

A new species of *Dictyomeridium* (lichenized Ascomycota, Trypetheliaceae) from Tasmania

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Abstract

Dictyomeridium tasmanicum sp. nov. (Trypetheliaceae) is described from the bark of coastal *Allocasuarina verticillata* in south-eastern Tasmania. The new lichen has a thin, UV⁻, epiphloeodal thallus, small but prominent, pleurothelioid ascomata with eccentric to lateral ostioles, and bisporous asci containing comparatively large, muriform-euseptate ascospores.

Introduction

The tropical and subtropical lichen genus *Dictyomeridium* Aptroot, M.P.Nelsen & Lücking was recently segregated from *Polymeridium* (Müll.Arg.) R.C.Harris as a phylogenetically and morphologically distinct lineage within the family Trypetheliaceae (Lücking *et al.* 2016). Comprising seven species, it is characterized by the combination of pleurothelioid ascomata with eccentric to lateral ostioles and muriform ascospores (Aptroot & Lücking 2016; Lücking *et al.* 2016; Hongsanan 2020). In Australia, two species are already known from Queensland (McCarthy 2020); in this contribution, the newly described *D. tasmanicum* is reported from coastal habitats in south-eastern Tasmania.

Dictyomeridium tasmanicum P.M.McCarthy & Kantvilas

Figs 2 & 3

Mycobank No.: **MB 840847**

Similar to *D. immersum* (Aptroot, A.A.Menezes & M.Cáceres) Aptroot, M.P.Nelsen & Lücking in that both species, uniquely in the genus, have 2-spored asci, but the new entity differs in having an off-white to pale silvery grey, UV⁻ thallus lacking a prothallus, and semi-immersed to almost superficial ascomata.

Type: Australia, Tasmania, near Triabunna, Spring Bay Mill, shoreline below Lispers Corner, 42°33'S, 147°56'E, 2 m alt., on bark of *Allocasuarina verticillata* along foreshore, *G. Kantvilas 429/19*, 20.xi.2019 (holotype – HO 599616).

Thallus lichenized, crustose, epiphloeodal, effuse, non-rimose, smooth to minutely uneven, off-white to pale silvery grey, to 25 mm wide, very thin, 20–40 µm thick, ecorticate, UV⁻. *Photobiont cells* sparse, trentepohlioid, 10–16 × 8–13 µm. *Prothallus* absent. *Ascomata* pleurothelioid, solitary, sparse, semi-immersed in the substratum to almost superficial, dull black and smooth above, not or only very slightly overgrown by the thallus, (0.25–)0.37(–0.45) mm wide [*n* = 20], with a broadly ellipsoid to pyriform outline in surface view; ostiole eccentric to lateral, *c.* 20–40 µm wide. *Ascomatal wall* greenish black in section, 25–50 µm thick above, 20–30 µm thick at the base, K⁻. *Hamathecium* hyaline, not interspersed with granules or oil droplets, of loosely anastomosing paraphysoids embedded in a gelatinous matrix (anastomoses most frequent towards the ostiole), KI⁻; paraphysoids long-celled, 0.5–0.7(–1) µm thick, not constricted at the septa. *Subhymenium* hyaline, not interspersed, 25–40 µm thick. *Asci* 2-spored, narrowly clavate to cylindroclavate, orientated vertically or tilted towards the ostiole, non-amyloid, 84–115 × 15–25 µm, initially with a thick tholus and, often, a long narrow ocular chamber that becomes excluded as the tholus contracts towards maturity. *Ascospores* colourless, narrowly ellipsoid, oblong-ellipsoid or oblong, contiguous-uniseriate or overlapping slightly, non-amyloid, the distal spore usually shorter and broader than the narrower and more

elongate proximal spore, muriform-euseptate, with 9–18 × 2–4 ± cuboidal or polygonal locules, usually distinctly constricted at the primary septum, (35–)50(–74) × (12–)15(–20) µm [*n* = 30], these measurements not including the perispore, which is smooth, hyaline and (2–)4–5(–7) µm thick (this last feature clearly visible only in ascospores outside the asci). *Pycnidia* not seen.

Etymology: The species epithet refers to the occurrence of the new lichen in Tasmania.

Remarks

The new species is one of only two members of *Dictyomeridium* with 2-spored asci. The other taxon, *D. immersum*, from western and north-eastern Brazil, has a pale pinkish white and UV⁺ yellow thallus surrounded by a brown prothalline line, together with deeply immersed ascomata with only the ostiole and periostiole region visible (Aptroot *et al.* 2013). Incidentally, all other species have 8-spored asci, including the two tropical Australian representatives, *D. amylosporium* (Vain.) Aptroot, M.P.Nelsen & Lücking and *D. proponens* (Nyl.) Aptroot, M.P.Nelsen & Lücking.

Dictyomeridium tasmanicum is currently known from coastal *Allocasuarina verticillata* (she-oak) woodland at two closely adjacent localities in south-eastern Tasmania. Coastal she-oak in Tasmania is usually a lichen-rich habitat with respect to biomass if not species richness. The tree produces very rough, furrowed bark on its older trunks, and is commonly covered in species of Parmeliaceae, notably *Austroparmelia pseudorelicina* (Jatta) A.Crespo, Divakar & Elix, *Flavoparmelia rutidota* (Hook.f. & Taylor) Hale, *Menegazzia subpertusa* P.James & D.J.Galloway and *Punctelia pseudocoralloidea* (Gyeln.) Elix & Kantvilas, whereas the smooth-barked younger limbs are typically rich in crustose lichens and festooned with *Usnea* species. In that respect, the type locality is very unusual, because at this site the she-oak trunks and branches are essentially bare (Fig. 1), no macrolichens at all are present, and crustose lichens are very rare, poorly developed and at most represented by tiny, very scattered thalli, mostly hidden in fissures of the bark. *Dictyomeridium tasmanicum* was found in such a habitat, but it was extremely uncommon and associated with equally uncommon, minute, scattered thalli of *Buellia dissa* (Stirt.) Zahlbr., *Enterographa divergens* (Müll.Arg.) Redinger and *Rinodina australiensis* Müll.Arg.

Indeed, the discovery of this highly inconspicuous new species was entirely fortuitous and due solely to a detailed flora survey being conducted at the site (the Third Tasmanian Museum and Art Gallery Expedition of Discovery; see Baker *et al.* 2019). The cause for this starkly depauperate local flora is unknown, but it may be due to the recent heavy industrialisation of the site when it served as one of the world's largest woodchip mills for more than four decades. There was also evidence of a loss of diversity in saxicolous lichen communities as well as some physical damage to lichen thalli.

ADDITIONAL SPECIMEN EXAMINED

Tasmania. ● near the type locality, Lispers Corner, 42°32'S, 147°56'E, 10 m alt., on bark of *Allocasuarina verticillata* in coastal woodland, *G. Kantvilas 17/21*, 10.i.2021 (HO 602363).

Acknowledgements

For their support of the TMAG Expedition to Spring Bay where the new species was collected, we thank Graeme Wood, Anna Cerneaz, Robbie Williams and the staff of Spring Bay Mill, and the Friends of the Tasmanian Museum and Art Gallery.

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Figure 1. *Allocasuarina verticillata*-dominated coastal woodland at Spring Bay, Tasmania. Note the unusual absence of epiphytes on the rough-barked trunks.



Figure 2. *Dictyomeridium tasmanicum* (holotype). Scales: 1 mm.

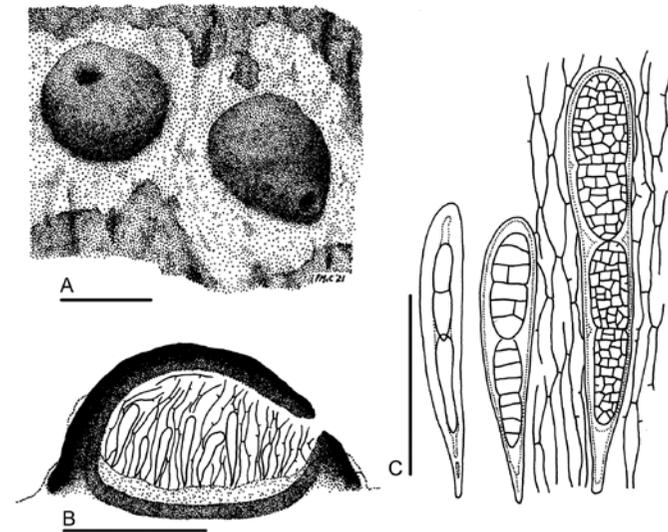


Figure 3. *Dictyomeridium tasmanicum* (holotype). A, Habit of thallus and two ascomata. B, Sectioned ascoma (semi-schematic). C, Two immature asci, a mature ascus and paraphysoids. Scales: A, B = 0.2 mm; C = 50 μ m.