

PHYSCOMITRELLA

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Physcomitrella Bruch & Schimp., in Bruch, Schimper & Gumbel, *Bryol. Europ.* 1: 9 (fasc. 42: 1) (1849); the diminutive of *Physcomitrium*.

Type: *P. patens* (Hedw.) Bruch & Schimp.

Paroicous, less commonly autoicous, rarely polygamous. Plants small, gregarious, yellowish green. Stems yellow to reddish brown, unbranched, branched by innovation or forked; in cross-section with a central strand, a medulla of parenchyma and a cortex of c. 2 layers of firm-walled cells usually with thin outer walls. Rhizoids reddish brown. Leaves erect-spreading to spreading, not or weakly concave, oblong-lanceolate to obovate, acuminate, acute or obtuse; costa from less than half the leaf length to subpercurrent, rarely \pm forked at the apex; margins plane, usually bluntly serrate above and entire below. Upper laminal cells oblong-hexagonal, those in lower part more oblong; marginal cells differentiated or not, rarely forming a distinct border; alar cells not differentiated.

Periogonia not differentiated. Calyptra mitrate, entire or rarely slightly lobed at the base, covering only the rostrum. Setae pale to reddish brown, 0.1–0.3 mm long (excluding the vaginula), straight. Capsules erect, globose, inoperculate, rostrate, lacking a neck and with the columella resorbed prior to maturity; exothecial cells isodiametric or oblong-hexagonal, with very thin non-cuneate walls, not thickened at the corners; stomata weakly immersed or superficial. Spores subreniform, reddish brown, uniformly spinose or spinose-baculate, 25–38 (–44) μm .

This monotypic genus has a broad but scattered distribution. *Physcomitrella patens* was divided into four subspecies by Tan (1979); however, the subspecies concept employed here is somewhat broader.

Physcomitrella, while difficult to detect due to its small size, is recognisable by its minute, globose, inoperculate capsules. Because of the fragility of the exothecial cells the capsule walls often fragment irregularly leaving a mass of reddish brown spores only partially contained in the broken capsule. Disturbance by invertebrates can play a role in capsule fragmentation and spore dispersal.

References

- Fife, A.J. (1982), Taxonomic and nomenclatural observations on the Funariaceae. I. *Physcomitrium*, *Physcomitrella*, and *Goniomitrium* in New Zealand, *Lindbergia* 8: 96–104.
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- Scott, G.A.M. & Stone, I.G. (1976), *The Mosses of Southern Australia*. Academic Press, London.
- Tan, B.C. (1979), A new classification for the genus *Physcomitrella* B.S.G., *J. Hattori Bot. Lab.* 46: 327–336.

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Physcomitrella patens (Hedw.) Bruch & Schimp. subsp. **readeri** (Müll.Hal.) B.C.Tan, *J. Hattori Bot. Lab.* 46: 334 (1979)

Ephemerella readeri Müll.Hal., *Hedwigia* 41: 120 (1902); *Physcomitridium readeri* (Müll.Hal.) Roth, *Aussereur. Laubm.* 250 (1911); *Physcomitrella readeri* (Müll.Hal.) I.G.Stone & G.A.M.Scott, *J. Bryol.* 7: 604 (1973). T: Dimboola, Vic., 1897, *F.M.Reader*; holo: *n.v.*

Physcomitrella austropatens Broth. ex Roth, *Hedwigia* 54: 273 (1914). T: Yarriambiack Creek, "Brim co. Boring", Vic., 27 July 1902, *F.M.Reader*; H-BR, NSW.

Illustration: B.Malcolm, N.Malcolm, J.Shevock & D.Norris, *California Mosses* 50 (2009).

Paroicous. Stems to 2 mm tall. Leaves erect-spreading, 1.0–1.5 long, c. 0.3 mm wide, acute, enclosing the capsule when dry; costa 1/2–3/4 the leaf length, usually unbranched above; marginal cells not differentiated.

Calyptra mitrate, c. 0.5 mm long. Setae c. 0.1 mm long. Capsules with an air sac between the spore sac and exothecium; exothecial cells oblong-hexagonal, c. $66 \times 10 \mu\text{m}$; rostrum c. $225 \times 100 \mu\text{m}$. Spores 39–42 μm .

Occurs in S.A., N.S.W., Vic. and Tas. Also in New Zealand, Japan and California.

Vic.: Kew, 5 July 1884, *F.M.Reader*; Swan Hill, *I.G.Stone 1368*. Tas.: Milford, 1.5 km SE of Pittwater Bluff, *A.Moscal 13001*.

We consider specimens from California to be indistinguishable from Australian material. This interpretation differs from that of Tan (1979), but it agrees with Scott & Stone (1976: 262).