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A further new species of *Hafellia* (Physciaceae,
lichenized Ascomycota) from Australia

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A further new species of *Hafellia* (Physciaceae, lichenized Ascomycota) from Australia

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Abstract: The examination of various collections of crustose lichens in preparation for a further lichen volume of the *Flora of Australia* has led to the identification of several undescribed species. A new further species of *Hafellia* is described in the present paper. Chemical constituents were identified by thin-layer chromatography (Elix & Ernst-Russell 1993), high performance liquid chromatography (Elix *et al.* 2003) and comparison with authentic samples.

Hafellia subtropica Elix, sp. nov.

Figs. 1–2

Sicut *Hafellia curatellae* sed ascosporae latus et acidum hafellicum continente differt.

Type. Australia. New South Wales, Mann River Nature Reserve, Diehard Creek, 50 km E of Glen Innes, 29°40'29"S, 152°05'19"E, 595 m, on *Allocasuarina* in *Allocasuarina-Eucalyptus* woodland along stream, *J.A. Elix* 37066, 1.v.2005 (holotype CANB).

Thallus corticolous, 1–3 cm wide, thin, *c.* 0.7 mm thick, finely rimose to deeply cracked and areolate. Prothallus black or not apparent. Upper surface whitish, grey-white to grey, weakly to markedly verruculose. Apothecia common, 0.2–1.2 mm wide, moderately immersed to sessile; disc black, epruinose, concave at first then flat to weakly convex, ±tuberculate; margin black, narrow or excluded in convex apothecia. Exciple brown-black, with or without a paler zone in the inner part. Epihymenium 10–15 µm thick, olive-brown to dark brown, K–. Hymenium 70–120 µm thick, interspersed with oil droplets particularly towards the base. Hypothecium 80–150 µm thick, brown-black. Asci 8-spored, 45–65 × 10–20 µm. Ascospores narrowly to broadly ellipsoidal, 1-septate, olive to brown, 16–23 × 8–14 µm, with weak subapical wall thickenings; outer wall moderately ornamented. Pycnidia not seen.

Chemistry: Thallus K+ red, C–, P+ yellow or yellow-orange; containing norstictic acid (major), hafellic acid (major), neopaludonic acid (trace), neosubpaludonic acid (trace), connorstictic acid (minor or trace).

Etymology: The specific epithet derives from the subtropical habitats occupied by this species.

Notes. This new species is characterized by the whitish, grey-white to grey thallus, the 8-spored asci, the olive-brown to dark brown epihymenium (reacting K–), the relatively small, ellipsoid ascospores (16–23 × 8–14 µm) with relatively weak subapical wall thickenings, a moderately ornamented outer spore wall, and the presence of norstictic and hafellic acids. Hafellic acid exhibits the following R_f values in the standard TLC solvent systems: A 0.50, B 0.32, C 0.33 [the spot appears fluorescent sky-blue under long wavelength ultraviolet light after sulfuric acid treatment and charring] (Elix & Ernst-Russell 1993). *Hafellia curatellae* (Malme) Marbach is superficially similar but differs in having narrower ascospores (15–22 × 6–8 µm *vs.* 16–23 × 8–14 µm), an epihymenium that often reacts K+ clear yellow-green or olive, a more or less smooth outer spore wall and contains only norstictic and connorstictic acids (Etayo & Marbach 2003, Marbach 2000).

The new species occurs on bark in coastal and montane forests in southern Queensland and northern New South Wales. Commonly associated species include *Brigantiaea microcarpa* (Räsänen) Hafellner, *Flavoparmelia euplecta* (Stirt.) Hale, *Fuscidea elixii* Kantvilas, *Heterodermia speciosa* (Wulfen) Trevis., *Lecanora achroa* Nyl., *Parmelia erumpens* Kurok., *Parmotrema reticulatum* (Taylor) M. Choisy, *Pertusaria commutata* Müll. Arg., *P. erythrella* Müll. Arg., *Relicina sydneyensis* (Gyeln.) Hale, *Ramalina peruviana* Ach., *Usnea dasaea* Stirt. and *U. confusa* Asahina.

ADDITIONAL SPECIMENS EXAMINED

Queensland: • Bunya Mountains State Forest, Nanango Road, 64 km NE of Dalby, 26°51'49"S, 151°38'51"E, 670 m, on twigs of shrub in mixed *Eucalyptus-Araucaria* forest, *J.A. Elix* 37958, 7.v.2005 (CANB).

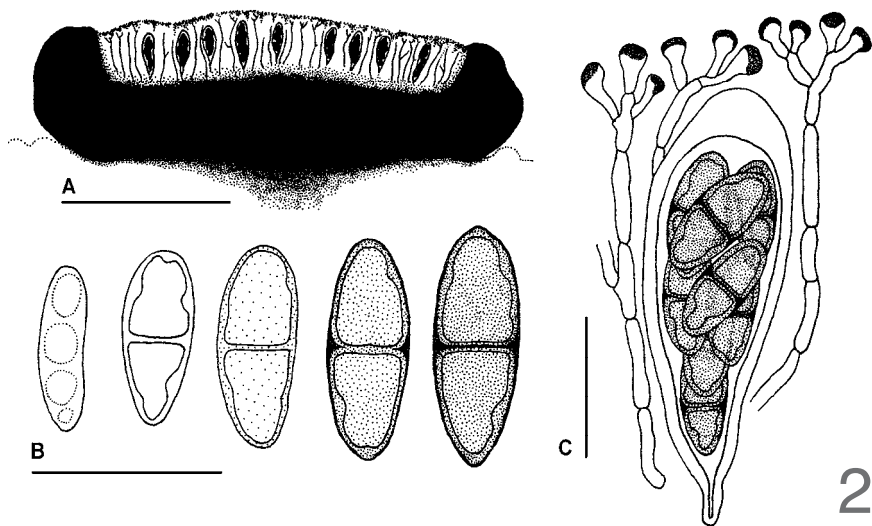
New South Wales: • type locality, on *Allocasuarina* in *Allocasuarina-Eucalyptus* woodland along stream, *J.A. Elix* 37054, 1.v.2005 (holotype CANB); • Washpool National Park, Gibraltar Range, Hakea Walk, 78 km E of Glen Innes, 29°28'10"S, 152°21'01"E, 895 m, on fallen *Acacia* in mixed rainforest with scattered *Eucalyptus*, *J.A. Elix* 37259, 2.v.2005 (CANB).

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Figures 1–2. *Hafellia subtropica* (holotype in CANB): 1, habit (scale in mm); 2A, sectioned apothecium [scale 0.2 mm]; 2B, stages of ascospore development [scale 20 μ m]; 2C, mature ascus and paraphyses [scale 20 μ m].