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A new species of *Buellia* (Caliciaceae, Ascomycota)
from Île Matthew, New Caledonia

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from Île Matthew, New Caledonia

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Abstract

Buellia mackeei Elix & H. Mayrhofer, a saxicolous species with *Physconia*- then *Buellia*-type ascospores, bacilliform conidia, and 4,5-dichlorolichexanthone and stictic acid, is described as new to science.

This paper describes a continuation of investigations into *Buellia*-like lichens in Australia, New Zealand (Elix 2018; Elix & McCarthy 2018 and references therein) and the islands of the South Pacific Ocean (Elix 2016; Elix & de Lange 2017). Here we describe a new saxicolous species of *Buellia sens. lat.* from Île Matthew, New Caledonia. Methods are as described in the papers cited above.

Buellia mackeei Elix & H. Mayrhofer sp. nov. Fig. 1
Mycobank No.: MB 830140

Similar to *Buellia maunakeansis* Zahlbr., but differs in having a continuous, rimose-areolate thallus and in containing stictic acid as its major secondary metabolite.

Type: New Caledonia, Île Matthew, Pic Est, [22°20'40"S, 171°21'20"E], 100 m alt., on volcanic rock, *H.S. McKee 38687*, 17.i.1981 (GZU – holotype).

Thallus crustose, rimose-areolate, white to pale grey, continuous, to 25 mm wide; areoles 0.2–1 mm wide, chunky, more or less flat; upper surface smooth or subgranular, matt; prothallus not apparent; medulla white, containing calcium oxalate (H₂SO₄⁺), I–; photobiont cells 7–11 µm diam. *Apothecia* 0.2–0.5 mm wide, lecideine, scattered, broadly adnate to sessile; disc black, epruinose, ± plane; proper exciple thin, concolorous with the disc, entire, persistent, cupuliform, in section 30–50 µm thick; outer zone opaque brown-black, K–, N–; inner zone pale brown. *Hypothecium* 130–225 µm thick, red-brown to dark brown, K–. *Epithymenium* 10–15 µm thick, dark brown, K–, N–. *Hymenium* 80–95 µm thick, colourless, not interspersed; subhymenium 25–35 µm thick, pale brown, not interspersed; paraphyses 1.7–2.0 µm wide, simple to branched, capitate; apices dark brown, 4–5 µm wide. *Asci* approximating the *Bacidia*-type, with 8 or fewer spores. *Ascospores* at first of the *Physconia*-type, then of the *Buellia*-type, 1-septate, olive-brown to brown, ellipsoid, 12–[13.9]–17 × 6–[7.7]–10 µm, not constricted at the septum; outer spore-wall smooth. *Pycnidia* immersed; conidia bacilliform, straight, 3.5–4.5 × 0.7–1 µm.

Chemistry: Thallus K⁺ yellow, C–, P⁺ orange, UV⁺ pale orange; containing 4,5-dichlorolichexanthone (minor), stictic acid (major), cryptostictic acid (minor), constictic acid (trace), norstictic acid (trace).

Etymology: The species is named after the collector of the type specimen, the late Australian botanist Dr H.S. McKee.

Remarks

This new species is characterized by the rimose-areolate, white to pale grey crustose thallus, with a non-amyloid medulla that contains calcium oxalate, the adnate to sessile, lecideine apothecia with epruinose discs, *Physconia*- then *Buellia*-type ascospores, 12–17 × 6–10 µm, the bacilliform conidia, 3.5–4.5 µm long, and the presence of 4,5-dichlorolichexanthone and stictic acid. Its anatomy resembles that of *B. maunakeansis*, a widely distributed Pacific species (Elix 2016). However, the thallus of *B. maunakeansis* differs in comprising markedly bullate, contiguous to dispersed, convex areoles and rust-brown pruinose discs, and in containing 4,5-dichlorolichexanthone, norstictic and connorstictic acids. Chemically, *B. mackeei* is identical to the stictic acid race of *Buellia mamillana* (Tuck.) W.A. Weber, but the latter has cryptolecanorine apothecia, an amyloid medulla lacking calcium oxalate, and longer, subfiliform conidia, 6–12 × 1–1.5 µm (Elix 2011).

At present, the new species is known only from the type locality. Île Matthew is an uninhabited volcanic islet located 446 km east of the New Caledonian mainland. It is 0.7 km² in area, and composed of two andesitic-to-dacitic volcanic cones, piton Est (142 m high) and Soufrière Ouest (177 m high), separated by a rocky isthmus 200 m wide (Maillet *et al.* 1986). The only associated species are *Physcia dactylifera* Elix and *P. integrata* Nyl.

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Figure 1. *Buellia mackeei* (holotype in GZU). Scale = 1 mm.