S.It.E. - Società Italiana di Ecologia

SItE 2017

XXVII Congresso Nazionale della Società Italiana di Ecologia

La ricerca ecologica in un mondo che cambia

Libro degli Abstract

12-15 Settembre 2017
Complesso di SS. Marcellino e Festo,
Largo San Marcellino 10, Napoli

Università degli Studi del Sannio

Università degli Studi della Campania Luigi Vanvitelli

ARTIFICIAL STREAMS FOR EVALUATING THE RESILIENCE OF BENTHIC INVERTEBRATE COMMUNITIES TO DROUGHT IN ALPINE AREAS (FERSINA RIVER BASIN, TRENTO, NE ITALY)

Bruno M.C.[1], Doretto A.[2], Bona F.[2], Piano E.[2], Macchi F.[1], Maule A.[2], Saglietti A.[3], Fenoglio S.[2]

[1] Fondazione Edmund Mach - Centro Ricerca e Innovazione
[2] Dipartimento di Scienze della Vita e Biologia dei Sistemi, Università degli Studi di Torino
[3] Dipartimento di Scienze ed Innovazione Tecnologica. Università degli Studi del Piemonte Orientale

In temperate streams, macroinvertebrate distribution in the riverbed is strongly related to the variation of CPOM availability, and leaf breakdown studies have recently been used to assess the functional integrity of streams at the ecosystem level. Over the last decades, alpine streams have been shifting from permanent to temporary systems due to the combined effects of global change and human pressures, and droughts are at present one of the most relevant threats for these lotic ecosystems. However, the impacts of droughts on aquatic communities and ecosystem processes have been poorly assessed through field studies, because drying conditions in alpine areas are usually unpredictable and mixed with several co-occurring confounding factors. Hence, we used a set of semiartificial flumes where each variable can be precisely isolated and manipulated. We investigated the effects of droughts of different length on leaf breakdown and on macroinvertebrates functional feeding groups (FFG) abundance and composition in an Alpine non-glacial stream. We simulated a 20 days drought-rewetting-drought cycle in one flume, and a 60 days drought in a second flume, collecting every 20 days from 20 October 2016 (20 days pre-simulation) to 30 January 2017 (20 days post simulation). We deployed 50 packs of 3.0 ± 0.1 g leaves of European beech in each flume, and collected 10 leafpacks randomly on each sampling occasion. We sorted and identified all the benthic invertebrates, and classified them as FFG. The leafs were then used to calculate leaf pack mass loss, and nitrogen and carbon contents. Results show that droughts cause a delay in leaf matter degradation and a decrease in the abundance of all FFG, and that the interruption of the drought with a rewetting period does not have any mitigation effect. Hydrological intermittence significantly slows the input of allochthonous organic matter into the system, and alters the functional feeding group assemblages.