

Seasonal effects of variable recruitment of a dominant piscivore on pelagic food web structure

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Abstract

Piscivorous fish play an important role in regulating lake food web structure. However, most ultimately piscivorous fish pass through a period of planktivory before becoming piscivorous. In 1993 and 1994, two large cohorts of young-of-the-year largemouth bass (*Micropterus salmoides*) were recorded in Paul Lake, Michigan. The 1993 and 1994 cohorts were the largest recorded in data extending back to 1984 and occurred during a period in which adult and juvenile bass biomass was low. In 1993, consumption of large-bodied zooplankton by the young-of-the-year cohort eliminated large-bodied cladocerans by the middle of August. As large cladocerans declined, small cladocerans, especially *Bosmina longirostris*, increased. By early September the biomass of *B. longirostris* was similar to that of the entire cladoceran community in previous years. Coincident with the shifts in the cladoceran community were increases in epilimnetic Chl *a* concentrations $<35 \mu\text{m}$. However, total epilimnetic Chl *a* did not increase. In contrast, the 1994 cohort had no discernible effect on pelagic food web structure because production of large-bodied zooplankton rapidly exceeded predation. Our results show the potential for large cohorts of piscivorous fish to affect food web structure, at a seasonal scale, through intense planktivory.