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Commentary

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Nature and characteristics of benthivores fish and its benefits

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DESCRIPTION

The prey selectivity of fish is highly dependent on predator characteristics. Preferred prey traits may differ between visual predators (e.g., drift-feeding salmonids) and more invisible predators (e.g., benthic predators). By analyzing macro invertebrate communities and prey of gudgeons (Gobio gobio) and wolves (Barbatula barbatula) in two small sub mountain rivers, the five prey characteristics and prey choices of small demersal fishes were investigated. We assessed the explanatory power of long-term prey abundance. Fuzzy principal component analysis and selectivity index indicated that the fish were feeding selectively. Prey size and feeding type were the most predictive of fish diet variables, followed by average abundance, while microhabitat preferences, migration modes, and flowpreferences were less important. Fish preferred prey that favored small, consistently abundant prey, herbivores, and sediment.

Larger game and shredders were avoided. The selection patterns of both fish species differed from those of visual fish predators, but were very similar. Supportively, somewhat more visually feeding gudgeons than purely nocturnal loaches were somewhat more selective for prey traits and prey resource abundance. to analyze the selectivity of prey clusters. From 1993 to 1997, the effectiveness of fish harvesting as a tool for biomanipulation and recovery was studied in the shallow Lake Pojarampi (North Karelia, Eastern Finland). The external trophic load of this lake waslow and largely stable throughout the study period. Reactions in the prey community were consistent with these changes.Benthic invertebrate biomass increased and zooplankton biomass decreased. At the same time, nutrients and chlorophyll a Concentration decreased. The P-ratio also indicated that nutrient cycling in the lake was reduced, making the lakemore oligotrophic despite increased predation by herbivorous zooplankton. Aquatic systems worldwide face increasing challenges related to rising Greenhouse Gas (GHG) emissions, eutrophication, and drastic changes in fish community composition. It is known that benthic fish can influence the biogeochemistry of sediments and water columns, but few studies have shown a causal relationship. Here, we used a mesocosmic approach with mesokoi (Cyprinus carpio) to reveal the effects of bioturbation on greenhouse gas and nutrient dynamics. We hypothesize that fish bioturbation reduces methane (CH_4) emissions and increases carbon dioxide (CO_2) emissions through increased sediment oxygenation. In addition, decreased phosphorus (P) mobilization was expected due to increased binding of iron (III) (Fe_3 $^+$) to sediment oxygenation. At the same time, however, increased aerobic decomposition increased CO_2 emissions and increased total GHG emissions. Contrary to our hypothesis, we found no evidence of bioturbation affecting P mobilization from sediments. This is probably due to the already high P-bonds in the control treatment due to the high pressure water Flow.We conclude that fish bioturbation has a strong impact on her GHG emissions, as increased overall removal rates offset decreased CH_4 emissions. Depending on the pore water as for the P ratio, benthic fish can further reduce P mobilization. Most species disperse and their diets are not positively correlated with environmental food abundance. This indicates that the most commonly consumed macro invertebrates are not the most abundant in the environment.