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NEW LOCALITIES OF *BATTARREA PHALLOIDES* (BASIDIOMYCOTA) IN BULGARIA

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The paper is dedicated to Prof. D. Temniskova on the occasion of her 80th jubilee

Abstract: *Battarrea phalloides*, a rarely found basidiomycete which is included in the Red List of fungi in Bulgaria and also in the Red Data Book of the Republic of Bulgaria with threat status EN B2a(i,ii,iv), has been recorded in two new localities in Eastern Bulgaria near to the Black Sea coastal region. The paper provides data on macro- and microscopic description of the basidiomata, coordinates, and map of distribution of the fungus in Bulgaria.

Key words: basidiome, endangered species, fungi

The increasing interest in conservation of fungal diversity in Bulgaria (Drumeva-Dimcheva & Gyosheva-Bogoeva 1993; Denchev 2005; Gyosheva et al. 2000, 2006; Peev 2011) logically provokes the need for accumulation of new data on distribution and habitat requirements of fungi. *Battarrea phalloides* (Dicks.) Pers. is a basidiomycete which is included in the Red List of fungi in Bulgaria

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(Gyosheva et al. 2006) and also in the Red Data Book of the Republic of Bulgaria (Gyosheva & Stoychev 2011) with threat status EN B2a(i,ii,iv). Most of the previous findings of *Battarrea phalloides* in Bulgaria are concentrated in the Thracian Lowland, one is in the Srednd Gora Mts and all data published on the site characteristics and fungus description are quite scarce (Gyosheva & Stoychev 2011; Lacheva 2012a, b, Dinev 2013). Therefore, the purpose of this paper is to supplement data on this endangered species with its more detailed morphological descriptions and to provide information on its recent findings in a new region of the country.

During this study, 25 basidiomata of *Battarrea phalloides* were found. Two of them were discovered in the close vicinity of the guard house and the Dam of the Reservoir Tsonevo in the Eastern Stara Planina Mountains (Varna District) on 31 July 2012. The altitude of this site is 66 m a.s.l. and its coordinates are 43°01,835' N 027°24,331' E (taken by GPS Garmin Montana 600). The other 23 fruiting bodies were observed on 12 July 2013 at 5 m a.s.l on the path to the Specialized Hospital for Rehabilitation 'Tuzlata', very close to the hyperhaline wetland Balchishka Tuzla and 'Tuzlata' beach (the Black Sea, Dobrich District). The coordinates are 43°24,100' N 028°13,453' E. Map template is after Peev (2011).

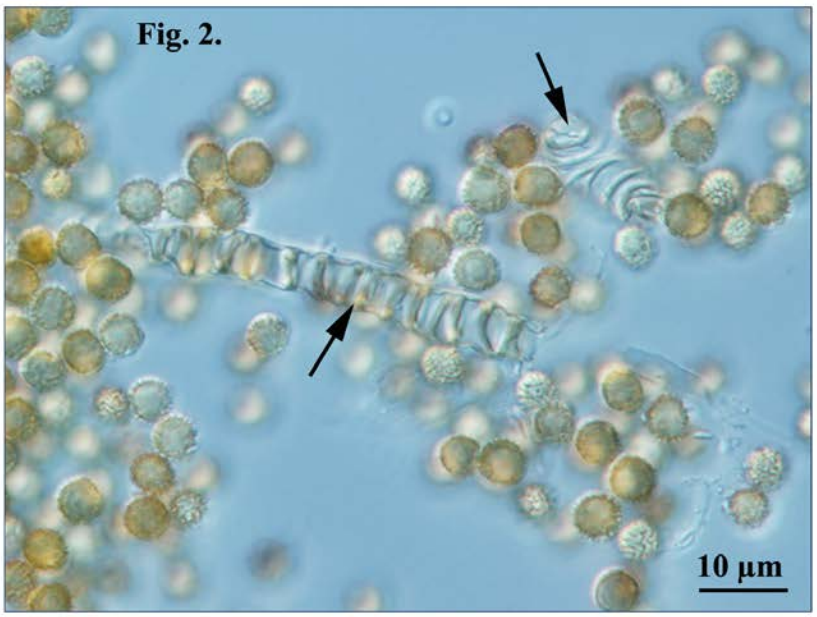
One basidioma from the first locality and two basidiomata from the second one were taken for further microscopic investigations. The collected specimens are kept in the Mycological Collection of Sofia University "St. Kliment Ohridski".

Basidiospores and elaters were observed in the lab on non-permanent slides by light microscopy (LM) on Olympus BX53 microscope. The photos were taken by Olympus DP72 camera.

According to macroscopic observations (Fig. 1) the height of basidiomata observed in the both localities ranged from 13 to 30 cm including the spore sac. Stipe was 11–27 cm long, 0,5–2 cm broad, rusty-brown, woody and hollow. Its surface was longitudinally striated and covered with fibers that peel or split to form fine to very coarse needle-like, ribbon-like, or shaggy scales. Volva at the stipe base was up to 4x5 cm (when dry), saclike, free, fragile, and two-layered: the inner layer was similar to the scales of the stipe; the outer layer was thick, membranous, dirty white in colour. Spore sac was sub-globose, 1,5–6 cm broad and 1–3 cm high.

Microscopic study (Fig. 2) showed that elaters were 4–5,5 μm wide and 20–68 μm long, cylindrical, tapered, with irregular spiral thickening along the length, whitish to pale yellow in colour, not branched. Basidiospores were round to globose, 4–5,5 μm in diameter, with short, broad pedicel, verrucose or warty ornamentation, and yellow-ochre in colour.

The endangered species *Battarrea phalloides* was found in two distant sites, characterized by similar features: warm, free-draining sandy soils, situation near to the trunk bases of *Cupressus sempervirens* L. and near to asphalt road. According to Gyosheva & Stoichev (2011, Fig. 3) in Bulgaria the fungus was found for first time on sandy soil with decaying wood of poplar (*Populus canescens*) in the city park 'Ostrova' near the Maritsa River (Plovdiv town). In the same Plovdiv District



Figs. 1–2: 1 – Basidiomata of *Battarrea phalloides* (measure size is 20 cm); 2 – Basidiospores and elaters (arrows) of the fungus.

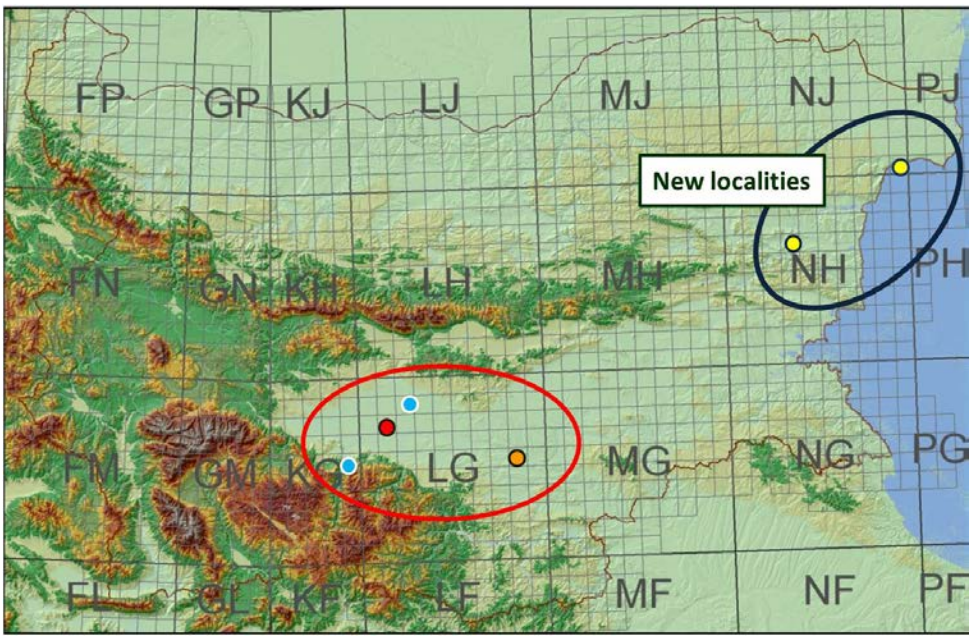


Fig. 3. Map of distribution of *Battarrea phalloides* in Bulgaria.

Lacheva (2012 a, b, 2014) recorded *Battarrea phalloides* on soil with decaying wood in Bogdan village and in the parkland of the Palace 'Krichim', and also in a meadow situated on the left site of the bridge over the Stryama River near to Stryama village. Dinev (2013) notified in an electronic newspaper that Mr Nikolay Apostolov found the species in the park 'Penyo Penev' in Dimitrovgrad town Park, but did not mention the type of the substrate. All these findings are concentrated in the Thracian Lowland and Sredna Gora Mts (Central South Bulgaria), but no data on their coordinates have been provided. The new localities of *Battarrea phalloides* reported in this paper with their coordinates are situated in Eastern Bulgaria near to the Black Sea. Additionally, map of the species distribution in Bulgaria is provided (Fig. 3) in order to facilitate its future monitoring.

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