

BUXBAUMIACEAE

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Buxbaumiaceae Schwägr., *Sp. Musc. Fond.* 23 (1830)

Type: *Buxbaumia* Hedw.

Rhizoautoicous. Gametophore greatly reduced. Leaves minute, ecostate, non-chlorophyllose. Seta elongate, robust. Capsule large, exerted, asymmetrically ovoid to gibbous. Peristome consisting of an inner 32-pleated membranous endostome with thickened dorsal ridges; exostome teeth usually greatly reduced in 1 or 2 series opposite the endostome keels, with a palisade-like nematodontous parastome completely surrounding the peristome.

This monogeneric family is characterised by greatly reduced gametophores, a disproportionately large, asymmetrical, dorsoventrally flattened capsule on a robust seta, and a peristome containing both arthrodontous and nematodontous elements.

References

Eddy, A. (1990), *Handb. Malesian Mosses 2*: 239–243.

Sainsbury, G.O.K. (1955), A handbook of New Zealand mosses, *Bull. Roy. Soc. New Zealand* 6: 26–27.

Stone, I.G. (1983), *Buxbaumia* in Australia, including one new species, *B. thorsborneae*, *J. Bryol.* 12: 541–552.

BUXBAUMIA

Buxbaumia Hedw., *Sp. Musc. Frond.* 166 (1801); named after the German botanist Johann Christian Buxbaum (1693–1730).

Lecto: *B. aphylla* Hedw.

Gametophore reduced to a perichaetium or perigonium. Rhizoids at the base of the gametophore delicate, colourless to pale yellow, papillose. Perigonia microscopic, consisting of a single leaf and, apparently, a single antheridium. Perichaetial leaves few to numerous, colourless to reddish brown, narrowly lanceolate to triangular; marginal cells forming short finger-like projections, or ciliate. Laminal cells rectangular, thin- or thick-walled.

Seta long, smooth to papillose, orange-brown to red-brown. Capsules inclined, narrowed towards the mouth; neck short, distinct; stomata few, immersed in the neck; operculum conical, smooth or mammillose. Outer peristome elements column- or tooth-like, papillose. Spores oval to globose, finely papillose.

A genus of c. ten species scattered throughout the Northern Hemisphere; also in Malesia, Australia and New Zealand. *Buxbaumia* is represented in Australia by three comparatively rare taxa, two of which are endemic.

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Key

- 1 Perichaetial leaf margins ciliate **1. B. aphylla**
1: Perichaetial leaf margins entire or with short finger-like processes 2
2 Perichaetial leaves numerous, red-brown; seta smooth, glossy; operculum smooth **2. B. colyerae**
2: Perichaetial leaves sparse, colourless; seta papillose; operculum mammillose **3. B. thorsborneae**

1. *Buxbaumia aphylla* Hedw., *Sp. Musc. Frond.* 166 (1801)

T: Not designated.

Buxbaumia tasmanica Mitt., in J.D.Hooker, *Fl. Tasman.* 2: 199 (1859). T: Cheshunt, Tas., *W.Archer s.n.*; iso: HO.

Illustration: I.G.Stone, *op. cit.* facing p. 546, pl. 1c.

Perichaetial leaves few, colourless to pale yellow, 0.30–0.34 mm long, 0.10–0.12 mm wide; apex irregular; margin ciliate. Seta 5–7 mm long, red-brown, finely papillose. Capsules c. 3.5 mm long, gibbous, pale brown to golden; neck swollen; operculum smooth. Outer peristome elements brownish, tooth-like. Spores globose, 12–14 µm diam.

Occurs in north-eastern Qld and Tas.; also in New Zealand, Europe, Japan and North America.

Qld: track heading NE of radio mast towards Centre Peak, Mount Bellenden Ker [Wooroonooran] Natl Park, *E.A.Brown 95/222*, *B.M.Wiecek & K.L.Radford* (NSW). Tas.: N side of L. Fenton, Mount Field Natl Park, *D.H.Norris 28552* (HO).

Setae in the isotype of *B. tasmanica* are not as coarsely papillose, and the capsules lack the distinct rim separating the upper flattened and lower convex surface, as in the foreign collections examined. However, according to Fife, in an annotation of the isotype of *B. tasmanica* (1996), it falls within the range of variability observed among New Zealand collections of *B. aphylla*.

2. *Buxbaumia colyerae* Burges, *Proc. Linn. Soc. New South Wales* 57: 242 (1932)

T: Williams River, base of Barrington Tops, N.S.W., Sept. 1930, *A.Burges*; holo: LIV; iso: SYD.

[We have received a digital image of the holotype and of the collection packet from Liverpool where the Burges Herbarium is housed. On the packet, the collection date recorded by Burges is August 1931, although in the protologue he noted that he collected it in September 1930. Burges stated that he returned to the type locality in August 1931, but he did not find any trace of the moss. The collection date recorded on the isotype at SYD is August 1930.]

Illustrations: I.G.Stone, *op. cit.* 545, fig. 3; facing p. 546, pl. 1b.

Perichaetial leaves numerous, reddish brown, paler near the base, 0.25–0.47 mm long, 0.08–0.12 mm wide; apex obtuse or short-acuminate; marginal cells bulging, occasionally forming short finger-like projections. Upper laminal cells predominately short-rectangular, occasionally narrowly rectangular, 37–63 × 10–20 µm, thick-walled; basal laminal cells shorter. Calyptra not seen. Seta 10–15 mm long, red-brown, smooth and glossy. Capsules inclined, relatively narrow, ovoid, almost symmetrical, 5–6 mm long, with a scarcely flattened upper surface; stomata few, at base of the capsule, immersed; operculum short, smooth; apex rounded. Outer peristome elements yellow, column-like, coarsely papillose. Spores globose, 10.0–12.5 µm diam.

This endemic species occurs in far north-eastern Qld, with a disjunct record in the Central Tablelands, N.S.W.; grows on rock and on soil in temperate and montane tropical rainforest.

Qld: Bellenden Ker, *A.G.Stone [IGS 16840]* (MEL); Centre Peak Track, Bellenden Ker, *I.G.Stone 16888* (MEL); Plane Track, Bellenden Ker, *I.G.Stone 16863* (MEL); Bellenden Ker, *A.G.Stone [IGS 17940]* (MEL).

The distinctive, red-brown, non-ciliate leaves, longer setae and narrower, scarcely flattened capsules distinguish this from the other Australian species. According to Stone (1983), *B. colyerae* is very similar to the New Zealand endemic *B. novae-zelandiae* Dixon. The isotype in SYD consists of a single sporogone.

3. *Buxbaumia thorsborneae* I.G.Stone, *J. Bryol.* 12: 541 (1983)

T: Mt Bellenden Ker, Qld, *I.G.Stone 16842*; holo: BRI; iso: MEL.

Illustrations: I.G.Stone, *op. cit.* 543, fig. 1; 544, fig. 2, pl. 1a.

Perichaetial leaves few, colourless, narrowly lanceolate, to c. 0.5 mm long, c. 0.13–0.14 mm wide; apex irregular; marginal cells bulging, often forming short finger-like projections. Laminal cells 55.0–67.5 × 10–14 µm, thin-walled. Calyptra narrowly tubular, smooth. Seta to c. 5 mm long, orange-brown, papillose. Capsules inclined to almost horizontal, gibbous, with the underside swollen and the upperside flat, c. 2.5–3.0 mm long and 2.0–2.5 mm wide, yellow to pale brown, with a distinct orange-brown ridge around the edge; stomata few, basal, immersed; operculum mammillose. Outer peristome elements red-brown, tooth-like, tubular. Spores oval, 10–12 (–14) µm long.

An endemic species found at c. 1200 m in montane rainforest in north-eastern Qld; grows on granite rocks in seasonal streams.

Qld: Plane Track, Mt Bellenden Ker, *I.G.Stone 16863* (MEL); Centre Peak Track, Mt Bellenden Ker, *I.G.Stone 16888* (MEL).

Buxbaumia thorsborneae can be distinguished from *B. colyerae* by the shorter setae, the shape of the capsules, the thickened ridge around the capsule, and the mammillose operculum. It shares a rather similar capsule morphology with *B. aphylla*, but the mammillose operculum and non-ciliate leaves are diagnostic. The same characters separate *B. thorsborneae* from the Malesian endemic *B. javanica* Müll.Hal.