

Hydropus lecythiocystis



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***Hydropus lecythiocystis* E.F. Malysheva & Malysheva, sp. nov.**

Etymology. The name refers to the shape (lecythiform) of cheilocystidia.

Classification — *Porothelaceae*, *Agaricales*, *Agaricomycetes*.

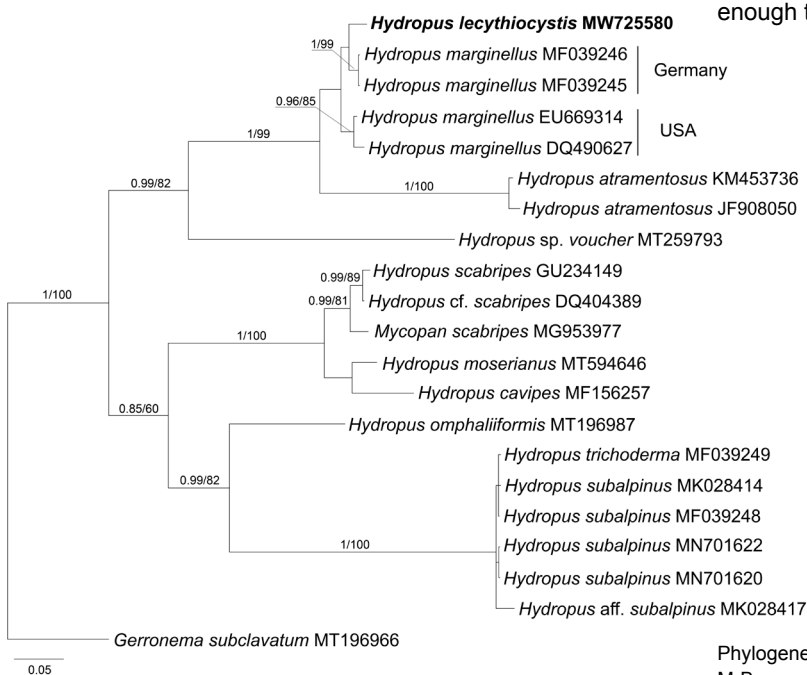
Basidiocarps small to medium-sized, collybioid or omphalioid. *Pileus* 12–30 mm diam, applanate or subfundibuliform, with flattened or without umbo, with undulating and scarcely striate margin; hygrophanous; surface pruinose to subvelutinous, sordid grey (07 05 10), huckleberry brown (070 40 20) or arable brown (070 40 30), with beech brown (070 30 20) or mineral brown (070 30 10) centre, with a touch of olive (all colour names of macroscopic features are given following the RAL DESIGN colour range system). *Lamellae* crowded, decurrent, with lamellulae, slightly ventricose, pastel sand (080 80 10) or micaceous light grey (080 80 05), edge even or somewhat serrulate, concolorous. *Stipe* 20–35 × 2–2.5 mm, cylindrical, ash gold (070 50 20) at upper part and beech brown (070 30 20) at base, slightly pruinose. *Context* thin, whitish. *Smell* and *taste* not distinctive. *Basidiospores* (6.0–)6.7–8.0(–10.2) × 3.7–5.0 μm, Q = 1.60–2.00, Q_{av} = 1.70, n = 50, subcylindrical or dacryoid, often slightly allantoid, hyaline in KOH, thin-walled; amyloid. *Basidia* predominantly 2-spored, sporadically 1-spored, 20–32 × 4.5–6 μm, narrowly clavate. *Cheilocystidia* abundant, 34–59 × 9–18(–27) μm, utriform, broadly lageniform with subcapitate apex, some proportion almost lecythiform with broad capitula, intermixed with broadly clavate, urniform or subcylindrical ones, hyaline, thin-walled. *Pleurocystidia* absent. *Pileipellis* a clavicutis, with dense layer of broadly clavate, cylindrical, subglobose, pyriform or

broadly utriform pileocystidia, 41.5–72 × 15–28.5 μm, weakly to strongly pigmented with intracellular greyish brown pigment, slightly thick-walled. *Stipitipellis* a cutis, containing fascicles of *caulocystidia*, (45–)53–77(–106) × 11–26 μm, broadly clavate, utriform, subcylindrical or lageniform, hyaline, slightly thick-walled. *Clamp connections* present.

Habitat & Distribution — Growing in small groups or solitary on rotted wood of *Betula pendula*. So far known only from type locality.

Typus. Russia, Krasnoyarsk Territory, Sayano-Shushenskiy State Biospheric Nature Reserve, the mouth of the Sarly River, N52°09'55.5" E92°18'43.9", floodplain birch forest, on rotted wood of *Betula pendula*, 16 Aug. 2020, V. Malysheva (holotype LE 313638, ITS and LSU sequences GenBank MW725580 and MW760390, MycoBank MB 839059).

Notes — *Hydropus lecythiocystis* is characterised by its pruinose and dark greyish brown pileus with slight touch of olive, cheilocystidia of variable shape with presence of lecythiform elements, 2-spored basidia, predominantly subcylindrical, allantoid or dacryoid, amyloid basidiospores, and lignicolous habitat. Based on morphological characters it resembles *H. marginellus* (Bas 1999, Læssøe 2008), but differs from the latter by having concolorous lamellae edge, exclusively 1–2-spored basidia, shorter cheilocystidia with present of distinctive lageniform ones with subcapitate apex, and growing on wood of deciduous trees. Phylogenetically, *H. lecythiocystis* and *H. marginellus* turned out to be closely related species. In the phylogenetic tree, *H. lecythiocystis* formed a branch close to European collections of *H. marginellus* but not to North American ones. However, the dissimilarity of their nrITS sequences reaches more than 2 %, and together with strong micromorphological differences, it is enough to consider them as different species.



Colour illustrations. Russia, Yenisei river basin in Sayano-Shushenskiy Reserve. From top to bottom: pileipellis elements, basidiospores, cheilocystidia, caulocystidia; and mature basidiocarps (all from holotype). Scale bar = 1 cm (basidiocarps), 10 μm (microstructures).

Phylogenetic nrITS topology from Bayesian analysis was performed with MrBayes v. 3.2.5 software (Ronquist et al. 2012) with 6 M generations under GTR+G model, showing relationships of *Hydropus* species, with *Gerronema subclavatum* as outgroup. Maximum likelihood analysis was performed on RAxML server v. 1.0.0 (<https://raxml-ng.vital-it.ch/#/>) with 100 rapid bootstrap replicates. Support values (PP/BS) are given above the branches. All tips are labelled with taxon name and GenBank accession number. The newly generated sequence is in **bold**.