

HOLOMITRIUM

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Holomitrium Brid., *Bryol. Univ.* 1: 226 (1826), *orth. cons.*; from the Greek *holos* (complete) and *mitrion*, the diminutive of *mitra* (a headband, headdress or turban), possibly alluding to the large calyptra that covers the entire capsule.

Type: *H. perichaetiale* (Hook.) Brid.

Pseudoautoicous. Female plants small to medium-sized, growing in turfs. Stems erect to ascending, tomentose, densely foliose; central strand present; flagelliferous branches occasionally present. Leaves falcate-secund to erecto-patent when moist, not much altered or crispate or spirally contorted when dry, subulate; alar patches single-layered; margin serrate to crenulate, rarely almost entire; border differentiated or not; costa strong, subpercurrent to percurrent, abaxially smooth or with a few apical teeth. Basal laminal cells elongate to linear, thick-walled, pitted; upper laminal cells isodiametric, not pitted.

Perichaetial leaves sheathing or clasping at the base, sometimes overtopping the capsule. Calyptra cucullate. Sporogones solitary or aggregated; capsule exserted, ovoid to cylindrical, straight; stomata present at base of capsule, phaneropore; annulus present. Peristome teeth undivided, fenestrate or irregularly split, densely papillose on the outer surface or on both sides. Spores spherical, finely papillose.

Holomitrium is a medium-sized, mainly tropical genus of perhaps 40 species, although some species occur at temperate latitudes in the Southern Hemisphere. In Australia and New Zealand a single species, *H. perichaetiale*, has been recognised, but recently a second taxon, *H. trichopodum*, was transferred from *Dicranoloma* (Klazenga, 2006) based on molecular and peristome characters.

Species of *Holomitrium* are recognised by leaves that are mostly crisped or spirally contorted when dry, conspicuous perichaetia, straight capsules on a comparatively long seta, and entire or fenestrate to irregularly split, papillose peristome teeth.

References

Ramsay, H.P. (1986), Studies on *Holomitrium perichaetiale* (Hook.) Brid. (Dicranaceae: Bryopsida), *Hikobia* 9: 307–314.

Klazenga, N. (2003), A revision of the Australasian species of *Dicranoloma* (Bryophyta, Dicranaceae), *Austral. Syst. Bot.* 16: 427–471.

Klazenga, N. (2006), *Holomitrium trichopodum* (Bryophyta, Dicranaceae), a *Holomitrium* with split peristome teeth from Australia and New Zealand, *J. Hattori Bot. Lab.* 100: 293–303.

Leaves erecto-patent to homomallously curved when moist; distal part curled up when dry **1. H. perichaetiale**
Leaves falcate-secund, not greatly altered when dry..... **2. H. trichopodum**

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1. *Holomitrium perichaetiale* (Hook.) Brid., *Bryol. Univ.* 1: 227 (1826)

Trichostomum perichaetiale Hook., *Musci Exot.* 1: 73 (1818); *Sprucea perichaetialis* (Hook.) Hook.f. & Wilson, *Fl. Antarct.* 1: 128 (1844); *Symblepharis perichaetialis* (Hook.) Wilson, in J.D.Hooker, *Fl. Nov.-Zel.* 2: 60 (1854). T: Dusky Bay, [South Island], New Zealand, 1791, A.Menzies; holo: BM.

Holomitrium muelleri Hampe, *Linnaea* 36: 514 (1870). T: Rockingham Bay, Qld, F.Mueller; holo: BM.

Sclerodontium fraseri Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 54 (1882); *Leucoloma fraseri* (Mitt.) Kindb., *Enum. Bryin. Exot.* 92 (1889); *Dicnemoloma fraseri* (Mitt.) Renauld, *Essai Leucoloma* 44 (1909). T: *s. loc.*, N.S.W., Fraser; syn: NY; Paramatta, N.S.W., W.Woolfs; syn: NY.

Holomitrium hodgkinsoniae Müll.Hal., *Hedwigia* 36: 364 (1897). T: Richmond River, N.S.W., 1879, Miss Hodgkinson; holo: B, destroyed.

Holomitrium hodgkinsoniae var. *virescens* Müll.Hal., *Hedwigia* 36: 365 (1897). T: Greenwich, Sydney, N.S.W., June 1884, T.Whitelegge; holo: B, destroyed.

Illustrations: H.Streimann, *The Mosses of Norfolk Island* 55, fig. 23 (2002); D.Meagher & B.Fuhrer, *A Field Guide to the Mosses and Allied Plants of Southern Australia* 157 (2003).

Plants 1–2 cm tall, green above, brown below, forming rough mats or short turfs. Stems creeping, with ascending upper parts, frequently branched when creeping; flagelliform branches occasionally present. Leaves erecto-patent to homomallously curved, the tips curled up when dry, subulate above the obovate basal part, 3.9–4.8 mm long, 0.6–1.0 mm wide, canaliculate, smooth; margin entire throughout or serrulate at the leaf shoulder, double-layered in the subula; border lacking; costa subpercurrent, abaxially smooth throughout or with a few minute teeth at the extreme apex; guide cells 7–9, with 2 layers of stereids on either side, adaxial and abaxial epidermis differentiated, consisting of cells with distinct lumina except at the base. Upper laminal cells conspicuously shorter than basal ones, oblate to isodiametric, rounded, 6–12 (–15) µm long, not pitted.

Perichaetial leaves subulate above the long sheathing basal part. Sporogones solitary; seta 13–26 mm long; capsules ovoid to ellipsoidal; peristome teeth entire to irregularly split or fenestrate, split to the base, very fragile. *n* = 10, *fide* H.P.Ramsay, *Hikobia* 9: 312 (1986).

Occurs in eastern Qld and N.S.W, eastern Vic. and Tas. in wet to dry forest or woodland, and on rock outcrops, tree and treefern trunks, and a canopy epiphyte in tropical rainforest. Also known from Lord Howe Island, Norfolk Island and New Zealand.

Holomitrium perichaetiale can be distinguished from other mosses with spirally contorted leaves by its larger stature, and by the double-layered margin in the upper part of the leaves.

2. *Holomitrium trichopodum* (Mitt.) Klazenga, *J. Hattori Bot. Lab.* 100: 301 (2006)

Dicranum trichopodum Mitt., in J.D.Hooker, *Handb. New Zealand Fl.* 2: 411 (1867); *Dicranoloma trichopodum* (Mitt.) Broth., in H.G.A.Engler & K.A.E.Prantl, *Nat. Pflanzenfam.*, 2nd edn, 11: 209 (1924). T: Otago, South Island, New Zealand, *Hector & Buchanan*; holo: NY.

Illustration: N.Klazenga, *op. cit.* 466, fig. 29a–h (2003), as *Dicranoloma trichopodum*.

Plants to c. 5 cm tall, light green. Stems erect, simple to sparingly branched; asexual propagules absent. Leaves falcate-secund, ovate-linear, gradually long-acuminate, 4.0–11.2 mm long, 0.4–1.1 mm wide, canaliculate, smooth; margin serrulate at the extreme apex or in the distal 20%, crenulate or entire below in upper 50–75%, entire below; border consisting of 1–4 cell rows, reaching 20–33% of the leaf length; costa excurrent, abaxially smooth throughout or with a few minute teeth at the extreme apex; guide cells 7–14, with (1–) 2 or 3 layers of stereids on either side; abaxial epidermis differentiated, consisting of cells with distinct lumina, in the distal part of the leaf. Upper laminal cells conspicuously shorter than basal ones, isodiametric to oblong, rectangular to irregularly shaped, 10–35 µm long, not pitted.

Innermost perichaetial leaf abruptly contracted into a long subula. Sporogones solitary; seta 20–39 mm long; capsules straight; annulus persistent; peristome teeth split to the base, very fragile.

Occurs in western Tas., in wet forest, usually quite high on tree trunks. Also in New Zealand.

Tas.: Hartz Mountains Rd, Arve R. area, W of Geeveston, *P.J.Brownsey M26063b* (HO); near Pelion Plains, Cradle Mountain-Lake St. Clair Natl Park, *S.J.Jarman s.n.* (HO 513156); Red Knoll, 0.5 km W of Scotts Peak Dam, Southwest Natl Park, *A.Moscal 28138A* (HO).

When not bearing sporogones, *H. trichopodum* is very difficult to distinguish from *Dicranoloma menziesii*. The most reliable gametophytic characters are probably the narrower leaves and the smooth costa of *H. trichopodum*, which may have only a few small teeth at the extreme apex, while *D. menziesii* has small scattered teeth in the distal quarter or more of the costa. In contrast, the two species are readily distinguished in the presence of sporogones.

The gametophore of *H. trichopodum* does not fit well in *Holomitrium*, because the leaves are not at all spirally contorted when dry, being more similar to a *Dicranoloma* gametophore. However, sporogone characters, supported by DNA sequences, clearly place it in this genus.

Holomitrium austro-alpinum E.B.Bartram from New Guinea also has stiff leaves that are not much altered when dry.

Excluded Name

Holomitrium dietrichiae Müll.Hal., *Linnaea* 37: 149 (1872)

T: Brisbane R., Qld, 1864, *A.Dietrich*; holo: B (destroyed).

The type was destroyed together with the rest of Müller's herbarium in the conflagration of the Berlin herbarium during the Second World War. No isotypes have been located.