

University of South Bohemia in České Budějovice
Faculty of Science

**Different effects of planktonic invertebrate predators and fish
on the plankton community in experimental mesocosms**

RNDr. Thesis

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Annotation

The impact of fish and cyclopoid copepod predation on zooplankton communities was evaluated using large-volume mesocosms (depth 9.5 m; volume 13 m³) in the Římov reservoir (Czech Republic). Two yearling roach and perch individuals introduced into mesocosms represented the fish treatment, which was compared to cyclopoid copepods (initial abundance of 2 ind.L⁻¹) and a control with no initial addition of predators. Our results clearly support the hypothesis that planktivorous fish feeding leads to the suppression of large-bodied cladocerans. In the presence of fish, the cladoceran community changed from a dominance of large-bodied *Daphnia* spp. at the beginning to dominance by the smaller *Bosmina longirostris* at the end of the experiment. The overall strong effect of fish over cyclopoid predation suggests the main role of fish predation in the forming of zooplankton communities and in turn impacting phytoplankton biomass in mesocosms.

Declaration [in Czech]

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Co-author agreement

The co-author Mojmír Vašek fully acknowledge that Michal Šorf is the first author of this publication. Michal Šorf was responsible for field sampling, zooplankton samples processing, statistical analyses and writing the manuscript.

Mojmír Vašek

Different effects of planktonic invertebrate predators and fish on the plankton community in experimental mesocosms

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Abstract

The impact of fish and cyclopoid copepod predation on zooplankton communities was evaluated using large-volume mesocosms (depth 9.5 m; volume 13 m³) in the Římov reservoir (Czech Republic). Two yearling roach and perch individuals introduced into mesocosms represented the fish treatment, which was compared to cyclopoid copepods (initial abundance of 2 ind.L⁻¹) and a control with no initial addition of predators. Our results clearly support the hypothesis that planktivorous fish feeding leads to the suppression of large-bodied cladocerans. In the presence of fish, the cladoceran community changed from a dominance of large-bodied *Daphnia* spp. at the beginning to dominance by the smaller *Bosmina longirostris* at the end of the experiment. Chlorophyll-a concentration and rotifer abundances increased in the absence of daphnids. In the absence of fish, the presence of large-bodied cladocerans resulted in decreasing chlorophyll-a concentration. Although no significant differences were observed between cyclopoid abundances in treatments stocked with cyclopoids and the control, the proportion of large cladocerans clearly showed the effect of the manipulation. The similar trends in both these treatments did not confirm the importance of cyclopoid predation in our experiment. The overall strong effect of fish over cyclopoid predation suggests the main role of fish predation in the forming of zooplankton communities and in turn impacting phytoplankton biomass in mesocosms.

Key words: predation, zooplankton, perch, roach, mesocosms

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