

RADULINA

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Radulina W.R.Buck & B.C.Tan, *Acta Bryolichenol. Asiatica* 1: 9 ('1989') [1990]; derived from the Latin *radula* (a small scraper), in reference to the seriate papillae on laminal cells.

Hypnum sect. *Sigmatella* subsect. *Thelidium* Müll.Hal., *Linnaea* 39: 466 (1875); *Trichosteleum* sect. *Thelidium* (Müll.Hal.) A.Jaeger, *Ber. Thätigk. St. Gallischen Naturwiss. Ges.* 1876–77: 419 (1878), non *Thelidium* A.Massal. (Ascomycota, Verrucariales).

Lecto: *Hypnum pickeringii* Sull. [= *Radulina borbonica* (Bél.) W.R.Buck]

Autoicous. Plants small to medium in mostly thin dull and green to golden mats. Stems creeping, freely but irregularly branched; branches often ascending and falcate-cuspidate. Pseudoparaphyllia foliose. Leaves strongly falcate-secund, scarcely altered when dry, lanceolate to ovate-lanceolate, gradually long-acuminate, concave; margins plane, serrulate above, serrulate to entire below; costa usually absent, occasionally short and double. Laminal cells elongate, hexagonal to linear, firm- to thick-walled, ±porose, pluripapillose, the unbranched papillae uniseriate to biseriate over the lumina; alar region differentiated; basal cells larger, inflated; outermost cells thin-walled, others yellow, thick-walled, in a single row across the insertion; supra-alar cells quadrate, in a single row.

Calyptra cucullate, naked. Seta slender, elongate, reddish, tuberculate just below the capsule, smooth below. Capsule inclined to horizontal, arcuate, short-cylindrical; exothecial cells short-rectangular, strongly collenchymatous; annulus lacking; operculum obliquely long-rostrate. Peristome double; exostome teeth and endostome segments 16, similar in length; cilium 1. Spores medium-sized, finely papillose. Chromosome numbers not known.

Buck & Tan (1990) recognised four species of *Radulina*, including *R. hamata*. Subsequently, Buck (1993) added a fifth species, *R. borbonica*. Tan *et al.* (2005) suggested that the genus was confined to western Melanesia, especially Papua New Guinea, while Ramsay *et al.* (2004) reported *R. hamata* from Australia. A more recent revision by O'Shea (2006) examined large numbers of collections, including types, and has concluded that the genus comprises four species and an additional variety. His assertion that *R. hamata* is conspecific with *R. borbonica* is accepted here. Thus, the Palaeotropical *Radulina* occurs in tropical Africa and islands in the western Indian Ocean, as well as India, SE Asia, Malesia, Japan and the Pacific islands. Only one species, the widespread *R. borbonica*, is known from northern Australia

Both *Radulina* and *Trichosteleum* have pluripapillose laminal cells. However, the former can be characterised by its narrowly ovate-lanceolate falcate-secund leaves with inflated basal alar cells and setae that are distally verrucose. Although *Radulina* can resemble *Acroporium* in having cuspidate branch apices and concave leaves with thick-walled laminal cells, it is distinguished by the pluripapillose laminal cells and alar cells that do not curve in towards the insertion.

References

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- Buck, W.R. (1993), Taxonomic results of the BRYOTROP expedition to Zaire and Rwanda 24: Leskeaceae, Brachytheciaceae, Stereophyllaceae, Plagiotheciaceae, Entodontaceae, Sematophyllaceae *p.pt.*, Hypnaceae (except *Hypnum*), *Tropical Bryol.* 8: 199–217.

¹ c/- National Herbarium of New South Wales, Mrs Macquaries Road, Sydney, New South Wales 2000.

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Radulina borbonica (Bél.) W.R.Buck, *Tropical Bryol.* 8: 208 (1993)

Leskea borbonica Bél., *Voy. Ind. Or. Bot.* 2 (Crypt.): 97 (1834); *Hypnum borbonicum* (Bél.) Müll.Hal., *Syn. Musc. Frond.* 2: 315 (1851). T: Île Bourbon [Réunion], 1825–1829, *C.Bélanger s.n.*; holo: *n.v.*

Hypnum hamatum Dozy & Molk., *Ann. Sci. Nat., Bot.*, sér. 3, 2: 307 (1844); *Trichosteleum hamatum* (Dozy & Molk.) A.Jaeger, *Ber. Thätigk. St. Gallischen Naturwiss. Ges.* 1876–77: 420 (1878) [Ad. 2:486]; *Radulina hamata* (Dozy & Molk.) W.R.Buck & B.C.Tan, *Acta Bryolichenol. Asiatica* 1: 10 ('1989') [1990]. T: Sumatra, [Indonesia], Borneo, [Malaysia]; holo: L; iso: L, NY.

Hypnum hamatum var. *semimammillosum* Müll.Hal., in Geheeb, *Biblioth. Bot.* 13: 11 (1889); *Trichosteleum hamatum* var. *semimammillosum* (Müll.Hal.) Paris, *Index Bryol.* 1: 1311 (1898). T: Astrolabe Range, New Guinea, *W.G.Lawes*; holo: L *n.v.* Synonymy *vide* Tan *et al.* (2005), based on Bartram (1939).

Illustrations: E.B.Bartram, *Philipp. J. Sci.* 68: pl. 25, fig. 435 (1939), as *Trichosteleum hamatum*; H.C.Gangulee, *Mosses of Eastern India and Adjacent Regions* 3: 1913, fig. 979 (1980), as *T. hamatum*; W.R.Buck, D.H.Vitt & W.M.Malcolm, *Key to the Genera of Australian Mosses* 14 (2001), as *T. hamatum*; H.P.Ramsay, W.B.Schofield & B.C.Tan, *J. Hattori Bot. Lab.* 95: 31, fig. 15 (2004), as *Radulina hamata*; Y.Jia, P.-C.Wu & B.C.Tan, *Moss Flora of China: Sematophyllaceae* 8: 51, pl. 608, figs 1–14 (2005), as *R. hamata* var. *hamata*.

Plants variable, forming dense intricate tufts or mats, pale or lurid green, dull to slightly glossy. Stems irregularly pinnate; branches decumbent or ascending, 2–3 mm long, usually hooked at the tips. Leaves crowded, gradually lanceolate-acuminate from a concave expanded ovate base, 1.0–2.2 mm long, c. 0.5 mm wide, often smaller, ecostate; margins erect, sharply serrate distally. Laminal cells linear to narrowly elliptic, 30–50 µm long, c. 5 µm wide, with a row of papillae over the lumina; alar region with a basal row of 2 or 3 large inflated hyaline cells.

Perichaetia on stems; perichaetial leaves abruptly long-acuminate, sharply serrate. Seta 10–15 mm long. Capsule small, c. 0.5 mm long, ovoid, horizontal-pendulous; operculum with a short rostrum. Peristome double; exostome teeth 16, narrowly furrowed on the outer surface, cross-striolate below, coarsely papillose above, trabeculate on the abaxial surface; endostome with a high basal membrane; segments keeled, perforate, shorter than the teeth; cilium 1, narrow, neither nodulose nor appendiculate.

Widespread from Malesia through the Pacific to the Hawaiian Islands; also in tropical Africa, India, Indian Ocean islands, SE Asia, China, Japan, Papua New Guinea and Australia (N.T. and north-eastern Qld). Occurs in dry coastal and montane rainforest, on trees and on rotting logs on river flats and slopes.

N.T.: Melville Is., *J.Russell-Smith 1299* (AD, DNA, MEL); *loc. id.*, *H.Streimann 42434* (CANB). Qld: Fishery Falls, *W.B.Schofield 79866* & *M.I.Schofield* (NSW); Frenchmans Ck, *W.W.Watts Q383, Q362b* (NSW); Mossman Gorge, *I.G.Stone 15882* (MEL); slopes of Black Mtn, NW of Kuranda, *H.Streimann 31114* (CANB); Daintree Natl Park, *B.O. van Zanten 68.1110* (GRO, NSW).

Radulina borbonica is characterised by the slender, strongly falcate, serrulate leaves with pluripapillose laminal cells. The pluripapillose cells give fresh specimens a dull green appearance.