



**Great Lakes Protection Fund**

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**Funded Project**

# Assessment of Transoceanic NOBOB Vessels and Low-Salinity Ballast Water as Vectors for Nonindigenous Species Introductions to the Great Lakes

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Project No.	604
Timeline	2000 – 2005
Award Amount	\$1,123,000
Team Leader	Thomas Johengen, University of Michigan, <a href="mailto:Johengen@umich.edu">Johengen@umich.edu</a>
Project Website	<a href="http://www.glerl.noaa.gov/res/Task_rpts/2001/nsreid10-1.html">http://www.glerl.noaa.gov/res/Task_rpts/2001/nsreid10-1.html</a>

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This team provided the first ever characterization of the biological contents of ballast tanks in ships reporting no ballast on board (so-called NOBOB vessels), the first scientific evidence of risks that NOBOB vessels pose, the first assessment of the impact of ballast management practices on the biological and sediment burden in NOBOB vessels, and the first quantitative assessment of the effectiveness of open-sea ballast exchange. Field sampling uncovered at least 32 species of invertebrates, phytoplankton, and microorganisms—six of which currently foreign to the Great Lakes—in sediment at the bottom of 75 ballast tanks. Open-sea experiments tested the effectiveness of ballast water exchange in removing coastal plankton from tanks, comparing test tanks to control tanks aboard the same vessel. These findings illuminated the importance of NOBOB vessels as vectors for the spread of invasive species, and they have resulted in recommendations for all ocean-going ships across the world.