

Studies on the Bryophyte Flora of Vanuatu.

7. Stereophyllaceae (Musci)

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Abstract The family Stereophyllaceae is newly recorded from Vanuatu based on the collections made in 1996. Description and illustrations of *Stereophyllum radiculosum* are presented with special reference to the overlooked characters of leaves.

Key words: Stereophyllaceae, *Stereophyllum radiculosum*, mosses, Vanuatu.

This paper deals with the family Stereophyllaceae occurring in Vanuatu, based on the collections made by Higuchi in 1996 and by Mr K. Sugimura in 1997 (cf. Higuchi, 2002). The specimens examined are kept in the herbarium of the Department of Botany, National Science Museum (TNS), and the duplicates in the herbarium of the Department of Forestry, Republic of Vanuatu (PVNH).

Stereophyllaceae

Higuchi (1996) lists 33 families, 84 genera, and 236 species and infraspecific taxa of mosses from Vanuatu. The family Stereophyllaceae has not been reported from Vanuatu. By the examination of above collections, *Stereophyllum radiculosum* was recognized, which is a new record for the moss flora of Vanuatu.

Buck & Ireland (1985) proposed raising the subfamily Stereophylloideae of the family Plagiotheciaceae to familial rank, and considered that *Stereophyllum* is monotypic. Buck & Vitt (1986) suggested that the Stereophyllaceae sensu Buck & Ireland (1985) should be placed in distinct lineage in the superfamily Brachytheciacanae. Subsequently, based on the investigation using nucleotide sequences of the chloroplast gene, *rbcL*, Arikawa & Higuchi (1999) indicated that a close relationship between the Stereophyl-

laceae and the Brachytheciaceae was not justified.

The following description is based on the plants from Vanuatu.

Stereophyllum radiculosum (Hook.) Mitt., J. Linn. Soc. Bot., **12**: 542 (1869).

Plants pale- to yellow-green, forming thin and flat mats. Stems creeping, to 6 cm long, irregularly and rarely branched, slightly complanate-foliate, radiculose on ventral surface; in cross-section with 2–3 rows of small thick-walled cells surrounding large thin-walled cells; central strand absent. Pseudoparaphyllia filamentous, ca. 3–9 cells long, 1–2 cells at base. Axillary hairs with a single short brown basal cell and 3–4 rectangular hyaline distal cells. Dorsal and ventral stem leaves often different in shape and size. Dorsal stem leaves oblong-ovate, abruptly acute to obtuse, sometimes apiculate, $2.0\text{--}2.4 \times 0.8\text{--}1.1$ mm, slightly concave; margins plane, serrulate above, entire below; costa single, distinct, outstanding as white line on dorsal surface of leaves when dry, $3/4\text{--}4/5$ the leaf length, in cross-section with a layer of large thin-walled cells on ventral surface at base; laminal cells rhomboidal, $7\text{--}10 \times 3\text{--}4$ μm , unipapillose or mammillose, sometimes smooth, thick-walled; alar cells subquadrate to rectangular, sometimes extending up one or both margins to $1/3$ the leaf length; basal cells bistratose at both sides of costa. Ventral

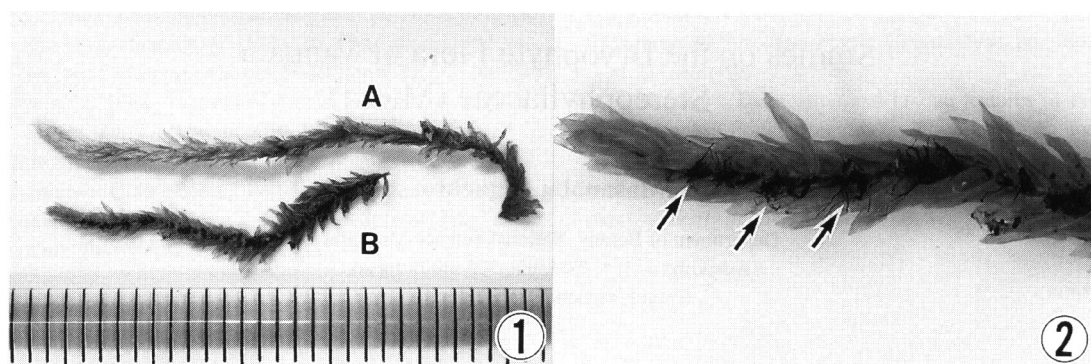


Fig. 1. *Stereophyllum radiculosum*. 1. Plants. A: dorsal view, B: ventral view. Scale=1 mm. 2. A part of plant. Arrows show bunch of rhizoid. All taken from Higuchi 31465.

stem leaves nearly lingulate, $1.6\text{--}2.0 \times 0.6\text{--}0.7$ mm. Perichaetia at bases of stems. Perigonia and sporophytes not seen.

Specimens examined. Espiritu Santo Isl., Kerepua, 25 m alt., on boulder in forest, Nov. 3, 1996 (Higuchi 31453), Kerepua~Mt. Tabwemasana, 200 m alt., on boulder in forest, Nov. 4, 1996 (Higuchi 31465).

Distribution. N. America, Central America, South America, Africa, India, Australia (cf. Buck, 1998). New to Vanuatu.

Stereophyllum radiculosum is characterized by oblong-ovate leaves with short-acute to rounded apices, unipapillose laminal cells and numerous alar cells. Although this species show wide distribution, it had not been known from Oceania except Australia (Queensland). The plants from Vanuatu are somewhat larger than those from Australia, India, Cameroon, Florida and Texas which I examined. This difference of plant size may be related to the difference of the habitat. This species usually grows on bases of tree and logs, while it grows on boulder in dry forest in Vanuatu. In *Stereophyllum radiculosum* dorsal and ventral stem leaves are often different in shape and size. Dorsal stem leaves are oblong-ovate, abruptly acute to obtuse and larger, while ventral ones are nearly lingulate and smaller.

Entodontopsis is closely related to *Stereophyllum*, and is distinguished from *Stereophyllum* by having smooth and elongate laminal cells. In addition, the bistratose basal cells of *Stereophyllum*

radiculosum (Fig. 2: 11) may afford a useful distinguishing character. The basal cells of *Entodontopsis leucostega* is never bistratose, but unistratose (Fig. 2: 13).

Acknowledgements

I thank Mr. E. Bani, Head of Environment Unit, and staffs of Department of Forestry, Republic of Vanuatu, for their kind help of the filed researches. The material was collected with aid of a Grant-in-Aid for Scientific Research Program (no. 08041165 to Dr. T. Iwashina) of the Ministry of Education, Culture, Sports, Science and Technology in Japan.

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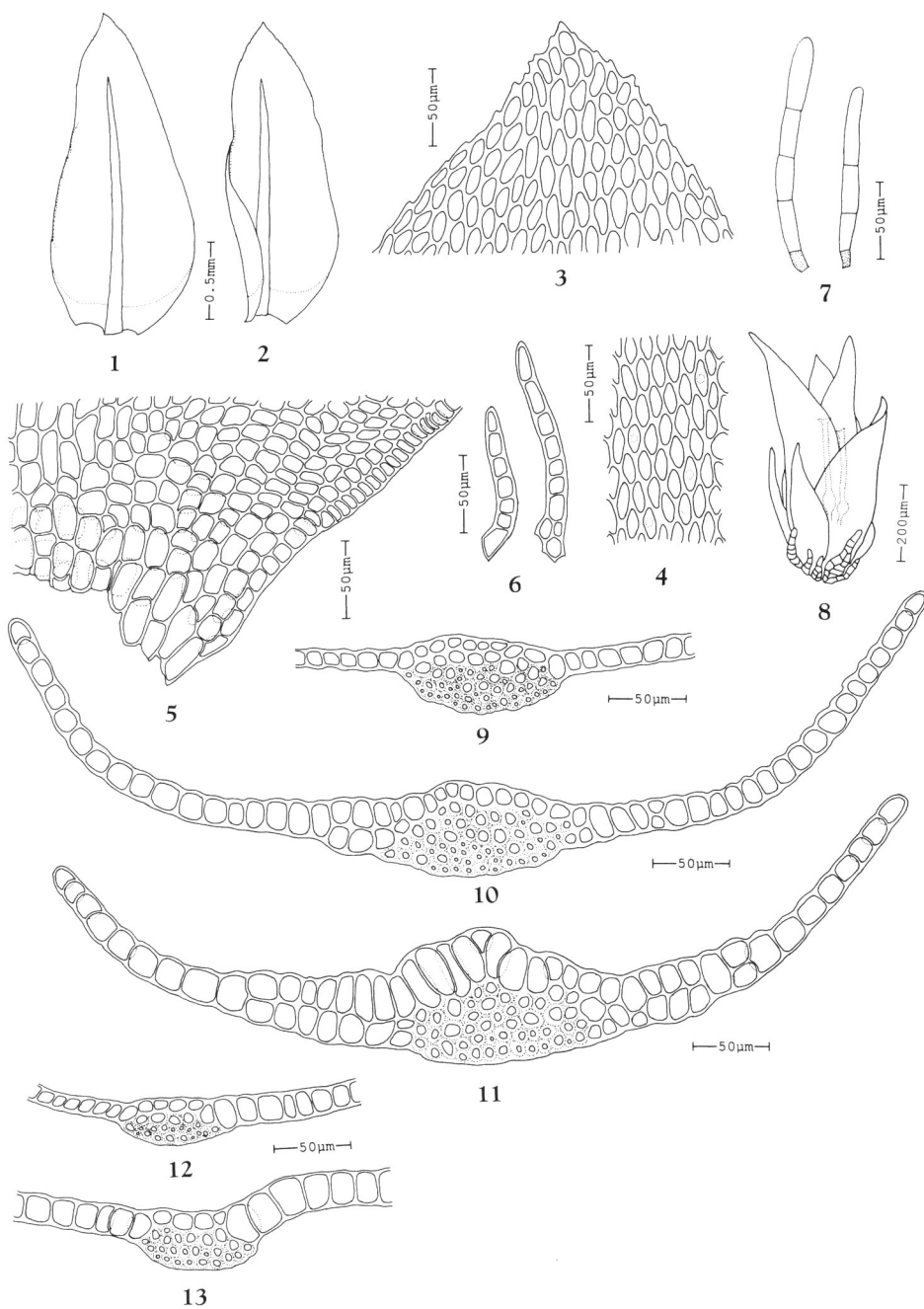


Fig. 2. *Stereophyllum radiculosum* (1–11) and *Entodontopsis leucostega* (12, 13). 1, 2. Stem leaves. 3–5. Laminal cells of stem leaf (3: apical part, 4: median marginal part, 5: alar part). 6. Pseudoparaphyllia. 7. Axillary hairs. 8. Perichaetium. 9–11. Cross-sections of costa (9: middle part, 10: lower part, 11: basal part). 12, 13. Cross-sections of costa (12: lower part, 13: basal part). Figs. 1–11 drawn from Higuchi 31465, Figs. 12, 13 drawn from Anderson & Crum 13435 as *Stereophyllum leucostegum*.

