

LEUCOBRYACEAE

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Leucobryaceae Schimp., *Coroll.* 19 (1856).

Type: *Leucobryum* Hampe

Dioicous, occasionally pseudoautoicous. Acrocarpous mosses, forming turfs or cushions. Leaves leucobryaceous or normally developed, always with a broad costa.

Sporogones solitary. Seta straight or cygneous. Capsules sulcate when dry; stomata lacking. Peristome haploleptideous; teeth narrowly triangular and deeply bifid or split to the base into filiform segments.

This cosmopolitan family includes 12 genera (Goffinet & Buck, 2004, Goffinet *et al.*, 2012), about half of which have a leucobryaceous leaf anatomy. Only the two largest genera, *Campylopus* and *Leucobryum*, are known from Australia.

The current circumscription of the family is derived from phylogenetic analyses based on DNA sequences (La Farge *et al.*, 2000). Formerly, *Campylopus* and other genera lacking a leucobryaceous leaf anatomy were included in a much more broadly circumscribed Dicranaceae. However, the choice to accept the results of a phylogenetic analysis is not a matter of preferring molecular markers over morphological characters, as there is unlikely to be strong morphological evidence that places *Campylopus* and its relatives in the Dicranaceae. Indeed, their inclusion in the Dicranaceae dates from when that family was much more broadly circumscribed and at times also included genera with leucobryaceous leaves, as well as many those that are now placed outside the Dicranales. Potential morphological synapomorphies for *Leucobryum* and *Campylopus* are the sulcate capsules and the absence of stomata, but I am not certain that this combination of characters is also present in all other non-Australian genera or that it does not occur at all outside the family. On the other hand, the leucobryaceous leaf anatomy is also shared by *Leucophanes* Brid., *Octoblepharum* Hedw., *Arthrocormus* Dozy & Molk., *Exostratum* L.T.Ellis and a few other non-Australian genera. These have occasionally been placed in Leucobryaceae, but they are more appropriately included in Calymperaceae.

References

Goffinet, B. & Buck, W.R. (2004), Systematics of the Bryophyta (mosses): from molecules to a revised classification, *Monogr. Syst. Bot. Missouri Bot. Gard.* 98: 205–239.

Goffinet, B., Shaw, A.J. & Buck, W.R. (2012), *Classification of the Bryophyta*. [<http://www.eeb.uconn.edu/people/goffinet/Classificationmosses.html>]

La Farge, C., Mishler, B.D., Wheeler, J.A., Wall, D.P., Johannis, K., Schaffer, S. & Shaw, A.J. (2000), Phylogenetic relationships within the haploleptideous mosses, *Bryologist* 103: 257–276.

Key to Genera

Plants variously green to brown, not glaucous or whitish; lamina well developed, at least the more distal laminal cells chlorophyllose; costa well developed, broad but not occupying almost the entire leaf width at the base **CAMPYLOPUS**

Plants glaucous or pale to whitish green; lamina forming a narrow border to the costa; laminal cells hyaline throughout the leaf; costa occupying almost the entire leaf width, consisting of a layer of narrow chlorophyllose cells sandwiched between layers of empty hyaline cells **LEUCOBRYUM**

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