
Peziza halophila

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# ***Peziza halophila*** Loizides, Agnello & P. Alvarado, *sp. nov.*

*Etymology*. *Halophila* = ἁλόφιλη (salt-loving); from the Greek noun ἅλας = salt, ultimately from ἅλς = sea, and the female adjective φίλη = friend, loving.

Classification — *Pezizaceae*, *Pezizales*, *Pezizomycetes*.

*Ascomata* 2–6(–8) mm diam, sessile, broadly attached to the substrate, discoid to saucer-shaped at first, soon pulvinate and usually undulating; margin poorly delineated, usually undifferentiated. *Hymenium* glabrous to somewhat furrowed at maturity, dark violet-purple, sepia-brown or purple-brown, drying black. *Outer surface* concolorous or slightly paler than the hymenium. *Context* thin and brittle, purple-brown to sepia-brown, with a strong spermatic odour. *Ascospores* (15–)16–17.5(–18) × (9.5–)10–11.5(–12) µm (Me = 16.6 × 11.1; Q = 1.3–1.6; Qm = 1.49), broadly ellipsoid, biguttulate, thick-walled, hyaline and smooth when immature, developing fine, isolated low warts at full maturity. *Asci* 250–350 × 12–15 µm, cylindrical, 8-spored, uniseriate, thick-walled, with a tapering aporhynchous base. *Amyloidity* intense on the apical arc and linearly fading 10–30 µm downwards. *Paraphyses* subcylindrical, 4–5 µm wide, occasionally bifurcate, fasciculate, with dissolved ochraceous to pale brown or golden-brown pigment, indistinctly septate and frequently exceeding the length of the asci; apices capitate, subcapitate, or clavate, usually bent and enlarged to 7–10 µm wide, filled with dark brown to purple-brown refractive granulose or vacuolar content, becoming red-brown to purple-red in Melzer's reagent. *Subhymenium* gelatinised, composed of chains of subangular to shortly elongated cells (*textura angularis*/*prismatica*). *Medullar excipulum* poorly differentiated, gelatinised; upper layer mostly composed of elongated cells < 50 µm across, lower layer mostly composed of spherical cells 15–45 µm across. *Ectal excipulum* a *textura intricata* of interwoven, occasionally branching, septate, thick-walled hyphae < 8 µm wide, with scattered or locally fasciculate hair-like terminal elements, projecting 100–200(–400) µm.

Habit, Habitat & Distribution — Halophytic, fruiting in large troops between January and February on flooded coastal sands and salt marshes, often in close proximity to the shore. So far only known from the island of Cyprus.

*Typus*. Cyprus, Akrotiri Lemesou, on embryonic coastal dunes, 21 Jan. 2017, *M. Loizides* (holotype in Venice Herbarium: MCVE 29341, LSU sequence GenBank MG262327, MycoBank MB823270).

*Additional material examined*. Cyprus, Lady's Mile, on embryonic coastal dunes, 18 Jan. 2012, *M. Loizides*, ML21181P1; *ibid.*, 26 Jan. 2017, *M. Loizides*, ML71162P1 (ITS and LSU sequences GenBank MG262328 and MG262325); Akrotiri Lemesou, on salt marshes, 21 Jan. 2017, *M. Loizides*, ML71162P2 (LSU sequence GenBank MG262326).

*Colour illustrations*. Holotype collection area at Akrotiri coast, Cyprus. Inserts: Top: ascocarps in situ, scale bar = 10 mm; bottom (left to right): asci and paraphyses in water, scale bar = 20 µm; asci and paraphyses in Melzer's reagent, scale bar = 20 µm; spores in water (top) and in Cotton Blue (bottom), scale bars = 10 µm; ascus in Congo Red, scale bar = 50 µm; ectal excipulum and hyphoid terminal elements in Congo Red, scale bar = 200 µm (from holotype collection).

Notes — Phylogenetic studies, based on LSU, ITS, *rpb2* and β-tubulin rDNA regions, have shown the genus *Peziza* to be polyphyletic (Norman & Egger 1996, 1999, Hansen et al. 2001, 2002, 2005, Tedersoo et al. 2006, Hansen & Pfister 2006). Pfister et al. (2016), recently adopted a narrow taxonomical concept, placing several taxa previously included in *Peziza* s.lat. in the genera *Adelphella*, *Galactinia*, *Lepidotia* and *Pachyella*. Our collections from Cyprus nest within the core clade of *Peziza*, related to the type species *P. vesiculosa*, and are especially close to *P. proteana* and *P. exogelatinosa*.

Interestingly, *P. halophila* exhibits transitional morphological features between *Peziza* and *Pachyella*. Species within *Peziza* s.str. share an intense amyloid reaction of the ascus apex (Hansen et al. 2001, 2002, Vizzini et al. 2016) and this feature is prominent in *P. halophila*. The broadly attached, pulvinate apothecia on the other hand, along with the presence of gelatinous tissue and absence of croziers, have been traditionally viewed as pachyelloid characters and have been used in the past to discriminate between the two genera (Le Gal 1963, Pfister 1973). The presence of a filamentous outer layer terminating in long hyphoid hairs has also been associated with *Pachyella*, but in the latter it is typically embedded in a gelatinous matrix, whereas in *P. halophila* gelatinous tissue is mostly confined to the middle layers. The dextrinoid content of the paraphyses is an unusual feature, which, together with the minute apothecia and halophytic ecology, make *P. halophila* unique within the genus.

Based on publicly available sequences, *P. proteana* is the closest relative of *P. halophila* (97 % LSU sequence similarity), but differs dramatically in its typical form, producing much larger, pale brown ascomata with lilac tinges and has much smaller, coarsely warted spores. *Peziza exogelatinosa*, described from calcareous woodlands in Denmark, is also genetically similar (96 % LSU sequence similarity) and shares with *P. halophila* a violet-brown to violet-black hymenium as well as similarly-sized, minutely warted biguttulate spores measuring 16.3–18.8 × 8.8–10 µm (Hansen et al. 1998). This species, however, produces considerably larger and often cupulate ascomata < 35 mm across, has asci with a pleurorhynchous base and a gelatinised ectal excipulum of globose cells (*textura globulosa*). *Peziza lobulata* and *P. subviolacea* (96 % and 94 % LSU sequence similarity, respectively) also have violet-purple hymenia, but are predominantly carbonicolous and produce larger cupulate ascomata 20–30 mm across, with smaller spores measuring 11–15 × 6–8 µm (Svrček 1976, 1977). The recently described *Peziza simplex* (Dougoud & Moyne 2012, no sequence available) could also be compared with *P. halophila*, since it produces small pulvinate ascomata 2–5(–6) mm across with occasional violet tinges and has asci lacking croziers. It differs in its smooth, non-verrucose spores, an ectal excipulum of globose/angular cells (*textura globulosa*/*angularis*) and a non-halophytic ecology.

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