

## WIJKIA

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*Wijkia* H.A.Crum, *Bryologist* 74: 170 (1971); named in honour of the Dutch bryologist Roelof J. van der Wijk (1895–1981).

Lecto: *W. extenuata* (Brid.) H.A.Crum.

Dioicous. Plants creeping, irregularly subpinnate to irregularly bipinnate; stem and branch leaves dimorphic. Stem leaves appressed to erect, wide-spreading when dry, abruptly tapered from an ovate to ovate-lanceolate and strongly concave base, occasionally with a piliferous serrulate apex. Branch leaves smaller and gradually acuminate. Laminal cells elongate-rhomboidal to linear, smooth to seriatly papillose over the lumina and cell walls; alar region clearly differentiated, with a basal row of large inflated and pigmented or hyaline cells and several rows of small quadrate supra-alar cells. Propagules occasionally found as groups of flagelliform brood branches with microphyllous leaves at the tips of branches.

Seta long. Capsules horizontal. Peristome double, diplolepidous, alternate, with the exostome and endostome well developed; exostome teeth dorsally cross-striate, papillose above with a median groove; trabeculate on the dorsal surface; endostome with a high pleated basal membrane; cilia 1 or 2. Spores small, less than 20 µm diam.

This genus of approximately 25 species is most diverse in the Palaeotropics, but it also occurs in Mexico, southern Brazil and western Canada. Species of *Wijkia* have been reported with smooth to pluripapillose cells, although most appear to have smooth cells. Based on molecular studies by Tsubota *et. al.* (2001a, b) the genus is considered to be polyphyletic. In published studies of the papillae in 23 species of Sematophyllaceae *s. str.*, particularly *Taxithelium*, Câmara & Kellogg (2010) stated “reports of papillae in *Wijkia* were determined to be erroneous so this species was not included in the study”.

The very variable *W. extenuata*, often with seriate papillae in rows over both the cell lumen and lateral walls, is known from tropical, subtropical and temperate forests in eastern Australia. This moss has also been reported recently from Papua New Guinea and Fiji (Tan *et al.*, 2011).

*Wijkia macgregorii* (Broth. & Geh.) H.A.Crum, listed by Crum (1971) for Australia, is thought to be an error as no specimens with this name have been found.

### References

- Câmara, P.E.A.S. & Kellogg, E.A. (2010), Morphology and development of leaf papillae in Sematophyllaceae, *Bryologist* 113: 22–33.
- Crum, H.A. (1971), Nomenclatural changes in the Musci, *Bryologist* 74: 165–174.
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<sup>1</sup> c/- National Herbarium of New South Wales, Mrs Macquaries Road, Sydney, New South Wales 2000.

Tsubota, H., Akiyama, H., Yamaguchi, T. & Deguchi, H. (2001a), Molecular phylogeny of the Sematophyllaceae (Hypnales, Musci) based on chloroplast *rbd* sequences, *J. Hattori Bot. Lab.* 90: 221–240.

Tsubota, H., Akiyama, H., Yamaguchi, T. & Deguchi, H. (2001b), Molecular phylogeny of the genus *Trismegistia* and related genera (Sematophyllaceae, Musci) based on chloroplast *rbd* sequences, *Hikobia* 13: 529–549.

***Wijkia extenuata* (Brid.) H.A.Crum, *Bryologist* 74: 171 (1971)**

*Hypnum extenuatum* Brid., *Musc. Rec. Suppl.* 4: 172 (1819); *Acanthocladium extenuatum* (Brid.) Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 85 (1882); *Sematophyllum extenuatum* (Brid.) Paris, *Index Bryol.*, Suppl. 306 (1900). T: “Novae Hollandiae” [probably Tas.], *J.J.H. de Labillardière*; ?B (probably destroyed) *n.v.*

*Acanthocladium crossii* Broth. & Geh. ex Broth., *Öfvers. Förh. Finska Vetensk.-Soc.* 35: 55 (1893); *Wijkia crossii* (Broth. & Geh. ex Broth.) H.A.Crum, *Bryologist* 74: 171 (1971). T: Manning R., N.S.W., 1882, *Cross 169*; holo: H–BR; iso: MEL, NSW.

*Acanthocladium extenuatum* (Brid.) Mitt. f. *flagellaris* Broth., *Proc. Linn. Soc. New South Wales* 26: 473 (1901), *nom. nud. in synonym.* Based on: Alstonville, Richmond R., N.S.W., *W.W.Watts 3603* (NSW).

*Acanthocladium extenuatum* (Brid.) Mitt. var. *rivulatorium* Broth., in W.A.Weymouth, *Pap. & Proc. Roy. Soc. Tasmania* 1902: 118 (1903), *nom. nud. in synonym.* Based on: Macquarie Harbour, West Coast, Tas., *T.B.Moore s.n.* (HO; Hb W.A.Weymouth 2069).

*Hypnum crinitum* Hook.f. & Wilson, *London. J. Bot.* 3: 555 (1844); *Acanthocladium crinitum* (Hook.f. & A.Wilson) Broth. ex Paris, *Coll. Nom. Broth.* 1: 1 (1909); *Sematophyllum crinitum* (Hook.f. & Wilson) Paris, *Index. Bryol. Suppl.* 306 (1900). T: Northern Island, New Zealand: *Oldfield & W.Colenso*; Auckland, *Knight* (BM?).

*Hypnum glaucescens* Hornsch. ex Müll.Hal., *Syn.* 2: 392 (1851), *nom. inval. in synonym.* with *Acanthocladium extenuatum* (Brid.) Mitt.

*Rhynchostegium glaucescens* Mitt., *Trans. Proc. Roy. Soc. Victoria* 19: 89 (1882), *nom. nud.*

*Stereodon flagelliramus* Broth, in L.Rodway, *Pap. & Proc. Roy. Soc. Tasmania* 1912: 117 (1913).

*Hypnum polyurum* Müll.Hal. ex Broth., *Öfvers. Förh. Finska Vetensk.-Soc.* 35:44 (1893) *nom. nud. in synonym.*

*Hypnum subextenuatum* Müll.Hal. ex F.Muell., *Fragm.* 11 (Suppl.): 113 (1881), *nom. nud.*; *Acanthocladium subextenuatum* Müll.Hal. ex Burges, *Proc. Linn. Soc. New South Wales* 60: 92 (1935), *nom. nud. in synonym.* Based on: Lawson, N.S.W., *T.Whitelegge s.n.* (MEL).

*Hypnum pseudoextenuatum* Müll.Hal. ex F.Muell., *Fragm.* 11 (Suppl.): 113 (1881), *nom. nud.*; *Acanthocladium pseudoextenuatum* Müll.Hal. ex Burges, *Proc. Linn. Soc. New South Wales* 60: 92 (1935), *nom. nud. in synonym.* Based on: Australia: Lawson, N.S.W., *T. Whitelegge s.n.* (NSW).

*Acanthocladium macroextenuatum* Müll.Hal. ex Burges, *Proc. Linn. Soc. New South Wales* 60: 93 (1935), *nom. nud. in synonym.* Based on: Lane Cove, N.S.W., *T.Whitelegge s.n.* (MEL).

*Acanthocladium sericeum* Broth. ex Burges, *Proc. Linn. Soc. New South Wales* 60: 92 (1935), *nom. nud. in synonym.* Based on: Kurrajong, N.S.W., *C.T.Musson 4534* (NSW).

*Acanthocladium rigidifolium* Dixon, *Proc. Roy. Soc. Queensland* 53(2): 37 (1942); *Wijkia rigidifolia* (Dixon) H.A.Crum, *Bryologist* 74: 171 (1971). T: Lochaber, near Eidsvold, Qld, Apr. 1922, *T.V.Sherrin 9*; holo: BM; iso: MEL.

Illustrations: G.A.M.Scott & I.G.Stone, *The Mosses of Southern Australia* 449, pl. 85 (1976); H.P.Ramsay, *J. Hattori Bot. Lab.* 64: 182, fig. 3e (1988); J.Beever, K.W.Allison & J.Child, *Mosses of New Zealand*, 2nd edn 148, fig. 80 (1992); H.Streimann, *The Mosses of Norfolk Island* 143, fig. 64 (2002); H.P.Ramsay, W.B.Schofield & B.C.Tan, *J. Hattori Bot. Lab.* 92: 11–15, figs 4–7 (2002).

Plants very variable in size and appearance, rather rigid, robust, small to robust, forming loose or dense, dull or somewhat glossy, greyish yellow to green mats. Stems red, creeping, to c. 12 cm long, irregularly subpinnately to irregularly bipinnately branched at right angles to the primary stem; distal branches often erect or ascending, 3–10 mm long, occasionally flagelliferous, often complanate. Stem leaves appressed to erect and wide-spreading when dry, mostly abruptly tapering from an ovate-lanceolate strongly concave base to a slender, occasionally piliferous, serrulate apex; those on primary stems to 1–2 mm long (including the apex), on secondary stems to 1.5 mm long. Branch leaves smaller (0.5–1.0 mm long), more slender and sharply toothed than stem leaves, erect to erect-spreading, lanceolate to ovate-lanceolate, concave, ±gradually short-acuminate; margins mostly plane, serrulate, occasionally almost to the base. All leaves ecostate. Laminal cells 40–60 × 4–6 µm, linear or

linear-rhomboidal, smooth or seriatly papillose over the lumina and walls; alar region with a basal row of inflated hyaline or coloured cells; supra-alar cells small, quadrate. Propagules occasional, forming clumps of terminal flagelliform branchlets with appressed reduced microphyllous leaves.

Perichaetia arising from short lateral branches on the main stem; inner perichaetial leaves erect, with a long and sharply toothed acumen, from a sheathing base. Seta 15–40 mm long, flexuose, reddish, smooth. Calyptra cucullate. Capsules to 1.5 mm long, horizontal, ovoid-cylindrical below the mouth, gibbous, with a short neck; exothecial cells somewhat collenchymatous; annulus differentiated; operculum base swollen; apex short- or long-rostrate, arched, blunt. Peristome: exostome teeth 16 with a zig-zag median line, striolate below, papillose, trabeculae on back well developed; endostome segments 16, with a high basal membrane, segments slightly shorter than the teeth; cilia 1–3, almost as long as the segments. Spores 12–16 µm diam.  $n = 11$  (N.S.W.), 20 (N.S.W., Tas.), *vide* H.P.Ramsay *et al.*, *op. cit.* 5–6.

Known from New Caledonia, Papua New Guinea, New Zealand, Lord Howe Island, Norfolk Island and eastern Australia (Qld, N.S.W., A.C.T., Vic. and Tas.) where it is common in wet forests. Usually found on fallen logs or on the bases or trunks of trees, rarely on rock or on soil.

Qld: South Peak, Mt Bellenden Ker, *H.Streimann 27412, 27455 27419e* (CANB); Eungella, *I.G.Stone 17171, 17279* (MEL); track to Kennedy Falls, *W.B.Schofield 90343, 90383, I.G.Stone & M.I.Schofield* (NSW). N.S.W.: Mt Drummer, 1952, *R.G.Robbins* (CANB); Dantes Glen, Lawson, *W.W.Watts 5929, 5930, 5942* (NSW). A.C.T.: Hurdle Ck, Tidbinbilla, *D.G.Catcheside 65.362* (CANB). Vic.: Paradise Rd, Wombat S.F., near Daylesford, *H.Streimann 39027* (CANB, HO); Ben Cairn, Mt Donna Buang, 13 Feb. 1975, *G.A.M.Scott* (NSW). Tas.: Kapi Ck, NE of Dundas Tramway, *A.E.Orchard 5684* (AD, BRI, CANB, HO, MEL); Dasher Walls, SE of Railton, *A.Moscal 11061* (HO).

*Wijkia extenuata* is a very variable species, from small compact plants, those forming loose tufts, or long and complanately branched, to plants that are subdendroid and form extensive slender mats. These forms intergrade, and the resulting continuum probably indicates a range of responses to variation in environment. Plants in south-eastern Australia tend to be larger, while those in the subtropics and tropics are often smaller and more compact; variation in stem and branch leaf size and shape is also considerable (Ramsay *et. al.*, 2002).

The leaves of both primary and secondary stems are particularly distinctive, their shape varying from ovate to ovate-lanceolate, often narrowing sharply to a straight or curved apex or, with a piliferous hair-point that can be quite short or as long as the leaf itself. Branch leaves are smaller, somewhat concave, narrowing gradually to an acuminate apex, not piliferous, and they have more strongly serrulate margins. The terminal branches are often complanate, and these coarse, irregularly pinnate, pale green plants, once observed, are relatively easy to identify in spite of their variability.

Very young, complanate stems of *W. extenuata* are often present in rainforest on small twigs and branches among other mosses. They can be confused with *Taxithelium* due to the seriatly papillose cells on their branch leaves, but papillae in *Taxithelium* are confined to the cell lumen and are not found over the walls. A more obvious distinction is the presence of inflated and coloured alar cells which not present in *Taxithelium*. Laminal cells can be smooth or faintly to strongly seriate-papillose on both the lumen and walls (Ramsay *et. al.*, 2002), although Câmara & Kellog (2010) note that most species of *Wijkia* examined by them had smooth or prorulose cells. Short, almost julaceous clusters of flagelliform brood branches with reduced and appressed microphyllous leaves are occasionally formed at branch apices (Ramsay *et al.*, 2002). These flagelliform branches appear to represent a form of asexual reproduction, often being produced in profusion, and they can regenerate in culture (H.Streimann, pers. comm., 1988).