

***Psilocybe serbica* - *Psilocybe arcana*, in Bosnia and Herzegovina**Dusko Trivič<sup>1</sup><sup>1</sup><https://www.facebook.com/dusko.trivic.9>**Key words:***Basidiomycota**Agaricales**Hymenogastraceae*

Mount Kozara, Prijedor

**Abstract:** *Psilocybe arcana* is a wood-rotting, bluing species containing psychoactive compounds. It is one of five taxonomical names which a phylogenetic analysis has shown to belong to the prior name *P. serbica*. Fixed morphological characters would separate them but intermediate collections occur. Morphological data and pictures illustrate this finding.**INTRODUCTION**

*Psilocybe serbica*, together with the complex of its morphological variability composed of *P. arcana*, *P. bohémica*, *P. moravica* and *P. moravica* var. *sternberkiana*, is a common species in Central Europe. Although Borovička (2008) found and built into a key some differentiating parameters to distinguish them, he also reported that he had ‘... seen several aberrant (or intermediate) collections from various sites in Europe, especially as herbarium specimens’. Later on, Borovička et al. (2011) found that they were all phylogenetically conspecific, with *serbica* as the prior epithet, basing on a three-gene analysis; yet they preferred not to abandon the synonymic names and kept them all at a subspecific level.

***Psilocybe serbica* M.M. Moser & E. Horak**

*Z. Pilzk.* 34(3-4): 138 (1969 ‘1968’)

phylogenetically a synonym of ***Psilocybe arcana* Borov. & Hlaváček**

*Mykol. Sborn.* 78(1): 3 (2001)





### BRIEF DESCRIPTION

Pileus up to 50 mm broad, convex with inflexed margin and weakly umbonate centre, then depressed with applanate margin, distinctly striate; viscid, brownish-ochraceous, turning to olivaceous-bluish tint with age or when bruised. Gills close, with lamellulae, adnate, ventricose, brown. Stipe up to 80 × 8 mm, cylindraceous to flexuous, central, whitish, changing colour like the pileus.

Spores 10.5 – 12.5 × 6.0 – 7.0 μm, in front view elliptic, in side view elliptic to sometimes subamygdaliform or adaxially flattened, smooth, germ pore small. Pleurocystidia absent. Cheilocystidia lageniform with a narrow, medium to often elongate and flexuous neck, numerous. Clamp connections present.

**Habitat and collection examined:** Bosnia and Herzegovina, Banja Luka, Prijedor, Mount Kozara, gregarious in a mixed forest with *Pinus* sp., *Picea abies*, *Tilia* sp., *Acer platanoides* and *Qercus* sp., approx. 750 m. a.s.l., 7 November 2021, D. Trivič, in pers. herb.

### NOTES

On the basis of the differential parameters indicated by Borovička (2008) this finding, with its unambiguous characters, can be identified morphologically as *P. arcana*.

However Borovička (2008) also anticipated possible different future developments: '*I have been studying the species of the stirps Serbica at their original localities in the Czech Republic for years and I have observed that the combinations of characters described above are constant; no intermediate collections have been found. On the other hand, I have seen several aberrant (or intermediate) collections from various sites in Europe, especially as herbarium specimens ... the presented concept of species within the stirps Serbica is still questionable, since intermediate collections have been observed. There is no doubt that especially DNA studies based on the present knowledge of European bluing species might help to answer some of the questions that still remain*'.

In fact later on, on a phylogenetic basis, Borovička *et al.* (2011) comment their three-gene (ITS, LSU and *tef1*) analysis results as follows:

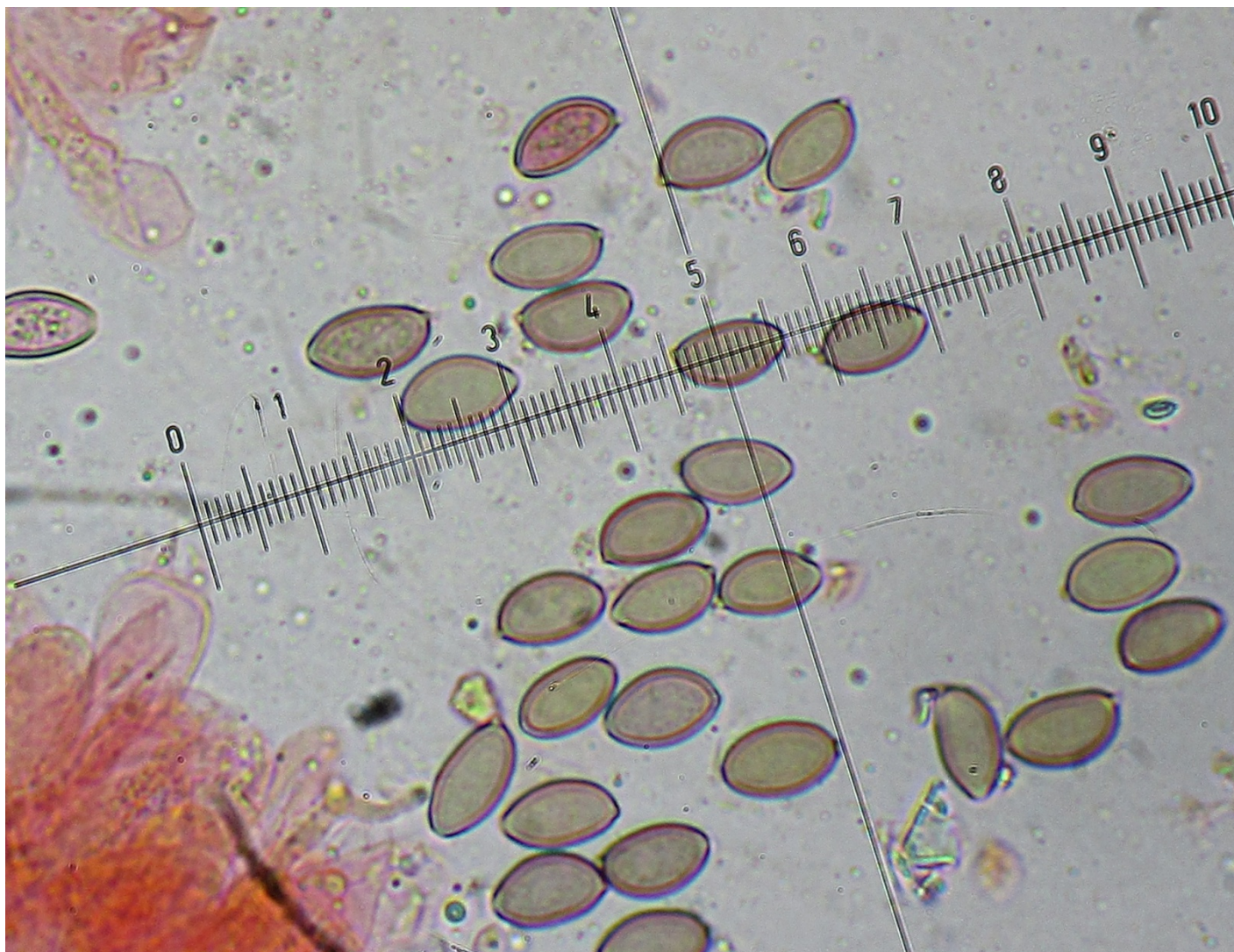
*'The absence of DNA polymorphism among the taxa of the P. serbica complex in studied markers indicates that these taxa represent, in fact, a single species despite their phenotypic variability ... When only morphological and ecological characters are used for classification, P. serbica complex is very variable and this variability has led to description of several species within it in the past. However, when the DNA sequence characters are used, the previously described taxa within the stirps Serbica appear to be identical. This is surprising particularly in the case of ITS, which represents a highly polymorphic marker and consequently a powerful tool for taxonomic purposes at species level ... Molecular analysis recognizes two sibling groups within the P. cyanescens complex and three distinct species: P. cyanescens, P. azurescens and P. serbica. The recently described morphospecies P. bohémica, P. arcana, and P. moravica apparently represent just morphological and ecological varieties of P. serbica, and should accordingly be treated below species level'*

Yet, they decide to also keep the use of the synonymic epithets at a subspecific level:

*'We therefore conclude that the P. cyanescens complex in Europe consists of three well-defined species, P. cyanescens, P. azurescens and P. serbica. The last species is, furthermore, very variable in macro- and microcharacters. The most distinct morphological entities, so far described at species level, namely P. arcana, P. bohémica and P. moravica, need to get a formal rank below species level. Consequently, we propose to treat P. moravica var. sternberkiana on the level of forma ... The recently described morphospecies P. bohémica, P. arcana, and P. moravica apparently represent just morphological and ecological varieties of P. serbica, and should accordingly be treated below species level'*

This seems to lead also other authors to refer to the *serbica* complex both ways instead of referring to it simply as a single taxon (e.g. Gotvaldová *et al.* 2022: *'The Psilocybe serbica complex contains several taxa formerly classified at the species level. However, phylogenetic analysis based on three molecular markers did not prove a significant difference between P. serbica, P. bohémica, P. arcana, P. moravica, and P. moravica var. sternberkiana. Therefore, all taxa are now considered conspecific with P. serbica or may be treated as varieties'*).





Spores in Congo red. Previous page: cheilocystidia in Congo red

## ACKNOWLEDGEMENTS

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