



Lake Carriers' Association

Thermocyclops crassus Great Lakes Fact Sheet

Means of Introduction to the Great Lakes: Unknown

Date of Introduction to the Great Lakes: Unknown

First known Occurrence in North America: 1991 in Lake Champlain

A non-native species of zooplankton, *Thermocyclops crassus* (*T. crassus*), has been identified in the western basin of Lake Erie, according to the Environmental Protection Agency and researchers from Cornell University.

The best current evidence **does not point to ballast water discharges in the past decade** as the most likely reason for the recent discovery of *T. crassus*. However, without any supporting scientific data or research to back their claims, the National Wildlife Federation and the Alliance for the Great Lakes have been quick to blame ballast water, particularly recent discharges from foreign vessels, as the vector of introduction.

T. crassus

- *T. crassus* is a species of zooplankton found widely in Eastern Europe, Asia, Africa, and Australia.
- *T. crassus* was first identified in U.S. waters in Vermont's Lake Champlain in 1991. How it arrived in Lake Champlain, a waterway without direct links to international commercial maritime transportation that receives no ballast water discharges, is uncertain.
- Means of introduction to the Great Lakes is unknown.
 - Potentially brought via the St. Lawrence Seaway, canals, ballast water, or overland by recreational vessels.
- *T. crassus* is nearly identical to an abundant native zooplankton species, *Mesocyclops edax*

(*M.edax*) (U.S. Geological Survey, EPA).

- Because of its similarity to *M. edax*, *T. crassus* was possibly present in the Great Lakes and overlooked for years.
 - Researchers are now returning to past specimens to see if it was missed.
- If *T. crassus* entered the Great Lakes via ballast water, it is possible, and even probable, that it occurred before regulations were made more stringent in 2006, and remained undetected for more than a decade (U.S. Geological Survey).
 - Study of transoceanic ships entering Great Lakes from 2001 to 2002 found one *T. crassus* in the sediment of the ballast water tank of one foreign ship.
 - U.S. Geological Survey: “If this species invaded (the Great Lakes) via ballast water, it may have done so prior to regulatory changes in 2006 and remained undetected for a decade or more.”
- *T. crassus* is extremely salt water sensitive; it can’t survive a salinity count above 7 parts per thousand (ppt).
 - Current regulations created in 2006 stipulate that oceangoing vessels must flush their ballast tanks mid-ocean with saltwater.
 - This salt water flushing results in a salinity level of 30 ppt, much too high for *T. crassus* to survive.
- *T. crassus* prefers warm waters around 77 degrees and cannot reproduce in temperatures below 50 degrees, which greatly limits its ability to thrive or even survive in Great Lakes.
- Vector by which *T. crassus* entered Lake Erie is unknown.-
 - Could have been released with other exotic creatures (i.e. a hobbyist emptying his aquarium into the lake).
 - Could have been picked up by a recreational boat elsewhere and brought to Lake Erie.
 - Could have come from Lake Champlain.
 - To get to western Lake Erie, *T. crassus* would have to move from Lake Champlain through Richeleau River to St. Lawrence River.
 - *T. crassus* would likely not survive high salinity during this journey.
 - It would have to travel through waterways and canals that only recreational boats could travel all the way through.
- Researchers are unlikely to label *T. crassus* an invasive species based on its lack of threat to the Great Lakes (EPA).
 - Unlike invasive species, non-native species do not have an adverse impact on the local ecology.
 - EPA: “The species has not been documented to cause harm, and has not been projected to cause harm in the Great Lakes.”

- EPA: There is no evidence of adverse impact on Lake Champlain ecosystem, and it is considered extremely rare.
- Due to its biological similarity to *M. edax*, *T. crassus* is unlikely to be harmful to the ecosystem.

For more information, contact Thomas Rayburn, LCA's Director of Environmental and Regulatory Affairs, at: Rayburn@lcaships.com or call (440) 333-9994.

About the Lake Carriers' Association

Lake Carriers' Association ("LCA") represents 14 American companies that operate 56 U.S.-flag vessels ("lakers") on the Great Lakes and carry the raw materials that drive the nation's economy: iron ore and fluxstone for the steel industry, aggregate and cement for the construction industry, coal for power generation, as well as salt, sand and grain. Collectively, our members can transport more than 100 million tons of dry-bulk cargo per year and employ more than 1,600 men and women, all of whom are U.S. citizens or legally admitted aliens, and provide annual wages and benefits of approximately \$125 million. In turn, the cargos our members carry generate and sustain more than 103,000 jobs in the eight Great Lakes and have an economic impact of more than \$20 billion.

Additional Resources

U.S. Environmental Protection Agency. "*Thermocyclops crassus* Frequently Asked Questions." <https://www.epa.gov/great-lakes-monitoring/thermocyclops-crassus-frequently-asked-questions>.

U.S. Geological Survey. "*Thermocyclops crassus*." <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=2793>.

U.S. Fish and Wildlife Service. "*Thermocyclops crassus*, Ecological Risk Screening Summary." http://media.mlive.com/news_impact/other/Thermocyclops%20crassus%20ERSS%20reviewed.pdf