Spiny waterflea (*Bythotrephes longimanus*)

**Background and Introduction**

This predatory cladoceran zooplanktor, commonly known as the spiny waterflea [formerly identified as *Bythotrephes cederstroemi*], is a crustacean (a relative of crayfish and shrimp). A native of the Ponto-Caspian region of Eastern Europe and Western Asia, *Bythotrephes* was first found in North America in December 1984 in Lake Huron. Spread through the Great Lakes was rapid, with the species being found in Lake Ontario in September 1985, Lake Erie in October 1985, Lake Michigan in September 1986, and Lake Superior in August 1987. This species is believed to be an international shipping ballast water introduction. Its rapid spread throughout the lakes most likely is the result of currents, inter- and intra-lake ballast transfers, and recreational boating on the lakes.
Spiny waterflea distribution, red marks infested areas.

**Biology and Impacts**

*Bythotrephes* is planktivorous, consuming up to 20 prey zooplankters per day. One major target species of *Bythotrephes* is *Daphnia* (another small water flea). Research has shown that a dramatic decrease in *Daphnia* abundance coincided with the introduction of *Bythotrephes* in Lake Michigan. Density of a native predatory zooplanktor, *Leptodora*, also dropped off coincident with the appearance of *Bythotrephes*, possibly because *Bythotrephes* was outcompeting it for *Daphnia*. It has been theorized that declines in the abundance of *Daphnia* and other *Bythotrephes* prey may alter the food web in the Great Lakes, reducing the number of young plankton-eating fish which survive their first year. Researchers have observed that chinook salmon, walleye, white bass, alewife, yellow and white perch, emerald and spottail shiner, and lake whitefish consume *Bythotrephes*. It is not known, however, how nutritional this water flea is for fish, given the amount of its mass made up by exoskeleton and the long
It is too soon to know the ultimate impact of *Bythotrephes* on Great Lakes ecosystems. If the water flea is found to be a preferred (and nutritious) food source for perch and other fishes, its impact on fish populations may be beneficial. If predation by *Bythotrephes* results in reduced populations of preferred prey, such as *Daphnia*, the water flea may result in negative consequences to native Great Lakes fish populations. It has been theorized that the decline of alewife in Lakes Ontario, Erie, Huron, and Michigan may be related to the introduction of *Bythotrephes*.

*Observations of spiny waterflea in NY in iMapInvasives. Green circles are confirmed observations, yellow circles are unconfirmed observations, and orange squares are approximate observations. Map: imapinvasives.org/nyimi/*