

Influence of the predator *Salmo trutta trutta* on the habitat preference, community structure and growth rate of a *Cottus gobio* population

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The bullhead *Cottus gobio* is a small-sized fish widespread over most of the European continent and listed in Annex II of EU Habitats Directive for its great conservation interest. In the last decades bullhead populations suffered a widespread decline, so the species is classified as potentially endangered. Among the factors linked with this decline there are chemical pollution, habitat deterioration, and the massive introduction of salmonids. This study aims to better understand in which way the presence of the predator *Salmo trutta trutta* affects *Cottus gobio* populations. The investigation was carried out in two sites of the Nossana stream, a groundwater-fed watercourse located in the Serio catchment (Orobian Alps, Italy). The downstream site hosts a fish community constituted by both bullhead and brown trout while in the upstream site there are only bullheads. An insurmountable barrier isolates the upstream population of *C. gobio* from salmonids, while the other and environmental characteristics of the two sites are fully comparable. We evaluated the community structure, the habitat preference and the body condition of bullhead populations. The results indicate that the presence of trout decreases the abundance of younger bullheads, reduces the average adult body size and induces a bullhead suboptimal habitat occupation.

Desilt or not desilt? The effects of a sediment flushing on Alpine macroinvertebrate communities

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Sediment flushing from dams is a prescribed practice to desilt reservoirs; it helps restoring longitudinal sediment transfer continuity in rivers, but it also leads to negative ecological impacts. The Val Pusteria dam is periodically flushed into the Rienz River, in South Tyrol (NE Italy). We monitored a flushing event conducted from 27th May to 14th June 2019 by collecting macroinvertebrates 10 days before, and then 40 and 74 days after the completion of the operations and recording turbidity was recorded continuously for the entire duration of the event. We selected seven biological traits related to organism size, life cycle duration, mobility (dispersal and locomotion), feeding type, substrate and current velocity preference to characterize and compare the invertebrate communities before and after the sediment pulse disturbance. Invertebrate assemblages taxonomic richness and Shannon diversity decreased 40 days after the event, but density and richness recovered over time. Shifts in species composition were observed in post flushing samples, with a reduction in density of sensitive species and shredders. Post-flushing samples were generally characterized by sediment-tolerant taxa, able to cope with the new habitat conditions. Altered taxonomic and functional community composition following the flushing prevented the full functional recovery to pre-disturbance conditions.