (sér. 2) 3(2): 112. 1903 & Sp. Hepat. 2: 292. 1903; M.L.So, Syst. Bot. Monogr. 60: 23. 2001. [Fig. 1]

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Plants 28–50 (-64) mm long, (3.4-) 4.0–4.8 mm wide including leaves, greenish when fresh, with creeping rhizome; shoots mostly simple, rarely branched; branches lateral-intercalary; stem more or less sub-circular in outline in transverse section, 250–370 × 280–440 µm, differentiated, 16–25 cells across; cortical cells 3–5-layered, (2.5-) 5–20 × 5–25 µm, thick-walled with prominent middle lamella, light brown pigmented; medullary cells 5–25 × 10–30 µm, thin-walled, hyaline or with yellowish pigmentation; paraphyllia absent; rhizoids absent on ventral surface of stem, both stem surfaces widely exposed. Leaves contiguous–slightly imbricate, horizontally spreading, oblong-ovate, more or less rectangulate, 1.7–2.3 mm long, 0.8–1.1 mm wide, length : breadth ratio 1.9–2.3:1, distinctly longer than wide, dorsal leaf base insertion line almost parallel to stem, dorsal margin straight, entire, somewhat recurved, with 0–2 teeth present towards the apical portion, base moderately decurrent, apex truncate, with (3-) 4–7 short tooth, ventral margins slightly arched, with 1–3 tooth, base recurved to form an elongated ventral sac; ventral sac tubular, 0.35–0.45 × 0.05–0.13 mm, without tooth, base hardly decurrent; marginal teeth (5-) 6–9 (-11) per leaf, spinose-dentate, mostly 1–4 (-5) cells long, 2–3 (-4) cells wide at base, 1–3 cells uniseriate towards apex, terminal tooth cells slightly elongated, triangulate, 10–20 × 21–42 µm, l:b ratio 2.0–2.7:1; apical–subapical leaf cells 13.1–18.2 × 25.2–33.3 µm, median leaf cells 15.1–25.2 × (18.2-) 20.2–34.3 µm, basal leaf cells slightly larger, 21.2–30.3 (-34.3) × 28.3–50.5 (-55.5) µm, trigones indistinct, walls thin throughout, surface smooth; oil-bodies not seen. Underleaves vestigial, present towards the growing shoot, 105–185 × 55–90 µm.

Dioicous (?). Androecia terminal, sometimes intercalary, long-spicate; bracts in 12–35 (-46) pairs, loosely imbricate, base slightly inflated, margins almost entire, apex mostly entire, sometimes with 1–2 small tooth, teeth 1–2 cells long, 1–2 cells wide at base, 1 cell uniseriate towards apex; antheridia 1 per bract, globose, 0.31–0.38 × 0.22–0.24 mm, stalk biseriate, 101–111 × 30.3 µm. Gynoecia not seen.

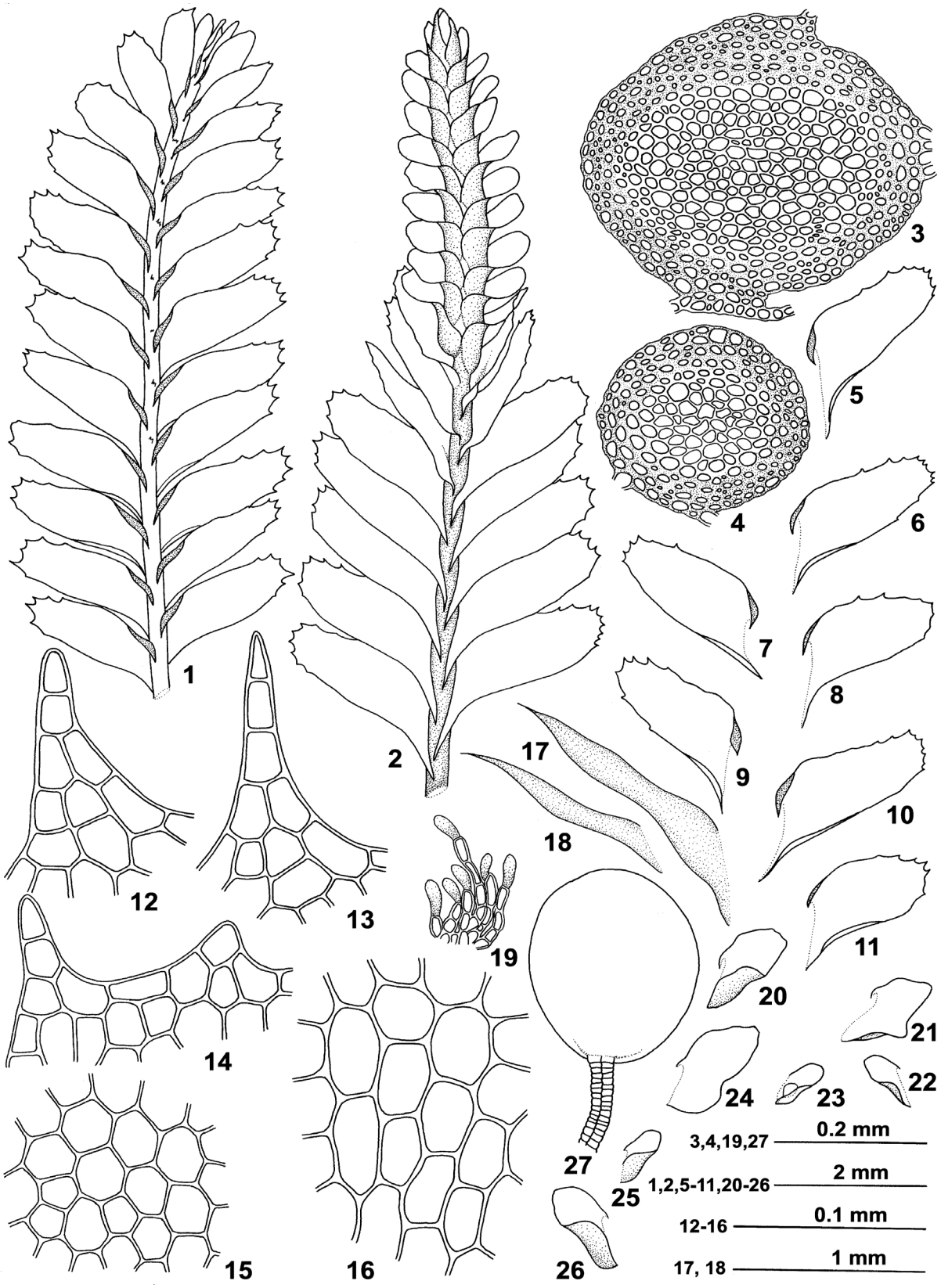

Fig. 1. Plagiochila kurzii Steph. 1. A portion of the plant in ventral view showing ventral leaf sac. 2. A portion of male plant in dorsal view. 3, 4. Transverse sections of the stem. 5–11. Leaves. 12. A marginal tooth of the leaf. 13–14. Apical leaf cells. 15. Median leaf cells. 16. Basal leaf cells. 17, 18. Tubular ventral sac of leaf. 19. An underleaf. 20–26. Male bracts. 27. An antheridium [All figures drawn by S. Majumdar from D.K. Singh 61624 (CAL)].

Habitat and ecology: Epiphytic, growing on bark of *Drypetes longifolia* (Blume) Pax & K.Hoffm. in association with *Caudalejeunea recurvistipula* (Gottsche) Schiffn., *Heteroscyphus hyalinus* (Steph.) A.Srivast. & S.C.Srivast., *Lepidolejeunea bidentula* (J.B.Jack & Steph.) R.M.Schust., *Plagiochila sciophila* Nees, *Radula javanica* Gottsche, *R. sumatrana* Steph.

Specimens examined: India: Andaman & Nicobar Islands, South Andaman, Motor Bhanji, Chidiatapu, near water stream, c. 19 m, 11˚32' 995˝N, 92˚40' 420˝E, 04.02.2014, D.K. Singh 61613C (CAL); on bark of *Drypetes longifolia* c. 18 m, 11˚32' 995˝N, 92˚40' 400˝E, 04.02.2014, D.K. Singh 61619A (CAL); on bark of *Drypetes longifolia* c. 19 m, 11˚32' 995˝N, 92˚40'420˝E, 04.02. 2014, D.K. Singh 61624 (CAL).

Distribution: INDIA [Andaman & Nicobar Islands (Stephani, 1903; Inoue, 1984; So, 2001a, b; Singh *et al*., 2016a, b); CHINA (Zhu, 2006); INDONESIA (Söderström *et al.*, 2010); MALAYSIA (Menzel, 1988; Chuh-Petiot, 2011); SRI LANKA (Inoue, 1979 as *P. meijeri* Inoue; So, 2001b; Long & Rubasinghe, 2014); TAIWAN (Wang *et al.*, 2011).

Plagiochila kurzii is characterized by stem completely devoid of paraphyllia (Figs. 1: 1, 2); almost rectangular leaves with 5–11 spinose-dentate teeth along the margins, 1–4 (-5) cells long, 2–3 (-4) cells wide at base, 1–3 cells uniseriate towards apex (Figs. 1: 1, 2, 5-14); presence of tubular sac on the ventral leaf base with entire margin (Figs. 1: 1, 5-11, 17, 18), and small underleaves restricted towards growing region of the shoots (Fig. 1: 19).

P. kurzii with ventral base of the leaves forming a water sac is referable to the subgenus *Metaplagiochila* Inoue. The only other representative of this subgenus in India is *P. bantamensis* (Reinw., Blume & Nees) Mont. which was till recently known from Nicobar group of Islands only in Indian bryoflora (Reichardt, 1866 as *P. nicobarensis*; Stephani, 1904 as *P. didrichsenii*; So, 2001a; Singh *et al.*, 2016a), but now also reported from Assam in the Northeast (Verma *et al*., 2013). *P. bantamensis* was first collected in India from Nicobar Islands by E. Jelinek during 'Novara Expedition 1857–1859' (described as *P. nicobarensis* Reichardt), and few years later again by F. Didrichsen (described as *P. didrichsenii* Steph.). Interestingly, this species was also not collected from Nicobar Islands or anywhere else in Andaman & Nicobar till one of us (DKS) relocated it in Pulo Bhathia in Little Nicobar Island in 2014. The two species can be readily distinguished from each other as follows.

1a. Paraphyllia variously shaped, numerous on ventral stem surface; teeth on leaf margin long, spinose or strongly ciliate (at least on ventral margin), tooth 3–15 cells long; ventral sac spherical in shape, margin ciliate; underleaves large, deeply bilobed with additional ciliate lobes .....*P. bantamensis*

1b. Paraphyllia absent; teeth on leaf margin short, spinose-dentate, tooth 1–4 (-5) cells long; ventral sac tubular in shape, margin entire; underleaves small, restricted only near the growing point .....*P. kurzii*

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