

AMBUCHANANIACEAE

Rodney D. Seppelt¹

Ambuchananiaceae Seppelt & H.A.Crum, *Fl. Australia* 51: 406 (2006); Seppelt & H.A.Crum, in H.A.Crum & R.D.Seppelt, *Contr. Univ. Michigan Herb.* 22: 29 (1999), *nom. inval.*

Type: *Ambuchanania* Seppelt & H.A.Crum

Autoicous. Stem cortical cells in a single layer, weakly differentiated from underlying cells, without pores or fibrils; scleroderm lacking. Stem leaves large, imbricate, bordered by 15–20 rows of narrow cells with pitted walls in mid-lamina. Branches erect, dimorphic, short and long, not forming fascicles; branch cortical cells similar to those of the stem. Branch leaves narrower than stem leaves; hyaline cells with rudimentary fibrils on abaxial lower surface; adaxial surface pores simple, solitary, in centre of cell surface on branch leaves, absent on stem leaves; abaxial surface pores simple, forming a pore-like structure at junction of 4 hyaline cells, with ringed pores on walls between 2 hyaline cells, scattered, up to 10 per cell on stem leaves. Chlorophyllose cells of leaves located on adaxial side of hyaline cells (in cross-section). Perichaetia terminal; perigonia lateral, borne immediately below perichaetia; antheridia oblong-ellipsoidal.

Formerly, a monotypic family considered endemic to Tasmania, Shaw *et al.* (2010) added a second genus, *Eosphagnum* A.J.Shaw.

This family differs from Sphagnaceae in the location of the chlorophyllous cells in cross-sections of the leaves, the ringed thickenings found in leaf hyaline cells, and in the elongate antheridia. *Eosphagnum*, unlike *Ambuchanania*, conforms to mainstream *Sphagnum* architecture at the whole plant level. At the molecular level, the two taxa form one of three distinct lineages within the Sphagnopsida (Shaw *et al.*, 2010).

Shaw *et al.* (2010) intended to validate Ambuchananiaceae and *Ambuchanania*, However, this action was redundant following validation of the family name by Seppelt & Crum (2006; see below).

References

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- Crum, H.A. & Seppelt, R.D. (1999), *Sphagnum leucobryoides* reconsidered, *Contr. Univ. Michigan Herb.* 22: 29–31.
- Johnson, K.A., Whinam, J., Buchanan, A.M. & Balmer, J. (2008), Ecological observations and new locations of a rare moss, *Ambuchanania leucobryoides* (Ambuchananiaceae), *Pap. & Proc. Roy. Soc. Tasmania* 142: 1–6.
- Seppelt, R.D. (2000), The Sphagnopsida (Sphagnaceae; Ambuchaniaceae) in Australia, *Hikobia* 13: 163–183.
- Seppelt, R.D. & Crum, H.[A.] (1999), *Sphagnum fuscovinosum*, a new species from Australia, *Contr. Univ. Michigan Herb.* 22: 131–134.
- Shaw, A.J., Cox, C.J., Buck, W.R., Devos, N., Buchanan, A.M., Cave, L., Seppelt, R., Shaw, B., Larraín, J., Andrus, R., Greilhuber, J. & Tensch, E.M. (2010), Newly resolved

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relationships in an early land plant lineage: Bryophyta class Sphagnopsida (peat mosses), *Amer. J. Bot.* 97: 1511–1531.

Threatened Species Section (2008), *Listing Statement for Ambuchanania leucobryoides* (daisy pan moss), Department of Primary Industries & Water, Tasmania.

AMBUCHANANIA

Ambuchanania Seppelt & H.A.Crum, in H.A.Crum & R.D.Seppelt, *Contr. Univ. Michigan Herb.* 22: 29 (1999); named in honour of Alex M. Buchanan, the original collector.

Type: *A. leucobryoides* (T.Yamag., Seppelt & Z.Iwats.) Seppelt & H.A.Crum

Sphagnum sect. *Buchanania* T.Yamag., Seppelt & Z.Iwats., *Hikobia* 11: 139 (1992), *nom. illeg.*, *non* Yamaguchi *et al.*, *J. Bryol.* 16: 45 (1990).

Description as for the family.

Ambuchanania leucobryoides (T.Yamag., Seppelt & Z.Iwats.) Seppelt & H.A.Crum, in H.A.Crum & R.D.Seppelt, *Contr. Univ. Michigan Herb.* 22: 29 (1999)

Sphagnum leucobryoides T.Yamag., Seppelt & Z.Iwats., *J. Bryol.* 16: 45 (1990). T: Port Davey, Coffin Bay, Tas., *A.M.Buchanan 9371*; holotype: HO.

Illustrations: T.Yamaguchi, R.D.Seppelt & Z.Iwatsuki, *op. cit.* 45–54, figs 1–6, as *Sphagnum leucobryoides*; R.D.Seppelt, *op. cit.* 180, fig. 8; A.J.Shaw *et al.*, *op. cit.* 1524, fig. 6.

Plants small, pale brown or whitish green (when dry), somewhat glossy. Stems c. 2 cm long, irregularly and sparsely branched. Stem leaves suberect to widely spreading, broadly lanceolate, 3.6–4.3 mm long, 1.5–1.7 mm wide, concave, tubular in upper part; apex rounded-obtuse or narrowly truncate; margin entire or irregularly sparsely toothed at the base; hyaline cells of stem leaves narrowly rectangular or narrowly rhomboidal on abaxial surface, broadly rhomboidal on adaxial surface; fibrils rudimentary; unringed pores scattered on abaxial surface at apical part of leaf; chlorophyllose cells of stem leaves with lumina oblong to oval (cross-section). Long branches 3–5 mm long; branch leaves lanceolate, with cells similar to stem leaves. Short branches few, single or paired, c. 0.3 mm long, with 8–10 appressed imbricate leaves; upper leaves narrowly obovate, to 8.6 mm long and 1.1 mm wide; hyaline cells of upper leaves slightly inflated on both sides (cross-section), fibrillose except for cells at apical and basal parts of leaf. Chlorophyllose cells of stem leaves with oblong to oval lumina, usually immersed on both surfaces of leaf (cross-section); those of branch leaves dimorphic, exposed adaxially, with small rounded-triangular to oval lumina, or with narrowly elliptic lumina, thick-walled and with papillae on internal commissural walls of hyaline cells. Lower leaves of short branches obovate, concave, with a border of 10–15 rows of cells in mid-leaf.

Perichaetial leaves ovate, concave, 3.3–3.4 mm long, 1.4–1.6 mm wide; apex rounded. Antheridia c. 0.50 × 0.15 mm, in a fascicle of 2–4; antheridial stalks 0.3–0.4 mm long, connected at base; perigonal leaves similar to perichaetial leaves. Pseudopodium c. 3.5 mm long. Capsules 1.0–1.1 mm diam., with many pseudostomata in lower half.

Known from white quartzitic sand deposited by alluvial flow in three coastal localities in south-western Tas. Earlier reports of this species from the margin of a *Gymnoschoenus* sedgeland more than 60 km from the coast have been reassessed and found to be *Sphagnum novae-zelandiae* (R.D.Seppelt, in Johnson *et al.*, 2008).

This is readily distinguished from *Sphagnum* species by the following characteristics: plants having a *Leucobryum*-like appearance; stems and branches with a slightly differentiated cortex, lacking a scleroderm, and without fibrils or pores in the outer hyalodermal cells; long and short erect branches; large, imbricate stem leaves; large, club-shaped leaves of the short branches; hyaline cells of the leaves narrower on the abaxial surface than those on the adaxial surface; hyaline cells of leaves located on abaxial side of chlorophyllose cells in cross-section; in section, dimorphic chlorophyllose cells of the leaves of short branches;

terminal perichaetia; perigonia lateral on the stem just below the perichaetium; and oblong-ellipsoidal antheridia.

AMBUCHANANIALES

R.D.Seppelt & H.A.Crum†

The order Ambuchananiales Seppelt & H.A.Crum (*in* H.A.Crum & R.D.Seppelt, *Contr. Univ. Michigan Herb.* 22: 29, 1999), the family Ambuchananiaceae Seppelt & H.A.Crum, and the genus *Ambuchanania* Seppelt & H.A.Crum were based on a single, composite description. If we assume that the Latin diagnosis referred to the new genus, and the new order did not require such a diagnosis, then the family name is invalid under Art. 41.1 of the ICBN. Ambuchananiaceae is validated here.

Ambuchananiaceae Seppelt & H.A.Crum, *fam. nov.*

Type: *Ambuchanania* Seppelt & H.A.Crum

Sphagnaceae similis sed caulibus cum cortice parce differentis sine poris aut fibrillis; foliis limitatis ab seriebus numerosis cellularum angustarum; cellulis hyalinis uni- vel bistratis; cellulis chlorophyllosis adaxialis; archegoniis terminalibus, cum foliis perichaetialis amplificatis; antheridiis nudis, oblongis-cylindricis differt.

from *Flora of Australia* 51: 406 (2006)