

CLASTOBRYUM

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Clastobryum Dozy & Molk., *Musc. Frond. Ined. Archip. Ind.* 41 (1846); from the Greek *klastos* (broken) and *bryon* (a moss), alluding to the fragility of the generitype.

Lecto: *C. indicum* (Dozy & Molk.) Dozy & Molk.

Clastobryella M.Fleisch., *Musc. Buitenzorg* 4: 1193 (1923). T: not designated.

Tristichella Dixon, *Ann. Bryol.* 5: 44 (1932). T: *T. spiculifera* Dixon [= *Clastobryum spiculiferum* (Dixon) B.C.Tan, Z.Iwats. & D.H.Norris]

Dioicous. Plants slender, forming glossy golden-green (occasionally reddish brown) turfs. Main stem long, creeping, pinnate, with closely arranged erect to ascending terete or complanate pinnate branches, occasionally long and flagellate. Rhizoids short, clustered, red, smooth to papillose. Stem leaves concave, narrowly elongate, with an acute apex, or ovate-lanceolate and long-acuminate. Branch leaves occasionally ranked, sometimes tristichous, small, narrowly ovate-lanceolate, acuminate; base \pm decurent; costa absent or very short and double. Laminal cells narrowly elongate, rhomboid-linear, smooth or weakly papillose; alar region with 1 row of subquadrate basal cells, swollen, thick-walled and mostly coloured. Gemmae on branch tips or in upper axils of upper leaves, filiform, unbranched, somewhat papillose.

Perigonia and perichaetia on stems; inner perichaetial leaves lanceolate, contracted to a long denticulate point. Seta slender, long, purple, smooth or papillose above. Capsules erect, elongate-ovoid; operculum short, curved-rostrate; annulus absent. Peristome double, exostome and endostome alternate; exostome teeth 8 or 16, close together when dry, lanceolate, smooth, with low lamellae; endostome segments stellate, stretched over the mouth, filamentous, with a tendency to complete suppression. Spores irregular in shape and variable in size. Chromosome numbers not known.

This genus of about ten species is known from Sri Lanka, Malesia, SE Asia, Japan and tropical Australia. Two species are epiphytic on bark or epiphyllous in north-eastern Qld.

A report of *C. conspicuum* M.Fleisch. by Tan *et al.* (1996) was based on the misidentification of a vegetative branch of *Acroporium microcladon* var. *rhizogemmae* (W.B.Schofield 90258, NSW, UBC). The record of an unnamed species of *Clastobryum* in Stone (1982; IGS 16431, IGS 16445 in MEL) is also referable to that moss.

References

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Stone, I.G. (1982), Some new and noteworthy records mostly from Queensland, Australia, *Austrobaileya* 1: 518.

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Tan, B.C. & Iwatsuki, Z. (1992), Lectotypification of *Clastobryum indicum* and *C. conspicuum*, *Hikobia* 11: 147–152.

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Key

Leaves complanate and distinctly tristichous **1. C. dimorphum**
Leaves neither complanate nor tristichous **2. C. epiphyllum**

1. *Clastobryum dimorphum* (I.G.Stone) B.C.Tan, Z.Iwats. & D.H.Norris, in B.C.Tan & Z.Iwatsuki, *Hikobia* 11: 151 (1992)

Tristichella dimorpha I.G.Stone, *J. Bryol.* 14: 691 (1987). T: Mt Bellenden Ker, Qld, 7 Sept. 1980, I.G.Stone 16926; holotype: MEL.

Illustrations: I.G.Stone, *op. cit.* 692, fig. 1; 694, fig. 2; 695, fig. 3 (1987), as *Tristichella*; H.P.Ramsay, *J. Hattori Bot. Lab.* 64: 182, fig. 3a–c (1988), as *Tristichella*; W.R.Buck, D.H.Vitt & W.M.Malcolm, *Key to the Genera of Australian Mosses* 14 (2001); H.P.Ramsay, W.B.Schofield & B.C.Tan, *J. Hattori Bot. Lab.* 95: 14, fig. 5; 17, fig. 7 (2004).

Dioicous; male plants c. 1 cm long; female plants to 3 cm long. Plants prostrate, glossy, pale green to reddish gold. Branches of two types: short, tristichous, numerous, 2.5–5.0 mm long, c. 1.5 mm wide, irregularly pinnate, ascending, often penicillate at the apex; longer flagelliform branches 3–6 mm long and 1.3–1.5 mm wide, tapering and flexuose, becoming filiform at the apex, arising either from the stem or the apices of short tristichous branches. Stem and branch leaves dissimilar, ecostate. Stem leaves sparse and scale-like, 0.3–0.6 mm long, concave, tapered to abruptly acuminate, appressed to the stem; margin serrate; alar cells not usually swollen. Branch leaves 0.8–1.5 mm long (including acumen), 0.20–0.25 mm wide, markedly concave, mostly cymbiform, equitant and often imbricate, abruptly narrowed to a serrate acumen usually with a twist, and tapered to a long fine point, tristichous. Laminal cells of branch leaves narrow, linear-rhomboidal, occasionally sigmoid or flexuose, thick-walled, 70–90 × 3–5 µm, shorter above and at the base, occasionally porose-sinuose; alar region with 3 or 4 swollen thick-walled pale to reddish gold basal cells, often curved, sausage-shaped and prominent; upper alar cells 2 or 3, smaller, irregularly quadrate to short-rectangular. Leaves of flagelliform shoots 1.4–1.8 mm long, occasionally arranged in more than 3 rows and distantly spaced, suberect to erect and appressed at the apex, lanceolate, concave, occasionally cymbiform, abruptly contracted at the base to a long piliferous point, flexuose and coarsely toothed; alar cells either not differentiated or similar to those of branch leaves; margin distantly serrate. Gemmae filamentous, unbranched, to 200 µm, in clusters between upper leaves, mostly on flagelliform shoots, 7–10 cells long, papillose for most of their length, golden.

Perigonia bud-like, on stems and branches. Perichaetia borne on main stems basally or laterally on a branch. Perichaetial leaves often reddish gold, in patches to 2 mm long; margins serrate to denticulate; upper perichaetial leaves with a sheath-like base, piliferous, with denticulate projections and cristate marginal cells, contracted at the apex to a long denticulate point. Calyptra c. 3.5 mm long, coiled, split, clasping the seta below the capsule. Seta reddish gold, 7–12 mm long, twisted counter-clockwise above, ±smooth below. Capsules ovoid, 1.25–1.80 mm long, with a short neck, constricted below the mouth when dry; exothelial cells irregularly rectangular with thickened radial walls, smaller and flatter at the rim; operculum conical, with a short oblique blunt rostrum. Exostome teeth 8, whitish, c. 200 µm long, 65–70 µm wide at the base, usually curled back when dry, incurved when wet, with scattered papillae on plates and projecting trabeculae; endostome consisting of a low basal membrane with 8 narrow papillose segments to c. 100 µm high, erect when dry; cilium 1. Spores 12–27 µm diam., papillose, pale reddish brown.

Endemic to north-eastern Qld; epiphytic on the twigs and branches of shrubs and trees in montane forest above 1200 m.

Qld: S slopes of Mt Bartle Frere, *B.O. van Zanten* 68.1523, 68.1515 (GRO, NSW); Mt Bellenden Ker, *I.G.Stone* 15561, 15564, 15566 (MEL); Thornton Peak, *P.Phillips & M.Goodwin s.n.* (MEL); Mt Lewis, *I.G.Stone* 19555 (MEL); Mt Bellenden Ker, *D.H.Vitt* 27927, 27889 & *H.P.Ramsay* (NSW); Mt Bellenden Ker, *W.B.Schofield* 90227, 90242 & *M.I.Schofield* (NSW, UBC).

Clastobryum dimorphum is unlikely to be confused with other Pylaisiadelphaceae. It is characterised by the short branches with regularly tristichous, subequitant, cymbiform leaves, their apices abruptly contracted to a point. Long filamentous branches are often present, but these can be absent in young plants. Smooth, filamentous, unbranched gemmae often occur in upper leaf axils.

2. *Clastobryum epiphyllum* (Renauld & Cardot) B.C.Tan & Touw, *J. Hattori Bot. Lab.* 70: 93 (1991)

Trichosteleum epiphyllum Renauld & Cardot, *Rev. Bryol.* 23: 106 (1896); *Clastobryella epiphylla* (Renauld & Cardot) M.Fleisch., *Musc. Buitenzorg* 4: 1197 (1923). T: Tjibodas, Java, [Indonesia], *J.Massart* 1349 p.p.; holo: L; iso: FH.

Illustration: H.P.Ramsay, W.B.Schofield & B.C.Tan, *J. Hattori Bot. Lab.* 95: 15, fig. 6i–p (2004).

Plants small, delicate. Stems prostrate, 4–5 cm long, with erect branches 2–3 mm long. Branch leaves crowded, somewhat ranked, to 1 mm long, bluntly acute; upper margins serrulate. Laminal cells fusiform to elongate, 40–50 × 4–5 µm, unipapillose, thin- to thick-walled; alar region with a basal row of enlarged rectangular thick-walled reddish brown cells; a few irregular supra-alar cells present. Gemmae filamentous, unbranched, 150–200 µm long, clustered on the stems, 15–20 cells long; walls faintly papillose, almost smooth.

Perichaetia and sporophytes not known from Australian collections. Seta c. 10 mm long, erect, smooth below, papillose above. Capsules small, inclined; mouth slightly narrowed; urn long, ovoid; annulus undifferentiated. Peristome double; exostome teeth papillose, with low lamellae; endostome segments narrow, rudimentary. Spores 20–25 µm [M.Fleischer, *Musci Flora. Buitenzorg* 4: 1198, 1923].

Occurs in monsoonal forests in Sri Lanka, Indonesia, Vietnam, the Philippines, and is known from two sterile collections from north-eastern Qld where it is epiphytic on branches and epiphyllous.

Qld: Babinda, *W.W.Watts* Q400 (NSW); Dunn Ck, Kirrima Rd, Cardwell Ra., *H.Streimann* 31253 (CANB).