MNIACEAE

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Type: Mnium Hedw., nom. cons.

Diocous, autoicous or synoicous. Plants robust, perennial, with stoloniferous stems matted with rhizoids and erect simple or forked reproductive shoots. Rhizoids brown, papillose. Leaves on stolons small, crowded. Leaves on reproductive shoots small and remote at the base, larger and forming a comal tuft or rosette at the apex, elliptic to suborbicular; costa single, strong, ending in the apex or just below; leaf bordered by linear cells occasionally with weak rounded teeth. Laminal cells rounded-quadrangular to hexagonal, mostly thick-walled, non-porous or porose, becoming larger, longer and more rectangular towards the costa and insertion.

Perigonia and perichaetial terminal. Perigonia usually discoid, with large perigonal leaves. Perichaetial leaves forming a comal tuft of narrow and erect leaves; inner ones small and narrow. Setae solitary or polysetous 1–4, clustered, short or long. Capsules exerted, inclined or pendant, rarely erect, oblong-ovoid to cylindrical; neck short; annulus present; operculum convex to obliquely rostrate. Peristome usually well developed; exostome teeth 16, lanceolate-acuminate, trabeculate or not; endostome segments alternating with and similar in length to teeth, rarely reduced; basal membrane high, rarely reduced and low; cilia usually well developed, nodose. Spores papillose, comparatively large.

Koponen (1988) divided the Mniaceae sens. lat. into three families, viz. Mniaceae sens. str., Plagiooniaceae and Cincidiaceae. In the classification scheme of Buck & Goffinet (2008) several genera (e.g. Pohlia, Mielichhoferia and Schizymenium), traditionally included in the Bryaceae, but phylogenetically closer to the Mniaceae (Cox & Heddersen, 2003), were transferred into the Mniaceae. However, more recent molecular evidence from nuclear, chloroplast and mitochondrial genomes suggests that a broad Mniaceae clade may have separated early into two diverging lineages, the families Mielichhoferiaceae and Mniaceae. Thus, Pohlia, Mielichhoferia, Schizymenium and other genera have now been recognised as constituting the Mielichhoferiaceae (Shaw, 2009; Goffinet \textit{et al.}, 2012), while 12 other genera, including \textit{Mnium}, \textit{Plagiomnium} and \textit{Orthomnion}, are retained in the Mniaceae. We accept the more recent interpretation for Australian mosses, recognising the two families with \textit{Mielichhoferia} and \textit{Pohlia} in the Mielichhoferiaceae and \textit{Orthomnion} and \textit{Plagiomnium} in the Mniaceae.

There have been extensive cytological studies on the Mniaceae summarised by Fritsch (1991) and Newton (1986) under individual genera. For \textit{Plagiomnium} the recorded chromosome numbers are \( n = 6, 7, 12, 14 \) and 21 with karyotype data for many, while for \textit{Orthomnion} \( n = 14 \) has been reported by Ono for a single species in Japan (Fritsch, 1991).

This family is well represented in temperate regions of the Northern Hemisphere. Only two genera \textit{Orthomnion} and \textit{Plagiomnium}, with a single species for each, are recorded from Australia where sporophytes are rare in \textit{Plagiomnium} and have not yet been found in \textit{Orthomnion}. Vegetative plants of \textit{Orthomnion} can be distinguished from \textit{Plagiomnium} by the more densely tomentose stolons and bases of erect stems, an entire leaf margin, leaves that are more closely spaced in two rows, a weaker costa, the lack of stereid bands, and the thin-walled and porose laminal cells. The presence of porose cell walls is not usually emphasised.

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in descriptions of *Orthomnion* but is shown clearly in published illustrations [e.g. Koponen (1980a: 43, figs 16–20, 22–24); Koponen (1982a: 79, fig. 3); Eddy (1996: 197, fig. 465)]. Subsection *Orthomniopsis* (Broth.) T.J.Kop., to which the Australian species *O. elimbatum* belongs, is characterised by short setae (less than 10 mm long) and trabeculate peristomes in contrast to the other subsection *Oligodon* T.J.Kop., not present in Australia, which has longer setae and reduced peristomes.

**References**


**Key to Species**

Leaves of erect stems orbicular; apices rounded-obtuse; border weak, undulate; margin entire; laminal cell walls porose; dioicous; setae short; capsules erect; epiphytic ............................ *Orthomnion elimbatum*  

Leaves of erect stems elliptic to ovate; apices rounded, with a short apiculus; border of 3 or 4 rows of narrow elongate cells; margin toothed; laminal cell walls non-porose; synoicous; setae elongate; capsules horizontal to nutant; calcicolous ......................................................... *Plagiomnium novaezelandiae*