

PLAGIOMNIUM

Robert Wyatt¹ & Helen P. Ramsay²

Plagiomnium T.J.Kop., *Ann. Bot. Fennici* 5: 145 (1968); from the Greek *plagios* (oblique) and *mnios* (a moss), in reference to the abundant creeping stolons.

Type: *P. cuspidatum* (Hedw.) T.J.Kop.

Dioicous or synoicous. Plants robust in creeping mats of prostrate stoloniferous stems, with short erect fertile stems forming loose tufts. Undersides of prostrate stems and lower parts of erect stems with smooth brown dense tomentum. Leaves on stolons elliptical to orbicular, complanate in 2 rows, strongly bordered throughout by 3 or 4 rows of elongate cells; margin entire to toothed but less toothed than leaves on erect stems; costa strong, ending in the rounded to mucronate leaf apex. Leaves on erect stems spirally arranged with a terminal rosette, elliptical to orbicular, with toothed margins; apex obtuse, with a minute apiculus; costa broad at the base, narrow above and reaching the apex. Laminal cells isodiametric to elongate, thick-walled, lacking pores.

Perigonia and perichaetia rosulate, with gametangia terminal on erect stems; perichaetial leaves larger and clustered into a rosette or comal tuft. Setae elongate, solitary or aggregated. Capsules inclined or pendulous, ovate or oblong; mouth wide, red-rimmed; operculum conical, long-rostrate. Peristome with yellowish endostome teeth; exostome segments narrow. Spores to 35 µm diam.

Plagiomnium is widespread in the Northern Hemisphere – Europe, North America, Asia and Malasia, including New Guinea, with a total of c. 40 species (Koponen, 1982). Only sect. *Rostrata*, one of the five recognised by Koponen (1982), is represented in Australasia, with a single species, *P. novaezelandiae*.

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¹ Georgia Museum of Natural History, University of Georgia, Athens, GA 30602, U.S.A.

² c/- National Herbarium of New South Wales, Mrs Macquaries Road, Sydney, New South Wales 2000, Australia & Department of Biological Sciences, Macquarie University, North Ryde, New South Wales 2109.

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Plagiomnium novaezealandiae (Colenso) T.J.Kop., *Ann. Bot. Fennici* 14: 6 (1977)

Mnium novaezealandiae Colenso, *Trans. & Proc. New Zealand Inst.* 18: 225 (1886), as *M. novae-zealandiae*. T: Glenross, Hawkes Bay Co., New Zealand, Sept. 1885, *D.P.Balfour*; lecto: WELT M414 n.v., fide T.Koponen, *op. cit.* 101 (1983).

Mnium novaezeelandiae Müll.Hal., in Geheeb, *Gen. Musc. Frond.* 135 (1900), as *M. novae-seelandiae*, *nom. nud.* Based on: Greymouth, New Zealand, 1885, *R.Helms* 53 (BM, NSW, NY, S).

Mnium novae-alesiae Müll.Hal. ex Geh., *Rev. Bryol.* 3: 4 (1876), *nom. nud.* Based on: Sydney, N.S.W., *Kayser*; n.v., fide T.Koponen, *loc. cit.*; mentioned by Mitten (1882) according to Watts & Whitelegge (1906) [type probably destroyed in Berlin in 1943].

Mnium tasmanicum Watts & Whitel., *Proc. Linn. Soc. New South Wales* 30 (Suppl.): 145 (1906), *nom. nud.* in synon. [Specimen not located. According to Koponen (1983: 102) this name was mentioned in connection with *Mnium rostratum* Schrad. [= *P. rostratum* (Schrad.) T.J.Kop.] in an early catalogue; removed from the Tasmanian checklist (Dalton *et al.*, 1991).]

Illustrations: T.Koponen, *op. cit.* 102, figs 1–4 (1983); J.E.Beever, K.W.Alison & J.Child, *op. cit.* 100, fig. 44.

Synoicous. Plants with stoloniferous prostrate stems 2–8 cm long. Fertile erect stems c. 10 mm long. Leaves on stoloniferous stems complanate, ±distichous, mostly oval, c. 3–4 mm long and 2–4 mm wide; costa reaching the apex; margin weakly toothed to entire, bordered; leaf base non-decurrent to weakly developed; laminal cells c. 30 × 15–30 µm. Leaves on erect stems 5–7 mm long, 3–5 mm wide, elliptical to obovate; apex rounded to mucronate, usually short-apiculate, slightly undulate; border of 3 or 4 rows of narrow elongate cells; margin with short blunt teeth; costa broad basally, narrowing above and ending just below or in the apex; laminal cells rounded-hexagonal, larger and more elongate near the costa and at the base, 40–63 × 28–35 µm, unevenly thickened at the corners.

Apical leaves on erect shoot larger than stem leaves, c. 7 mm long and 3 mm wide, forming a rosulate comal tuft and subtending mixed antheridia and archegonia. Setae 1–4 per perichaetium, erect, 20–40 mm long. Capsules 3.0–3.5 mm long, horizontal to nodding, broadly ovoid, with a red-rimmed mouth; operculum conical, with a long curved rostrum. Peristome: exostome teeth narrow, finely papillose; endostome segments well developed, with 2 nodulose or slightly appendiculate cilia. Spores c. 30 µm diam. Chromosome number $n = 14$ (mitotic) for Australia (Ramsay, 2011). [Sporophytes not known from Australian collections. The foregoing description based on New Zealand specimens (Beever *et al.*, 1992).]

This Australasian endemic occurs in eastern Qld and N.S.W. and in Vic.; also in New Zealand. Most records are from elevations above 1000 m; primarily calcicolous in Australia, especially on limestones, but occasionally on basalt.

Qld: Bunyip Falls, Lamington Natl Park, 21 Aug. 1969, *I.G.Stone* (MEL); Lamington Natl Park, *Olsen* 742 (BRI); Blue Pool, Lamington Natl Park, *I.G.Stone* 17572 (MEL); Cunninghams Gap Natl Park, N of Moonbah, *D.H.Norris* 36224 (H); Brindle Ck, near NSW border, NNE of Kyogle, *H.Streimann* 61105 (CANB, EGR, KRAM, MO, NY, TAL); Table Top, Hervey Ra., WSW of Townsville, *H.Streimann* 37186 (B, MEXU, NY); E side of Bunya Mtns, *I.G.Stone* 13394 (MEL). N.S.W.: Jenolan Caves, 1979, *P.M.Selkirk* [HPR 40/79] (MQU, NSW); *loc. id.*, *R.J.Coveny* 18915 (NSW); *loc. id.*, *V.Stajsic* 2827 & *N.Klazenga* (MEL); *loc. id.*, 24 Sept. 2001, *J.Milne* (MEL); Tumbarumba, 8 km W of Mt Kosciuszko, Feb. 1962, *T.Walker* & *R.Turner* (MEL); Cambewarra, *T.Whitelegge* 339 (NSW); New England Natl Park, 72km E of Armidale, *H.Streimann* 47654 (CANB); Point Lookout, *D.McVean* 267467 (CANB). Vic.: Upper Cobingra R., Bogong High Plains,

1 Feb. 1949, *J.H.Willis* (MEL); Dinner Creek Gorge, *A.W.Theis 15690D* (MEL); Mitchell R., 27 km NW of Bairnsdale, *H.Streimann 50204* (MEL); Bryces Gorge, 2011, *D.A.Meagher* (MEL).

Some Australian specimens consist only of vegetative stolons, and erect fertile stems were either absent or were not collected.

In the past, *P. novaezelandiae* has been confused with the wide-ranging, synoicous, polyploid *P. rostratum* (Schrad.) T.J.Kop. (Koponen, 1982). Both are referable to sect. *Rostrata* (Kindb.) T.J.Kop. which has its centre of diversity in East Asia. However, *P. rostratum*, as recognised by Koponen (1982: 83–85), has a limited range mainly in temperate parts of the Northern Hemisphere, and Australasian collections have been re-named *P. novaezelandiae*. Plants of the latter are larger, as are its laminal cells, and leaf bases are decurrent (Koponen, 1983: 102).

The closest relative to the Australasian species might be the South African *P. rhynchophorum* var. *reidii* (Dixon) T.J.Kop., but their similarity could be the result of convergence caused by extreme habitats rather than reliable evidence of a close relationship (Koponen, 1982: 83–85; 1983: 103).

Investigations using genetic markers (e.g. Wyatt *et al.*, 1992) have proved, in many cases, that synoicous species are allopolyploids. Chromosome numbers in *Plagiomnium* range from $n = 6$ or 7 to many polyploids with $n = 12$ or 14 , and a few with $n = 21$. *Plagiomnium rostratum* has the numbers $n = 6$ or 12 , while $n = 7$ or 14 are rarer (Fritsch, 1991). Although few specimens of *P. novaezelandiae* have been examined cytologically in Australia, and no New Zealand numbers are available, the recently recorded $n = 14$ from gametophytic mitosis in which a number of apparent chromosome pairs were observed (Ramsay, 2011: 603), together with its being synoicous, supports a likely polyploid origin for this species in Australia.