# POLYTRICHUM

*Jaakko Hyvönen*[1]

*Polytrichum* Hedw., *Sp. Musc. Frond.* 88 (1801); from the Greek *poly* (many) and *trichos* (a hair), in reference to the hairy calyptra.

Type: *P. commune* Hedw.

Dioicous. Plants tightly to loosely caespitose, whitish green to brown. Stems erect, simple or branched. Rhizoids restricted to the stem base and the bases of the lowermost scale-like leaves. Leaves tightly appressed when dry, erect-spreading to distinctly recurved when moist; lamina linear-lanceolate, gradually narrowing to a sharp apex, with ovate to subquadrate abaxial cells; margin distinctly upcurved, unistratose; sheathing base ovate, gradually or abruptly narrowing to lamina, the sheath cells subquadrate to rectangular with firm walls; costa slightly excurrent, reddish brown, apically sharply serrate with abaxial teeth; lamellae covering almost the entire lamina.

Calyptra hairy. Setae usually solitary, terminal or pseudolateral by subperichaetial innovation, smooth. Capsules inclined, pale to dark brown; urn box-like with 4 distinct angles; exothecial cells distinctly pitted, subquadrate, with firm walls; stomata restricted to the markedly swollen hypophysis; operculum rostellate. Peristome teeth 64, pale brown; epiphragm thin, attached to peristome teeth apices. Spores echinate.

While the number of described species of *Polytrichum* is close to 80, the actual number is certainly much lower. The genus is distributed in of both hemispheres. Represented in Australia by two non-endemic taxa, *Polytrichum* is a pioneer plant of open soil and peat.

## 1. Polytrichum commune Hedw., *Sp. Musc. Frond.* 88 (1801)

T: Europe; *n.v.*

*Polytrichum perigoniale* Michx., *Fl. Bor.-Amer.* 2: 293 (1803); *Polytrichum commune* Hedw. var. *perigoniale* (Michx.) Hampe, *Linnaea* 13: 44 (1839). T: Carolina, U.S.A.; holo: *n.v.*

*Polytrichum brachypelma* Müll.Hal., *Hedwigia* 36: 346 (1897). T: Sydney, N.S.W., *D.Kayser*; *n.v.*; Blue Mountains, N.S.W., 1884, *T.Whitelegge*; syn: H-BR.

*Polytrichum cataractarum* Müll.Hal., *Hedwigia* 36: 347 (1897). T: Fitzroy Falls, N.S.W., Nov. 1884, *T.Whitelegge*; iso: NSW.

Illustrations: H.A.Crum & L.E.Anderson, *Mosses of Eastern North America* 2: 1282, fig. 637 (1981); D.G.Long, *Bioscience* 17: 38, fig. 12 (1985); J.Beever, K.W.Allison & J.Child, *Mosses of New Zealand*, 2nd edn 27, fig. 12b (1992).

Stems to 18 cm tall. Leaves appressed when dry, distinctly squarrose when moist, 6.1–10.2 mm long; lamina 0.5–0.8 mm wide, abaxial cells with distinctly incrassate outer walls; margin serrate with large sharp unicellular teeth, tightly upcurved, unistratose, 4–8 cells wide; sheathing base gradually widened; costa excurrent, with apical abaxial teeth; lamellae 34–52, on adaxial surface of blade, 5–10 cells high, ±straight to slightly crenate by upper margin, with apical cells retuse in cross-section and with an incrassate outer wall.

Urn 3.1–6.2 mm long, 1.6–3.5 mm wide. Spores 6–11 µm diam. $n = 7$, *fide* H.P.Ramsay, *J. Hattori Bot. Lab.* 82: 220 (1997).

Occurs in Qld, N.S.W., A.C.T., Vic. and Tas. Almost a cosmopolitan species with a distribution that includes New Zealand, the Pacific islands, Africa and South America. *Polytrichum commune* is a plant of diverse open habitats; it is commonly found on peat.

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http://www.anbg.gov.au/abrs/Mosses_online/Polytrichaceae_Polytrichum.pdf (2012)

Qld: S of Bald Rock, *I.G.Stone 13435* (MEL). N.S.W.: Sams Ck, *H.Streimann 49176* (CANB, H). A.C.T.: Bimberi Ra., *P.Darbyshire 80* (MEL). Vic.: Gorae West, *A.C.Beauglehole 1462* (MEL). Tas.: Mt Wellington, *A.V.Ratkowsky H363* (HO).

*Polytrichum commune* usually has rather distant leaves with glossy sheathing parts covering the stem. However, this is true only of specimens growing in moist habitats. The typical, retuse, apical cells of the adaxial lamellae are a reliable and readily seen diagnostic character that is present in all specimens. Two varieties (var. *commune* and var. *perigoniale*) have been distinguished in Australia, but their status is still in dispute, and they are not recognised here.

### **2. Polytrichum juniperinum** Willd. ex Hedw., *Sp. Musc. Frond.* 90 (1801)

T: Switzerland; *n.v.*

*Polytrichum juniperinum* Willd. ex Hedw. var. *australe* Müll.Hal., *in* J.E.Zetterstedt, *Oefvers. Förh. Kongl. Svenska Vetensk.-Akad.* 24: 573 (1868). T: near Melbourne, Vic., *F.Mueller*; *n.v.*

*Polytrichum densifolium* Hampe, *Linnaea* 30: 635 (1860), *nom. illeg.* (later homonym); *Polytrichum novae-hollandiae* A.Jaeger, *Ber. Tätigk. St. Gallischen Naturwiss. Ges.* 1873–74: 270 (1875). T: Mt Wellington, Tas., *F.Mueller*; *n.v.*

*Polytrichum sullivanii* Hampe, *Linnaea* 40: 316 (1876). T: between Mt Ararat and Mt William, Vic., *D.Sullivan*; lecto: H-BR, *fide* J.Hyvönen, *Fl. Australia* 51: 409 (2006); isolecto: BM, MEL.

*Polytrichum tasmaniae* Müll.Hal., *Hedwigia* 36: 343 (1897). T: Marydale, Tas., Dec. 1890, *O.Burchard*; *n.v.*

*Polytrichum cypellomitrium* Müll.Hal., *Hedwigia* 36: 343 (1897). T: Kangaroo Valley, near Moss Vale, N.S.W., Dec. 1885, *T.Whitelegge*; lecto: H-BR, *fide* J.Hyvönen, *Fl. Australia* 51: 409 (2006); Moss Vale, Fitzroy Falls, N.S.W, Nov. 1884, *coll. unknown*; syn: H, MEL, NSW, S;

*Polytrichum ryparomitrium* Müll.Hal., *Hedwigia* 36: 344 (1897). T: Liverpool, 20 miles [c. 32 km] S of Sydney, N.S.W., Nov. 1884, *T.Whitelegge*; iso: HBG, H-BR, NSW, S.

*Polytrichum longipilum* Müll.Hal., *Hedwigia* 36: 344 (1897). T: Studley Park, near Melbourne, Vic., 2 Aug. 1883, *F.M.Reader*; syn: S; outside Dimboola, Vic., 1892, *F.M.Reader*; *n.v.*; upper Ovens R., Vic., 1882, *McCann*; syn: JE; Grampians, Vic.; syn: *n.v.*; Daylesford, Vic., 1877, *R.Wallace*; syn: JE; Fowlers Bay, Vic., *coll. unknown*; syn: HBG, JE.

*Polytrichum beccarii* Müll.Hal., *Hedwigia* 36: 345 (1897). T: Mt Wellington, Tas., 19 Feb. 1878, *O.Beccari*; iso: H-BR.

*Polytrichum nodicoma* Müll.Hal., *Hedwigia* 36: 346 (1897). T: Oakleigh, Vic., 14 Sept. 1886, *F.M.Reader*; syn: HBG, S; outside Dimboola, Vic.; syn: H-BR.

*Polytrichum tysdalei* Müll.Hal., *Hedwigia* 36: 346 (1897). T: Gippsland, Vic., 1884, *H.Tysdale*; lecto: H-BR, *fide* J.Hyvönen, *Fl. Australia* 51: 409 (2006); isolecto: JE.

*Polytrichum lycopodioides* Müll.Hal., *Hedwigia* 36: 347 (1897). T: Tas.; *n.v.*

*Polytrichum juniperum* var. *australe* K.H.Walther, *Ann. Bryol.* 7: 149, fig. 8g–i (1934) *nom. illeg.* (later homonym), *non* Müll.Hal. (1868). T: Mt Wellington, Tas., 23 Dec. 1895, *W.A.Weymouth*; syn: H-BR.

Illustrations: H.A.Crum & L.E.Anderson, *Mosses of Eastern North America* 2: 1271, fig. 631 (1981); D.G.Long, *Bioscience* 17: 51, fig. 17 (1985); J.Beever, K.W.Allison & J.Child, *Mosses of New Zealand*, 2nd edn 27, fig. 11a–h; 56, pl. 5; 59, pl. 13 (1992).

Stems to 15.5 cm tall. Leaves tightly appressed when dry, erect-spreading when moist, 4.2–8.5 mm long; lamina 0.4–0.6 mm wide; abaxial cells with distinctly incrassate outer walls; margin entire, tightly incurved, partly covering adaxial lamellae, unistratose, 5–11 cells wide, with short broad cells; sheathing base gradually widened; costa forming a brown to hyaline arista with apical abaxial teeth; lamellae 32–52, on adaxial surface of lamina, 5–8 cells high, distinctly crenate by upper margin, with apical cells of central lamellae pyriform in cross-section and with the incrassate outer wall forming a distinct knob.

Urn 3.7–6.6 mm long, 2.0–3.6 mm wide. Spores 9–14 µm diam. $n = 7$, *fide* H.P.Ramsay, *J. Hattori Bot. Lab.* 82: 220 (1997).

Occurs in S.A., N.S.W., A.C.T., Vic. and Tas. An almost cosmopolitan species, *P. juniperinum* is a hardy plant of open habitats, and it can survive at very dry sites such as the tops of dry peat hummocks in mires.

S.A.: Williamstown, southern Lofty Ra., *L.D.Williams 10381* (AD). A.C.T.: Mt Coronet, *N.T.Burbidge 6737* (CANB). Vic.: Bogong High Plains, *I.G.Stone 11314* (MEL). Tas.: Mt Wellington, *D.A. & A.V.Ratkowsky B78* (HO); Ben Lomond Natl Park, *A.V.Ratkowsky H369* (HO).

*Polytrichum juniperinum* is easily identified by the tightly appressed leaves with entire leaf margins that cover the adaxial lamellae. This makes the adaxial surface of the leaves glossy, a unique feature among Australian Polytrichaceae.

## Doubtful and Excluded Names

*Polytrichum piliferum* Schreb. ex Hedw., *Sp. Musc. Frond.* 90 (1801)

Detailed study of Australian material did not reveal any specimens belonging to this taxon. Obviously, earlier records of the species for Australia are based on misidentification of stunted specimens of *Polytrichum juniperinum*.

*Polytrichum recurvipilum* Müll.Hal., *Hedwigia* 36: 343 (1897)

T: Braidwood district, N.S.W., Nov. 1884, *W.Baeuerlen*; *n.v.*

The type material of this species was not available for study, and it is impossible to identify the species from the original description. However, the name is likely to be superfluous, and if the type material can be located, this will probably fall into synonymy under *Polytrichum commune* or *Polytrichastrum longisetum*.