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***Stigmidium lobariae*, a new lichenicolous fungus from the Holarctic**


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The lichenicolous fungus *Stigmidium lobariae* growing on *Lobaria pulmonaria* is described from Spain and Alaska.

**Key words** – Ascomycota – lichenicolous fungi on *Lobaria* – taxonomy

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**Introduction**

Lichenicolous fungi, growing on *Lobaria pulmonaria* chiefly in the occidental Pyrenees, were studied by Etayo & Diederich (1996). A presumably new species of *Stigmidium* on *Lobaria pulmonaria* was reported, but left unnamed due to insufficient material. Additional finds of this fungus in Alaska and Spain permit it to be formally described here.

**Methods**

The material was examined and photographed using Nikon Eclipse 80i and Zeiss microscopes Stemi 2000–CS and Axio Imager A1 equipped with Nomarski differential interference contrast optics. Microscopical examinations were done in water, 10% KOH (K), Lugol's iodine, directly (I) or after a KOH pre-treatment (K/I), and Brilliant Cresyl Blue (BCr) solutions. Sizes of asci were rounded to the nearest 1 µm, those of ascospores to the nearest 0.5 µm. There measurements are given in the form “(minimum–) mean minus standard deviation—mean plus standard deviation (–maximum)” and followed by the number of measurements (n). Examined specimens are

housed in private herbarium of J. Etayo (hb. Etayo) and mycological herbarium of the Komarov Botanical Institute (LE).

**Taxonomy**

***Stigmidium lobariae* Zhurb. & Etayo, sp. nov.**

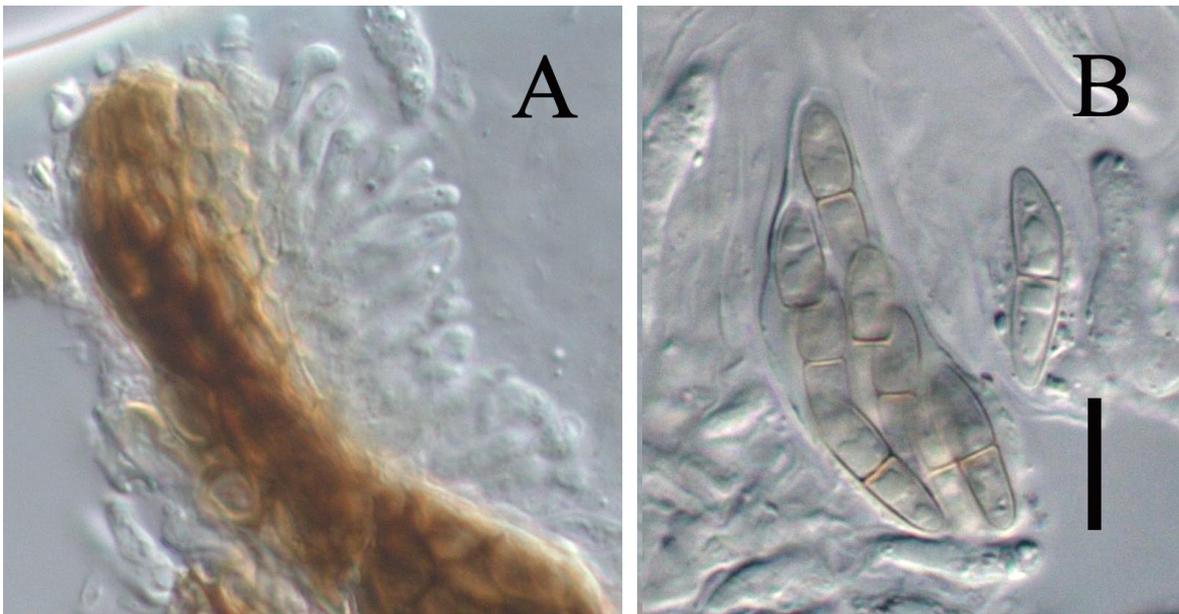
Fig. 1

MycoBank 564360

Etymology – The specific epithet reflects the host genus.

Differs from *Stigmidium peltideae* in its larger asci, finally pale olive brown, somewhat longer ascospores of (9.5–)12.5–15(–16.5) × (3–)3.5–4(–4.5) µm, and different host genus.

Vegetative hyphae almost hyaline to pale brown, contorted, 2–4 µm thick, smooth-walled, BCr+ blue. Ascomata perithecioid, brownish black, glossy, subsphaerical, sometimes with indistinct papilla, 40–70 µm diam., with a rather conspicuous ostiole of ca. 15 µm diam., mostly semi-immersed when mature, dispersed. Exciple medium to dark brown, 8–10 µm thick, paraplectenchymatous in surface view, composed of several cell layers, cells 5–10 µm diam., K–, BCr+ blue-green.



**Fig. 1** – *Stigmidium lobariae* (holotype, in water) **A** Ostiolar filaments. **B** Ascus with spores. – Bar = 10  $\mu\text{m}$ .

Hymenial gel I–, K/I–. Periphyses 0–1-septate, 6–12  $\times$  1.5–2.5  $\mu\text{m}$  (Fig. 1A). Pseudoparaphyses resembling type “a” sensu Roux & Triebel (1994). Interascal filaments not observed. Asci widely obclavate, narrowly pyriform or narrowly elliptic, with a short foot, (24–)32–46(–52)  $\times$  (10–)12–17(–19)  $\mu\text{m}$  (n = 19, in water or I), 8-spored, wall BCr+ violet. Ascospores initially hyaline, then pale olive brown, narrowly oblanceolate, wider above, occasionally almost narrowly elliptic, 1-septate, not or slightly constricted at the septum (Fig. 1B), (9.5–)12.5–15(–16.5)  $\times$  (3–)3.5–4(–4.5)  $\mu\text{m}$ , length/breadth = (2.7–)3.2–4.0(–4.8) (n = 84, in water, I or BCr), smooth-walled, non-halonate, sometimes with 1–2 large oil guttules per cell, irregularly overlapping in 2–3 rows in an ascus, BCr+ blue. Anamorph not found.

Host lichen – *Stigmidium lobariae* grows on upper side of lobes or occasionally soralia of *Lobaria pulmonaria*; distinct pathogenicity was not observed. In the examined collections it was associated with *Capronia* spp., *Dactylospora lobariella* (Nyl.) Hafellner and *Nanostictis christiansenii* Etayo.

Known distribution – Known from several finds in Spain and Alaska.

Material examined – USA, South-Central Alaska, Kenai Peninsula near Seward, S slope of unnamed Mt. by the road to the Chugach

National Forest and Exit Glacier, 60°10'N, 149°30'W, alt. 150 m, *Picea sitchensis* dominated forest, on upper side of *Lobaria pulmonaria* lobes, 1 September 2000, M. Zhurbenko 00470 (LE 260791 – **holotype**). – SPAIN, Navarre, between Roncesvalles and Valcarlos, 43°02'37"N, 1°19'34"W, alt. 650 m, oceanic *Fagus* forest, 18 April 1995, J. Etayo s. n. (hb. Etayo); Navarre, Urbasa Natural park, Baquedano, near Limitaciones de las Améscoas mountain, km 6, 42°46'N, 2°05'W, alt. 1090 m, *Fagus* forest, 1 April 1994, J. Etayo 12355 (hb. Etayo).

Notes – Modern taxonomy of the lichenicolous genus *Stigmidium* Trevis. supports its high host specificity. No species of the genus have been described from *Lobaria* (Schreb.) Hoffm. (*Lobariaceae* Chevall. 1826, *Peltigerineae*). However, eight *Stigmidium* species are known on the other lichen genera of the suborder and should be compared with the new species: *S. cupulare* (Pat.) D. Hawksw. (on *Sticta* (Schreb.) Ach.), *S. croceae* (Arnold) Cl. Roux & Triebel (on *Solorina* Ach.), *S. disconeophromeum* Etayo (on *Nephroma* Ach.), *S. peltideae* (Vain.) R. Sant. (on *Peltigera* Willd., *Pseudocyphellaria* Vain., and *Solorina*), *S. pseudopeltideae* Cl. Roux & Triebel (on *Peltigera*), *S. schaereri* (A. Massal.) Trevis. (on *Pseudocyphellaria*), *S. solorinarium* (Vain.) D.

Hawksw. (on *Solorina*), and *S. spegazzinii* Etayo (on *Pseudocyphellaria*) (Saccardo & Saccardo 1905, Roux & Triebel 1994, Kondratyuk & Galloway 1995, Hawksworth & Cole 2003, Suija 2005, Etayo & Sancho 2008, Zhurbenko 2009). *Stigmidium cupulare* differs from *S. lobariae* in its bigger ascospores of 200–400 µm diam. and hyaline ascospores; *S. croceae* can be distinguished by its permanently hyaline, finely granulose, and somewhat smaller ascospores of (8.5–)9–13(–14.5) × (2.5–)3–3.5(–4.5) µm; *S. disconeophromeum* differs in its very crowded ascospores and constantly hyaline smaller ascospores of 10–13.5 × 3–3.5 µm; *S. peltideae* has permanently hyaline and somewhat shorter ascospores of (8.5–)11–13.5(–17) × (3–)3.5–4.5(–5) µm; *S. pseudopeltideae* differs in its 1(–3)-septate, shorter ascospores of (9–)9.5–12.5(–15) × (2–)3–4.5(–5) µm, which sometimes have a thin halo, and in its negative reaction of endoascus and spore wall with BCr; *S. schaereri* is distinguished by its bigger ascospores and negative reaction of endoascus and spore wall with BCr; *S. solorinarium* differs in its 1(–3)-septate, occasionally finely granulose ascospores, which sometimes have a thin halo and in negative reaction of endoascus and spore wall with BCr; *S. spegazzinii* differs in its smaller ascospores of 25–50 µm diam., associated with a conspicuous net of vegetative hyphae, shorter ascospores of 8–12.5 × 3–4 µm, and negative reaction of endoascus and spore wall with BCr.

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