



Examining shifts in zooplankton community as a response of environmental change in Lakes

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We examined 20 years of zooplankton samples from Harp Lake for shifts in zooplankton variability following invasion by zooplankton predator *Bythotrephes longimanus*, using organism body size—as measured at high resolution by Laser Optical Plankton Counter (LOPC)—as the primary metric of investigation. A period of transitory high variability in the 2yr post-invasion was observed for both body size compositional variability and aggregate variability metrics, with both measures of variability shifting from low or intermediate to high variability immediately following invasion, before shifting again to intermediate variability, 2 yr post-invasion. Aggregate and compositional variability dynamics were also considered in combination over the study period, revealing that the period of transitory high variability coincided with a shift from a community-wide stasis variability pattern to one of asynchrony, before a shift back to stasis 2 yr post-invasion. These dynamics were related to changes in the significant zooplankton species within the Harp Lake community over the pre- and post- invasion periods, and are likely to be indicative of changes in the stability in the zooplankton community following invasion by *Bythotrephes*. The dual consideration of aggregate and compositional variability as measured by LOPC was found to provide a valuable means to assess the ecological effects of biological invasion on zooplankton communities as a whole, extending our knowledge of the effects of invasion beyond that already revealed through more traditional taxonomic investigation.