

Pseudospiropes longipilus on *Lepraria* sp. – a hyphomycete imitating a lichenicolous habit

Uwe BRAUN, Bettina HEUCHERT & Wolfgang VON BRACKEL

Abstract: BRAUN, U., HEUCHERT, B. & BRACKEL, W. v. 2008. *Pseudospiropes longipilus* on *Lepraria* sp. – a hyphomycete imitating a lichenicolous habit. – *Herzogia* 21: 235–238.

Pseudospiropes longipilus, a common, widespread, periderm-inhabiting hyphomycete of birch, has been found in Germany, Bavaria, on the thallus of *Lepraria* sp. on *Betula pendula*. This hyphomycete was not found growing around the lichen thallus by accident. The mycelium was observed to be developed in the thallus, giving rise to numerous erumpent conidiophores. *P. longipilus* on *Lepraria* sp. cannot be classified as genuine lichenicolous fungus, but may dwell on the lichen thallus, imitating a true lichenicolous habit.

Zusammenfassung: BRAUN, U., HEUCHERT, B. & BRACKEL, W. v. 2008. *Pseudospiropes longipilus* auf *Lepraria* sp. – ein Hyphomycet, der eine lichenicole Lebensweise imitiert. – *Herzogia* 21: 235–238.

Pseudospiropes longipilus, ein häufiger, weit verbreiteter peridermbewohnender Hyphomycet der Birke, wurde in Deutschland, Bayern, auf einem Thallus von *Lepraria* sp. auf *Betula pendula* gefunden. Dieser Hyphomycet wurde nicht zufällig um den Flechtenthallus herum wachsend gefunden, sondern das Mycel entwickelte sich im Thallus und brachte zahlreiche herausbrechende Konidienträger hervor. *P. longipilus* auf *Lepraria* sp. ist nicht als echter lichenicoler Pilz zu bezeichnen, er kann aber auf dem Flechtenthallus wachsen und imitiert eine lichenicole Lebensweise.

Key words: Anamorph, *Pseudospiropes*, lichenicolous fungi.

Introduction

A lichen-inhabiting hyphomycete has recently been found on the thallus of *Lepraria* sp. growing on the periderm of *Betula pendula*. The mycelium of this fungus was found to be developed within the thallus giving rise to numerous erumpent conidiophores. Due to the habit of this hyphomycete, at first sight it was taken for a true lichenicolous fungus. However, attempts to identify this species revealed that the lichen-associated hyphomycete was identical with *Pseudospiropes longipilus*, a common periderm inhabiting fungus of birch.

Material and Methods

The material has been examined and described, mounted in distilled water, by means of light microscopy (Olympus BX 50, Hamburg, Germany). Squeezing preparations and sections by means of a hand microtome have been used to observe the location of the mycelium of the lichen-associated fungus.

Description of lichen-associated colonies of *Pseudospiropes longipilus*

Pseudospiropes longipilus (Corda) Hol.-Jech., Proc. Kon. Ned. Akad. Wetensch., Ser. C, Biol. Med. Sci. 76(3): 301(1977). (Fig. 1)

≡ *Helminthosporium longipilum* Corda, Icon. fung. 1: 14 (1837).

Teleomorph: *Melanomma subdispersum* (P.Karst.) Berl. & Voglino, in Sacc., Syll. Fung. 4: 148 (1886).

Material examined: Germany, Bavaria, Kreis Schwandorf, Breitenbrucker Weiher, Postloher Forst, on the thallus of *Lepraria* sp., on the periderm of *Betula pendula*, 3 Oct. 2007, W. v. Brackel (HAL 2234 F).

Colonies on the lichen thallus scattered, villose, blackish. Mycelium immersed; hyphae sparingly branched, irregularly sinuous, 1–3(–4) μm wide, brown, thin-walled, smooth. Conidiophores arising from immersed hyphae, erumpent, erect, subcylindrical, straight to somewhat curved-sinuous, usually unbranched, up to $400 \times 5\text{--}8 \mu\text{m}$, pluriseptate, dark brown, paler towards the apex, wall thick, up to 1.5(–2) μm wide, smooth or almost so, but later often becoming rugose, outline of the wall irregularly undulate, in the upper half sometimes seemingly coarsely verrucose due to somewhat protuberant lateral old conidiogenous loci. Conidiogenous cells integrated, at first terminal, 10–30 μm long, polyblastic, sympodially proliferating, cicatrized, conidiogenous loci subdenticulate, at first subconspicuous, only ultimate rime darkened-refractive (i.e. loci visible in front view as minute circles), later slightly thickened and pigmented through, except for a minute central pore; conidiophores later rejuvenating, i.e. with enteroblastic proliferation and rectilinear (monopodial) growth, leaving coarse, irregular, annular, circumferential fringes of the torn wall and forming new terminal conidiogenous cells that displace the previous conidiogenous cells in an intercalary position, resulting in a lateral displacement of the old scar. Conidia solitary, broadly ellipsoid-ovoid to cylindrical, (10–)12–22 \times (5–)6–8(–9) μm , pale to medium brown or olivaceous-brown, wall thin ($\leq 1 \mu\text{m}$), smooth or almost so, apex broadly rounded, base somewhat attenuated, obconically truncate, hilum often somewhat peg-like, 1–2 μm wide, unthickened or almost so, at most slightly darkened-refractive.

Discussion

Pseudospiropes longipilus is a common, widespread periderm-inhabiting hyphomycete of birch (HUGHES 1951, ELLIS 1976). The colonies found on the thallus of *Lepraria* sp. on *Betula pendula* agreed morphologically perfectly with the latter species. Furthermore, some conidiophores directly emerging from the periderm surrounding the lichen thallus were also observed. However, the sample examined did not represent an accidental collection of some fruiting of *P. longipilus* around a lichen thallus. Squeezing preparations and sections using a hand microtome revealed the mycelium of this hyphomycete to be developed within the thallus of *Lepraria* sp., giving rise to conidiophores erumpent through the surface, i.e. *P. longipilus* was able to dwell on this lichen. The ecology of this fungus on *Lepraria* sp. is, however, unclear. Any nutritional connexions between hyphomycete and lichen could not be observed. A saprobic habit using faded or necrotic parts of the thallus seems to be most probable. The application of the term 'lichenicolous' depends on its circumscription and application. Lichenicolous fungi (sensu lato) may have different ecological requirements, i.e. they are characterised by various habits, ranging from saprobes and commensalistic organisms to parasites (LAWREY & DIEDERICH 2003), but genuine (obligately) lichenicolous fungi (HAWKSWORTH 1979) are confined to lichens as hosts. In this sense, *P. longipilus* cannot be considered a true lichenicolous fungus (or at most a facultatively lichenicolous fungus sensu lato). In any case, this species may dwell on *Lepraria* sp., imitating a true lichenicolous habit.

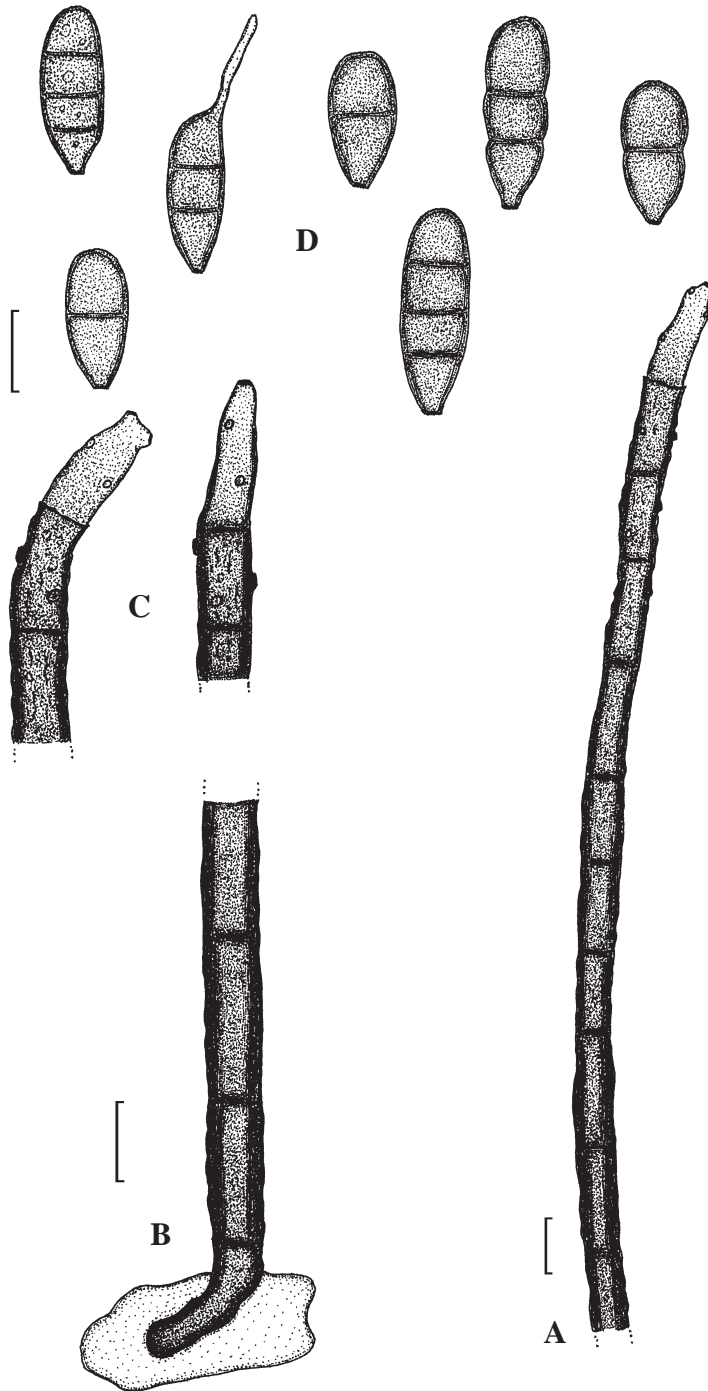


Fig. 1: *Pseudospiropes longipilus* on *Lepraria* sp. on birch periderm, **A** – conidiophore, **B** – base of a conidiophore, **C** – tips of conidiophores with conidiogenous cells, **D** – conidia. Scale = 10 µm. U. Braun del.

P. longipilus is characterised by a combination of strictly sympodially proliferating conidiogenous cells and enteroblastically rejuvenating conidiophores, leaving coarse, irregular, annular fringes, which have not yet been described in detail for this species and the whole genus, although comparable structures have been depicted in several other species of *Pseudospiropes*, e.g. *P. nodosus* (Wallr.) M.B.Ellis, *P. simplex* (Kunze) M.B.Ellis (ELLIS 1971), and *P. rousselianus* (Mont.) M.B.Ellis (ELLIS 1976). Similar phenomena of the proliferation of conidiophores and conidiogenous cells are also known in the closely allied genus *Spiropes* Cif. (ELLIS 1971), and have been discussed by SEIFERT & HUGHES (2000).

References

- ELLIS, M. B. 1971. Dematiaceous Hyphomycetes. – Kew: Commonwealth Mycological Institute.
ELLIS, M. B. 1976. More dematiaceous Hyphomycetes. – Kew: Commonwealth Mycological Institute.
HAWKSWORTH, D. L. 1979. The lichenicolous Hyphomycetes. – Bull. Brit. Mus. (Nat. Hist.), Bot. **6**: 183–300.
HUGHES, S. J. 1951. Studies on micro-fungi IV. Two fungi of *Betula* periderm. – Mycol. Pap. **37**: 1–17.
LAWREY, J. D. & DIEDERICH, P. 2003. Lichenicolous fungi: interactions, evolution, and biodiversity. – Bryologist **106**: 80–120.
SEIFERT, K. A. & HUGHES, S. J. 2000. *Spiropes dictyosporus*, a new synnematosus fungus associated with sooty moulds. – New Zealand J. Bot. **38**: 489–492.

Manuscript accepted: 29 May 2008.

Addresses of the authors

Uwe Braun & Bettina Heuchert, Martin-Luther-Universität, Institut für Biologie, Bereich Geobotanik und Botanischer Garten, Herbarium, Neuwerk 21, D-06099 Halle (Saale), Germany. E-mails: uwe.braun@botanik.uni-halle.de, bettina.heuchert@botanik.uni-halle.de

Wolfgang von Brackel, Institut für Vegetationskunde und Landschaftsökologie (IVL), Georg-Eger-Str. 1b, D-91334 Hemhofen, Germany. E-mail: wolfgang.von.brackel@ivl-web.de