

Hydropisphaera foliicola, a new species from Martinique

Christian LECHAT
Jacques FOURNIER

Ascomycete.org, 9 (1) : 6-8.
Janvier 2017
Mise en ligne le 07/01/2017



Abstract: A detailed description of *Hydropisphaera foliicola* sp. nov. is presented, based on a collection on dead leaf of *Pouteria pallida* (C.F. Gaertn.) Baehni (*Sapotaceae*) in Martinique (French West Indies). The fungus was cultured and sequenced; no asexual morph was obtained in culture but fertile ascomata occurred after five weeks. This species resembles *H. erubescens* (Roberge ex Desm.) Rossman & Samuels but differs from it in having significantly smaller ascospores.

Keywords: Ascomycota, *Bionectriaceae*, *Hypocreales*, ribosomal DNA, taxonomy.

Résumé : une description détaillée d'*Hydropisphaera foliicola* sp. nov. est présentée à partir d'une récolte sur feuille de *Pouteria pallida* (C.F. Gaertn.) Baehni (*Sapotaceae*) en Martinique (Petites Antilles françaises). Le champignon a été cultivé et séquencé, le stade asexué n'a pas été obtenu en culture, mais des ascomates fertiles sont apparus après cinq semaines. Cette espèce ressemble à *H. erubescens* (Roberge ex Desm.) Rossman & Samuels mais en diffère par des ascospores nettement plus courtes.

Mots-clés : ADN ribosomal, Ascomycota, *Bionectriaceae*, *Hypocreales*, taxinomie.

Introduction

In the continuity of a research program on the fungal diversity of Lesser Antilles, conducted by Prof. R. Courtecuisse "Les champignons des Petites Antilles; diversité, écologie, protection" (COURTECUISSÉ, 2006), we collected a *Hydropisphaera* occurring on a dead leaf of *Pouteria pallida* (C.F. Gaertn.) Baehni (*Sapotaceae*), which proved to be different from species reported in the literature. The ascomata of this genus are pale yellow to dark orange or brownish-orange, not changing colour in 3% KOH or lactic acid and thus belong to the *Bionectriaceae* as defined by ROSSMAN *et al.* (1999). The genus *Hydropisphaera* is distinguished from other genera in the *Bionectriaceae* by the ascomata becoming cupulate when dry and the ascomatal wall more than 30 µm thick, composed of two regions with an outer region composed of large, subglobose to globose, thin-walled cells, and an acromonium-like or gliomastix-like asexual morph. Based on these characteristics, phylogenetic analysis and comparison with other genera in the *Bionectriaceae* and with known species of *Hydropisphaera*, the specimen described herein is determined to represent a previously undescribed species of *Hydropisphaera*.

Materials and methods

The specimen was examined, cultured, sequenced and phylogenetically analysed using the methods described in LECHAT & FOURNIER (2015).

Taxonomy

Hydropisphaera foliicola Lechat & J. Fourn., sp. nov. Fig. 1
Mycobank: MB 815589

Diagnosis: Differs from the most similar species *Hydropisphaera erubescens* in having smaller ascospores 15–17 × 4–4.7 µm vs. 18–26 × 4–5 µm.

Holotype: FRENCH WEST INDIES, Martinique, Fort-de-France, forêt de Colson, Plateau-Perdrix, 20 Aug. 2015, on dead leaf of *Pouteria pallida* (C.F. Gaertn.) Baehni (*Sapotaceae*), leg. C. Lechat CLLM15128 (LIP), ex-type culture: CBS 140758. GenBank LSU: KX986914.

Etymology: The specific epithet "*foliicola*" refers to its habitat on a dead leaf.

Perithecia solitary, scattered on substratum, without stroma, globose, (160–)180–220(–240) µm diam. (X=200 µm, n=10), pale yellow, becoming brownish orange and collapsing cupulate when dry, smooth to slightly roughened, not changing colour in 3% KOH or lactic acid. Perithecial apex with short, acute papilla. **Perithecial wall** 30–45 µm thick, composed of two regions: outer region 25–35 µm wide, of subglobose 7–10(–12) × 6–11 µm cells, with pale orange walls 1–1.5 µm thick, with protruding cells slightly roughening surface; inner region 10–15 µm wide, of elongate, flattened cells 7–12 × 2–5.5 µm, with hyaline walls. **Asci** 50–60 × 8–10 µm (X=55 × 9 µm, n=20), clavate, apex simple, 8-spored, ascospores biserial above, uniseriate below, filling each ascus. **Ascospores** (14–)15–17 (–18) × 4–4.7(–5) µm (X=16.5 × 4.5 µm, n=30), fusiform, 1–3-septate, slightly constricted at septum, hyaline, verrucose.

Asexual morph: Unknown but possibly acromonium-like.

Cultural characteristics: After three weeks on PDA at 25° C, colony 30–45 mm diam., cottony, pale buff, composed of pale brownish orange, septate, smooth hyphae, 2.5–4 µm wide, diffusing an orange colouration in medium, white to pale yellow at the margin, not sporulating after three weeks. Fertile ascomata solitary or in groups of 3–8 appearing at the margin of the colony after five weeks.

Discussion

Hydropisphaera foliicola is placed in the genus *Hydropisphaera* based on morphological features of its sexual morph, along with phylogenetic analysis of its LSU sequences. Sexual morphs of *Hydropisphaera* have ascomata that do not change colour in 3% KOH or lactic acid, usually become cupulate upon drying, and are hairy or glabrous. Known glabrous species are macroscopically identical and are separable only by size, ornamentation and septation of ascospores. The known asexual morphs for species of *Hydropisphaera* are considered acromonium-like as well as gliomastix-like, as discussed by SUMMERBELL *et al.* (2011), LECHAT *et al.* (2010) and LECHAT & FOURNIER (2016). Unfortunately the culture of *H. foliicola* did not produce an asexual morph but instead yielded ascomata, which produce the same ascospores as in nature after five weeks.

Maximum likelihood phylogeny based on LSU sequences (Fig. 2) shows that *H. foliicola* is nested in the *Hydropisphaera* clade and clusters with species known to have an acromonium-like asexual morph, which suggests that the asexual morph of *H. foliicola* could be acromonium-like. The closest species to *H. foliicola* is *H. erubescens* (Roberge ex Desm.) Rossman & Samuels, which it resembles morphologically but differs mainly in having longer ascospores. Descriptions of *H. erubescens* reported in literature by SAMUELS (1978)

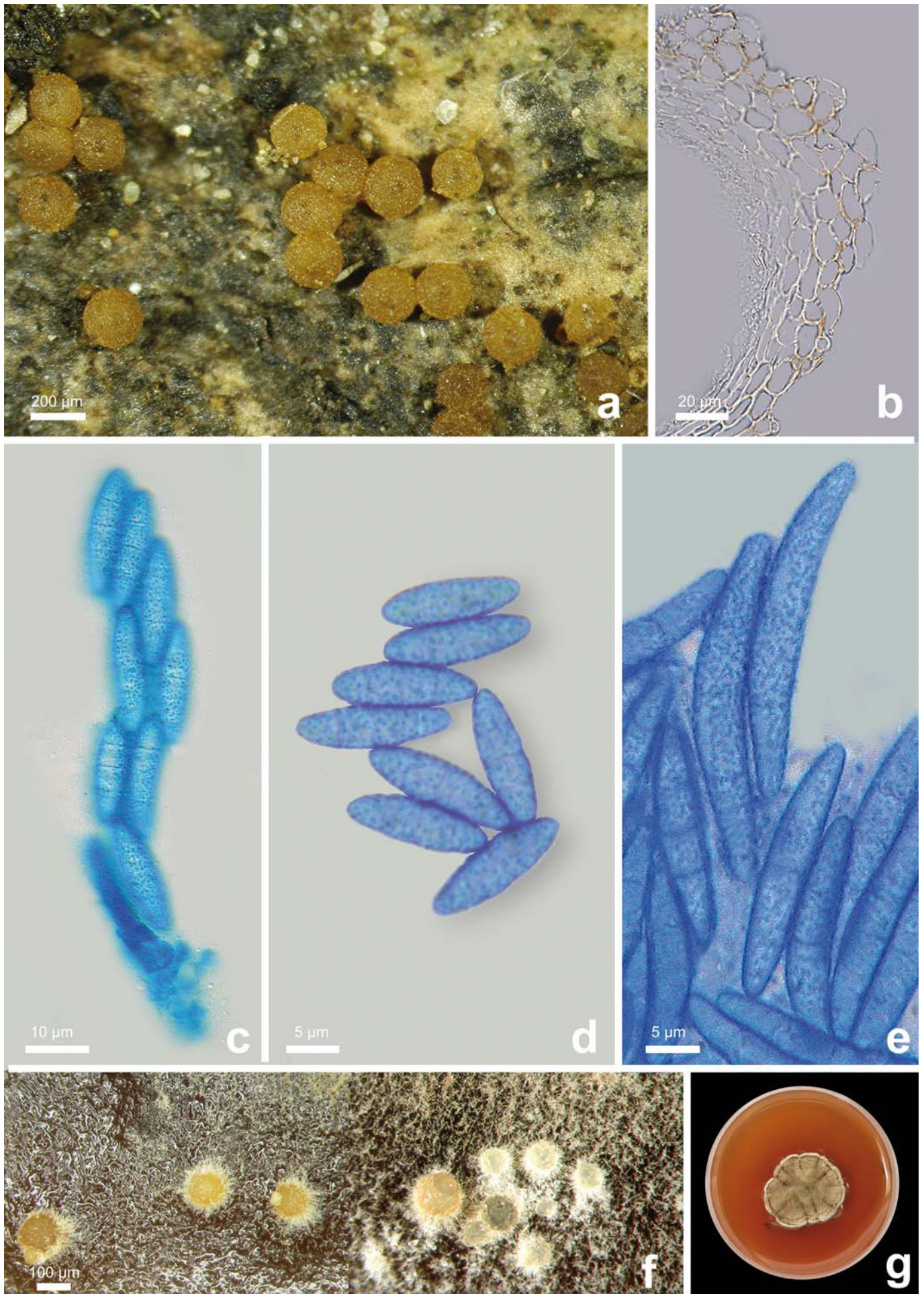


Fig. 1 – *Hydropisphaera foliicola*

Legend of Fig. 1: a-d, f, g: *Hydropisphaera foliicola* (CLLM15128 Holotype); e: *H. erubescens* (CLL14114)

a: Ascomata on the substratum; b: Lateral ascomatal wall in vertical section; c: Asci and ascospores; d: Ascospores; e: Ascospores of *H. erubescens* (c-e in cotton blue); f: Ascomata in culture after five weeks; g: Culture on PDA at three weeks.

and ROSSMAN (1983) — as “*Nectria erubescens*” — mention smooth-walled ascospores but all specimens examined during this survey revealed ornamented ascospores (Fig. 1). Based on differences of microscopic characters and phylogenetic analysis, *Hydropisphaera foliicola* Lechat & J. Fourn. is proposed as a new species.

Acknowledgements

The authors gratefully acknowledge Dr Amy Rossman (Oregon State University, Corvallis, U.S.A.) for her advices and scientific assistance and for her presubmission review of a preliminary draft.

References

COURTECUISE R. 2006. — Liste préliminaire des Fungi recensés dans les îles françaises des Petites Antilles : Martinique, Guadeloupe et

dépendances. 1. Basidiomycètes lamellés et affines (*Agaricomycetideae*). *Documents mycologiques*, 133-134: 81-140.

LECHAT C., FARR D.F., HIROOKA Y., MINNIS A.M. & ROSSMAN A.Y. 2010. — A new species of *Hydropisphaera*, *H. bambusicola*, is the sexual state of *Gliomastix fusigera*. *Mycotaxon*, 111: 95-102.

LECHAT C. & FOURNIER J. 2015. — *Protocreopsis korfii* (*Hypocreales*, *Bionectriaceae*), a new species from Martinique (French West Indies). *Ascomycete.org*, 7 (6): 307-310.

LECHAT C. & FOURNIER J. 2016. — *Hydropisphaera znieffensis*, a new species from Martinique. *Ascomycete.org*, 8 (2): 55-58.

ROSSMAN A.Y. 1983. — The phragmosporous species of *Nectria* and related genera. *Mycological Papers*, 150: 1-164.

ROSSMAN A.Y., SAMUELS G.J., ROGERSON C.T. & LOWEN R. 1999. — Genera of *Bionectriaceae*, *Hypocreaceae* and *Nectriaceae* (*Hypocreales*, *Ascomycetes*). *Studies in Mycology*, 42: 1-248.

SAMUELS G.J. 1978. — Some species of *Nectria* having *Cylindrocarpon* imperfect states. *New Zealand Journal of Botany*, 16: 73-82.

SUMMERBELL R.C., GUEIDAN C., SCHROERS H.-J., HOOG G.S. (DE), STARINK M., AROCHA ROSETE Y., GUARRO J. & SCOTT J.A. 2011. — *Acremonium* phylogenetic overview and revision of *Gliomastix*, *Sarocladium*, and *Trichothecium*. *Studies in Mycology*, 68: 139-162. doi: 10.3114/sim.2011.68.06

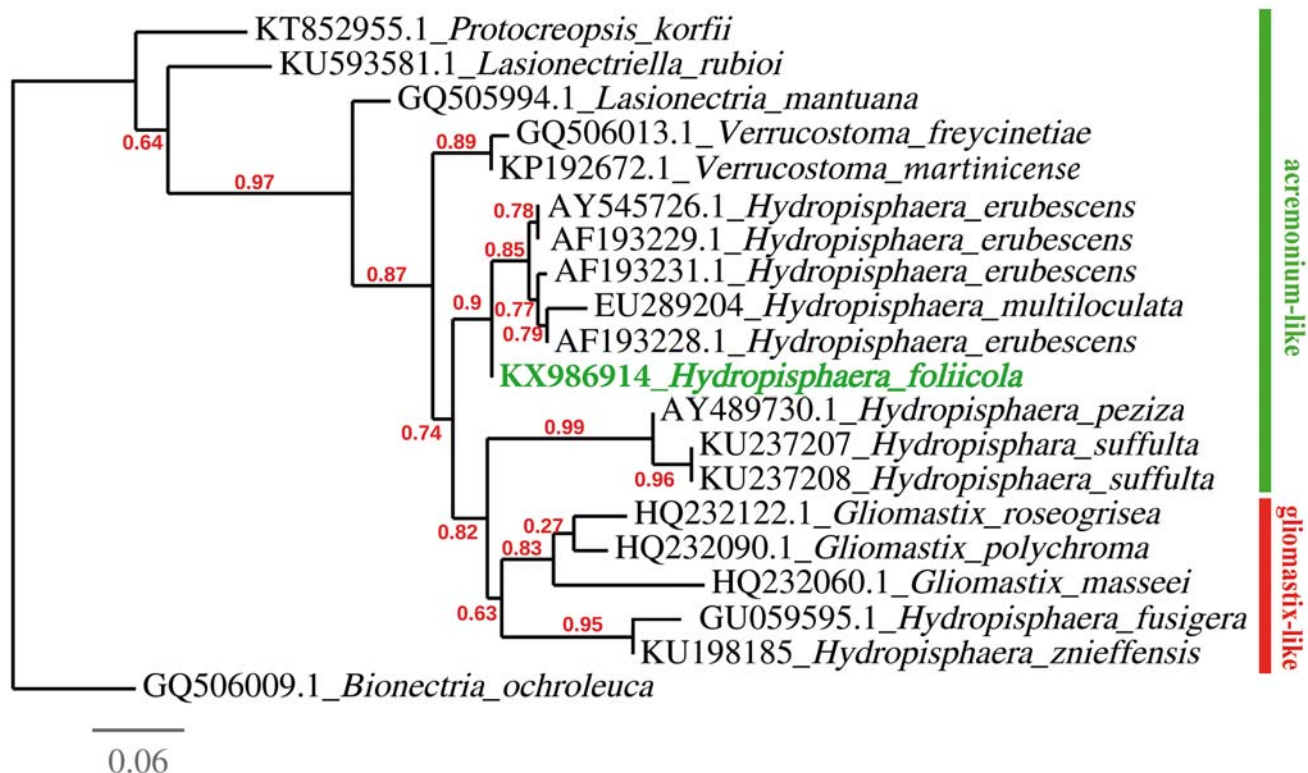


Fig. 2 – Maximum likelihood phylogeny of *Hydropisphaera foliicola* based on LSU sequences, rooted with *Bionectria ochroleuca*.



Christian Lechat
64 route de Chizé
79360 Villiers-en-Bois
France
lechat@ascofrance.fr



Jacques Fournier
Las Muros
09420 Rimont
France
jacques.fournier@club-internet.fr