

ARTIFICIAL STREAMS FOR STUDYING THE RESILIENCE OF BENTHIC ASSEMBLAGES TO DROUGHT: A CASE STUDY FROM FERSINA RIVER BASIN (TRENTO, NE ITALY)

A. DORETTO¹, F. BONA², E. FALASCO³, E. PIANO⁴, S. FENOGLIO⁵, M.C. BRUNO⁶

¹DBIOS, Università degli Studi di Torino, Torino, Italy, alberto.doretto@unito.it

²DBIOS, Università degli Studi di Torino, Torino, Italy, francesca.bona@unito.it

³DBIOS, Università degli Studi di Torino, Torino, Italy, elisa.falasco@unito.it

⁴DBIOS, Università degli Studi di Torino, Torino, Italy, elena.piano@unito.it

⁵DISIT, Università del Piemonte Orientale, Alessandria, Italy, stefano.fenoglio@uniupo.it

⁶Edmund Mach Foundation, San Michele all'Adige, Italy, cristina.bruno@fmach.it

The hydrological alteration of flow regime due to the combined effects of global warming and increased water abstraction represents nowadays one of the major threats to streams and rivers. Many lotic ecosystems, especially in alpine areas, are shifting from perennial to intermittent, due to the increased frequency and intensity of drought events. As a consequence, negative effects are expected on the benthic communities, which degree of resilience depends on the species-specific adaptations and the availability of in-stream refugia (for example, persistent pools). Despite the scientific relevance of this topic, accurate field studies involve several logistic and theoretical difficulties for freshwater ecologists. As pointed out by many authors, in order to provide generalizable results, future research on these topics should include a more quantitative approach. However, this is very difficult to achieve, because droughts are usually unpredictable, and also several confounding factors can interfere with the assessment of the sampling design. In this context, the use of artificial streams may represent a remarkable tool to study this type of disturbance. In fact, they allow to simulate and replicate drought events, varying their duration and extent in a manipulative and experimental way. In this study, the post-drought recovery pattern of benthic communities (both macroinvertebrates and diatoms) was investigated for three weeks after a 5-day drought, in relation to the presence of instream refugia (i.e. remaining pools). The innovative aspect of the research was the experimental setting, represented by four artificial streams (20 m long, 30 cm wide and 30 cm deep) directly fed by a second-order, pristine alpine stream (Fersina, Trento, NE Italy). This poster illustrates the preliminary results of this study.