

# Research Monitoring of the Lake Michigan Ecosystem

**Primary Investigator:** Steve Lozano - NOAA GLERL

This project was completed in 2002

## Background

The Laurentian Great Lakes are one of the most highly “managed” ecosystems in the world. In order to be effective, management decisions must be based on sound scientific data, and for this reason, GLERL has maintained a long-term monitoring program for Lake Michigan for the past 13 years. In past years, the primary objective of this project was to monitor and assess the health of the Lake Michigan ecosystem by examining long-term food web dynamics and indicators of water quality in order to understand and predict natural and anthropogenic causes of variability.

## 2002 Accomplishments

This year all previously collected environmental data sets were placed in a single location on the in-house GLERL web site (see products listing below).

## Prior Accomplishments

The environmental factors that influence the abundance and success of Mysis, Bythotrephes, and larval fish were monitored from 1998-2001. Some of these findings were published (see below). A large number of archived zooplankton samples were counted and entered into spreadsheets. Zooplankton samples were searched for new (and expected) planktonic invaders, climate-variation effects, and tumors. The research papers and data sets that will be put on the GLERL web site provide an excellent summary of temporal changes in biological and environmental variables from 1984-2002 in southern Lake Michigan.

## Products

GLERL in-house data web site: includes data for zooplankton (1984-2001), benthos (1962-1994), and nutrients (1994-2000).

Pothoven, S.A., G.L., Fahnenstiel, H.A., Vanderploeg . 2001. Population dynamics of *Bythotrephes cederstroemii* in south-east Lake Michigan 1995-1998. *Freshwater Biology* 46: 1491-1501.

Pothoven, SA, G.L., Fahnenstiel, H.A., Vanderploeg, M., Luttenton. 2000. Population dynamics of *Mysis relicta* in southeastern Lake Michigan, 1995-1998. *J. Great Lakes Res.* 26: 357-365.

Bridgeman, TB, G., Messick, H.A., Vanderploeg. 2000. Sudden appearance of cysts and ellobiopsid parasites on zooplankton in a Michigan lake: a potential explanation of tumor-like anomalies. *Can. J. Fish. Aquat. Sci.* 57 (8): 1539-1544.

Omair, M., H.A. Vanderploeg, D. J. Jude, and G.L. Fahnenstiel. 1999. First observations of tumor-like abnormalities (exophytic lesions) on Lake Michigan zooplankton. *Can. J. Fish. Aquat. Sci.* 56: 1711-1715.

Fahnenstiel, G.L., A. E. Krause, M.J. McCormick, H.J. Carrick, and C. L. Schelske. 1998. The Structure of the Planktonic Food-Web in the St. Lawrence Great Lakes. *J. Great Lakes Res.* 24(3):531-554.