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Esperienze e approcci innovativi per la conoscenza e la salvaguardia degli ecosistemi acquatici

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Switzerland). Both hatchery and wild fish were tagged with Passive Integrated Transponders (PIT) tags and released upstream and downstream a submersible monitoring antenna, anchored to the streambed in a pass-over orientation. The number of fish detected daily by the antenna (divided between fish released upstream and downstream the antenna) was analyzed in relation to the daily water discharge, to search for similar patterns in their fluctuation over time. Only the movement of fish released upstream the antenna displayed a significant relationship with water discharge, with the highest number of fish detected during periods of high-water flow, occurring after heavy rains. No significant relationship was found with fish released downstream the antenna. High-water discharge events were probably the main reason behind the steep decrease in hatchery trout abundance over time in our study site. Such events contributed to the poor effectiveness of restocking actions in this small tributary, providing further evidence against stocking strategies based on subadult/adult fish.

Moving waters: mitigating hydrological alterations while increasing hydropower production, a case study from the Italian Alps

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We assessed the effect of a pronounced hydropeaking reduction on a 10-km reach in the upper course of the Noce Stream (NE Italian Alps). The water released by Cogolo-Peio storage hydropower created daily and subdaily hydropeaks, which increased the discharge from 1 to 7 m3sec-1 in about 10 minutes. The mitigation measure, based on the diversion of water from the storage plant release channel directly into the intake of three small Run-of-the-River hydropower plants operating intermittently and in series, constructed in 2015, which released the hydropeaks downstream of the confluence with a major tributary. The application of a recently-proposed set of hydropeaking indicators, the hydraulic analysis of the propagation of the hydropeaking wave, together with the assessment of changes in biological data, allowed quantifying the effectiveness of hydropeaking mitigation. Although hydropeaking was largely mitigated, the macrobenthic communities did not show the taxonomic and functional recovery to a composition typical of more natural flow regimes. Conversely, the hyporheic communities showed an increase in diversity and abundance of interstitial taxa, especially those exclusive to the hyporheic zone. These effects were due to the positive (reduced shear stress and clogging) and negative (increased pollutants concentration) effects of the mitigation measures.