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Research Communication

Genus *Symphysodontella* M. Fleisch. (Pterobryaceae: Bryophyta) - new to the moss flora of the Eastern Ghats

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Abstract

Surveys carried out in the Kolli Hills of Eastern Ghats resulted in the discovery of 2 species of *Symphysodontella* M. Fleisch. namely *S. cylindracea* (Mont.) M. Fleisch. and *S. involuta* (Thwaites & Mitt.) M. Fleisch. of which the former is new to the moss flora of India whereas the latter is new to the moss flora of Eastern Ghats. Detailed descriptions with figures substantiated by photo plates and a key to distinguish the two species are provided. Incidentally, genus *Symphysodontella* is new to the moss flora of Eastern Ghats.

Keywords

Bryophyta; Eastern Ghats; Pterobryaceae; *Symphysodontella*; *S. cylindracea*; *S. involuta*

Citation

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Introduction

Symphysodontella M. Fleisch., with 9 species in the world, is predominantly an insular genus Magill [1]. The species are mostly distributed in South and Southeast Asian Islands, and South Pacific Islands. In India, only 2 species namely *Symphysodontella involuta* and *S. tortifolia* Dixon are reportedly known so far. Of these, *S. tortifolia* is endemic to India and *S. involuta* is endemic to Peninsular India and Sri Lanka.

Gangulee [2], reported 4 species namely *S. borii* Dixon, *S. tortifolia*, *S. subulata* Broth. and *S. pilifolia* Dixon. Lal [3] and Dandotiya *et al.* [4], included one more species *S. involuta* in their checklists raising the number to 5. However, Magill [1] proposed new combinations to *S. borii* and *S. pilifolia* as *Myurium borii* (Dixon) Magill and

Pterobryopsis pilifolia (Dixon) Magill respectively thereby reducing the number of species to 3. Moreover, according to Magill [1], the material of *Symphysodontella subulata* reported by Dixon [5] based on Bor's collection (*Bor* 93b) and included by Gangulee [2] is a depauperate form of *S. tortifolia* and thus *S. subulata* is endemic to the Philippines. Recently, Manju and Rajesh [6] described *Symphysodontella madhusoodananii* as new to plant science from the Western Ghats which is an addition to the already known species in India and the World as well.

Surveys carried out in the Kolli Hills of Eastern Ghats resulted in the discovery of 2 species of *Symphysodontella* namely *S. cylindracea* and *S. involuta* of which the former is new to the moss flora of India whereas the latter is an addition to the moss flora of Eastern Ghats. Thus, currently there are 4

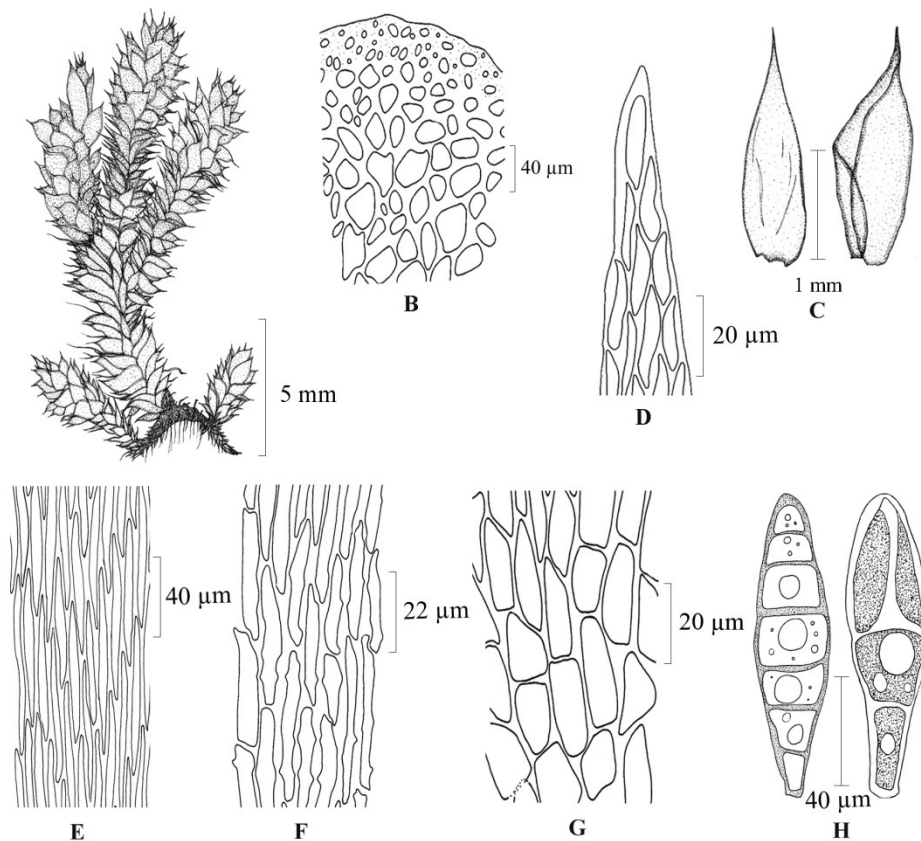


Fig. 1. *Symphysodontella cylindracea* (Mont.) M. Fleisch.

A. Plant B. Portion of cross section of stem C. Leaves D. Leaf apical cells
E. Leaf median cells F. Leaf basal cells G. Alar cells H. Gemmae (P. M. Biju 2074)

species in India namely *S. cylindracea*, *S. involuta*, *S. tortifolia* and *S. madhusoodananii* C.N. Manju & K.P. Rajesh. Incidentally, genus *Symphysodontella* M. Fleisch., so far known to be distributed in the Northeast, Eastern Himalaya and the Western Ghats in India, is added here to the moss flora of the Eastern Ghats. Detailed descriptions with figures substantiated by photo plates and a key to distinguish the two species are provided. The specimens are deposited at SCCN.

Key to the species

- 1a. Costa single, 2/3 as long as leaves; alar region tinted to red-brown ----- **2. *S. involuta***
b. Costa double, short, faint; alar region yellow-brown ----- **1. *S. cylindracea***

1. *Symphysodontella cylindracea* (Mont.) M. Fleisch., *Musc. Buitenzorg* 3: 692. 1908. *Neckera cylindracea* Mont., *Ann. Sci. Nat. Bot.* 3, 10: 109. 1848. - Type: Tahiti, *Nadeaud s.n.* 1896 (NY). (**Figs. 1 & 2**)

Plants pale green, glossy. Stems creeping, 2 - 4 cm long, wiry, irregularly pinnately branched, dark brown, ca 0.24×0.20 mm in cross section, ovate, without a central strand; cortex 3- or 4-layered; cells 4 - $12 \times 3 - 8$ mm, thick-walled;

medullary ones $12 - 24 \times 8 - 20$ mm, thin-walled; branches ascending or pendant, 1 - 3 cm long. Leaves dense, erectopatient, ovate-oblong to ovate-lanceolate, cucullate, entire, slightly convolute or not, acute to acuminate; stem leaves $2 - 2.8 \times 1 - 1.1$ mm; branch leaves $1.9 - 2.8 \times 0.7 - 0.9$ mm; cells narrow, elongate, incrassate, with distinctly porose walls below and faintly porose above; apical cells $36 - 48 \times 8 - 12$ µm; median ones $40 - 68 \times 4 - 8$ µm; those at base $30 - 68 \times 8 - 16$ µm; alar cells $24 - 40 \times 16 - 24$ µm, oblong, yellow-brown; costa short, double, sometimes longer on one side or bifurcate at base. Gemmae at leaf base, clustered, fusiform, stalked, 3 - 7-celled, $0.09 - 0.19 \times 0.03 - 0.04$. Sporophyte not seen.

Habitat: Rupicolous in degraded evergreen forests, ca 1240 m.

Distr.: Indonesia, Malaysia, the Philippines, New Caledonia, Papua New Guinea, New Hebrides, Fiji, Phoenix Islands, Cook Islands, Samoan Islands, Society Islands, Tahiti and India: Eastern Ghats of Tamil Nadu (Namakkal).

Specimens examined: Eastern Ghats: Tamil Nadu, Namakkal Dist., Kolli Hills, Sholakkadu, Kuzhivalavu Shola, ca 1240 m, 28.12.2016, P.M. Biju 2074.

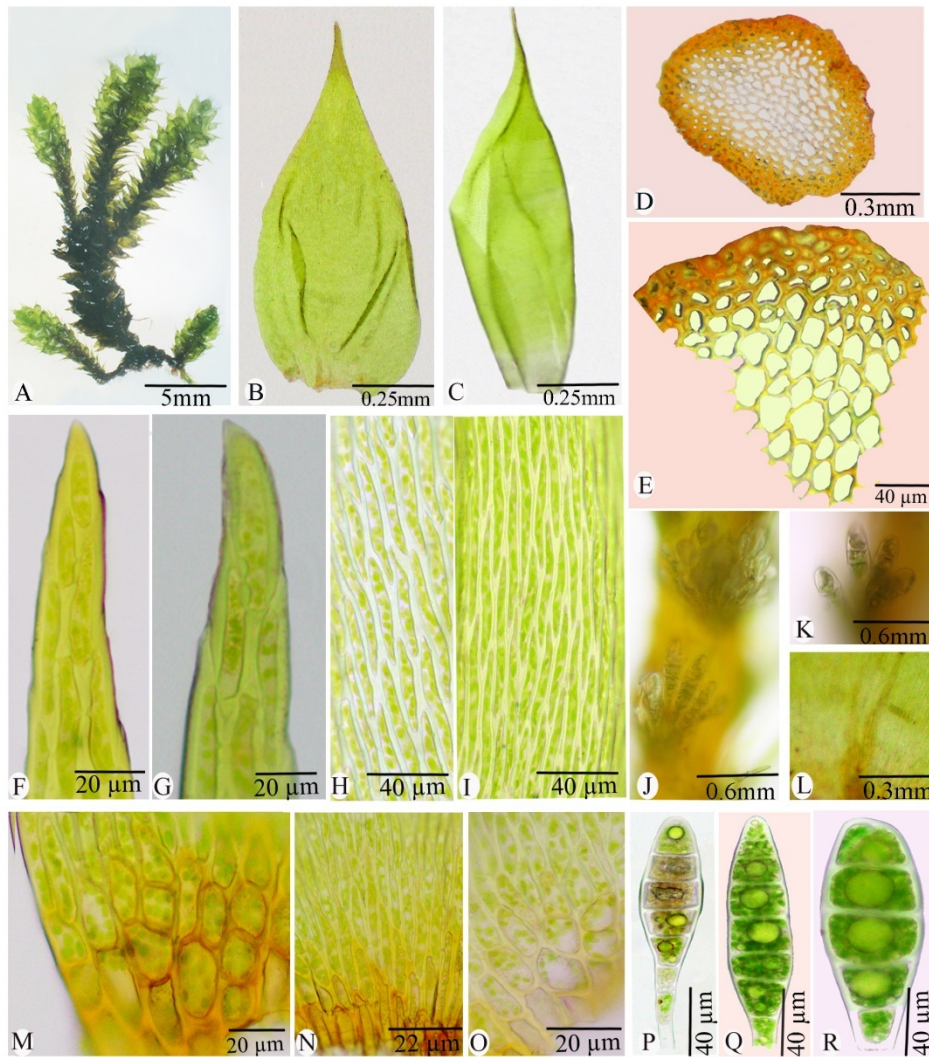


Fig. 2. *Symphysodontella cylindracea* (Mont.) M. Fleisch.

A. Plant B&C. Leaves Stem leaf D. Cross section of stem E. A portion enlarged F&G. Leaf apical cells H&I. Leaf median cells J&K. Cluster of gemmae at leafbase L. Costa M. Alar cells N&O. Leaf basal cells P-R. Gemmae (P. M. Biju 2074)

2. *Symphysodontella involuta* (Thwaites & Mitt.) M. Fleisch., *Musc. Buitenzorg* 4: 1674. 1923. *Pterobryum involutum* Thwaites & Mitt., *J. Linn. Soc., Bot.* 13: 315. 1873. - Type: Ceylon, Central Province, 4000 - 6000 ft., *Thwaites s.n.* (BM). (Figs. 3 & 4)

Plants pale green to pale brownish-green, glossy. Stems creeping, 2 - 4 cm long, wiry, irregularly pinnately branched, dark brown, 0.11 - 0.24 × 0.09 - 0.20 mm in cross section, ovate, without a central strand; cortex 2- or 3-layered; cells 4 - 8 × 3 - 6 mm, thick-walled; medullary ones 8 - 24 × 4 - 14 mm, thin-walled; branches ascending or pendant, 2 - 3 cm long. Leaves dense, erectopate, oblong to ovate-lanceolate, cucullate, plicate, cordate to rounded, entire, convolute or not, acuminate to long-acuminate; stem leaves 3 - 5.5 × 1.6 - 2 mm; branch leaves 3 - 5.2 × 1.5 - 1.9 mm; cells narrow, elongate, incrassate, with distinctly porose walls below and faintly porose above; apical cells 16 - 40 × 8 - 12 µm; median ones

36 - 68 × 8 - 12 µm; those at base 20 - 40 × 10 - 14 µm; alar cells 12 - 24 × 8 - 20 µm, indistinct, rectangular, tinted to red-brown; costa single, almost 2/3 as long as leaves, sometimes bifurcate at base. Sporophyte not seen.

Habitat: Rupicolous in degraded evergreen forests, ca 1300 m.

Distr.: Sri Lanka and India: Western Ghats of Kerala, Tamil Nadu (Kanyakumari, Madurai and Tirunelveli) and Eastern Ghats of Tamil Nadu (Namakkal).

Specimens examined: Eastern Ghats: Tamil Nadu, Namakkal Dist., Kolli Hills, Sholakkadu, Kuzhivalavu Shola, ca 1300 m, 28.12.2016, P.M. Biju 2080, 2094.

Discussion

The Eastern Ghats, one of the bryogeographical zones of the country, is underexplored as far as

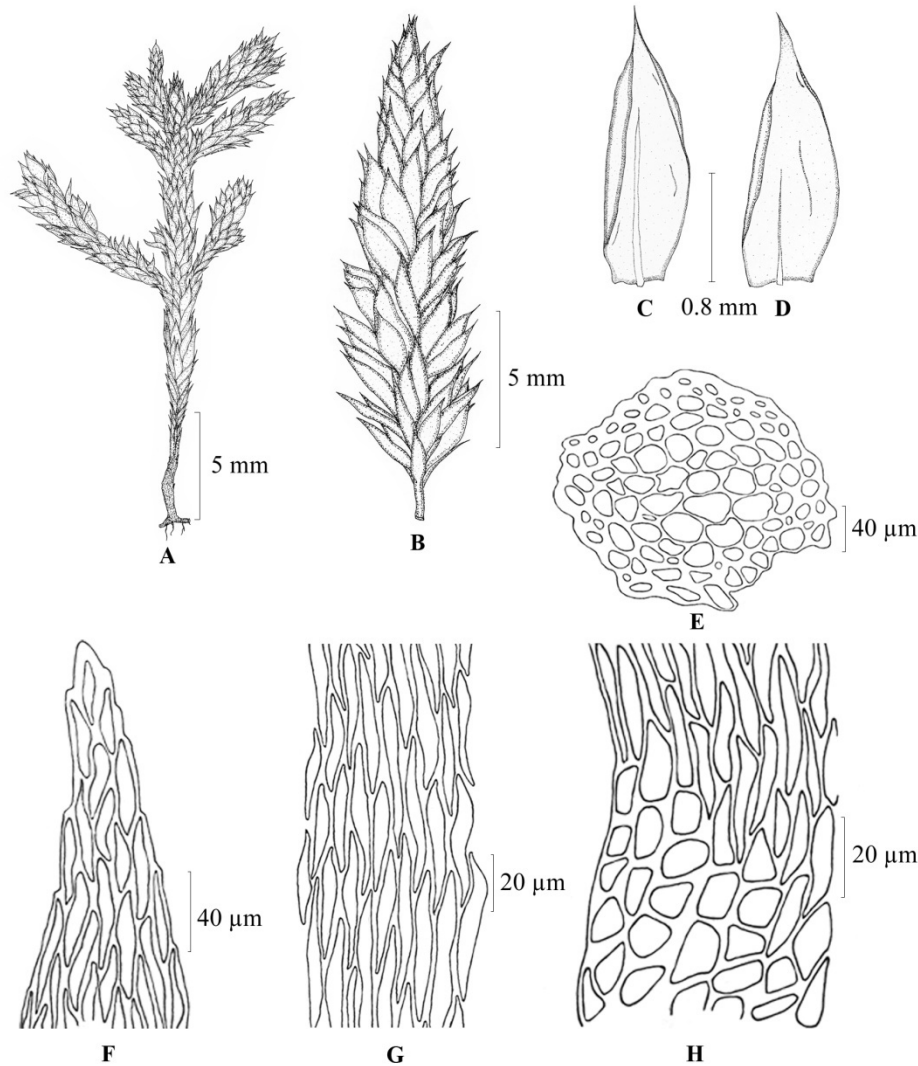


Fig. 3. *Symphysodontella involuta* (Thwaites & Mitt.) M. Fleisch.

A. Plant B. Portion of plant C. Stem leaf D. Branch leaf E. Cross section of stem
F. Leaf apical cells G. Leaf median cells H. Leaf basal cells (P. M. Biju 2080)

bryophytes are concerned. The new reports made by Kumar and Krishnamurthy [7], Sathish *et al.* [8], Biju and Daniels [9,10,11] and Palani *et al.* [12] testify to this. The discovery of *Symphysodontella cylindracea* and *Symphysodontella involuta* reiterates the need for more rigorous studies on the bryoflora of the Eastern Ghats. The occurrence of *S. involuta* in the Eastern Ghats highlights the affinity of Eastern Ghats to that of the Western Ghats-Sri Lanka biogeographic unit.

Authors' contribution

AEDD - identification and writing and formatting of the MS; PMB - collection, dissection and help in identification; MMP and VA - dissection, figures, photographic plates and help in identification.

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Conflict of interest

The authors declare that they have no competing interests.

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Fig. 4. *Symphysodontella involuta* (Thwaites & Mitt.) M. Fleisch.

A. Plant **B.** Branch **C&D.** Stem leaves **E&F.** Branch leaves **G.** Cross section of stem
H. Leaf apical cells **I.** Leaf median cells **J.** Leaf basal cells **K.** Alar cells (*P. M. Biju* 2080)

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