

WISCONSIN'S RAPID RESPONSE FRAMEWORK FOR AQUATIC INVASIVE SPECIES

WORKING DRAFT

Wisconsin Department of Natural Resources
December 19, 2012

SCOPE AND PURPOSE

This document is intended to serve as an aid to resource managers who are responsible for responding to newly discovered aquatic invasive species (AIS). It has been prepared not just for government agency staff but also for anyone who has responsibility for managing the waters of the State of Wisconsin. It cannot, and does not attempt to, provide answers or solutions to all of the issues associated with rapid responses. Rather, this document provides a framework to assist any manager in responding thoroughly, professionally and effectively to the many challenges that result from new invasions.

As defined in Section 23.22 (1) (c) Stats., an “invasive species” is a nonindigenous species whose introduction causes or is likely to cause harm to the economy, environment or human health. This framework incorporates the categories for AIS used in the WI Admin Code NR 40: restricted and prohibited. A “restricted species”, as defined in NR 40.02, is an already established species for which statewide or regional eradication or containment may not be feasible. A “prohibited species” is one that the Department has determined is likely to survive and spread if introduced into the state, but which is either not found or is limited to isolated individuals or a specific watershed in the state or the Great Lakes, and for which statewide or regional eradication or containment may be feasible.

Early detection of new invasions is critical to any rapid response. The value of rapid response is realized only if populations are identified when they are small and manageable. To be most effective, a response to a new introduction should occur quickly during the “pioneering” stage. Note that the term “quickly” is subject to the biology and context of each individual invasion. In Wisconsin, the pioneering stage of rapid response is defined in WI Admin Code NR 198 as a small community of aquatic invasive species in the early stages of colonization, or recolonization, in a particular waterbody or portion thereof. For rooted aquatic plants, a pioneer population is one that has been present less than 5 years, or is a recolonization following the completion of an established population control project under subchapter IV. It also must be less than 5 acres in size or less than 5% of the littoral area whichever is greater. Importantly, this means a rapid response could continue for years when a species spreads slowly and can be effectively contained.

We purposefully did not prepare detailed “response plans” for individual species that have not yet invaded because responses must be guided by case-specific facts. How a species invades – their number, density and distribution, proximity to other known

invasions, the time of year, water use, and numerous other factors – determines what actions are possible and useful. Instead of pre-determined plans, we chose to rely upon an established process to guide decision-making and response actions for species invasions anywhere in the state. We encourage pre-planning efforts for future invasions, but have also learned that there is a limit to the level of response planning that is useful until an invasion actually occurs. For example, an understanding of possible actions (and real constraints) is very helpful in advance of an invasion. Similarly, establishing communication networks with potential partners and stakeholders can be useful.

The process that we have selected ensures that managers give attention to all of the necessary components of an effective response: coordination, communication, public outreach and community-based partnership, planning, incentives and funding, science, information management, laws and regulations, resources and logistics. As an example, one of the first steps following verification of any invasion is to plan and implement a “delimitation” survey to determine the geographic extent of the invasion. Whereas a single or very limited invasion may lend itself to complete elimination of the invading population, invasions at numerous locations over a wide area may preclude eradication and allow only for a strategy of spread prevention. New invasions to flowing waters (rivers and streams) are inherently more difficult to control than invasions into contained waters (lakes and ponds). The wide range of possible conditions has a correspondingly wide range of possible response actions. They range from the removal of infested and potential hosts to outreach and regulatory efforts, such as quarantines and inspections that are intended to reduce or eliminate the movement of infested materials away from the invaded body of water. These decisions cannot be made until survey information is available.

Our experiences with Hydrilla, Eurasian water milfoil, red swamp crayfish, carp and other aquatic plant and animal invasive species have been used to help develop and refine this framework (examples are [appended](#)).

Wisconsin works closely with federal, interstate, state and local partners on development of rapid response plans and research options for controlling invasive species (e.g., Asian carp and northern snakehead). As planning and research efforts proceed, we will incorporate findings and recommendations into Wisconsin’s Rapid Response Framework for AIS.

ACKNOWLEDGEMENTS

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THE RAPID RESPONSE PROCESS OVERVIEW

Early Detection & Reporting - The most critical step in addressing a new invasive species is to know that it exists. The early detection of new invasions is key and frequently requires a network of well-trained volunteers and professionals who can carry out field surveys, reporting, and when necessary, specimen collection for identification. Protocols for early detection monitoring are available (<http://dnr.wi.gov/lakes/monitoring/AIS.aspx>).

The efficiency of field surveys may be greatly improved by following Smart Prevention principles to target waters most susceptible to invasion, colonization and harmful impacts (<http://limnology.wisc.edu/personnel/jakevz/ais/>).

The rapid response process begins once a potentially new invasion has been reported, whether to an agency (e.g., county, state or federal resource agencies, GLIFWC) or community-based organizations (e.g., lake or sanitary district, river organization) or owner of a private pond, dam or wetland whose mission includes responding to invasions. The Wisconsin DNR has a reporting procedure for both plants and animals with details on collecting specimens and contact information for regional AIS Coordinators.

Report Invasive Species: <http://dnr.wi.gov/topic/invasives/report.html>

Verification - The rapid and accurate identification of a new invasive species is an important first step. Suspected sample(s) must be verified by a recognized expert or accredited laboratory before action can be taken. Samples should be vouchered to authenticate suspected sample(s) with physical evidence.

Notification - Relevant resource managers at the local, regional, state and national levels should be notified once the reported invasion has been verified. Notification of the news media and the public should occur once the initial verification has been confirmed. Note: media is only involved if the species is listed as a prohibited species, is new to the region, or in a critical waterbody. New as well as existing findings of aquatic invasive species are kept up to date on Wisconsin's Surface Water Integrated Monitoring System (SWIMS) (<http://prodoasint.dnr.wi.gov/swims/login.jsp>).

Rapid Assessment - Once a new invasion has been verified, a rapid assessment needs to be completed (per WI Administrative Code NR 40) to determine both the threat(s) posed by the invasion and the potential for an effective rapid response. The first step in a rapid assessment is delimiting the physical extent of the invasion. Another important step is an assessment of the resources (personnel, funds, equipment, supplies, etc.) needed to address the invasion. The rapid assessment will ultimately determine whether responsible agencies or organizations should attempt control including containment, eradication, partial or temporary suppression to control harmful impacts and reduce nuisance; continue to actively watch and evaluate; or no action. The WI Administrative Code NR 40 category is also an important consideration when deciding on the rapid response action. For example, a discovery of a new population of Eurasian water milfoil, a

“restricted species” would elicit a very different response than a new finding of hydrilla, a “prohibited species”.

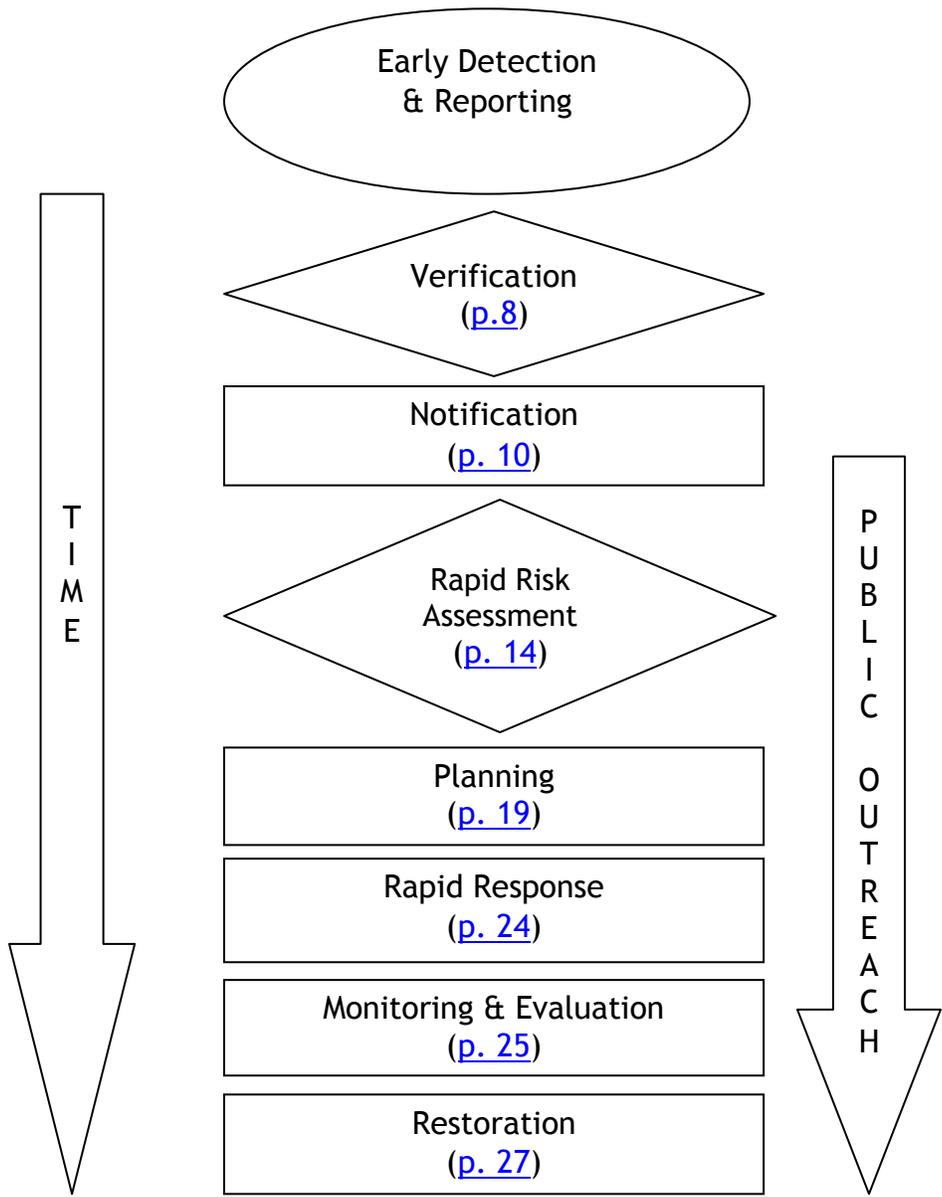
Planning - Once a rapid response action has been determined, planning is needed to address roles and responsibilities, coordination, internal and external communications, marshalling resources and partners, spread prevention, decision-making, enforcement and implementation. In some cases it is necessary to use the Incident Command System (ICS) to coordinate a planned response between multiple jurisdictions and functional agencies. In most instances, a written response plan should be prepared. Such plans can include information from management plans, recommended practices, water conservation plans, and standards and guidelines (see [appendix](#) for examples). Plans may be written for an individual body of water, cluster of waterbodies, or connected bodies of water. Wisconsin provides state cost share grants to eligible entities for rapid response planning and eligible control activities (<http://dnr.wi.gov/Aid/AIS.html>).

Rapid Response - Rapid response is an action or series of actions taken to quickly contain, and if possible, control newly discovered invaders. Control options include physical, chemical and biological methods to remove, destroy or suppress invasive species. In most instances, eradication may not be possible, so temporary or partial suppression and nuisance-relief of harmful impacts are the only control options. In addition to direct control of the invader, rapid response actions include containment of the invader by heightening the awareness of users (signs and messaging), employing a combination of best management practices at public access sites (e.g., boat-washing and decontamination stations), regulation and enforcement, and changing user behavior and potentially waterbody use.

Monitoring & Evaluation - A rapid response is not complete after containment and control action has been taken. Monitoring after a response is important to determine if management actions are effective. At a minimum, monitoring efforts should focus on treated waters, but should also include adjacent high risk waters when possible. Monitoring results can indicate the need for repeated or additional response actions. Finally, feedback on the efficacy of response actions and the effectiveness of the Rapid Response Plan will enhance long-term preparedness for response to other invasive species introductions. See Aquatic Plant Management in Wisconsin for an example of a Pre- and Post-treatment monitoring protocol (<http://www4.uwsp.edu/cnr/uwexplakes/ecology/APMguide.asp>).

Restoration - Once an initial response effort is complete, it may be necessary to restore disturbed areas to their natural ecological function. Restoration efforts would typically utilize native species whenever possible to help restore ecosystem resiliency and beneficial recreational use as well as guard against future re-infestations or new introductions.

The Rapid Response Process



HOW TO USE THIS DOCUMENT

This document is operational in nature; therefore, the activities outlined below focus on the steps to verify a new AIS infestation and the actions that would follow a confirmed introduction. The actions are arranged in the order they should be performed; however, some activities may or should be implemented simultaneously. Some of the tasks identified may already be ongoing, while others will need to be implemented quickly following review and approval. Not all items in this document will be relevant to all invasions. Nevertheless, managers should consider each item as they proceed to plan and implement responses to new invasions.

Successful implementation of this document requires resource managers who are willing to aggressively respond to the particular circumstances of a new infestation. Ideally, this guidance will prompt improvements in response timing, organizational development, permitting efficiencies, funding mechanisms, outreach strategies, and other tools that in turn will allow this document to evolve further over time.

VERIFICATION

Verification and notification can be done simultaneously after the initial confirmation of AIS at a new location. See [Figure 1](#) at the end of the Notification section for clarification.

Who The individual/organization who receives and accepts responsibility for handling the initial report in coordination with the state, tribal, provincial, and/or federal agency where the initial sighting occurs. The DNR AIS Regional Coordinator ([Group 1](#)) should be contacted to aid in this process.

Why The objectives are to confirm the accuracy of the report, determine the condition (age, reproductive status, vigor, etc.) of the sample, and ensure that everyone is handling reports consistently and judiciously.

How

1. Interview the reporter(s) to validate detection and fill out the appropriate report form: [3200-125 - Aquatic Invasive Plant Incident Report](#) or [3200-126 – Aquatic Invasive Animal Incident Report](#)
 - a. Record details of the location such as: County, Township, City/Village, name of water body, land unit area, landmarks, boat landing name, highway mile, and land ownership where the suspect invader was found. Get GPS coordinates if possible.
 - b. Collect contact information from the reporter(s).
 - c. Secure an estimate of the number of the individuals found and the extent of the infestation.
 - d. Obtain a digital or other photograph (with scale indicator), if possible.
 - e. Secure a specimen, if possible.
 - f. Document the date and time of sighting(s).
 - g. Note other relevant conditions (access limitations, possible transport vectors, etc.)
2. If the suspected invasive species is a wetland plant, the report and a picture of the specimen should be sent to invasive.species@wi.gov with “WIP” in the subject line. Once the identity of the species has been confirmed, the wetland invasive plant expert will inform the AIS Coordinator.
3. For non-wetland plants and animals, validate identification as soon as possible via examination of a physical sample and voucher a specimen for the state record. (See [Group 3](#) in Notification Section for a list of experts)

- a. When feasible, arrange for a site visit by at least one recognized expert (preferably a small team).
- b. If recognized experts cannot feasibly reach the site within a reasonable time frame, arrange to have samples and/or other evidence (e.g., photographs) sent via express mail service to the most accessible recognized expert.
- c. Prior to shipping samples, obtain guidelines from recognized experts (and use any existing protocols; <http://dnr.wi.gov/topic/Invasives/report.html>) regarding handling of the sample, desired quantity, where and how to deliver the sample, etc.

NOTIFICATION

Who The individual/organization who accepts the responsibility to verify and confirm the accuracy of the initial report.

Why The objectives are to ensure that all parties that may affect a response decision are quickly engaged and to rapidly inform all other interested parties.

How

1. As soon as practical after a physical sample is visually confirmed to be an invasive species by a recognized expert, notify all relevant natural resource managers. See [Figure 1](#) and subsequent tables below. Note that for many organizations, only primary contacts will be notified. Those primary contacts will then be responsible for further internal notification within their organization (i.e., a primary contact for a state agency would be responsible for contacting other key officials within their state agency).
2. Secure verification of notifications to confirm that all relevant contacts did, in fact, receive notification (e.g., Internet list server response confirmation requirement, phone list call-backs, etc.).
3. While proceeding with subsequent response activities described below, obtain a definitive confirmation of the invasive species via a second expert(s) and/or a biological analysis.
4. Contact the initial observer of the new AIS population to inform them on the verification of the AIS.
5. Note that the general public/media notification should not occur unless the species is new to the region or the infestation is in a critical waterbody.
6. Disseminate information on definitively confirmed invasions through an easily accessible database and list serve. Add the new finding into SWIMS and contact the appropriate people depending on whether the species is a restricted or prohibited species

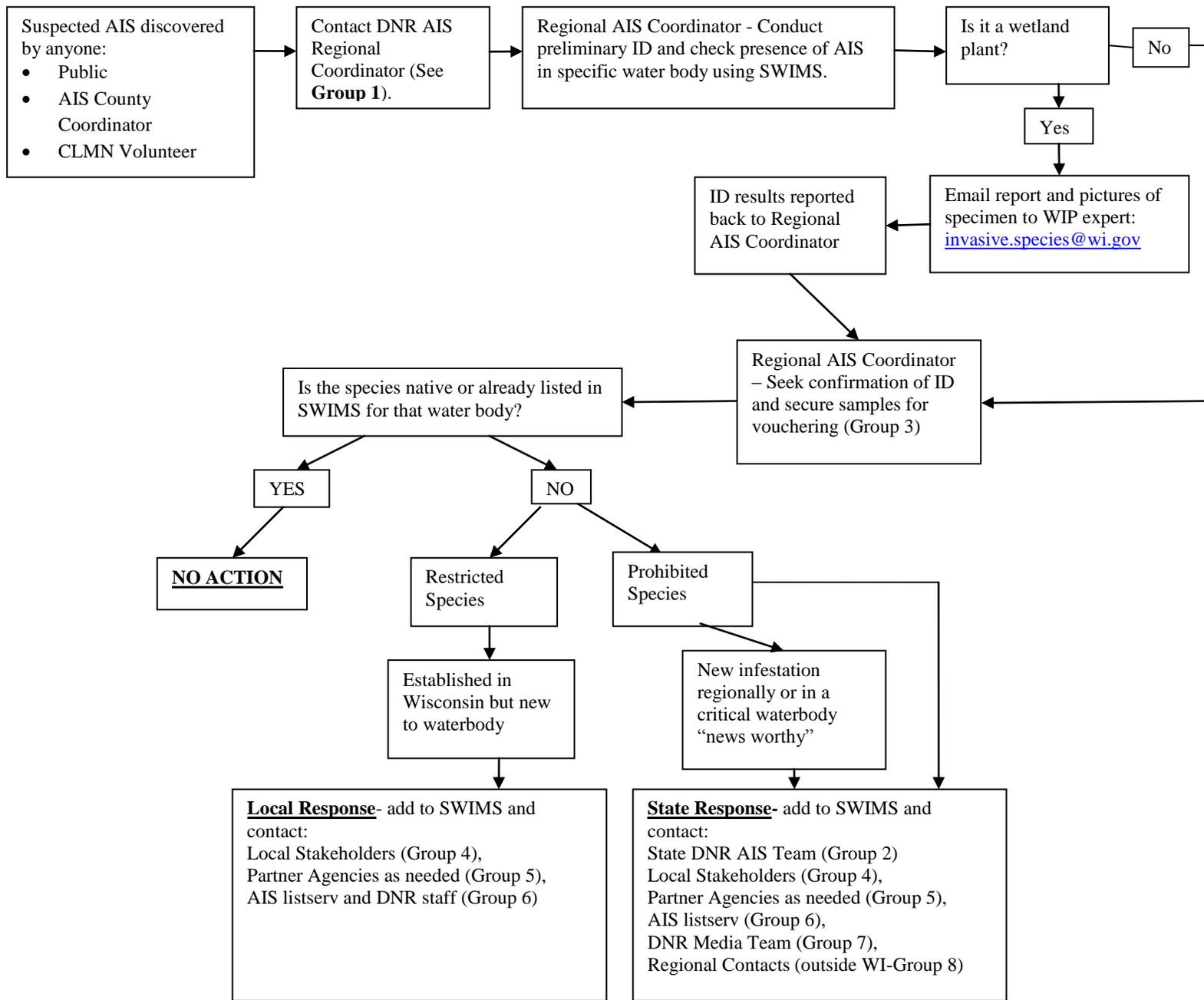


Figure 1: AIS Discoveries-Communication Protocol

The following tables are not comprehensive but provide an initial set of contacts. They presume the identified individuals will directly make further contacts within their organizations. Contact only necessary agencies and organizations.

Group 1 - <u>DNR Regional AIS Coordinators:</u>			
<u>Northern District</u>			
Park Falls Area	Jim Hansen	james.hansen@wisconsin.gov	715-762-1343
	Jim Kreitlow	james.kreitlow@wisconsin.gov	715-365-8947
Rhineland Area	Kevin Gauthier	kevin.gauthiersr@wisconsin.gov	715-365-8937
Spoooner Area	Pamela Toshner	pamela.toshner@wisconsin.gov	715-635-4073
<u>Southern District</u>			
SE Wisconsin	Heidi Bunk	heidi.bunk@wisconsin.gov	262-574-2130
Southern Wisconsin	Sue Graham	susan.graham@wisconsin.gov	608-275-3329
<u>Northeast District</u>			
	Brenda Nordin	brenda.nordin@wisconsin.gov	920-662-5141
<u>Western District</u>			
	Scott Provost	scott.provost@wisconsin.gov	715-421-7881

Group 2 - State DNR AIS Team:			
Section Chief	Jeff Bode	jeff.bode@wisconsin.gov	608-266-0502
Statewide AIS Coordinator	Bob Wakeman	robert.wakeman@wisconsin.gov	262-574-2149
AIS Communications/ Outreach Specialist	Deborah Seiler	deborah.seiler@wisconsin.gov	608-267-3531
Aquatic Invasives Education Specialist	Christal Campbell	christal.campbell@wisconsin.gov	608-266-0061
Statewide AIS Monitoring Coordinator	Scott Van Egeren	scott.vanegeren@wisconsin.gov	608-264-8895
Invasive Species Project Coordinator	Mindy Wilkinson	melinda.wilkinson@wisconsin.gov	608-266-6437

Group 3 - Appropriate AIS Specialists:			
Brock Woods	wetland plants	brock.woods@wisconsin.gov	608-221-6349
Dr. Emmett Judziewicz	wetland plants	ejudziew@uwsp.edu	715-346-4248
Craig Roesler	crayfish	craig.roesler@wisconsin.gov	715-634-9658
Dr. Robert Freckmann	aquatic plants	rfreckma@uwsp.edu	
Paul Skawinski	aquatic plants	Paul.M.Skawinski@uwsp.edu	
Scott Van Egeren	crayfish	scott.vanegeren@wisconsin.gov	608-264-8895
Laura Herman	snails	laura.herman@uwsp.edu	715-365-8998
Heidi Bunk	zebra/quagga mussels and spiny waterfleas	heidi.bunk@wisconsin.gov	262-574-2130

Group 3 – Appropriate AIS Specialists Continued:			
John Lyons	fish	john.lyons@wisconsin.gov	608-221-6328
Scott Van Egeren	invertebrates	scott.vanegeren@wisconsin.gov	608-264-8895
Kelly Kearns	riparian plants	kelly.kearns@wisconsin.gov	608-267-5066

Group 4 - Local Stakeholders:
Specific AIS County Coordinators (http://dnr.wi.gov/lakes/invasives/topics.aspx)
Lake Associations (http://www4.uwsp.edu/cnr/uwexlakes/lakelist/)
DNR Lake Coordinators/Specialists (http://dnr.wi.gov/lakes/invasives/topics.aspx)

Group 5 - Partner Agencies:
UW
UW Sea Grant
DATCP
GLIFWC
USFWS
USGS
River Alliance of WI
Wisconsin Wetlands Association

Group 6 - AIS list serve:
Available through the DNR Lakes Program

Group 7 - DNR Media Team:
Lisa Gaumnitz lisa.gaumnitz@wisconsin.gov 608-264-8942
Public Affairs Staff

Group 8 - Regional Contacts:
GL Panel
Mississippi River Panel
Asian Carp Regional Coordinating Committee
MICRA
Minnesota
Michigan
Illinois
Iowa

RAPID RISK ASSESSMENT

In this section, it may be especially valuable to implement some of the steps simultaneously.

Step I – Defining Roles and Responsibilities

Who Lead Agency/Organization, as defined below. The Lead Agency or organization depends on the scale, location and type of AIS. The Incident Command System (ICS) may be used depending on the size of the area to be surveyed and the resources needed. ICS is a standardized organizational and operational structure for managing emergency responses, and integrating and coordinating multiple organizations and agencies.

Why The objective is to activate a predetermined response management system that expedites decision-making, information sharing, avoids duplication, and minimizes authority conflicts, while preserving flexibility for adaptive management.

How

1. The appropriate Lead Agency or organization with authority where the initial sighting(s) occurred convenes a meeting of all relevant managers and selects a Management Team and Lead Coordinator. At a minimum, this meeting should involve all organizations that have jurisdiction within the infestation area. During this meeting it should be decided whether to have a single command response with one Incident Commander (IC), or in the case of a multi-agency or multi-jurisdictional response, a Unified Command (UC) in which multiple agencies share incident management responsibilities.
2. The Management Team will assess the risk and analyze all potential management options. The Lead Coordinator will coordinate all management activities. Note that the Lead Coordinator will not be the primary decision-maker or have veto power regarding response strategies; he or she simply will serve as a primary point-of-contact for resolving coordination and logistical problems. Response actions within the boundary of lands, waters, or structures owned/administered by a particular individual, organization, or jurisdiction will be overseen by that owner/administrator unless they concede responsibility to another entity.

The Management Team will:

- a. Determine the extent of the infestation and pathways for potential spread.
- b. Determine the risk to the environment, human health, economy, etc.
- c. Identify constraints and limitations, including jurisdictional issues, legislative authority, funding, permitting, personnel training, access to private lands, gaps in knowledge, and ecological uncertainties.
- d. Determine if eradication/control is possible and select the appropriate method(s) to be employed.

The Lead Coordinator will:

- a. Coordinate interagency “response team” notification operations.
 - b. Facilitate creation of a response management system involving lead representatives of each local, tribal, state, provincial, and/or federal government that has legal authority over the response.
 - c. Represent (i.e., be the spokesperson for) the Management Team.
 - d. Facilitate a collaborative decision-making process that considers cascading levels of authority within individual agencies.
 - e. Facilitate development of response priorities.
3. The above actions should take into account the roles, relationships, and inter-agency agreements among:
- a. All affected states (e.g., Governor, state agencies, AIS coordinators, etc.)
 - b. Federal agencies (e.g., USFWS, USDA, NOAA, USACOE, etc.)
 - c. Tribes
 - d. Local governments
 - e. Other interested parties, such as NGOs, universities, nurseries, marinas, etc.
4. The local response team should draw upon technical experts from outside the region to help advise response operations when appropriate.

Step II – Delimiting Invasion and Conducting Literature Search

Who The appropriate lead agency with authority where the initial sighting(s) occurred, in partnership with federal, tribal, state and local governments as well as non-government organizations.

Why The objective is to rapidly provide information to guide subsequent management decisions, including survey design.

How

1. Determine the geographic extent of the infestation. Survey efforts should follow existing regional or national protocols.
 - a. Examples of sampling protocols are available for:
 - i. Crayfish

- ii. Plants
- iii. Snails

2. Determine demography of infestation (e.g., age structure). These efforts should follow existing state, regional or national protocols. Where possible, surveys should assess maturity and reproduction condition of the infested site(s).
3. Identify and survey nearby facilities, habitats or resources (e.g., boat launches, wetlands, beaches, upstream/downstream of site, areas with disturbed habitat, etc.) that are especially vulnerable to invasion.
4. Identify any nearby facilities, habitats or resources (e.g., nearest known population, ports, boat launches, vendors, etc.) that could serve as a source or pathway of invasion.
5. Ensure that field surveys are completed and the results are reported using agreed upon methods.
6. Compile existing information on the species through literature searches and interviews with experts on the species. If there have been past rapid responses to this species in Wisconsin, then first look for already compiled information.
7. Identify threat(s) to the State's economic, ecological, and recreational resources.
8. Determine if financial resources are available for response activities. One place to look for funding is through the Wisconsin DNR Aquatic Invasives Grants (<http://dnr.wi.gov/lakes/grants/>).

Step III - Planning Internal and External Communications

Who Lead Coordinator in cooperation with UW-Extension

Why The objective is to develop a joint information center to ensure consistent and effective communication to resource managers and interested external stakeholders, including the media and public.

How

1. Notify and educate the affected landowners, and where appropriate, secure written permission to gain access to their properties for response activities.
2. Notify and educate potentially affected landowners and other users.
3. Develop a response management system as needed. The Incident Command System (ICS) may be used depending on the size and type of response needed.
4. Develop a public information strategy (consider a formal, written plan) including: press releases, information packets, and public meetings. Provide information to

affected publics as early as possible. Ideally, public outreach should begin before response decisions are made. Key messages should include: 1) being a “host community” to an invasion is a burden; 2) the risks from the invasion; 3) the available response options; 4) the considerations to be used in decision-making; and 5) the process forward.

The public information/participation strategy should:

- a. Identify who the various interests are that may be affected based on the early identification of issues. Examples include:
 - Water users known to be affected;
 - People who may be affected and people who think they may be affected; and
 - People whose support is needed.
 - b. Establish and maintain two-way communication between management team and identified interests. State how staff will maintain on-going communication with identified interests using frequent telephone calls, email, work sessions and one-on-one meetings.
 - c. Draft press releases to announce significant events and progress.
 - d. Conduct a public scoping session/informational meeting to present the problem and identify issues. Multiple meetings may be necessary throughout the response process as the project progresses.
 - e. Summarize information and comments gathered at public scoping and other meetings and write responses to the comments.
5. Develop and implement general public education and outreach. In situations where a variety of educational materials exist, ensure coordination and agreement on which materials will be used.

Step IV - Marshalling Resources

Who Lead Coordinator in partnership with all other involved organizations

Why The objective is to provide sufficient resources (personnel, equipment, materials, contractors, funding) to initiate control actions and associated activities, including acquisition of required permits.

How

1. Develop estimates for staffing needs, facilities and equipment, and funding.
2. Identify potential sources for staffing, facilities, equipment, and funds.
3. Secure commitments for needed staff, facilities and equipment, and funds.

4. Ensure mechanism for dispersal of funds is in place, and when funds are needed, the flow of dollars occurs expeditiously.

Step V – Preventing Spread

Who Lead Coordinator and Management Team

Why The objective is to minimize all vectors that might further spread the original infestation.

How

1. Identify dispersal vectors (including movement by humans, fish and wildlife, water traffic, water flow, and other physical processes) and pathways and evaluate associated risks.
2. Restrict dispersal pathways where feasible, including:
 - a. Quarantine infested areas as needed to prevent spread. Install physical barriers, if needed.
 - b. Assess the likely movement of infested vehicles, equipment, and materials to identify risk and inspection needs at other vulnerable areas.
 - c. Establish wash and inspection requirements on vehicles and equipment, if needed.
 - d. If feasible, determine and eliminate the likely source of inoculation as warranted. Bring in Wisconsin DNR Law Enforcement to follow up if any law enforcement -related sources are suspected.
 - e. Ensure that invasive species “alert” signs are adequately deployed.
 - f. Begin outreach to alert the public of the risks of spreading the new infestation.
 - g. Use established procedures for equipment disinfection to ensure that personnel do not unintentional spread the invasive species (See [Agency Guidelines for Transfer of Boats, Trailers and Equipment](http://dnr.wi.gov/topic/fishing/documents/vhs/disinfection_protocols.pdf); http://dnr.wi.gov/topic/fishing/documents/vhs/disinfection_protocols.pdf).
 - h. Work with UW-Extension (see [RAPID ASSESSMENT Step III](#) – Planning Internal and External Communications) to design and implement educational outreach programs using print, electronic media and other avenues.

PLANNING

Step I – Exploring Alternatives

Who Lead Coordinator and Management Team

Why The objective is to evaluate all the available information and then decide which response action (eradication or containment/mitigation) and which management action (hand-pulling, dredging, herbicide, etc.) is appropriate.

How

1. Decide if eradication is feasible based on rapid analysis of specific nature of invasion, including population dynamics and pathways of spread. Consider the following:
 - a. Risk to environment, human health, economy, etc.
 - b. Anticipated cost of eradication effort and follow-up monitoring (relative to available funding).
 - c. Available resources (personnel, equipment, etc.).
 - d. Regional and local distribution – single vs. multiple, continuous vs. patchy, isolated vs. widespread.
 - e. Landscape context – upstream vs. downstream, edge vs. interior, etc.
 - f. Age of infestation.
 - g. Neighbors' actions/inaction.
 - h. Other available management or response plans.
 - i. Pathways/source – identified, controlled, eliminated, etc.
 - j. Species track record of eradication/control.
 - k. Survey and assessment confidence.
 - l. Type of waterbody (e.g. lake, pond, main-stem reservoir, tributary reservoir, small stream, large river, wetland, or water diversion facility).
 - m. Type of substrate.
 - n. Life stage(s) present.
 - o. Time of year in relation to reproduction, migration, etc.

- p. Land ownership – public vs. private, willing landowner vs. unwilling landowner.
 - q. Amount of water in the system to be treated. Consider the following:
 - 1) Potential for drawn down or flows reduced before treatment.
 - 2) Flow sources, including springs, and the potential to regulate that flow.
 - r. Land use patterns.
 - s. Presence of [state](#) or [federally](#) listed rare, threatened or endangered species.
 - t. Presence of [critical habitat](http://dnr.wi.gov/lakes/criticalhabitat/) (<http://dnr.wi.gov/lakes/criticalhabitat/>).
 - u. Special status, including:
 - 1) Water use designation (e.g., drink water)
 - 2) Wild, Scenic or Recreational River designation
 - 3) Outstanding or Exceptional Resource Waters ([ORW or ERW](#); <http://dnr.wi.gov/topic/surfacewater/orwerw.html>)
 - 4) Historic sites
 - 5) Cultural resources
 - 6) Department of Defense or other restricted access areas
 - 7) Tribal lands
 - v. Other considerations.
2. Consider potential management actions.
- a. Physical/Mechanical Activities
 - Hand-pulling
 - Suction Harvesting
 - Trapping/Netting/Capturing
 - Mechanical Harvesting (cutting/mowing)
 - Benthic Barriers (matting)
 - Hydroraking/Rotovating
 - Dredging
 - Draining/Drawdown
 - Surface Covers
 - Physical Barriers (creation & removal)
 - b. Biological Activities (Biocontrols)
 - Insects
 - Mammals

Fish
Micro-organisms

c. Chemical Activities

Herbicides: Contact, Systemic, Shading – chemical dyes
Pesticides

d. Regulatory Activities

Statute
Regulation
Policy
Quarantine

3. Assess potential impacts of management actions. Consider the following:

- a. Air Quality
- b. Soils
- c. Cultural Resources
- d. Water Resources
- e. Fish and Wildlife including threatened, endangered and sensitive species
- f. Human Health
- g. Social Environment
- h. Vegetation diversity including threatened, endangered and sensitive plant species.
- i. Economic Conditions
- j. Visual Resources and Recreation
- k. Effectiveness of various treatment methods.

Step II – Making Decisions

Who Lead Coordinator and Management Team

Why The objective is to seek a decision on which response action (eradication or containment/mitigation) and which management action (hand-pulling, dredging, herbicide, etc.) to undertake.

How

1. Identify decision-makers and observe decision-making protocols. Propose a single course of action or offer alternatives to decision-makers. Brief in writing or in person as needed.
2. Develop a response plan. The response plan ensures that everyone is working in concert toward an agreed upon goals. The plan should provide a coherent means of communicating the overall response objectives in the context of both

operational and support activities. At the simplest level, the plan must have the following three elements:

- a. What do we want to do?
- b. Who is responsible for doing it?
- c. How do we communicate with each other?

Step III – Securing Permits

Who Lead Coordinator and Management Team

Why The objective is to satisfy all regulatory requirements, including permits, licenses, certifications, concurrence, etc.

How

1. Consider Commissioner Emergency Order. A formal determination of emergency can facilitate numerous aspects of regulatory processes.
2. Identify all State/Federal regulatory requirements, including any applicable emergency provisions. A partial list of State/Federal permits and regulatory reviews that may apply include:
 - a. US Army Corps of Engineers Section 10 permit for any work in, over, or under navigable waters of the United States.
 - b. US Clean Water Act Section 404 permit from the US Army Corps of engineers for the discharge of dredged or fill material into waters of the United States.
 - c. US Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 18 authorizes the Environmental Protection Agency (EPA) to allow states to use a pesticide for an unregistered use in the United States for a limited time if EPA determines that emergency conditions exist. The uses are requested for a limited period of time (no longer than 1 year), to address the emergency situation only. If the need is immediate, a state agency may issue a crisis exemption that allows the unregistered use for 15 days. Under FIFRA, registrations and product labeling may restrict uses of pesticides. Each registration specifies the plants/sites on which it may be applied. Restricted-use pesticides are limited to use by pesticide applicators who are certified, or to people under supervision of a certified applicator.
 - d. US Endangered Species Act Section 7 consultations with the National Marine Fisheries Service (NMFS) for marine and anadromous species, or the U.S. Fish and Wildlife Service (FWS) for fresh-water and wildlife, for any “action” that may affect listed species or their designated habitat in the United States.

- e. WDNR Chapter NR 40 Invasive Species Identification, Classification and Control aimed at the prevention of new AIS introductions and to support the state in enforcement in controlling or eradicating pioneer populations.
 - f. WDNR Chapter NR 109 Aquatic Plants: Introduction, Manual Removal and Mechanical Control Regulations establishes procedures for issuing permits for mechanical aquatic plant control and prohibits the launching of watercraft or equipment that has attached aquatic plants or zebra mussels.
 - g. WDNR Chapter NR 107 Aquatic Plant Management establishes procedures and permitting for the control of aquatic plants using chemicals registered and labeled by the EPA.
 - h. Wisconsin Pest Control Pollutant Discharge Permits are general permits for pest control treatment projects that have a pollutant discharge into a waterbody (<http://dnr.wi.gov/topic/wastewater/AquaticPesticides.html>).
3. Identify all local regulatory requirements, including any applicable emergency provisions.
 4. Identify any cooperative agreements with other agencies/organizations.
 5. Assign lead person from each regulatory agency to facilitate permit approval in a timely manner within their respective agency.
 6. Consult with DNR to determine if an environmental assessment or environmental impact statement is required.
 7. Determine timeframe necessary for meeting all regulatory requirements.

RAPID RESPONSE

Who Lead Coordinator and Management Team

Why The objective is to implement the eradication or control strategies.

How

1. Lead Coordinator facilitates implementation of the response plan developed by the Management Team.
2. Continue public outreach efforts. Make sure the public is well informed on response activities and progress by providing information updates as needed.
3. Ensure compliance with emergency rules and regulations, quarantines, or wash and inspection requirements. Identify loop-holes and additional regulatory needs.
4. Agencies collaborate to coordinate and deploy field resources; implement ICS if needed.
5. Management Team monitors eradication/control progress and the impacts of selected methods on the environment and other organisms.
6. Establish a schedule for frequent Management Team meetings to resolve operational issues that cross jurisdictional interests.
7. Adjust eradication/control methods based on new information. Selected methods may be adjusted to improve effectiveness and/or to reduce or minimize impacts.
8. Engage Law Enforcement and Water Guard to investigate and, if possible, control the source of the introduction. For more information see Invasive Species Rule Compliance & Stepped Enforcement Process and Guidance.
9. Document efforts (i.e. take pictures) throughout the response process. These will be very useful when reporting on the response efforts.

MONITORING & EVALUATION

Who Lead Coordinator and Management Team

Why The objectives are to 1) provide information and data on treatment effectiveness, effects on native species and possibly ecosystem recovery and 2) provide surveillance for spread to additional waterbodies.

How

1. Design a monitoring program to evaluate the status of the invasive species population. Monitoring activities should be carried out in coordination with other program field operations.
DNR has guidelines for monitoring the effectiveness of aquatic plant treatments (See [DNR Aquatic Plant Treatment Evaluation](#) as guidance for aquatic plants.) These guidelines must be followed for any DNR AIS grant funded control projects.
2. Select ecological indicators and timeframe for monitoring as needed to assess the status and trends in invasive and native species populations. Potential ecological indicators may include:
 - a. Treatment effectiveness monitoring
 - i. The frequency and density of the target organism within the control area.
 - ii. The frequency, density and richness of non-target organisms within the control area.
 - iii. The habitat characteristics of the control area that may affect the outcome of a given treatment.
 - iv. Water or sediment samples to estimate residuals from a chemical treatment. This will help to determine the duration of effective treatment.
 - b. Surveillance monitoring
 - i. A representative number of waterbodies in the relevant area around the control effort should be surveyed for additional invasive populations.
 - ii. Habitat characteristics that could affect the suitability of the waterbody to establishment of an invasive species population should be taken into consideration. The waterbodies surveyed should be those that are suitable for establishment.
3. Disseminate findings through an easily accessible database and listserv (e.g., the AIS listserv).
4. Conduct a follow-up evaluation of response organizations and other interest groups to identify opportunities for improving rapid response capacity. Disseminate “lessons learned” to other interested organizations.

5. Revise the rapid response plan and associated documents/guidelines based on evaluation and long-term monitoring results.

RESTORATION

Who Management Team/Lead Coordinator.

Why The objective is to bolster the system to encourage the recovery of native plants and animals, which will ideally return natural ecological function while discouraging reinvasion by AIS.

How

1. Collaborate with partners to share existing restoration protocols, Best Management Practices (BMPs) and contract specifications relating to invasive species. Are natural recolonization/succession processes sufficient?
2. Develop a site restoration plan to restore damaged areas (e.g., roads, lawns, boat launches, staging areas, etc.) and ecosystem functions.
3. Identify plant and animal species that should or should not be used within particular ecosystems. Ensure that restoration projects “do not spread” or “do not establish” invasive species by using appropriate native species to the greatest extent possible.
4. Monitor restoration projects to track the control of invasive species and the re-establishment of native species.
5. Promote an ecosystem approach to restoration projects.

Appendix: Examples of rapid response plans around the state

- Embedded documents do not work in pdf format. Email Erin Vennie-Vollrath (Erin.VennieVollrath@wisconsin.gov) for copies of rapid response plans.

1. Response for Early Detection of Eurasian Water milfoil Field Protocol (April 2008)



Early Detection EWM
(2).doc

2. Hydrilla Response Plan: Marinette Co.



Hydrilla Response
Plan (2).doc

3. Eurasian Watermilfoil (EWM) Rapid Response Plan for the Gilmore Lake Association



Gilmore Lake
Association EWM RR.

4. Statewide Response Plan of the Wisconsin DNR to Documented Instances of Red Swamp Crayfish (*Procambarus clarkii*) Infestation



Red Swamp Crayfish
RR.pdf