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BOOK OF ABSTRACTS

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Hyporheic zone and resilience in intermittent mountain streams

Author(s): Maria Cristina Bruno (1); Alberto Doretto (2); Stefano Fenoglio (3) & Alex Laini (4)

Affiliation(s): (1) Research and Innovation Centre, Fondazione Edmund Mach, San Michele all'Adige, Italy; (2) Department of Life Sciences and Systems Biology, University of Turin, Turin, Italy; (3) Department of Science and Technological Innovation, University of Piemonte Orientale, Alessandria, Italy; (4) Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Parma, Italy.

Presenting author: Maria Cristina Bruno

In Northern Italy, alpine and perialpine streams are facing an intensification in magnitude, frequency and timing of droughts due to the combined effects of global and local pressures. These aquatic ecosystems are changing from perennial to intermittent systems with possible but still largely unknown detrimental ecological effects. In this context, a great attention has been paid on the response of stream invertebrates because of their importance in terms of biomass, diversity, and functionality. We investigated the impacts of droughts in low order systems that have recently become intermittent in the Po River watershed (NW Italy), focusing on the biotic exchange between the benthic and hyporheic habitats occurring over different time scales. A first site was selected the headwaters of the Po River (Piedmont) with two stations (one perennial, one intermittent) with piezometers installed in the riverbed, instrumented with temperature and pressure dataloggers, where we monitored two supraseasonal droughts over a period of two years (2017-2019) over a large time scale (sampling conducted approximately monthly during. A second site was chosen in the Po Valley, where during a drought event in summer 2018we monitored at short-time intervals (3-4 days) three Apenninic tributaries of the Po River with a gradient of intermittence. The composition, abundance, functional groups of meio- and macro-invertebrates collected in the hyporheic habitat showed which faunistic components used of the hyporheic zone as a refuge from drought, and its role to increase the resilience/resistance of the aquatic system. In general, we observed a loss of taxa susceptible to drying rather than a replacement of perennial-flow specialists with intermittent-flow specialists along flow intermittence gradients. This work was realized within the framework of the Project of national interest (PRIN) NOACQUA Risposte di comuNità e processi ecOsistemici in corsi d'ACQUA soggetti o intermittenza idrologica"--codice 2O1572HW8F, funded by the Italian Ministry of Education, University and Research."