ISSN 0376-5156
Geophytology 47(2): 155-159
November 2017

New record of two mosses from Malabar Wildlife Sanctuary in the Western Ghats of India

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Manuscript received: 1 June 2017
Accepted for publication: 27 September 2017

ABSTRACT

Bryocrumia vivicolor and *Phyllodon subretusus* are the two rare mosses of the family Hypnaceae. These are reported from the Malabar Wildlife Sanctuary in the Western Ghats of India. *Bryocrumia vivicolor* was earlier reported from Tamil Nadu, hence the present collection is a new record from Kerala. *Phyllodon subretusus* was earlier reported only from Sri Lanka, hence the present collection of *Phyllodon subretusus* is a new record from India.

Key words: *Bryocrumia vivicolor*, Hypnaceae, India, Malabar Wildlife Sanctuary, *Phyllodon subretusus*, Western Ghats.

INTRODUCTION

The genus *Bryocrumia* Anderson was instituted by Anderson (1980). *Bryocrumia* is a monotypic genus with a single species *Bryocrumia vivicolor*. A detailed study on *Bryocrumia vivicolor* was carried out by Buck (1987) and *Glossadelphus scutellifolius* and *G. vivicolor* were placed in the synonymy of *Bryocrumia vivicolor*. In 1909 *Bryocrumia* was collected by L.J Sedgwick from Mahabaleswar in Maharashtra and is available in BM from Dixon's (1914) collection. Later on, in 1911 Foreau (in Dixon's 1914) collected *Bryocrumia vivicolor* from Shembaganur in Tamil Nadu and described as *Glossadelphus andersonii*. Buck (1987) also discovered that the Indian *Taxithelium vivicolor* was identical to *Bryocrumia andersonii*, and later transferred it to *B. vivicolor* (Crum & Buck 1990).

The genus *Phyllodon* Bruch. & Schimp. is represented by eleven valid species throughout the globe, while in India this genus is represented by only one species *Phyllodon scuttellifolius* (Besch.). W.R. Buck recorded this taxon from Tamil Nadu (Dixon 1914, Daniels 2010). It should be noted that *Taxiphyllum, Phyllodon* and *Bryocrumia* are quite difficult to distinguish (Anderson 1980). Buck (1987) separated *Phyllodon* and suggested that *Glossadelphus* is a synonym of *Phyllodon*. *Phyllodon* Schimp. is characterised by ligulate, concave leaves with broadly obtuse apex, double dentate margin above the middle of the leaf and prorate distal cells. During the present study, a detailed investigation on the bryophytes of Malabar Wildlife Sanctuary in the Western Ghats revealed the occurrence of two rare mosses viz., *Bryocrumia vivicolor* and *Phyllodon subretusus*. *P. subretusus* was so far known only from Sri Lanka. Hence, the present collection is a new record of the species from India. The present paper reports a detailed description with illustrations of *Bryocrumia vivicolor* and *Phyllodon subretusus*, collected from Malabar Wildlife Sanctuary, Western Ghats, India.

Systematic Description

Bryocrumia vivicolor (Broth. & Dixon) Buck

Plate 1. A-J

Taxithelium vivicolor Broth. & Dixon *in* Dixon. Rec. Bot. Surv. India 6(3): 86, f.1:4a-h. 1914.

Glossadelphus vivicolor (Broth. & Dixon) Broth. *in* Engl., Nat. Pflanzenfam. ed. 2, 11: 444, 1925.

Glossadelphus andersonii E.B.Bartram, Bryologist 54: 81, f.1-6, 1951. *Taxiphyllum andersonii* (E.B.Bartram) H.A.Crum, Bryologist 68: 220, 1965.

Bryocrumia andersonii (E.B.Bartram) L.E.Anderson, Phytologia 45: 66, 1980.

Description: Plants slender-delicate, horizontally spreading, thin, yellowish to dark greenish, sparsely branched, up to 1.2 cm long. Rhizoids purple, forms clusters on the main stem, where the branches arise. Stem without central strand, 117.5 µm wide; cortical cells thick walled, 2-3 rowed, surrounded by inner few hyaline cells, 9-10 × 9-10 µm. Leaves elliptical, slightly decurrent, apex bluntly rounded to broadly obtuse, from a flat base, margin minutely crenulated at apex, 0.7× 0.3 mm. Costa not prominent, a faint double costa is visible when kept in 3% KOH. Leaf cells small, irregularly quadrangular at apex, 4-10× 4-5 µm, narrow, rhomboidal at middle, comparatively long, 13-20×3-4µm; basal alar cells well differentiated with rectangular cells, 10-24× 5-7µm. Sporophyte not observed.

Specimens Examined: Malabar Wildlife Sanctuary, Kozhikode District, Kerala, India; *Prajitha* 12858 (500-600 m) (MBGH), *Manju* 12560, 14-11-14 (400 m) (ZGC).

Ecology & Distribution: Occurs on wet rocks in evergreen forests along with *Pelekium velatum*, altitude ranges between 400-600 m. This species is rare in the study area. It is distributed in India (Maharashtra-Mahabaleswar, Tamil Nadu - Palni hills (Shembaganur, Perumalmalai), Kerala (present collection); U.S.A. (North Carolina, South Carolina), Zaire, Uganda, Kenya, Sri Lanka (Nuwara Eliya) and China (Yunnan) (Chopra, 1975, O'Shea & Buck, 2001).

Phyllodon subretusus (Thwaites. & Mitt.) Ochyra & R.R Ireland.

Plate 2 A-H

Ectropothecium subretusum Thwaites & Mitt., J. Linn. Soc., Bot. 13: 321, 1873.

Glossadelphus subretusus (Thwaites & Mitt.) M. Fleisch., *Die Musci der Flora von Buitenzorg* 4: 1352, 1923.

Hypnum subretusum (Thwaites & Mitt.) Broth., *Die Natür. Pflanz.* I(3): 1093, 1908.

Taxiphyllum subretusum (Thwaites & Mitt.) O'Shea, *J. Hattori Bot. Lab.* 92: 126, 2002.

Vesicularia subretusa (Thwaites & Mitt.) Broth. ex Paris,Collatio Nom. Brother. *et* Ind. Bryol. 36, 1909.

Description: Plants soft, yellowish green, creeping, pinnately branched, up to 6 cm long; stem 0.3 mm wide; medullary cells thin walled, 22.92–36.38 × 17.4- 19.6 µm; cortical cells thick walled,

Table 1. Distinguishing characters of *Bryocrumia* and *Phyllodon* (After O'Shea & Buck 2001).

Characters	*Bryocrumia* Anderson	*Phyllodon* Schimp.
Leaf shape	Elliptic to oblong-ovate, from a contracted flat base	Elliptic to oblong-ovate, from a contracted base, strongly concave
Leaf apex	Bluntly obtuse to broadly rounded	Truncate
Leaf areolation	Cells blunt to rounded	Cells blunt to rounded
Leaf papillae	Absent, but cells very slightly prorate	Present, obvious, and cells often prorate
Leaf decurrency	Slightly decurrent	Not decurrent
Alar cells	Differentiated with several rows of rectangular cells	Not differentiated

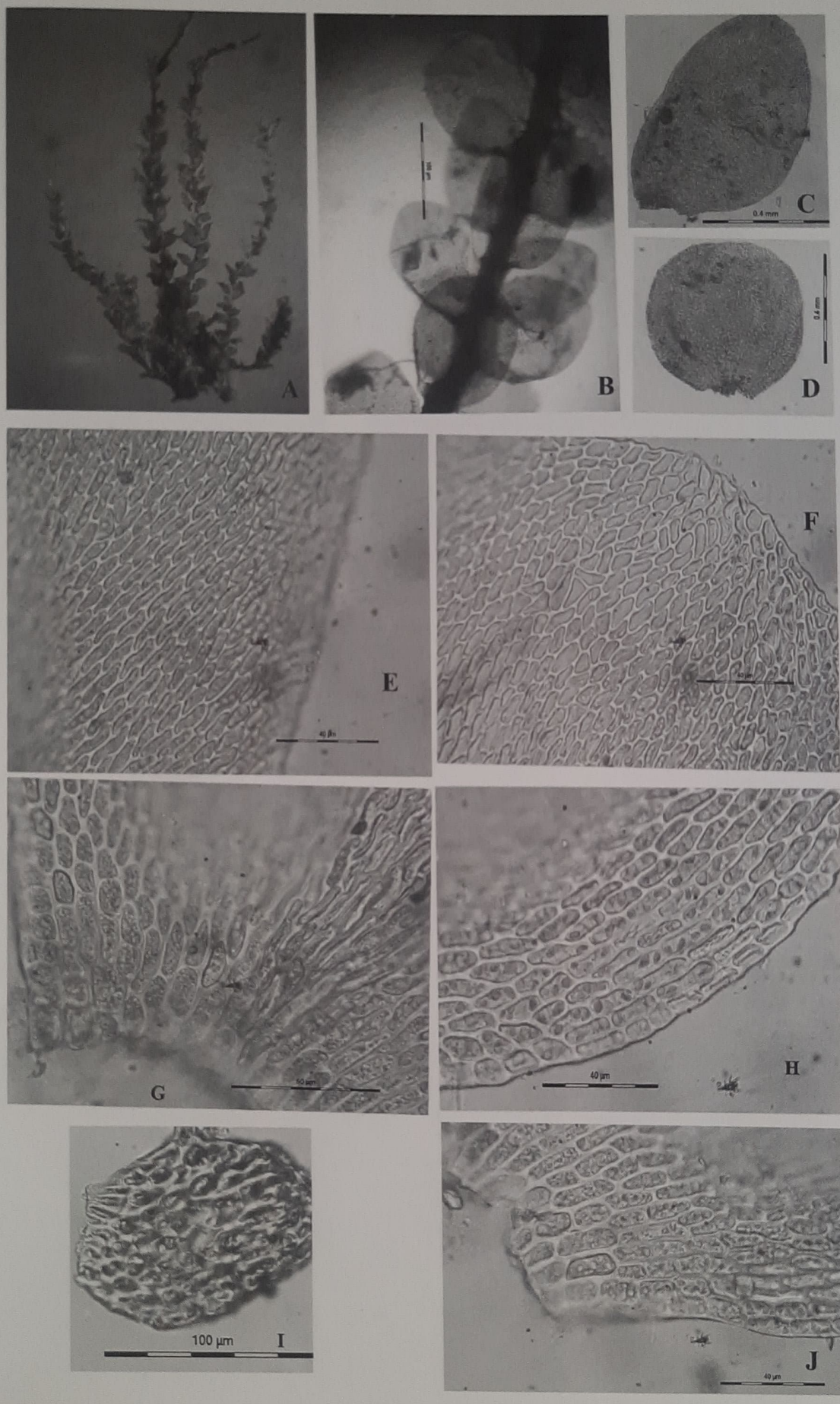

PLATE 1

***Bryocrumia vivicolor*, A.** Habit, **B.** Branch, **C&D.** Leaves, **E.** Leaf middle cells, **F.** Leaf tip cells, **G&J.** Leaf basal cells, **H.** Leaf marginal cells, **I.** Cross-section of Stem.

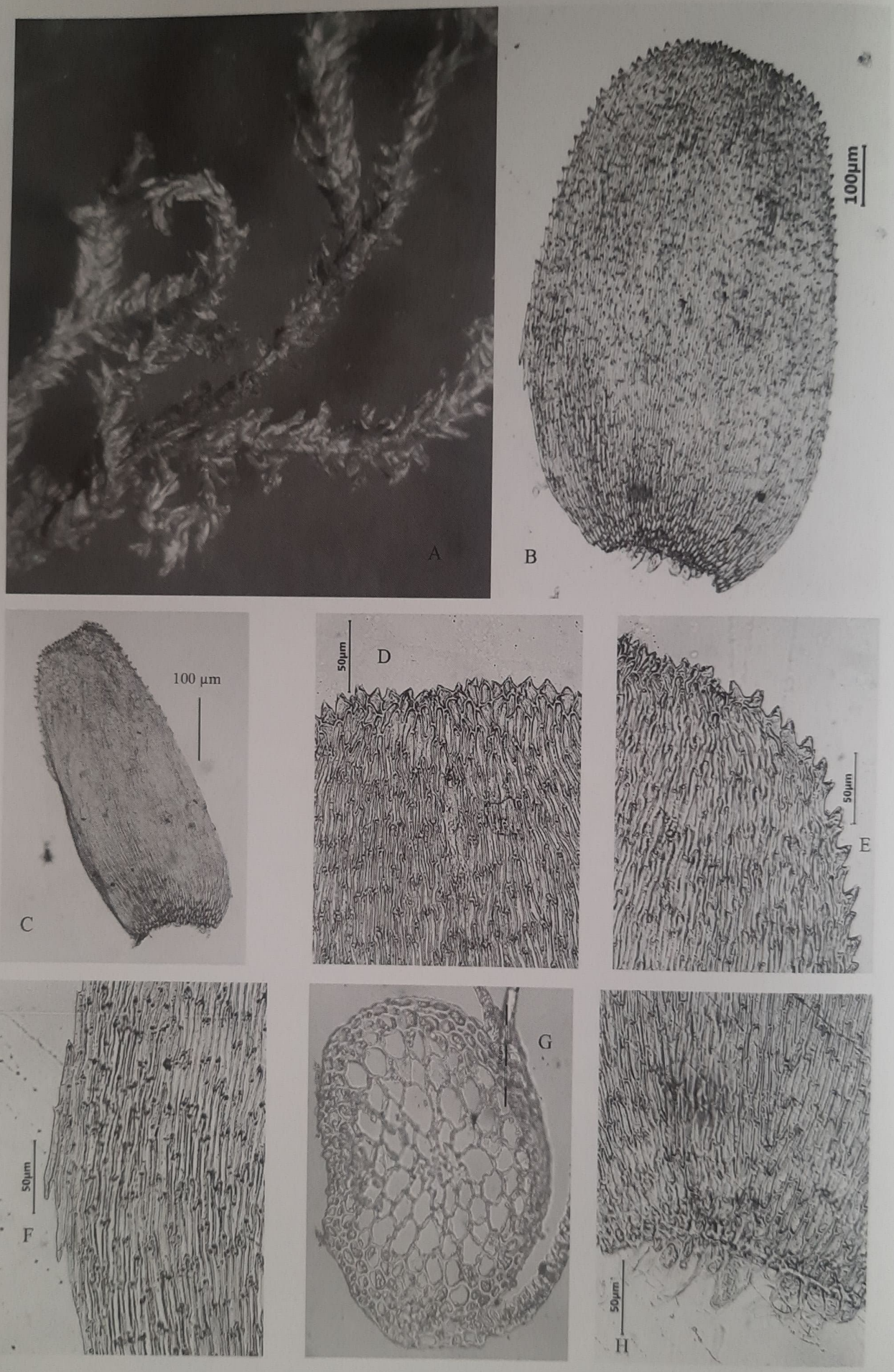

PLATE 2

Phyllodon subretusu, **A.** habit in herbarium, **B.** Branch leaf, **C.** Stem leaf, **D.** Leaf tip cells, **E.** Leaf tip marginal cells, **F.** Leaf basal marginal cells, **G.** Cross-section of Stem, **H.** Leaf basal cells.

comparatively small, 10.65-21.68 × 12.21- 17.51µm. Leaves elliptic to ovate- oblong; margin entire at base, sharply serrulate towards tip, spines double, apex rounded, densely papillose, 0.69-1 × 0.36-0.49 mm. Ecostate; some leaves shows the presence of single costa, which ends at middle of the leaf, 0.79 × 0.56 mm. Leaf extreme base have two rows of small, quadrangular cells, 22-30 × 7 µm, followed by narrow elongated, rhomboidal cells, 51- 68 × 5 µm; marginal cells at base narrow, elongated, 39- 90× 4 µm; towards tip short, rhomboidal cells, 20-24 × 5-9 µm; cells with papillose ends, except at extreme base. Sporophyte not observed.

Specimen examined: Malabar Wildlife Sanctuary, Kozhikode District, Kerala, India; *Prajitha* 8667, 16-03-13 (637 m) (MBG).

Ecology & Distribution: Commonly occurs on moist rocky patch in evergreen forests between 428-637 m altitude. *P. subretusus* is known from Sri Lanka, however, the present collection of *P. subretusus* from Malabar Wildlife Sanctuary, Kerala is the first record from India.

ACKNOWLEDGEMENTS

The authors are thankful to Dr. William R. Buck, New York Botanical Garden for confirming the identification of *Phyllodon subretusus*. We are grateful to the staff members of the Kerala Forest Department for their permission to collect the specimens. MCN is thankful to the authorities of the Zamorin's Guruvayurappan College, Kozhikode for providing the laboratory facilities. The financial support from the Kerala State Council for Science, Technology & Environment (KSCSTE), Thiruvananthapuram is also thankfully acknowledged.

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