RHIZOGONIUM

Scott R. Gilmore[1]

Rhizogonium Brid., *Bryol. Univ.* 2: 663 (1827); from the Greek *rhiza* (a root) and *gonion* (referring to the sporophyte); the name refers to the copious paraphyses suggesting a rooted sporophyte, *fide* H.A.Crum & L.E.Anderson, *Mosses of Eastern North America* 2: 657 (1981).

Type: *R. novaehollandiae* (Brid.) Brid.

Dioicous. Plants tufted, yellow to olive-green. Stems short, simple, tomentose at the base. Rhizoids smooth, red-brown. Propagula absent. Leaves complanate, distichous, imbricate, erect-spreading to wide-spreading, often decurrent, ovate to linear-lanceolate; apex acute to acuminate; margin entire to singly toothed, with or without a distinct border; costa strong, ending below apex to excurrent; laminal cells small, isodiametric.

Perichaetia basal, often in tomentum. Calyptra cucullate. Capsules inclined to pendulous (rarely erect), cylindrical, conical or urceolate, widest at the mouth; exothecal cells isodiametric; operculum rostrate, short or long, with the apex bent to one side. Peristome double; endostome 33–50% the length of the exostome. Spores globose to ovoid, smooth.

Rhizogonium includes c. 20 species, with many occurring in the wet-tropics. Four species are known from Australia, although three occur mainly in cool-temperate areas.

The genus is similar to elements of *Pyrrhobryum*, with the stem leaves varying from small at the base to larger above.

References

Eddy, A. (1996), Rhizogoniaceae, *Handb. Malesian Mosses* 3: 197–214.

Inoue, S. & Iwatsuki, Z. (1976), A cytotaxonomic study of the genus *Rhizogonium* Brid. (Musci), *J. Hattori. Bot. Lab.* 41: 389–403.

Koponen, T., Touw, A. & Norris, D.H. (1986), Bryophyte flora of the Huon Peninsula, Papua New Guinea. XIV. Rhizogoniaceae (Musci), *Acta Bot. Fenn.* 133: 1–24.

Manuel, M.G. (1981), Synopsis of Rhizogoniaceae Broth. in Malaya, *Cryptog. Bryol. Lichénol.* 2: 449–455.

1 Leaves bordered by elongate cells ..... **4. R. pennatum**

1: Leaves not bordered by elongate cells 2

2 Costa ending just below the coarsely toothed leaf apex; leaves more than 0.6 mm wide *(1:)* ..... **1. R. distichum**

2: Costa ending below the apex to excurrent; leaf apex not coarsely toothed; leaves less than 0.6 mm wide 3

3 Length-width ratio of leaves less than 3: 1; costa excurrent *(2:)* ..... **3. R. novaehollandiae**

3: Length: width ratio of leaves more than 3: 1; costa ending below apex to excurrent ..... **2. R. graeffeanum**

1. Rhizogonium distichum (Sw.) Brid., *Bryol. Univ.* 2: 665 (1827)

Hypnum distichum Sw., *J. Bot. (Schrader)* 2: 179 (1801) [3f. A. 1802]; *Mnium distichum* (Sw.) Müll.Hal., *Syn. Musc. Frond.* 1: 173 (1848). T: "Dusky Bay" [Dusky Sound], New Zealand, 1791, *A.Menzies 89*; iso?: BM.

Rhizogonium muelleri Hampe, *Linnaea* 28: 211 (1856). T: Sealers Cove, Vic., *coll. unknown*; holo: BM.

Illustration: J.Beever, K.W.Allison & J.Child, *Mosses of New Zealand*, 2nd edn 102, fig. 45g (1992).

---

[1] 7494 Andrea Crescent, Lantzville, British Columbia, Canada V0R 2H0

Cite as: S.R.Gilmore, *Australian Mosses Online. 36. Rhizogoniaceae: Rhizogonium.*
http://www.anbg.gov.au/abrs/Mosses_Online/Rhizogoniaceae_Rhizogonium.pdf (2012)

Plants yellow-green to olive-green. Stems c. 10 mm long. Leaves erect-spreading, decurrent, oblong to ovate-lanceolate, 1.5–2.2 mm long, 0.6–1.0 mm wide; margin entire below the coarsely toothed apex; costa ending just below the apex; laminal cells usually hexagonal above and subquadrate below, thick-walled, 12–19 µm, rarely larger.

Perichaetial bracts lanceolate, often with a long tapering twisted hairpoint. Setae to 20 mm long. Capsules inclined to pendulous (rarely erect), cylindrical to urceolate, widest at the mouth, c. 2 mm long; operculum long-rostrate. Exostome covered in small blunt papillae; endostome with 3 papillose cilia per segment. Spores 14–18 µm.

Occurs in N.S.W. south of Port Macquarie and in A.C.T., Vic. and Tas.; grows on tree ferns and fallen or rotting logs. Also known from New Zealand and SE Asia.

N.S.W.: Mongarlowe R., *H.Streimann 49025* (CANB). A.C.T.: gully along Warks Rd, *S.R.Gilmore 170* (CANB). Vic.: Mitchell River Natl Park, *H.Streimann 50221* (CANB). Tas.: Tasman Penin., *W.A.Weymouth 1672* (CANB).

Rhizogonium distichum differs from other species by the costa ending below the apex and by lacking elongate cells between the tip of the costa and the tip of the leaf. Although few in number, the teeth on the leaf apex are quite distinctive, consisting of 1–3 cells with a larger, central tooth above the costa.

2. Rhizogonium graeffeanum (Müll.Hal.) A.Jaeger, *Ber. Tätigk. St. Gallischen Naturwiss. Ges.* 1873–74: 220 (1875)

Mnium graeffeanum Müll.Hal., *J. Mus. Godeffroy* 3(6): 61 (1874). T: Savai'i, [Western] Samoa, *R.Graeffe*; B? (probably destroyed) *n.v.*

Rhizogonium geheebii Müll.Hal., *Hedwigia* 36: 332 (1897); *Mnium geheebii* (Müll.Hal.) Müll.Hal., *Genera Musc. Frond.* 142 (1901). T: Sydney, N.S.W., 1875, *D.Kayser*; holo: B? (probably destroyed) *n.v.*; iso: BM (two specimens).

Illustration: T.Koponen, A.Touw & D.H.Norris, *Acta Bot. Fenn.* 133: 10, fig. 5f–i (1986).

Plants yellow-green to pale green. Stems to 15 mm long. Leaves wide-spreading, slightly decurrent, linear-lanceolate, rarely oblong-lanceolate, acuminate, 0.85–1.32 mm long, 0.23–0.35 mm wide; margin unevenly dentate in upper half; costa ending just below the apex to percurrent, rarely short-excurrent; laminal cells mostly hexagonal, 11–16 µm wide, thin- or thick-walled.

Outer perichaetial bracts lanceolate; inner bracts ovate-lanceolate. Setae to 10 mm long. Capsules erect to cernuous, urceolate to conical, widest at the mouth, to 0.6 mm long; operculum bluntly rostrate. Exostome teeth papillose; endostome with 1 cilium per segment. Spores 9.5–12.0 µm.

This species is found on wood in moist areas of eastern Qld and in N.S.W. as far south as Wyong. Also in New Guinea.

Qld: Ravenshoe, *W.W.Watts Q502* (NSW); Nambour, *D.Verdon 5208* (CANB). N.S.W.: Richmond R., *W.W.Watts 3676* (NSW); Kingwell, Wyong, *W.W.Watts s.n.* (NSW).

Sporophytes are uncommon, and the foregoing description is based on only a few specimens. The leaves are often slightly crisped or curled parallel to the costa when dry. *Rhizogonium graffeanum* is distinguished from *R. novaehollandiae* by its narrower leaves.

3. Rhizogonium novaehollandiae (Brid.) Brid., *Bryol. Univ.* 2: 664 (1827)

Fissidens novaehollandiae Brid., *Bot. Zeitung (Regensburg)* 1: 212, 234 (1802); *Skitophyllum novaehollandiae* (Brid.) Bach.Pyl., *J. Bot. (Desvaux)*, sér. 2, 4: 165 (1815); *Hypnum novaehollandiae* (Brid.) Arnott, *Mém. Soc. Linn. Paris* 5: 301 (1827); *Mnium novaehollandiae* (Brid.) Müll.Hal., *Syn. Musc. Frond.* 1: 173 (1848). T: "Novae Hollandiae" [Australia], *J.-J.H. de Labillardière*; holo: B? (probably destroyed) *n.v.*

Illustration: J.Beever, K.W.Allison & J.Child, *The Mosses of New Zealand*, 2nd edn 102, fig. 45f (leaf only) (1992).

Plants yellow to olive-green. Stems 10–20 mm long. Leaves crowded to dispersed on the stem, imbricate to erect-spreading, slightly decurrent, ovate, oblong or lanceolate, acute, 0.8–1.5 mm long, 0.4–0.6 mm wide; margin lightly dentate towards apex; costa short-

excurrent to excurrent; basal laminal cells subquadrate; upper cells hexagonal, 10–14 µm wide, ±thick walled.

Inner perichaetial bracts ovate with a tapering apex; outer bracts triangular-lanceolate. Setae c. 20 mm tall. Capsules cernuous, cylindrical, 1.5–2.0 mm long, usually widest at the mouth; operculum long-rostrate. Exostome teeth papillose; endostome with 1 papillose cilium per segment. Spores 14.0–16.5 µm. *n* = 5, *fide* H.P.Ramsay, *Austral. J. Bot.* 22: 315 (1974).

Rhizogonium novaehollandiae grows on wood and tree ferns in moist habitats in southern Vic. and Tas.; also in New Zealand and Central and South America.

Vic.: Coast Range Rd, *H.Streimann 36683* (CANB). Tas.: Mt Wellington, *W.A.Weymouth 2337* (CANB); King William Saddle, *J.A.Curnow 4411* (CANB).

The two ranks of leaves are commonly folded towards each other when dry.

4. Rhizogonium pennatum Hook.f. & Wilson, *in* J.D.Hooker, *Fl. Nov.-Zel.* 2: 116 ('1855') [1854]

var. **aristatum** (Hampe) Dixon, *Bull. New Zealand Inst.* 3: 220 (1926)

Rhizogonium aristatum Hampe, *Linnaea* 40: 314 (1876). T: mountains near L. Pedder, Tas., *Schuster 70*; holo: BM.

Illustration: G.A.M.Scott & I.G.Stone, *The Mosses of Southern Australia* 312, pl. 55 (1976).

Plants pale green to olive-green. Stems to 3 cm long, rarely longer. Leaves wide-spreading to squarrose, slightly decurrent, lanceolate to oblong-lanceolate, rarely triangular-lanceolate, acuminate, 1.4–2.1 mm long, 0.4–0.6 mm wide; margin thickened, composed of elongate cells, entire to serrulate below, serrulate to serrate above (rarely entire); costa strongly excurrent; laminal cells mostly hexagonal, 9–16 µm, thin- or thick-walled.

Perichaetial bracts ovate to lanceolate. Setae c. 30 mm long. Capsules cernuous, cylindrical, c. 1.9 mm long; operculum short-rostrate. Peristome and spores not seen.

Rare on rocks and soil in south-eastern N.S.W. (Blue Mountains) and Tas.; also in New Zealand.

N.S.W.: Nellies Glen, Katoomba, *T.Whitlegge s.n.* (NSW). Tas.: Mt Anne, *J.R.Croft 10198* (CANB); Adamsons Peak, *D.H.Norris 27049* (CANB).

Sporophytes are uncommon, and the relevant characters in the foregoing description are based on a single specimen. Many authors have suggested that var. *aristatum* is the only variety occurring in Australia, and that var. *pennatum* is absent. I agree with this view.

Doubtful Species

Rhizogonium alpestre Müll.Hal., *Hedwigia* 36: 333 (1897)

The original and rather vague description by Müller is the only known report of this species. Watts & Whitelegge (*J. Linn. Soc. New South Wales* 30 (Suppl.): 146, 1906) suggested that it might belong in *Porotrichum*. The type specimen (formerly in B, and probably destroyed during the Second World War) was collected from Mt Wellington, Tas., but this moss has not been found since.