

Volvariella paludosa



Fungal Planet 1111 – 29 June 2020

***Volvariella paludosa* Kapitonov & E.F. Malysheva, sp. nov.**

Etymology. The epithet *paludosa* (boggy) refers to the preferred habitat of the species.

Classification — *Pluteaceae*, *Agaricales*, *Agaricomycetes*.

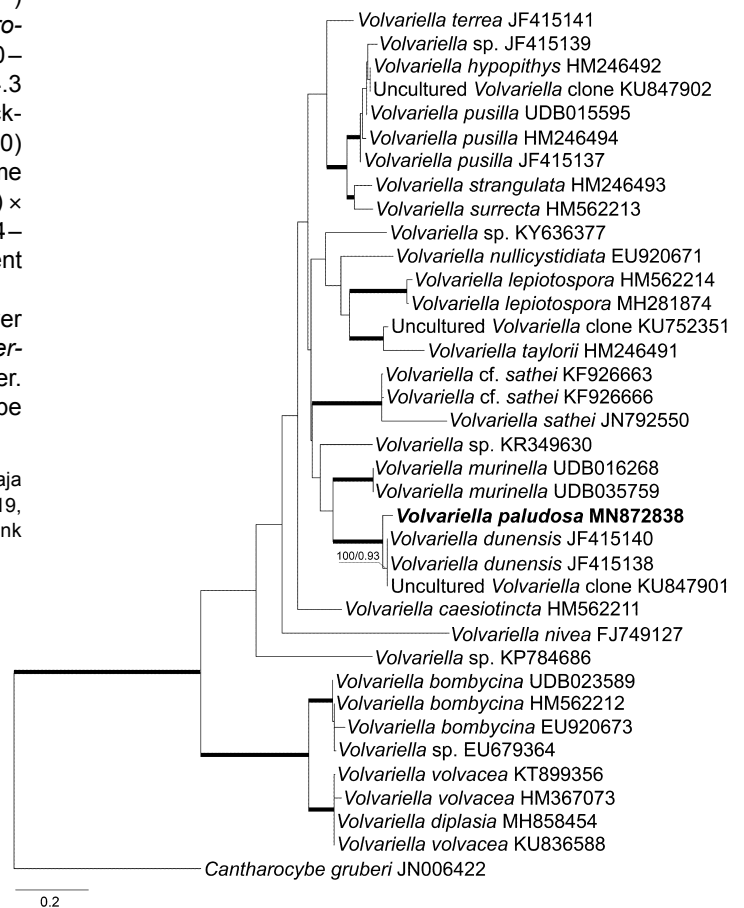
Basidiocarps medium-sized. *Pileus* 40–70 mm diam, at first convex to broadly campanulate, becoming plano-convex or plano-umbonate with low broad umbo, non-hygrophanous, surface not viscid, pale grey to whitish, covered with thin and short appressed hairs. *Lamellae* up to 7 mm broad, subcrowded, free, with lamellulae, slightly ventricose, initially whitish then pink, edge even or somewhat serrulate, entire concolourous. *Stipe* 50–80 × 7–12 mm, cylindrical, somewhat broadening towards base, smooth, white. *Context* in pileus and stipe white. *Volva* moderate, not voluminous (up to 20 mm high), friable, saccate, entire or lobate, felt-membranous, white, often with adhered moss fragments. *Smell* and *taste* indistinct. *Pileipellis* cutis, consisting of septate and elongate, non-gelatinous, slightly thick-walled hyphae, 4–12 µm wide. *Cheilocystidia* numerous, variable in size and shape: predominantly ventricose-lageniform, broadly fusiform, more rarely narrowly to broadly clavate or utriform, thick-walled, (30.8–)35.0–60.5(–67.7) × (8.8–)11.6–18.6(–23.0) µm, av. = 49.2 × 14.8 µm (n = 50). *Pleurocystidia* scarce, utriform or broadly clavate, (50.3–)54.0–79.5(–90.2) × (17.6–)19.1–32.3(–34.2) µm, av. = 64.0 × 24.3 µm (n = 30). *Basidia* (2–)4-spored, broadly clavate, thick-walled, (20.4–)22.5–27.4(–28.9) × (8.8–)9.0–10.0(–12.0) µm, av. = 25.0 × 9.7 µm (n = 35). *Basidiospores* ellipsoid, some slightly flattened, smooth, thick-walled, (7.6–)8.2–9.2(–9.7) × (4.9–)5.2–6.0(–6.7) µm, av. = 8.7 × 5.6 µm, Q = (1.24–)1.44–1.67(–1.90), av. Q = 1.56 (n = 180). *Clamp connections* absent in all tissues examined.

Habitat & Distribution — Growing solitary on a moss cover in the sedge (*Carex rostrata*)-brown moss (*Hamatocaulis versicosus*) rich fen with sparse birch (*Betula nana*) shrub layer. Uncommon in the studied area. So far only known from type locality.

Typus. RUSSIA, Tyumen Region, Vagayskiy District, near Kobjakskaia village, low (minerotrophic) swamp, N58°04'08" E68°56'24", 25 June 2019, V. Kapitonov (holotype LE313556; ITS and LSU sequences GenBank MN872838 and MN877373, isotype TCCS1839, MycoBank MB834185).

Colour illustrations. Russia, Tyumen Region, Vagayskiy District, near Kobjakskaia village, rich fen, where the holotype was collected. Top: mature basidiocarp; median: pileus (view from above); bottom: lamellae and volva; bottom: basidiospores and basidia; on the right: four various cheilocystidia and two various pleurocystidia (all from holotype). Scale bars = 1 cm (basidiocarp, pileus, lamellae, volva) and 10 µm (microstructures).

Notes — *Volvariella paludosa* is characterised by its rather large basidiospores compared to other known species of *Volvariella*, medium-sized basidiocarps with light grey and hairy pilei, whitish volva and variable hymenial cystidia, and rich fen habitat. The preferred habitat, hairy pileus and spore size are the key characters for separating *V. paludosa* from other species with grey, fibrillose pilei, such as *V. volvacea*, *V. murinella*, *V. taylorii*. The phylogenetically closest species, *V. dunensis*, differs by its arenicolous habitat (in coastal dunes of Mediterranean basin and the Atlantic coast of Spain), smaller basidiospores (7–8.5 × 4.5–6 µm) and larger cheilocystidia of a different shape (Justo & Castro 2010, Vizzini et al. 2011).



Best tree from the ML analysis of the nrITS dataset for *Volvariella* species with *Cantharocybe gruberi* as outgroup, generated on RAXML server v. 0.9.0 (<http://raxml-ng.vital-it.ch/#/>) with 100 rapid bootstrap replicates. Thickened branches indicate bootstrap support values ≥ 70 % and Posterior probabilities ≥ 0.95 calculated in MrBayes v. 3.2.5 software (Ronquist et al. 2012). All tips are labelled with taxon name and GenBank accession number. The newly generated sequence is in **bold**.

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