



Great Lakes Maritime Research Institute

*A University of Wisconsin - Superior and
University of Minnesota Duluth Consortium*

A US DOT Designated National Maritime Enhancement Institute

Dedicated to Developing and Improving Economically and Environmentally Sustainable Maritime Commerce
on the Great Lakes through Applied Research



Summary Report

December 2004 - February 2009

Co-Directors: James P. Riehl, Ph.D. and Richard D. Stewart, Ph.D.

Research Highlights

- ✿ Established a **Maritime Education Program for K-12 Teachers, Students and Communities**, with lesson plans and materials reaching K-12 classrooms across the Great Lakes impacting thousands of teachers, students, and community members: [Michigan Technological University](#). Model adopted nationally by the Ship Operations Cooperative Program (SOCP).
- ✿ Assisted in **recruitment for the maritime industry**, working with the [Great Lakes Maritime Academy](#) (MI), SOCP, and regional K-12 schools and youth organizations: [University of Wisconsin-Superior](#) and [University of Minnesota Duluth](#).
- ✿ Developed the **Port Environmental Management System Model and Best Management Practices Guide** to distribute to Great Lakes port authorities to examine port and tenant operations, and provide a tool to small public port authorities for enhancing environmental initiatives: [Purdue University](#) (IN), in conjunction with American Great Lakes Ports Association. Endorsed by industry, Green Marine and EPA. Guide available on [www.glmri.org](#)
- ✿ Developed the **Geographic Intermodal Freight Transport Model** to allow best environmental and economical route selections for freight transportation decisions: [Rochester Institute of Technology](#) (NY).
- ✿ Built a prototype model and tested the **Ballast-Free Ship Design** to eliminate aquatic invasive species in the Great Lakes and US ports: [University of Michigan](#). Along with the environmental benefits, initial tests are showing hydro-dynamic benefits for fuel consumption.
- ✿ Created the Great Lakes Maritime Information Clearinghouse, a **data site for Regional Analysis of Intermodal Freight Flows** in the Great Lakes Region: [University of Toledo](#). The US Army Corps of Engineers is funding the updates to their data on the Great Lake's master dock files.
- ✿ Initiated an **economic analysis of Great Lakes shipping** to provide stakeholders and policy makers with information to support decision making and resource allocation: [University of Minnesota Duluth](#). The goal is to provide the economic impact of maritime commerce on an annual basis.
- ✿ Conducted research in support of the Northeast Midwest Institute's Great Ships Initiative project to promote an **effective treatment for ballast water**, and analyzed the biological propagation of invasive species at the ballast water testing facility: [University of Wisconsin-Superior](#) and [University of Minnesota Duluth](#).
- ✿ Provided an analysis of the **impact that cold temperatures have on Bio-Diesel fuels (B-20)** while using the research vessel Blue Heron as the maritime test platform: [University of Minnesota Duluth](#).
- ✿ Conducted research associated with **corrosion of steel pilings** in Lake Superior: [University of Minnesota Duluth](#). Initial results have identified the bacteria and the next phase is to isolate the source of the bacteria. Ongoing.
- ✿ Initiated a study to determine the feasibility of a **Great Lakes marine container service**, connecting Green Bay to global markets: [University of Wisconsin-Green Bay](#).
- ✿ Conducted an analysis of shipbuilding capability on the Great Lakes and prepared a reference database for Great Lakes **ship repair and shipbuilding capabilities**: [University of Michigan](#).
- ✿ Conducted a study to develop and pursue a market for the **re-utilization of dredge materials** in lieu of staging the fines at a disposal facility: [University of Minnesota Duluth](#), in conjunction with the Harbor Technical Advisory Committee.
- ✿ Worked with state DOTs and planning agencies to incorporate **maritime operations into transportation planning**: [University of Wisconsin-Superior](#) and the [University of Minnesota Duluth](#).
- ✿ Established a cooperative information exchange with **Baltic Sea** maritime researchers, industry, and national agencies: [University of Wisconsin-Superior](#).
- ✿ Interacted with **Canadian** government agencies, industry, and academics on joint Great Lake topics, such as ports, cruising, environmental issues, and short sea shipping: [University of Wisconsin-Superior](#) and [University of Minnesota Duluth](#).
- ✿ Prepared a report on the history of attempts to change, modify, and/or eliminate the **Harbor Maintenance Tax**: [University of Minnesota Duluth](#). The report was lauded for its track of legislation activities.
- ✿ Engaged in studies on **cruising on the Lakes**, and worked with the Great Lakes Cruising Coalition to educate regional ports about cruise line operations to open new markets: [University of Wisconsin-Superior](#).
- ✿ Developed a **vessel design to haul slab steel** from Duluth-Superior to the lower lakes and through the Seaway: [University of Michigan](#).

GLMRI Achievements

University Involvement – 125 personnel at 12 Great Lakes Universities Directly Working on Maritime Commerce Research in the Great Lakes

- 2 Host universities: **University of Wisconsin-Superior and University of Minnesota Duluth**
- 10 Affiliate universities located in **Wisconsin, Minnesota, Michigan, Ohio, New York, and Indiana**
- 38 Faculty focused on maritime commerce research
- 27 Supporting personnel
- 60 Students involved in maritime research and outreach

Research – 44 Funded Projects on Maritime Commerce Research in the Great Lakes

- \$2.3 million** of matching/in-kind support of GLMRI, in addition to direct funding
- 249 papers, publications, presentations, and outreach events sponsored by GLMRI

Support to Federal, State, and Regional Agencies and Industry

GLMRI has provided information, research data, and support to agencies such as:

- ✿ US Secretary of DOT appointment to Marine Transportation System National Advisory Council
- ✿ Transportation Research Board
- ✿ National Academy of Sciences
- ✿ PIANC – Permanent International Association of Navigation Congresses
- ✿ GAO – Government Accountability Office
- ✿ US Coast Guard
- ✿ US Army Corps of Engineers
- ✿ Senate Great Lakes Task Force



Broad Based Support of GLMRI

Advisory Board Leadership

US Coast Guard
US Army Corps of Engineers
US DOT/Maritime Administration
US DOT/Saint Lawrence Seaway Development Corporation
Lake Carriers Association
American Great Lake Ports Association
Great Lakes Commission
Society of Naval Architects and Marine Engineers

Endorsements of GLMRI

“I wholeheartedly support the work of the GLMRI.”

Administrator Collister (Terry) Johnson, Saint Lawrence Seaway Development Corporation, in letters to Congressman David Obey and James Oberstar, July 23, 2007.

“The Maritime Administration strongly endorses the work of GLMRI.”

Administrator Sean Connaughton, Maritime Administration, in a letter to Dr. Richard Stewart, October 28, 2008.

“...when public resources are used with professionalism and respect, it is refreshing. I was sincere in my comments, and greatly appreciate your serious approach to necessary research and education. There is far too little attention paid to freight...”

Christina Casgar, Office of the Secretary of Transportation, Acting Director, Office of Freight and Logistics in an email to GLMRI, June 30, 2006.

“The Great Lakes region has long needed an organization such as GLMRI. The unique nature of Great Lakes shipping, both domestic, U.S./Canada, and overseas, requires a tightly-focused approach. While transportation studies are being conducted elsewhere, their results may not transfer well to this system. Research that will bring new trades and jobs and address Lakes-specific environmental concerns must be conducted by an organization based in and dedicated to the region and its transportation system.”

Great Lakes Maritime Task Force (GLMTF) 2009 Position Paper. The GLMTF is the largest labor/management coalition ever to represent Great Lakes shipping. Members represent every facet of the industry in every state that borders the Great Lakes, and other states too. Website: www.glmtf.org

“These universities provide a research network specifically focused on ways to enhance maritime trade for the benefit of the nation. ... GLMRI not only oversees research projects at the University of Wisconsin [Superior] and University of Minnesota [Duluth], but also supports maritime research at affiliated universities throughout the Great Lakes region.”

American Great Lakes Ports Association, Website: www.greatlakesports.org

To obtain copies of studies or additional information go to our website:

www.glmri.org

or contact Carol Wolosz, Assistant Director

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