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Chiodecton epiphyllum is a lichenicolous fungus on *Coenogonium flavicans* and belongs in the genus *Plectocarpon* (Arthoniales: *Roccellaceae*)

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Abstract: The biological status of *Chiodecton epiphyllum* (Arthoniales: *Roccellaceae*), described as a foliicolous lichen from Papua New Guinea, is reassessed, based on additional material from Brazil, Costa Rica, and Papua New Guinea. The species is a lichenicolous fungus growing on the foliicolous lichen *Coenogonium flavicans* (Gyalectales: *Gyalectaceae*). Furthermore, its ascomatal anatomy and lichenicolous growth habit suggest placement in the related genus *Plectocarpon*, instead of *Chiodecton*. We therefore propose the new combination *Plectocarpon epiphyllum* [Bas.: *Chiodecton epiphyllum*]. The species is further lectotypified on its ascomata since parts of the original description which denote vegetative characteristics refer to the sterile thallus of the host lichen.

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Introduction

Foliicolous lichens host a diverse flora of lichenicolous fungi (Lücking & Bernecker-Lücking 2000), including representatives of Arthoniales, Dothideales, Hypocreales, Sordariales, Ostropales, as well as anamorphic hypho- and coelomycetes (Hawksworth 1979, 1981; Samuels 1988; Matzer 1996; Lücking *et al.* 2000). Taxa with fissitunicate asci are rather well-studied (Matzer 1996), although new species are continuously described (Eriksson & Hawksworth 1987; Matzer & Hafellner 1990; Etayo 1997; Lücking 1997, 1998; Lücking & Sérusiaux 1998; Cáceres & Lücking 2000; Thor *et al.* 2000).

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In 1992, RL collected abundant material of an unknown lichenicolous fungus on the foliicolous lichen *Coenogonium* (=*Dimerella*) *flavicans* (Vězda & Farkas) Kalb & Lücking, in a Costa Rican rainforest. The clearly Arthonialean fungus could not be assigned with certainty to any known genus, nor any taxon treated in the monograph of Matzer (1996). The same species was collected by MC in northeastern Brazil in 1998 and 2000, again on the host lichen *Coenogonium flavicans*, and the well-developed material suggested close affinity with *Chiodecton*, although no lichenicolous taxon was thus far known in that genus.

Meanwhile, ES (in Aptroot *et al.* 1997) described the first foliicolous species of *Chiodecton*, *C. epiphyllum* Sérus., from Papua New Guinea. We then recognized the great similarity between the neotropical lichenicolous collections and those of the paleotropical lichen, which completely agreed even in minor anatomical details, except for their seemingly different biological nature. A further collection from the type locality finally showed the species growing

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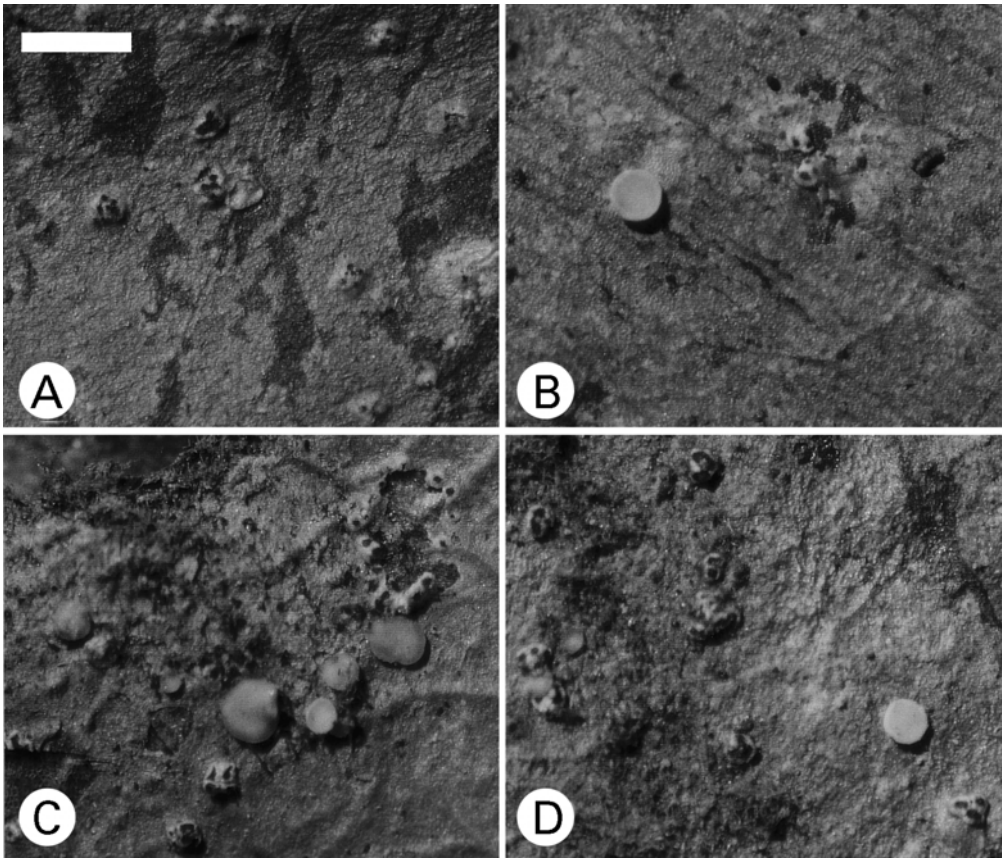

FIG. 1. *Plectocarpon epiphyllum* (with aggregate, partly perithecioid ascomata immersed in pale, thalline verrucae) on thalli of *Coenogonium flavicans* (with gyalectoid apothecia) from different collections in the Neotropics and Paleotropics. A, topotype from Papua New Guinea (*Sérusiaux s.n.*); B, Costa Rica (*Lücking* 92-5643); C & D, northeastern Brazil (C, 2000, *Cáceres & Lücking s.n.*; D, *Cáceres* 98-753). Scale = 1 mm.

lichenicolously on the same host lichen as the neotropical collections, the pantropically distributed *Coenogonium flavicans*. Re-examination of the type material of *Chiodection epiphyllum* suggests that the species grows on a sterile thallus of *Coenogonium*, the reason why it was not recognized as a lichenicolous fungus.

The Species

Plectocarpon epiphyllum (Sérus.) Cáceres, Diederich, Lücking & Sérus. comb. nov.

Chiodecton epiphyllum Sérus. in Aptroot *et al.*, *Bibliotheca Lichenologica* **64:** 49 (1997).—Type: Papua New Guinea. Madang, Brahman Mission at Ramu river, lichenicolous on *Coenogonium flavicans* on leaves of an undetermined dicotyledon, viii 1992, *Sérusiaux 14200-27* (LG—lectotype: ascomata, designated here).

(Figs 1 & 2)

Notes. The species was provisionally placed in *Chiodecton*, despite the supposed absence of a prothallus characteristic of that genus and a number of anatomical differences referring to the ascomata, such as apically not enlarged paraphysoid tips, ellipsoid to fusiform ascospores that are 6-septate (an unusual number for a species of *Chiodecton*) and the foliicolous habitat (Sérusiaux in Aptroot *et al.* 1997). Its

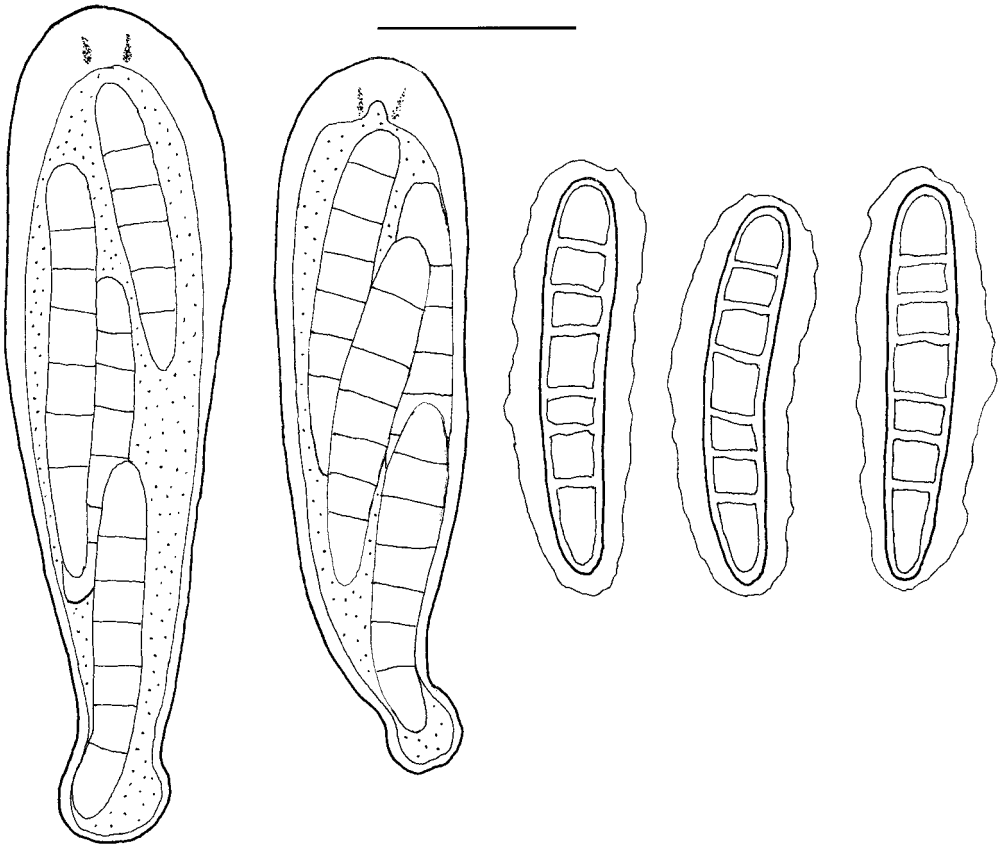

FIG. 2. *Plectocarpon epiphyllum*, asci and ascopores, examined in Lugol's iodine after pre-treatment with KOH (topotype from Papua New Guinea, *Sérusiaux s.n.*). Scale=10 μm.

generic identity was clarified with the help of PD, who suggested *Plectocarpon* as a home for this lichenicolous taxon.

Plectocarpon is also a member of *Roccellaceae* (now including *Opegraphaceae*) and externally resembles *Chiodecton* (Thor 1990), but differs in the *Opegrapha*-type hamathecium (paraphysoid tips not enlarged) and ascospores (fusiform with perispore), and the often K+ green excipulum. The genus includes many lichenicolous species, all previously known growing on foliose and fruticose, mostly corticolous macrolichens (Aptroot *et al.* 1997; Diederich & Etayo 1994; Santesson 1993; Wedin & Hafellner 1998). This is the first species growing on a crustose, foliicolous lichen, an unusual habitat which explains its rather small ascomata compared to the other species of the genus. Within the genus, the species is characterized by its 6-septate ascospores, a feature thus far only known from *Plectocarpon pseudocyphellariae* Diederich and *P. usneae* Diederich & Etayo, which have much larger ascospores [21–31 × 4–4·5 μm in *P. pseudocyphellariae* and 26–30 × 4·5–5 μm in *P. usneae*, versus 17–22 × 3–4·5 μm in *P. epiphyllum* (Diederich & Etayo 1994; Aptroot *et al.* 1997].

Besides *Arthonia*, *Opegrapha*, *Enterographa*, and *Mazosia* (Matzer 1996), *Plectocarpon* is thus a further genus in the Arthoniales known to include lichenicolous species on foliicolous lichens. The sole occurrence on *Coenogonium flavicans* in all known specimens (most probably including

the sterile host thallus in the type material) suggests a high degree of specificity.

Additional specimens examined. **Costa Rica:** *Heredia:* Braulio Carrillo National Park, Botarrama trail, lichenicolous on *Coenogonium flavicans* on leaves of *Spatiphyllum* sp., 1992, *Lücking* 92-5643 (hb. Lücking).—**Brazil:** *Pernambuco:* Bonito Ecological Reserve, lichenicolous on *C. flavicans* on leaves of undetermined plant, 1998, *Cáceres* 98-753 (hb. Lücking); Igarassu, Charles Darwin Biological Station, lichenicolous on *C. flavicans* on leaves of undetermined plant, x 2000, *Cáceres & Lücking s.n.* (hb. Lücking).—**Papua New Guinea:** *Madang*: Brahman Mission at Ramu river, lichenicolous on *C. flavicans* on leaves of undetermined plant, x 1995, *Sérusiaux s.n.* (LG).

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References

Aptroot, A., Diederich, P., Sérusiaux, E. & Sipman, H. J. M. (1997) Lichens and lichenicolous fungi from New Guinea. *Bibliotheca Lichenologica* **64:** 1–220.

Cáceres, M. E. S. & Lücking, R. (1999) Three new species and one new combination of foliicolous lichens and lichenicolous fungi from the Atlantic rain forest in Pernambuco state, Brazil. *Nova Hedwigia* **70:** 217–226.

Diederich, P. & Etayo, J. (1994) Taxonomic notes on the genus *Plectocarpon* (lichenicolous Ascomycotina). *Nordic Journal of Botany* **14:** 589–600.

Eriksson, O. E. & Hawksworth, D. L. (1987) Notes on ascomycete systematics. Nos 225–463. *Systema Ascomycetum* **6:** 111–165.

Etayo, J. (1997) Aportación al catálogo de líquenes epífilos y hongos liquenícolas de Coiba (Panamá). In *Flora y Fauna del Parque Nacional de Coiba (Panamá)* (S. Castroviejo & M. Velayos, eds): 205–220. Madrid: Real Jardín Botánico (CSIC).

Hawksworth, D. L. (1979) The lichenicolous Hyphomycetes. *Bulletin of the British Museum of Natural History (Botany)* **6:** 183–300.

Hawksworth, D. L. (1981) The lichenicolous Coelomycetes. *Bulletin of the British Museum of Natural History (Botany)* **9:** 1–98.

Lücking, R. & Bernecker-Lücking, A. (2000) Lichen feeders and lichenicolous fungi: do they affect dispersal and diversity in tropical foliicolous lichen communities? *Ecotropica* **6:** 23–41.

Lücking, R. & Sérusiaux, E. (1998) *Gyalideopsis cochlearifera*, a new pantropical, commensalistic species on foliicolous Gomphillaceae. *Lichenologist* **30:** 543–549.

Lücking, R. (1997) Additions and corrections to the knowledge of the foliicolous lichen flora of Costa Rica, Central America. The family *Gomphillaceae*. *Bibliotheca Lichenologica* **65:** 1–109.

Lücking, R. (1998) Foliicolous lichens and their lichenicolous fungi collected during the Smithsonian International Cryptogamic Expedition to Guyana 1996. *Tropical Bryology* **15:** 45–76.

Lücking, R., Diederich, P. & Etayo, J. (2000) Checklist of foliicolous lichens and their lichenicolous fungi. Part II. Lichenicolous fungi. [*http://www.uni-bayreuth.de/departments/planta2/ass/robert/lichens/checkfun.html*].

Matzer, M. & Hafellner, J. (1990) Eine Revision der lichenicolen Arten der Sammelgattung *Rosellinia* (Ascomycetes). *Bibliotheca Lichenologica* **37:** 1–138.

Matzer, M. (1996) Lichenicolous ascomycetes with fissitunicate asci on foliicolous lichens. *Mycological Papers* **171:** i–x, 1–202.

Samuels, G. J. (1988) Fungicolous, lichenicolous, and myxomyceticolous species of *Hypocreopsis, Nectriopsis, Nectria, Peristomialis*, and *Trichonectria*. *Memoirs of the New York Botanical Garden* **48:** 1–78.

Santesson, R. (1993) *The Lichens and Lichenicolous Fungi of Sweden and Norway*. Lund: SBT-förlaget.

Thor, G. (1990) The lichen genus *Chiodecton* and five allied genera. *Opera Botanica* **103:** 1–92.

Thor, G., Lücking, R. & Matsumoto, T. (2000) The foliicolous lichen flora of Japan. *Symbolae Botanicae Upsalienses* **32**(3): 1–72.

Wedin, M. & Hafellner, J. (1998) Lichenicolous species of Arthonia on Lobariaceae with notes on excluded taxa. *Lichenologist* **30:** 59–91.

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