

***BOSMINA LONGIROSTRIS* ANTENNULE MORPHOLOGY AS AN INDICATOR OF INTENSITY OF PLANKTIVORY BY FISHES**

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ABSTRACT

Analysis of cladoceran fossil remains from sediment cores from two suites of lakes—Tuesday, Paul, and Peter lakes in the Upper Peninsula of Michigan and the Herring River chain of lakes on Cape Cod, Massachusetts—reveals a high incidence of the *cornuta* form of *Bosmina longirostris*. This form is characterized by having relatively short, extremely down-curved or down- and out-curved antennules, as opposed to the normal *Bosmina* morphology of relatively long and slightly curved antennules. *Cornuta* form constitutes on average 36% of *Bosmina* remains accumulated in sediments for the period 1944–1987 in minnow (*Phoxinus eos*, *P. neogaeus*) dominated Tuesday Lake. Two periods of low percent *cornuta* form coincide with known fish manipulations that resulted in reduced planktivory by minnows and increased invertebrate predation. An earlier coincidence of low percent *cornuta* form with decreased planktivory is inferred. In bass dominated Paul and Peter lakes, *cornuta* form *Bosmina* remains occur in sediments from periods when minnows invaded these lakes. *Bosmina* remains, of which 20–50% are *cornuta* form, dominate surface sediments from the Herring River chain of lakes, which are connected to the Atlantic Ocean and frequented by alewife (*Alosa pseudoharengus*), an obligate planktivore. Analysis of a sediment core from Gull Pond, the furthest from the sea, shows that *cornuta* form is common only after European settlement when modifications of channels connecting the lakes to the sea may have enhanced alewife migration inland. *Cornuta* form *Bosmina* is correlated with high planktivory in seven lakes from two different geographic areas and over time spans of decades to centuries. *Cornuta* form *Bosmina* may, therefore, be a useful indicator of high planktivory in both paleolimnological and neolimnological contexts.