

## *Risk Assessment for Potential Aquatic Invaders in the Great Lakes*

Since control of invasive species is extremely costly and eradication nearly impossible once established, researchers emphasize that prevention is the most cost-effective management tool available. In taking steps to advance prevention efforts, a scientifically valid process is needed to guide sound management and policy decisions targeting organisms and vectors that pose the greatest threats. Risk assessment (RA)<sup>1</sup> can serve as a useful scientific tool in identifying aquatic invasive species (AIS) of priority concern based on the ecological factors that contribute to their invasive potential.

**Goal:** Support management efforts to reduce the potential for AIS to be introduced or spread in the Great Lakes region through live organism trade pathways by implementing a risk assessment to identify high-risk species.

### **Objectives:**

- Facilitate the development and implementation of a risk assessment for potentially invasive aquatic species for the Great Lakes region.
- Disseminate results to stakeholders including states and federal policy makers, agencies and resource managers, industry, and NGOs to inform management strategies.
- Based on the results of the risk assessment, work with OIT businesses and consumers to reduce likelihood of release of high risk species, through targeted outreach and other programs.
- Provide a list of alternative species that can replace those AIS identified as high risk.

The primary components of such a project would include:

- Identify species in trade that are appropriate for a risk assessment (potentially using a screening protocol);
- Develop & apply a risk assessment model with appropriate input and validation to ensure useful results;
- Identify alternative species for those identified as high-risk; and
- Implement an outreach strategy to communicate results of the risk assessment.

An important consideration for this project will be to ensure that the risk assessment model is both scientifically sound and will yield results that are accepted by and useful for stakeholders to identify and implement risk management activities, as appropriate. This project will **not** identify or make recommendations related to options for risk management.

### Questions / Issues for Discussion

- How do we determine the list of species that will be put through a risk assessment?
- How will this effort support or build on existing state/provincial efforts to identify high-risk species?
- How do we engage stakeholders to make the process useful while maintaining scientific credibility?

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<sup>1</sup> Risk assessment, for purposes of this project, is defined as the process of determining how often an undesired event might occur and the potential consequences of that event. Comparatively, risk analysis is a comprehensive evaluation that combines the results of the risk assessment with potential risk management solutions.

## *Internet Monitoring for the Sale of Aquatic Invasive Species*

Unregulated direct sales (e.g., internet, consumer to consumer) of live organisms is an issue that has received limited attention in the management of the organisms in trade vector. This issue has been most commonly associated with aquatic plants in the horticulture and water garden trades, although it could have implications for other organisms in trade pathways as well (e.g. aquarium pets). Several studies have documented the availability of invasive aquatic plants via the internet, including federally listed noxious weeds. Although identified as a problem, limited work is being done in the Great Lakes region to assess and manage this mechanism for aquatic invasive species (AIS) introduction and spread.

**Goal:** Reduce the potential for AIS to be introduced or spread in the Great Lakes region via unregulated direct sales of live organisms over the internet.

### **Objectives:**

- Assess the availability of AIS of concern to the Great Lakes region over the internet.
- Work with online retailers as well as consumers and hobbyists to increase awareness of AIS and best management practices for reducing risks of introduction and spread.
- Reduce the sale/purchase of these species over the internet.

The proposed project will support management efforts by assessing the availability of AIS via internet sales and implementing management actions, as appropriate, to reduce the risk that these species will be released in the Great Lakes region as a result of this pathway. The primary components of such a project would include:

- Determine a target list of AIS of concern to the Great Lakes region (e.g., regulated species)
- Develop and implement an internet monitoring system to identify online retailers selling those species; and
- Implement a strategy to work with those retailers and/or consumers and hobbyists to reduce the sale and purchase of these species via the internet.

The internet monitoring system maybe developed anew or could be an adaptation of the Invasive Species Internet Monitoring System (ISIMS) developed by the National Science Foundation (NSF) Center for Integrated Pest Management (CIPM). In addition, a committee of “subject matter experts” will need to be convened to assess the relevancy of the data the system collects and provide associated recommendations for revising the system parameters to yield increasingly relevant results. While technology and tools exist to implement the monitoring system, ensuring relevant results and developing an effective management strategy to work with retailers and/or consumers are challenges for this project.

### Questions / Issues for Discussion

- How do we effectively work with retailers and/or consumers?
  - warning (e.g. pop-up notification) to consumers intending to buy a species of concern
  - email/letter notification to the retailer that they are selling potentially invasive or prohibited species
  - warning “labels” for species of concern
  - educational information (e.g., proper disposal practices, Habitattitude™) information posted on retailer websites and/or hobbyist forums
- Is there opportunity for an enforcement mechanism if species are regulated?
- How do we determine if our efforts are successful?

## *Advancing Efforts to Reduce Risks for Aquatic Invasions in Private and Public Aquaculture*

There is evidence indicating that considerable progress has been made over the past decade by private and public aquaculture towards the reduction of risks associated with aquatic invasive species (AIS)<sup>2</sup> and aquatic invasive pathogens and viruses. This has occurred through regulatory programs, policies and best management practices (BMPs), as well as educational outreach targeting industry. Another sign of progress, particularly in the Great Lakes region, is voluntary adoption of the AIS-HACCP (Hazard Analysis and Critical Control Point) program. HACCP is a structured process of analysis to identify hazards posed by AIS, the active or passive means to control those hazards and the means to document that those controls are being implemented.

Management challenges, however, still exist. The aquaculture industry in the region is highly varied, with differences among private and public aquaculture facilities in operations and practices, as well as available resources and technical capacity to engage in efforts to prevent the introduction and spread of AIS, pathogens and viruses. States and provinces responsible for managing aquaculture programs are also frequently constrained by limited resources to address AIS risks within their jurisdictions, let alone across jurisdictional lines. Questions have also been raised regarding the degree and scope of implementation of BMPs and programs such as HACCP to effectively reduce AIS risks. There is a critical need for these management efforts to be implemented to the maximum extent possible. Additional work is needed to facilitate continuous improvement for AIS prevention in aquaculture, including the detection of new threats such as from disease related pathogens and viruses. A comprehensive assessment of regulatory and voluntary programs and policies will provide information that can be used to improve regional consistency, target resources and promote progress towards reducing AIS risks from aquaculture in the Great Lakes region.

**Goal:** Advance existing efforts to ensure that the aquaculture industry in the Great Lakes region is AIS-free<sup>3</sup> and biosecure<sup>4</sup> through an analysis of regulatory programs and an assessment of AIS-related BMPs and AIS-HACCP programs for both private and public operations.

### **Objectives:**

- Conduct a regulatory analysis of private and public aquaculture programs in the eight Great Lakes states and two provinces, including facilities and species regulations, as well as stocking policies and practices.
- Use results from the regulatory analysis to guide an assessment of AIS-related BMPs to determine what, why and where (if at all) practices are utilized to support AIS risk reduction. Given the difference in management scenarios of private and public aquaculture, the assessment is to be handled separately for each of these sectors.
- Assess implementation of AIS-HACCP programs for private and public aquaculture in the Great Lakes region, to identify gaps and unmet needs that need to be addressed to further strengthen AIS risk reduction efforts.
- Develop recommendations based on findings to strengthen regional coordination and consistency for the aquaculture industry in managing AIS risks within the region.

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<sup>2</sup> AIS: Aquatic species (e.g., fish, crustaceans, reptiles, plants) not native to the Great Lakes that may cause significant harm to the environment, economy, or human health. For purposes of this document, AIS will be used in reference to aquatic invasive species as well as aquatic invasive pathogens and viruses.

<sup>3</sup> AIS-Free: AIS risks managed or mitigated to an “acceptable” level

<sup>4</sup> Biosecurity: A health plan or measures designed to protect a population from transmissible infectious disease (WWF and Blue You, 2008)

- Promote implementation of AIS-related BMPs and AIS-HACCP through capacity building programs for purposes of raising awareness, technology transfer and enhancing regional consistency to strengthen reduction of AIS risks.

#### Questions/Issues for Discussion

- In the conduct of a comparative analysis of private/public aquaculture regulations and policies in the eight Great Lakes states and two Canadian provinces, how can we ensure that the results of the analysis are useful in promoting efforts to reduce AIS risks?
- What is currently known and how can we best assess the status of aquaculture operations regarding AIS-related BMPs and AIS-HACCP to support efforts in identifying outstanding risks (e.g., a survey, on-site visits)?
- In the assessment of private and public aquaculture operations, the following areas are proposed to guide in the collection of information on AIS-related BMPs and AIS-HACCP, including regional consistency issues. Should other topical areas be considered in this assessment?
  - Basic Facility Information
  - Best Management Practices to Address AIS: Level of awareness and/or use of BMPs in the different types of facilities.
  - AIS-HACCP: The level of awareness and/or participation in the AIS-HACCP program to address AIS, including consideration for how pathogens and viruses are addressed
  - Environmental Technologies: Innovative approaches under development and/or adopted to minimize AIS introduction and spread?
- What questions should be considered in analyzing the assessment results on AIS-related BMPs and AIS-HACCP to support development of recommendations for improvements on AIS risk reduction?
  - Do barriers exist that impede facilities from implementing BMPs to the maximum extent? Is it cost, training, staff?
  - What can we do to reduce the barriers and work with aquaculture operators to improve risk reduction efforts through BMPs and HACCP?
  - How can this assessment be applied in future initiatives to improve efforts for AIS risk reduction for aquaculture?
- What types of outreach strategies, such as a culminating project workshop, can be most effective in targeting project findings in order to achieve the project goal of ensuring that private and public aquaculture operations are AIS-free and biosecure?
- Who are the potential partners to be engaged in this aquaculture project?