**Lepidotia hispida**: a spectacular member of the **Pezizaceae**

Nicolas VAN VOOREN  
Anneke VAN DEN BERG-BLOK  
Gerard VERKLEY

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### Introduction

*Lepidotia hispida* (Quél.) Boud., also known as *Peziza quelepidotia* Korf & O'Donnell, is a remarkable species. It has been rarely cited and illustrated since its publication by Quélet (in Cooke, 1879, fig. 402). It occurs in peat-bogs. The second author collected this species in June 2013, on a rehydrated block of potting soil, and submitted pictures on the internet forum AscoFrance where it was identified. This note provides a detailed description of this collection, pure cultures isolated from it, and some additional taxonomic information for this spectacular cup-fungus.

### Material and methods

The description of the apothecia is based on fresh and dried material of the same collection; the dried specimens were rehydrated in tap water over several hours. Microscopic characters were studied with an optical microscope under various magnifications. Water mounts were used for the observation of microscopic characters and measurements. Additional reactive agents were used to stain specific features: Lugol’s solution (IKI) for testing the amyloid reaction of asci, and cotton blue (CB) for observation of spore ornamentation.

To obtain pure cultures, parts of fresh apothecia collected in the field were placed above 2% malt extract agar (MEA) with 30 ppm penicillin and streptomycin to shoot off their ascospores. Germination of asci, and cotton blue (CB) for observation of spore ornamentation.

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### Taxonomy


**Type specimen:** leg. L. Quélet, Hérimoncourt (Doubs, France), ex herb. Cooke under voucher no. K(M) 199507 *sub nom. “Neottiella hispida.” Although this collection is not explicitly cited by Cooke (1879), the mention “Figured from specimens communicated by Dr. Quelet” referring the figure 402 leads us to think that this sample must be considered the holotype.

**Apothecia** at first tuba-like, more or less ventricose, with a pruinose surface, pale cream-beige, somewhat splayed at the top and more intensely colored, pinkish brown, becoming cupulate, fleshy, measuring 10–15 mm in diameter, often spread out, with a small trough in the center, hymenium dull yellowish to tan at maturity; outer surface concolorous, furfuraceous and marked by small red-brown warts. **Stipe** 4–5 (10) × 0.3–0.8 mm, furfuraceous, at first concolorous, becoming pale reddish brown or vinaceous.

**Medullary excipulum** of *textura globulosa/subangularis*, with large cells, up to 70 μm in diameter. **Ectal excipulum** similar to the medullary excipulum, with cells somewhat smaller and more colored (brownish wall). **Subhymenium** thin, of *textura intricata*. **Asci** cylindrical, 190–220 × 9–11 μm, more or less truncate at the top, narrowed at the base, without croziers, 8-spored, appearing inamylloid in fresh specimens but diffusely blue (top and wall) in Lugol’s solution (IKI) in rehydrated material. **Paraphyses** not enlarged at the top, × 2–3 μm, more or less curved, containing a yellowish vacuolar pigment, becoming brown with age. **Ascospores** ellipsoid-fusoid, 14–16 × 6.5–7.5 μm [X = 14.8 × 7.1 μm (n=25), Q = 2.1], hyaline, without oil drops but containing small guttules, quite thick-walled (~0.5 μm wide), appearing smooth in water, with low ornamentation in cotton blue, but not really verrucose as stated by Korf (1973).

**Colonies** on MEA reaching a diameter of 38–70 mm in 10 days, spreading with an regular margin, immersed mycelium pale luteous to luteous, aerial mycelium absent or diffuse, pure white to pale luteous; reverse concolorous. **Colonies** on OA 70–85 mm diam. in 10 days, similar as on MEA but without aerial mycelium. Subcultures sometimes produced masses of irregularly inflated hyphae, which on the surface produced terminal, globose to pyriform, hyaline, smooth-walled blastospores, 12–18 × 5–9 μm. No fruitbodies were formed.

**Studied material:** *THE NETHERLANDS:* numerous specimens growing on a sample of commercial Latvian potting peat, composed entirely of *Sphagnum balticum*. The fruiting occurred over several days from the beginning of June 2013, *leg. A. van den Berg-Blok, det. N. Van Vooren, pers. herb. NV 2013.06.00*; living cultures CBS 135943 and 135944; Sequences from CBS 135944 deposited in GENBANK (ITS.

Summary: A recent collection of *Lepidotia hispida* (syn. *Peziza quelepidotia*), a very rare species, characterized in particular by stipitate ascocarps, has been studied in depth. Description of macro- and micro-characters, illustrations, and comments are provided. Pure cultures have been obtained and deposited in the CBS Collection, and sequences deposited in GenBank.

**Keywords:** Ascomycota, Pezizales, peat-bog fungi, cultures, taxonomy.


**Mots-clés :** Ascomycota, Pezizales, champignons des tourbières, cultures, taxinomie.
Plate 1 – *Lepidotia hispida*, different aspects. Photos: A. Van den Berg-Blok


**Comments:** The particular morphology of this fungus allows a quick determination, although some *Peziza* species can share such a habitus. This is the case for *P. varia* (Hedw. : Fr.) Alb. & Schwein. that can produce long-stipitate specimens, representing “sterigmate” forms (HÄFFNER, 1992). Such a form has been well illustrated by BOUDIER (1905-1910, pl. 266) under the name *Aleuria asterigma* Vuill. Of course, the color of apothecia in *L. hispida* is different, the ascospores are smaller and its ecology is special.

**Discussion**

The LSU sequence of CBS 135944 matches 99.86% with a GenBank accession AY640959 (“NRRL M80”, REEB et al., 2004) and 98.4% with that of Genbank U42693 (NRRL 22205, O’DONNELL et al., 1997; HANSSEN et al., 2001) both identified as *Peziza quelepidotia*, and it is furthermore 99.8% similar to AF335152 identified as *Peziza natrophila* Khan (HANSSEN et al., 2001). The ITS sequence of CBS 135944 does not match with any sequences in Genbank, except AF133174, also identified as *P. quelepidotia*, a short and incomplete ITS sequence (96% homology). We have no doubt that our material corresponds to *Lepidotia hispida*.

BOUDIER (1885) proposed the new genus *Lepidotia* in the Aleuriés for species with eguttulate ascospores (“sans sporidioles”) and stipitate or abconical apothecia (“sensiblement pédiculés ou obconiques”), covered by triangular scales (“à squames triangulaires”). BOUDIER (loc. cit.) included *Peziza hispida* Quél. and, with some doubts, *Peziza subrepanda* Cooke & W. Phillips as the two taxa belonging to this genus. The Aleuriés, in the sense of BOUDIER (1907: 43), correspond to a group of cup-fungi with amyloid asci, and thus it is considered a synonym of the family of *Pezizaceae* Dumort. ECKBLAD (1968: 171) selected *Peziza hispida* Quél. as the type-species, but he did not give a precise systematic position for the genus *Lepidotia*. KORF (1973), after the study of a modern collection he identified as *Peziza hispida*, considered *Lepidotia* not to be distinct from the genus *Peziza* Fr. and proposed a new name for the species, *Peziza quelepidotia*, due to the earlier competing name *P. hispida* Huds.

In their phylogenetic works, HANSSEN et al. (2001) confirm the placement of *Lepidotia hispida* (as *Peziza quelepidotia*) in the *Pezizaceae*, but its position within the genus *Peziza* was unresolved. In a more recent phylogenetic study, as shown on Fig. 1 (HANSSEN et al., 2005), the species forms an independent clade and must be excluded from

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1 This number is not known by the curator of NRRL, Dr James Swezey (pers. comm.)
2 This material comes from a culture presented in O’DONNELL & BENKE (1973).
the genus Peziza. In their analysis, it is associated with Peziza natrophila (NOWSHIER & KHAN, 1976), another very rare taxon which shares some features with L. hispida, but which has strongly ornamented spores. *P. natrophila* was described from an area that was regularly treated with “alkali carbonate” (NOWSHIER & KHAN, op. cit.). Such a place can be considered an extreme environment. The known collections of *L. hispida* suggest also that a particular environment is required for its development. We confirmed this placement by comparing Genbank sequences of LSU from the culture CBS 135944 (see above). The conspecificity of the two species, as raised by HANSEN et al. (2001, 2005), needs further investigations morphologically and phylogenetically.

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**References**


