

## *Monodictys epilepraria*, a new species of lichenicolous hyphomycetes on *Lepraria*

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**Abstract:** The new lichenicolous hyphomycete, *Monodictys epilepraria*, is described from thalli of several *Lepraria* species. It is known from the Czech Republic, Great Britain, Lithuania, Poland, Spain and Sweden, and appears to be widespread, but probably much overlooked. The new species is characterized by relatively small, brown, muriform, smooth-walled conidia developing on decolourized patches of the host.

**Key words:** Hyphomycetes, *Lepraria*, lichenicolous fungi, *Monodictys*

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### Introduction

The genus *Lepraria* Ach. comprises persistently sterile, leprose lichens with a very simple morphology, in which thalli consist only of soredia or soredia-like granules, in some species developing over a medulla or a hypothallus (e.g., Laundon 1992, Tønsberg 1992). Recent molecular studies suggest that almost all *Lepraria* species form a monophyletic group closely related to *Stereocaulon* (Ekman & Tønsberg 2002). Although the genus is rather poorly attacked by lichenicolous fungi, c. 15 species have been reported on it, most of them not host-specific (e.g., *Athelia arachnoidea* (Berk.) Jülich, *Marchandiomyces corallinus* (Roberge) Diederich & D. Hawksw., *Taeniolina scripta* (P. Karst.) P. M. Kirk, *Trichonectria hirta* (A. Bloxam) Petch). Three species are known exclusively from *Lepraria*: *Libertiella leprariae* Etayo & Diederich, *Rhymbocarpus neglectus* (Vain.) Diederich & Etayo, and *R. pubescens* (Etayo & Diederich) Diederich & Etayo (Kümmerling *et al.* 1993; Etayo & Diederich 1995, 1998).

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During our studies on *Lepraria*, we repeatedly collected a hyphomycetous fungus with brown muriform conidia overgrowing epiphytic thalli of several *Lepraria* species, partly decolourizing their thalli. The fungus appears to represent a new species of *Monodictys* S. Hughes and is described below.

### Material and Methods

Microscopical characters of the new fungus were studied and measured in gently squashed preparations in water and in 5% KOH; all measurements and illustrations refer to material examined in water. Thin layer chromatography (TLC) of a selection of the hosts was performed according to Orange *et al.* (2001). Herbarium specimens are deposited in E, KRAM, UGDA, WI and hb. Diederich.

### The Species

#### *Monodictys epilepraria* Kukwa & Diederich sp. nov.

Species lichenicola in *Leprariae* thallis vigenis, insignis conidiis rufis, subglobosis ad ellipsoideis, laevibus, 6–25(–30) × 5–20 µm, e 15–60 cellulis 2.5–4.5 µm diam.

Typus: Great Britain, Scotland, V. C. 104, North Ebudes, Isle of Skye, Tokavaig wood, on *Lepraria lobificans*, 8 August 2003, P. Diederich 15653 (E—holotypus; hb. Diederich, UGDA—isotypi).

(Figs 1 & 2)

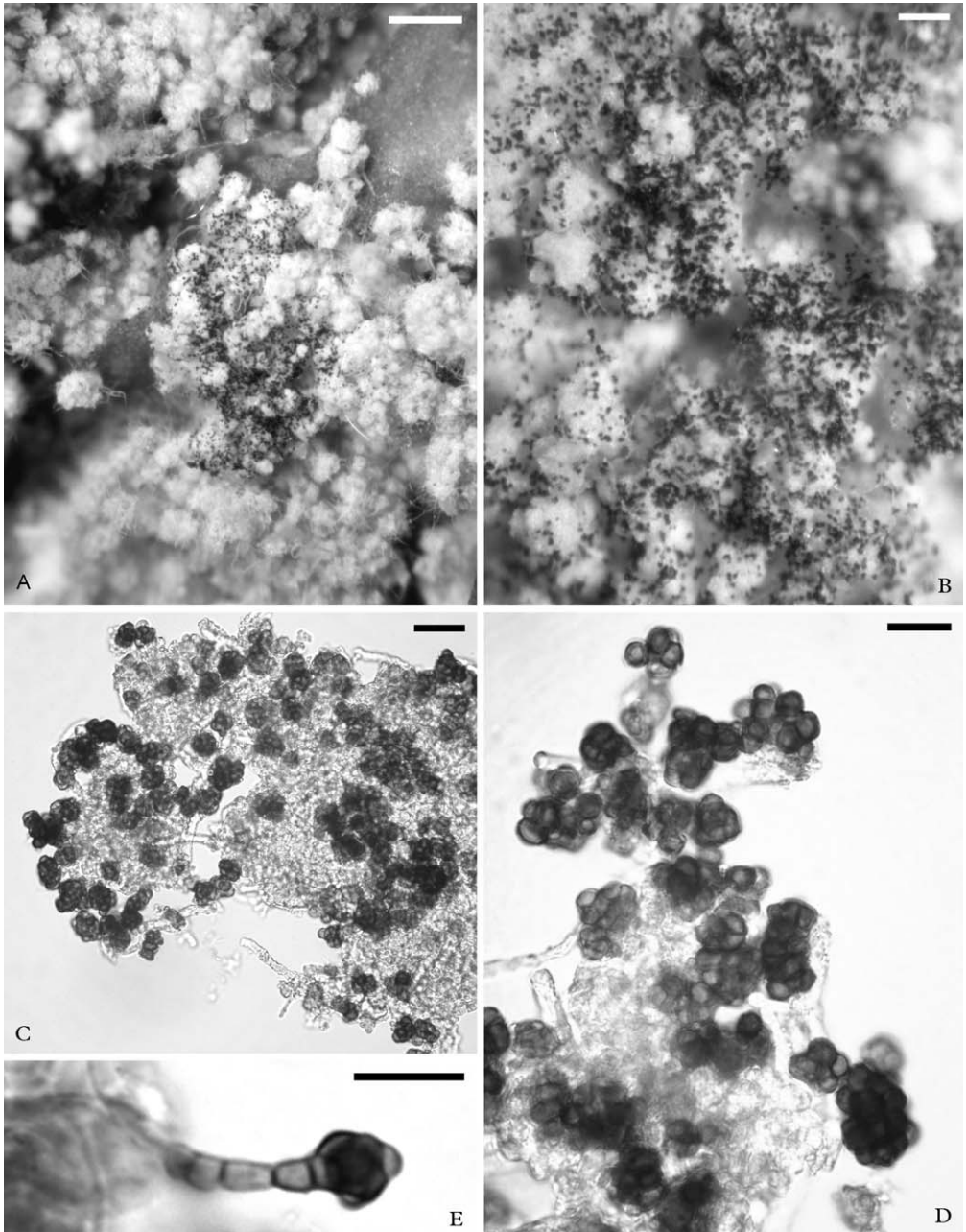


FIG. 1. *Monodictys epilepraria*. A & B, habitus (holotype); C & D, squashed soredium showing conidia (holotype); E, conidiophore, conidiogenous cell and young conidium (*Winkowska* s.n.). Scales: A=500  $\mu$ m, B=200  $\mu$ m; C=20  $\mu$ m; D-E=10  $\mu$ m.

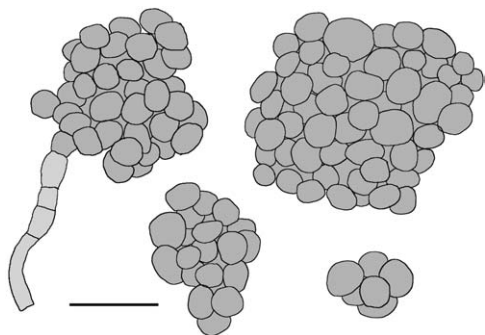


FIG. 2. *Monodictys epilepraria*, conidiophore and conidia (Kukwa 178). Scale = 10  $\mu$ m.

*Colonies* dispersed, superficial, dark brown to black, arising on the surface of decolourized patches of the host thallus. *Mycelium* immersed to superficial, branched, smooth-walled, hyaline, 1–3  $\mu$ m thick.

*Conidiophores* micronematous, mononematous, hyaline to brown, smooth-walled, septate, irregular in length, up to 30  $\mu$ m long. *Conidiogenous* cells monoblastic, integrated, terminal, determinate, ellipsoid to subcylindrical, hyaline to brown, 2–3  $\mu$ m diam., 1–8  $\mu$ m long. *Conidia* arising singly at the apices of the conidiogenous cells, dry, acrogenous, muriform, mainly subglobose or shortly ellipsoid, 6–25(–30)  $\times$  5–20  $\mu$ m diam., composed of *c.* 15–60 cells when fully developed, the individual cells medium to dark brown with an olivaceous tinge, becoming slightly darker and more olivaceous in 5% KOH, subglobose, smooth-walled, thick-walled, wall without irregular thickenings, 2.5–4.5  $\mu$ m diam.

*Hosts, ecology and distribution.* The new species is known from several *Lepraria* species, including *L. elobata*, *L. incana*, *L. jackii*, *L. lobifcans* and *L. rigidula*, usually corticolous, rarely lignicolous, always in forest conditions. Infected areas of the hosts are decolourized, indicating that the fungus is pathogenic. We have collected it in the Czech Republic, Great Britain, Lithuania, Poland and Sweden. J. Etayo (pers. comm.) has also collected it in Spain (Navarra, Atallo, on *Lepraria* sp., 1997, Etayo 14444 (hb Etayo). The species is most probably

widespread and common throughout Europe, but overlooked. *Monodictys cellulosa* has twice been reported from *Lepraria* thalli (Etayo & Diederich 1996, Roux *et al.* 2001); it is possible that both records belong to the new species.

*Observations.* There are now four lichenicolous species known in the genus *Monodictys*. *Monodictys cellulosa* S. Hughes, a species most commonly found on decorticate, rotten wood, but also reported several times as growing on lichens (e.g., Hawksworth 1979, sub *M. lepraria*), is distinguished by much larger conidia, 80–110  $\times$  30–50  $\mu$ m (Rao & de Hoog 1986). However, it is not certain if this fungus is really lichenicolous or just saprotrophic on dying lichen thalli, and its nomenclature is not yet entirely settled. Several authors consider *M. cellulosa* and *M. lepraria* (Berk.) M. B. Ellis to be synonyms, but Rao & de Hoog (1986) treat them as distinct species. Laundon (1992) has shown that the epithet *lepraria* cannot be used for this fungus and suggests that *M. cellulosa* is its correct name. If we follow Rao & de Hoog (*loc. cit.*) who treat the material as two distinct species, then one of them has no valid name, and it is not obvious which one of them is lichenicolous. Clearly, all the lichenicolous material referred to that species is in urgent need of a critical revision. *Monodictys anaptychiaie* (Lindau) D. Hawksw. has 2–5(–6)-celled, distinctly verrucose conidia when mature, 8–12  $\times$  5–10  $\mu$ m; it is known only from the type locality in Germany where it grows on *Anaptychia ciliaris* (Hawksworth 1975). *Monodictys fuliginosa* Etayo is characterized by subspherical conidia of 6–16  $\mu$ m diam. with irregular thickenings in the cell wall (Etayo & Diederich 1996); this taxon is abundant on thalli of *Lobaria* species, especially on *L. pulmonaria*.

Rao & de Hoog (1986) provided a key to all known species of *Monodictys*. Following that key, the closest species appear to be *M. abuensis* (Chouhan & Panwar) V. Rao & de Hoog and *M. nitens* (Schwein.) S. Hughes, both with much larger conidia (>25  $\mu$ m long), and *M. pelagica* (T. W. Johnson)

E. B. G. Jones, a marine species differing by dark brown to black conidia.

*Additional specimens examined* [hosts abbreviated as LE (*Lepraria elobata*), LI (*L. incana*), Lj (*L. jackii*), LL (*L. lobificans*), LR (*L. rigidula*); all specimens collected by *Kukwa* are in UGDA]. **Czech Republic:** S Bohemia, 2 km WSW of Mirochov and 0.5 km SE of Hajnice v Zadnim lese, on LR, 2002, *Kukwa* 1388; S Bohemia, 4 km NE of Mirochov, Fabián reserve, on LI, 2002, *Kukwa* 1415a.—**Great Britain:** Scotland: **V. C. 104**, North Ebudes, Isle of Skye, S of Carbost, Glen Brittle Hut, on LL, 1987, *Diederich* 8730 (hb. Diederich); same locality as the type, 1987, on LL, *Diederich* 8099 (hb. Diederich).—**Lithuania:** 'Nemunas loops' Regional Park, Gojaus forest, 54°34'N, 24°16'E, on LI, 2002, *Kukwa* 1714a; Kreiviškės peninsula, Žemaitija Nat. Park, Lake Plateliai, 56°01'N, 21°50'E, on LI, 2001, *Prigodina* 3041 (WI, UGDA); Gražute Regional Park, Autaliepte oakwood, 1995, *Prigodina* (UGDA); Vilnius distr., Neris Regional Park, Dūkštų oakwood, 54°50'N, 24°58'E, on LI, 2001, *Prigodina* 3109 (WI, UGDA).—**Poland:** Kaszuby Lakeland, 0.5 km S of Reda, on LI, 2000, *Kukwa*; Krajeńskie Lakeland (Bc 51), SW of Lisewo, on LR, 1999, *Winkowska* (UGDA); Tuchola Forest, Wda river valley, 0.75 km SW of Łuby, on LL, 2002, *Kukwa* 1559a; Olsztyńskie Lakeland, by lake Dłużek, on LI, 2001, *Kubiak* (UGDA); Bielska Plateau (Cg 55), Białowieża Nat. Park, on LI, LL and LR, 2001, *Kukwa* 178, 185, 236a, 241, 267a, 480a; Gorce Mts., Gorczański Nat. Park, below Bieniowe glade, Kamienica stream valley, on LE, 1999, *Czarnota* (UGDA); Western Bieszczady, Smerek village, on LE, 1999, *Krzewicka* (KRAM); Bieszczadzki Nat. Park, Sianki, on Lj, 2002, *Czarnota* (UGDA); Ilawa lakeland, forest incorporate, Lisewo, on LI, 2003, *Kukwa* 1781; Carpathians, Beskid Sądecki Mts., Zgrzypy, on Lj, 1991, *Śliwa* (KRAM); Karkonosze Mts., Karkonosze Nat. Park, Łomniczka stream valley, on cf. LR, 2003, *Dimos* (UGDA).—**Sweden:** Skåne, 2 km N of Osby, 56°24'N, 14°02'E, on Lj, 2003, *Kukwa* 2620.

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