

## THAMNOBRYUM

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*Thamnobryum* Nieuwl., *Amer. Midl. Naturalist* 5: 50 (1917); from the Greek *thamnos* (a bush or shrub) and *bryon* (a moss), in reference to bush-like habit of these mosses.

Type: *T. alopecurum* (Hedw.) Gangulee

Diocious. Plants small or robust, frondose, forming wefts or dense mats. Primary stem creeping; fronds irregularly pinnate to bipinnate, terete-foliate to strongly complanate, with attenuate to flagelliform tips; central strand absent. Stipe leaves erecto-patent to patent, triangular; basal part occasionally appressed; margin entire; costa broad. Frond axis leaves spirally arranged to subdistichous, erecto-patent, elliptical to ovate, smooth to plicate; apex obtuse to short-acuminate, sometimes apiculate; margin entire below, crenulate or serrate near the apex; costa single and strong, reaching mid-leaf or to just below apex. Laminal cells occasionally thick-walled; upper laminal cells irregularly quadrate to rhomboidal; median cells slightly elongate; basal cells linear. Branch leaves similar but smaller.

Perichaetia and perigonia in leaf axils of frond axes and branches. Calyptra cucullate. Capsules long-exserted, inclined to horizontal, cylindrical; stomata at the base of the capsule, phaneropore; annulus differentiated; operculum rostrate, oblique. Peristome: exostome teeth triangular, the tips hyaline and the outer face with a distinct median zig-zag line, densely horizontally striate below, papillose above; endostome with a high basal membrane; processes gaping at the base, papillose; cilia 2 or 3, papillose. Spores globose, smooth or slightly papillose.

*Thamnobryum* is a genus of 20–30 species with an almost cosmopolitan distribution. It is most diverse in the Old World, and it is represented in Australia by three species.

### References

- Enroth, J. (1989), Bryophyte flora of the Huon Peninsula, Papua New Guinea. XXVII. Neckeraceae (Musci), *Acta Bot. Fenn.* 137: 41–80.
- Stone, I.G. (1982), Some new and noteworthy records of mosses mostly from Queensland, Australia, *Austrobaileya* 1: 511–520.

### Key

- 1 Frond axis leaves spirally arranged; leaves plicate..... **2. T. pandum**
- 1: Frond axis leaves subdistichous; leaves smooth.....2
- 2 Costa ending at or just below the crenulate leaf apex ..... **1. T. ellipticum**
- 2: Costa ending well below the serrate leaf apex..... **3. T. pumilum**

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**1. *Thamnobryum ellipticum*** (Bosch & Sande Lac.) Nog. & Z.Iwats., *J. Hattori Bot. Lab.* 36: 470 (1972)

*Porotrichum ellipticum* Bosch & Sande Lac., *Bryol. Javan.* 2: 70 (1863). T: Mt Salak, Java, [Indonesia], *J.Amann* 232; lecto: L (*here chosen*); Mt Gedé & Mt Salak, Java, [Indonesia], *Teysmann*; syn: L; “ad littus occidentale”, Sumatra, [Indonesia], *Teysmann*; syn: L; Padang, Sumatra, [Indonesia], *A.Wiltens*; syn: L?, not found.

Illustration: J.Enroth, *op. cit.* 75, fig. 16 (1989).

Plants small, 2–3 cm tall, wiry, pale to dark green. Stipe leaves erecto-patent, overlapping. Frond axis leaves subdistichous, erecto-patent, elliptical, 0.59–0.81 mm long, 0.22–0.35 mm wide, flat, smooth; apex short-acuminate. Branch leaves similar but smaller; margin crenulate near the apex; costa single and broad, flexuose above, ending at or just below the apex. Upper laminal cells rounded to rhomboidal,  $10\text{--}15 \times 5\text{--}10 \mu\text{m}$ ; basal cells linear, with 1 to a few rows of quadrate cells along the acroscopic margin. Perichaetia, perigonia and sporogones not seen in Australia.

Very rare on rocks in streams in north-eastern Qld; also in Malaysia.

Qld: Crystal Cascades, Cairns, *I.G.Stone* 15351, 15393 (MEL).

*Thamnobryum ellipticum* shares the small and wiry habit with *T. pumilum* from which it can be distinguished by the broad costa that ends at or just below the apex. This moss has only been found on rocks in or near rivers or waterfalls, whereas *T. pumilum* is known from a variety of substrata and habitats.

In Australia, *T. ellipticum* is known only from the two collections cited above, and the action of running water is evident as many leaves were eroded.

**2. *Thamnobryum pandum*** (Hook.f. & Wilson) I.G.Stone & G.A.M.Scott, *J. Bryol.* 7: 605. (‘1973’) [1974]

*Isoetecium pandum* Hook.f. & Wilson, in J.D.Hooker, *Fl. Nov.-Zel.* 2: 105 (1854); *Thamnium pandum* (Hook.f. & Wilson) A.Jaeger, *Ber. Thätigk. St. Gallischen Naturwiss. Ges.* 1875–76: 312 (1877) [Ad. 2: 216]. T: Bay of Islands, North Island, New Zealand, *J.D.Hooker*; syn: BM; East Cape, New Zealand, *Sinclair*; syn: BM; Hut Valley, Otago, South Island, New Zealand, *Lyall*; syn: BM; Stewart Island, New Zealand, *Lyall*; syn: BM.

Illustrations: J.D.Hooker, *Fl. Nov.-Zel.* 2: pl. LXXXIX, fig. 1 (1854); G.O.K.Sainsbury, *Bull. Roy. Soc. New Zealand* 6: 370, fig. 2 (1955); W.R.Buck, D.H.Vitt & W.M.Malcolm, *Key to the Genera of Australian Mosses* 80 (2001).

Plants robust, to c. 9 cm tall, dark green. Fronds with long stipes, terete-foliate. Stipe leaves patent and distant. Frond axis and branch leaves spirally arranged, erecto-patent, ovate to oblong, 1.3–2.2 mm long, 0.6–1.0 mm wide, concave in the basal part, plicate and keeled, especially when dry, short-acuminate; margin serrate at the apex; costa single, ending just below apex. Laminal cells irregularly rhomboidal,  $10\text{--}13 \times 6\text{--}7 \mu\text{m}$ ; basal cells linear,  $20\text{--}45 \times 4\text{--}8 \mu\text{m}$ , slightly pitted, shorter towards the margins.

Perichaetia c. 1.5 mm long. Perigonia c. 1 mm long. Calyptra not seen. Seta to c. 20 mm long. Capsules horizontal, cylindrical. Peristome: exostome teeth yellow, their tips hyaline; endostome pale yellow. Spores 9–13  $\mu\text{m}$  diam., slightly papillose.

Occurs in rainforest in eastern Qld and N.S.W. at altitudes to c. 1200 m; grows on rocks, occasionally in streams and on the shaded buttresses and exposed roots of trees. Also in Norfolk Island and New Zealand. Previously thought to occur in Tas., but the collection was misidentified.

Qld: Crediton Track, along Broken R., Eungella Natl Park, 10 km SW of Eungella, *H.Streimann* 61897 (CANB); along Lightning Falls Track S of junction with Pensioners Track, SE of O’Reilly’s Guest House, Lamington Natl Park, *D.H.Norris* 34794 (BRI); Binna Burra to Coomera Falls track, McPherson Ra., *H.Streimann* 323 (CANB). N.S.W.: ‘Botanical Walk’, Wilson River Primitive Reserve, Mount Boss S.F., 49 km NW of Port Macquarie, *H.Streimann* 63800 (CANB); Rawson Falls, 31 km NNW of Taree, *H.Streimann* 61512 (CANB).

Dry *T. pandum* is readily identified due to the plicate and keeled leaves that are curved back towards the stem. The gametophyte is very similar to that of *Pinnatella*, especially *P. alopecuroides*. Perigonia are common among Australian material, but perichaetia and sporogones are rare.

**3. *Thamnobryum pumilum* (Hook.f. & Wilson) B.C.Tan., *Mem. New York Bot. Gard.* 68: 5 (1992)**

*Isothecium pumilum* Hook. & Wilson, *Fl. Tasman.* 2: 206 (1859); *Microthamnium pumilum* (Hook.f. & Wilson) A.Jaeger, *Ber. Thätigk. St. Gallischen Naturwiss. Ges.* 1876–77: 426 (1878) [Ad. 2: 492]; *Thamnium pumilum* (Hook.f. & Wilson) Kindb., *Enum. Bryin. Exot.* 104 (1891). T: copse by West End Rivulet, Tas., W.Archer; lecto: BM (*here chosen*) [Tas.], R.C.Gunn; syn: BM; Stackhouse Falls, [Tas.], W.Archer; syn: BM.

*Neckera rivalis* Mitt., *J. Linn. Soc., Bot.* 4: 89 (1860), *nom. illeg.* (superfluous); *Thamnium rivale* (Mitt.) Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 84 (1882), *nom. illeg.* (superfluous); *Isothecium rivale* Mitt. ex Geh., *Rev. Bryol.* 24: 78 (1897). T: copse by West End Rivulet, Tas., W.Archer; syn: BM; Stackhouse Falls, [Tas.], W.Archer; syn: BM.

*Rhizogonium gracillimum* Hampe, *Linnaea* 40: 314 (1876); *Mnium gracillimum* (Hampe) Müll.Hal., *Gen. Musc. Fr.* 142 (1901); *Porotrichum gracillimum* (Hampe) Broth. ex Watts, *Proc. Linn. Soc. New South Wales* 26: 474 (1901); *Thamnium gracillimum* (Hampe) Broth. & Watts, *Proc. Linn. Soc. New South Wales* 40: 377 (1915). T: between Cape Otway and Cape Patten, [Vic.], C.Walter; lecto: BM (*here chosen*); Buchan River, Vic., F.Mueller; syn: BM.

*Porotrichum homalioides* Müll.Hal. ex Kindb., *Hedwigia* 41: 250 (1902). T: Australia, Mrs. McCann [*mis. F.Mueller*]; not located.

Illustrations: J.D.Hooker, *Fl. Nov.-Zel.* 2: pl. CLXXV, fig. 7 (1854); G.O.K.Sainsbury, *Bull. Roy. Soc. New Zealand* 6: 370, fig. 3 (1955).

Plants small, to c. 4 cm tall, wiry, pale or dark green. Stipe leaves distant, patent. Frond axis leaves subdistichous, erecto-patent, oblong, ovate to elliptical, 0.63–0.87 mm long, 0.31–0.40 mm wide, flat, smooth, narrowing at the base; apex acute; margin serrulate at mid-leaf, serrate at the apex, narrowly incurved at the basiscopic side; costa single, reaching up to c. three-quarters of the leaf length. Laminal cells rhomboid, 10–18 × 7.5–10 µm; basal cells narrowly rectangular to linear, shorter towards the margin.

Perichaetia and perigonia c. 1 mm long. Calyptra cucullate. Seta smooth, orange-brown below, orange above. Capsules exserted, inclined, ovoid; annulus differentiated. Peristome: exostome teeth orange-brown, with hyaline tips; endostome ±colourless to pale yellow. Spores 8–13 µm diam.

Occurs in south-eastern Qld, coastal N.S.W., Vic. and Tas.; grows in subtropical to cool-temperate rainforest, mainly in the riparian zone, at altitudes up to 1300 m, predominantly on moist basalt rocks, often near waterfalls, occasionally in caves, rarely terrestrial or epiphytic. Also in Lord Howe Island and New Zealand.

Qld: track to Festoon Falls, Dandabah, Bunya Mountains Natl Park, 44 km SW of Kingaroy, *H.Streimann & T.Pócs 65142* (CANB). N.S.W.: track to Mt Hyland, Mount Hyland Nature Reserve, 34 km NW of Dorrigo, *H.Streimann 60648* (CANB). Vic.: Dairy Creek Track, Delleys Dell, Grampians, 3 July 1998, *Austral. Bryol. Group* (MEL). Tas.: Ferdene S.F., *A.Moscal 2624A* (HO); Billet Ck, L. Barrington, *A.Moscal 28966* (HO).

*Thamnobryum pumilum* is similar in habit to *T. ellipticum* (*q.v.*). Sporogones were not abundant in Australian material and were found only in a few Victorian and Tasmanian collections.

Although this species has been reported from the A.C.T. (e.g. H.Streimann & N.Klazenga, *Cat. Austral. Mosses* 167, 2002), no collections have been found in Australian herbaria.