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Symphysodontella (Bryophyta: Pterobryaceae) new to the Australian flora

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Abstract

The genus *Symphysodontella* (Bryophyta: Pterobryaceae) is reported as new to the Australian flora, based on a collection of *Symphysodontella splendens* from northern Queensland. This species was previously known from Indonesia, Malaysia, Papua New Guinea and Vietnam. The presence of gemmae is reported for the first time in *Symphysodontella*.

Key words

Australia, Wet Tropics, bryophyte, moss, *Symphysodontella*, Pterobryaceae

Introduction

Symphysodontella was erected by Fleischer (1908) to accommodate three species previously placed in *Neckera*, *Pilotrichum*, *Pterobryum* or *Symphysodon* by various authors. Further species were added to the genus by Fleischer (1923), Brotherus (1909a, 1909b, 1913) and Dixon (1934, 1935, 1937), Bartram (1936, 1957) and Tixier (1970), all from mainland Asia or the south-east Asian archipelago, bringing the total number of species to sixteen.

The genus was subsequently revised by Magill (1980), who recognised only nine species: *S. attenuatula* M.Fleisch., *S. convoluta* (Dozy & Molk.) M.Fleisch., *S. cylindracea* (Mont.) M.Fleisch., *S. involuta* (Thwait. & Mitt.) M.Fleisch., *S. obtusa* Tixier, *S. parvifolia* Bartr., *S. siamensis* Dixon, *S. subulata* Broth. and *S. tortifolia* Dixon. Touw and Magill (1992) later synonymised *S. obtusa* under *S. splendens* (Reinw. & Hornsch.) Touw & Magill, and Manju and Rajesh (2012) added *S. madhusoodananii* Manju & K.P.Rajesh from India.

Among bryophytes collected in 2000 at Wrights Creek, in Crater Lakes National Park on the Atherton Tableland in northern Queensland, was an unusual lithophytic moss that we could not identify to genus using the moss key for Australia (Buck and Vitt 2006). Its dendroid, complanate and pinnate morphology, together with the absence of a costa and large patches of coloured and porose alar cells, suggested Pterobryaceae, but not any genus we knew. Subsequent investigations pointed to *Symphysodontella* M.Fleisch. (see Material and Methods for details), a view supported by Bob Magill (*pers. comm.* to A. Cairns, 1 Sept 2017).

Because only a few sterile stems were collected, we revisited Wrights Creek in October 2018 to try to collect further material. Unfortunately the area where the original collection was made had been severely scoured by strong water flows, and none was found. The rock habitat is unusual in *Symphysodontella*, although not unknown — most collections are from tree trunks (Magill 1980) — so the species might still be present at the site as an epiphyte.

Material and Methods

In June 2000 the authors, with Bruce Fuhrer, collected bryophytes on the Atherton Tablelands, Queensland. At Wrights Creek, near Lake Eacham in Crater Lakes National Park, we collected a few fronds of a moss that we thought was merely a flattened form of *Hypnodendron vitiense* Mitt., growing on rock close to water level. When we reviewed the specimen recently we realised that it was not a *Hypnodendron* because the costa is absent or short and double. However, it did not match any genera known from Australia.

Following a literature search, and after consulting Dr Robert Magill (Missouri Botanical Garden), we subsequently identified it as a species of *Symphysodontella*, based on the following features: 1) plants dioicous (only females seen); 2) complanate, dendroid fronds arising from a creeping primary stem; 3) stipe present, with minute scale-like leaves; 4) branching mostly 2–3-pinnate; 5) leaves dimorphic (stem leaves different in size from branch leaves), concave, oblong-lanceolate, apex acute; 6) costa short and double or absent; 7) alar cells coloured, weakly porose.

Based on the treatment by Magill (1980) we think the Australian material is best assigned to *Symphysodontella splendens*, a species otherwise known from Indonesia (Java, Sumatra, Kalimantan), Malaysia (Sarawak) and Vietnam. The following description is based on our Australian material so that comparisons may be made with plants from other localities. The symbol !d indicates that a high-resolution digital image has been seen.

Taxonomic Treatment

Symphysodontella splendens (Reinw. & Hornsch.) Touw & Magill, Journal of the Hattori Botanical Laboratory 71: 350 (1992)

Basionym: *Neckera splendens* Reinw. & Hornsch., Nova acta physico-medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosum 14(2): 714 (1829)

Type citation: 'Hab. in Iava insula.'

Type: Indonesia, Java, *Reinwardt s.n.* (BM 987207!d)

Plants yellow-green, somewhat glossy, consisting of complanate, dendroid fronds arising at ± regular intervals from a thin, creeping primary stem with scale-like leaves; secondary stems upright, complanate, reddish brown, to about 20 mm long, each consisting of a stipe and a leafy frond. *Stipe* 3–4.5 mm long, with sheathing scale-like leaves, 0.8–0.9 × 0.4–0.47 mm. *Frond* 9–13 mm long, ± triangular, (1–)2–3-pinnate, longest branches 7.5 mm long, becoming gradually smaller towards the frond apex. *Stem leaves* oblong to oblong-lanceolate or elliptical, 1.59–1.78 × 0.58–0.73 mm, moderately concave, apex acute, base weakly rounded, margins plane, weakly serrulate above, costa weak, short and double or absent, upper laminal cells linear, sinuous, 50–60(–72) × 3.0–4.5 μm, thin-walled, sparsely porose; alar cells roundly rectangular, somewhat thick-walled, porose, yellowish brown to orange. *Branch leaves* lanceolate to elliptical, 1.00–1.30 × 0.29–0.42 mm, weakly concave, apex acute, base weakly rounded, margins plane, weakly serrulate to entire, costa short and double or absent; upper laminal cells linear, slightly sinuous, 50–71 × 4–6 μm in mid-leaf, distinctly shorter in the apex, thin-walled, sparsely porose; alar cells rounded, quadrate to rectangular, thick-walled, weakly porose, yellowish brown to orange. *Gemmae* occasional, in dense dark clusters in axils of stem and branch leaves, greenish brown, multi-cellular, ± elongate-elliptical. *Perichaetia* on frond axis and branches (only immature perichaetia seen). *Perigonia* not seen. *Sporophytes* not seen. Fig. 1.

Habitat: On rock next to permanent stream in upland tropical rainforest.

Distribution and ecology: Indonesia (Flores, Java, Kalimantan, Seram, Sumatra), Malaysia (Sarawak), Papua New Guinea, Vietnam, Australia (Queensland Wet Tropics). In Australia *S. splendens* was collected as a lithophyte on rock next to a permanent stream in upland tropical rainforest.

Australian specimen seen: Queensland, Crater Lakes National Park, Wrights Creek, on rock next to water, 777 m, 10 Jun 2000, *D.A. Meagher 1291* (BRI AQ1000874).

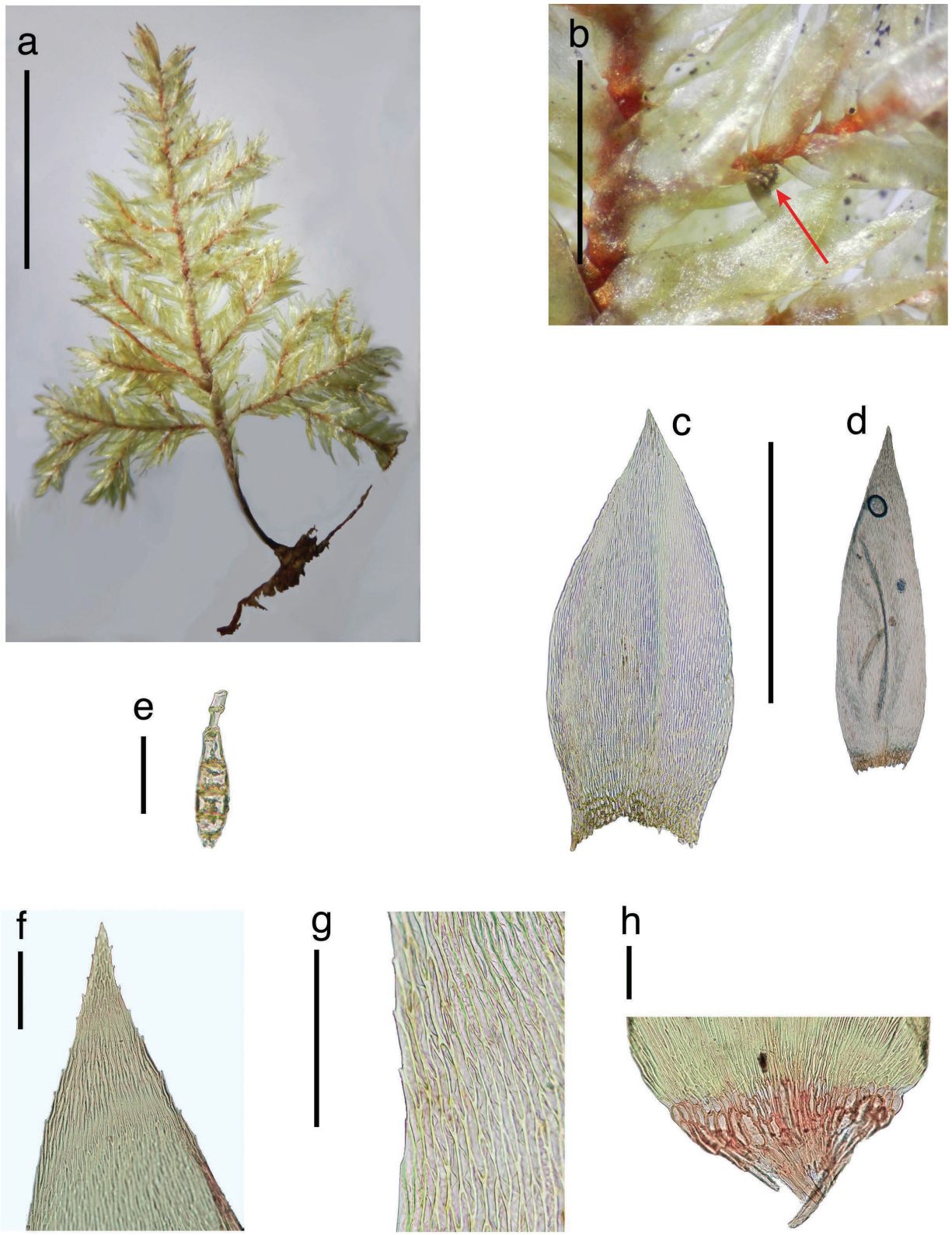

Fig. 1. *Symphysodontella splendens*: **a)** whole frond, **b)** cluster of gemmae (arrowed), **c)** stem leaf, **d)** branch leaf, **e)** gemma, **f)** apex of branch leaf, **g)** mid-lamina of branch leaf, **h)** base of branch leaf. Scale bars: a = 5 mm; b–d = 1 mm; e–h 100 µm. All from *Meagher 1291* (BRI).

Recognition: The following differentiation is based on Magill (1980), which included *Symphysodontella obtusa* Tixier, now treated as a synonym of *S. splendens* (Touw 1992). *Symphysodontella splendens* differs from *S. attenuatula* M.Fleisch., *S. convoluta* (Dozy & Molk.) M.Fleisch. and *S. involuta* (Thwaites & Mitt.) in having the costa almost always short and double (usually single to mid-leaf or above in those species). *Symphysodontella splendens* differs from *S. siamensis* Dixon and *S. cylindracea* (Mont.) M.Fleisch. in the small size of the fronds (30–60 mm long in those species), and from *S. tortifolia* Dixon, *S. subulata* Broth. and *S. parvifolia* Bartram in having the leaf apex acute to acuminate rather than acuminate to subulate. *Symphysodontella madhusoodananii* Manju & K.P.Rajesh has drooping secondary stems, the branches are often flagellate, the leaves are long-acuminate and plicate, and the laminal cells are strongly porose (Manju and Rajesh 2012).

Symphysodon species are slightly more robust and much more regularly dendroid, and the leaf margins are serrate rather than serrulate (Bob Magill, *in litt.* 9 September 2017). *Symphysodontella* species often resemble *Trachyloma* species, particularly because of the flattened fronds and dimorphic leaves (stem leaves larger than branch leaves), but in *Symphysodontella* the alar cells are strongly differentiated and usually coloured, some species have a distinct costa reaching beyond midleaf, and some are much smaller than any *Trachyloma* species. Furthermore, plants of *Trachyloma* species almost always have dark brown to black gemmae at the apices of at least some branches.

Revised couplets for key to Australian Mosses

To accommodate *Symphysodontella* in the current key to Australian mosses (Buck and Vitt 2006), we suggest the following amendment:

93 Leaves auriculate; capsule immersed *(92)* ..... **Calyptothecium**

93: Leaves not auriculate 94A

94A Alar cells not differentiated ..... **Trachyloma**

94A: Alar cells differentiated 94B

94B Alar cells irregular shaped, forming distinct dark rounded patches..... **Camptochaete**

94B: Alar cells rounded, rectangular to quadrate, orange-brown, extending across the leaf base ..... **Symphysodontella**

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