

ORTHOMNION

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Orthomnion Wilson emend. T.J.Kop., *Ann. Bot. Fennici* 17: 41 (1980); Wilson, in W.Mitten & W.M.Wilson, *Hooker's J. Bot. Kew Gard. Misc.* 9: 368 (1857); from the Greek *orthos-* (erect) and *mnios* (a moss), in reference to the upright fertile stems.

Orthomnion (Wilson) Mitt., *J. Linn. Soc., Bot.*, Suppl. 1: 142 (1859).

Lecto: *O. bryoides* (Griff.) Nork.

Orthomniopsis Broth., *Öfvers. Förh. Finska Vetensk.-Soc.* 49(10): 1 (1907). T: *Orthomniopsis japonica* Broth. [= *Orthomnion dilatatum* (Mitt.) P.C.Chen]

Dioicous. Plants deep green, with sterile prostrate stolons and fertile erect stems. Stolons densely tomentose; matted rhizoids restricted to the base of erect stems. Leaves elliptic to orbicular, on prostrate stems, becoming lingulate to spatulate above on erect stems, rounded and truncate at the apex; margins entire, weakly and vestigially bordered with a single row of elongate cells; costa strong below, ending well below the apex in all leaves, lacking a stereid band. Laminal cells isodiametric to elongate near the costa and insertion; cell walls slightly thickened, with conspicuous pores on the transverse walls.

Perigonia and perichaetia terminal; perigonia discoid; perichaetia in a comal tuft; perigonial and perichaetial leaves spatulate, their apices rounded or bluntly acute. Seta short, 5–20 mm long. Capsules emergent, erect to suberect, oblong-cylindrical; neck \pm elongate; annulus present; operculum long-rostrate. Peristome with the endostome reduced; cilia reduced to absent. Spores rather large, 35–100 μ m diam.

The genus *Orthomnion*, monographed by Koponen (1980), includes nine species in SE Asia, Japan, western Melanesia (including New Guinea) and Australia. One species, *O. elimbatum*, is endemic to New Guinea and Australia.

Koponen (1980, 1982) suggested that *Orthomnion* might be of comparatively recent origin, having developed from stock similar to *Plagiomnium*. Evolutionary indicators pointing to this possibility include the erect capsules, a reduction of the leaf border and decurrent leaf base, loss of stereids in the costa, and porose laminal cell walls. Events leading to the origin of the most advanced species, *O. elimbatum*, might have enabled it to occupy successfully its niche as an epiphyte.

References

- Koponen, T. (1980), A synopsis of Mniaceae (Bryophyta) II. *Orthomnion*, *Ann. Bot. Fennici* 17: 35–55.
- Koponen, T. (1982), The family Mniaceae in Australasia and the Pacific, *J. Hattori Bot. Lab.* 52: 75–86.
- Koponen T. & Norris, D.H. (1983), Bryophyte flora of the Huon Peninsula, Papua New Guinea II. Mniaceae, *Ann. Bot Fennici* 20: 31–40.

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Orthomnion elimbatum (Nog.) T.J.Kop. *Ann. Bot. Fennici* 17: 45 (1980)

Orthomniopsis elimbata Nog., *J. Hattori Bot. Lab.* 10: 8 (1953). T: Timberline-Ogao, Mt Sarawaket, Morobe District, [Papua] New Guinea, 6000–9000 ft, June 1939, *M.S.Clemens* [location of type unknown, not at NICH] *fide* T.Koponen, *loc. cit.*

Mnium rotundifolium E.B.Bartram, *Svensk Bot. Tidskr.* 47: 398 (1953). T: Nondugl, Vaghi Valley (south of the Bismarck Mtns), Mt Hagen District, Western Highlands, [Papua] New Guinea, 1600 m, Oct.–Nov. 1951, *N. & G.Gyldenstolpe* 11; holo: FH-Bartram; iso: S, *fide* E.B.Bartram, *Contrib. U.S. Natl. Herb.* 37: 43–67 (1965).

Illustrations: A.Noguchi, *loc. cit.* fig. 4(9–13), as *Orthomniopsis elimbata*; T.Koponen, *op. cit.* 43, figs 21–25.

Plants with stolons 8–10 cm long; fertile stems erect, 10–20 mm long. Leaves on stolons glossy, smaller, darker green and strongly crisped, undulate when dry, ±orbicular to broadly elliptic, 3–6 mm long, 2–4 mm wide, obtuse with undulate entire margins, bordered at the base by 1 or 2 rows of thin-walled elongate cells, less distinct apically; base non-decurrent; costa strong basally but failing below the broadly rounded apex. Leaves on erect stems larger, paler, not crisped or undulate when dry; margins undulate; border as in stolon leaves. Laminal cells hexagonal; smaller in stoloniferous leaves, larger in stem leaves, more elongate, 35–45 × 40–65 µm, with uniformly thickened walls, porose (typically with 2 large pores in each transverse wall), mammillose.

Perigonia and perichaetia terminal on erect shoots; perigonial leaves in a rosette; perichaetial leaves larger than vegetative leaves, the inner ones spatulate, forming a comal tuft; apex often fragile, rounded or bluntly acute. Calyptra smooth. Seta short, 5–10 mm long, polysetose, 1 or 2 per perichaetium. Capsules erect to slightly inclined, 3.5–5.5 mm long. Peristome complete; exostome teeth trabeculate; endostome with reduced segments and cilia. Spores 36–68 µm diam. Chromosome number not known. [Sporophytes not known from Australian collections. The foregoing description from Papua New Guinean material; for illustration of sporophyte see Koponen (1980: 43, fig. 25).]

Orthomnion elimbatum occurs in New Guinea (Papua New Guinea and Irian Jaya) and eastern Qld, most commonly north of Mackay. It occurs primarily as an epiphyte on tree trunks and branches, occasionally on rocks near water.

Qld: Mt Lewis, *B.O. van Zanten* 681137, 681143A (GRO, NSW), 681968 (CANB); *loc. id.*, *W.A.Weber* 268272 (CANB); Mt Lewis, near Julatten, *W.A.Weber & D.McVean* B-31692 (CANB, COLO, H, MEL, MO, NICH, NY, UBC); Mt Lewis road, between Mount Molloy and Mossman, 1981, *D.H.Vitt & H.P.Ramsay* (DUKE 117187); Ravenshoe, *W.W.Watts* 517, 522 (H, NSW); Tully R., Cardwell Ra., *I.G.Stone* (MEL 2346825A); *loc. id.*, 8 Sept. 1954, *P.R.Messmer* (FH, MEL, NSW); Yamanie Natl Park, W of Abergowrie, *R.G.Coveny* 16972 (NSW); Eungella Natl Park, *D.H.Norris* 38277 (H, MEL); *loc. id.*, *I.G.Stone* 12463C (MEL); Hypipamee Crater, Atherton Tablelands, 8 Sept. 1954, *P.R.Messmer* (H, MEL, NSW); *loc. id.*, *D.H.Norris* 40762 (H); Bunya Mtns, SW of Kingaroy, *D.H.Norris* 35282, 35296, 35673 (H); Kennedy Hwy, 2 km S of Herberton road, *D.H.Norris* 42349 (H).

Australian collections of *O. elimbatum* are predominantly stoloniferous with only a few erect shoots being present. One perigonial shoot and one perichaetial shoot were seen in the van Zanten collection 681143B (NSW). The antheridia were empty and the archegonia unfertilised.