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P41: Diatom and bacteria assemblages in saline habitats (Vojvodina, Serbia)

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Soda pans are restricted to the Carpathian Basin and differ from other similar saline waters mainly due to the dominant presence of Na+, HCO3–, and CO32– ions. These shallow and temporary aquatic habitats are inhabited by a number of species that can thrive in extreme environments. In Serbia, saline habitats are rare, endangered, and most common in the territory of Vojvodina. One of the most investigated group of organisms in soda pans is diatoms. Due to ecophysiological plasticity, they can survive and tolerate extreme environmental conditions which gives them a competitive advantage over other algae. Quite the opposite, prokaryotes in saline habitats are not sufficiently studied and data are scarce. Thus, samples from 6 soda pans were collected in March 2021 aiming to determine diatom (microscopic and molecular analysis, 18S rRNA gene) and bacterial community (16S rRNA gene).
Most of the recorded diatom taxa are neutrophilic to alkalibiontic, mostly halophilic, and eutrophic species. The species richness diversity index was the highest in Velika Slatina and Slatina, while it was lowest in Mala Rusanda. The genus *Nitzschia* was one of the most represented and numerous according to morphological analyses (24 taxa, 4 dominant), while molecular analyses indicate 11 different species with low abundances and mainly with unassigned sequences. The biggest discrepancy in these two approaches was observed in Mala Rusanda and Okanj bara. Metabarcoding analysis indicated *Halamphora veneta* as the dominant taxa, while morphological analyses have shown a predominance of *Nitzschia supralitorea* and *Surirella brebissonii* in Mala Rusanda, and *N. austriaca* in Okanj bara.
Estimated richness and alpha diversity indices showed the highest bacterial diversity in Velika Rusanda and Okanj bara, while the lowest richness was in Mala Rusanda. Representatives of the phylum Proteobacteria were detected predominantly in Pečena Slatina, *Bacteroidota* in Velika Slatina, *Actinobacteria* in Okanj bara, while representatives of *Firmicutes* were most abundant in Slatina, Velika Rusanda, and Mala Rusanda. At the genus level, 515 different genera were detected, and some of the most dominant were: *Luteolibacter*, unidentified genera from the family Bacillaceae, *Actibacter*, etc.
Further investigations will be required to overcome the problem of the reference barcoding library incompleteness for halophilic and alkaliphilic species in these habitats and try to reveal the unknown relationship between diatoms and bacteria.