

### Three new species of *Trapelia* (lichenized Ascomycota, Trapeliaceae) from eastern Australia

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#### Abstract

*Trapelia atrocarpa* Elix & P.M.McCarthy, *T. kosciuszkoensis* Elix and *T. pruinosa* Elix & P.M.McCarthy (Trapeliaceae) are described as new from siliceous rocks and soil in eastern Australia.

#### Introduction

The genus *Trapelia* M.Choisy (1929), based on *Lecidea coarctata* Sm., includes lichens with a *Chlorella*-type photobiont, hemiangiocarpic apothecia that burst through the upper surface of the thallus, a reduced, cupulate excipulum composed of prosoplectenchymatous hyphae, eight-spored, hemiamyloid asci (Baral 1987) in which the tholus typically lacks internal amyloid structures, simple ascospores, richly branched paraphyses and bacilliform to filiform conidia (Lumbsch & Kainz 2004; Kantvilas & Elix 2007; Purvis *et al.* 2009; Kantvilas *et al.* 2015; Orange 2018). All species contain gyrophoric acid, 5-*O*-methylhiassic acid or related substances.

Eight species of *Trapelia* have been reported from Australia (McCarthy 2018; Elix & McCarthy 2019), including the widespread, probably cosmopolitan *T. coarctata* (Sm.) M. Choisy and *T. involuta* (Taylor) Hertel, as well as the Australasian *T. macrospora* Fryday and five Australian endemics, *T. calvariana* Kantvilas & Lumbsch, *T. concentrica* Elix & P.M.McCarthy, *T. crystallifera* Kantvilas & Elix, *T. lilacea* Kantvilas & Elix and *T. thieleana* Kantvilas, Lumbsch & Elix. In this paper, three new species are described and illustrated, *viz.* *T. atrocarpa* from consolidated soil in the Australian Capital Territory and New South Wales, *T. kosciuszkoensis* from siliceous rocks in alpine New South Wales, and *T. pruinosa* from siliceous rocks and soil in Queensland, the Australian Capital Territory, New South Wales and Victoria.

#### The species

*Trapelia atrocarpa* Elix & P.M.McCarthy, sp. nov.  
Mycobank No. **MB 833122**

Fig. 1

Similar to *Trapelia concentrica* Elix & P.M.McCarthy, but differs in having larger ascospores, 14–27 × 7–16 µm, and longer conidia, 20–25 µm long.

*Type:* Australia, Australian Capital Territory, Woodstock Nature Reserve, Shepherds Lookout Walk, 20 km WNW of Canberra, 35°14'34"S, 148°58'38"E, 555 m alt., on consolidated soil in open *Eucalyptus-Callitris* woodland, P.M. McCarthy 4799, 17.vii.2018 (CANB – holotype).

*Thallus* areolate, whitish grey to glaucous grey or dark grey, smooth at first, not sorediate; areoles dispersed or contiguous, 0.05–0.2 mm wide, roundish, plane to convex; medulla white, containing calcium oxalate (H<sub>2</sub>SO<sub>4</sub><sup>+</sup>), I–. *Photobiont* green, of the *Chlorella*-type, with individual cells irregularly roundish or rhomboid, 6–10 × 5–8 µm, solitary or in pairs, triads or tetrads. *Apothecia* scattered, 0.1–0.4 mm wide, irregularly roundish, adnate to sessile, at first appearing as a pale pruinose disc, then often splitting at the apex, soon becoming superficial

and often with white, slightly roughened or pruinose margins and black or rarely brown-black, epruinose discs; proper margin thick, brownish, usually with a well-developed, white thalline rim. *Excipulum* in section cupular, brown at the sides, pale brown to colourless within, unchanged in K, 50–60 µm thick at the sides, 100–120 µm thick at the base. *Hypothecium* 70–80 µm thick, pale brown, poorly differentiated from the hymenium. *Hymenium* 100–140 µm thick, colourless, I+ blue, not interspersed with granules or oil droplets. *Paraphyses* richly branched, particularly at the base and near the apices, slender, 1–2.5(–3) µm thick, flexuose, tangled, separating readily in K; apices not markedly expanded. *Asci* 8-spored, of the *Trapelia*-type, with an amyloid wall and a prominent, non-amyloid tholus, elongate-clavate, often with a long tapering stalk, 80–100 × 18–25 µm. *Ascospores* simple, non-halonate, thin-walled, often vacuolate, ellipsoid to ovate, 14–[19.5]–27 × 7–[10.5]–16 µm. *Pycnidia* punctiform, brown-black, immersed in areoles; conidia filiform, curved, 20–25 × 0.7 µm. *Chemistry:* Thallus K–, C+ red, KC+ red, P–, UV–; containing gyrophoric acid (major), 5-*O*-methylhiassic acid (trace or absent).

*Etymology:* The specific epithet refers to the black apothecial discs.

#### Remarks

The new species is characterized by small but conspicuous apothecia with black or rarely brown-black epruinose discs with a well-developed white thalline rim, the nondescript, areolate thallus with a smooth surface, the relatively large, ovate to ellipsoid ascospores and the presence of gyrophoric acid. *Trapelia atrocarpa* appears to be most closely related to the Australian endemic *T. concentrica*, with both species having a poorly developed, areolate thallus containing gyrophoric acid and calcium oxalate. There are, however, clear and consistent differences between the two taxa. In *T. concentrica* the apothecia often become surrounded by 1–3 more-or-less concentric fissures with a white-pruinose surface so that the apothecium appears almost gyrose, the ascospores are smaller, 11–[13.3]–17 × 6–[7.7]–10 µm, and the conidia are shorter, 11–17 µm long (Elix & McCarthy 2019). *Trapelia atrocarpa* is sometimes superficially similar to the European *T. elacista* (Ach.) Orange, but that species has a much better developed, cracked, crustose thallus, larger apothecia (to 0.7 mm wide) and a preference for moist rock surfaces (Orange 2018).

At present, the species is known from consolidated soil and siliceous rocks in dry *Eucalyptus* woodland in the Australian Capital Territory and New South Wales. Commonly associated lichens on soil include various *Caloplaca* species, *Cladia aggregata* (Sw.) Nyl. *sens. lat.*, *Buellia suttonensis* Elix & A.Knight, *Diploschistes thunbergianus* (A.Massal.) Lumbsch & Vězda, *Lecidea terrena* Nyl., *Rhizocarpon reductum* Th.Fr., *Trapelia pruinosa* and *T. involuta* (Taylor) Hertel.

#### ADDITIONAL SPECIMENS EXAMINED

*New South Wales:* ● Mount Canobolas State Conservation Area, N slopes of Mt Canobolas, 12 km SW of Orange, 33°19'58"S, 148°58'52"E, 1100 m alt., on roadside trachytic rhyolite in *Eucalyptus* woodland, J.A. Elix 46879, 30.ix.2019 (CANB); ● Tuena–Bathurst road, c. 10 km N of Tuena, 33°55'38"S, 149°21'09"E, 650 m alt., on pebble in open *Eucalyptus* woodland, J.A. Elix 46884, 30.ix.2019 (CANB). *Australian Capital Territory:* ● Type locality, on consolidated soil in open *Eucalyptus-Callitris* woodland, P.M. McCarthy 4784, 4791, 4793, 5.xii.2018 (CANB).

*Trapelia kosciuszkoensis* Elix, sp. nov.  
Mycobank No. **MB 833123**

Fig. 2

Similar to *Trapelia macrospora* Fryday, but differs in having shorter ascospores, 17–[23.2]–30 µm long, a thinner hypothecium, 70–100 µm thick, and in containing 5-*O*-methylhiassic acid as the major lichen substance.

*Type:* Australia. New South Wales, Mount Kosciuszko National Park, Etheridge Range, Seamans Hut, 2 km ENE of Mt Kosciuszko, 36°21'S, 148°17'E, 2100 m alt., on granite rocks in alpine heath, *D. Verdon* 4422C, 14.iii.1979 (CANB – holotype).

*Thallus* to 50 mm wide and 0.1 mm thick, whitish to glaucous grey or cream-grey, sometimes with a pale fawn tinge, rimose-areolate, smooth at first, soon becoming rather scabrid, at length irregularly cracked, not sorediate, areoles contiguous, 0.2–0.5 mm wide, roundish to irregular, plane to weakly convex; medulla white, lacking calcium oxalate (H<sub>2</sub>SO<sub>4</sub>-), I-. *Photobiont* green, of the *Chlorella*-type, with individual cells irregularly roundish or rhomboid, 6–10 × 5–8 μm, solitary or in pairs, triads or tetrads. *Apothecia* scattered, 0.5–1.3 mm wide, irregularly roundish, immersed to just emergent, at first appearing as a pale pruinose disc, then often spitting at the apex, soon becoming superficial and often with white, slightly roughened or pruinose margins; proper margin very thin, brownish, usually with a well-developed, rather ragged, white thalline rim; disc concave to weakly convex, pale to dark brown, epruinose, subgyrose. *Excipulum* in section cupular, dark brown at the sides, pale grey-brown to colourless within, unchanged in K, 50–70 μm thick at the sides, 15–25 μm thick at the base. *Hypothecium* 70–100 μm thick, red-brown, poorly differentiated from the hymenium. *Ephymenium* 30–45 μm thick, pale grey-brown to brown. *Hymenium* 140–160 μm thick, colourless, I+ blue, not interspersed with granules or oil droplets. *Paraphyses* richly branched, particularly at the base and near the apices, slender, 1.5–2 μm thick, flexuose, tangled, separating readily in K; apices not markedly expanded. *Asci* 8-spored, of the *Trapelia*-type, with an amyloid wall and a prominent, non-amyloid tholus, elongate-clavate, 100–120 × 25–35 μm. *Ascospores* simple, non-halonate, thin-walled, often vacuolate, broadly-ellipsoid, 17–[23.2]–30 × 12–[14.0]–18 μm. *Pycnidia* punctiform, brown, immersed in areoles; conidia filiform, curved, 20–30 × 0.7 μm.

*Chemistry:* Thallus K-, C+ red, KC+ red, P-, UV-; containing 5-*O*-methylhiascic acid (major) and gyrophoric acid (trace).

*Etymology:* The species is named after the type locality.

#### Remarks

This species is characterized by the crustose, non-effiguate thallus containing 5-*O*-methylhiascic acid, the immersed apothecia and the large ascospores, 17–[23.2]–30 × 12–[14.0]–18 μm. *Trapelia kosciuszkoensis* had previously been confused with *T. macrospora*, known from Campbell Island and Tasmania (Fryday 2004; Kantvilas & Elix 2007), with both species having relatively large ascospores, rimose-areolate thalli and immersed apothecia. However, *T. macrospora* has longer ascospores, 25–[29.3]–34 μm long, a much thicker hypothecium, 150–180 μm thick, and contains gyrophoric acid.

At present, the species is known only from granite rocks in Mount Kosciuszko National Park, southern New South Wales. Commonly associated lichens on rock include *Candelariella vitellina* (Hoffm.) Müll.Arg., *Diploschistes scruposus* (Schreb.) Norman, *Lecanora polytropia* (Ehrh.) Rabenh., *Notoparmelia signifera* (Nyl.) A.Crespo, Ferencova & Divakar, *Pertusaria lophocarpa* Körb., *Rhizocarpon geographicum* (L.) DC., *Umbilicaria cylindrica* (L.) Delise ex Duby and *U. decussata* (Vill.) Zahlbr.

#### ADDITIONAL SPECIMENS EXAMINED

*New South Wales:* ● Mount Kosciuszko National Park, just S of Rawsons Pass, 36°27'S, 148°15'E, 2130 m alt., on granite rocks in alpine heath, *J.A. Elix* 4265, 6.ii.1978 (CANB); ● Mount Kosciuszko National Park, 1 km N of Mt Kosciuszko, along the Lakes Trail, 36°27'S, 148°16'E, 2120 m alt., on granite rocks in alpine grassland, *J.A. Elix* 4265, 6.ii.1978 (CANB); ● Mount Kosciuszko National Park, N slopes of Mt Stillwell, 36°26'S, 148°19'E, 1950 m alt., on exposed granite rocks in alpine herbfield, *J.A. Elix* 11670 & *P.W. James*, 23.i.1984 (CANB).

*Trapelia pruinosa* Elix & P.M. McCarthy, sp. nov.  
Mycobank No. **MB 833124**

Fig. 3

Similar to *Trapelia crystallifera* Elix & Kantvilas, but differs in having a pruinose upper surface, longer ascospores, 13–[16.6]–20 μm long, and in containing 5-*O*-methylhiascic acid as the major lichen substance.

*Type:* Australia. Australian Capital Territory, trail to Aranda Bushland, 35°15'32"S, 149°04'53"E, 672 m alt., on soil bank in dry *Eucalyptus* woodland, *J.A. Elix* 46785, 14.vii.2019 (CANB – holotype).

*Thallus* to 50 mm wide and 1 mm thick, whitish to cream-grey, glaucous grey or dark grey, squamulose; upper surface sparsely to usually densely white-pruinose, the pruina often concentrated in a shallow depression in the centre of squamules, not sorediate; squamules 0.2–3 mm wide, roundish to irregular, weakly concave to plane, becoming unevenly crenulate to lobate, plane to undulate, discrete and dispersed or contiguous, overlapping and imbricate or fused, margins entire, not thickened, adnate to the substratum or upturned, squamules becoming irregularly cracked with age; medulla white, containing calcium oxalate (H<sub>2</sub>SO<sub>4</sub>+), I-. *Photobiont* green, of the *Chlorella*-type, with individual cells irregularly roundish or rhomboid, 5–10 × 5–8 μm, solitary or in pairs, triads or tetrads. *Apothecia* scattered, 0.5–1.3 mm wide, irregularly roundish, immersed to just emergent, at first often appearing as a pale pruinose disc, soon becoming superficial and often with white, slightly roughened or pruinose margins; proper margin very thin, brownish, usually with a well-developed, rather ragged, white thalline rim; disc plane to convex, pale to dark brown, white-pruinose or not. *Excipulum* in section cupular, dark brown at the sides, pale grey-brown to colourless within, K+ yellow-brown solution, 70–100 μm thick at the sides, 25–50 μm thick at the base. *Hypothecium* 100–120 μm thick, pale brown, poorly differentiated from the hymenium. *Ephymenium* 15–30 μm thick, brown. *Hymenium* 150–170 μm thick, colourless, I+ blue, not interspersed with granules or oil droplets. *Paraphyses* richly branched, particularly at the base and near the apices, slender, 1.5–2 μm thick, flexuose, tangled, separating readily in K; apices not markedly expanded. *Asci* 8-spored, of the *Trapelia*-type, with an amyloid wall and a prominent, non-amyloid tholus, elongate-clavate, 70–100 × 20–25 μm. *Ascospores* simple, non-halonate, thin-walled, often vacuolate, broadly-ellipsoid, 13–[16.6]–20 × 7–[9.1]–12 μm. *Pycnidia* punctiform, brown, immersed in the upper surface; conidia filiform, straight to weakly curved, 11–16 × 0.7 μm.

*Chemistry:* Thallus K-, C+ red, KC+ red, P-, UV-; containing 5-*O*-methylhiascic acid (major) and gyrophoric acid (minor or trace).

*Etymology:* The species is named after the pruinose upper surface of its thallus.

#### Remarks

*Trapelia pruinosa* appears to be most closely related to the widespread Australian endemic *T. crystallifera*, with both species having an esorediate, areolate to squamulose thallus, with the squamules usually well-developed, often separate, relatively large and crenulate-lobate. However, *T. crystallifera* differs in having a crystalline, cracked, mealy upper surface, epruinose discs, smaller ascospores, 9–[12.3]–15 × 4–[6.4]–8 μm, which are often pointed at one end, and it contains gyrophoric acid as the major lichen substance (Kantvilas & Elix 2007). *Trapelia involuta* is chemically identical to *T. pruinosa*, but the areoles are smaller, 0.2–0.6 mm wide, they lack surface pruina and calcium oxalate and the ascospores are significantly longer, 19–[21.3]–24.5 × 9–[10.4]–12.5 μm (Orange 2018).

At present, the species is known from siliceous rocks and clay soil in dry *Eucalyptus* woodland, and is common in the Australian Capital Territory and central-western New South Wales. It also occurs occasionally in Victoria and Queensland. Commonly associated lichens on rock include various *Caloplaca* and *Xanthoparmelia* species, *Acarospora citrina* (Taylor) Zahlbr. ex Rech., *Buellia amandineiformis* Elix & Kantvilas, *B. suttonensis* Elix & A.Knight,

*Candelariella vitellina* (Hoffm.) Müll. Arg., *Diploschistes eugeneus* (A. Massal.) J. Steiner, *D. stricticus* (Körb.) Müll. Arg., *Lecanora pseudistera* Nyl., *Lecidea terrena* Nyl., *Lepra erubescens* (Hook. f. & Taylor) A. W. Archer & Elix, *Pertusaria lophocarpa* Körb., *Rhizocarpon geographicum* (L.) DC. and *R. reductum* Th. Fr.

#### ADDITIONAL SPECIMENS EXAMINED

**Queensland:** ● Box Creek, Leichhardt Hwy, 51 km SW of Theodore, 25°22'S, 149°52'E, 230 m alt., on semi-shaded boulder in *Eucalyptus-Callitris* woodland, *H. Streimann* 52560, 30.viii.1993 (CANB). **New South Wales:** ● Newell Hwy, 29 km N of Dubbo, 31°54'S, 148°32'E, on soil in *Callitris* woodland, *J.A. Elix* 2677, 2683, 3.ix.1976 (CANB); ● Weddin State Forest, 25 km WSW of Grenfell, 34°01'S, 148°01'E, 300 m alt., on soil in *Callitris* forest, *J.A. Elix* 4745, 14.vii.1978 (CANB); ● Weddin Mountains National Park, 15 km SW of Grenfell, 33°54'S, 148°00'E, 340 m alt., on rocks in dry sclerophyll forest, *J.A. Elix* 25117, 31.v.1990 (CANB); ● Jimberoo State Forest, Mountain Creek, 14 km NNE of Rankin Springs, 33°43'S, 146°20'E, 280 m alt., on consolidated soil in *Eucalyptus-Callitris* woodland, *J.A. Elix* 25311, 13.vi.1990 (CANB); ● Conapaira State Forest, 13 km SSW of Rankin Springs, 33°58'S, 146°13'E, 420 m alt., on metamorphic rocks in *Eucalyptus-Callitris* woodland, *J.A. Elix* 25381, 13.vi.1990 (CANB); ● Shingle Ridge, 5 km N of Molong along road to Yeoval, 33°04'22"S, 148°49'45"E, 595 m alt., on sandstone rock in remnant *Eucalyptus* woodland, *J.A. Elix* 38562, 13.x.2005 (CANB); ● Goonoo State Forest, Goondy Creek, Mogriguy Forest Road, 11 km E of Mogriguy, 25 km NE of Dubbo, 32°03'07"S, 148°46'34"E, 350 m alt., on soil in *Eucalyptus-Allocasuarina* woodland, *J.A. Elix* 37153, 11.x.2005 (CANB); ● Goobang National Park, Ten Mile Creek, 1.5 km SSW of Gingham Gap, 32°49'56"S, 148°20'11"E, 430 m alt., on old termite mound in *Eucalyptus-Callitris* woodland, *J.A. Elix* 39349, 4.viii.2008 (CANB); ● Ingalba Nature Reserve, 9 km W of Temora, S of highway, 34°26'11"S, 147°26'01"E, 315 m alt., on soil in open *Eucalyptus-Callitris* woodland, *J.A. Elix* 39735, 16.iv.2009 (CANB); ● Ingalba Nature Reserve, 7 km W of Temora, N of highway, 34°26'10"S, 147°26'23"E, 270 m alt., on soil and pebbles in *Eucalyptus-Callitris* woodland, *J.A. Elix* 45155, 14.v.2010 (CANB); ● Ingalba Nature Reserve, 7 km W of Temora, N of highway, 34°26'10"S, 147°26'23"E, 270 m alt., on soil and pebbles in *Eucalyptus-Callitris* woodland, *J.A. Elix* 45155, 14.v.2010 (CANB); ● Tuena–Bathurst road, c. 10 km N of Tuena, 33°55'38"S, 149°21'09"E, 650 m alt., on soil bank in open *Eucalyptus* woodland, *J.A. Elix* 46871, 30.ix.2019 (CANB); ● Gooloogong–Grenfell road, 5 km N of Grenfell, 33°51'16"S, 148°10'37"E, 385 m alt., on consolidated soil in *Eucalyptus-Callitris* woodland, *J.A. Elix* 46835, 2.x.2019 (CANB); ● Warraderry Range, Gooloogong–Grenfell road, 38 km N of Grenfell, 33°38'42"S, 148°22'15"E, 330 m alt., on sandstone in *Eucalyptus-Callitris* woodland, *J.A. Elix* 46843, 46844, 2.x.2019 (CANB); *loc. id.*, *P.M. McCarthy* 4896, 2.x.2019 (CANB). **Australian Capital Territory:** ● Woodstock Nature Reserve, Shepherds Lookout Walk, 20 km WNW of Canberra, 35°14'34"S, 148°58'38"E, 555 m alt., on consolidated soil in open *Eucalyptus-Callitris* woodland, *P.M. McCarthy* 4782, 4.xii.2018 (CANB); ● type locality, on soil bank in dry *Eucalyptus* woodland, *J.A. Elix* 46804, 9.viii.2019 (CANB). **Victoria:** ● Tallarook State Forest, Horan Track, 17 km S of Seymour, 37°11'S, 145°10'E, 600 m alt., on exposed rock outcrop in dry sclerophyll forest, *H. Streimann* 36058, 25.xii.1985 (CANB).

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Figure 1. *Trapelia atrocarpa* (holotype in CANB), Scale = 2 mm.

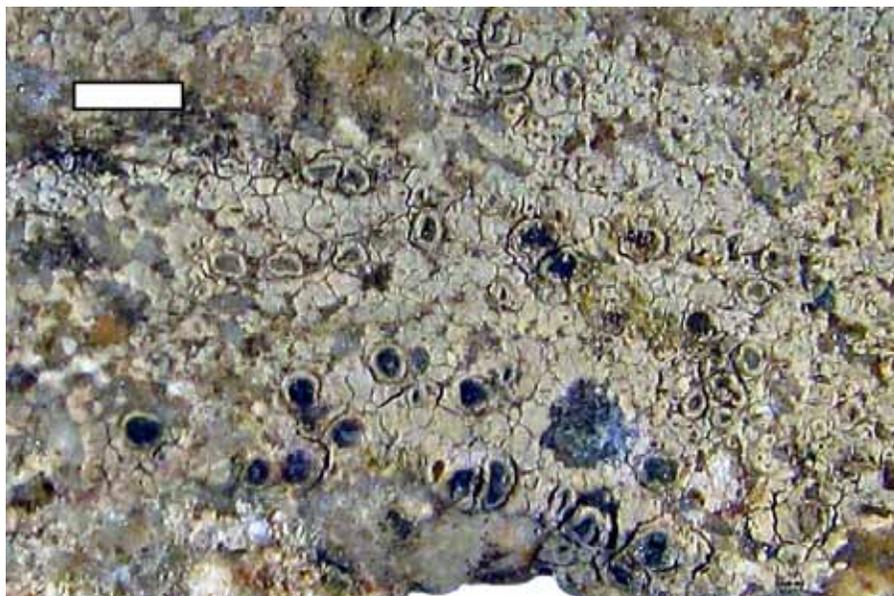


Figure 2. *Trapelia kosciuszkoensis* (holotype in CANB). Scale = 2 mm.

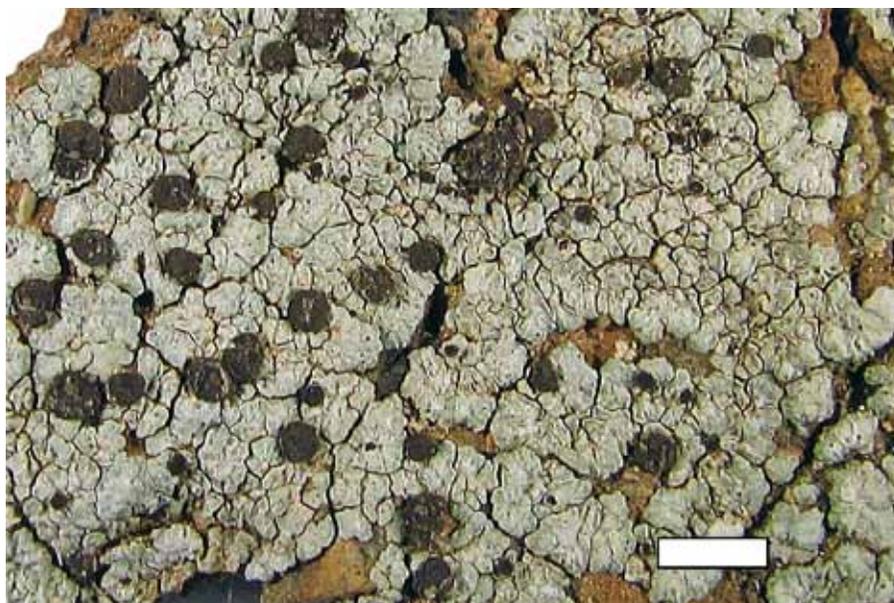


Figure 3. *Trapelia pruinosa* (holotype in CANB). Scale = 2 mm.

*Thelidium carbonaceum* (Verrucariaceae), a new saxicolous lichen from Tasmania

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**Abstract**

The lichen *Thelidium carbonaceum* P.M.McCarthy & Kantvilas (Verrucariaceae) is described from siliceous rock in south-western Tasmania. It has very small, thin thalli that are jet-black and rimose-areolate along with diminutive, semi-immersed perithecia, 0.08–0.17 mm diam., with an excavate apex and a well-developed, carbonized involucrellum, a brown-black excipulum, and 1-septate ascospores, 11–18 × 4.5–6 µm.

**Introduction**

*Thelidium* A.Massal. (Verrucariaceae, Verrucariales), a genus of approximately 100 species, grows almost exclusively on calcareous or siliceous rocks in aquatic, semi-aquatic and terrestrial habitats, especially in northern-temperate to boreal latitudes (Zschacke 1933; Servit 1954; Kopachevskaya *et al.* 1977; Clauzade & Roux 1985; McCarthy 2001; Galloway 2007; Thüs & Nascimbene 2008; Orange 2009, 2013; Thüs & Schultz 2009; Harada 2013). The thallus is crustose, usually ecorticate and immersed in the substratum to partially superficial and diffuse, continuous or rimose to areolate. Ascomata are perithecioid, immersed in the thallus or directly in the substratum, or semi-immersed to superficial, with or without a dark to black involucrellum, and the asci are fissitunicate, each producing 8 colourless, thin-walled ascospores with 1–3(–7) transverse septa and, occasionally, with 1–3 longitudinal or oblique divisions. Traditionally, ascospore septation has distinguished *Thelidium* from the simple-spored *Verrucaria* Schrad., while it remains poorly differentiated from *Polyblastia sens. lat.* in which ascospores are submuriform to fully muriform and range from colourless to dark brown.

*Thelidium* is currently represented in Australia by five species, four of which are exclusively calcicolous, with two others reported from Australian island territories in the Subantarctic (McCarthy 2018). In this paper, we describe as new a highly distinctive species on quartz in south-western Tasmania.

**Methods**

Observations and measurements of thallus and ascomatal anatomy, asci and ascospores were made on hand-cut sections mounted in water and dilute KOH (K). Asci were also observed in Lugol's Iodine (I), with and without pretreatment in K.

*Thelidium carbonaceum* P.M.McCarthy & Kantvilas, sp. nov. Figs 1, 2  
Mycobank No. MB 832113

Characterized by its very small, thin, black, rimose-areolate thalli with minute, semi-immersed perithecia, 0.08–0.17 mm diam., each with an excavate apex, a well-developed, carbonized involucrellum, 35–60 µm thick, a brown-black excipulum, 10–13 µm thick, sparse periphyses, mostly obclavate asci, 42–55(–60) × 13–23 µm, and 1-septate ascospores, 11–18 × 4.5–6 µm.

*Type:* Australia, Tasmania, Southwest Natl Park, Mount Sprent Track, 42°47'S, 145°58'E, 720 m alt., on quartzite pebbles in a gravelly gap in buttongrass moorland, *G. Kantvilas 142/18*, 13.x.2018 (holotype – HO 594769).

*Thallus* crustose, epilithic, greenish black to jet-black, growing on quartz pebbles and providing a striking contrast to the whitish substratum, diffuse and with scattered microthalli mostly 1–2 mm wide, which are best-developed and thickest in minute fissures and pits in the