XVI European Diatom meeting

Murcia, 6–10 July 2026

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Paraninfo / 11:00 – 11:15

T3.6. Diatoms in extreme environments and neglected habitats

SEASONAL DYNAMICS OF BENTHIC DIATOM COMMUNITIES IN SALINE LAKES: A METABARCODING AND MICROSCOPY APPROACH

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Benthic diatoms play a crucial role in nutrient cycling and serve as sensitive indicators of environmental change in lake ecosystems, yet their seasonal dynamics remain relatively understudied compared to phytoplankton. In this study, we examined seasonal changes in benthic diatom communities in two saline lakes in Serbia, Plava Banja and Pečena Slatina, using metabarcoding and microscopy across three seasons (spring, summer, and autumn) during 2023 and 2024.

Seasonal variation in environmental conditions differed between lakes, showing a strong and significant effect in Pečena Slatina, while the effect in Plava Banja was weak and not statistically significant. RDA analysis with permutation tests for both methods indicated that diatom community composition in Plava Banja was primarily influenced by conductivity, pH, and ammonium, whereas in Pečena Slatina, ammonium was the main driver, followed by conductivity.

Both approaches showed that *Nitzschia* taxa were dominant in spring in Plava Banja, followed by a decrease in summer and autumn, when they were replaced by *Craticula* taxa. This trend slightly differs in Pečena Slatina, with *Nitzschia* taxa being dominant in spring but making a reappearance again in autumn. *Craticula* was nearly absent as a dominant taxa in spring, increased in summer according to metabarcoding, and peaked in autumn in microscopy. *Anomoneis* was consistently detected as dominant by metabarcoding, while microscopy recorded high abundance only in spring 2023.

PERMANOVA revealed significant seasonal variation in diatom community composition across both lakes and methods. Pairwise comparisons across all samples showed that spring communities differed from both summer and autumn, while no differences were detected between summer and autumn.

Overall, these results demonstrate strong seasonal structuring of benthic diatom communities, with consistent seasonal shifts in dominant taxa detected by both

metabarcoding and microscopy, highlighting the importance of these communities for understanding ecosystem dynamics in saline lakes.