

MITTENIACEAE

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Mitteniaceae Broth., *Nat. Pflanzenfam.* I, 3: 532 (1903).

Type: *Mittenia* Lindb.

Dioicous. Plants gregarious or scattered on soil, slender, complanate, the leaves distichous or with an intermittent third row. Stems with a central strand, simple or branching from basal buds, brownish, bare below. Protonema with two phases, either transitory with normal cylindrical cells or, in very shaded habitats, persistent with highly refractive lenticular cells, reproducing by gemmae. Rhizoidal gemmae occasionally present. Leaves blue-green, distant, bract-like in lower part of stem, often overlapping above, oval to oblong, vertically to obliquely inserted, asymmetrical with the basiscopic lamina long-decurrent; apex short-apiculate to rounded; margin usually entire, occasionally crenulate; costa failing above mid-leaf; laminal cells subquadrate to rounded-hexagonal.

Fertile shoots usually with at least perichaetial leaves radially arranged and with transverse insertions. Perichaetia terminal. Calyptra short-conical, persistent on tip of operculum. Capsules exerted, cylindrical; operculum finely tapered. Peristome double, red-brown, with 16 long slender tapered exostome teeth and c. 32 nodulose endostome processes forming a dome over the capsule mouth.

A monotypic family with a single species; native to New Guinea, Australia and New Zealand.

Opinions vary concerning the order to which Mitteniaceae belongs. *Mittenia* was originally placed in the Mniaceae (Bryales) by W.Mitten (1860), but Brotherus (1903) introduced Mitteniaceae, still in the Bryales, and this has been accepted by most modern authors. Shaw (1985) argued that the unique peristome structure warrants a new order Mitteniales, whereas Stone (1986) suggested that placement in Schistostegales would be more appropriate as *Schistostega* D.Mohr and *Mittenia* have the same distinctive protonema, some vegetative similarities and, although the former lacks a peristome, the internal structure of the capsule does not preclude a relationship with *Mittenia*. The family was placed in the Rhizogoniales in Buck & Goffinet's (2000) classification, [although, more recently, it has been included in the Pottiales \(Goffinet *et al.*, 2012\).](#)

References

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Cite as: I.G.Stone, *Australian Mosses Online*. 38. Mitteniaceae.

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MITTENIA

Mittenia Lindb., *Öfvers. Förh. Kongl. Svenska Vetensk.-Akad.* 19: 606 (1863); named in honour of the British bryologist William Mitten (1819–1906).

Type: *M. plumula* (Mitt.) Lindb.

Mniopsis Mitt., in J.D.Hooker, *Fl. Tasman.* 2: 187 (1859); *nom. illeg. non Mniopsis* Mart., *Nov. Gen. Sp. Pl.* 1(1): 3 (1823). T: *Mniopsis plumula* Mitt. [= *Mittenia plumula* (Mitt.) Lindb.]

Description as for the family.

Mittenia plumula (Mitt.) Lindb., *Öfvers. Förh. Kongl. Svenska Vetensk.-Akad.* 19: 606 (1863)

Mniopsis plumula Mitt., in J.D.Hooker, *Fl. Tasman.* 2: 187 (1859). T: Ovens Ck, Tas., *W.Archer*; syn: NY; isosyn: NY.

Mniopsis rotundifolia Müll.Hal., *Hedwigia* 36: 332 (1897); *Mittenia rotundifolia* (Müll.Hal.) Paris, *Index Bryol.*, Suppl. 1: 248 (1900). T: Lilyvale, N.S.W., Sept. 1891, *T.Whitelegge*; iso: H-BR *n.v.*, *fide* H.N.Dixon & E.B.Bartram, *Bot. Not.* 1937: 77 (1937).

Illustrations: G.O.K.Sainsbury, *Bull. Roy. Soc. New Zealand* 5: 291, fig. 2 (1955); I.G.Stone, *Proc. Roy. Soc. Victoria* 74: 119–124, figs 1–20, pl. XX–XXII (1961); I.G.Stone, *Austral. J. Bot.* 9: 124–151, figs 1–81, pl. 1–4 (1961).

Stems 5–20 mm tall, solitary or clustered. Leaves mostly less than 1 mm long; costa in T.S. composed of a central group of 2–8 stereids surrounded by large chlorophyllose cells; laminal cells firm-walled, isodiametric, c. 18–29 μm wide.

Perigonal and perichaetial leaves, ligulate to oblanceolate, c. 1.5–2.0 mm long, 0.30–0.45 mm wide; costa reaching to c. three-quarters of leaf length; laminal cells short-oblong. Setae 1 or more per perichaetium, 2–3 mm long, geniculate, pale greenish yellow. Theca and operculum each c. 1.00–1.25 mm long. Spores globose, 8–12 μm diam., green, slightly spiculate. *n* = 10, *fide* H.P.Ramsay (pers. comm.).

Not uncommon in eastern Australia where it occurs from south-eastern Qld through N.S.W, A.C.T., Vic. and Tas.; also known from an isolated locality in south-western W.A. Usually found in higher rainfall areas, from sea level to alpine regions, colonising steeply inclined earth banks, earth on the bases of uprooted trees, under rock overhangs and in wombat holes, also the decomposing walls of caves; usually on soils derived from granite, basalt or sandstone. Also in New Guinea and New Zealand.

W.A.: Mt Chudalup, *I.G.Stone* 6530 (MEL). Qld: Blackdown Tableland, *I.G.Stone* 20150 (MEL). N.S.W.: Dorrigo, *I.G.Stone* 17811 (MEL). Vic.: Byaduk Caves, *I.G.Stone* 9499 (MEL). Tas.: Russell Falls, *I.G.Stone* 3246 (MEL).

In deep shade the specialised, luminous green protonema, indistinguishable from that of the Northern Hemisphere species *Schistostega pennata* (Hedw.) F.Weber & D.Mohr, sometimes covers very large areas and can persist for many years, reproducing asexually and forming few or no sterile gametophores. On more exposed earth banks, fertile gametophores can form a dense turf with little or no evidence of a persistent protonema; these reproduce by spores and regrowth from old fragments of stem.