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Abstract: *Melanophloea montana* P.M.McCarthy (Thelocarpaceae) is described as new from sheltered siliceous rocks in montane rainforest in north-eastern Queensland.

In August, 2006, a remarkable lichen with perithecioid ascomata was collected from siliceous rock in the montane rainforest of the Atherton Tableland in north-eastern Queensland. It is described here as *Melanophloea montana* (Thelocarpaceae).

Melanophloea montana P.M.McCarthy sp. nov.

Fig. 1

Thallus epilithicus, rimosus, laevigatus, medioviridigriseus vel griseobrunneus, 30–50(–80) μm crassus, ecorticatus; algae chlorococcoidea. Ascomata perithecia simulantia, convexa vel hemisphaerica, superficialia, (0.24–)0.35(–0.42) mm diametro, parietibus viridiatris; paries algae includens. Hymenium amyloideum. Pseudoparaphyses simplices vel anastomosantes. Asci c. 150–200-sporae, 70–150 \times 12–22 μm , parietibus aequae tenuibus. Ascospores numerosae, simplices, hyalinae, plerumque ellipsoideae, 4–6(–6.5) \times (2–)2.5–3 μm .

Type: Australia, Queensland, Atherton Tableland, Ravenshoe State Forest, Tully Falls Weir, 28 km S of Ravenshoe, 17°41'57"S, 145°31'24"E, on deeply shaded, damp siliceous rocks in rainforest, alt. 885 m, P.M. McCarthy 2520, 7.viii.2006 (holotype CANB; isotype HO).

Thallus crustose, epilithic, to 4 cm wide, determinate, sparingly to richly rimose but not areolate, smooth, slightly glossy, medium greenish grey to greyish brown, 30–50(–80) μm thick, ecorticate, tending to peel in places, somewhat pulpy and translucent when wetted. Algae chlorococcoid; cells bright green, globose, (4–)5–7(–8) μm diam., less commonly subglobose to broadly ellipsoidal. Hyphae c. 2 μm wide. Prothallus not apparent; hypothallus absent. Ascomata resembling perithecia, rather numerous, mostly solitary and semi-immersed to almost superficial, convex to hemispherical, (0.24–)0.35(–0.42) mm diam. [50 measured], greenish black, not overgrown by the thallus. Ascomatal apex usually rounded, occasionally somewhat flattened or depressed, with a whitish, grey-green, medium grey-brown or dark brown, (50–)80–120 μm diam. area, viz. the uppermost level of the hymenium. Even when ascomata are uniformly \pm black when dry, when wetted the 'epihymenium' is visible as a brownish disc. Ascomatal wall with an outer, 20–45 μm thick, greenish black hyphal layer (thinner towards the apex, thicker below), with cells 2–4 μm wide, subtended at the apex by the excipulum and, laterally, by thalline hyphae and algal cells. Excipulum enclosing the hymenium, uniformly hyaline to pale yellowish brown, 20–25(–35) μm thick at the base, 30–50(–60) μm thick near the apex, composed of numerous periclinal layers of thin-walled elongate hyphae. Hymenium subglobose to depressed-ovate, 0.18–0.25 μm diam.; hymenial gel IKI+ blue-black; contents remaining coherent in KOH and water. Subhymenium pale brown to medium orange-brown, 40–60 μm thick. Paraphyses rather sparse at maturity, initially more numerous and simple, becoming sparingly branched and anastomosing, (0.5–)1(–1.5) μm wide. Periphyses absent. Asci obclavate, narrowly clavate to elongate-cylindrical, containing c. 150–200 ascospores, 70–150 \times 12–22 μm , IKI+ pale blue; wall uniformly c. 1 μm thick at maturity; apex rounded, apparently lacking dehiscence apparatus, with a very intensely blue cap outside the wall of the apex (G. Kantvilas, pers. comm.); empty post-mature asci remaining visible in the hymenium. Ascospores simple, hyaline, narrowly to broadly ellipsoidal or short-cylindrical, massed in the asci, 4–6(–6.5) \times (2–)2.5–3 μm [50 measured], lacking a perispore; contents clear, non-guttulate. Conidiomata not seen.

Etymology: The epithet *montana* refers to the montane habitat in which the species was found. This is in contrast to the lowland habitats of previous collections of *Melanophloea*.

Remarks

The previously monotypic *Melanophloea* was originally characterized by a granulose corticolous thallus with a chlorococcoid photobiont, prominent perithecioid ascomata with a carbonized wall, a hamathecium of anastomosing filaments, an amyloid hymenium, and thin-walled asci containing very numerous, simple, globose ascospores (James & Vězda 1971). *Melanophloea pacifica* P.W.James & Vězda is known from the bark of rainforest trees in the Solomon Islands and at Cape Tribulation, north-eastern Queensland (James & Vězda 1971, Thor 1995).

While the newly described species can be accommodated in *Melanophloea*, placement there is not entirely satisfactory. The saxicolous thallus is thin and rather smooth, the ascomata are less prominent, and while these are externally rather deeply pigmented, in section the ascomatal wall is not "carbonized", and it encloses algal cells. Moreover, the ascospores are ellipsoidal to short-cylindrical. Nevertheless, a well-defined suite of thallus and ascomatal characters confirm *Melanophloea* as the most appropriate available genus: a chlorococcoid photobiont, a firm involucrellum-like ascomatal wall, anastomosing filaments resembling pseudoparaphyses, the absence of periphyses, a firmly coherent amyloid hymenium, thin-walled multispored asci, and minute, simple hyaline ascospores.

Melanophloea montana is more remote from *Thelocarpon* Nyl., with its pale, often translucent and more fragile ascomatal wall that lacks all traces of an involucrellum-like layer (Salisbury 1966). However, their relationship is confirmed by the morphology of the ascomata which, rather than being true perithecia, are essentially apothecia with an upwardly curved excipulum that encloses the hymenium but which nevertheless leaves a narrow disc of exposed epihymenium consisting of hamathecial filaments and ascus apices (Fig. 1A, B).

This lichen is known only from the type locality in montane rainforest in north-eastern Queensland. Associated taxa included the locally common pyrenolichens *Anisomeridium australiense* (P.M.McCarthy) R.C.Harris and *Strigula australiensis* P.M.McCarthy.

Melanophloea pacifica P.W.James & Vězda

SPECIMEN EXAMINED

Queensland: • Cape Tribulation National Park, c. 45 km NE of Mossman, Cape Tribulation beach, 16°05'S, 145°30'E, at the base of a tree in open rainforest, alt. 2–10 m, G. Thor 5309, 19.xi.1985 (CANB).

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References

- James, P.W. & Vězda, A (1971): *Melanophloea* P. James & Vězda, a new lichen genus. *Lichenologist* 5, 89–91.
Salisbury, G (1966): A monograph of the lichen genus *Thelocarpon*. *Lichenologist* 3, 175–196.
Thor, G (1995): Additional lichen records from Australia. 23. Three lichens new to Australia and a new locality for a *Collema* species. *Australasian Lichenological Newsletter* 37, 19–23.

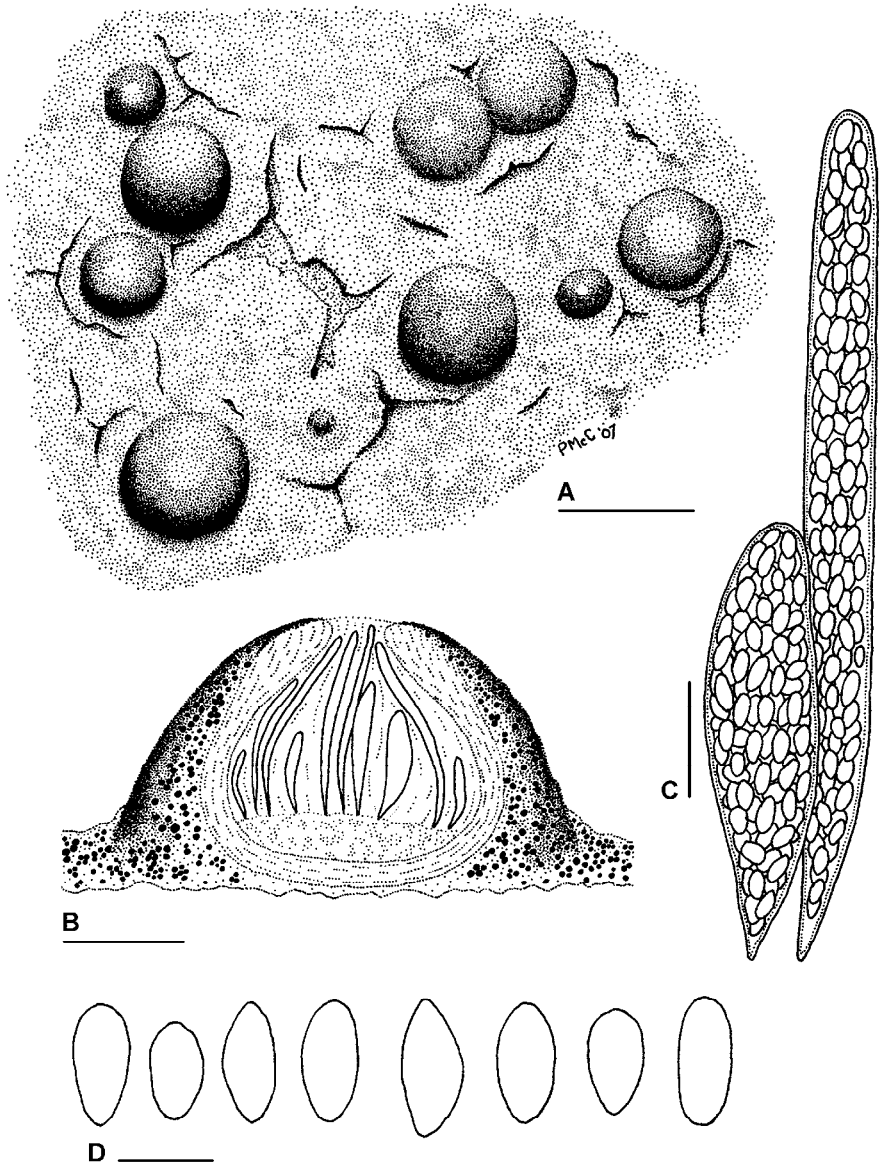


Figure 1. *Melanophloea montana* (holotype). A, Habit of thallus and ascomata. B, Sectioned ascoma and adjacent thallus (semi-schematic). C, Two mature asci. D, Ascospores. Scales: A = 0.5 mm; B = 0.1 mm; C = 20 μ m; D = 5 μ m.