Flora of Tasmania online

SIPHULASTRUM [1] [2]

Gintaras Kantvilas [3]

Siphulastrum Müll.Arg., *Flora* 72: 143 (1889).

Type: *S. triste* Müll.Arg.

Thallus minutely foliose to squamulose, ± smooth or nodulose and papillate, sometimes very densely so and forming caespitose mats, occasionally sorediate; upper surface yellowish brown to grey-brown to blackened, minutely pubescent; lower surface ecorticate, pale brown, attached to the substratum by white to blue-black rhizohyphae. Photobiont cyanobacterial, *Scytonema*, with cells in chains. Ascomata apothecia, biatorine, lacking a thalline margin. Disc plane, initially red-brown, soon blackened. Proper exciple thin, persistent, at first pale red-brown, soon concolorous with the disc, comprised of radiating, paraplectenchymatous hyphae. Hypothecium pale to deep yellow-brown, intensifying in K. Hymenium hemiamyloid, I+ red, KI+ blue, mostly hyaline but overlain by a greyish epithecium. Paraphyses simple, rather stout, 3–4 µm wide; apices a little enlarged to 4–5 µm, often pigmented. Asci clavate, 8-spored, of the *Siphulastrum*-type: hemiamyloid, with a thin, intensely KI+ blue outer wall and outer cap, and a well-developed, non-amyloid tholus lacking any internal structures; ocular chamber not developed. Ascospores simple, hyaline, ellipsoid, usually with a roughened exospore *c.* 1 µm thick. Conidiomata not seen. Chemistry: argopsin.

A small genus of four species, restricted to cold regions of the Southern Hemisphere; two species, including one endemic, occur in Tasmania. Although superficially similar to several other genera of the Pannariaceae, including *Pannaria pro parte*, *Fuscopannaria* and *Parmeliella*, *Siphulastrum* is usually easily recognised by the combination of the presence of argopsin (P+ orange) in the thallus, the *Scytonema* (as distinct from *Nostoc*) photobiont, the biatorine apothecia and the characteristic, hemiamyloid asci.

Key references: Jørgensen & Galloway (1992).

1 Thallus sorediate, usually growing on bark in wet forest, scrubby woodland and heathland at high elevations — 1 S. granulatum

Soredia absent; thallus growing on thin soil on exposed alpine boulders — 2 S. mamillatum

1 Siphulastrum granulatum P.M.Jørg. & D.J.Galloway

Fl. Australia 54: 317 (1992). Type: Tasmania, Lake Dobson, 42°41'S 146°35'E, 1030 m, on soil and moss in *Eucalyptus coccifera* subalpine woodland, 13 August 1981, *G. Kantvilas 623/81 & P. James* (holo—BM!; iso—HO!).

Thallus minutely foliose to squamulose, forming patches to *c.* 50 mm wide. Squamules and lobes 0.5–1.5 mm wide, olive-brown to yellow-brown, plane to concave, scattered, commonly on a black, effuse or ± byssoid prothallus, or contiguous and imbricate and the prothallus then inapparent; margins crenulate and notched, thickened, downy whitish-pruinose, ascending, becoming sorediate; soredia pale blue-grey, very coarsely granular, soon spreading across the squamules and the entire thallus ± reduced to sorediate cush-

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3 Tasmanian Herbarium, Tasmanian Museum & Art Gallery, PO Box 5058, UTAS LPO, Sandy Bay, TAS 7005, Australia.

ions; lower surface whitish to pale brown, attached by tangled, whitish to blue-black rhizohyphae. Apothecia uncommon, 0.4–1.2 mm wide, initially with a red-brown disc and pale brown proper exciple, soon becoming entirely black-brown to black. Hymenium 65–90 µm thick; epithecium dilutely grey-brown to intensely greyish black, K+ grey-green, N+ crimson, with the pigment within and coating the terminal cells of the paraphyses; asci 55–70 × 12–18 µm. Ascospores 10–*12.4*–15 × 5.5–*7.0*–8 µm.

Chemistry: argopsin; thallus K–, KC–, C–, P+ orange.

Endemic to Tasmania where it is relatively frequent at subalpine and alpine elevations in rainforest, open woodland and scrubby heathland. It occurs either directly on bark or amongst epiphytic bryophytes or, more rarely, on peaty soil in sheltered microhabitats. Papery bark, such as that of *Athrotaxis*, *Leptospermum* and *Richea*, is a typical habitat. The combination of a blue-grey sorediate, squamulose thallus and the presence of argopsin make this tiny, rather inconspicuous species easily identifiable.

Ball Room Forest Track, 41°40'S 145°57'E, 1967, *G.C. Bratt 67/587 & Cashin* (HO); *c*. 0.5 km NE of Twin Spires, 41°53'S 146°07'E, 1200 m, 1999, *G. Kantvilas 72/99* (HO); northern slopes of Mt Riveaux, 43°08'S 146°39'E, 700 m, 2000, *G. Kantvilas 121/00* (HO).

2 Siphulastrum mamillatum (Hook.f. & Taylor) D.J.Galloway

New Zealand J. Bot. 21: 197 (1983); —*Lecidea mamillata* Hook.f. & Taylor, *London J. Bot*. 3: 637 (1844); *Parmeliella mamillata* (Hook.f. & Taylor) Zahlbr., *Cat. Lich. Univ*. 3: 212 (1925).

Thallus minutely foliose-squamulose, forming caespitose patches to 50–100 mm wide and to *c*. 10 mm tall, initially on a short-lived, black prothallus. Squamules 0.4–1.5 mm wide, concave, contiguous and imbricate, yellow-brown to grey-brown or blackened, with the margins thickened, crenulate, downy whitish-pruinose, ascending, soon becoming nodulose, papillate and developing dense, erect, terete, coralloid laciniae, 0.15–0.3 mm wide and blackened at the tips; soredia absent; lower surface attached by a tangle of blue-black rhizohyphae. Apothecia 0.5–1.5(–2) mm wide, usually crowded and nestled amongst the laciniae; disc plane to undulate to a little convex, black-brown to jet-black; proper exciple mostly concolorous with the disc, persistent. Hymenium 65–90 µm thick; epithecium grey-brown to grey-black, K+ grey-green or bluish green, N+ crimson, with the pigment coating the terminal cells of the paraphyses; asci 50–75 × 13–20 µm. Ascospores (10–)10.5–*13.5*–16 × (5–)5.5–*6.8*–8(–8.5) µm.

Chemistry: argopsin; thallus K–, KC–, C–, P+ orange.

Widespread and common in alpine areas, usually on thin soil amongst bryophytes on large, exposed boulders, but also rarely on the ground or on rotting wood. Although most commonly seen on dolerite mountains, this species also occurs on quartzitic and conglomerate peaks of the south-west. The nodulose-papillate thallus closely resembles that of the ± equally common *Parmeliella ligulata* P.M.Jørg. & D.J.Galloway, which occurs in identical habitats but which differs by lacking P+ orange secondary compounds and has amyloid asci with internal structures in the tholus. More problematic for identification, however, is a rare species from the Mt Ossa area, tentatively ascribed to *Pannaria*. This unusual lichen has a pale brownish thallus containing pannarin (P+ orange), a *Nostoc* photobiont, ascending or decumbent, ± terete laciniae and forms dense cushions on soil or boulders. Also a little similar (and growing in the same habitats) is *Micarea oreina* Kantvilas & Coppins, which differs clearly by having immarginate apothecia, as well as in many anatomical and chemical characters. *Siphulastrum mamillatum* also occurs in New Zealand and southern South America.

Mt Wellington, at the shelter hut, 42°53'S 147°13'E, 1000 m, 1970, *G.C. Bratt 70/386, J.A. Cashin & G. Degelius* (HO); Mt Charles, 42°09'S 146°15'E, 1040 m, 2006, *G. Kantvilas 114/06* (HO); Clear Hill, 42°41'S 146°16'E, 1198 m, 2011, *G. Kantvilas 497/11* (HO).

REFERENCES

Jørgensen PM, Galloway DJ (1992) Pannariaceae. *Flora of Australia* **54** 246–293.

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