

Validation of the recent combination *Lepra roseola*

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Abstract

The recent combination *Lepra roseola* (A.W.Archer & Elix) A.W.Archer & Elix is validated.

When the new combination *Lepra roseola* (A.W.Archer & Elix) A.W.Archer & Elix was published recently, (Archer & Elix 2018), the basionym cited lacked the epithet *roseola*. Consequently, the name was invalid. *Lepra roseola* is validated here.

Lepra roseola (A.W.Archer & Elix) A.W.Archer & Elix, *comb. nov.*

Mycobank no: **822556**

Basionym: *Pertusaria roseola* A.W.Archer & Elix, in Elix, Jariangprasert & Archer, *Telopea* **12**, 269 (2008).

Acknowledgement

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Reference

Archer, AW; Elix, JA (2018): New combinations of Australian species in the genus *Lepra* Scop. *Australasian Lichenology* **82**, 130–136.

A new species of *Enterographa* (lichenized Ascomycota, Roccellaceae) from Lord Howe Island, Australia

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Abstract

Enterographa membranacea sp. nov. (Roccellaceae) is described from the trunk of a palm tree in Lord Howe Island, south-western Pacific Ocean. A key is provided to the 12 species of *Enterographa* known from Australia and its island territories.

The genus *Enterographa* Fée *sens. lat.* (Roccellaceae) includes *c.* 65 species that grow on bark, rock or leaves, or as parasites of other lichens, mainly in the tropics and subtropics (Sparrius 2004; Lücking 2008; Seavey & Seavey 2014). Eleven species are currently known from Australia including its oceanic island territories (McCarthy 2018). In this contribution, *E. membranacea* is described as new from a palm trunk in Lord Howe Island, and a key is provided to the Australian species of *Enterographa*.

Methods

Observations and measurements of photobiont cells, thalline and ascomatal anatomy, asci, ascospores, pycnidial anatomy and conidia were made on hand-cut sections mounted in water and treated with 10% potassium hydroxide (K). Calcium oxalate was detected by treatment of thalline and pseudostromatal sections with a 10% aqueous solution of sulfuric acid; it forms colourless, needle-shaped crystals. Asci were also observed in Lugol's Iodine (I), with and without pretreatment in K. Chemical constituents were identified by thin-layer chromatography (Elix 2014) and comparison with authentic samples.

New species

Enterographa membranacea P.M.McCarthy & Elix, sp. nov.

Figs 1, 2

Mycobank No.: **MB 825507**

Characterized by the combination of the very thin, effuse and inconspicuous, whitish, membranous thallus, lacking lichen substances and calcium oxalate; lirelliform ascomata immersed in conspicuous, off-white pseudostromata that are rounded to ellipsoid or elongate to irregular in outline, 0.4–2 mm long, 0.4–1 mm wide, containing psoromic acid (major) and calcium oxalate; asci of the *Opegrapha*-type; uniformly branched and loosely anastomosing paraphyses; colourless, fusiform to oblong-fusiform, (5–)6-septate, microcephalic ascospores, 18–25 × 2–3 µm, with a perispore 1.5–4 µm thick; and curved to arcuate, filiform conidia, 12–22 × *c.* 0.5 µm.

Type: Australia, New South Wales, Lord Howe Island, Mt Lidgbird, SSE slope, just E of Goat House Cave, 31°34'S, 159°06'E, alt. 450 m, on the thin, very smooth, flaking outer layer of a palm trunk (*Howea forsteriana*?) along base of basalt cliffs in *Metrosideros nervulosa*, tree fern and *Dracophyllum fitzgeraldii*-dominated rainforest, *D.H. Vitt 28714*, 21.xi.1981 (holotype – CANB).

Thallus epiphytic on the epidermis of a palm trunk, crustose, effuse and inconspicuous, dull, smooth, whitish to pale grey, filmy and 20–30(–50) µm thick when dry, slightly pulpy and a little thicker when wet, esorediate, ecorticate, not containing calcium oxalate (H₂SO₄-); colonies consisting of discontinuous mosaics of thalli to 5 mm wide, these separated by a

whitish and slightly raised prothallus to 50 µm wide. *Algae Trentepohlia*, comparatively sparse in the vegetative thallus, dominating ascomatal and pycnidial pseudostromata (see below); cells ellipsoid, 8–14 × 7–10 µm, solitary or in very short filaments; interstitial hyphae short-celled, 2–2.5(–4) µm thick. *Medulla* absent. *Ascomata* very numerous, lirelliform, immersed in off-white (with a greenish tint), thin, scarcely prominent to slightly convex pseudostromata that are rounded to ellipsoid or elongate to irregular in outline, solitary or with groups of up to 4 merging, not water-repellent, 0.4–1.5(–2) mm long, 0.4–0.8(–1) mm wide [$n = 50$]; surface smooth, dull, unbroken or faintly rimulose, the cracks usually parallel to the lirella. *Lirellae* simple to sparingly branched, pale to medium brown in surface view, 0.2–1.2(–1.5) mm long, superficially 60–80(–100) µm wide, 80–100 µm wide at the base (thin section); disc plane, very narrow, slit-like and epruinose, or not apparent; margin scarcely visible in surface view. *Pseudostromata* 80–110 µm thick adjacent to the lirella, tapering gradually towards the margin, dominated by photobiont cells and plate-like crystals of calcium oxalate (H₂SO₄⁺), without a discernible medulla, with an uppermost, alga-free layer, 10–15(–20) µm thick, amorphous or consisting of hyaline, columnar hyphae 2–2.5 µm wide. *Proper excipulum* visible only in thin section, medium to dark olive-brown above and 20–30 µm thick, pale yellow-brown to orange-brown laterally and at the base, 10–15 µm thick; cells periclinal, 5–8 × 2–2.5 µm. *Hypothecium* hyaline to pale yellowish brown, 15–22 (–25) µm thick, not interspersed with granules or oil globules, KI–, K–. *Hymenium* 65–85 µm deep, not interspersed, KI+ pale violet-blue; subhymenium hyaline, to 10 µm thick, usually indistinguishable from the hypothecium. *Epilhymenium* poorly defined, 5–10 µm thick, pale yellowish brown, K–. *Paraphysoids* only slightly conglutinate in the hymenial gel, 0.7–1.2 µm thick, uniformly branched and loosely anastomosing, long-celled, the septa not constricted; apices not swollen or pigmented. *Asci* 8-spored, *Opegrapha*-type, broadly cylindrical or cylindroclavate, thin-walled, 45–64 × 12–15 µm; apex rounded, with a tholus 2–3 µm thick, with or without a conical ocular chamber to 2 µm wide which is often, but not always, encircled by a minute amyloid ring; ascoplasma gradually turning pale reddish brown in KI. *Ascospores* colourless, irregularly massed in the ascus, (5–)6-septate at maturity, fusiform to oblong-fusiform, usually straight, occasionally slightly curved or faintly sigmoidal, not constricted at the septa, (18–)22(–25) × (2–)2.5(–3) µm excluding the perispore [$n = 50$]; cells of ± equal size throughout spore ontogeny (microcephalic); perispore 1.5–2.5(–4) µm thick, developing to its full extent only outside the ascus; apices rounded or subacute; contents clear. *Pycnidia* moderately numerous, solitary, immersed in whitish, low-convex, thallus-dominated structures that are anatomically identical to ascomatal pseudostromata, 70–100 µm wide; apex punctiform, pale brown or not apparent; internal wall hyaline to pale brown (thin section), 4–5 µm thick, with a simple conidiogenous layer; conidiogenous hyphae 6–10 × 0.5–0.7 µm. *Conidia* hyaline, simple, filiform, usually curved to arcuate, occasionally sigmoidal, 12–20(–22) × c. 0.5 µm. *Chemistry*: Pseudostromata K–, C–, KC–, PD+ yellow, UV–; containing psoromic acid (major) by TLC. Pseudostromata H₂SO₄⁺, containing calcium oxalate. Thallus, K–, C–, KC–, PD–, UV–, H₂SO₄[–]; lacking lichen substances and calcium oxalate.

Etymology: The epithet *membranacea* refers to the filmy, whitish thallus of the new species.

Remarks

Enterographa membranacea is unique among non-foliicolous species with a *Trentepohlia* photobiont due to its thin, filmy and effuse thallus that contrasts with small, sharply delimited, whitish pseudostromata in which are embedded narrow, outwardly brownish, lirelliform ascomata. The pantropical *E. anguinella* (Nyl.) Redinger has a thicker, continuous to areolate thallus, and the ascospores are 6–11-septate and 25–52 × 2–3 µm (Sparrius 2004). Moreover, while the corticolous *E. kalbii* Sparrius, from Brazil, has broadly similar ascomatal anatomy and ascospore septation, the thallus is considerably thicker (0.5–0.7 mm) and contains lichexanthone, but lacks psoromic acid (Sparrius 2004).

This species is known from only the type locality in Lord Howe Island, where it grows on the epidermis of the very smooth, flaking outer layers of a palm trunk (*Howea forsteriana*?).

Key to the species of *Enterographa* in Australia

[Based on Sparrius (2004); Lücking (2008); McCarthy & Elix (2016)]

- 1 Growing on leaves; photobiont *Phycopeltis* 2
- 1: Growing on rock, bark or wood; photobiont *Trentepohlia* 3
- 2 Thallus C+ red; margins of pseudostromata greenish white; conidia filiform, c. 20 × 1 µm [Christmas Island] **E. desloveri**
- 2: Thallus C–; margins of pseudostromata orange-brown; conidia bacilliform, 4–6 × 1.5–2 µm [SE Australia] **E. bella**
- 3 Growing on rock 4
- 3: Growing on bark or wood 5
- 4 Thallus cream-coloured, forming rimose-areolate colonies, P+ yellow (psoromic acid?), lacking dehydroconstipatic acid; pycnidial apices orange-brown **E. subgelatinosa**
- 4: Thallus chalky white, effuse, scarcely forming continuous colonies, P–, lacking psoromic acid, containing dehydroconstipatic acid (major); pycnidial apices black **E. cretacea**
- 5 Most or all ascospores 3-septate 6
- 5: Ascospores with more than 3 septa 8
- 6 Thallus P–, lacking psoromic acid; ascomata punctiform, in lines or clusters **E. compunctula**
- 6: Thallus P+ yellow, containing psoromic acid; ascomata rounded to short- or elongate-lirelliform 7
- 7 Thallus smooth; ascospores 15–25 µm long; ascomata mostly elongate-lirelliform and often richly branched, with a brown disc; hypothecium to 40 µm thick **E. micrographa**
- 7: Thallus verrucose, ascospores 25–31 µm long; ascomata round to short-lirelliform, not or sparingly branched, with a blackish disc; hypothecium c. 80 µm thick **E. elixii**
- 8 Thallus P–, lacking psoromic acid 9
- 8: Thallus P+ yellow, containing psoromic acid 10
- 9 Thallus C+ red, containing gyrophoric acid; ascomata short, branched lirellae, with a pink to pale brown disc; ascospores 6–12(–15)-septate **E. pallidella**
- 9: Thallus C–, lacking gyrophoric acid; ascomata ellipsoid, or short, scarcely branched lirellae, with a dark brown to black disc; ascospores 5–7-septate **E. divergens**
- 10 Ascomata punctiform, outwardly black, forming lines or clusters; ascospores 5–7 µm wide **E. subserialis**
- 10: Ascomata lirelliform; ascospores 2–3 µm wide 11
- 11 Ascospores 5(–6)-septate, 18–25 µm long **E. membranacea**
- 11: Ascospores 6–11-septate, 25–52 µm long **E. anguinella**

References

- Elix JA (2014): *A Catalogue of Standardized Thin-Layer Chromatographic Data and Biosynthetic Relationships for Lichen Substances*, 3rd edn. Published by the author, Canberra.
- Lücking, R (2008): Foliicolous lichenized fungi. *Flora Neotropica Monograph* **103**, 1–867.
- McCarthy, PM (2018): *Checklist of the Lichens of Australia and its Island Territories*. <http://www.anbg.gov.au/abrs/lichenlist/introduction.html> (Version 17 May 2018). Australian Biological Resources Study, Canberra.

McCarthy, PM; Elix, JA (2016): Five new lichen species (Ascomycota) from south-eastern Australia. *Telopea* **19**, 137–151.
 Seavey F; Seavey J (2014): New additions to the lichen genus *Enterographa* (Roccellaceae) from Everglades National Park including an updated world key. *Lichenologist* **46**, 83–93.
 Sparrius, LB (2004): A monograph of *Enterographa* and *Sclerophyton*. *Bibliotheca Lichenologica* **89**, 1–141.

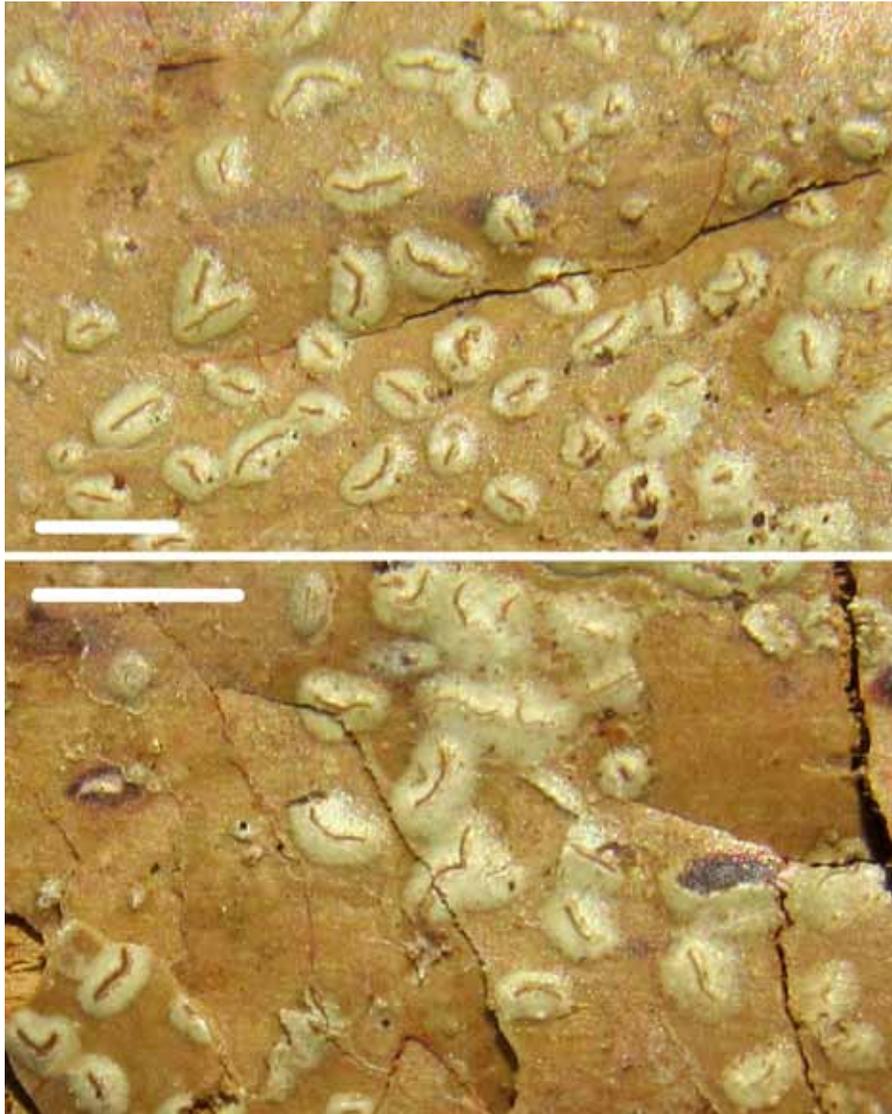


Figure 1. *Enterographa membranacea* (holotype). Scales: 2 mm.

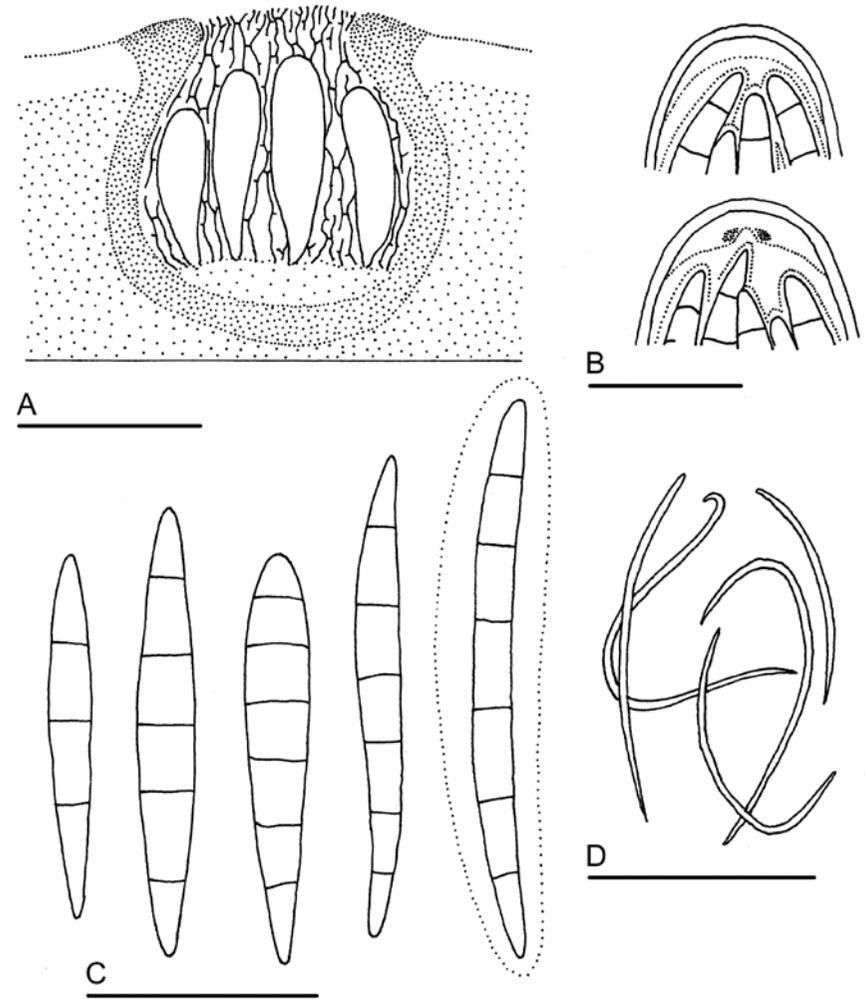


Figure 2. *Enterographa membranacea* (holotype). A, Vertical section through an ascoma (semi-schematic); B, Ascus apices without (above) and with an ocular chamber enclosed within a faint, amyloid ring; C, Immature (left) and mature ascospores; D, Conidia. Scales: A = 50 μ m; B–D = 10 μ m.