CYATHOPHORUM

Hans (J.D.) Kruijer[1]

Cyathophorum P.Beauv., *Mag. Encycl.* 9, 5: 324 (1804); from the Greek *κυαθος* (*cyathos*, a cup) and *φορεω* (*phoreo*, to bear), in reference to the vaginula.

Hookeria Sm. sect. *Cyathophorum* (P.Beauv.) Arn., *Disp. Méth. Mousses* (preprint) 56 (1825 [1826?]); *Mém. Soc. Hist. Nat. Paris*, sér. 2, 2: 305 (1826); *Cyathophorum* P.Beauv. sect. *Eu-Cyathophorum* Broth., *Nat. Pflanzenfam.* I, 3: 966 (1907); *nom. illeg. pro Cyathophorum* P.Beauv. sect. *Cyathophorum*; *Cyathophonum* P.Beauv. ex Brid., *Muscol. Recent.*, Suppl. 4: 149 ('1819') [1818], *nom. inval., err. pro Cyathophorum* P.Beauv. T: *Cyathophorum pteridioides* P.Beauv., *nom. illeg. incl. spec. prior.* [*Anictangium bulbosum* Hedw.].

Stems usually simple, occasionally branched or with a few innovations, not differentiated, tomentose at the base and where creeping, terete or quadrangular; rudimentary branches absent; central strand present; axial cavities absent; axillary hairs absent or 4–11-celled. Foliation complanate. Leaves in 3 ranks; apex rounded or acuminate; costa forked or simple; laminal cells prosenchymatous, hexagonal, thin-walled.

Calyptra mitrate, fleshy, pale to dark brown. Setae descending, straight to curved, ochraceous, smooth; base widened. Capsules erect, ochraceous to reddish ochraceous; rostrum straight. Exostome present; endostome at least partly ciliate; basal membrane reaching 33–50% of the exostome.

Cyathophorum comprises seven species in eastern Africa, Indo-Malaysia, warm-temperate parts of China and Japan, Melanesia, southern Polynesia (except New Caledonia), eastern Australia, and New Zealand. Represented in Australia by a single species.

Cyathophorum bulbosum (Hedw.) Müll.Hal., *Syn. Musc. Frond.* 2: 14 (1851)

Anictangium (*nom. rej.*) *bulbosum* Hedw., *Sp. Musc. Frond.* 43, t. 6, figs 1–5 (1801); *Hedwigia bulbosa* (Hedw.) Brid., *J. Bot. (Schrader)* 1: 272 ('1800') [1801]; *Anoectangium* (*nom. cons.*) *bulbosum* (Hedw.) Schwägr., *Sp. Musc. Frond.*, Suppl. 1, 1: 36 (1811); *Cyathophorum pteridioides* P.Beauv., *Mag. Encycl.* 9, 5: 324 (1804), *nom. illeg. incl. spec. prior.* [*Anictangium bulbosum* Hedw.]. T: "Insulae Australes", *collector unknown* (absent from the Hedwig-Schwägrichen herbarium in G, not located elsewhere); lecto: The illustrations in Hedwig (1801), *fide* J.D.Kruijer, *Blumea*, Suppl. 13: 24, 295 (2002).

Leskea pennata Labill., *Nov. Holl. Pl.* 2, 26: 106, t. 253, fig. 1 ('1806') [1807]; *Hookeria pennata* (Labill.) Sm., *Trans. Linn. Soc. London* 9: 277 (1808), *nom. illeg. incl. spec. prior.* [*Anictangium bulbosum* Hedw.]; *Pterigophyllum pennatum* (Labill.) Brid., *Muscol. Recent.*, Suppl. 4: 151 ('1819') [1818], *nom. illeg. incl. spec. prior.* [*Anictangium bulbosum* Hedw.]; *Cyathophorum pennatum* (Labill.) Brid., *Bryol. Univ.* 2: 722 (1827), *nom. illeg. incl. spec. prior.* [*Anictangium bulbosum* Hedw.]; *Hypnum pennatum* (Labill.) Poir., *in* Steudel, *Nomencl. Bot.* 2: 201 (1824), *nom. nud.* (in synon.) [*Hookeria pennata* (Labill.) Sm.]. T: "in capite van Diemen", [Tas.], *J.-J.H. de Labillardière*; type material not seen with certainty: BM?, FI?

Hookeria pennata (Labill.) Sm. var. *minor* Wilson & Hook.f., *in* J.D.Hooker & W.Wilson, *Fl. Antarct.* 1: 143, t. 62, fig. 3 (1844); *Cyathophorum pennatum* (Labill.) Brid. var. *minus* (Wilson & Hook.f.) Wilson, *in* J.D.Hooker, *Fl. Nov.-Zel.* 2: 120 ('1855') [1854]; *Cyathophorum bulbosum* (Hedw.) Müll.Hal. var. *minus* (Wilson & Hook.f.) Paris, *Index Bryol.* 294 (1894); *Cyathophorum pennatum* (Labill.) Brid. f. *minus* (Wilson & Hook.f.) Brizi, *Atti Reale Accad. Lincei, Rendicanti Cl. Sci. Fis.*, Ser. 5, 2: 103 (1893), as *minor*, *nom. nud.*; *Ann. Reale Ist. Bot. Roma* 6: 352 (1897), as *minor*; *Cyathophorum minus* (Wilson & Hook.f.) M.Fleisch., *Musc. Buitenzorg* 3: 1097 (1908), *nom. illeg. incl. spec. prior.* [*Cyathophorum densirete* Broth.]. T: "Lord Auckland's Islands" [Auckland Is.], *Antarct. Exp. 1839–43, J.D.Hooker s.n.*; holo: BM (sub *W 86.b*); iso: BR, FH, L, NY.

Cyathophorum densirete Broth., *Oefvers. Förh. Finska Vetensk.-Soc.* 35: 51 (1893), as *Cyatophorum*. T: South Road Forest, Circular Head, Tas., 21 Apr. 1892, *W.A.Weymouth 862*; holo: H *n.v.*; iso: BM, JE, NY.

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Illustrations: B. & N.Malcolm, *Mosses and other Bryophytes* 10, 37, 71, 152, 203 (2000); J.D.Kruijer, *Blumea*, Suppl. 13: 50, pl. 3D; 298, fig. 46; 306, fig. 48B; 308, fig. 49B (2002); W.R.Buck, D.H.Vitt & W.M.Malcolm, *Key to the Genera of Australian Mosses* 36 (2002).

Dioicous. Plants occasionally gemmiferous. Stems to 6 (–12) cm tall, usually quadrangular in section, occasionally weakly terete; terminal cell of axillary hairs ±rectangular, elongate to linear, 55–95 × 8–15 µm, smooth. Leaves dull or glossy; margin usually serrate-dentate, rarely ciliate; teeth 1–7-celled, to 150 (–400) µm long; border absent or interrupted; costa reaching 16–50% of lamina length; laminal cells 45–205 × 20–50 µm. Lateral leaves ovate to lanceolate, 3.0–10.5 mm long, 1–4 mm wide; amphigastria round to oblong, 1–4 mm long, 0.5–4.0 mm wide.

Calyptra 0.4–0.6 mm long. Setae 0.8–3.0 mm long. Capsules subglobose to ellipsoidal, 1.2–2.3 mm long, 1.0–1.3 mm wide; operculum long-rostrate, 0.8 mm long. OPL: PPL: IPL = 4: 2: 4–8(–10)c. Exostome teeth 290–510 µm long, 70–140 µm wide. Spores 10–25 µm. $n = 5$, based on material from Vic. and New Zealand, *fide* H.P.Ramsay, *in* A.Löve, *Taxon* 16: 559 (1967); M.E.Newton, *J. Bryol.* 7: 399, 400 (1973); H.P.Ramsay, *Austral. J. Bot.* 22: 327, 328 (1974).

Occurs in Qld, N.S.W., Vic., Tas. and south-eastern S.A. at elevations up to 1670 m; also in Papua New Guinea, New Zealand, Auckland Is., Chatham Is., Lord Howe Is. and perhaps on Norfolk Is. and New Ireland. Grows on soil, rock (basalt, sandstone, granite and limestone), rotting logs or stem bases and the trunks of trees and tree ferns; less often on branches of trees, rarely found submerged in streams near the water-line, in forests and fern thickets, frequently in moist, shaded places, especially in gullies and near streams.

S.A.: Mt Gambier, *F.Mueller s.n.* (MEL). Qld: Mt Bellenden Ker, *H.Streimann 27380* (CANB). N.S.W.: Nadgee State Forest, *H.Streimann 38062* (CANB). Vic.: Mount Napier State Park, *A.C.Beauglehole 3881* (MEL). Tas.: Tasman Penin., 3 Feb. 1899, *W.A.Weymouth s.n.* (CANB, NY).

Most plants are shorter than 6 cm; larger ones are known from Vic. and Tas., and plants more than 7.5 cm in length were found only in Vic. Plants from Qld lack gemmae and have leaves that are predominantly set with unicellular teeth, while southern specimens are occasionally gemmiferous and show a predominance of multicellular teeth at their leaf margins. In all areas most stems are simple, but undamaged, branched stems do occur and may be found more frequently in nature than are known from herbarium material. Damaged stems frequently have a few innovations, and those growing in particularly wet conditions are occasionally dark olive-green. The axillary hairs are especially difficult to observe and, in addition, they are often damaged or lost.

Fruiting specimens were frequently found in Vic. and Tas., but these are uncommon elsewhere in Australia.

Labillardière (*loc. cit.*) and Palisot de Beauvois (*Mém. Soc. Linn. Paris* 1: pl. 8, fig. 6, 1822) depicted completely non-ciliate endostomes of *Cyathophorum bulbosum*. However, the endostomes are usually entirely ciliate, although partly non-ciliate endostomes are sometimes seen.

Doubtful Records

Canalohypopterygium tamariscinum (Hedw.) Kruijer, *Lindbergia* 20: 87 (1996)

Leskea tamariscina Hedw., *Sp. Musc. Frond.* 212, t. 51, figs 1–7 (1801). T: "Insulae Australes & Jamaica" (Jamaican material excluded), unknown collector (absent from the Hedwig-Schwägrichen herbarium in G, not located elsewhere); lecto: The illustrations in Hedwig (1801), *fide* H.Kruijer, *Lindbergia* 20: 85–88 (1996).

Hypnum setigerum P.Beauv., *Prodr.* 70 (1805); *Hypopterygium setigerum* (P.Beauv.) Wilson, *in* J.D.Hooker, *Fl. Nov.-Zel.* 2: 118 ('1855') [1854], *nom. illeg. incl. spec. prior.* (*Leskea tamariscina*), *fide* H.Kruijer, *Lindbergia* 20: 85–88 (1996).

Hypopterygium commutatum Müll.Hal., *Syn. Musc. Frond.* 2: 6 (1850), *nom. illeg. incl. spec. prior.*; *Canalohypopterygium commutatum* (Müll.Hal.) Frey & Schaepe, *J. Hattori Bot. Lab.* 66: 269 (1989), *nom. illeg. incl. spec. prior.* (*Leskea tamariscina*), *fide* H.Kruijer, *Lindbergia* 20: 85–86 (1996).

Reported for mainland Australia and Tasmania by Sainsbury (1955, as *Hypopterygium setigerum*), but almost certainly endemic to New Zealand. G.A.M.Scott & I.G.Stone (*The Mosses of Southern Australia* 398, 1976, as *H. commutatum*) found no records of *C. tamariscinum* for Australia, likewise Kruijer (2002). The few herbarium specimens of *C. tamariscinum* said to come from Australia or Tasmania proved to be misidentified or are almost certainly mislabelled.

Catharomnion ciliatum (Hedw.) Wilson, *in* J.D.Hooker, *Fl. Nov.-Zel.* 2: 119 ('1855') [1854]

Pterigynandrum ciliatum Hedw., *Sp. Musc. Frond.* 84, t. 17, figs 7–13 (1801). T: "Insulae Australes", unknown collector (absent from the Hedwig-Schwägrichen herbarium in G, not located elsewhere); lecto: The illustrations in Hedwig (1801), *fide* J.D.Kruijer, *Blumea* Suppl. 13: 131 (2002).

Reported from mainland Australia and Tasmania, but almost certainly confined to New Zealand and Chatham Is. Rodway (1914) and Sainsbury (*Pap. & Proc. Roy. Soc. Tasmania* 90: 37, 1956) suggested that the Tasmanian record was erroneous. Kruijer (2002) suggested that Tasmanian records made by various authors in the Australian and New Zealand literature were based on almost certainly mislabelled material gathered by R.C.Gunn. Gunn's collections are the only ones that are indicated to come from Tasmania, and they probably originated in New Zealand.

Hampe (in F.Mueller, *Fragm.* 11 (Suppl.): 52, 1880) reported the species from mainland Australia based on collections made by F.Mueller, but these collections were not found (Kruijer, 2002).

Dendrohypopterygium filiculiforme (Hedw.) Kruijer, *Blumea*, Suppl. 13: 105 (2002)

Leskea filiculiformis Hedw., *Sp. Musc. Frond.* 212, t. 50, figs 1–5 (1801), as *filiculaeformis*; *Hypopterygium filiculiforme* (Hedw.) Brid., *Bryol. Univ.* 2: 712 (1827). T: "Insulae Australes", *collector unknown* (absent from the Hedwig-Schwägrichen herbarium in G); lecto: the illustrations in Hedwig (1801), *fide* J.D.Kruijer, *Blumea*, Suppl. 13: 24, 105 (2002).

This moss has not been reported from Australia in the literature, and it is almost certainly endemic to New Zealand. The few specimens that are labelled as coming from Australia (and Norfolk Is.) are presumed to have been mislabelled (Kruijer, 2002). Four specimens in BM collected by Ludwig Leichardt are labelled "Australia & New Zealand", but they were probably collected in New Zealand.