FINAL REPORT
Great Lakes Fishery Trust

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Grantee Organization:	Great Lakes Commission
Project Team:	Tim Eder, Executive Director, Great Lakes Commission Erika Jensen, Program Manager, Great Lakes Commission Cecilia Weibert, Program Specialist, Great Lakes Commission David Betcher, GIS Program Specialist, Great Lakes Commission Bryan Comer, 2014-2015 Sea Grant Fellow, Great Lakes Commission
Contact Person:	Erika Jensen, Program Manager Great Lakes Commission 2805 S. Industrial Hwy., Suite 100 Ann Arbor, MI 48104 Phone: 734-971-9135 Email: ejensen@glc.org
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PROJECT ABSTRACT

Through this project, the Great Lakes Commission (GLC) convened the Great Lakes states and provinces to increase coordination and information-sharing around the status of ballast water management, and consider opportunities for advancing regionally consistent, and regionally protective ballast water standards and policies. This work was conducted through three primary activities:

- **Convene a Ballast Water Task Force:** The GLC convened a task force of officials from the Great Lakes states and provinces to work towards developing a common regional approach for future ballast water permit cycles and reviews of existing regulations and programs. Recognizing the complexities and evolving landscape of this issue, as well as the ongoing need for information-sharing, the focus of the Task Force shifted during the project to providing input on a workshop that would review the status of preventing AIS introduction and spread through ballast water discharge in the region.

- **Plan and conduct a ballast water workshop:** With input from the Task Force, as well as other agency, NGO and industry partners, the GLC convened a ballast water workshop on November 16-17, 2016 in Detroit, Michigan. The workshop provided an opportunity for the Great Lakes and St. Lawrence community – including federal, state and provincial agencies, industry, ports, research facilities, environmental groups and other stakeholders – to come together, share information and develop a common base of understanding of contemporary conditions – and associated challenges and opportunities – of ballast water management. Over 70 people attended the workshop which included

presentations and discussion on the current regulatory framework (including federal legislative action), the status of treatment technology, the state of the science, and stakeholder perspectives on ballast water management in the U.S. and Canada. It also featured a GIS-based ballast water regulatory story map developed by GLC staff documenting the route of a Fednav ship traveling from Europe to and through the Great Lakes – St. Lawrence system and the regulations triggered by the route and the ship's activities. The presentation story map is based off an actual vessel and actual route and illustrates the complexity of multiple, disparate regulatory regimes. The ship, Federal Champlain, is fitted with a BallastAce treatment system. It originates in Høyanger, Norway, and ends its trip through the Great Lakes – St. Lawrence system in Thunder Bay, Ontario. The story map can be viewed online at http://arcg.is/2jmUsCt.

Following the workshop, GLC staff developed a complete workshop proceedings document that is now available online: http://www.glc.org/work/ballastwater/proceedings. The proceedings include the workshop overview and agenda, presentation summaries, speaker biographies, and the attendee list.

- **Develop briefing papers:** The GLC developed a briefing paper on the status of ballast water regulation in the Great Lakes region at the state, federal and international levels. In addition, GLC contracted with the Great Ships Initiative to develop a briefing paper that summarizes biological efficacy testing and certification of Ballast Water Management Systems (BWMSs) for use in the U.S. and Canada. Both papers were distributed to workshop participants in November and are available online http://www.glc.org/work/ballastwater/proceedings.

Following the workshop, there is now a common base of understanding from which the Great Lakes states can decide whether and how to pursue achieving regional consistency in the standards and regulatory programs they want to impose to best ensure protection of the Great Lakes. The GLC convened the Task Force in January 2017 to discuss and refine possible next steps and identify appropriate opportunities and mechanisms for continuing to work together on this important issue.

FINAL NARRATIVE REPORT

Background/Overview

1. Briefly summarize the project description as outlined in the original proposal.

The project was originally intended to convene the Great Lakes states and provinces to advance a ballast water standard for the region. The goal was a consensus-based position outlining the standards, rules and compliance schedules that should be included in ballast water rules. This position would enable consistency in state rules and the positions put forward in negotiations with the federal governments, and provide greater confidence that the rules protect the sensitive freshwater environment of the lakes. The project was originally planned in two phases. The first phase was to focus on gathering information and developing a solid basis and common understanding among delegates of the state of the science, technology and economics. During phase one, delegates would commit to going forward to negotiate common standards in phase two. Phase two was to include hiring of a skilled facilitator to assist with negotiations.

2. Briefly summarize any significant changes to the work performed in comparison to the originally proposed and funded plan of work. If changes were made, describe how they affected your ability to achieve the intended outcomes for the work.

Initially, the project proceeded as planned. The GLC successfully convened a task force of state and provincial representatives, secured their involvement in the project, held a series of conference calls and gathered their feedback on commissioning white papers to address critical information needs. During this time, the political landscape shifted and the U.S. Congress began to push legislation that would severely hamper Great Lakes states' ability to have influence over federal or international ballast water standards or their effectiveness in our region through VIDA, the Vessel Incidental Discharge Act. While communication with state and provincial representatives continued under this project, the debate around this bill led to less harmony among Great Lakes states and caused our work to slow. Further, industry, independent groups and various government groups continued to make progress toward ballast water controls.

The result was an altered and still evolving political, regulatory and technological landscape since the project began. The GLC, it's member states and provinces, and other partners recognized that a significant need and opportunity for agencies, ports, industry, regulators, NGOs and researchers to come together, share information and develop a common base of understanding. From there, the Great Lakes states would be in a better position to decide whether it still makes sense to pursue the original aim of the project: to enable states to self-determine the standards and regulatory programs they want to impose to best ensure protection of the Great Lakes.

Therefore, the GLC worked with the GLFT to revise to scope of work to focus on convening a workshop to bring together federal, state and provincial representatives, industry, ports, environmentalists and other key stakeholders. The focus of the workshop was to develop a common understanding of the status of technology to treat ballast water discharges; the current regulatory framework (including federal legislative action); the state of the science; and stakeholder perspectives related to ballast water discharge standards in the U.S. and Canada. The GLC worked with the Task Force to plan the workshop and convened the group following the workshop to determine next steps.

This change in approach was similar to the original conception of our proposal. The information gathering effort (originally phase I) was accomplished through the workshop and development of briefing papers. The project achieved the phase I objective of developing a common base of understanding for states and

provinces, and this work was extended to industry, ports and researchers. While this work ultimately did not lead to a phase II and a consensus-based standard, it provided a better understanding of the state needs regarding this issue. In addition, it provided the foundation for a GLC policy resolution reflecting the current areas of agreement among the states and provinces on ballast water management and regulations.

Outcomes

Please characterize key outcomes of the project related to knowledge, training, relationships, and practice. Not all projects will have outcomes of all types.

3. To what extent and how (if at all) did this research project advance scientific knowledge of the issue?

This project helped increase awareness and bring scientific information to the Great Lakes ballast water management community. Through the workshop, researchers presented the results of scientific studies advancing our understanding of ballast water risks and the efficacy of treatment systems at reducing those risks. Presentations at the workshop explained to participants the difficulty researchers and scientists face in determining or predicting the number of organisms in a ballast water sample that is "safe" to discharge (i.e., presents a low risk to the ecosystem). In other words, the debate over "how clean is clean" is still unsettled. The project directly supported the Great Ships Initiative in developing a briefing paper on the biological efficacy testing and certification of Ballast Water Management Systems (BWMS) for use in the U.S. and Canada. The paper summarized testing protocols, their relationship to the biological conditions in the Great Lakes system, and reviewed all internationally approved BWMS and the extent to which those systems were tested in freshwater with environmental conditions like the fresh water of the Great Lakes. Through this work, workshop participants also learned that BWMS will not always perform in the real-world the way they have been shown to do in testing. This is due to the controlled and mandated conditions of the testing environment and the fact that biological conditions of waterways are diverse and fluctuating.

4. To what extent and how (if at all) did this project contribute to the education and advancement of graduate or undergraduate students focused on Great Lakes fishery issues?

N/A

5. To what extent and how (if at all) did this work help you or others on your team build new relationships with others in the research or management communities?

The workshop provided an opportunity for the GLC to engage with different industry groups and researchers involved in developing effective ballast water management and treatment technologies. It expanded our network of non-governmental partners and strengthened our relationships with others.

6. To what extent and how (if at all) do the findings have action implications for fishery managers? If the research has direct management implications, do you have any knowledge of use of the findings by managers? If the research does not have direct management implications at this stage, to what extent did the research advance the process of identifying management responses to critical issues?

Project findings do not directly fishery management activities. However, the findings do provide additional information to fishery managers to better understanding the current risks of AIS introduction and spread through ballast water. Fishery managers have traditionally been very concerned about invasive species and ballast water. Thus, fishery managers may choose to develop response plans or other take other actions to respond to new species invasions that may occur.

7. Considering the above or other factors not listed, what do you consider to be the most important benefits or outcomes of the project?

A key benefit of this project is providing a forum for state representatives to exchange information and coordinate responses on ballast water issues, including federal legislative activities and updates on changes in state programs and/or approaches. This continues to be a need. Further, as work on this issue evolves, broader forums for stakeholder engagement are also needed. This workshop provided an opportunity for the Great Lakes and St. Lawrence community – including representatives of federal, state and provincial agencies, industry, ports, research facilities, environmental groups and other key stakeholders – to come together, share information and develop a common base of understanding of contemporary conditions – and associated challenges and opportunities – of ballast water management. Moving forward, there is now a common base of understanding from which the Great Lakes states can decide whether and how to pursue achieving regional consistency in the standards and regulatory programs they want to impose to best ensure protection of the Great Lakes.

Following the workshop, the GLC convened the Task Force in January 2017 to discuss and refine possible next steps and identify appropriate opportunities and mechanisms for continuing to work together on this important issue. Task Force members identified the following possible next steps:

- Discharges of treatment system byproducts: There is a need to compile and make available state discharge standards for residual chlorine, oxidants, and other byproducts that are discharged in treated ballast water. A summary table could be developed, similar to what was done for state ballast water standards, to easily see and compare discharge regulations between states.
- Federal legislation: Interested states will continue to participate in Washington-state led work to coordinate input and responses to proposed federal legislation (e.g., the Vessel Incidental Discharge Act, VIDA).
- Explanation of state authority to regulate ballast water discharges: This issue was brought up at the workshop. States have authority/standing outside of the Clean Water Act to regulate ballast water and this is not well understood among some stakeholders. The National Sea Grant Law Center previously prepared a summary of this issue which may be useful to circulate when appropriate.
- Permit review periods: The GLC can help identify areas of common ground and help facilitate states speaking with a common voice when the U.S. Coast Guard/EPA permits are up for review. The need to talk comes sporadically based on policy, and the best approach would be to convene calls as needed. It may be difficult to judge timing on VGP review, and so the GLC will also be relying on states to help facilitate timing of conference calls.
- GLC policy resolution: The GLC will consider developing a new ballast water resolution to replace ones passed in 2007 and 2011. The GLC will work with a subgroup of its Commissioners, including some of the Task Force members to develop the draft resolution. (*Refer to the next section of this report for more details on the resolution.)*

Related Efforts

8. Was this project a standalone effort, or was there a broader effort beyond the part funded by the GLFT? Have other funders been involved, either during the time of your GLFT grant or subsequently?

This project was primarily a standalone effort but it is a part of a broader invasive species program at the GLC. The GLC recently finalized a new Strategic Plan and identified invasive species as one of the seven priority program areas. The GLC made attempts to coordinate with the Great Lakes Ballast Water Collaborative, but they did not participate in a formal way. The Great Lakes Fishery Commission and FedNav

contributed to covering a portion of the workshop costs. In addition, the Detroit Wayne County Port Authority and Northeast-Midwest Institute provided in-kind support.

9. Has there been any spinoff work or follow-up work related to this project? Did this work inspire subsequent, related research involving you or others?

Following the workshop and a debriefing call with the state and provincial Task Force, the GLC worked with its Commissioners to develop a policy resolution on ballast water management. The new resolution replaced historical resolutions on this issue adopted by the GLC in 2007 and 2011. The workshop and the activities of this project provided a critical foundation from which to develop the resolution. The new resolution was adopted by the GLC at their meeting in March 2017 and is available online: http://www.glc.org/wp-content/uploads/2013/09/FINAL-GLC-Resolution-2017-Ballast-20160315.pdf. In summary, the resolution expresses GLC support for:

- Compatible U.S. and Canadian federal ballast water treatment standards and enforcement mechanisms;
- Strong federal ballast water regulations;
- Consultation by Congress and federal agencies with the states and to advance ballast water policies and standards
- Maintaining requirements for ballast water exchange and saltwater flushing in addition to treatment technology for ships entering the Great Lakes-St. Lawrence system;
- Development of ballast water technology solutions for ocean-going ships and lakers;
- Government and private sector financial support for ballast management technology development for lakers;
- Review of federal discharge standards, requirements and technology at least every 5 years; and
- Scientifically-based efforts to better understand and monitor the effectiveness of treatment technology and regulatory policies.

Communication/Publication of Findings

10. List publications, presentations, websites, and other forms of formal dissemination of the project deliverables, tools, or results, including those that are planned or in process.

All materials from this project are available on the GLC website at http://www.glc.org/work/ballastwater

- Briefing Paper: Status of Ballast Water Discharge Regulations in the Great Lakes Region
- Briefing Paper: Biological efficacy testing and certification of Ballast Water Management Systems (BWMSs) for use in the U.S. and Canada
- Great Lakes and St. Lawrence Ballast Water Workshop Proceedings
- Ballast Water Management Story Map

The availability of these materials has been communicated to all workshop participants, as well as through the May 2017 issue of the GLC Advisor e-newsletter (http://www.glc.org/library/2017-05-advisor-newsletter). GLC staff also provided a report out on the workshop to its Commissioners at the March 2017 GLC meeting in Washington, DC. GLC staff will report out to the Great Lakes Panel and ANS Task Force at future meetings and previously distributed via email the project materials.

11. Please characterize your efforts to share the findings of this research with state, federal, Tribal, and interjurisdictional (e.g., Great Lakes Fishery Commission) agencies charged with management responsibilities for the Great Lakes fishery. If other audiences were priority for this research, please

characterize your outreach efforts to those audiences as well. (Please note: You may wish to consult midterm reports in which specific audiences for the findings, and means of outreach to these audiences, were identified.)

Key audiences for the project results include the states and provinces, who will use the workshop outcomes and briefing papers to inform their next steps and approaches to addressing AIS risk from ballast water discharge. The Great Lakes Fishery Commission was a supporter of the workshop and one of their staff members presented at the workshop. In addition, groups such as the Great Lakes Ballast Water Collaborative which includes industry representation, may use workshop outcomes to focus future meetings and efforts around specific issues identified at the workshop which may require ongoing communication and coordination. These groups were targeted through the communications described above to the GLC's own Board and Commissioners, as well as the Great Lakes Panel on Aquatic Nuisance Species and the national Aquatic Nuisance Species Task Force. The information was well received by the GLC Board and Commissioners at their March 2017 meeting and directly influenced the policy resolution that was developed.

12. Please identify technical reports and materials attached to this report by name and indicate for each whether you are requesting that GLFT restrict access to the materials while you seek publication. (Please note that the maximum amount of time during which GLFT will restrict access to the results of funded research is 18 months, unless notified that more time is needed.)

- Briefing Paper: Status of Ballast Water Discharge Regulations in the Great Lakes Region
- Briefing Paper: Biological efficacy testing and certification of Ballast Water Management Systems (BWMSs) for use in the U.S. and Canada
- Great Lakes and St. Lawrence Ballast Water Workshop Proceedings

GLC is ***not*** requesting the GLFT restrict access to these materials.

13. Manuscripts. Grantees submitting one or more publications or pending publications in lieu of a standalone technical report must submit a cover memo that confirms that all aspects of the funded research are incorporated in the published work, and in cases of multiple publications, identifies or crosswalks the grant-funded objectives to the published article containing results.

N/A

14. Compilation reports. Grantees working on several related subprojects under a single grant may submit a series of subproject reports rather than a single, integrated report. However, grantees must submit a cover sheet or introduction that outlines and crosswalks grant objectives with the location of the results in the compilation document.

N/A

Discussion

As mentioned earlier, this project provided a critical service to the states and provinces in their ongoing deliberations and work on advancing ballast water management policies, and engaging with federal agency and industry partners. The Task Force members expressed an interest in continuing to convene at strategic points in the regulatory and/or technology development process.

This project, and the workshop in particular, was extremely valuable in providing an opportunity to identify gaps, needs and opportunities to advance ballast water management collaboratively. The workshop showed that while the U.S. Coast Guard and IMO discharge standards are now more widely accepted as the driving force for technology development, there is concern that approved technologies and treatment systems will not meet the discharge standards in all conditions (especially freshwater), even if operated properly. Some of the existing regulatory regimes retain ballast water exchange/saltwater flushing requirements in addition to the numeric standards, as a mechanism for added protection by combining the two approaches. Binational coordination of programs remains important as Canada moves forward in developing regulations to implement the IMO standard over the next year.

Different stakeholder groups continue to be divided on the role of both the EPA and the Clean Water Act, and the role of state programs in regulating ballast water discharges. Congress is still considering federal legislation that, if passed, will likely impact EPA and state ballast water programs. As part of this discussion, it is also important for stakeholder groups to understand that states have authority/standing outside of the Clean Water Act to regulate ballast water. This issue was brought up at both the workshop, and in the development of the GLC policy resolution.

There are inconsistencies in policies and programs over how to address “laker” vessels, i.e., vessels that remain within the Great Lakes and St. Lawrence River system, and comparatively less investment in developing technologies to accommodate the unique design of these ships. More broadly, despite delays and uncertainties in the regulatory process, some industry groups and vessel operators are moving forward with testing treatment options and some are installing technology ahead of required schedules. These are key points to consider in ongoing policy and management discussions regarding opportunities to harmonize approaches, reduce burden on industry, and protect the water resources of the Great Lakes and St. Lawrence River.

Finally, as discussed previously, this project made it possible for the GLC to move forward with a new policy resolution on ballast water management. This resolution represents a consensus viewpoint of the states and provinces, and characterizes the current needs and opportunities described above. It provides input on federal agency activities and recommends areas for future investment.