

# New records of larger fungi established in habitats of glacial relict plants in Bulgaria

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**Abstract.** In this research communication some new and rare for Bulgaria taxa of ascomycetes and basidiomycetes found in habitats of glacial relict plants are reported. *Cortinarius huronensis* var. *huronensis* and *Russula nana* are recorded for the first time for the Bulgarian mycota. Novel findings about the threatened species *Galerina sphagnorum*, *Gomphidius roseus*, *Hypholoma udum*, and *Mitrla paludosa* are also included.

**Key words:** ascomycetes, basidiomycetes, Bulgaria, glacial relict plants, larger fungi

## Introduction

In 2009 and 2010 a survey of the larger fungi in habitats of Bulgarian relict plants was held within the framework of the project Conservation of Biodiversity in Hot-Spots of Glacial Relict Plants in Bulgaria. The survey produced a number of records, including new taxa for the country and new data about some threatened species from the *Red List of Fungi in Bulgaria* (Gyosheva & al. 2006). This paper presents information about the interesting larger fungi found in habitats of relict plants.

## Material and methods

Specimens of fungi were collected in 2009 and 2010 in habitats of relict vascular plants in the Rila and Western Rhodopi Mts. The studied specimens are kept at the Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOMF). The microscopic characteristics of fresh and dried specimens were studied. The abbreviations of the authors of fungal names follow Kirk & Ansell (2004). The conservation status is indicated ac-

ording to the *Red List of Fungi in Bulgaria* (Gyosheva & al. 2006).

## Results and discussion

### I. New for Bulgaria larger basidiomycetes found in communities of glacial relict plants

#### *BASIDIOMYCOTA*

#### *Agaricomycetes*

#### *Agaricales*

#### *Cortinariaceae*

*Cortinarius huronensis* Ammirati & A.H. Sm. var. *huronensis*, Michigan Bot. 11: 20, 1972.

Pileus up to 4 cm in diameter, initially hemispherical to campanulate, subsequently almost flat, umbonate; surface fibrillose, at first olivaceous to yellowish-olive at the margin, dark-brown, later brown to hazel-brown; margin incurved for a long time. Stipe 5–8 × 0.3–0.5 cm, cylindrical, hollow, ocher, pale yellow-brownish to olive-brownish, fibrillose. Flesh pale ocher, thin; smell raphanoid. Gills yellowish, brown-yellow to rust-brown, broad, adnate. Basidiospores

7.5–11 (12.5) × 5–7.5 µm, ellipsoid to ovate, slightly to moderately warty, ochre-yellow. Basidia 4-spored, clavate. Cheilocystidia clavate. Macrochemical reaction: KOH on the pileus surface – reddish-brown.

**Specimen examined.** Western Rhodopi Mts: Shiroka Polyana locality above Dospat town, 1605 m, among *Sphagnum girgensohnii* Russow under *Pinus sylvestris* L., 21 Aug 2009, leg. E. Dimitrova, det. M. Gyosheva & E. Dimitrova (SOMF 29 147).

**Habitat.** In peat bogs among *Sphagnum* sp., under conifers and *Betula* spp., August–September (Ammirati & Smith 1972; Breitenbach & Kränzlin 2000).

**Distribution.** Europe and North America (Ammirati & Smith 1972; Ammirati 1988; Breitenbach & Kränzlin 2000).

**Comments.** Ammirati & Smith (1972) distinguished two varieties of this species: var. *huronensis* and var. *olivaceus* Ammirati & Smith. *Cortinarius huronensis* has been previously reported from Bulgaria (Rila Mts) by Gyosheva & Denchev (2000) as *Dermocybe palustris* (M.M. Moser) M.M. Moser. The Bulgarian specimen of *Dermocybe palustris* (SOMF 29 146) is morphologically similar to var. *olivaceus* – with olive-brown to cinnamon-brown color of the pileus and smaller spore size (cfr Ammirati & Smith 1972; Breitenbach & Kränzlin 2000).

## Russulales

### Russulaceae

***Russula nana* Killerm. var. *nana***, Denkschr. Königl.-Baier. Bot. Ges. Regensburg 20: 38, 1936.

Pileus 2–3.5 cm in diameter, initially hemispherical, then convex to almost plane; surface slightly viscid when moist, bright-red to pinkish, discoloured in ochraceous cream patches; margin slightly striate. Stipe 2–3 × 0.5–1 cm, cylindrical, white, subsequently slightly grayish, fragile. Flesh white, reddish under the cuticle; smell weak, indistinct; taste acrid. Gills white, broadly attached. Spore print white. Basidiospores 6–9 × 6–7 µm, subglobose to broad ellipsoid, dense warty, forming network. Basidia clavate, 4-spored. Cheilocystidia clavate. Pleurocystidia fusiform. Macrochemical reaction: FeSO<sub>4</sub> on the pileal flesh – pink.

**Specimen examined.** Northwestern Rila Mts: in a small cirque on the northern slope of peak Kabul, 2250 m, near *Salix herbacea* L., 4 Sep 2009, M. Gyosheva (SOMF 29 148).

**Habitat.** Mycorrhizal associate of dwarf willows, seldom near *Dryas octopetala* L. In an European Alpine shrub community, 2000–2500 m, July–August (Senn-Irlet 1988; Skirgiello 1991; Arnolds 1992; Kränzlin 2005).

## II. New localities of larger fungi with conservation value found in communities of glacial relict plants

Four species from the *Red List of Fungi in Bulgaria* (Gyosheva & al. 2006) were found during the investigations.

### ASCOMYCOTA

#### Leotiomyces

#### Helotiales

#### *Incertae sedis*

***Mitrula paludosa* Fr. : Fr.** – Critically Endangered [CR]

**Specimen examined.** Rila Mts: Sedemte Rilski Ezera cirques, under lake Ribnoto Ezero among mosses and on cones of *Pinus mugo* Turra, in peaty habitat, 2100 m, 3 Sep 2009, M. Gyosheva (SOMF 29 149).

**Comments.** Reported from Mt. Vitosha (Hinkova 1954, 1955) and Rila Mts, near Govedartsi village (Dimcheva & al. 1992; Dimitrova 1999; Dimitrova & Gyosheva 2010).

### BASIDIOMYCOTA

#### Agaricomycetes

#### Agaricales

#### Strophariaceae

***Galerina sphagnum* (Pers. : Fr.) Kühner** – Endangered [EN]

**Specimen examined.** Rila Mts: Sedemte Rilski Ezera cirques, near lake Trilistnika among *Sphagnum* spp., 2203 m, 3 Sep 2009, M. Gyosheva (SOMF 29 150).

**Comments.** Reported from Rila Mts (near Borovets and Govedartsi village) and from Western Rhodopi Mts (Longurly locality and Chairski Ezera), also from peat habitats (Gyosheva 1996; Gyosheva & Ganeva 2004).

***Hypholoma udum* (Pers. : Fr.) Kühner** – Endangered [EN]

**Specimens examined.** Western Rhodopi Mts: Koupena Reserve, among *Sphagnum platyphyllum* (Lindb.) Warnst., 1356 m, 9 Oct 2009, leg. M. Lazarova, det. M. Gyosheva (SOMF 29 151); Kartala locality, among *Sphagnum* spp., 1658 m, 22 Oct 2010, leg. B. Tsenov, det. M. Gyosheva (SOMF 29 152).

**Comments.** Reported as *Psilocybe uda* (Pers.: Fr.) Gillet in: Hinkova (1954, 1955) (from Mt. Vitosha), Hinkova (1958) (from Rila Mts), Gyosheva & al. (2006).

## Boletales

### Gomphidiaceae

***Gomphidius roseus* (Fr.: Fr.) Fr.** – Vulnerable [VU]

**Specimens examined.** Western Rhodopi Mts: Kavallite locality near Shiroka Polyana Dam, 1547 m, 15 Sep 2009, leg. M. Lazarova, det. M. Gyosheva (SOMF 29 153).

**Comments.** Reported only from the Rila Mts (Gyosheva 1998; Gyosheva & Denchev 2000; Assyov 2004).

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