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## NEW RECORDS OF RARE AND THREATENED LARGER FUNGI FROM MIDDLE DANUBE PLAIN, BULGARIA

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**Abstract.** New data about the distribution of eleven rare larger fungi for Bulgaria from the Middle Danube Plain (Pleven District) are presented in the paper. Nine species are of a high conservation value, included in the Red List of fungi in Bulgaria. Three of them are enlisted also in the Red Data Book of the Republic of Bulgaria. Seven taxa are new records from Middle Danube Plain.

**Key words:** ascomycetes, basidiomycetes, Bulgarian mycota, new chorological data

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## INTRODUCTION

The present work provides new chorological data for eleven rare larger fungi (ascomycetes and basidiomycetes) in Bulgaria, found during the field works in 2014–2015, in the Middle Danube Plain (Pleven District). Nine species are with a high conservation value, included in the Red List of fungi in Bulgaria (GYOSHEVA ET AL. 2006). Three of them *Amanita caesarea* (Scop.: Fr.) Pers., *Auriscalpium vulgare* Gray and *Cortinarius bulliardii* (Pers.) Fr. are enlisted also in the Red Data Book of Plants and Fungi of the Republic of Bulgaria (GYOSHEVA 2015a-c).

Only 115 larger fungi have been reported from the Pleven's Hills so far (GYOSHEVA & TZONEV 2005). Six of them are included in the Red List of fungi in Bulgaria: *Amanita vittadini* (Moretti) Vittad., *A. caesarea*, *Arrhenia spathulata* (Fr.: Fr.) Redhead, *Hohenbuehelia petaloides* (Bull.: Fr.) Schulzer, *Hygrophorus russula* (Schaeff.) Kauffman and *Phallus hadriani* Vent.

The Danube Plain is one of the most poorly studied floristic regions in Bulgaria regarding mycodiversity. About 130 species larger fungi (ascomycetes and basidiomycetes) have been reported so far from this region (DENCHEV & ASSYOV 2010; DIMITROVA & GYOSHEVA 2009; GYOSHEVA ET AL. 2012; GYOSHEVA & TZONEV 2005; PEEV ET AL. 2015). Seven species are from the Red List of fungi in Bulgaria. Only two species: *Amanita caesarea* and *Pithya cupressima* (Pers.: Fr.) Fuckel are from the Red Data Book of the Republic of Bulgaria. *Tuber macrosporum* Vittad. is a rare and less known for Bulgaria species, also reported from another part of the Danube Plain (GYOSHEVA ET AL. 2012). Therefore the present paper presents important new data about the distribution in the Middle Danube Plain of these eleven rare taxa, seven of which are newly recorded for the Danube Plain and nine of which are taxa of a high conservation value.

## MATERIAL AND METHODS

The larger fungi were found during the periods September – November 2014 and 2015 by the second author, in the predominant natural and secondary plant communities in the Middle Danube Plain, mostly Kailaka Protected Area: communities of *Quercus cerris* L., *Quercus frainetto* Ten., *Carpinus orientalis* Mill., *Tilia tomentosa* Moench and plantations of *Pinus nigra* Arn. but also from the natural forests in Chernelka Natural Monument and in the vicinity of Gorni Dabnik Dam. The investigated areas are almost the same with the previous research from the area (GYOSHEVA & TZONEV 2005).

The fungi were registered following the tracking method. The identification was confirmed by the use of the works of COURTECUISSE & DUHEM (1995), DENNIS (1968), KRIEGLSTEINER (2000, 2001) and PHILLIPS (2006). The studied specimens are kept at the Mycological Collection of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia (SOMF). The

threat status follows the Red List of fungi in Bulgaria (GYOSHEVA ET AL. 2006). The author's name of fungal taxa are abbreviated according to KIRK & ANSELL (2004) and Index Fungorum.

## RESULTS

### *New localities of rare larger fungi for Bulgaria in the Middle Danube Plain*

#### *Ascomycota*

##### *Otidea alutacea* (Pers.) Massee

**Specimen examined:** In the Itzovo Branishte locality, between the Pleven town and Jassen village, on soil, near plantation of *Pinus nigra*, 11.10.2015, leg. R. Tzonev, det. R. Tzonev & M. Gyosheva (SOMF 26610), 43.408097N 24.564297E

*Vulnerable* (VU) species, previously known from the Danube Plain near Rakovitsa village (DIMITROVA & GYOSHEVA 2009).

#### *Basidiomycota*

##### *Amanita caesarea* (Scop.) Pers. (Fig. 1)

**Specimen examined:** near Gorni Dubnik Dam locality, in community of *Quercus cerris* and *Q. frainetto*, 02.10. 2014, leg. & det. R. Tzonev (SOMF 26611), 43.362316N 24.306672E

*Vulnerable* (VU) species. Enlisted in the Red Data Book of Plants and Fungi of the Republic of Bulgaria (GYOSHEVA 2015a). So far reported for the Middle Danube Plain from oak forests in Itzovo Branishte locality (GYOSHEVA & TZONEV 2005).



Fig. 1.

##### *A. franchetii* (Boud.) Fayod.

**Specimen examined:** Kailaka Protected Area, Bohotska forest, in community of *Q. cerris*, 25.10. 2015, leg. R. Tzonev, det. R. Tzonev & M. Gyosheva (SOMF 26612), 43.341909N 24.306754E.

During the field observation the species was recorded as widespread in the oak forest also in Chernelka Natural Monument (Todorovo village) and Burkach village (43.270660N 24.422897E) and in the vicinities of Gorni Dabnik Dam (43.362082N 24.306754E).

*Vulnerable (VU)* species. The record is new for the Pleven's Hills and the Danube Plain.

***Auriscalpium vulgare* Gray**

**Specimen examined:** Kailaka protected area, *P. nigra* plantation, 02.11.2015, leg. R. Tzenev, det. M. Gyosheva (SOMF 26613), 43.352035N 24.644206E.

*Endangered (EN)* species. Enlisted in the Red Data Book of Plants and Fungi of the Republic of Bulgaria (GYOSHEVA 2015b). The record is new for the Danube Plain.

***Clitocybe alexandri* (Gillet) Gillet**

**Specimen examined:** near the Chernelka River (Chernelka Natural Monument), in forest of *Carpinus orientalis*, 25.10.2015, leg. R. Tzenev, det. M. Gyosheva (SOMF 26614), 43.340026N 24.558050E.

The finding is new for the Danube Plain. The species is rare for Bulgaria. It was reported only once from Bulgaria – Rila Mts, Borovets locality, in beech community (STOYCHEV & GYOSHEVA 2005).

***Cortinarius bulliardii* (Pers.) Fr.**

**Specimen examined:** near the Chernelka River (Chernelka Natural Monument), in forest of *C. orientalis*, 25.10.2015, leg. R. Tzenev, det. M. Gyosheva (SOMF 26615), 43.340249N 24.552678E.

*Endangered (EN)* species. Enlisted in the Red Data Book of Plants and Fungi of the Republic of Bulgaria (GYOSHEVA 2015c). This is the first record for the Danube Plain.

***Hygrophorus russula* (Schaeff.) Kauffman**

**Specimen examined:** near the Chernelka River (Chernelka Natural Monument), in forest of *C. orientalis*, 25.10.2015, leg. R. Tzenev, det. M. Gyosheva (SOMF 26616), 43.340284N 24.558032E.

*Vulnerable (VU)* species. It was already reported from the region: from Kailaka Protected Area, in community of *Q. cerris* and *Q. frainetto* (GYOSHEVA & TZENEV 2005).

***Phallus hadriani* Vent.**

**Specimen examined:** Itzovo Branshte locality, on dry pasture, 09.11.2015, leg. R. Tzenev, det. M. Gyosheva, 43.415301N 24.556129E.

*Near Threatened (NT)* species. It was reported for the Middle Danube Plain from Totleben village (GYOSHEVA & TZENEV 2005).

***Pisolithus arrhizus* (Scop. : Pers.) Rauschert**

**Specimen examined:** Itzovo Branishte locality, on dry pasture, 09.11.2015, leg. R. Tzonev, det. M. Gyosheva (SOMF 26619), 43.415278N 24.554675E.

*Near Threatened* (NT) species. This is the first record for the Danube Plain.

***Tulostoma brumale* Pers.**

**Specimen examined:** Kailaka Protected Area, on calcareous soils, in community of *C. orientalis*, 02.11.2015, leg. R. Tzonev, det. R. Tzonev & M. Gyosheva (SOMF 26617), 43.380672N 24.632225E.

Rare species for Bulgaria. Recorded for the first time from the Danube Plain.

***Typhula filiformis* (Bull.) Fr. (Fig. 2)**

**Specimen examined:** Itzovo Branishte locality, between Pleven town and Jassen village, on decaying twigs and leafs in forest litter, in community of Silver Lime (*Tilia tomentosa*), 18.10.2015, leg. R. Tzonev, det. M. Gyosheva (SOMF 26618), 43.408968N 24.569255E.

It is not a common species in Bulgaria. It had been reported from Sofia region, Sofia city – Borisova Gradina Park (HINKOVA 1955) and from Western Stara Planina Mts, between Tsaritchina and Tseretsel village (ASSYOV ET AL. 2010). This is the first record for the Danube Plain.



**Fig. 2**

#### CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this article.

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