

# The first confirmed finding of *Leptosporomyces mundus* (Basidiomycota) in Russia

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**Abstract:** The first record of *Leptosporomyces mundus* in Russia is reported. The short note on distribution of this species in East Europe as well as main diagnostic features are presented. An detailed description of Russian material on the species is given and additional Transcarpatian (Ukraine) material is cited. It is supposed that the earlier record of *L. mundus* from Russia in literature is referred to the Ukrainian material of Parmasto.

**Key words:** *Leptosporomyces mundus*; rare species; morphology; distribution; Murmansk Region

## INTRODUCTION

The genus *Leptosporomyces* (Atheliaceae, Atheliales) is represented in Russia by eight species – *L. fuscostratus* (Burt) Hjortstam, *L. fusoides* (Jülich) Krieglst., *L. galzinii* (Bourdot) Jülich, *L. montanus* (Jülich) Ginns & M.N.L. Lefebvre, *L. mutabilis* (Bres.) Krieglst., *L. raunkiaeri* (M.P. Christ.) Jülich, *L. roseus* Jülich, *L. septentrionalis* (J. Erikss.) Krieglst. (Zmitrovich, 2008). In cited monograph *L. mundus* was mentioned as a provisional species. However, there appeared information about the finding of this species in Russia without data on distribution and ecology (Bernicchia & Gorjón, 2010). This finding was referred later on (Kunttu et al., 2016), but it is still unclear, on what data was based this record.

A recent floristic investigation in northwestern part of the Murmansk Region, especially in Pasvik State Nature Reserve, brought a number of new regional records. Among them, there are some rare species e.g., *Paulliticium ansatum* Liberta, *Postia parva* (Renvall) Renvall. The study of mycobiota in the Pasvik Reserve was started in 2008. Preliminary list of aphylloroid fungi has included 124 species (Khimich et al., 2015). In the present paper, the first confirmed record of *Leptosporomyces mundus* in Russia is discussed here.

## MATERIAL AND METHODS

The Pasvik State Nature Reserve is situated in the north-western part of Murmansk Region (the

north-west of Russia) and lies as a narrow belt on the east bank of the Pasvik River, along the Russian-Norwegian border. Reserve is situated in the Northern boreal zone according to Ahti et al. (1968). Pine (*Pinus sylvestris* L.) forests dominate and occupy about 90% of the forested area and are at the northern limit of distribution. Spruce (*Picea obovata* Ledeb.) is very rare in the reserve, but there are several stands of up to 20 spruce trees. Birch (*Betula pubescens* Ehrh.) forests are frequent and are confined to the banks of rivers, streams and to former agricultural lands. Aspen (*Populus tremula* L.) often grows as an admixture in pine and birch forests on fertile soils (Moshnikov & Krutov, 2010). General survey of the climate, soil and vegetation of the Pasvik Reserve was presented by Borovichev and Boychuk (2016).

7 days-long field work was carried out by the first author in August 2015, mainly in previously understudied areas in the Pasvik Reserve. Wood logs were chosen by random route method and aphylloroid fungi occurred were collected.

Samples were studied under the LOMO light microscope. Microscopic features were observed in 3% KOH solution, Melzer's reagent (IKI). Ten spores per specimen were measured. The following abbreviations are used: L = mean spore length, W = mean spore width. The additional Transcarpatian herbarium specimen of *Leptosporomyces mundus* from LE was studied.

The specimens are kept in the herbarium INEP – herbarium of the Institute of the Industrial Ecology Problems of the North KSC.

## RESULTS AND DISCUSSION

Only single specimen of the *Leptosporomyces mundus* in question from the former USSR was found by us within Parmasto's exsiccates – namely No 121 from the series "Corticiaceae URSS II", collected by Parmasto in Transcarpatia (Ukraine) in 1956. This finding was accounted in the "Conspectus systematis Corticiacearum" (Parmasto, 1968) and, it is possible, in such status *Leptosporomyces mundus* was considered as distributed within Russia by consequent European authors.

The following description presents the first finding of *Leptosporomyces mundus* from Russian territory (in modern administrative sense).

LEPTOSPOROMYCES MUNDUS (H.S. Jacks. & Dearden) Jülich (Figs. 1, 2)

Fruit bodies resupinate, annual, athelioid, fragile and easily separable from the substrate, 0.3–2 cm long, partly merging, thin, margin is unclear, white, cobwebby. Hymenophoral surface as fine pellicular layer, smooth, later cracked, white to cream or with a fine orange-brown hue. Hyphal system monomitic, hyphae clamped, 1.6–2.8 µm in diameter, incrustation

absent to unclear, thin-walled or with thickened walls near a substrate. Leptocystidia basally clamped, thin-walled, hyphoid, cylindrical of fusoid, often slightly sinuous, tapering towards the apex, 23–35 × 3–3.5(4) µm. Basidia subcylindrical to subclavate, thin-walled, basally clamped, 8–16(–18) × 3–4 µm, with four sterigmata up to 3 µm long. Basidiospores ovoid or ellipsoid, ventrally flattened and in some projections short-cylindrical, thin-walled, 3–4(–4.5) × 1.7–2 µm, L = 3.2 µm, W = 1.8 µm, Q = 1.5–2.2, with a prominent apiculus, IKI–.

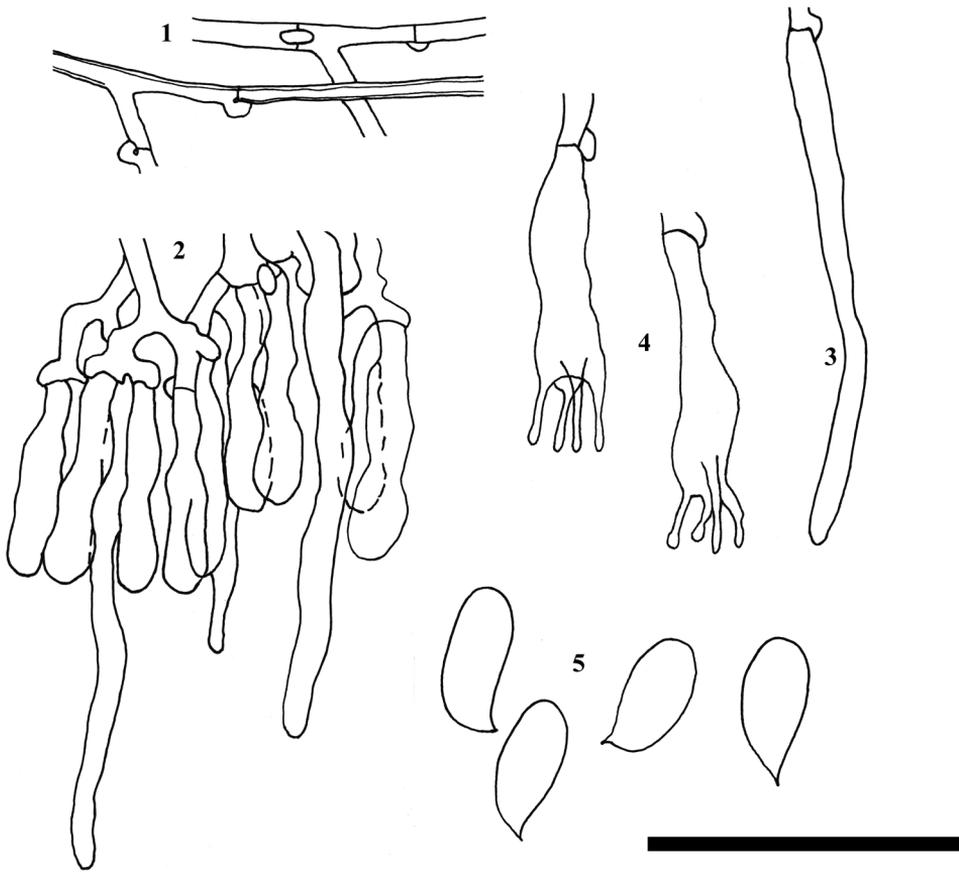
**Specimen studied:** Russia, Murmansk Region, Pasvik State Nature Reserve, north-west bank of the Kaskamajarvi Lake, 69.287091°N, 29.453580°E, on fallen trunk of *Pinus sylvestris* in pine forest, 22 August 2015, coll. Y. R. Khimich, det. Y. R. Khimich and I.V. Zmitrovich (INEP 1638).

**Additional material examined:** Ukraine, Bogdan Region, on fallen log of *P. abies* in a mixed forest, 19 August 1956, coll. and det. E. Parmasto (LE 168615, "Corticiaceae URSS II", N 121).

*Leptosporomyces mundus* is easily recognizable by its projecting leptocystidia. Few species belonging to the genus *Athelia* have similar cystidia (*A. cystidiolophora* Parmasto, *A. phialophora* Zmitr. & Spirin, *A. malyshevae* Zmitr.), but their basidiospores have different size, besides, *L. mundus* has regular clamps on hyphae. The distribution of *L. mundus* in Europe, to the best of our knowledge, is limited to Austria,



**Fig. 1.** *Leptosporomyces mundus* on fallen trunk of *Pinus sylvestris* (INEP 1638). Photo by Yuliia Khimich. Scale bar = 2 cm.



**Fig. 2.** *Leptosporomyces mundus* (INEP 1638): 1 – hyphae; 2 – hymenial elements; 3 – leptocystidia; 4 – basidia; 5 – spores. Scale bar: 20  $\mu\text{m}$  for 1–4, 10  $\mu\text{m}$  for 5.

Finland, Norway, Sweden, Ukraine, also to USA and Canada, it occurs on the wood of coniferous trees (Zmitrovich, 2008; Kunttu et al., 2016). The microscopical features of this taxon are clear and the fungus is easy to identify. However, *L. mundus* is rare and rarely collected species.

In Norway, it is included in the Red List with the category EN (Anonymous, 2015). This species requires a special attention and study of its distribution in the Murmansk Region.

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