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Biodiversity and applications of algae**(22882) - METABARCODING AS A TOOL TO COMPLEMENT THE REFERENCE DATABASE – A CASE STUDY OF SALINE LAKE (PEČENA SLATINA, SERBIA)**

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Abstract

Benthic diatoms have been used for decades as powerful indicators for biomonitoring lakes and rivers around the world. Due to the more than 100,000 diatom species morphological approach requires a high level of taxonomic knowledge. To overcome this obstacle, the application of metabarcoding has been developed in recent years. One of the challenges that still “forces” the simultaneous use of both approaches in biomonitoring is the incompleteness of the reference barcoding library.

The diatom community from different substrates (reed, mud, artificial substrate) in Pečena Slatina has been intensively investigated in 2019, 2021-2023. One of the goals of the ongoing BIOLAWEB project, funded by the European Union, was to complement the Diat.barcode reference library for the possibility of using metabarcoding as tool in the future routine biomonitoring in Serbia. The morphological results show a similar diatom composition among different substrates with little difference in dominant taxa. *Nitzschia frustulum* was one of the most dominant taxa in 2022, while in 2019 it dominated together with *Anomoeoneis sphaerophora*, in 2021 with *Navicymbula pusilla* and *Tryblionella hungarica*, and in 2023 with *Halamphora veneta*. Molecular data (*rbcl*) have shown the dominance of *T. hungarica* and *Nitzschia supralitorea*.

Anomoeoneis sphaerophora was observed in microscopy while metabarcoding data showed an unknown sequence of *Anomoeoneis*. Using phylogeny and p-distance calculations to compare our sequence to those present in the Diat.barcode we showed that this unknown sequence of *Anomoeoneis* had a high probability of matching with *A. sphaerophora*.

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Keywords: *Anomoeoneis sphaerophora*, diatoms, Diat.barcode, *rbcl*, saline lake