

RHAPHIDORRHYNCHIUM

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Rhaphidorrhynchium Besch. ex M.Fleisch.], *Musc. Buitenzorg*. 4: 1245 (1923); from the Greek *rhaphis* (a needle) and *rhynchos* (a nose or beak), in reference to the long narrow rostrum on the operculum.

Type: *R. aurescens* (A.Jaeger) Besch. ex M.Fleisch.

Autoicous, rarely dioicous. Plants slender to coarse, glossy. Stems creeping, irregularly to pinnately branched, forming low tufts; branches irregularly arranged. Leaves strongly flexuose or falcate-secund when dry, lanceolate, long-acuminate, ecostate; margins entire or distantly serrulate. Laminal cells in the distal one-third of the leaf narrowly elongate-linear [L:W > 8:1], thick-walled, porose, smooth or obscurely papillose; alar region with row of 3 or 4 erect thin- to thick-walled cells that are slightly to moderately swollen.

Perichaetia inconspicuous, on stems; inner perichaetial leaves ovate-lanceolate; apex long-filiform. Seta elongate, red. Capsule inclined, ovoid-cylindrical; exothecial cells usually round, strongly collenchymatous; operculum with a swollen base and a filiform rostrum. Peristome double; exostome teeth 16, broadly lanceolate, cross-striate with widely extending lamellae, incurved between endostome segments when dry; endostome segments 16, the same length as exostome teeth, with a broad basal membrane, keeled; cilia 1 or 2, often shorter than the segments. Spores small to moderately large.

In Australia, *Rhaphidorrhynchium* is morphologically distinct from *Sematophyllum* and similar genera (see Ramsay *et al.*, 2004), being characterised by differences in leaf arrangement. Thus, *Rhaphidorrhynchium* has strongly flexuose or falcate-secund leaves, and *Sematophyllum* has appressed to erect-spreading leaves that can be secund or flexuose, but which are not strongly falcate when dry. More significantly, the laminal cells in the distal one-third of the leaf and, especially, in the long leaf acumen, are particularly diagnostic. In *Rhaphidorrhynchium* they are narrowly elongate-linear, whereas in most *Sematophyllum* species they are rhomboid, oval-oblong or fusiform to shortly elongate. Furthermore, the exothecial cells are strongly collenchymatous in *Rhaphidorrhynchium* but subcollenchymatous in *Sematophyllum*, i.e. with thickened longitudinal walls. According to Ramsay *et al.* (2004) *Rhaphidorrhynchium* is more closely related to *Warburgiella* than *Sematophyllum*. However, *Warburgiella* differs in having non-collenchymatous exothecial cells and sheathing perichaetial leaves.

Rhaphidorrhynchium includes about 60 species there are scattered in South America, Africa, India, Malesia and East Asia. One species and an additional variety are known from Australia.

Reference

Ramsay, H.P., Schofield, W.B. & Tan, B.C. (2004), The family Sematophyllaceae (Bryopsida) in Australia. Part 2. *Acroporium*, *Clastobryum*, *Macrohymenium*, *Meiotheciella*, *Meiothecium*, *Papillidiopsis*, *Radulina*, *Rhaphidorrhynchium*, *Trichosteleum*, *Warburgiella*, *J. Hattori Bot. Lab.* 95: 1–69.

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Cite as: H.P.Ramsay, *Australian Mosses Online. 1. Sematophyllaceae: Rhaphidorrhynchium*. http://www.anbg.gov.au/abrs/Mosses_Online/Semat_Rhaphidorrhynchium.pdf (2012)

Rhaphidorrhynchium amoenum (Hedw.) M.Fleisch., *Musc. Buitenzorg* 4: 1249 (1923)

Hypnum amoenum Hedw., *Spec. Musc.* 292 (1801); *Sematophyllum amoenum* (Hedw.) Mitt., *J. Linn. Soc., Bot.* 12: 487 (1869); *Rhaphidostegium amoenum* (Hedw.) A.Jaeger, *Ber. Tatig. St Gallischen Naturwiss. Ges.* 1876–77: 400 (1878) [Ad. 2:466]. T: Fuegia [Tierra del Fuego, Argentina]; *n.v.*

Hypnum cyparioides Brid., *Musc. Recent.* 2(2): 138 (1801); *Stereodon cyparioides* (Brid.) Mitt., *J. Linn. Soc., Bot.* 4: 87 (1860); *Rhaphidorrhynchium cyparioides* (Brid.) Broth., *Nat. Pflanzenfam.*, 2nd edn, 11: 427 (1925). T: Tas., *Stuart & Gunn*; holo: BM (Wilson).

Rhaphidostegium calliferum Geh. & Hampe, *Rev. Bryol. Lichénol.* 8: 27 (1881); *Rhaphidorrhynchium calliferum* (Geh. & Hampe) M.Fleisch., *Musc. Buitenzorg* 4: 1248 (1923); *Sematophyllum calliferum* (Geh. & Hampe) Broth. ex Dixon, *Proc. Roy. Soc. Queensland* 53: 38 (1941). T: Mt Wellington, Tas.; iso: HO.

Hypnum callidioides Müll.Hal., *Linnaea* 28: 213 (1856); *Rhaphidostegium callidioides* (Müll.Hal.) A.Jaeger, *Ber. Thätigk. St. Gallischen Naturwiss. Ges.* 1876–77: 404 (1878) [Ad. 2:470]; *Rhaphidorrhynchium callidioides* (Müll.Hal.) Broth., *Nat. Pflanzenfam.*, 2nd edn, 11: 427 (1925). T: Sealers Cove, Vic., *F.Mueller*; holo: BM (Hampe) *n.v.*; iso: MEL.

Autoicous; perigonia gemmiferous. Plants small, slender, forming dense low yellow-brown to yellow-green tufts. Stems 1–5 cm long, richly subpinnately branched; branches 5–10 mm long, obtuse. Leaves ovate-lanceolate, concave, narrowed to the long filiform channelled apex, 1.0–1.5 mm long, 0.3–0.4 mm wide, crowded, decurved and falcate or circinate, frequently secund; margins plane, entire or serrulate in the acumen. Laminal cells 45–75 × 4–7 µm, linear, with acute thick-walled apices; alar region with a basal row of 3 or 4 large oblong colourless inflated cells, the outermost cell thin-walled; supra-alar cells few, subquadrate, with uniformly thick walls.

Perichaetial leaves ovate to ovate-lanceolate, long-acuminate or piliferous, serrate towards the apex. Calyptra smooth, cucullate. Seta 5–15 mm long, smooth, twisted to the left. Capsule 0.80–1.25 mm long, ovoid to cylindrical, horizontal or ±pendulous, often basally truncate; annulus absent. Peristome with exostome teeth having projecting papillose trabeculae on the inner surface; endostome segments lightly papillose; basal membrane of medium height; cilium 1. Spores 8–14 µm, smooth, green. *n* = 11, 22, *vide* H.P.Ramsay, *Taxon* 16: 560 (1967).

While this species has the appearance of a small, slender *Hypnum*, the inflated alar cells are particularly distinctive and are not present in *Hypnum*. *Hypnum cyparioides* was reduced to a synonym of *R. amoenum* by H.N.Dixon (*Rev. Bryol. Lichénol.* 2: 21–29, 1929), and the numerous Tasmanian collections of *H. cyparioides* in BM, collected by Stuart and Gunn, confirm their conspecificity (Ramsay *et al.*, 2004).

Many collections previously named *R. amoenum* are, in fact, referable to *Warburgiella*. Whereas the former has strongly collenchymatous exothecial cells and non-sheathing perichaetial leaves with a long-acuminate, filiform apices, *Warburgiella* has semi-collenchymatous exothecial cells and sheathing inner perichaetial leaves with an abruptly acuminate or contracted cuspidate apex.

Two varieties are recognised in Australia.

Perichaetial leaves long-acuminate, strongly denticulate distally var. **amoenum**
Perichaetial leaves acute and nearly entire var. **congruens**

a. Rhaphidorrhynchium amoenum var. **amoenum**

Illustrations: J.Beever, K.Allison & J.Child, *Mosses of New Zealand* 149, fig. 81a–g; pl. 49, 50 (1992), as *Sematophyllum amoenum*; W.R.Buck, D.H.Vitt & W.M.Malcolm, *Key to the Genera of Australian Mosses* 30 (2002); D.Meagher & B.Fuhrer, *A Field Guide to the Mosses and Allied Plants of Southern Australia* 79 (2003); H.P.Ramsay, W.B.Schofield & B.C.Tan, *J. Hattori Bot. Lab.* 95: 39, fig. 17 (2004).

Most Australian collections of *R. amoenum* are referable to the type variety var. *amoenum* which is widely distributed. The principal differences between this and var. *congruens* are in the perichaetial leaves.

Common and variable in southern Chile, Argentina, New Zealand and Australia (southern W.A., Qld, N.S.W., A.C.T., Vic. and Tas.); it grows on rotting logs, occasionally on rock in wet forests.

W.A.: Beedelup, *R. Wyatt* 3785 (PERTH); The Cascades, *H. Streimann* 54235 (PERTH). Qld: logging road from Kennedy Rd to Mt Lewis, *B.C. Tan* 94-75, *E.A. Brown* & *R.G. Coveny* (FH, NSW). N.S.W.: Bago S.F., SSW of Batlow, *H. Streimann* 35052 (CANB, HO); Yarrangobilly, *W.W. Watts* 8613, 8623 (NSW). A.C.T.: Tidbinbilla, 10 June 1992, *R.G. Coveny* (NSW). Vic.: Mount Wombelano Falls, Kinglake Natl Park, *A.W. Thies FN1480G* (MEL); Kallista, 1 May 1949, *H.T. Clifford* (MEL); Mt Eccles *A.C. Beauglehole* 3070 (MEL). Tas.: The Springs, Mt Wellington, *W.A. Weymouth* 169 (HO); Cradle Mtn, *A.V. Ratkovsky H426* (HO); Deal Is., Bass Str., *J.S. Whinray s.n.* (MEL).

b. *Rhaphidorrhynchium amoenum* var. *congruens* (Hampe) B.C.Tan, W.B.Schofield & H.P.Ramsay, *Nova Hedwigia* 67: 218 (1998)

Hypnum congruens Hampe, *Linnaea* 30: 643 (1860); *Rhaphidostegium congruens* (Hampe) A.Jaeger, *Ber. Thätigk. St. Gallischen Naturwiss. Ges.* 1876-77: 395 (1878); *Rhaphidorrhynchium congruens* (Hampe) Broth., *Nat. Pflanzenfam.*, 2nd edn, 11: 427 (1925); *Rhynchostegium congruens* (Hampe) Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 89 (1882). T: Victoria Ranges, Vic., *F. Mueller*; holo: BM.

Illustration: H.P.Ramsay, W.B.Schofield & B.C.Tan, *op. cit.* 39, fig. 17e, f (2004).

The type of var. *congruens* is more robust than that of *R. amoenum*. Moreover, it is similar to the type variety in most gametophytic and sporophytic attributes except for the perichaetial leaves. Thus, in var. *amoenum*, the perichaetial leaf apices are gradually long-acuminate to piliferous and strongly denticulate distally, whereas the perichaetial leaf apices of var. *congruens* are shortly acute and nearly entire. There are very few specimens of the latter, and this complicates taxonomic interpretation of these morphological differences.

Only two specimens of this endemic variety are known, from Vic. and Tas., and it has not been collected in the last 100 years.

Tas.: locality unknown, *W.A. Weymouth* 2900 (HO).