

A Model Rapid Response Plan for Great Lakes Aquatic Invasions

Aquatic Invasive Species Workshop: Developing a Rapid Response Plan for Ohio

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Why Rapid Response?

- Invasive fish rears ugly head in Great Lakes
- Nov 8, 2004
- Great Lakes Radio Consortium
- The northern snakehead caught by a Chicago fisherman in Lake Michigan a few weeks ago may have been a released pet, pointing to what is often an overlooked source of potential invasive species.

'Perfect weed' may threaten our lakes

Sep 23, 2006

Jerry Wolffe

The Oakland Press

An invasive aquatic plant that has clogged lakes and waterways in 18 states is closer to Michigan than many scientists are comfortable with.

Hydrilla - which could have a profound ecological and economic effect on coastal and inland waters - has been found in northern Indiana, less than an hour's drive from Michigan.



Creepy Catch of The Day

David A. Fahrenthold
Washington Post
Apr 29, 2004

The snakehead fish, a voracious Asian invader that's been known to breathe out of water and scoot short distances over land, has reappeared in Maryland.

Why Rapid Response?



Hydrilla invades lake

Manitou threatened by fast-growing import, officials say
Christina Seiler
The Rochester Sentinel

Lake Manitou has a new and worrisome problem: *Hydrilla verticillata*. The Indiana Department of Natural Resources has issued an alert about the invasive water plant, which has the potential of choking out other aquatic plants. Lake Manitou is the only lake in the Midwest where hydrilla is found, said Doug Keller, the state's aquatic coordinator.

Why Rapid Response?

Asian carp could threaten Great Lakes

Nov 29, 2006

Matt Whetstone

Cadillac News

Two electronic barriers separate Lake Michigan from the Chicago ship canal.

If the barriers are breached, it could prove devastating to the Great Lakes region. The effort is underway to control the movement of two species of Asian carp, which are “knocking on the door,” according to Department of Natural Resources Fisheries Supervisor Tom Rozich.

The invasive species would pose a significant threat to the Great Lakes because they are capable of surviving in cold water. Rozich said. Secondly, they would compete directly with perch, alewives, smelt and any type of larval species that subsists on plankton.



Rapid Response Plan for Great Lakes Aquatic Invasions

Goal

- Enhance capacity to anticipate, prevent and respond to new ANS invasions in the Great Lakes-St. Lawrence region
- Capitalize on the window of opportunity to stop the establishment of new harmful species shortly after introduction, when control/eradication is feasible

Objective

- Initiate eradication efforts or critical interim measures to achieve effective containment while a long term strategy is formulated (Rapid Response Protocol for Invasive Aquatic Fish and Other Fauna, Maine Department of Environmental Protection)

We must be prepared for Great Lakes aquatic invasions to continue



Our best defense is building capacity for rapid response upon their arrival!

Laying the Foundation for Rapid Response

- Create public and political will that allows for quick and effective action in the event of Great Lakes aquatic invasions
- Develop societal awareness for the damaging consequences imposed by AIS invasions if left unchecked
- Collective recognition of the escalating ecological, economic and societal costs incurred by AIS invasions will help drive the need for rapid response and related prevention and control measures
- Ultimately there needs to be a common understanding that in the short run, native communities may be compromised, but this must be accepted as the trade-off to prevent further invasion

Rapid Response Plan Components

- Introduction, Defining the Problem, & Goals
- Organizational Structure & Communication
- Outreach
- Early Detection & Monitoring
- Decision Support & Rapid Scientific Assessment
- Management Options for Eradication/Control
- Implementation
- Adaptive Management
- Funding

Rapid Response Plan Components

■ Organizational Structure and Communication

The functionality of a rapid response plan is strongly dependent on sound organization that is reinforced through effective communication

- Establish protocols on a regional level, such as an MOU, to handle multijurisdictional challenges
- Define roles and responsibilities of participating agencies on an AIS rapid response team
- Determine an invasion command structure (ISC) for decision making on rapid response and identify the lead authority legally empowered to make decisions
- Predesignate an on-scene coordinator on location of the AIS invasion to coordinate the logistics of a local response

Rapid Response Plan Components

■ Outreach: Pre-invasion

An informed public aware of the threats posed by AIS invasions is very important in cultivating the political will needed for approval of rapid response plans.

- Convene an outreach/communication team to develop/conduct strategic plan targeting media, general public, commercial and recreational water users, angling groups, environmental groups, legislators, elected officials
- Designate a public communications officer from a leading entity as the point of contact on outreach activities
- Begin an aggressive outreach campaign for those invasions considered imminent through the use of fact sheets, informational meetings, postcards, flyers, press releases

Rapid Response Plan Components

- Outreach: Progression of the Invasion and Implementation of Rapid Response
 - Implement outreach tools that are effective in conveying information during the progression of the invasion (door-handle hangers, fact sheets, media announcements and related stories, etc.)
 - Use a dedicated website to provide ongoing information on the status of the invasion, including a clear statement on the need for rapid response to an invasion
 - Provide open public forums (town hall meetings, lake association meetings, etc.) to inform the public on specific information regarding the AIS invasion and gather input from stakeholders

Rapid Response Plan Components

■ Outreach: Post Invasion

- Formally document outcome of rapid response efforts
- Develop and conduct an assessment of effectiveness of rapid response plan based on results
- Convey assessment to all public and private stakeholders, including agency representatives
- Establish a process documenting the “lessons learned” for application during future invasions

Rapid Response Plan Components

■ Early Detection and Monitoring

The effectiveness of AIS rapid response is highly dependent on early detection of new introductions and monitoring of established populations

- Coordinated frameworks/networks for active (dedicated) and passive (incidental) detection to maximize the probability of AIS detection prior to the establishment of the invasive population.
- Locations where routine monitoring should occur based on the identification of 1) “hotspots” characterized by high invasion risks such as industrial ports with high volumes of shipping traffic, or 2) high value resources that could be severely impacted by a new invasion

Rapid Response Plan Components

- Early Detection and Monitoring
 - Identification of high priority species for which to monitor using a set of criteria based on “invasiveness” characteristics
 - Great Lakes-specific training materials for the public and stakeholders to raise awareness for potential invasive species and guidance on measures to be taken if species are found ANS Task Force Expert Database to identify/verify specimens in a timely manner
 - Website sponsored by U.S. Geological Survey presents more information on AIS early detection and monitoring
<http://edrr.nbii.gov/portal/server.pt>

USGS/NOAA Expert Directory

Experts List - Microsoft Internet Explorer provided by EOE

Address <http://www.dorklegion.com/USGS/experts/expertlist.php?expertprimarystate=MA>

ANS Task Force Experts Directory

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Name	State	Discipline	Affiliation	ExpertProfile
Jay Baker	MA		Mass Office of Coastal Zone Management	State ANS Contact
Charles Hernick	MA	General Mollusks Taxonomy Aquatic-General	Mass Office of Coastal Zone Management	State ANS Contact
Les Mehrhoff	MA	Taxonomy Plants Terrestrial	Invasive Plant Atlas of New England	manages a volunteer network that surveys New England states for terrestrial invasive weeds

Done Internet

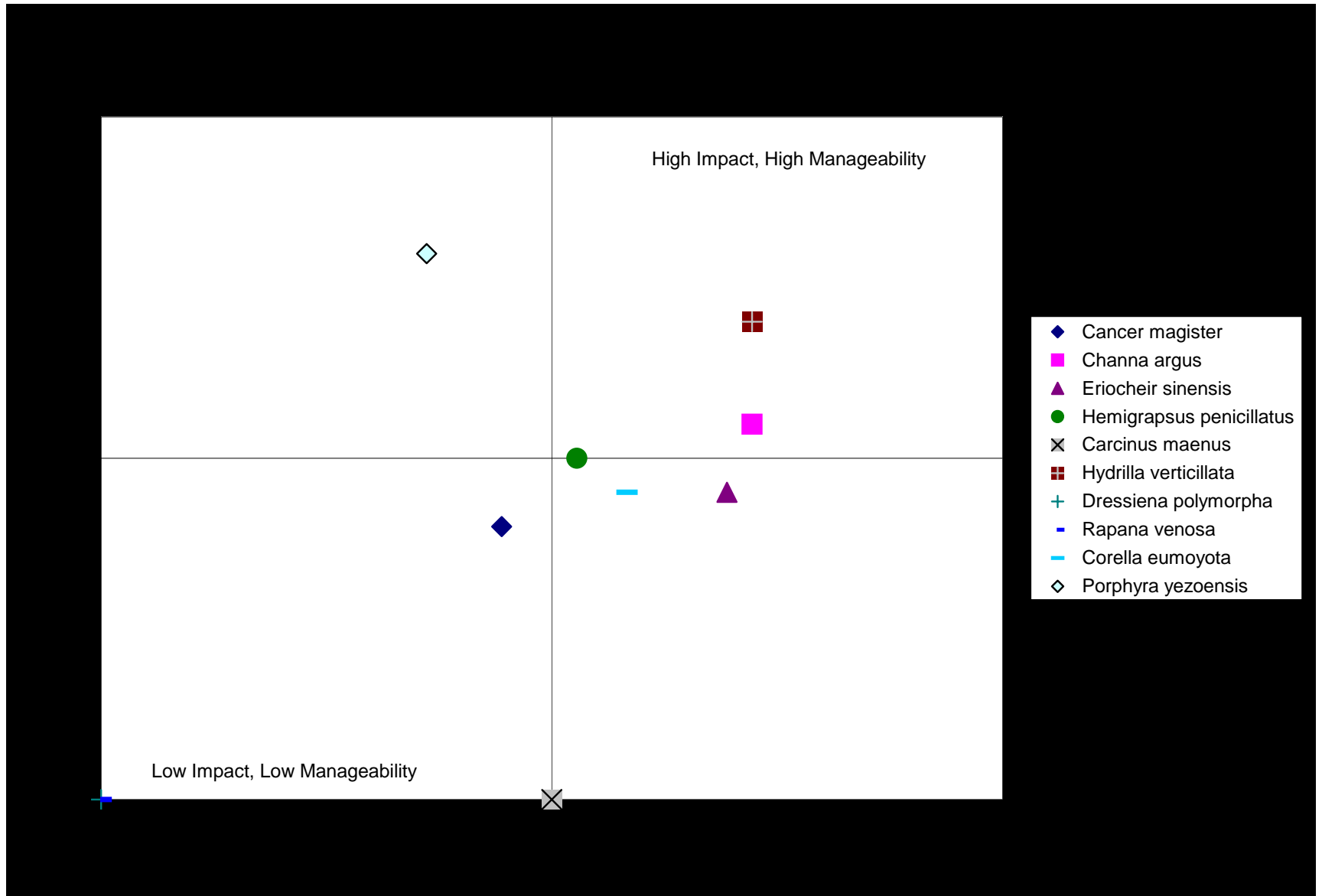
Rapid Response Plan Components

■ Decision Support and Scientific Assessment

If the predicted costs and impacts of the damage caused by the invasive species outweigh the risks and costs associated with implementation of a rapid response plan, support then exists for response efforts to proceed.

- Institutional arrangements to conduct a decision support system based on appropriate legal authority
- Framework to guide flow of information for decisions and tools to weigh economic and ecological factors
- Scientific assessment to provide the basis of decisions on how to respond (or not) to the AIS invasion. Threshold criteria are needed to drive decisions for action such as impact, manageability, treatment costs
- Communication and education campaign targeted to all stakeholders during the entire process of decision making with the objective of making the process user friendly and transparent

Species Evaluation



Rapid Response Plan Components

■ Management Options for Control & Eradication

There is only a limited set of physical/mechanical, biological and chemical tools approved for use in managing AIS invasions through rapid response.

- Assess existing tools for rapid response and expand tool kit for rapid response management (e.g. eradication, control, containment) through research and development
- Implement containment and quarantine options, if needed, following an AIS invasion for interim use while decisions are being made on permanent management strategies
- Where applicable, secure pre-approval for tools needed to implement management strategies to facilitate timely selection and application of treatment

Rapid Response Plan Components

- Management Options for Control & Eradication
 - National Environmental Policy Act (NEPA): An environmental assessment typically is required under NEPA for any proposed chemical treatment.
 - An environmental assessment must include a description of the proposed treatment, why the treatment is needed, a description of the environment to be treated, projected environmental impacts of the proposed treatment, etc.
 - Categorical exclusions are applicable in some cases

Rapid Response Plan Components

■ Management Options for Control & Eradication

While eradication may involve high initial economic costs, if eradication is achieved, it is invariably more cost-effective than any measure that requires continuous expenditure over long periods of time

- Select treatment options for response to AIS invasion based on physical, hydrological and biological information coupled with a benefit cost analysis (Assessment matrix for evaluating the feasibility of various management options)
- Secure access to the permitting process for application regarding scenarios involving high risk species and generic jurisdictional scenarios;
- Ensure that all appropriate authorities participate in rapid response planning, to provide the operational and legal authority
- Conduct an outreach campaign targeted to the appropriate stakeholder groups to support management efforts.

Table 1: Assessment matrix for evaluating the feasibility of various management options.

Assessment	Physical/ Mechanical		Biological		Chemical	
	A	B	X	Y	1	2
Timeline to apply treatment						
Specificity of treatment to invading species						
Authority to access invaded habitat						
Required Federal permits for application						
Required state permits for application						
Required training needed to apply treatment						
Safety concerns for applying treatment						
Costs of treatment						
Effectiveness of treatment						
Appropriate to specific habitat under consideration						

Rapid Response Plan Components

■ Implementation

Quintessential to effective implementation is a single operational point of contact to coordinate management and outreach on the site of AIS invasion

- Establish an implementation plan, based on legal authority, accounting for all rapid response components
- Integrate rapid response plan as component of state AIS management plans
- Establish an “on-call” advisory team comprised of Invasive Species Response Coordinators (ISRCs) to coordinate implementation in the event of an invasion
- Assign an “on-call” public relations officer to handle coordinated/consistent communication with the public in the event of an invasion

Rapid Response Plan Components

■ Implementation

- Connect implementation activities to the decision support system backed up by scientific and risk assessments to choose the best management option based on technical, political and socioeconomic feasibility
- Based on outcomes from decision support, mobilize an incident command system to coordinate implementation of response actions
- Access pre-established funding sources that are adequate to mount an effective, timely and sustained response to new invasions with the provision that these sources may need to be shared across jurisdictional boundaries

Rapid Response Plan Components

■ Adaptive Management

...a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs

- Establish long-term goals and objectives for adaptive management and restoration efforts associated with rapid response to AIS (e.g., normal conditions, original state, success criteria)
- Goals/objectives should be based on technical feasibility and stakeholder values and desired functions
- Assess effectiveness of rapid response based on long term goals and incorporate findings into future decisions and improvements to the response action.
- Conduct post-procedure monitoring/re-introduction risks

Rapid Response Plan Components

■ Funding

The largest potential obstacle to overcome for implementation of a rapid response is securing adequate funding that is readily accessible

- Develop a funding plan to identify potential resources from federal, state and local agencies and public and private entities; including long-term funding strategies for rapid response efforts
- Ascertain policy and legislative opportunities that could be directed to support AIS rapid response funding needs
- Implement advocacy efforts to ensure that Congress authorizes and appropriates funding for rapid response programs
- Prepare cost estimates for general response scenarios, as examples for policy makers, which can be adapted for expeditious use in the event of a new AIS invasion

Rapid Response Plan

■ Species-Specific Case Study

- Primary purpose of the case study is to test the functionality of the model rapid response in the capacity to respond to an invasion.
- Hydrilla (*Hydrilla verticillata*) was selected as the species for the case study, identified by the state of Michigan's ANS Council as a potential invader of Michigan waters as well as other waters in the Great Lakes region
- The *Model Rapid Response Plan for Great Lakes Aquatic Invasions* provided a framework in building the hydrilla rapid response plan

Rapid Response Plan

■ Species-Specific Case Study

- Leading the charge in the development of the hydrilla rapid response plan is Roger Eberhardt, Office of the Great Lakes, Michigan DEQ
- State of Indiana is now implementing rapid response plan to contain infestation of inland lake in northern part of the state

Model Rapid Response Plan for Great Lake Aquatic Invasions

■ **Further Information**

□ **Website Access:**

<http://glc.org/ans/initiatives.html#rapid>

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