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Two new species of *Pseudohalonectria* from palms

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Abstract: Two new species, *Pseudohalonectria eubenangeensis* and *P. palmicola*, are described from palms in rainforests in north Queensland, Australia. The new species are compared with the known species in the genus, all of which occur in freshwater habitats. This is the first record of species in this genus from terrestrial habitats and from monocotyledonous hosts.

Key Words: Australia, Lasiosphaeriaceae, palm fungi, systematics

We are investigating the fungi on palms in Australasian and Asian regions and have reported several new species (e.g., Hyde 1996, Hyde et al 1997, 1998). The purpose of this paper is to describe two new species of *Pseudohalonectria* Minoura & T. Muroi from palms in Australia.

*Pseudohalonectria* was introduced to accommodate a single species, *P. lignicola* Minoura & T. Muroi, which was found on balsa wood submerged in a lake in Japan (Minoura and Muroi 1978). Shearer (1989) added another five species to the genus, also from wood in aquatic habitats. *Pseudohalonectria* is characterized by colored (bright yellow to brown) ascomata with erumpent, cylindrical, periphysate necks. Asci are uniseriate, cylindrical to clavate, with a nonamyloid, thimble-shaped, refractive apical apparatus. Ascospores are cylindrical, smooth, hyaline to slightly colored and usually multi-septate (Shearer 1989). *Pseudohalonectria phialidica* Shearer has been linked to a hyphomycetous, phialidic anamorph (Shearer 1989).

Shearer (1989) and Chen et al (1995) discussed the placement of *Pseudohalonectria* at the ordinal level and concluded that it was related to the Sordariales. *Pseudohalonectria* is similar to *Ophioceras* Sacc., the latter being placed in the Sordariales (Lasiosphaeriaceae), based on its peridium structure and hypersaprobic habit (Conway and Barr 1977). *Pseudohalonectria* is also similar to *Mycomedusispora* (Rick) Carroll & Munk (Lasiosphaeriaceae), which also has colored ascomata, but fragmenting ascospores and ventricose asci with a subapical refractive globule (Shearer 1989). The placement of *Pseudohalonectria* and *Ophioceras* in the Sordariales was supported based on phylogenetic analysis of rDNA restriction and sequence data, although equally weighted phylogenetic analysis of morphological characters produced equivocal results (Chen et al 1995). Molecular data showed that the two genera are clearly separated.

Two previously unrecorded *Pseudohalonectria* species were found during the present study of fungi on palms. This is the first record of members of the genus being associated with monocotyledonous substrata and/or in a terrestrial habitat.

*Pseudohalonectria eubenangeensis* K. D. Hyde, J. E. Taylor et J. Fröhlich, sp. nov. Figs. 1–11

Ascomata immersa vel superficialia, spherica vel pyriformia, 358–658 μm alta, 286–458 μm in diametro, papillata, brunnea vel nigra, glabra, solitaria vel gregaria. Asci 80–120 × 8–11.5 μm, 8-spori, cylindrici, apparato apicali (2–2.5 μm alti × 1.5–2 μm diam) praediti. Ascospores 70–98 × 2.5–3.5 μm, fasciculatae, filiformes vel cylindrici, subhyaline, 3–5(–7) septatae.

Ascomata erumpent from beneath several layers of host tissue which are not discolored, 358–658 μm high × 286–458 μm diam, globose to pyriform, dark brown when wet, to almost black when dry, glabrous, solitary or in small clusters, with a central, cylindrical, periphysate neck, 135–175 μm long × 90–125 μm diam (Figs. 1–3). Peridium 24–46 μm wide, comprising four distinct strata of small, thin walled, often compressed *textura angularis*; innermost stratum comprising 1–2 rows of hyaline compressed cells, second stratum 3–8 rows of reddish brown cells, third stratum...
**Figs. 1-11.** *Pseudohalonechia eubenangeasis* (from holotype). 1. Ascomata partially immersed on host substrate. 2. Vertical section of ascoma. 3. Periphysate ostiolar canal. 4. Peridium comprising four distinct strata. 5. Asci with a refractive, thimble-shaped, nonamyloid, apical apparatus. 6, 7. Ascospores. 8-11. Asci. Scale bars: 1 = 100 μm; 2, 3 = 50 μm; 4-11 = 10 μm.
stratum similar to outer stratum, but hyaline and thin-walled (this stratum often disintegrating), outermost stratum 1–2 rows of reddish-brown cells with slightly thickened walls; peridium releasing yellow pigments when crushed (Figs. 3, 4). Paraphyses numerous, 4–6 μm wide, filamentous, septate, infrequently branched, tapering, same length as asci. Asci 80–120 × 8–11.5 μm, 8-spored, cylindrical, apedicellate, apex rounded to slightly acute, with a refractive, thimble-shaped, nonamyloid apical apparatus, blue in cotton blue, 2–2.5 μm high, and 1.5–2 μm diam. (Figs. 5, 8–11). Ascospores 70–98 × 2.5–3.5 μm, fasciculate, filiform or cylindrical, 3–5(-7)-septate, subhyaline to pale yellow, rounded at the apex and attenuated slightly at base, without sheaths or appendages (Figs. 6, 7).

Etymology. In reference to Eubenangee Swamp, near Cairns in northern Queensland Australia, where this species was first collected, with the Latin suffix “ensis” indicating origin or place.

Host. Archontophoenix alexandrae.

Known distribution. Australia.


Notes. The overall morphology of Pseudohalonectria eubenangeensis and the yellow pigmentation of the peridium are characteristic features of Pseudohalonectria. However, this collection does not correspond to any species given in the key provided by Shearer (1989), although it is similar to P. longirostrum Shearer (Table 1).

Pseudohalonectria eubenangeensis has similar-sized ascospores with a similar number of septa to those found in P. longirostrum Shearer (Shearer 1989) and P. palmicola Hyde et al, described below. However, P. eubenangeensis has a smaller apical apparatus and shorter necks than both of these species (Table 1). In addition the peridium and ascomatal morphology in these species differs. The black ascomata of P. palmicola are immersed beneath the raised host epidermis and possess a peridium composed of three strata, whereas the ascomata of P. longirostrum are bright yellow to brownish yellow, immersed or partially immersed and have a peridium composed of two strata (Shearer 1989).

Pseudohalonectria palmicola K. D. Hyde, J. E. Taylor et J. Fröhli., sp. nov. Figs. 12–21


Ascomata immersed beneath raised areas of host epidermis, which are not colored, 340–408 μm high × 264–332 μm diam, globose, dark brown, glabrous, mostly clustered, with an eccentric black, cylindric, periphyseate neck, up to 1.6 mm long × 132–152 μm diam, emerging at the edge of the uplifted tissue and curving upwards (Figs. 12–15). Peridium 23–67 μm wide, comprising three distinct strata of mostly textura angularis: innermost stratum 10–34 μm thick, central stratum 7–16 μm thick, outermost stratum 4–14 μm thick (Figs. 16, 17), cells in innermost and outermost region with hyaline walls, filled with light greenish yellow pigment, while cells of central region have brown walls and lack bright pigment. Paraphyses numerous, 4.5–8 μm wide at the base, filamentous, septate, infrequently branched, tapering gradually to 2–2.5 μm at the ends, same length as asci (Fig. 18). Asci 120–156 × 13–15 μm, 8-spored, cylindrical, apedicellate, apex rounded, with a refractive, thimble-shaped, nonamyloid apical apparatus, blue in cotton blue, 3.5–4 μm high and 2.5–4 μm diam (Fig. 19). Ascospores 74–83 × 4–4.5 μm, fasciculate, filiform, 3–6-septate, hyaline, without sheaths or appendages (Figs. 20, 21).

Etymology. In reference to the palm host and the Latin suffix *cola* meaning “dweller.”

Host. Calamus australis.

Known distribution. Australia.

Specimens examined. AUSTRALIA. NORTH QUEENSLAND: Atherton Tablelands, near Topaz, Bellenden Ker National Park, Mt. Bartle Frere walking track, on dead rachis of Calamus australis, April 1995, J. Fröhlich (HKU(M) JF640, HOLOTYPE); ibid., March 1997, C. Pearce (HKU(M) 1501).
Notes. The bright yellowish green pigment associated with the peridial cells of *P. palmicola* are characteristic of *Pseudohalonectria*. The collection is compared with the most similar *Pseudohalonectria* species in Table I.

The ascospores and ascomatal necks of *P. palmicola* are longer than those of *Pseudohalonectria lignicola* and smaller than those of *P. longirostrum*. The taxa also differ in ascus size and ascospore septation and the ascospores of *P. eubenangeensis*, *P. lignicola*, *P. longirostrum* become pigmented at maturity, while those of *P. palmicola* remain hyaline.

*Pseudohalonectria* species have until now been collected only from submerged, rotting wood (Shearer 1989). *Pseudohalonectria palmicola* was collected from a dead rattan (stem of *Calamus*) on the floor of a tropical rainforest that was moist, but not subject to flooding. As there is very little rain in the forest during the dry season, it seems likely that this species of *Pseudohalonectria* is not an aquatic species. The species was not associated with soft rot cavities. *Pseudohalonectria* species have been found to be inhibitory to other filamentous fungi and yeasts in paired culture (Shearer 1989), but we were unable to isolate *P. palmicola*.

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LITERATURE CITED


