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P162 Evaluating the use of saline diatom indices for bioassessment through metabarcoding and microscopy in two inland saline lakes (Serbia)

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Diatoms are widely recognized as effective bioindicators of ecological status in aquatic ecosystems, routinely used in biomonitoring. Traditional microscopy-based identification is time-consuming and requires taxonomic expertise, prompting the use of DNA metabarcoding as a faster and complementary or alternative method for bioassessment. This study evaluates the applicability of *rbcL*-based metabarcoding alongside microscopy for the assessment of two Serbian saline lakes—Plava Banja and Pečena Slatina—located in the Pannonian Plain. These lakes host specialized diatom communities dominated by halophilic and halotolerant taxa. To assess their ecological status/potential, two salinity-specific diatom indices were applied: the Diatom Index for Soda Pans (DISP) and the Trait-Based Index (TBI). In Pečena Slatina, both indices yielded comparable values between microscopy and metabarcoding, suggesting methodological consistency. In contrast, results from Plava Banja showed only partial agreement. In both lakes, index values were positioned near the upper end of the scale, indicating good ecological status/potential. However, microscopy consistently included a significantly higher proportion of taxa in index calculations—exceeding 79% in Plava Banja and 90% in Pečena Slatina—compared to 51–65% for metabarcoding. This discrepancy reflects current limitations in reference libraries for saline environments and incomplete trait annotation in molecular datasets, particularly the lack of species-level resolution and ecological or biovolume data. These constraints reduce the robustness of index-based assessments using metabarcoding. While metabarcoding shows promise, its application in saline ecosystems remains limited until gaps in reference libraries and trait coverage are addressed.

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