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Contributi innovativi dell'oceanologia e della limnologia alla
conoscenza, al recupero e alla salvaguardia delle risorse
acquatiche minacciate dai cambiamenti globali

Strumenti e approcci innovativi nelle scienze acquatiche in un
mondo che cambia

Patterns of geographical distribution of toxigenic cyanobacterial species and oligotypes in the perialpine lake district

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Eco-AlpsWater (EAW) is a major European project co-financed by the European Regional Development Fund (ERDF) through the Interreg Alpine Space program (www.alpine-space.eu/projects/eco-alpswater). The aim of the initiative is to integrate traditional water monitoring approaches implemented in the Alpine region and in Europe (Water Framework Directive-WFD) with high throughput sequencing technologies (HTS). In this work we will present the rationale and results obtained in the Italian hydrographic network, with a focus on large subalpine lakes and cyanobacterial communities determined on samples collected in pelagic areas and rocky-shore biofilms (Lake Garda). Overall, the pelagic and biofilm samples showed distinct communities, with only a few shared species and oligotypes (amplicon sequence variants) mostly belonging to the Chroococcales. One of the most widespread pelagic species in the Italian district and the whole Alpine region was *Planktothrix rubescens*. In contrast, *Tychonema bourrellyi* showed consistent populations only in the southern subalpine lake district. The normalized DNA sequence abundances of these two species were highly correlated with the microcystin and anatoxin-a concentrations, demonstrating a high consistency of the results obtained by HTS and metabolomic profiling, and a high ability of HTS to predict the toxigenic potential due to the production of hepatotoxins and neurotoxins in inland waters.