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Two new species in the Australian Graphidaceae (lichenized Ascomycotina)

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Abstract: *Acanthothecis borealis* A.W.Archer & Elix, with protocetraric acid, and *Graphis cycasicola* A.W.Archer & Elix, with norstictic acid, are described as new to science.

Recent studies on the Australian Graphidaceae have confirmed the presence of three species in the genus *Acanthothecis* and 67 species in the genus *Graphis* (Archer 2006, Archer & Elix 2007). An examination of recent collections from the Northern Territory has revealed the presence of two new species, one in each genus. The chemistry of the new species was analyzed by thin-layer chromatography (Elix & Ernst-Russell 1993) and confirmed by high-performance liquid chromatography (Elix *et al.* 2003).

Acanthothecis borealis A.W.Archer & Elix, sp. nov. Fig. 1
Sicut *Acanthothecis clavulifera* (Vain.) Staiger & Kalb sed ascosporis minoribus differt.

Etymology: from the Latin *borealis*, northern, a reference to the type locality in the north of Australia.

Type: Australia, Northern Territory, Berry Spring Nature Park, 47 km S of Darwin, 12°42'06"S, 130°59'57"E, alt. 35 m, on twigs of treelet, *J.A. Elix 37360*, 4.viii.2005 (Holotype—CANB).

Thallus off-white to pale grey, surface smooth to subtuberculate, corticolous. Apothecia lirelliform, inconspicuous, scattered, concolorous with the thallus, simple, straight, curved or sinuous, lips closed, with a conspicuous thalline margin, 1–2 mm long, 0.2–0.3 mm wide. Exciple not carbonized. Hymenium 120–140 μm tall, not interspersed, I-negative. Ascospores narrowly elongate-ellipsoid, hyaline, 4–8 per ascus, 40–56 μm long, 7–8 μm wide, 16–18-locular, I-negative, with a thin halo (epispore) 1–2 μm wide.

Chemistry: protocetraric acid.

Acanthothecis borealis is a rare, inconspicuous species known only from the type specimen from the Northern Territory. It is characterized by the inconspicuous lirellae, the long, narrow ascospores giving no colour with iodine, and the presence of protocetraric acid. It resembles the chemically similar *A. clavulifera* Staiger & Kalb (Staiger & Kalb 1999), but is distinguished from that species by shorter ascospores (40–56 μm compared with 85–117 μm) with fewer locules (16–18 compared with 36–47). Ascospores in the genus *Acanthothecis* range in length from 20 μm and 4-locular (Makhija & Adawadkar 2007) to 100 μm and multilocular or muriform (Staiger 2002), and are a useful taxonomic character. The new species is distinguished from other species of *Acanthothecis* containing protocetraric acid by the size and structure of its ascospores—the spores of *Acanthothecis abaphoides* (Nyl.) Staiger & Kalb and *A. hololeucoides* (Nyl.) Staiger & Kalb are muriform, whereas those of *A. subclavulifera* (Nyl.) Staiger & Kalb are locular and measure 75–110 μm in length.

Graphis cycasicola A.W.Archer & Elix, sp. nov. Fig. 2
Sicut *Graphis subserpentina* Nyl. sed excipulum integrum atratum ad basim planatum differt.

Etymology: from *Cycas*, the substratum of the holotype, plus the Latin *cola*, dweller or living on.

Type: Australia, Northern Territory, Berry Springs Nature Park, 47 km S of Darwin, 12°42'06"S, 130°59'57"E, alt. 35 m, on bark of *Cycas armstrongii*, *J.A. Elix 37306*, 4.viii.2005 (holotype—CANB).

Thallus pale olive-green to pale fawn, surface smooth and dull, corticolous. Apothecia lirelliform, conspicuous, scattered, simple, straight, curved or sinuous, rarely branched, semi-immersed, lips closed, with a thick, conspicuous thalline margin almost completely covering the exciple, 1–4(–5) mm long, 0.4–0.7 mm wide. Exciple completely carbonized. Hymenium 120–150 μm tall, I-negative, not interspersed. Ascospores 1 per ascus, ellipsoid, hyaline, muriform, 110–125 μm long, 25–32 μm wide, I+ blue.

Chemistry: norstictic acid.

Graphis cycasicola is a rare corticolous species known only from the type specimen from the Northern Territory. It is characterized by the semi-immersed lirellae, the completely carbonized exciple, the muriform ascospores, and the presence of norstictic acid. It resembles *G. subserpentina* Nyl. both chemically and morphologically, but differs in having a completely carbonized exciple. It also superficially resembles *G. polyclades* Kremp. and *G. streblocapa* (Bél.) Nyl. (*cf.* Archer 2006, Figs 59 and 60), but both those species contain stictic acid.

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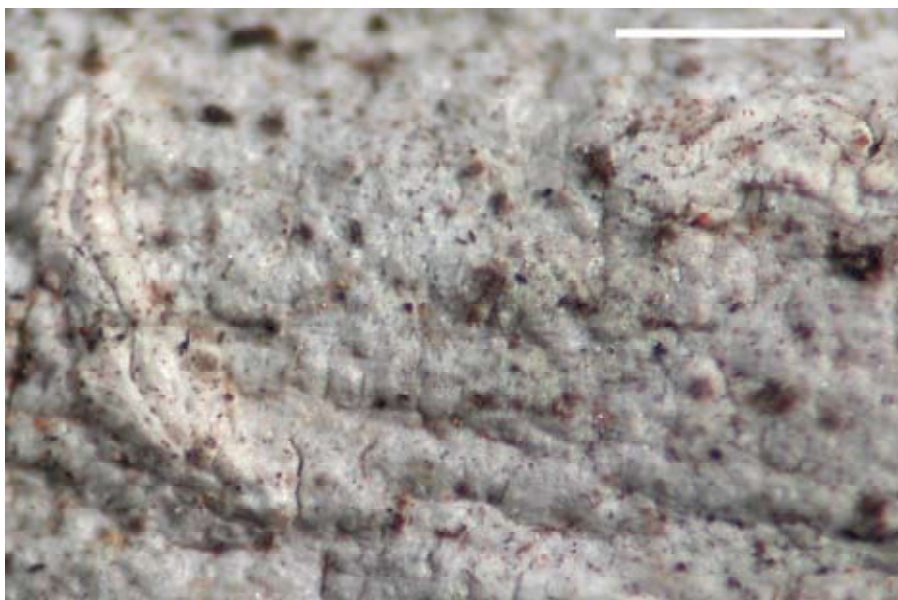


Figure 1. *Acanthothecis borealis* (J.A. Elix 37360, holotype CANB). Scale bar = 1 mm.



Figure 1. *Graphis cycasicola* (J.A. Elix 37306, holotype CANB). Scale bar = 1 mm.