

Barssia peyronelii comb. nov. (Pezizales) for the old Mattiolo's species *Stephensia peyronelii*

Carlo AGNELLO
Vasileios KAOUNAS

Ascomycete.org, 9 (1) : 1-5.
Janvier 2017
Mise en ligne le 07/01/2017



Abstract: Thanks to the study of the original material of *Stephensia peyronelii* Mattir., recently discovered in the herbarium of the university of Turin, we propose a new combination in the genus *Barssia*. The work is accompanied by micrographs, an old plate by O. Mattiolo and an updated key to the genus *Barssia*.

Keywords: Europe, *Helvellaceae*, hypogeous fungi, taxonomy.

Riassunto: Grazie allo studio del materiale originale di *Stephensia peyronelii* Mattir., recentemente emerso nell'erbario di Torino, viene proposta la nuova combinazione nel genere *Barssia*. Il lavoro è corredato da foto al microscopio, tavola antica di O. Mattiolo e chiave del genere aggiornata.

Parole chiave: Europa, funghi ipogei, *Helvellaceae*, tassonomia.

Introduction

In a recent article we described the new species *Barssia hellenica* Kaounas, Agnello, P. Alvarado & Slavova (KAOUNAS *et al.*, 2015). We also reported the absence of original material of *Stephensia peyronelii* Mattir. after the information given by CERUTI (1960) and ŁAWRYNOWITZ & SKIRGIELŁO (1984). In the same article we had hypothesized that the characters of *S. peyronelii* would be more appropriate with the genus *Barssia* Gilkey. While this article was going to press, the holotype of *S. peyronelii* was rediscovered in the herbarium of Turin thanks to Alfredo Vizzini (University of Turin) who allows us to study it in October 2015.

Material and methods

A very small fragment of the type material was recovered and rehydrated in water for 12 hours. Then the material was separated in two parts. A first part was mounted in water for measurements and observations of the pigmentation; finally this mount was treated with Congo red to stain the cell walls of different elements. The other part was mounted in Melzer's reagent to check the negative amyloid reaction. The spore dimensions were obtained by measuring 30 random free ascospores.

Taxonomy

Protologue and original diagnosis of *Stephensia peyronelii* (MATTIOLLO, 1936)

La nuova specie è caratterizzata da un corpo fruttifero di color castaneo-badio, carnoso, globoso o subgloboso o irregolare, certe volte anche rimoso, anfrattuosso, di dimensioni assai piccole, come quelle di un pisello o poco più; ricoperto da un lievissimo indumento cotonoso (duvet.). Il peridio è formato da uno strato esterno pseudo-parenchimatrico, misurante da 200 a 270 micra circa, seguito da un altro strato contiguo di filamenti fungini compatti, misuranti da 150 a 200 micra circa. Foveola basilare assai visibile. La presenza di cavernula interna (tipica della congenere *Stephensia bombycina*) nei miei esemplari non fu constatata. Gleba di colore bianco sporco. Vene della trama originantesi dagli strati del peridio. Vene esterne di colore biancastro, girose, disposte quasi a mò di grappoli, abbastanza numerose, rivestite dall'imenio, con elementi disposti a palizzata. Aschi allungati, sublineari, lageniformi, differenti assai da quelli della congenere *S. bombycina*, simili invece a quelli del *Pachyphloeus* (180×30–45). Spore ellittico-cilindriche, simili a quelle della *Balsamia vulgaris* Vitt., lievi, trasparenti, misuranti 26–29×15–16. Questo fungo ricorda esternamente la *S. bombycina* ma ne differisce nettamente, così che subito si riconosce dalla forma degli aschi, dal tipo delle spore, e anche dal colore

del peridio. Questa specie alpina fu raccolta dal prof. Beniamino Peyronel, del quale porterà meritatamente il nome, a m. 1400 s.l.d.m., il 3 agosto 1925, tra le radici di un larice, a Rioclairetto, in regione la "Tiriero", nella valle di Perrero (Pinerolo). La frase diagnostica è la seguente:

Stephensia Peyronelii. Mattiolo. (Species nova).

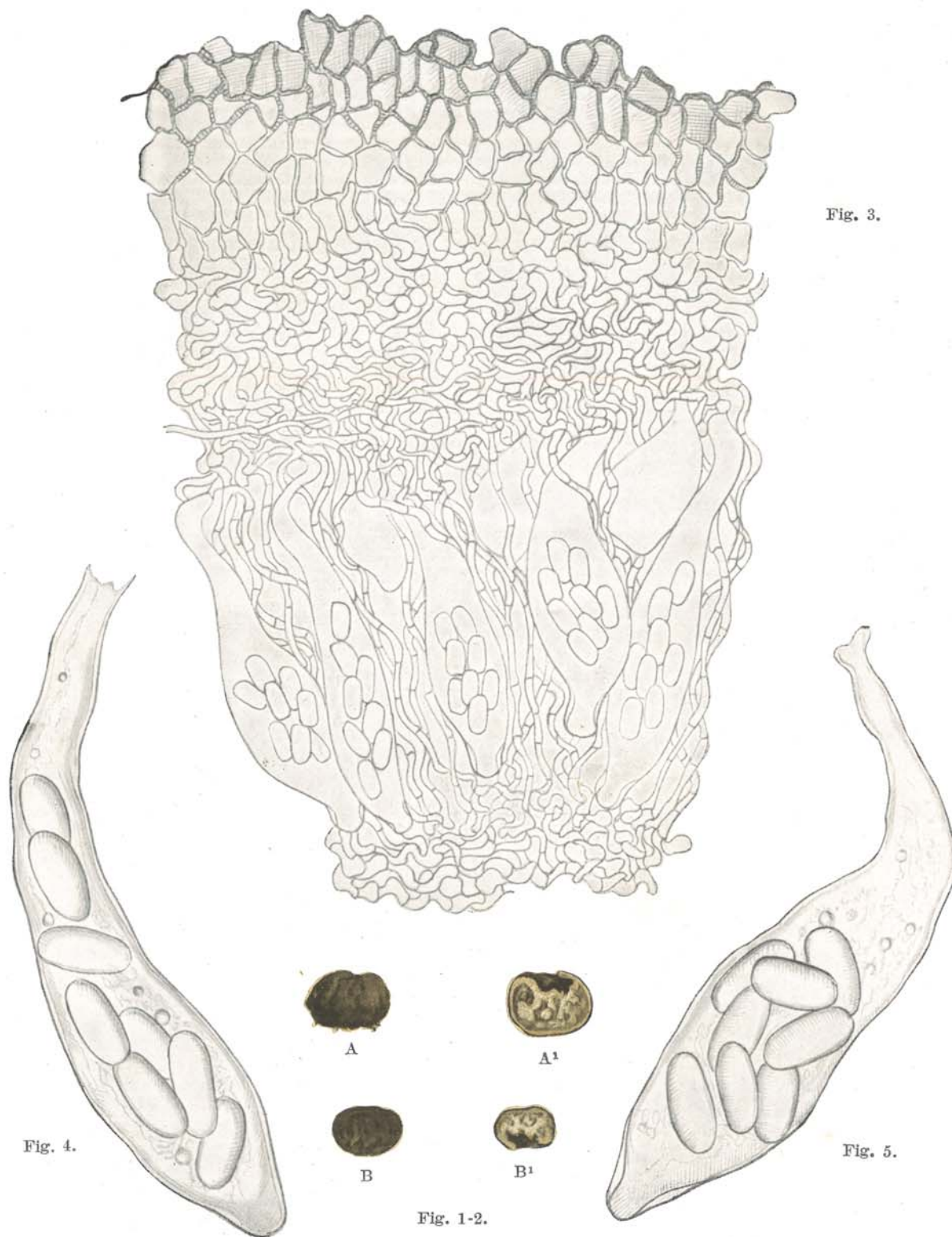
Fungus ab Pisi molem varians, globosus, semiglobosus, vel irregularis; fossula basilari varie intrusa praeditus. Peridio colore badio notato; extus flocculosus, araneosus, molliusculus, spisso. Gleba giroso-venosa. Venis albidis. Ascis linearibus longis, obtusis, medium versus subventricosis evidenter pedicellatis, octosporis 180 × 30–45. Sporis, uti in Genere *Balsamia* elliptico-cylindricis, levibus, hyalinis 26–29 × 15–16 micra. Fungus maturus *Stephensiae bombycinae* Tul. Similis a qua tamen facillime distinguitur ob ascorum, sporarum forma et magnitudinem. A Clarissimo Mycetologo Beniamino Peyronelio inventus, Rioclairetto in Valle Perrero, in Pinerolense dictione ad *Laricum radices* 1400 s.l.m. Augusto mense 1925 et ei merito dicato.

Microscopic description of the holotype

Peridium composed of a pseudoparenchymatous hyphal structure with polygonal cells measuring 25–40 × 10–30 µm, thick-walled (3–6 µm) and dark amber in the outer layer, with thinner walls (2–4 µm) in the internal layer. Some very rare light brown hairs, smooth, 7–9 µm in diam., emerging from the terminal cells of the peridium. **Gleba** formed by interwoven septate hyphae, 2–5 µm in diam. **Paraphyses** hyaline, cylindrical, simple or forked, septate, a little longer than the asci, 4–7 µm wide. **Asci** irregularly clavate or ellipsoid, thick-walled, with a protruding hump at the apex and a pleurorhynchous base, inamyloid, 8-spored, measuring 150–190 × 30–45 µm. **Ascospores** ellipsoid, smooth, hyaline, irregularly arranged inside the asci, measuring 25–33 × 14–18 µm (av. 28 × 16 µm), Q (L/l) = 1.78–2.11 (Qm = 1.93), usually containing one or two large oil drops and several smaller droplets.

Studied material: ITALY. Piedmont, Valle Perrero, Rioclairetto, 1400 m asl, under *Larix*, August 1925, leg. B. Peyronel, herb. TO-Crypt. Collezione Mattiolo / "*Stephensia peyronelii*", holotype.

The microscopic examination reveals an almost perfect match with the original description by MATTIOLLO (1936). Only two exceptions can be highlighted: we found spore dimensions to be identical on average but with a slightly wider range, and some very rare hairs emerging from the peridium. Therefore, considering that the placement of this species into the genus *Barssia* is more appropriate, mainly due to ellipsoidal spores and clavate/ellipsoid asci with a protruding hump at the apex, we propose the following new combination:



Stephensia Peyronellii Mattiolo.

Fig. 1-2. — A A¹ - Aspetto esterno della *Stephensia Peyronellii*. Grand. nat.
 B B¹ - Come il fungo si presenta in sezione.

Fig. 3. — Sezione della *S. Peyronellii* osservata al microscopio. Ocul. 2. Obb. 6 Koristka.

Fig. 4-5. — Aschi contenenti le spore molto ingranditi. Ocul. 2. Obb. 8* Koristka.
 Alla sommità è visibile la zona di deiscenza.

O. MATTIROLO. — *R. Accademia di Agricoltura*, Vol. LXXIX, 1936-XIV.

Fig. 1 — Mattiolo's (1936) original plate.

Barssia peyronellii (Mattir.) Agnello & Kaounas *comb. nov.* – MB 819181

Basionym: *Stephensia peyronellii* Mattir., *Atti Acc. Agr. Torino*, 79: 191 (1936).

Discussion

CERUTI (1961) hypothesized that *Stephensia peyronellii* was a synonym of *Barssia oregonensis* Gilkey. Now we reject this hypothesis because a real difference in shape of the asci exists and they are associated with a different host. Indeed the known species of *Barssia* are host-specific. We believe that *B. peyronellii* is an independent species, and we are confident that future new collections under *Larix* in Piedmont or elsewhere, in combination with biomolecular analyses, will confirm this independence.

Acknowledgements

We are grateful to Alfredo Vizzini (University of Turin) for reporting us the existence of the holotype of *Stephensia peyronellii* and providing the corresponding material; to Milena Maione (Biblioteca Fondazione Einaudi di Torino) for Mattiolo's plate, and Laura Guglielmono (University of Turin) for her extreme kindness. Thanks also for different reasons to Pablo Alvarado (Santander, Spain) and Nicolas Van Vooren (Lyon, France).

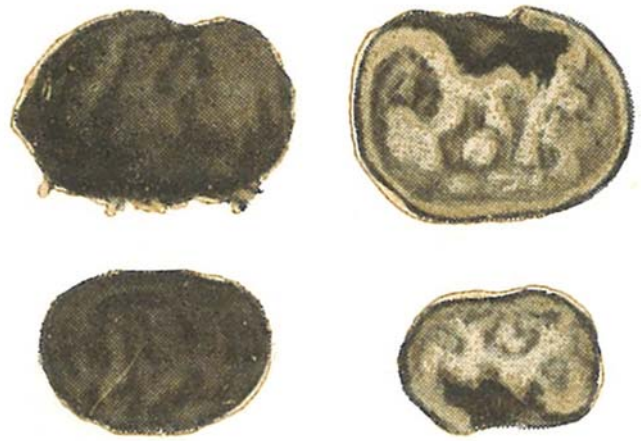


Fig. 2 – *Barssia peyronellii*. Part of the original plate.

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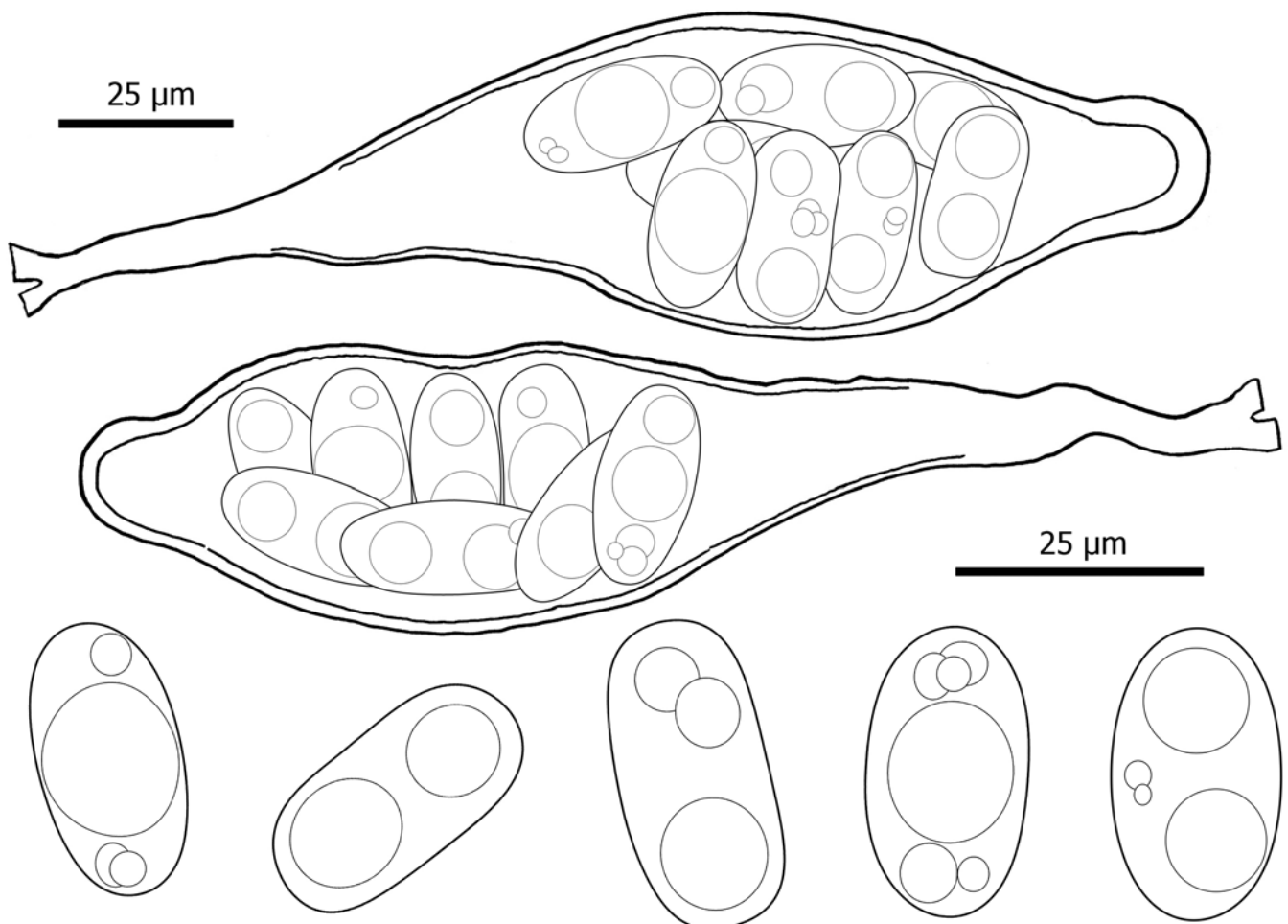


Fig. 3 – *Barssia peyronellii*. Asci and ascospores of studied material.

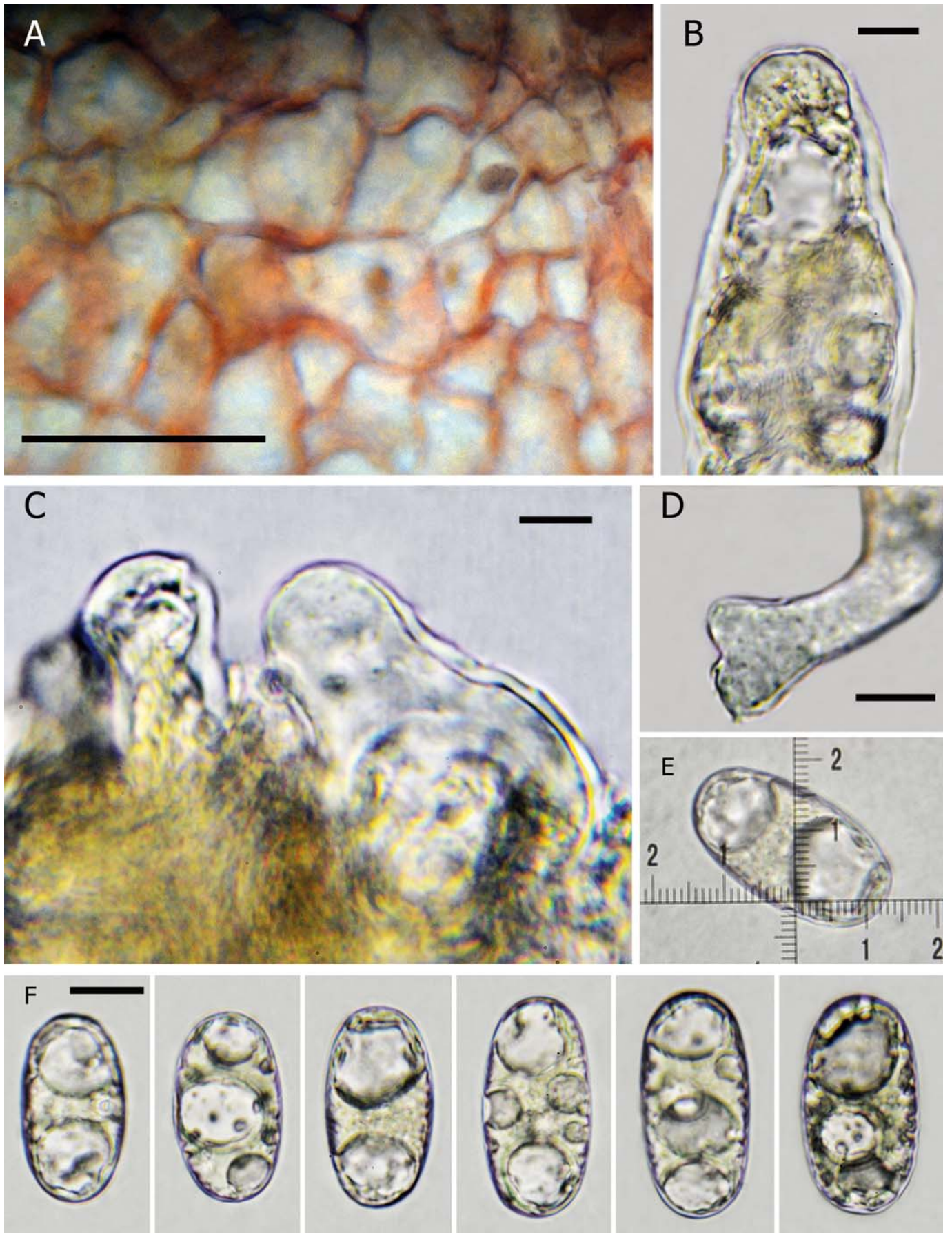


Fig. 4 – *Barsisia peyronellii*. Microscopic characters from the holotype.

A: Cells of internal peridium in Congo red; B and C: Asci apex in water; D: Pleurorhynchous base of an ascus in water; E and F: Ascospores in water. Scale bars: A = 50 μ m; B, C, D, F = 10 μ m. Photos: C. Agnello.

Key to the known species of *Barssia* based on morphological and ecological characters

- 1a Globose ascospores ***B. yezomontana***
1b Ellipsoid ascospores **2**
1c Ovoid spores **3**
2a Ascospores 24–32 × 12–17 µm with cylindrical or slightly clavate asci, under *Pseudotsuga menziesii* ***B. oregonensis***
2b Ascospores 25–33 × 14–18 µm, with ellipsoid/clavate asci, under *Larix* ***B. peyronelii***
2c Ascospores larger, on average 29–36 × 16–22 µm, with ellipsoid/clavate asci, apical depression not evident, under *Cedrus atlantica* ***B. maroccana***
3 Ascospores 21–27 × 16–20.5 µm, with irregularly clavate or broadly ellipsoid asci, under *Abies cephalonica* ***B. hellenica***

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Carlo Agnello
Via A. Gramsci 11
72023 Mesagne
Italy
agnellocarlo@libero.it



Vasileios Kaounas
Sokratous 40
TK 19016 Artemis Attika
Greece
bkaounas@gmail.com

Erratum

In *Ascomycete.org* vol.7, fasc. 2, in the article "*Urnula mediterranea* (Pezizales), a rare species, recorded in Greece", an error about the distribution of this species has to be corrected on page 98, in the legend of the plate 2: the record "Kragujevac (Serbia), May 2014, leg. N. Lukić" must be changed in: **Žeželj near Kragujevac (Serbia), May 2014, leg. N. Milosavljević.**