

*Psathyrella ovispora*



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***Psathyrella ovispora* D. Deschuyteneer, Heykoop & G. Moreno, sp. nov.**

*Etymology.* Name reflects the unusual morphology of its spores.

*Classification* — *Psathyrellaceae*, *Agaricales*, *Agaricomycetes*.

*Cap* 9–23 mm broad and 6–13 mm high, convex to conical convex, flattened convex at maturity, with umbo, ochre-brown, hygrophanous, striate when moist, first drying at the margin that adopts a beige straw colour, leaving the central area with a darker ochre colour, finally light beige ochre colour. *Veil* fugacious, consisting of white appressed fibrils at margin of pileus, connecting the upper part of stipe, soon evanescent, leaving remnants on the edge of some gills near the stipe. Gills subventricose, adnate, more or less dark blackish greyish coloured, with white edge, but coloured brown in its half near the margin of the cap; lamellulae present. *Stem* 30–50 × 1.5–3 mm, cylindrical, slightly widened at the base, white to whitish, some with pale creamy ochre tones especially in the lower two thirds. *Odour* not distinctive. *Spores* (9.6–)10.3–12.3(–13.3) × (5.9–)6.3–7.8(–8.1) μm, av. 10.9–11.6 × 6.7–7.1;  $Q_{av}$  1.6, ellipsoid and ovoid in frontal view and even a little rounded, asymmetric and amygdaliform in side-view, smooth, germ pore distinct, central, 1–1.5 μm, hilar appendix very tiny, base sometimes truncate giving a subtriangular look in frontal view, dark brown, not opaque, very granular, containing most often one large oil drop. *Basidia* 4-spored, rarely 2-spored, (21.9–)23.4–29.4(–31) × (10.2–)11.6–13.5(–15.1) μm, av. 26.5 × 12.6 μm, clavate, hyaline with intracellular content. *Pleurocystidia* (39.5–)43.7–66.7(–77.3) × (9.5–)10.4–17.4(–19.4) μm, numerous, mostly lageniform with a long neck, some of them shorter (sub)utriform, ventricose or clavate, apex obtuse, very rarely forked, most often widely pedicellate, always thin-walled, hyaline, some of them covered with mucoid droplets or granular deposits which gradually disappear in exsiccate. The importance of these deposits will have to be reassessed after examination of new fresh specimens. *Cheilocystidia* (23.6–)30.6–43(–55) × (8.2–)9.3–12.4(–14.1) μm, very numerous and densely packed, hyaline, sublageniform, ventricose, clavate, subutriform, often polymorphic, always thin-walled, apex obtuse, sometimes subcapitate, rarely forked. At the half of the lamella-edge close to the cap margin thin-walled cheilocystidia become scattered, fewer in number, intermixed with many clavate marginal cells (= paracystidia), some of them thick-walled and brown coloured. *Veil* fibrillose, consisting of elongated and septate hyaline hyphae with inflated endings. *Clamp connections* present.

*Habitat & Distribution* — Gregarious on nitrified calcareous loamy soil among grasses under *Conium maculatum*, *Foeniculum vulgare* with *Urtica urens*. So far only known from Spain and Hungary.

*Colour illustrations.* Spain, Alcalá de Henares, El Gurugú, nitrified calcareous loamy grasslands with *Conium maculatum* where the holotype was collected. Basidiomata; pleurocystidia; spores under LM; smooth spores under SEM (from the holotype). Scale bars = 1 cm (basidiomata), 10 μm (pleurocystidia and spores under LM), 2 μm (spores under SEM).

*Typus.* SPAIN, Madrid, Alcalá de Henares, El Gurugú, on nitrified calcareous loamy soil, among grass with *Conium maculatum* and *Urtica urens*, 2 Dec. 2016, G. Moreno & M. Heykoop (holotype AH 33724, ITS and LSU sequences GenBank MF966497 and MN190260, MycoBank MB832058).

*Notes* — *Psathyrella ovispora* is characterised by the unusual if not unique appearance of its spores which vary from ellipsoid to ovoid, with base sometimes truncate giving a subtriangular look in frontal view, asymmetric and amygdaliform in side-view, containing most often one large oil drop. Other characters are the small to medium sized basidiomata and its gregarious fruiting on calcareous nitrified soils.

*Psathyrella ovispora* was erroneously identified by us as *P. fusca* (Heykoop et al. 2017). A morphological re-evaluation of our material, comparing it with abundant samples of *P. tephrophylla* (= *P. fusca*), has showed that it corresponds to a new species. Moreover, our former cladogram (Heykoop et al. 2017), due to poor sampling, showed a unique *P. fusca* clade. However, new sequences of *P. tephrophylla* generated a cladogram (see Supplementary Fig. FP1025-2) in which two very distinct clades can be differentiated, i.e., *P. tephrophylla* clade A corresponding to *P. tephrophylla* s.str., and *P. tephrophylla* clade B corresponding to *P. ovispora*. The material included by Nagy et al. (2011) in their study as *P. fusca* is conspecific with *P. ovispora*.

The commonly used name *Psathyrella fusca* (Schumach.) A. Pearson is illegitimate, and must be rejected, since its basionym *Agaricus fuscus* Schumach. 1803 is a later homonym of *A. fuscus* Schaeff. 1774, *A. fuscus* Batsch 1783 and many others. Therefore, the correct name for *Psathyrella fusca* s.str. is *P. tephrophylla*. This nomenclatural problem will be discussed by one of us (Deschuyteneer) in a future paper.

*Psathyrella ovispora* shares with *P. tephrophylla* similar cheilocystidia and pleurocystidia. However, it differs from the latter by its very different spores, the much smaller basidiomata, by fruiting in a different habitat and by being genetically different. Due to its very wide spores *P. ovispora* keys out (key B) as *P. magnispora* in Örstadius et al. (2015). *Psathyrella ovispora*, however, differs from *P. magnispora* by its slightly larger basidiomata, the differently shaped spores and cystidia. Besides, *P. magnispora* is completely different genetically and constitutes the very distinct and monospecific *magnispora* clade, whereas *P. ovispora* belongs to the *pygmaea* clade (Örstadius et al. 2015)

**Supplementary material**

**FP1025-1** Additional specimens examined.

**FP1025-2** 50 % majority rule ITS-28S rDNA consensus phylogram of the *pygmaea* clade of *Psathyrella* (as delimited in Örstadius et al. 2015), with *P. magnispora* as outgroup. It was obtained in MrBayes from 3900 sampled trees. Values next to nodes represent Bayesian PP and Maximum Likelihood BP. Only nodes supported by > 0.95 PP or > 70 % BP were annotated. Several clades around *P. pygmaea* were condensed (black triangle), and the rooting branch was reduced for publishing. **Bold** names represent samples sequenced in the present work.