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March 31, 2006

Mamie Parker and Timothy R.E. Keeney
Co-Chairs, ANS Task Force
U.S. Fish and Wildlife Service
4401 North Fairfax Dr., Rm. 322
Arlington, VA 22203

Dear Co-Chairs:

On behalf of the Great Lakes Panel on Aquatic Nuisance Species, I am pleased to submit for your consideration the document, *Aquatic Invasive Species Information and Education Priorities for the Great Lakes*. It is widely recognized that as aquatic invasive species (AIS) problems continue to escalate, effective outreach campaigns are critical for raising awareness and understanding on AIS issues as well as providing direction in the search for solutions to these problems. The information/education (I/E) priorities document, developed by the Panel's I/E Committee, is intended to be used as a long-term planning tool to assist entities in prioritizing outreach actions to advance AIS prevention and control in the Great Lakes region. The document is expected to evolve as the needs for AIS prevention and control change over time.

Offered in the document is a comprehensive listing of I/E priorities to guide funding entities and to assist stakeholders in the development of outreach projects on AIS issues. The priorities identified in this list are presented in topical areas of prevention, collaboration/partnerships, information management, marketing, education and evaluation. Structurally, the document emphasizes language that promotes partnership and collaboration; consistency in outreach and educational messages; emphasizes the development of tools to meet the needs of specific target audiences and the need to evaluate the effectiveness of outreach techniques. It is noteworthy that the Panel's I/E priorities document, along with a similar document developed by the Panel's Research Coordination Committee (www.glc.org/ans/panel.html#committees), have both been used recently as a resource in providing consensus based input from the Great Lakes region on a RFP for the 2007 Sea Grant AIS research and outreach grants competition.

In submitting this document, we encourage ANS Task Force review of the I/E priorities recommended by the Great Lakes Panel with the hope that Task Force members will give consideration to these priorities in their work on AIS prevention and control. A response is requested from the Task Force on the I/E priorities document within a 60 day timeframe. A finalized version of the document is enclosed with this letter which is also available online at: www.glc.org/ans/panel.html#committees.

Sincerely,



Roger Eberhardt
Chair, Great Lakes Panel on Aquatic Nuisance Species
Office of the Great Lakes, Michigan DEQ

cc: Scott Newsham, ANS Task Force Executive Secretary

**Great Lakes Panel on Aquatic Nuisance Species
Information and Education Committee**
Aquatic Invasive Species Information and Education Priorities for the Great Lakes

December 8, 2005

Background

One of the most significant threats to biodiversity in the Great Lakes-St. Lawrence region is the introduction of nonindigenous aquatic invasive species (AIS) into the ecosystem. Upon introduction, AIS can establish reproducing populations, thus posing risks to the economic and ecological health of the region and negative impacts to society. As of 2006, more than 180 AIS have been documented in the Great Lakes ecosystem¹, including known harmful species such as zebra mussel, quagga mussel, sea lamprey, purple loosestrife, Eurasian water milfoil, round goby, ruffe, spiny and fishhook water fleas, and rusty crayfish. Pathways for introduction include maritime commerce (ballast water discharge and hull fouling), aquaculture (private and public operations, recreational fisheries enhancement), organisms in trade (live food fish, aquaculture, horticulture, bait), canals and waterways, recreational activities (boating, scuba diving, float plane operation and fishing), and biological control. While some of the introductions associated with these activities have been accidental, others have been intentional².

Statement of Purpose

There is an ongoing need to prevent new AIS introductions and control the spread of established AIS populations in the Great Lakes-St. Lawrence region. Stakeholders must have an understanding and acceptance of the necessary actions to protect the biological integrity and beneficial uses of the resource. These stakeholders include the general public, commercial and recreational water users, governmental agencies and jurisdictions, research scientists, natural resource managers, shipping industry, and policy makers, among others. To empower stakeholders and encourage stewardship, credible and sound information needs to be compiled for effective dissemination and application.

The Information and Education (I/E) Committee of the Great Lakes Panel on Aquatic Nuisance Species (ANS) offers this document as a resource to guide funding entities and to assist stakeholders in the development of projects that address AIS information and education priority needs. Priorities are presented in topical areas of prevention, collaboration/partnerships, information management, marketing, education and evaluation. Sources of information for this priorities document include the Great Lakes Panel's *Information and Education Strategy for Aquatic Nuisance Prevention and Control*, the National Invasive Species Council Management Plan, as well as I/E Committee recommendations, among others.

It is expected that the document, as presented, will evolve as new information is available. Although work is underway for some of the priorities as listed; it is understood that further progress is needed under these priorities. Research priorities have been identified and presented in a document entitled, *Great Lakes Panel on Aquatic Nuisance Species Research Committee, Aquatic Invasive Species Research Priorities for the Great Lakes – 2005*. Lists of policy priorities will be developed by the Policy and Legislation Committee of the Great Lakes Panel.

Prevention of AIS Introduction and Spread

It is commonly accepted that prevention of new AIS introductions is more cost effective, technically feasible and environmentally beneficial than control and management of established AIS populations. Preventing introductions depends on actions taken by well informed stakeholders to address pathways of AIS introduction and spread.

¹ Ricciardi, A., unpublished data

² Great Lakes Panel on Aquatic Nuisance Species Research Committee: Aquatic Invasive Species Research Priorities for the Great Lakes Draft December 2005

Recommended Priorities

- Establish a communication network between scientists, resource managers and policy makers, to facilitate effective information exchange in AIS-related areas such as research; prevention and control technology; resource management needs; detection and sightings of AIS; and policy and legislative developments.
- Develop informational materials on the economic and ecological risks regarding AIS invasions, including benefit-cost assessment to raise awareness among stakeholders, especially policy makers, on the value of *preventing* new introductions.
- Develop educational tools (fact sheets, websites, locally-based forums, watercraft inspector education/training programs) to disseminate prevention messages and best management practices to stakeholders concerning pathways of AIS introduction and spread. Outreach efforts should include incentive based information in an attempt to encourage the widespread practice of these measures on a long-term basis.
- Disseminate fact sheets, identification cards and other educational materials to inform established citizen groups and build community based capacity (e.g. lake associations, volunteer water quality monitoring groups, conservation and other water use groups) to advance prevention, early detection, monitoring and rapid response.
- Publicize and distribute on a jurisdictional basis AIS legislation and regulations, listings of prohibited and regulated species, and lists of infested waters in recreational safety and regulation publications, as well as through a variety of outreach activities and materials, targeting stakeholders.
- Provide commercial enterprises (e.g. aquaculture, horticulture, aquarium, bait, and chemical applicators), natural resource managers, researchers and field personnel with information about programs and training concerning interrupting pathways of introduction and spread (e.g. Hazard Analysis and Critical Control Point (HACCP) training) and provide enforcement agencies with information and training to effectively enforce AIS laws.

Collaboration/Partnerships

As the threat of new aquatic invasions continues in the Great Lakes region, local, state, provincial and regional entities should collaborate in the development and implementation of I/E programs on AIS prevention and control. Strengthening regional communication, long-term partnerships and institutional and community based capacity will increase program effectiveness and avoid duplication of efforts.

Recommended Priorities

- Utilize the Great Lakes Panel as a forum to ensure regional coordination of outreach programs on AIS prevention and control.
- Promote collaboration and communication between the regional ANS Panels serving under the national ANS Task Force through forums such as: annual meetings, a shared e-mail list-serve, and linkages to each Panel's website.
- Evaluate regional coordination of I/E programming to improve development and dissemination of materials on a regional basis.
- Align educational initiatives, such as the Great Lakes Panel documents: *Information and Education Strategy for Aquatic Nuisance Prevention and Control* and the *AIS Information and Education Priorities for the Great Lakes* with established state/provincial AIS management plans, to ensure program coordination and efficient use of funds.
- Maintain and circulate contact information among the Great Lakes AIS network involved with AIS prevention and control initiatives.

- Establish active partnerships between resource management agencies and the commercial sector (e.g. organisms in trade businesses, commercial pesticide applicators and lake management companies) to raise awareness and advance regional policies, state/provincial management plans, and information dissemination.
- Build all-inclusive communication networks between researchers, Sea Grant and extension agents, state/provincial natural resource managers, AIS monitoring personnel and policy makers to implement early detection, monitoring, and rapid response activities.
- Create an efficient communication mechanism (e.g., Memorandum of Understanding) identifying leadership that is authorized to facilitate a collaborative rapid response effort to new invasions.
- Engage industry through state/provincial agencies in the design and delivery of educational materials for consumers and industry members using the *Habitattitude*TM as a model (refer to www.habitattitude.net).

Information Management

As I/E programs continue to produce information addressing AIS issues, there is an increasing need to manage this information to ensure compatibility and accessibility, and to minimize redundancy.

Recommended Priorities

- Develop and implement, as feasible, information management tools, such as the Great Lakes-St. Lawrence Research Inventory (searchable database developed by the Council of Great Lakes Researchers serving under the International Joint Commission) to maximize effective use of existing information on AIS prevention and control.
- Provide a variety of forums to disseminate information on AIS issues and related challenges, progress in AIS prevention and control and associated funding needs to keep Great Lakes organizations, abreast of current news and events.
- Develop an information network that informs the Great Lakes community about AIS issues and organizational responsibilities. Highlight the Great Lakes Panel membership and committee priority documents on information and education, research coordination, and policy and legislation.
- Establish linkages between existing web sites of organizations with AIS responsibilities or interests, to offer comprehensive information on AIS prevention and control efforts including case studies.
- Identify and utilize programs that serve in a regional clearinghouse capacity to advance information management in the following areas: 1) comprehensive inventory of I/E materials on AIS prevention and control in the Great Lakes region; 2) a reference service to respond to general inquires and requests for materials; 3) agency contact information; 4) internet services that provide extensive linkages to relevant web sites within and beyond the Great Lakes region; and 5) updated GIS maps/data describing current species-specific distribution trends in North America.
- Develop an accessible, integrated and centralized program for stakeholders to report AIS sightings and new infestations.
- Ensure wider distribution of AIS information through cost-effective mechanisms (existing forms of media: press releases, news articles, internet).
- Ensure accessibility of information on invasive species from other countries, including the translation of foreign research.

Marketing: Raising the Profile of AIS Issues as an Environmental Priority

Significant progress has been achieved in the past decade to raise the profile of AIS issues as an environmental priority, however these efforts must continue. Marketing is critical to securing the long-term political will and dedicated public resources needed to address Great Lakes aquatic invasions. Marketing strategies, integrated as part of I/E programming, are needed to promote the development and implementation of solutions to AIS problems.

Recommended Priorities

- Utilize consistent and understandable language/messages in efforts to market solutions to AIS problems on a regional basis.
- Implement national AIS public awareness campaigns including *Habitattitude*[™] and the national ANS Task Force's *Stop Aquatic Hitchhikers!*
- Develop a comprehensive public relations (PR) program (i.e. awareness weeks, public meetings, video, and brochures) to capture the attention of the public and policy makers (**e.g. Congressman outside of the Great Lakes region**) to generate support for AIS prevention and control. Of particular importance is the development of PR initiatives addressing high risk invasive species such as the Asian carp, hydrilla, round goby, ruffe, zebra mussel, and water fleas (*Bythotrephes* and *Cercopagis*).
- Develop a PR strategy targeting policy makers on the economic, ecological, health, and social impacts caused by Great Lakes aquatic invasions. A strong case should be made for the establishment of legislative mandates and funding authorizations to implement AIS prevention and control programs.
- Design marketing strategies that identify and utilize information on economic, environmental, human health and societal impacts to effectively influence the public's values and perceptions concerning AIS issues. As part of these strategies, AIS prevention and control messages should target groups associated with identified pathways.
- Motivate public and political action by profiling prevention, control and outreach success stories such as rapid response, containment, and eradication efforts and incorporate these messages into a PR campaign.
- Develop public service announcements and advertisements in recreation oriented media.
- Use marketing strategies to enhance distribution of new and existing AIS programs to schools and learning centers and provide teacher training.
- Develop a new AIS Organism in Trade campaign modeled after the AIS HACCP and *Habitattitude*[™], focused on associated pathways and species of concern for the Great Lakes region. Awareness materials should be made available in appropriate languages to inform of the dangers and consequences of releasing live aquatic organisms into the wild.
- Develop a specific campaign to approach and educate the industry supporting maritime commerce in the Great Lakes including ports, carriers, shippers, mariners, resource users, and users of goods produced from cargo transported to and from Great Lakes ships about the importance of their role to reduce AIS introduction and spread and the direct benefits to the industry.

Education

The educational process including public outreach, technical training and formal education should be acknowledged and fully utilized to influence and modify human behavior to achieve AIS prevention and control. It is important that educational programs focus on the biology of AIS, ecological and economic impacts, pathways of introduction, prevention and control strategies, the importance of protecting the ecological and economic health of the Great Lakes region and advance restoration. These programs should convey the need to maintain beneficial recreational and commercial uses of the Great Lakes while

addressing the need for AIS prevention and control. It is important to engage the youth of the Great Lakes region to encourage future generations to recognize the environmental threat posed by AIS.

Recommended Priorities

- Build upon existing outreach programs at a local, state, provincial and regional level to ensure that all pathways of AIS introduction and spread are addressed, targeting appropriate stakeholders.
- Incorporate as part of K-12 curriculum and youth group programs (e.g., boy scouts, girl scouts, 4-H, etc.), the biology of AIS, ecological and economic impacts, prevention and control strategies, and the importance of protecting the Great Lakes as a regional resource.
- Develop “invasion biology” academic programs at higher level institutions for researchers, resource managers, and scientists.
- Conduct workshops on a local, state, provincial and regional level, targeting educators, on current AIS issues to raise awareness, increase partnerships, and share resources to address AIS and associated impacts. Curriculum development on AIS topics should be coordinated with existing public school curriculum to meet state or provincial standards.
- Develop a web-based clearinghouse for AIS public outreach, training and formal education opportunities in the Great Lakes region.
- Implement training programs to address specific aspects of AIS prevention and control codes of best practices such as watercraft inspection, use of native species for horticulture, HACCP training, and the Clean Marinas Program.
- Develop and routinely update standard guidance for recreational user groups.

Evaluation

Information/education programs promoting AIS prevention and control have been operating on a state/provincial/regional level for over a decade. These programs, however, are being conducted in the absence of systematic evaluation to measure the extent to which associated goals and objectives are being met (i.e. the extent to which modified human behavior actually mitigates impacts resulting from AIS invasions). Program evaluation is needed to assess effectiveness in achieving AIS prevention and control to ensure efficient allocation of limited resources to support effective I/E programming.

Recommended Priorities

- Assess I/E projects and programs on AIS prevention and control, targeting stakeholders to identify successful elements, as well as gaps and unmet needs.
- To facilitate evaluation, incorporate measurable objectives into I/E projects and programs.
- Establish guidelines for publicly funded I/E programs that require the integration of evaluation components to assess programmatic effectiveness.
- Conduct surveys of stakeholder groups to determine level of awareness, assess behaviors and identify types of I/E activities and materials that are considered most effective in promoting practices that advance AIS prevention and control.
- As part of the evaluation process, assess how this document, *Information and Education Priorities for the Great Lakes*, is being utilized and its effectiveness in advancing AIS I/E priorities.

Informational resources used in the development of the document, *Aquatic Invasive Species Information and Education Priorities for the Great Lakes*:

- *Aquatic Nuisance Species Information and Education Materials Relevant to the Great Lakes Basin: Recommendations and Descriptive Inventory* (www.glc.org/ans/pdf/info_educate.pdf) based on 1996 Panel Workshop on Information/Education
- *Information/Education Strategy for Aquatic Nuisance Prevention and Control* and associated Implementation Plan (www.glc.org/ans/pdf/I-Estrategy.pdf) (as revised in 2001)
- Western Regional Panel summaries
- ANS Task Force State/Interstate ANS Management Plans (www.anstaskforce.gov/mgtplans.htm)
- *Great Lakes Commission Model State Plan*
- *New York State Nonindigenous Aquatic Species Comprehensive Management Plan*
- *Michigan's Aquatic Nuisance Species State Management Plan*
- *Ohio Comprehensive Management Plan*
- *Illinois' Comprehensive State ANS Management Plan*
- *Communications, Education and Outreach Committee Action Plan* (a product of the national ANS Task Force)
- *Great Lakes Regional Collaboration, Aquatic Invasive Species Strategy Team Action Plan*

Note that the Great Lakes Panel's Information/Education Committee is chaired by Emily Finnell, Office of the Great Lakes, Michigan Department of Environmental Quality