

# First record of *Otidea caeruleopruinosa* Harmaja (Ascomycota, Pezizales) in the Iberian Peninsula

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Summary: *Otidea caeruleopruinosa* is recorded for the first time outside Finland. Further morphological details are provided and a thorough comparison made to the original description. The variability of some characters is discussed and comments on species delimitation and systematic position within *Otidea* are given. A colour photograph is included, the first of *O. caeruleopruinosa* ever published.

Keywords: Pezizomycota, *Pyronemataceae*, *Flavoscypha*, species delimitation, taxonomy.

Résumé : *Otidea caeruleopruinosa* est signalée pour la première fois hors de Finlande. Des détails morphologiques sont fournis ainsi qu'une comparaison avec la description originale. La variabilité de certains caractères est discutée et des commentaires sur la délimitation de l'espèce ainsi que sa position systématique au sein des *Otidea* sont donnés. Une photographie en couleur est incluse, la première d'*O. caeruleopruinosa* jamais publiée.

Mots-clés : Pezizomycota, *Pyronemataceae*, *Flavoscypha*, délimitation d'espèce, taxinomie.

## Introduction

The species of the genus *Otidea* (Pers.) Bonorden are usually easy to identify to a genus level in the field due to the split apothecia in most of its species. Additional microscopic characters like the presence of hooked paraphyses and the biguttulate spores are also typical, though exceptions can be found in some species. However, species delimitation is not straightforward. A rather high species diversity and controversial interpretations of old epithets have contributed to the difficulty to determine with certainty *Otidea* gatherings. Many works have helped gain a better insight on some species in the past years (CARBONE, 2010a, 2010b, 2010c, 2010d ; CARBONE *et al.*, 2010; CARBONE & VAN VOOREN, 2010; PÉREZ-BUTRÓN & FERNÁNDEZ-VICENTE, 2008; VAN VOOREN *et al.*, 2008; VAN VOOREN, 2011), but many species are known from scarce records, and often the know-

ledge about the morphological variability is very poor. The few molecular works that have focused on the genus did not address species delimitation issues (LIU & ZHUANG, 2006). This article has as a main purpose to publish a record of *O. caeruleopruinosa* in the Iberian Peninsula, which is the second record of the species after HARMAJA (2009) published it, and the first outside Finland. Furthermore, attention is drawn to the morphological characters considered as diagnostic in the original description, having as a goal to further the knowledge on this species and the genus *Otidea*.

## Material and methods

The two gatherings were initially studied in fresh state, and examined again when dried, after soaking little pieces in water for two hours. The microscopic study was done using a light microscope. Water was generally used as a mounting

medium, whilst the Melzer's reagent was used to check the colour and behaviour of crystal particles of the excipulum. Measures were taken in H<sub>2</sub>O, the spore ranges and statistics are based on 45 free spores. The symbol \* refers to fresh material and † to dried rehydrated material. The drawings are made freehand. Dimensions of all elements are measured in water, and the range and the following statistics were calculated: mean length (L<sub>m</sub>), mean width (W<sub>m</sub>) and length-width ratio (Q<sub>m</sub> = L<sub>m</sub>/ W<sub>m</sub>).

Collections are deposited in the personal herbarium of M. Tabarés and the Swedish Museum of Natural History (S).

## Taxonomy

*Otidea caeruleopruinosa* Harmaja, *Karstenia*, 48: 37 (2009).

**Diagnosis:** *Apothecium scissum*, *extus caeruleopruinosum*. *Hymenium albidum*. *Sporae* 10.0–12.0 × 5.0–5.5 μm. *Typus:* Finland. Varsinais-Suomi. Lohja, Jalassaari, Ahtiala, Alho, nature reserve "Ahtialan lehto". Rich, predominantly deciduous (*Quercus robur*, *Corylus avellana* etc.), woods on calcareous soils, on bare, clayey mull, u. c. *Otidea alutacea*, *O. bufonia*, *O. flavidobrunneola*, 6682:3328, 20.IX.1978 H. Harmaja (H).

### Description based on the Spanish collection

**Apothecia** deeply cupuliform, split on one side, up to 60 mm high and 50 mm wide, with a whitish to pale cream hymenium; outer surface hardly or finely furfuraceous, first grey, dotted with concolorous or white warts, then becoming ochraceous with age. **Margin** jagged. **Base** slightly ribbed in some apothecia.

**Asci** 170–200 × 9–11 μm, cylindric, gradually attenuated to the base, pleurorhynchous, containing eight uniseriate spores. **Paraphyses** slightly enlarged at the top, 3–3.5 (5) μm, upper segment 27–44 μm, curved at the apex, septate, hyaline, without vacuole bodies (†). **Ascospores** ellipsoid or slightly navicular with rounded poles, \* 10.4–13.3 × 5–6.5 μm, † 10–12.5 × 5.5–6.2 μm, L<sub>m</sub> = 11 μm, W<sub>m</sub> = 5.7 μm, Q<sub>m</sub> = 1.9, hyaline, biguttulate, smooth, with a rather thick wall. **Medullary excipulum** of *textura intricata*, ca. 700 μm thick, with cylindric hyphae, 4.5–9 μm, intercalated with swollen cells (12–18 μm), hyaline, thin-walled. **Ectal excipulum** of *textura prismatica-angularis*, 100–120 μm thick, cells more or less rectangular, some ovoid, 10–32 × 10–22 μm. **Outermost layer** formed by hyphal aggregates that shape small warts, formed by hairs of 2–4 elongated cells, 6–10 μm wide, in some parts encrusted with reddish crystal particles, partly dissolving in Melzer. **Mycelial hyphae** (†) interwoven, cylindrical, branched, hyaline, smooth, 4–6 (8) μm; crystals covering many hyphae, yellowish-reddish, isodiametrical to acicular.

**Studied material:** SPAIN: Girona, Ripollés, Setcases, 1400 m, UTM 31T0442000-4693000, under *Corylus avellana*, *Betula verrucosa* and *Buxus sempervirens*, on calcareous soil, 20-VIII-2010, leg. M. Tabarés & S. Santamaria, MT10082001 [one apothecium]. *Ibidem*, 26-VIII-2010, MT10082601 and NV143 (S) [9 apothecia].



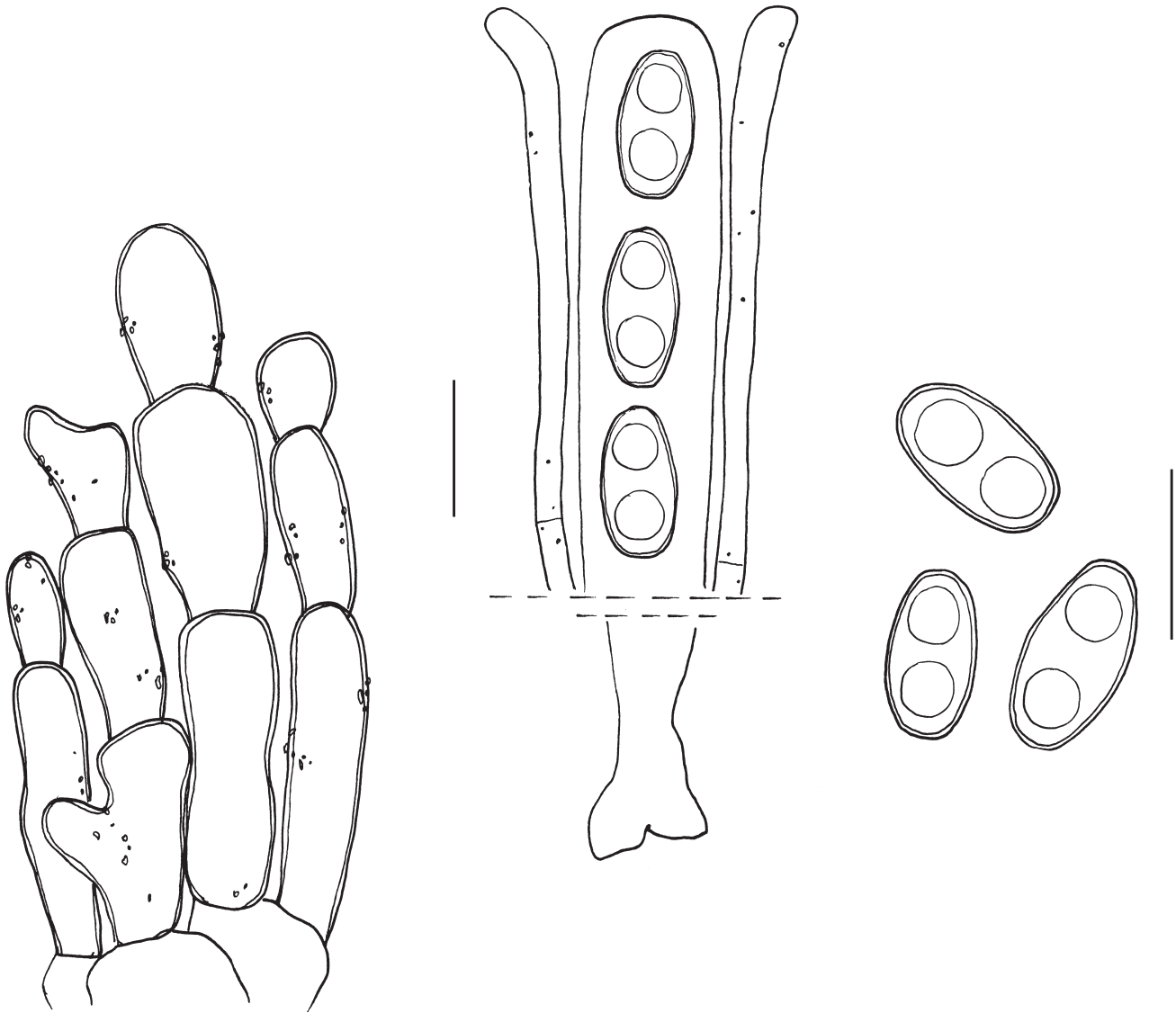
1 – *Otidea caeruleopruinosa*. Young fruitbody. Collection MT10082001. Photo: M. Tabarés.

## Discussion

*Otidea caeruleopruinosa* is a species recently described by HARMAJA (2009), based on two collections from one single Finnish locality. According to this author, *O. caeruleopruinosa* is characterized by the whitish hymenium, the presence of small dark blue warts on the outer surface and the spores that represent a rare size in the genus. HARMAJA (*op. cit.*) granted a high taxonomic value to the presence of bluish shades in the fruitbodies, even though he noted that the colour fades away when the material starts to dry. HARMAJA mentioned the structure of the ectal excipulum of a *textura prismatica-angularis* as an additional character for species delimitation.

The Iberian material reported here was tentatively assigned to *O. caeruleopruinosa*, but lacked truly bluish warts, even though the general colour of the outside of a young fruitbody (photo 1) was purplish grey, reason that it was doubted that it could be assigned to *O. caeruleopruinosa*. The ITS sequence of the Iberian material is identical to those obtained from the holotype and the paratype of *O. caeruleopruinosa* (OLARIAGA & HANSEN, in prep.). The ITS region is known to be adequate to delimit species in Pezizales (HANSEN *et al.*, 2002), including *Pyronemataceae* (TAMM *et al.*, 2010). It can thus be confirmed that presence of bluish warts is facultative in *O. caeruleopruinosa*, since collections with variability in this character showed identical ITS sequences.

*Otidea caeruleopruinosa* shows some typical characters of the *Flavoscypha* group, such as the truncate fruitbodies, white hymenium and paraphyses without refringent guttules, and the presence of many straight to curved paraphyses



**Fig. 1 – *Otidea caeruleopruinosa*.** Microscopic characters (collection NV143).  
a. Ascus and paraphyses. b. Ascospores. c. Cells of the outermost layer. Scale bars = 10 µm.

(versus predominantly hooked ones), together with the spores of relatively small size and tendency towards a *textura prismatica* in the ectal excipulum. Furthermore, some fruitbodies were observed to be slightly ribbed at the base, which is only known by us in this group. Molecular data seems to confirm this relationship (OLARIAGA & HANSEN, in prep.). It differs from the other European members (*O. concinna* (Pers.) Sacc., *O. phlebophora* (Berk. & Broome) Sacc. and *O. subconcinna* Harmaja ad int.) of this group in the lack of pure yellow tinges.

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**Important note:** the subtle purplish tinges visible on the photographs are an artefact.

