

BRACHYMENIUM

John R. Spence¹ & Helen P. Ramsay²

Brachymenium Schwägr., *Sp. Musc. Frond.*, Suppl. 2, 1: 131 (1824); from the Greek *brachys* (short) and *meninx* (a membrane), in reference to the low basal membrane of the endostome.

Lecto: *B. nepalense* Hook.

Autoicous. Plants medium-sized to comparatively large, in tufts on bark. Stems often branched by subfloral innovations. Leaves rosulate, contorted to spirally twisted around the stem when dry, erect to recurved when moist, obovate, spatulate or rarely ovate or lanceolate; margin recurved or plane above, denticulate to serrate in upper half; costa short- to long-excurrent, strong, in cross-section with a well-developed stereid band and 2 ventral layers of thin-walled cells; upper and middle laminal cells irregularly rhomboidal (3–5: 1); lower laminal cells longer and more regularly rectangular. Gemmae not known.

Perigonial and perichaetial leaves differentiated; outer leaves larger than vegetative leaves; inner leaves smaller and acuminate. Setae long-exserted. Capsules erect, pyriform to globose, rarely cylindrical; apophysis short to elongate; operculum minutely umbonate to bluntly conical. Peristome double; exostome papillose; endostome reduced, lacking cilia; segments often lacking or fused with exostome teeth. Spores large, 25–40 µm diam., somewhat papillose to almost smooth.

Brachymenium, as it is currently circumscribed, includes c. 25 species that are concentrated in montane tropical and subtropical areas of Africa, with a few species found in similar habitats in India and SE Asia. Only two species occur in New Guinea, and two reach Australia. *Brachymenium* is primarily epiphytic and is characterised by erect, pyriform to globose capsules, a strongly reduced peristome, monoicy, and large spores. The obovate, serrate leaves and *Rhodobryum*-type laminal areolation align the genus with *Rosulabryum* and *Rhodobryum*. The sporophytes, mostly autoicous in their sexuality and with spores, are distinctive. We interpret the genus in a narrow sense, including only monoicous species with erect, globose to pyriform capsules and large spores. The status of several Neotropical species, reported to be dioicous and having inclined, elongate capsules, needs to be investigated; it is possible that they are referable to *Rosulabryum*.

Brachymenium species are gametophytically similar to *Bryum*, and the genus has been traditionally characterised by its erect capsules with reduced peristomes. *Brachymenium* appears to be polyphyletic, with species representing three different genera included within it. The type species and its allies in sect. *Brachymenium* are autoicous, epiphytic species with erect, globose capsules. The other sections of the genus are only distantly related to this. Australian species of sect. *Dicranobryum* are morphologically similar to many species of *Gemmabryum*, and are characterised as small plants with imbricate, ovate or ovate-lanceolate leaves, erect or inclined capsules, and axillary leaf bulbils and rhizoidal tubers. Section *Leptostomopsis* is characterised by densely radiculose species in compact mats, with the leaves somewhat hyaline at the tip, strongly excurrent, denticulate costae and dioicous sexuality. This section represents a distinct genus and is not found in Australia (Spence, 2005).

Only three species of *Brachymenium* (*B. preissianum*, *B. acuminatum* and *B. lanceolatum*) were reported by Ochi (1970) for Australia, but more recent intensive collecting added several previously unrecorded taxa, including *B. exile*, *B. nepalense*, *B. coarctatum* and

¹ Glen Canyon National Recreation Area, 691 Scenic View Drive, P.O. Box 1507, Page, Arizona 86040-1507, U.S.A.

² c/- National Herbarium of New South Wales, Royal Botanic Gardens and Domain, Mrs Macquaries Road, Sydney, New South Wales 2000, Australia.

B. indicum. However, the revised circumscription of the genus leaves only *B. nepalense* and *B. lanceolatum*, the other taxa being transferred to *Gemmabryum*.

References

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Leaves lanceolate to oblong-lanceolate, irregularly contorted, yellowish brown; capsules elongate-ovate to oblong **1. B. lanceolatum**

Leaves obovate, or at least some leaves widest above middle, spirally contorted, often reddish; capsules globose to pyriform **2. B. nepalense**

1. *Brachymenium lanceolatum* Hook.f. & Wilson, in J.D.Hooker, *Fl. Tasman.* 2: 188 (1859)

Bryum lanceolatum (Hook.f. & Wilson) Mitt., *Trans. & Proc. Roy. Soc. Victoria* 19: 71 (1882). T: Tas., *R.C.Gunn s.n.*; holo: BM.

Illustration: H.Ochi, *J. Fac. Educ. Tottori Univ. Nat. Sci.* 21: 9, fig. 1 (1970).

Plants tufted, to 13 mm tall, branched by 2 or 3 innovations, yellowish with a brownish tint below, soft, not lustrous; fertile stems short. Leaves appressed to stem and contorted when dry, erect to erect-spreading when moist, yellowish brown; leaves of innovations soft, entire, lanceolate to oblong-lanceolate, to 3.4 mm long and 0.8 mm wide; apex long-acuminate; margin revolute; costa rather strong, long-excurrent with a smooth slender apex; laminal cells thin-walled, rhomboidal-hexagonal or elongate-hexagonal, 80–120 × 13–18 μm, smaller towards the apex, narrower and more elongate towards the margin, forming a distinct border of 1 or 2 rows of yellowish thicker-walled linear-vermicular cells; basal cells abruptly more lax.

Setae erect, slender, ±flexuose, c. 30 mm long, red. Capsules erect, ovate to oblong with a short neck, reddish brown; operculum low-conical. Peristome: exostome teeth yellow, lanceolate, with a hyaline apex; endostome pale yellowish; basal membrane c. half the height of exostome teeth; segments and cilia irregular in length and width. Only immature spores seen. Chromosome number not known.

Known in Australia only from the type collection from Tas.; also in India.

This species has not been collected in Tas. since the original description. As the only other collections come from India (described as *B. longifolium* Dixon & P. de la Varde), and given that Gunn corresponded with Hooker, it is possible that the type specimen is a mislabelled Indian collection.

2. *Brachymenium nepalense* Hook., in C.F.Schwägrichen, *Sp. Musc. Frond.*, Suppl. 2, 1: 131 (1824)

T: Nepal, *W.J.Hooker s.n.*; lecto: BM, *fide* H.Ochi, *J. Fac. Educ. Tottori Univ. Nat. Sci.* 23: 32–33 (1972).

Illustrations: H.C.Gangulee, *Mosses of Eastern India and Adjacent Regions* 2: 939, fig. 449 (1974); A.Eddy, *Handb. Malesian Mosses* 3: 167, fig. 444 (1996).

Plants tufted, 10–20 mm long, often reddish-tinged, matted with finely papillose red rhizoids below. Leaves contorted to spirally twisted around stem when dry, erect-spreading when moist, green, yellowish or reddish, obovate to spatulate, forming distinct comal tufts on fertile stems, very variable in size, usually less than 5 mm long, 1–2 mm wide; margin revolute at least below the middle, denticulate above; costa narrow, red-brown or yellowish, excurrent as a long arista or reddish hairpoint in comal leaves, sometimes percurrent; upper laminal cells rhomboidal, 30–60 × 12–18 µm, with thin porose walls; leaves strongly bordered by 2–4 rows of narrow reddish to yellowish incrassate cells; basal cells long and narrowly rectangular.

Perichaetial leaves smaller, more narrowly obovate to lanceolate, with a long hairpoint. Setae erect, somewhat flexuose, 20–50 mm long, reddish. Capsules long-necked, erect to suberect, narrowly to broadly pyriform or globose, red-brown; neck tapered; operculum minutely umbonate, bluntly conical. Peristome: exostome teeth smooth at base, papillose distally, yellow to pale tan; endostome rudimentary, yellow to white, with short segments, or the segments and cilia lacking or vestigial. Spores 25–35 µm diam. Chromosome number not known.

Known from a few localities in montane areas of north-eastern Qld; also a widespread and highly variable corticolous species of tropical, montane forest in Asia, Malesia, New Guinea, Africa and Polynesia.

Qld: Mt Fisher, *I.G.Stone 15718* (MEL); Maalan Ck, *H.Streimann 30592* (CANB); Barron State Forest, Herberton Ra., *H.Streimann 27217* (CANB); Thornton Peak, *J.R.Clarkson 5582* (MEL ex BRI); Mt Spec Natl Park, *I.G.Stone 24819* (MEL).

The reddish colouration is distinctive. When sterile, *B. nepalense* can only be distinguished from sterile *Rosulabryum* by its epiphytic habit and rather strongly coloured leaf border. Smaller forms resemble *Rosulabryum capillare*, the larger forms approaching *R. billarderi* in vigour. *Brachymenium nepalense* often occurs in rather small quantities mixed with other bryophytes. Australian plants are comparatively large.

Doubtful Names

Brachymenium klotzschii (Schwägr.) Paris, *Index Bryol.* 123 (1894)

The putative Australian specimen of this Neotropical species has not been found.

Brachymenium pulchrum Hook., *Bot. Misc.* 1: 136 (1829)

A specimen located at MEL labelled “Australia coll. by Mitten ex Herbarium E.G.Britton.” is probably a mislabelled specimen of this South African species. As no other Australian collections have been located it is excluded from the Australian flora.