



## Consequences of fish predation, migration, and juvenile ontogeny on zooplankton spring dynamics

Hansson, Lars-Anders, Alice Nicolle, Jakob Brodersen, Pia Romare, P. Anders Nilsson, Christer Brönmark, Christian Skov

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**ABSTRACT:** In order to disentangle if and when resource supply and adult and young-of-the-year (0+) fish predation affect zooplankton dynamics during spring, we monitored zooplankton during three consecutive years in a lake in southern Sweden. We also experimentally assessed 0+ fish predation rates and estimated changes in predation rates of adult fish on zooplankton. Decline in abundances of large-sized zooplankters in early spring was not caused by 0+ fish predation. Instead, this decline was most likely a combined result of size-selective predation from adult fish (stationary in the lake and from those returning from surrounding streams) and competition for diminishing algal food resources. On the other hand, the decline in medium-sized zooplankton in the lake during spring was strongly affected by 0+ fish. Hence, during spring, zooplankton are facing predation both from adult fish selecting large prey and from 0+ fish, which start feeding on small-sized prey and eventually switch to larger. Neither predation by different ontogenetic stages of fish (adult and 0+) nor resource supply shape the zooplankton spring dynamics, but rather they affect the timing and strength of these events. 0+ cyprinids tend to have stronger effect on zooplankton dynamics than other taxa of 0+ fish. A combination of predation from adult and 0+ fish during spring is the main mechanism behind the crash of the zooplankton community, which in many lakes leads to the termination of the clear-water phase.

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