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per riconnettersi alla natura*

Abstract book



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O.6.10 - Assessing the toxigenic potential of cyanobacteria in the Alpine region by combining high-throughput sequencing and metabolomic profiling

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In a recent survey carried out in the Alpine region as part of the Inter-reg Alpine Space Eco-AlpsWater project, we investigated the distribution of cyanobacteria and cyanotoxins in a large number of lakes. Plankton samples were collected monthly at 8 key lakes and 1 to 4 times at 30 additional sites in four countries. Taxonomic identifications and abundances of cyanobacteria were estimated by determining 16S rRNA amplicon sequence variants (ASVs) using high-throughput sequencing and light microscopy, while cyanotoxins were determined using liquid chromatography-mass spectrometry (LC-MS). Overall, in terms of relative abundance, the cyanobacteria showed a widespread presence of Chroococcales (mainly *Cyanobium*

sp.) and, especially in the largest water bodies, *Planktothrix rubescens*. In contrast, consistent pelagic populations of *Tychonema bourrellyi* were observed in the large lakes south of the Alps. The ASVs abundances of *P. rubescens* and *T. bourrellyi* showed a high correlation with microcystin and anatoxin-a concentrations, demonstrating a high consistency of the results obtained by HTS and metabolomic profiling. Overall, the results of the study showed a high capability of HTS to estimate the relative abundances of toxigenic cyanobacteria and their toxigenic potential.