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Esperienze e approcci innovativi per la conoscenza e la salvaguardia degli
ecosistemi acquatici

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Occurrence of cyanobacterial toxins in freshwaters of the Alpine region

Leonardo Cerasino (1)*, Adriano Boscaini (1), Camilla Capelli (2), Fabio Lepori (2), Giorgio Franzini (3), Chiara Zampieri (3), Federica Giacomazzi (3), Rainer Kurmayer (4), Maša Zupančič (5), Tina Eleršek (5), Nico Salmaso (1)

(1) Research and Innovation Centre, Fondazione Edmund Mach (FEM), via E. Mach 1 - San Michele all'Adige, Italy.

(2) Institute of Earth Sciences, University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Via Flora Ruchat-Roncati 15 - Mendrisio, Switzerland.

(3) Regional Environmental Agency of Veneto (ARPAV), Via Ospedale Civile 24 - Padova, Italy.

(4) Research Dep. of Limnology, University of Innsbruck, Mondsee Straße 9 - Mondsee, Austria.

(5) Department of Genetic Toxicology and Cancer Biology, National Institute of Biology (NIB), Večna pot 111 - Ljubljana, Slovenia.

* email corresponding author: leonardo.cerasino@fmach.it

Different genera of freshwater cyanobacteria have the ability of producing toxic metabolites (cyanotoxins). Massive proliferation of these organisms can lead to harmful concentration of toxins in the water. An increase in frequency, magnitude and duration of harmful blooms has been documented globally in the last decades. It is therefore important to gather information about the occurrence of these contaminants in order to understand their geographical spread. The distribution of cyanotoxins in freshwater bodies of the alpine region was investigated in the frame of the "EcoAlps-Water" project, funded by the European Interreg Alpine Space Program. The sampling was conducted in lakes and rivers of Austria, Italy, Slovenia and Switzerland using uniform protocols. Both pelagic and benthic samples were sampled. Toxins' analysis was conducted in a reference laboratory (at the Fondazione Edmund Mach) using LC-MS/MS methodologies, able to distinguish the different classes of toxic compounds: hepatotoxic microcystins, neurotoxic anatoxins and saxitoxins, cytotoxic cylindrospermopsins. The investigation revealed the presence of cyanotoxins in the majority of investigated lakes, with microcystins being the most represented. Moreover, anatoxins were found in a few water bodies. In conclusion, cyanotoxins represent an additional risk that lakes of the Alpine Space region are facing. Constant attention to this issue must therefore be paid because global climatic changes and other local anthropogenic pressures can synergistically increase the risk of high cyanotoxins levels.

Preliminary data on the effectiveness of fish passages from Toce River, the second largest tributary to Lago Maggiore

Mattia Iaia (1), Stefano Brignone (1), Armando Piccinini (2), Andrea Voccia (1), Tommaso Righi (1), Maurizio Odicino (1), Laura Saccardi (1), Vanessa De Santis (1), Tommaso Righi (1), Cesare Puzzi (3), Andrea Tersigni (3), Andrea Casoni (3), Pietro Volta (1)

(1) CNR-IRSA, Corso Tonolli 50, 28922, Pallanza

(2) Biomark, LLC 705 S. 8th St. Boise, ID 83702, USA

(3) G.R.A.I.A. srl, via Repubblica 1, 21020, Varano Borghi

* email corresponding author: iaiamarble90@gmail.com

River fragmentation by dams and weirs is a major threat to riverine fish populations, as it prevents fish from migrating to spawn, feed or reach preferred habitats. The restoration of river connectivity mainly through the creation of fish passages or by-pass channels is one of the main goals of the EU environmental policies and it has been carried out since at least three decades supported by local, regional and European funds. Data on fish passages effectiveness are however scarce and most of them are not publicly and easily accessible. To assess the effectiveness of two fish passages realized in 2020 within the LIFE15NAT/IT/000823 IdroLIFE Project in correspondence of two dams located in the middle and upper reaches of the Toce River, antennas for the detection of Passive Integrated Transponders (PIT) tags have been settled within the two