

**AN ACTION PLAN
TO MINIMIZE ECOLOGICAL IMPACTS
OF AQUATIC INVASIVE SPECIES IN
THE MISSISSIPPI RIVER BASIN**

**Developed by the
Mississippi Interstate Cooperative
Resource Association**



Preface

The Mississippi River Basin (Basin) is greatly impacted by aquatic invasive species. Bighead carp, silver carp, common carp, zebra mussel, purple loosestrife, and Eurasian water milfoil are among the species that are most damaging native species and their habitats within the Basin as a whole, while giant salvinia, water hyacinth, and hydrilla are significant problems in the southern reaches of the Basin. Ruffe is at risk to invade the Basin, while viral hemorrhagic septicemia and hydrilla are at risk to spread and cause ecologic and economic damages within the Basin.

The Mississippi Interstate Cooperative Resource Association, with input by the Mississippi River Basin Panel on Aquatic Nuisance Species and others, developed this action plan to guide near-term (2010-2015) coordinated efforts to prevent additional species invasion, and contain and control populations of priority AIS established in the Basin. This plan was developed, in part, by using the Great Lakes Regional Collaboration (2005) document, *Strategy to Restore and Protect the Great Lakes*. The genesis of the Collaboration and its strategic document is described below.

In May 2004, President Bush issued an Executive Order creating a Federal Great Lakes Interagency Task Force (Cabinet level) to improve Federal coordination on the Great Lakes. The Order also directed the convention of a “regional collaboration [Collaboration] of national significance for the Great Lakes.” This collaboration process was needed to develop, by consensus, the restoration and protection action plan for the Great Lakes.

The Interagency Task Force, Council of Great Lakes Governors, Great Lakes Cities Initiative, Native American Tribes, and Great Lakes Congressional Task Force formulated guidance used to develop, by consensus, a strategic plan to restore and protect the Great Lakes. The 1,500 people involved in the Collaboration developed a Strategy to Restore and Protect the Great Lakes (Strategy), which was released in December 2005. Since then, the Collaboration has guided implementation of priority actions listed in the Strategy.

The *Strategy* contains the most comprehensive strategic approach to protecting and restoring a large, aquatic ecosystem from the impacts of aquatic invasive species. People from many Great Lakes governmental and nongovernmental entities spent thousands of hours developing and honing the *Strategy*, from which we have modeled the following plan.

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I. Problem Statement

Significant progress, which resulted from implementation of the Clean Water Act, to restore damaged ecological diversity and integrity of large aquatic ecosystems in the United States (US) has been reversed by the present crisis of aquatic invasive species (AIS) impacts. An “invasive species” is defined as a species: 1) that is not native, and 2) whose introduction causes, or is likely to cause, harm to economies, ecosystems, and human health (Executive Order 13112). The United States continues to face wave after wave of aquatic species invasion, yet we and our aquatic ecosystems cannot afford even a single new invader. A new approach is needed to deal with this crisis. Our recommended approach is to implement this *Action Plan to Minimize Ecological Impacts of Aquatic Invasive Species in the Mississippi River Basin* (Plan) of the Mississippi Interstate Cooperative Resource Association (MICRA).

AIS have entered, and continue to enter and spread within, the United States through pathways such as ship ballast-water discharge, canals, recreational activities, and the release or escapement of organisms imported for a variety of uses. This Plan focuses MICRA’s collaborative efforts to lead a strategic, action-oriented approach to minimize risk of AIS introduction by means of those pathways, and also focuses our collective efforts to implement an integrated pest management approach to containing and controlling established populations of AIS. We assume that minimizing risks of introducing AIS will result in an outcome of a reduced rate of introduction, establishment, and impact of those species. We assume that containing and controlling established populations of AIS will result in an outcome of reduced ecologic and economic impacts of those species. Reduced impact of AIS is a critically important goal for MICRA as we continue our collaborative efforts to conserve aquatic resources within the Basin.

AIS impacts and threats are global in scale. Therefore, we recognize that we must not only work with our existing partners within the Basin, but also with entities from other basins in the U.S., Canadian and Mexican government and nongovernmental entities, and possibly with other organizations from elsewhere in the world.

II. Goals and Milestones

MICRA recognizes that we must work collaboratively and cooperatively so that we and our partner management agencies understand: 1) risks of introductions, spread, and impacts of AIS, and 2) how to coordinate and cooperate on management actions that most effectively and efficiently minimize those risks and impacts. Thus, our strategic approach for AIS in the Basin is that of risk assessment and risk management.

The primary goals for this action plan are described below. More **details, about how MICRA will strategically help lead action to attain those goals, are described in the Recommendations Section below.**

Goal 1 – Reduce and ultimately prevent all new introductions of AIS.

We support implementation of actions intended and designed to best achieve it (i.e., develop best available management practices) under present circumstances. Therefore, a list of priority species and proposed management actions for each (i.e., high risk of introduction, establishment, spread, and impact) will be developed, updated as needed, and used for ranking MICRA's collaborative efforts. This needed decision-support tool will be developed using available risk assessment processes (Risk Assessment and Management Committee 1996, Mississippi River Basin Panel on Aquatic Nuisance Species 2009), and will be updated as needed. The first draft of this list and associated management actions will be completed by December 31, 2011.

Goal 2 – Stop the spread of AIS within the Basin, extirpate harmful AIS, or if impossible, then control populations to ensure sustainable aquatic ecosystems and the social, economic, and cultural uses they support.

We will work with our partners to help develop detailed pest management plans for priority species, and for locations infested and impacted by several of those species.

Milestones:

- MICRA will update the list of species considered the most troublesome or potentially troublesome in the Basin (MICRA 2003).
 - This list will be updated by December 31, 2011, and will be further updated as needed.
- MICRA will help prioritize locations where greatest efforts are needed for integrated pest management activities
 - A list of priority locations for implementation will be developed by December 31, 2011.
- Integrated pest management programs will be developed or adopted for at least 2 priority, established AIS by —December 31, 2011.
 - [Note: We can meet this milestone first by developing an IPM program for bighead and silver carp using information/materials in the National Management Plan for Bighead, Black, Grass, and Silver Carps.]

III. Recommendations

The following five actions are recommended to direct efforts toward achieving both goals.

- 1) **Environmentally protective standards for ballast water should be promulgating, and effective ship-board treatments and best management practices should be implemented.**

MICRA will work with the U.S. Coast Guard, Environmental Protection Agency, states, industries, and others to achieve the following objectives:

- **Eliminate ship and barge-mediated introductions and spread of AIS in the Basin, Great Lakes, and Gulf of Mexico. (As appropriate MICRA will develop and submit comments to the U.S. Coast Guard and Environmental Protection Agency during public comment periods relating to proposed rulemaking.)**

Rationale: It is believed that ballast water discharge introduced the zebra mussel and many other species into the United States and then into the Basin. Meaningful and enforceable regulations and best management practices are needed to protect aquatic ecosystems from ballast-mediated introductions of AIS, and to limit the introduction of AIS into the Basin by that pathway. MICRA will support efforts to develop effective and ecologically sound ballast-water discharge regulations, and will assist in coordinating efforts, where and when appropriate, to monitor the effectiveness of those practices in ports, harbors, and connected waters.

2) Federal, State, and/or local governments should enact measures that ensure canals and waterways convey goods and/or vessels without enabling AIS to pass and expand their ranges.

MICRA will work with the U.S. Army Corps of Engineers, States, local governments, industries, and others to achieve the following objectives:

- **Fully examine options, and their ecologic benefits and costs, to prevent the spread of AIS via canal systems linking large, naturally discrete, aquatic ecosystems.**
- **Close or modify, through the use of physical barriers or control structures, canals that have fallen into disuse or disrepair—if rebuilt, then measures will be incorporated to prevent passage of AIS.**
- **Ensure that development of new cross-drainage basin connections not be completed unless measures are implemented to prevent passage of AIS.**
- **Develop approaches to prevent the exchange of AIS via intermittent, flood-related connections of large, naturally discrete aquatic ecosystems.**

Rationale: Construction of canals that connect naturally discrete basins has resulted in exchange of AIS. MICRA will work with appropriate agencies and controlling authorities to ensure that such exchange is minimized or eliminated.

3) Federal and state governments should take immediate steps to prevent the introduction and spread of AIS as the result of escapement/release of imported organisms.

MICRA will work with appropriate federal agencies, states, industries, and others to achieve the following objectives:

- **Facilitate development of voluntary agreements, codes of best practices, and other approaches and incentives for industrial trade groups.**

- Use, by MICRA members, of the rapid screening process developed by the Mississippi River Basin Panel on Aquatic Nuisance Species (2009), and/or other science-based approaches.
- Develop and use improved screening and risk assessment processes; assist in disseminating those processes to regulatory authorities.
- Increase resources for the enforcement of laws governing the importation and use of live organisms..
- Develop a list of species that are approved for import (i.e., “clean list”) within the Basin and provide to states as an alternative to the restricted species approach.

Rationale: Thousands of animal species and millions of organisms are imported and traded live each year. MICRA’s efforts are intended to support: 1) efficiently and effectively assessing risk of imported aquatic organisms, 2) allowing continued importation and use of organisms with low risk of impact, 3) regulating species that are high risk of establishment, spread, and impact in the Basin, and 4) continually improving screening and risk assessment tools for use by Federal and State regulatory authorities.

- 4) A well structured and funded integrated management program (IPM) for AIS in the Basin should be implemented. This program could be modeled after the Great Lakes Fishery Commission’s integrated sea lamprey control program. The objectives of this IPM program should be to:
 - Allocate additional funds for states to implement expanded State and Interstate Aquatic Nuisance Species Management Plans, with a particular emphasis on the immediate use of techniques to prevent AIS introductions, and slow the spread and control established, priority populations of AIS
 - Implement a scientifically based, monitoring program to detect newly introduced species, at invasion hotspots in the Basin, before they spread and become established
 - Authorize a single lead Federal entity to:
 - Administer a revolving fund for rapid response actions to be mostly implemented under state leadership
 - Coordinate Federal rapid response actions on Federal lands, and when and where requested by State agencies
 - Support additional research to develop and implement new, effective, and ecologically sound containment and control methods for priority species
 - Facilitate, coordinate, and/or lead development, implementation, evaluation, and adaptation of new, integrated management approaches in interjurisdictional waters of the Basin to contain, control, and mitigate impacts of priority AIS
 - In cooperation and partnership with States, Tribes, local governments, Aquatic Nuisance Species Task Force, National Invasive Species Council, Great Lakes Panel on Aquatic Nuisance Species, Mississippi River Basin Panel on Aquatic Nuisance Species, Great Lakes Commission, and others.

- Including, and especially, implementation of the Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States (Asian Carp Working Group 2007).
- Ensure overall coordination and accountability of AIS management in the Basin by collaborating on:
 - Development of outcome-based performance targets against which AIS program accomplishments will be measured.
 - Evaluating the effectiveness of AIS management and control activities.
 - Adaptation of AIS program activities to improve effectiveness and efficiency.
 - Communicating program accomplishments and needs to partners, stakeholders, and decision makers.

Rationale: Implementing an integrated pest management program in the Basin will result in immediate cost-effective benefits (e.g., Leung et al. 2002). MICRA will work with the states and others to increase Federal funding for: 1) approved (by the Aquatic Nuisance Species Task Force) State and Interstate Management Plans, 2) implementing priority recommendations in the Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States (Asian Carp Working Group, 2007), and 3) other priority needs such as giant salvinia, water hyacinth, etc.

5) Cost-effective AIS pathway-specific outreach and education programs should be conducted and evaluated.

MICRA will actively support efforts with Federal, State, and Tribal agencies, academic institutions, and other organizations to achieve the following objectives:

- Increase funding to expand the Stop Aquatic Hitchhikers!™ campaign to inform boaters and anglers on how to take preventive actions so that they do not spread AIS
- Increase funding to expand the Pet Industry Joint Advisory Council/Sea Grant/USFWS Habitattitude™ campaign
- Work with others to develop AIS-related modules for use by teachers in primary and secondary schools
- Expand AIS-focused Hazard Analysis and Critical Control Point (HACCP) training and plan implementation for research and management agencies

Rationale: Outreach is critically important to minimize the spread of AIS by the public. More fiscal resources are needed to: 1) conduct existing outreach campaigns more extensively throughout the basin by paying for expanded media exposure, and 2) evaluate how to improve and expand on existing outreach campaigns. MICRA also intends to enhance materials for, and work with, formal educational institutions so that teachers are better trained and supplied to teach students about the biology, ecology, and impacts of AIS, and what they can each do to prevent the spread of AIS.

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APPENDIX I

ESTIMATED FEDERAL FUNDING NEEDS FOR IMPLEMENTATION

Recommendation	Estimated Federal Funding
1. Promulgate environmentally protective standards for ballast water, and implement effective ship-board treatments and best management practices.	
2. Enact measures that ensure canals and waterways convey goods and/or vessels without enabling AIS to pass and expand their ranges.	\$0.05 M Annually
3. Take immediate steps to prevent the introduction and spread of AIS as the result of escapement/release of organisms imported for various uses.	\$0.3 M Annually (for 5 years)
4. Support implementation of a well structured and funded integrated management program (IPM) for AIS in the Basin.	\$84.1 M Annually
5. Support efforts to conduct and evaluate cost-effective AIS pathway-specific outreach and education programs.	\$20 M Annually
Total Estimated Annual Federal Funding	\$104.45 M