



Conference Abstract

Composition of diatom communities on travertine barriers of the Una River (Bosnia and Herzegovina) obtained by DNA metabarcoding and morphological analysis

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Abstract

The process of travertine formation and carbonate deposition in the rivers is unique, delicate, and depends on the activity of algae and mosses. Although diatoms have been used extensively in hydrobiological studies, the comparative analysis data on diatom communities of the travertine barriers in karstic rivers are still scarce.

The study aimed to detect the diatom composition on travertine barriers in the Una River, the large karstic river in Bosnia and Herzegovina. An integrated classical morphological identification approach with metabarcoding was applied on eight samples across the river length profile. Morphological analyses were performed using both light and scanning electron microscopes. Subsequent DNA metabarcoding of the chloroplastic gene 312bp *rbcL* was done. The DADA2 pipeline was used for the bioinformatic treatment of the demultiplexed MiSeq reads to infer Amplicon Sequence Variants (ASVs). ASVs were taxonomically assigned using the Diat.barcode v7 reference database.

A total of 126 species were identified using the morphological approach, while 133 ASVs were taxonomically assigned to 58 unique taxa with the molecular approach. Diatom community structures in terms of molecular and morphological approaches were congruent with 49 shared species. Species from genera Gomphonema, Navicula and Encyonema were less assigned in molecular analysis.

The most abundant taxa in the Una River are alkaliphilous, belonging to the genera Gomphonema, Nitzschia and Navicula. Although specific for their extremely good chemical status, the travertine barriers of the Una River are largely inhabited with meso-eutraphentic taxa.

Keywords

diatoms, travertine, biodiversity, morphological approach, metabarcoding, *rbcL*, Una River

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