

Dothidea hymeniicola: an overlooked *Endococcus* species on *Lobaria* in Central America

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Abstract: HAWKSWORTH, D. L. 2005. *Dothidea hymeniicola*: an overlooked *Endococcus* species on *Lobaria* in Central America. – *Herzogia* 18: 17–21.

The original material of the overlooked name *Dothidea hymeniicola* has been located and found to represent a currently otherwise unrecognized gall-forming species of *Endococcus* growing on a species of *Lobaria*, most probably *L. peltigera*. The original locality was given only as "Central America", but evidence that it was from Panama is presented, although the possibility that it might have come from Ecuador, Mexico, or Peru cannot be excluded. The new combination *Endococcus hymeniicola* is made to accommodate this fungus, which is described and illustrated. This appears to have been the first lichenicolous fungus new to science to have been described from Central America.

Zusammenfassung: HAWKSWORTH, D. L. 2005. *Dothidea hymeniicola*: eine übersehene Art der Gattung *Endococcus* auf *Lobaria* aus Mittelamerika. – *Herzogia* 18: 17–21.

Das Originalmaterial der übersehenen *Dothidea hymeniicola* wurde lokalisiert. Es ist eine unbekannte gallenbildende Art der Gattung *Endococcus*, die auf *Lobaria*, wahrscheinlich *L. peltigera*, wächst. Als Fundort war „Central America“ angegeben, aber es werden Befunde aufgezeigt, dass die Probe aus Panama stammen könnte, obwohl nicht ausgeschlossen werden kann, dass sie aus Ecuador, Mexiko oder Peru kommt. Die neue Kombination *Endococcus hymeniicola* wird für diesen Pilz eingeführt, der beschrieben und abgebildet wird. Es hat den Anschein, dass es der erste lichenicole Pilz ist, der von Mittelamerika neu beschrieben worden ist.

Key words: Berkeley, galls, lichens, lichenicolous fungi, Panama, *Sticta*.

Introduction

In the course of investigations made while preparing an account of the Rev. Miles J. Berkeley's lichenological interests (HAWKSWORTH 2004), I came across the name "*Dothidea hymenicolola*" in BERKELEY & BROOME (1852). This fungus was described as an aside in a paper dealing with British fungi "on some species of *Sticta*, Central America" with a short description lacking any measurements. The name was not indexed by SACCARDO (1882–1931, 1972) and seems to have been overlooked by most students of lichenicolous fungi. COOKE (1884: 44) evidently restudied the specimen, asserting "Is *Homostegia lichenum*, Somm.", i.e. the species now called *Plectocarpon lichenum* (Sommerf.) D.Hawksw. 1984 (DIEDERICH & ETAYO 1994). Cooke's paper was subsequently misquoted by THEISSEN & SYDOW (1915: 604) who stated "Nach Cooke ... mit *Piggotii* identisch ist", i.e. *Homostegia piggotii* (Berk. & Broome) P.Karst. 1873 (HAWKSWORTH et al. 2004); KEISSLER (1930: 300) followed Theissen & Sydow's error, listing it as a synonym of *H. piggotii*, but without any discussion.

The original material has been re-located in K(M), examined, and found to represent a hitherto unrecognized species of *Endococcus* growing on *Lobaria*. Notes on the key characters and

drawings of the ascospores are included in HAWKSWORTH (2004), but as a matter of policy the journal in which that contribution appeared does not publish new scientific names. The necessary new combination is therefore made here, along with a description, further drawings, and photographs.

Taxonomy

Endococcus hymeniicola (Berk. & Broome) D.Hawksw. **comb. nov.** (Figs 1–2)

Basionym: *Dothidea hymeniicola* Berk. & Broome, Ann. Mag. Nat. Hist., Ser. 2, 9: 385 (1852); as "*hymenicola*"¹.

Type: "Central America" [? Panama]: *Sine loco*, on *Lobaria* sp. [as "*Sticta* "], B. Seemann [as "Seeman"] (K(M) 117008 – holotype)².

Description: Ascomata perithecia, formed in the surface layer of pinkish convex galls 2–4 mm diam, arising singly but becoming packed and appearing almost confluent until examined closely when the stromatic gall tissue is generally evident between the perithecia; individual perithecia ± globose, the upper two-thirds exposed above the surface of the gall, 200–225 µm diam, ostiolate, the ostiole well-defined, gaping, 30–40(–50) µm diam; wall dark red-brown, entire, continuous below the centrum, where exposed somewhat uneven and knobby, composed of 3–6(–10) layers of cells, pseudoparenchymatous, textura angularis, 20–35 µm thick; outermost layer of cells mainly 10–12 µm diam to 18 × 10 µm, becoming more elongated and ± vertically orientated around the ostiole, the outward facing cell walls strongly and unevenly thickened, the thickening 3–4 µm thick, somewhat granular at the cell surface, and projecting to form the uneven surface; inner layers of cells hyaline, 8–12 µm diam, subglobose to radially compressed, cell walls evenly thickened, 2–2.5 µm thick. Hamathecium pseudoparenchymatous in young perithecia, soon gelatinized and disappearing, with no hamathecial filaments present at maturity; I– (Melzer's reagent, and Lugol's solution after pre-treatment with KOH). Asci elongate-clavate to broadly subcylindrical, thick-walled, with an short internal apical beak, bitunicate in structure, discharge fissitunicate, contents I+ reddish (Lugol's solution after pre-treatment with KOH), 70–80 × 11.5–13 µm when mature, (6–)8-spored. Ascospores irregularly overlapping biseriate in the asci, elongate-ellipsoid, rounded to slightly attenuated at the ends, brown, 1-septate, not or slightly constricted at the septum, walls smooth, lacking a conspicuous gelatinous sheath, (15–)16.5–18.5(–20) × 5.5–6.5(–7.5) µm, length:breadth ratio (2.3–)2.5–2.6(–3.6) (n³ = 17).

Illustrations: HAWKSWORTH (2004: 313, fig. 2).

Ecology: Forming galls on the thallus of a species of *Lobaria*, perhaps *L. peltigera* or *L. subdissecta*. The specimen is flattened and firmly glued to the sheet so it is impossible to check the veining on the underside which would be diagnostic for *L. peltigera*, and which was reported as collected by Seemann (see below). The host was referred to as "some species of *Sticta*" in the original description, but in the mid-1800s *Lobaria* species were generally included in *Sticta* (e.g. "*Sticta pulmonaria*" in BERKELEY 1857: 385).

¹ The epithet is based on „*hymenium*“ and the suffix „-icola“ (dwelling in) so the spelling should be corrected to „*hymeniicola*“ in accordance with Art. 60.8; the epithet „*hymenaicola*“ has been used for several other fungi, but in those cases it also has to be corrected to „*hymeniicola*“.

² Note added in proof: A single undated specimen of *Lobaria peltigera* collected by Seemann from Veraguás, Panama, was subsequently located by Scott LeGreca in BM, it is abundantly fertile but with no sign of the *Endococcus*.

³ n = the number of ascospores measured.

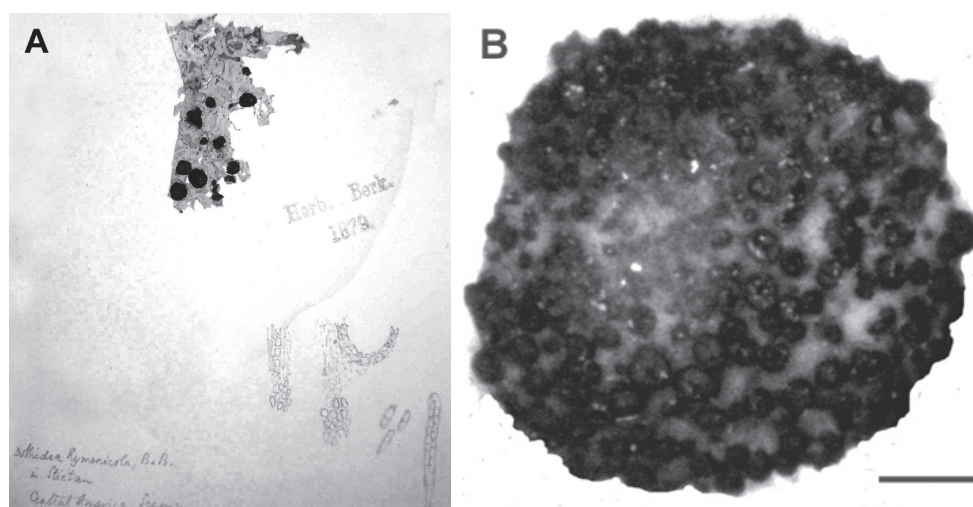


Fig. 1: *Endococcus hymeniicola*. **A** – The holotype collection of *Dothidea hymeniicola* (K(M) 117008) with Berkeley's sketches. **B** – Detail of the holotype collection showing a gall with separate perithecioid ascomata which have conspicuous ostioles. Photograph (B) © the Royal Botanic Gardens Kew. Scale = 500 μ m.

Distribution: The only published locality information was "Central America" and no additional data are present on the original specimen. However, the German botanist Berthold Seemann (1825–1871) trained in Kew in the 1840s, served as naturalist on the H. M. S. Herald in 1847–51, and a set of material from that voyage is in K (STAFLEU & COWAN 1985: 474). It seemed probable that the material was collected during that voyage, which included only Panama and Mexico in "Central America". Churchill Babington, a close collaborator of Berkeley (HAWKSWORTH 2004), named the lichens from the voyage and reported several "*Sticta*" species: *S. pulmonacea* [i.e. *Lobaria pulmonaria*] from the Behring Strait ("Kotzebue Sound" in "Western Eskimaux-land"), and four from the Isthmus of Panama, of which one, *S. peltigera* is now placed in *Lobaria*, *L. peltigera* (Babington, in SEEMANN 1852–57: 48, 246–248). It therefore seemed most probable that the specimen with the *Endococcus* came from Panama. However, there is some doubt as Seemann also made some side trips while based in Panama waiting to join the H. M. S. Herald, which was then travelling south from Vancouver Island (British Columbia). He made independent visits to Ecuador, Mexico, and Peru (ANON. 1872), and so the possibility that it came from one of these side expeditions cannot be excluded. Seemann subsequently travelled in Nicaragua, Panama, and Venezuela in the 1860s–1870s, but these journeys were made after this fungus was described.

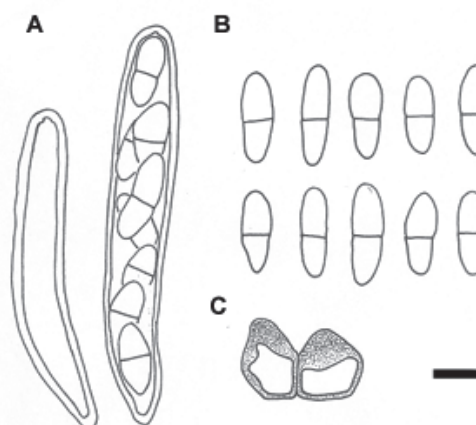


Fig. 2: *Endococcus hymeniicola* (K(M) 117008). **A** – Mature and immature asci. **B** – Ascospore outlines. **C** – Outer cells of the ascomatal wall. Scale = 10 μ m.

Discussion

At first glance, as did COOKE (1884), I suspected that this fungus might represent a species of *Plectocarpon*, such as *P. lichenum* which is well-known on *Lobaria pulmonaria*. However, the ascomata in that genus are multiloculate, not perithecioid, have a hamathecium of branched and anastomosed paraphysoids, asci of the *Opegrapha*-type, and ascospores which are 1–6-septate, tend to be constricted at the septa, colourless (except occasionally when over-mature), broadly fusiform rather than elongate–ellipsoid, and measure 16–25 × 4–9 µm in *P. lichenum* (DIEDERICH & ETAYO 1994).

The discrete ostiolate perithecia, the wall structure, the absence of paraphysoids, the ascus type, and the brown 1-septate ascospores, indicate that the species can be accommodated in *Endococcus* (HAWKSWORTH 1979). However, the ascospore dimensions do not agree with any currently accepted species of that genus, and I know of no previous reports of a species of this genus from *Lobaria*. While most *Endococcus* species are restricted to different crustose lichens, the number known on macrolichens is increasing, and those on macrolichens appear to be restricted to particular host genera, including ones on *Alectoria* (HAWKSWORTH 1971), *Collema* (DAVID & ETAYO 1995), *Oropogon* (ETAYO 2002), *Ramalina* (HAWKSWORTH 1976), *Stereocaulon* (KEISSLER 1930), *Usnea* (HAWKSWORTH 1982), and *Xanthoria* (HAWKSWORTH 1982).

It is interesting that *E. hymeniicola* occurs on convex galls recalling apothecia, as does *Plectocarpon lichenum*, and hence the original choice of the specific name. That these structures are galls and not parasitized apothecia is evidenced by the lack of a thalline exciple, and the absence of host asci and paraphyses, remnants of which would have been expected to be seen in microscopic preparations.

This fungus was probably the first lichenicolous one to have been described as new to science from Central America.

Acknowledgements

I am indebted to Begoña Aguirre-Hudson and Brian M. Spooner for help in locating the specimen on which this report is based, to Begoña also for Fig. 1 (B), and to Teresa Iturriaga for assistance in preparing microscopic preparations. Scott LeGreca kindly searched for and located material of the host lichen in BM. This study was undertaken while I was supported by a Programa Ramón y Cajal award of the Ministerio de Ciencia y Tecnología de España held in the Facultad de Farmacia of the Universidad Complutense de Madrid. Bibliographical investigations for this note were completed at The Royal Botanic Gardens Kew while I was in receipt of SYNTHESYS award GB-TAF-238 from the Consortium of European Taxonomic Facilities (CETAF).

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Manuscript accepted: 10 May 2005.

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