

Applicant (Organization): Great Lakes Commission
Type of Organization: Interstate Agency or Commission
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Project Title: NIS Early Detection and Monitoring: A Pilot Project for the Lake Michigan Basin
Project Category: Invasive Species
Rank by Organization (if applicable):
Project Duration: Two Years

Abstract:

Nonindigenous aquatic invasive species (NIS) pose significant risks to the ecological and economic integrity of the Great Lakes-St. Lawrence system. Ballast water from ocean-going commercial vessels is a primary vector for the unintentional introduction and spread of NIS to the Great Lakes-St. Lawrence system. Another significant source of the NIS problem also can be attributed to smaller commercial enterprises, including the aquaculture industry, aquarium trade, biological control, recreational boating, recreational fisheries enhancement, bait business and horticultural practices (e.g., water gardens, nursery trade). Once NIS populations become established, eradication is technically and economically problematic. Even modest control measures are costly and difficult to implement. Early detection of NIS introductions and assessment of established populations will help increase chances for effective elimination or control. To advance the development of a regional monitoring program, the initiation of a NIS Monitoring and Early Detection pilot project in the Lake Michigan basin is proposed.

Geographic Areas Affected by the Project

States: All
Lakes: All
Geographic Initiative
Primary Affected Area of Concern: Primary: Lake Michigan AOCs
Other: All other AOCs

Problem Statement:

Nonindigenous aquatic invasive species (NIS) pose significant risks to the ecological and economic health of the Great Lakes-St. Lawrence system. Many of these invasions are due to anthropogenic activities, such as ballast water transport from ocean-going commercial vessels and smaller commercial enterprises, including the aquaculture industry, aquarium trade, biological control, recreational boating, recreational fisheries enhancement, bait business and horticultural practices. NIS invasions are a significant force of ecological change, affecting population, community and ecosystem processes in the Great Lakes-St. Lawrence system. Further, they have significant and well-documented economic impacts on a range of water-dependent sectors.

A comprehensive regional early detection and monitoring regime for NIS has not been established in the Great Lakes-St. Lawrence ecosystem. A monitoring program is needed to discover new introductions and to track the spread of existing invasions. Without an effective surveillance system, new species introductions may not be detected until after the point where implementation of technically and economically feasible eradication/control measures is possible.

The Great Lakes Panel on Aquatic Nuisance Species has recognized that a comprehensive regional monitoring program is needed to facilitate early detection of NIS and support rapid response efforts. To address this need, it is proposed that a pilot project in the Lake Michigan basin be conducted. The pilot project will be designed to answer the following fundamental questions in efforts to advance the development of a regional monitoring program:

- Why is NIS monitoring needed?
- What high-risk areas within the Lake Michigan basin should be monitored?
- What aspects of the NIS problem should be monitored in terms of indicators/parameters that reflect species characteristics, pathways of introduction and spread, impacts, and predictors of invasion success?
- How will the data collected be used to support NIS monitoring and early detection?
- How should monitoring for early detection be conducted (e.g. a volunteer program targeting “most wanted” species or a regular, quantitative sampling program, etc.)?
- How should the NIS Early Detection System be coordinated with existing monitoring programs on native species in the Great Lakes-St. Lawrence system?
- How can baseline data be utilized to reflect disturbances caused by NIS impacts?
- What is an appropriate benchmark upon which the program can be evaluated?
- At what scale should the program be implemented (e.g., a single regional program, or multiple jurisdiction-specific programs)?

The establishment of an effective, regional monitoring program is an ambitious, long-term effort that will require a sustained commitment of personnel and resources. The proposed pilot project in the Lake Michigan basin will advance the development of a regional NIS monitoring and early detection program.

Proposed Work/Outcome:

The NIS Early Detection and Monitoring project will yield a set of guidelines and recommendations for a coordinated system to detect new invasions of nonindigenous aquatic species in the Lake Michigan basin. The project will focus on the Lake Michigan basin to take advantage of existing resources and infrastructure developed by the Lake Michigan Monitoring Coordination Council and its monitoring inventory efforts. The guidelines and recommendations will benefit from a thorough examination of existing monitoring programs and will be crafted with the advice of experienced scientists, resource managers, educators and decision-makers. The project will build on an existing framework of monitoring coordination and regional invasive species management, and integrate with the ongoing development of a rapid response plan – all of which are under Commission management. Outcomes of the Lake Michigan pilot project should be well positioned to provide a potential framework for a NIS monitoring program in that basin and, more generally, through the Great Lakes region.

To develop the NIS Early Detection and Monitoring pilot project, the Commission will: 1) establish a project management team and recruit technical advisors from two related coordination bodies to serve as an advisory committee throughout the project; 2) mine an existing monitoring database to identify organizations monitoring for groups of organisms that may include new introductions; 3) survey and interview key monitoring managers to discover ways the monitoring can be altered to provide early detection information; 4) assess the resulting monitoring coverage to discover gaps; 5) work with the response planning team and Advisory Committee to develop the pilot guidelines and recommendations for early detection in the Lake Michigan basin; and 6) present the plan to the broader ANS community.

Specifically, the Commission proposes the following workplan:

Task 1: Establish Project Management Team and Project Advisory Committee – The pilot project will be centered in the Lake Michigan basin in order to narrow the scope to a manageable level and leverage the monitoring coordination framework and data already in place. A project management team comprised of Great Lakes Commission staff, a representative from the Environmental Protection Agency’s Great Lakes National

Program Office, the chair of the Great Lakes Panel on Aquatic Nuisance Species and the chair of the Lake Michigan Monitoring Coordination Council. In addition, the Commission will recruit participation in an advisory committee from the Great Lakes Panel on Aquatic Nuisance Species and the Lake Michigan Monitoring Coordination Council. The Advisory Committee will provide guidance throughout the project through regular meetings and conference calls. The project will begin with a workshop that brings together Advisory Committee members along with other interested parties to discuss a range of NIS monitoring and early detection issues, examining such questions as:

- What criteria should be used to determine high-risk areas within the Lake Michigan basin?
- Should the challenge of predicting NIS invasions be included in early detection efforts? If so, how should it be addressed?
- How should the project survey/interviews be designed to most efficiently determine the capacity of existing Lake Michigan basin monitoring programs to detect and report on aquatic invasive species?

Task 2: Assess the Lake Michigan Monitoring Inventory – An inventory of ecosystem monitoring programs in the Lake Michigan basin was recently conducted by the Commission. This extensive database will be assessed to identify programs that regularly monitor or collect information regarding biotic and abiotic parameters in high-risk areas and may facilitate detection of harmful new aquatic invaders. The inventory analysis will provide a basis for subsequent tasks.

Task 3: Conduct Monitoring Survey and Interviews - The purpose of this task is to determine potential for existing Lake Michigan basin monitoring programs to detect and report on NIS. The Commission will consult with the Advisory Committee in developing a set of questions to be asked of program managers through a survey instrument and follow up phone interviews. Information will be collected related to monitoring parameters, locations, frequencies, methodologies, and other aspects that will help characterize monitoring efforts. An important objective of the interviews will be to determine the feasibility of adding various early detection mechanisms to existing programs in the Lake Michigan basin. Follow-up surveys may be distributed to select agencies to ensure the completeness of information.

Task 4: Assess Monitoring Coverage –The Commission will assess information gathered to determine the extent of monitoring coverage throughout the high-risk areas in the Lake Michigan basin. Emphasis will be placed on discovering geographic, parametric and methodological gaps in the monitoring coverage. Each high-risk area will be assessed to determine the adequacy of the monitoring coverage and attendant capacity to discover new NIS introductions and track the spread of current NIS. Additionally, an assessment of the potential to improve the early detection system in each high-risk area will be included. The Commission will build all responses and suggestions into a document that assesses current and prospective early detection and monitoring mechanisms.

Task 5: Guidelines and Recommendations for Early Detection and Monitoring of NIS in the Lake Michigan Basin – Following preparation of the monitoring assessment, the project management team will meet with the Advisory Committee in a one-day workshop to develop a set of guidelines and recommendations for early detection and monitoring of NIS introductions in high risk areas within the Lake Michigan basin. These guidelines will be based on the best available, scientifically sound methods that will provide the most effective monitoring coverage using existing resources. The guidelines will also be integrated with the model Rapid Response Plan under development, and will be shared with the Great Lakes Panel on Aquatic Nuisance Species and the Lake Michigan Monitoring Coordination Council for prospective guidance as early detection and monitoring programs are developed.

Task 6: Outreach and Communication – Guidelines and Recommendations for Early Detection and Monitoring of NIS in the Lake Michigan Basin will be distributed widely using the vast communication network (electronic and conventional) at the Commission's disposal. All elements will be posted on the Commission's website (www.glc.org) and prominently linked through the Great Lakes Information Network (www.great-lakes.net). The project management team will present its guidelines and recommendations at a meeting of the Great Lakes Panel on Aquatic Nuisance Species and discuss opportunities to 1) expand the effort to other lake basins; and 2) move from the recommendation to implementation stage.

Project Addresses Environmental Justice: Advancing NIS prevention and control efforts will yield basin wide benefits in terms of habitat preservation/improvement; protection of the sport and commercial fishery; and the more efficient and cost-effective targeting of public funds. This will benefit all sectors of society including those that have been historically underserved and disproportionately impacted.

Project Addresses Education/Outreach: Education and outreach is a major component of this project, with associated goals specifically addressing elements of the Information/Education Strategy for Aquatic Nuisance Prevention and Control endorsed by the Great Lakes Panel on Aquatic Nuisance Species. The Panel, which includes members drawn from all sectors of the community involved with and/or affected by invasive species, will have a major role in all project tasks. The project will feature an open and inclusive process to ensure that all relevant interests are invited to participate. The Great Lakes Commission's dissemination capability – via conventional and electronic means – will ensure that the larger community is apprised of project outcomes and opportunities to apply them.

Funding by Other Organizations (Names, Amounts, Description of Commitments):

Funding for the project is not being solicited from any other sources. The project will benefit substantially from support of the Great Lakes Panel on Aquatic Nuisance Species and the Lake Michigan Monitoring Coordination Council. Also, the Commission manages a number of project-specific prevention and control activities under the Panel's oversight. These efforts will also support/complement the proposed project.

Description of Collaboration/Community Based Support

The Great Lakes Commission staff has extensive experience in prevention and control of NIS. The staff has coordinated the Great Lakes Panel on Aquatic Nuisance Species since 1990, and has successfully completed more than a dozen projects addressing legislative, policy, outreach, planning and scientific aspects of the NIS issue. These projects have included the development of a model comprehensive management plan, model state legislative guidance, and the governor/premier-signed Great Lakes Action Plan for the Prevention and Control of Aquatic Nuisance Species.

Building on relationships established via its coordination of the Great Lakes Panel and project-specific activities, the Commission also will solicit collaboration from key stakeholders including but not limited to U.S. EPA, NOAA, U.S. Fish and Wildlife Service, U.S. Coast Guard, state environmental protection/resource management agencies, Lake Carriers' Association, Great Lakes Shipping Association, Sea Grant programs, the Northeast-Midwest Institute, International Joint Commission and the Great Lakes Fishery Commission.