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BOOK OF ABSTRACTS

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Streams fed by active rock glaciers: habitat, biota and conservation value

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In the present deglaciation scenario, the influence of mountain permafrost, which is shrinking at lower rates than glaciers, on Alpine stream ecosystems, is quickly increasing.

We present a research conducted in the European Alps (Solda Valley, Italy), aimed at characterising the habitat and biota of streams fed by active rock glaciers, evident form of mountain permafrost.

We compared the habitat conditions and zoobenthic communities of rock-glacial streams with those of groundwater- and glacier-fed streams, and recorded a unique habitat setting, with stable streambed and clear waters influenced by permafrost (constantly cold water [lt]1.5°C, high electrical conductivity and high concentrations of major ions and trace elements). The composition, abundance, biomass and diversity of invertebrate communities were comparable to those of non-glacial reaches, but included also cold-stenothermal species.

Thus, rock glacial streams may be considered as a unique alpine stream habitat, shaping the hydrochemistry, biodiversity and ecosystem functions of deglaciating catchments. They may act as stepping stones for the colonisation of upstream reaches, and simultaneously act as refuge areas for cold-stenothermals under increasing water temperature conditions in downstream reaches. These so far underinvestigated stream type therefore hold high conservation value, and should be the focus of research and conservation priorities in the extant state of increased exploitation of mountains by human activities, and changes in hydrology due to climate change.