Responding to a New Aquatic Invasive Plant in Presque Isle Bay:

A Mock Rapid Response Exercise

After-Action Report

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Tom Ridge Environmental Center,
Erie, Pennsylvania

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Acknowledgements

This workshop was partially funded by the U.S. Department of Interior, Fish and Wildlife Service. A special thanks to the following individuals who planned, facilitated, and presented at the workshop:

Holly Best, Park Manager 3, Pennsylvania Department of Conservation and Natural Resources

Leo Donovall, Pest Survey Specialist, USDA Animal and Plant Health Inspection Service

Jim Grazio, Great Lakes Biologist, Pennsylvania Department of Environmental Protection

Brian Gula, Environmental Educator, Pennsylvania Department of Conservation and Natural Resources

Heidi Himes, Fish Biologist, U.S. Fish and Wildlife Service

Bob Morgan, Lead AIS Ecologist, Pennsylvania Fish and Boat Commission

Sarah Whitney, Associate Director, Pennsylvania Sea Grant

And to all the workshop participants for their contributions to the rapid response effort in Pennsylvania.

The rapid response workshop was organized by Sara Stahlman, Pennsylvania Sea Grant. Please direct comments and questions concerning the after action report to Pennsylvania Sea Grant at 301 Peninsula Drive, Suite 3, Erie Pennsylvania 16505, phone: 814-217-9011, or e-mail sng121@psu.edu.

Background

Pennsylvania has more than 84,000 miles of streams and many lakes, sharing five major watersheds with other states and Canada. All of these waterways have the potential to host aquatic invasive species (AIS) that can threaten the ecological and economic health of Pennsylvania. Once invasive species become widely established, controlling their spread is both technically difficult and expensive, while eradication can be impossible. Therefore, prevention of new introductions must remain the first priority in fighting aquatic invasions.

The National Invasive Species Council defines rapid response as "a systematic effort to eradicate, contain, or control a potentially invasive non-native species introduced into an ecosystem while the infestation of that ecosystem is still localized." To be most effective, a response to an introduction should occur as soon as possible after the introduction is realized, and before the species is established.

When prevention efforts fail to stop the introduction of an aquatic invasive species, it is critical that a process be in place to quickly and effectively address new infestations. Objective Four of the Pennsylvania Aquatic Invasive Species Management Plan calls to "*Develop a system for early response to eradicate or contain a target species before the species can become permanently established*." In addition, one of the plan's priority strategies is to "*Implement a coordinated system for rapid response efforts to contain or eradicate newly detected aquatic invasive species" (Strategy 4A).* In response to this mandate, the Pennsylvania Invasive Species Council has adopted a process for quickly responding to new AIS infestations in the Commonwealth.

The Pennsylvania AIS Rapid Response Plan is an inter-agency decision support tool designed to aid authorities in conducting a coordinated and structured response to new AIS infestations. It outlines the steps to follow after receiving a report and serves as a guide for determining when a response is appropriate and what types of responses should be considered

This workshop, *Responding to a New Aquatic Invasive Plant in Presque Isle Bay: A Mock Rapid Response Exercise*, introduced participants to the rapid response process in Pennsylvania, familiarized them with the current plan, and allowed them to practice using the plan to respond to a mock scenario involving Starry Stonewort (*Nitellopsis obtusa*) on Presque Isle State Park in Erie, Pennsylvania.

The main objects of the exercise were to:

1. Test and further refine the Pennsylvania AIS Rapid Response Plan
2. Familiarize participants with the rapid response planning process
3. Practice highlighting and addressing issues that may arise during an actual response
4. Bring together the staff and stakeholders that would be called in for an actual response to increase familiarity and networking for increased communication
5. Identify gaps, challenges, limitations, and short falls in the current plan

The Pennsylvania AIS Rapid Response Plan is a working document and revising it will be an ongoing process. Input and recommendations from this exercise will be used to improve upon the current rapid response plan.

Workshop Agenda

8:00-8:30	Registration and Refreshments
8:30-8:45	Welcome and Introductions
8:45-9:30	Overview of Pennsylvania Rapid Response Plan
9:30-10:15	Scenario: Starry Stonewort Found in Presque Isle Bay
10:15-10:30	Break
10:30-11:15	Classroom run-through of Actions 1-4
11:15-11:30	Federal Resources for Rapid Response
11:30-12:00	Lunch (provided)
12:00-12:30	Travel to the Lagoons on Presque Isle State Park, Erie PA
12:30-2:30	Site Assessment at Lagoons
2:30-3:00	Travel back to the Tom Ridge Environmental Center and clean all equipment
3:00-4:15	Response Options Template
4:15-4:30	Wrap-up, Summary and Evaluations

Mock Scenario

Sid Shandy is an avid nature enthusiast who enjoys his regular Sunday morning kayak through the Presque Isle Bay lagoon system. While many times Sid simply enjoys bird watching and taking photographs of his beautiful surroundings, this particular morning Sid decided to bring his fishing equipment to try to catch some local pan fish, like bluegill and pumpkinseeds. Sid launched his kayak at the Lagoons launches and boat rental, and paddled towards Long Pond to try to catch some fish near the entry to Marina Lake. As Sid neared the bridge, he began to notice a thick, bushy plant that formed a "meadow–like" appearance under the water. As he neared, he reached down to grab some of the plant. The plant had the look and feel of steel wool! He tried to maneuver through the unknown plant, but it was too thick. Sid decided to take a picture with his smart-phone and continue on his way, unsure of what to make of the plant he had just encountered. After arriving home, Sid showed his cell phone images to a friend, Frank who spends a lot of time in Presque Isle Bay. When Frank agreed he had never seen this plant before, Sid decided to call his local conservation district for help.

Presentation Summaries and Table-Top Exercise

Rapid Response Plan and Procedures for Responding to Aquatic Invasive Species in Pennsylvania

Sara Stahlman, Senior Coastal Outreach Specialist, Pennsylvania Sea Grant

Stahlman provided information on the background and overall structure of the rapid response plan. The plan is laid out in a three-tiered structure. Section One is a flow-diagram that describes the overall picture of how a typical rapid response would look. It is not meant to be standalone product, but provide guidance for the flow of action steps. Section Two is a check-list of all the action items and provides enough information that it can be used as a stand-alone document. Section Three was developed to be a reference section and contains all the supplemental information necessary to assist with the action steps. Questions were raised about the best way to report invasive species, including the availability of specified methods for reporting, such as an AIS hotline, reporting website, and a report by e-mail option. The recommendations identified during this discussion are included in the "Inputs and Recommendations section on page 14 of this report.

Introducing Starry Stonewort

Jim Grazio, Great Lakes Biologist, Pennsylvania Department of Environmental Protection

Grazio provided background, identification, biology, and natural history information on starry stonewort. Starry stonewort, while resembling a true plant is actually a rooted alga. It can be identified by the diagnostic star-shaped bulbils and by implementing the "squeeze" test, where the contents of the cell will be expelled with a "pop" when squeezed. The bulbils can remain dormant in the sediment, making eradication virtually impossible. Management of starry stonewort may include various methods such as the use of copper-based herbicides, dredging, and manual removal by hand pulling or diver assisted suction harvest (DASH).

Actions 1-4

Sarah Whitney, Extension Director and Associate Director, Pennsylvania Sea Grant

Whitney led participants through Actions 1-4 in the rapid response plan based on the information in the mock scenario. As participants worked through the action steps, information gaps were identified, and recommendations were developed to help address these gaps. Identifying a specific reporting mechanism such as a statewide AIS hotline or e-mail address, was among one of the top concerns for this section, as well as knowing who will field all of the reports and making sure the information is directed to the appropriate agency. Some of the recommendations will be addressed once a new Pennsylvania Invasive Species Council Coordinator is identified. See page 14 for full list of workshop recommendations.

Federal Support for Rapid Response

Heidi Himes, Fish Biologist, U.S. Fish and Wildlife Service

Himes discussed the role federal agencies such as the U.S. Fish and Wildlife Service (USFWS) can play in local rapid response efforts and what kinds of resources they can provide. While federal agencies cannot mandate any sort of rapid response be conducted, they encourage the use of the rapid response

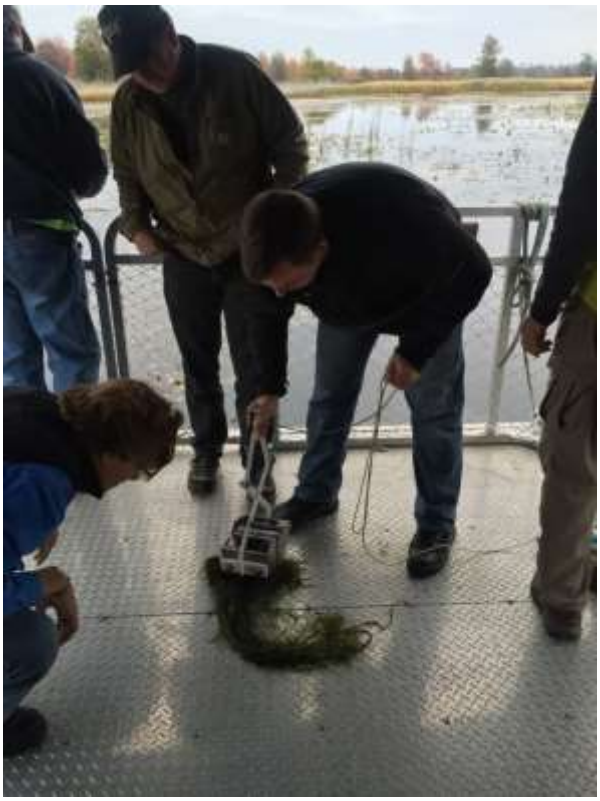
plan to determine if response is warranted and would like to be included in the suite of individuals needed to coordinate the response. While there is not a federal pool of rapid response funding that can be drawn from, federal agencies can work with those responding to potentially modify existing state AIS grants to shift allocations towards response needs, and in some instances provide support in the form of equipment and staff. In addition, USFWS can provide scientific and technical knowledge about different species and control methods, education and outreach initiatives, and can work with other partners to assist in getting any information needed to make scientifically sound response and management decisions. USFWS is available to be a resource for information and advice on invasive species and related issues.

DCNR Response to Starry Stonewort
Holly Best, Park Manager 3, Pennsylvania Department of Conservation and Natural Resources

During the site assessment, participants visited an infestation of starry stonewort located in the Presque Isle Bay Lagoon system in Erie, Pennsylvania. Best described the actions DCNR has planned for dealing with the infestation in the spring. DCNR plans to purchase herbicide and treat the 16-acre area that is impacted by the starry stonewort. They are currently researching various herbicide options to determine the best time to apply the chemical to make the biggest impact on the algae. The goal will be to treat to eradicate the population. However, if eradication is not possible, management efforts will take place to ensure the infestation doesn't spread.

Site Assessment at Presque Isle Bay Lagoons

The second half of the workshop focused on Action 5 of the rapid response plan: *Conduct site specific assessment and evaluate response options*. Participants traveled to the Presque Isle Bay Lagoons boat launch and livery and boarded a DCNR pontoon boat to the site of starry stonewort infestation. Site assessment materials were provided for participant use and included a ponar dredge, rake throw, secchi disk, hydrolab, camera, GPS units, measuring tape, and note pads and pens. Participants were asked to collect as much data as they felt was needed to assist them with brainstorming possible response options for the infestation. Samples of starry stonewort were collected using the ponar dredge and participants practiced identifying starry stonewort using the bulbils, and the "squeeze" method, where putting pressure to the stems expels the chloroplast and makes a discernable "pop". Upon returning to the dock, starry stonewort was washed off the deck of the boat to prevent further spread, and all equipment used was cleaned using a Clorox bleach solution after completion of the workshop.



Response Options Discussion

When participants returned from the site assessment field trip, they were divided into two groups to discuss potential action strategies for starry stonewort based on what they had learned during the site assessment. To add a "twist" to the exercise, participants were given two scenarios that altered some aspect of the infestation to encourage additional problem-solving when considering their response decisions. Each group was asked to consider one of the following scenarios:

1. **The starry stonewort infestation is at a public boat launch in a large Army Corps of Engineers impoundment in Pennsylvania where multi-state fishing tournaments are regularly held in the summer.**

2. **The starry stonewort infestation is in the private pond of a local business owner that is familiar with the issues of AIS, but unsure of what to do about the infestation and who to work with. He is worried about inviting governmental agencies onto his property.**

Group A worked through the Response Options template for Scenario One:

a. Response Objectives:
    i. Maintain the economic value of the lake for fishing tournaments
    ii. Avoid any ecological harm to fish and fish habitat (check for threatened and endangered species)
    iii. Prevent further spread to other areas
    iv. Contain or eradicate starry stonewort from the lake
    v. Protect human health by using treatments that are safe for water users
    vi. Provide education and outreach to the public so they support efforts to remove starry stonewort, while possibly interfering short term with tournament activities.
b. Examine all feasible Response Options
    i. Diver assisted suction harvesting (DASH)
    ii. Chemicals
    iii. Dredging
    iv. Outreach to user groups
    v. Targeted signage

c. Comparing Options
    Participants compared three main response options, DASH, dredging, and the use of chemicals. The need for resources for each of these options was discussed, many of which could be expensive, such as the DASH equipment, transport of dredge material, purchase of chemicals, etc. Ultimately, it was decided that dredging would be the most expensive, but would be the most feasible as far as eliminating the infestation. This option was chosen in combination with the use of chemicals. While these practices would impact the fishing tournaments, it was decided that the first two years of management would include herbicide application at times of the year when it would not impact the tournaments (early spring), followed by a year of dredging activities after evaluation of chemical results that would occur in late fall after fishing tournaments have concluded.

Education and outreach would be used to convince the public that any disruptions to the fishing tournaments would benefit the long-term use of the lake for economic use. After discussion, participants were asked about the ease of use of the response options template. Participants suggested adding a "concerns" box to the matrix.

Group B had a different experience when discussing Scenario Two:

Group B had a long discussion about how to handle invasive species infestations on private lands and which entities can advise about or work on private lands. Participants decided that the best option for this scenario was to direct the private business owner to those who can do work on private land, such as private contractors, local conservation districts, and the Penn State Extension Water Resources group. Agencies, who didn't feel they had the authority to work on private land, felt they could play a role in this kind of scenario by connecting the land owners to the right people and supporting the effort by providing them with the information necessary to help them make the best decisions.

Input and Recommendations

Participants identified several areas within the rapid response plan where they felt information was lacking or needed to be further refined. The following recommendations came from discussions that took place during the response exercise:

A. Report find to regulatory agency
   - Ensure contact information is accurate and up to date for all agencies and organizations.
   - Include contact information for both DCNR Bureau of Forestry and DCNR Bureau of State Parks.
   - Create a general reporting e-mail address/hotline/phone number.
   - Add Army Corps of Engineers to list of federal contacts.

B. Is the report High Priority?
   - Rename this action item "Does the Report Warrant Further Action" since occasionally even lower priority species may be low hanging fruits for action.
   - Extend the mock scenario to this point, to include how the agency receiving the report responds and makes the assumption it could be starry stonewort, or some other species, and determine whether further action is warranted.

C. Identify/verify the species
   - Remove information about taking photographs from the left side, and instead include information on taking several detailed photographs from multiple angles and include detailed protocols for taking pictures.
   - Keep experts list up to date.
   - For contacts such as the Cleveland Museum of Natural History, include contact information down to the division level, since calling the main museum line probably won't get people where they need to go for contacting an expert.
   - Work with mapping and tracking initiatives such as iMap Invasives to ensure a protocol is in place to report back to agencies if a new AIS report comes into a new location through the database.

D. Conduct risk assessment to determine if the species is a candidate for rapid response action
   - In Step 1, the definition of "new invasion" needs to be flushed out more.
   - In Step 2, the question "Is the population increasing" is confusing because we may not yet know the extent of the infestation since the detailed site assessment hasn't been completed yet.
   - Consider adding another option for species that are "low risk" but where action could still be taken.

E. Conduct site specific assessment and evaluate response options
   - Break this into two steps:
     i. Conduct site specific assessment
     ii. Evaluate response options
   - Add a "concerns" box into the response options template

Evaluation Summary

Participants were asked to fill out evaluations at the completion of the exercise to gain additional input and understanding into the needs and barriers individuals face in implementing rapid response. Key points from the evaluation forms are listed below and are based on the responses of 12 participants.

1. **What type of organization do you represent?**
    A. College, university, or research group (1)
    B. State, county, or local government (8)
    C. Federal government (1)
    D. Non-profit, conservation, or watershed group (2)
    E. International (0)
    F. Other (0)
2. **My position can be best described as:**
    A. Outreach or education (4)
    B. Program management (2)
    C. Communications, public relations/outreach (1)
    D. Resource manager (5)
    E. Research, science, engineering (6)
    F. Other: Database administrator

*Note: Some participants identified with more than one of the listed positions, and therefore the total number is larger than 12.

3. **Please tell us how you heard about this workshop:**
    A. Pennsylvania Sea Grant website (0)
    B. Listserv (2)
    C. Coworker (5)
    D. Conference/meeting (1)
    E. Other (4) (DEP contact, Sea Grant e-mail)
4. **How useful did you find the workshop?**
    A. 5 – Most useful (8)
    B. 4 – Very useful (4)
    C. 3 – Useful
    D. 4 – Somewhat useful
    E. 5 – Not useful
5. **How was the pace of the workshop?**
    A. 5 – Too fast (0)
    B. 4 – Slightly too fast (1)
    C. 3 – Just right (11)
    D. 2 – Slightly too slow (0)
    E. 1 – Too slow (0)
6. **How was the time allocated for discussions during the table-top exercise?**
    A. 5 – Too short (0)
    B. 4 – Slightly too short (2)
    C. 3 – Just right (9)

D. 2 – Slightly too long (0)
E. 1 – Too long (1)

7. **How well do you agree with the statement: I gained knowledge that I will apply in my job?**
   A. 4 – Strongly disagree (0)
   B. 3 – Disagree (0)
   C. 2 – Agree (3)
   D. 1 – Strongly agree (9)
8. **Are there any obstacles that might prevent you from using the rapid response plan in your agency or organization?**
   - Need clear definition of roles with many involved partners and interested parties
   - Funding, resources, support
   - Lack of knowledge about the plan in upper level management and supervisors and ensuring they are on board
   - Federal agencies already have rapid response plan in place
9. **How has this program benefited you? What was the most useful aspect of the workshop?**
   - Better understanding of the ins and outs of the rapid response plan
   - Learning and sharing our understanding of various aspects of rapid response, and understanding constraints of all partners and agencies
   - Working with the equipment during the site visit
   - Learning how to control starry stonewort
   - Physical interaction and application of the RR plan
   - Learning about the interagency process of rapid response
   - Knowing now that the plan exists
   - Idea exchange and application of the plan
   - Networking, and learning who to contact and when
   - It was helpful to understand the legislation behind responding to new invasive species
   - General knowledge of the plan
   - Connecting face to face with new people
10. **Is there anything you can suggest to improve the rapid response plan?**
    - Complete a review process every year to ensure all contact information is accurate and up to date
    - Review in some detail actual early detection and rapid responses (case studies); document what went right, what went wrong
    - Be sure to include contacts who are included in the plan, and have a plan for chain of communication
    - Make sure state agencies are on board and dedicated
    - Remove some ambiguity in terminology, for example species does not equal individuals
11. **Are you interested in attending additional workshop about rapid response and AIS? What other topics are you interested in?**

    Yes (10) No (0)

    Comment: After I've seen it in action, I can judge how it worked and whether I need additional training

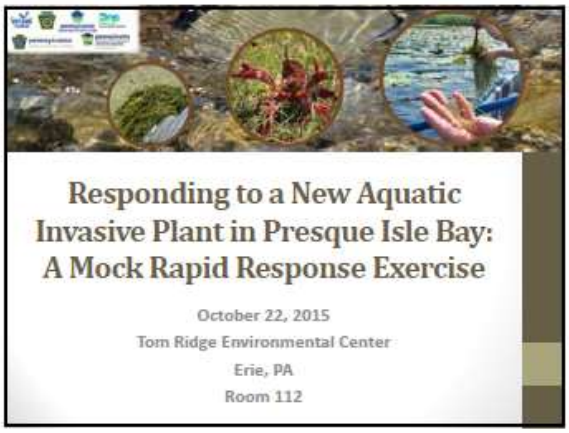
12. **After participating in the table-top exercise, are there any gaps and challenges that haven't already been discussed in implementing an effective early response for AIS in Pennsylvania?**
    - What happens downstream of reporting? How will the agencies take action with very limited funding?
    - The biggest challenge is knowing where to report sightings
    - Hard to get scenarios to match real life
    - Better coordination is needed between mapping and tracking databases such as iMap and the agencies
    - Finding a way to breach the barrier between normal workers and management
13. **What additional policies need to be in place to implement a successful AIS rapid response in Pennsylvania?**
    - Agree on a single database to report invasive species sightings
    - Develop reporting/tracking procedures for all invasive reports
    - Unfamiliar with current policies
    - Clear communication and awareness of the process
    - State agencies need prepared staff and funds to respond
    - Easier addition of plants and species to state regulatory control (i.e. noxious weed lists)
    - Make reporting obvious and public so that everything is reported to the proper spot
    - Obtain permits in advance
    - More training for all those that might come into contact with AIS
    - More communication between organizations
14. **What additional staffing needs to be in place to implement a successful rapid response in Pennsylvania?**
    - A full time Pennsylvania Invasive Species Council coordinator
    - More people who know what to do and what is legally allowed to be done- have their contact information readily available in the plan
    - On the ground folks to look out for new infestations
    - A dedicated PISC staff ready to respond to RR plan requests
    - More staffing for site assessments and control
    - Many agencies have very limited staff
15. **Are there areas where additional coordination/communication is needed? What are they?**
    - Consultation with taxa experts
    - More communication and explaining the importance of following the plan for identifying AIS and making sure everyone is in the "loop"
    - Advertisement to the public
    - PFBC needs to be more invested in AIS management
    - Everyone should be on the same page with the same knowledge: perhaps a group e-mail/Facebook/group, etc.
    - It seems we still need more coordination about how/where to report. More so on how, and official website, etc.
    - Distribution of sighting information and if anyone is acting on it

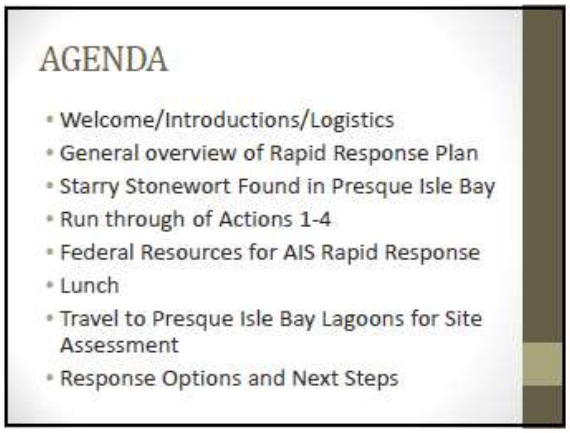
16. **Are there areas where additional communication is needed? What are they?**
    - Keep the contact list accurate and up to date
    - Advertisement to the public
17. **Additional comments:**
    - Great Job! Loved going out on the boat, it made the workshop interesting and unique
    - Great job- very interesting and helpful
    - Fantastic, glad I attended, thank you

Presentation Slides

A. **Introduction**

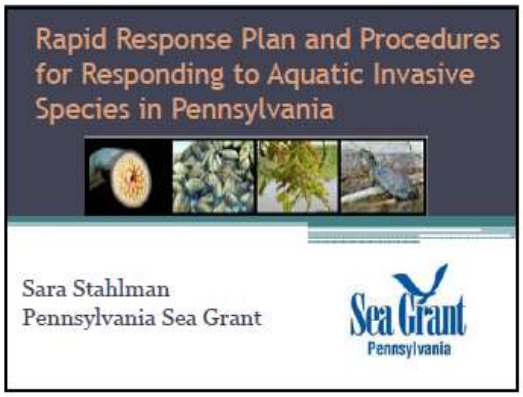
Sara Stahlman, Pennsylvania Sea Grant

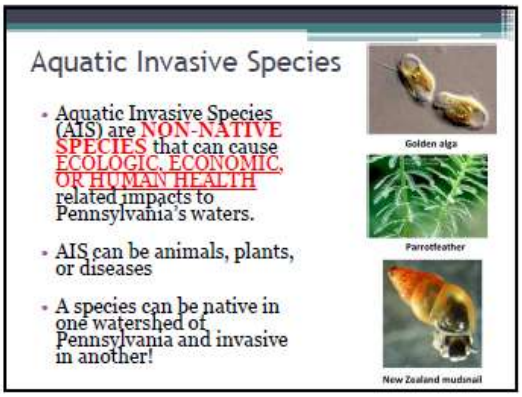


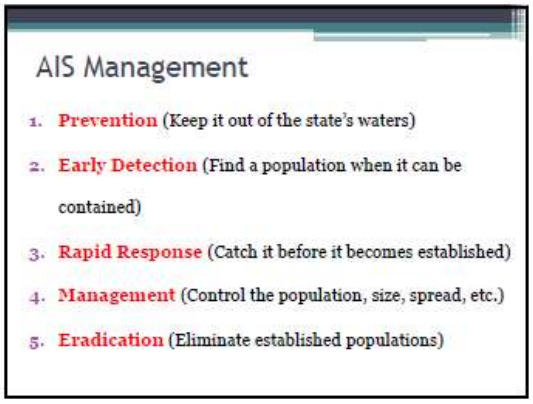


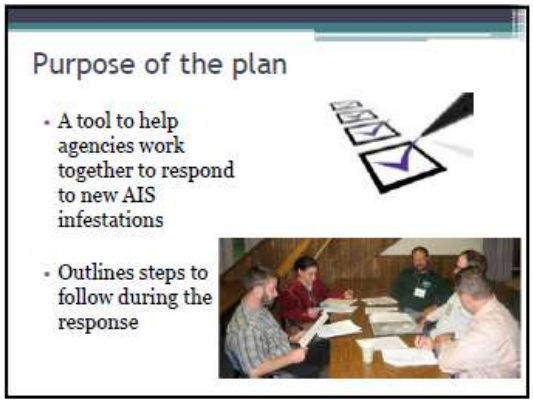
B. Rapid Response Plan and Procedures for Responding to Aquatic Invasive Species in Pennsylvania

Sara Stahlman, Pennsylvania Sea Grant









Plan Layout - Three Sections

- Section 1 – Flow Chart
- Section 2 – Checklist of Action Steps
- Section 3 – Supplemental/detailed information needed to support the action steps

Section 1: Shows the big picture

Section 2 - Checklist of Actions

Action 1: Report suspected AIS to AIS coordinator ☐ completed

Action 2: Is the report high priority? ☐ completed

Action 3: Identify/verify the species ☐ completed

Seven action steps total

Section 3 - Details of RR Plan

- Describes details about what should be included at each step
- Example: Detection
  - Contact information
  - GPS coordinates
  - Clear, high resolution digital pictures
  - Notes about location and habitat
- Resources/references

Jim Grazio, DEP: Round gobies found at Lake LeBoeuf

Action 1: Report suspected AIS to AIS coordinator ☐ completed

- Reports may come from a wide variety of sources
  - General public
  - Partner organizations
  - State agencies
- Report should go to the PISC coordinator
  - Call 717-772-5225
  - E-mail: ldonovall@pa.gov
  - AIS report form

Authority: Agency contact information based on taxa or location

TAXA	JURISDICTIONAL AGENCY	AGENCY CONTACT
State noxious aquatic weeds[1] and Federal noxious aquatic weeds	Pennsylvania Department of Agriculture (PDA)	Leo Donovall Invasive Species Council Coordinator
Other non-regulated obligate aquatic plants, amphibians, reptiles, mollusks, crustaceans, and fish	Pennsylvania Fish and Boat Commission (PFBC)	Bob Morgan Lead AIS Ecologist
Other invertebrates	PDA (terrestrial)	Leo Donovall
	PFBC (aquatic)	Bob Morgan
Mammals	Pennsylvania Game Commission (PGC)	H. Eric Miller Bureau of Wildlife Habitat Management
Pathogens[2]	PFBC	Bob Morgan
	PDA	Leo Donovall
	Pennsylvania Department of Health (PDH)	Dr. James Rankin Jr. Secretary of Health
AIS on State Park Lands	Department of Conservation and Natural Resources (DCNR)	Ewea Kuarac PA Bureau of State Parks
Permitting	Pennsylvania Department of Environmental Protection (DEP)	Jim Grazio Great Lakes Biologist

Action 2:

Is the report high priority?

☐ completed

Action 3:

Identify/verify the species

☐ completed

Collecting a specimen

- May need to consult outside sources and collect a specimen...

- Once verified, agency will report the occurrence internally and with:
  - Partner organizations
  - Federal contacts
  - State parks
  - Mapping initiatives:
    - iMAP invasive
    - USGS NAS
    - EDDmaps

Action 4:

Conduct risk assessment to determine if the species is a candidate for rapid response action

☐ completed

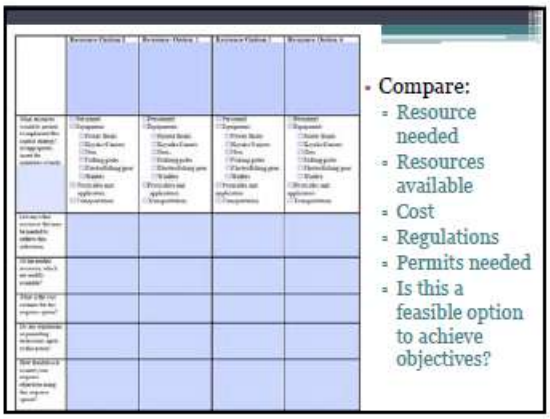
- Step 1: Is this a new invasion?
  - Yes: Go to Step 3
  - No: Go to Step 2
- Step 2: If a population already exists, is it increasing?
  - Yes: Go to Step 3
  - No: Low Risk
- Step 3: Is the species known to cause significant impacts?
  - Yes/Unknown: HIGH RISK
  - No: Low risk

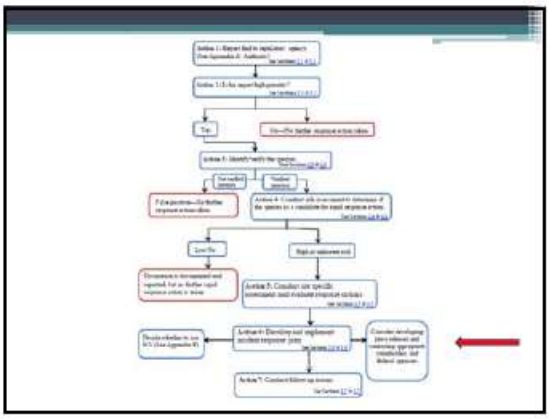
Action 5:

Conduct site specific assessment and evaluate response options

☐ completed

- Gather as much information as possible
  - Site description
  - Extent of infestation
  - Water chemistry data
- Identify response objectives
  - Ex: Contain, manage, or eliminate species
- Use response options tool to compare response options





Action 6: Develop and Implement Incident Response Plan:

- What are the planned actions?
- Who will be in charge of those actions?
- What regulations exist?
- What permits are needed and who will secure them?
- Funding
- Education and outreach

Action 7: Follow-up Actions

- Education and outreach
- Survey and monitoring plan
- Post incident evaluation
- Restoration plan

STOP AQUATIC HITCHHIKERS!
Protect the transport of nuisance species. Clean all recreational equipment.

Appendices

- A: Authority
- B: Legislation
- C: Protocols for reporting and collecting specimens
- D: AIS sighting report form
- E: Pathogens
- F: ICS

Appendix D: Pathogens

- Pennsylvania Department of Health: direct or indirect effect on human health. Example: West Nile virus
- Pennsylvania Department of Agriculture: direct or indirect effect on agriculture, aquaculture, or the artificial propagation, sale, or distribution of live aquatic mammals in the Commonwealth. Example: Permitting for Viral Hemorrhagic Septicemia
- Pennsylvania Fish and Boat Commission: direct or indirect effect on the protection, propagation, or distribution of fish, fish bait, baitfish, amphibians, reptiles, and aquatic organisms, or managing recreational boating in the Commonwealth. Example: Viral Hemorrhagic Septicemia, Spring Viremia of Carp

Appendix F: ICS

- Incident command system: Standardized, on-scene, all hazards incident management approach
- Highly structured and coordinated
- Five major functional elements:
  - Command
  - Operations
  - Planning
  - Logistics
  - Finance & Administration

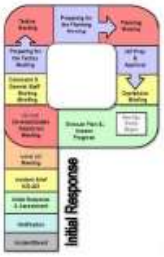


Figure1: ICS "Planning P"

Questions?

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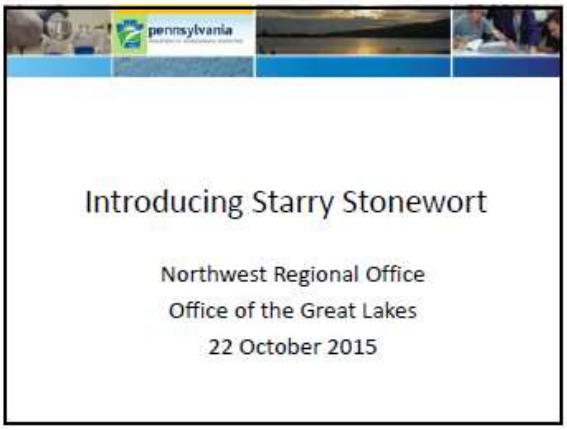
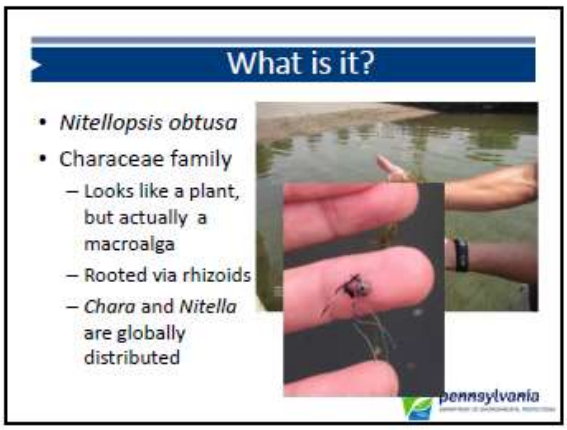
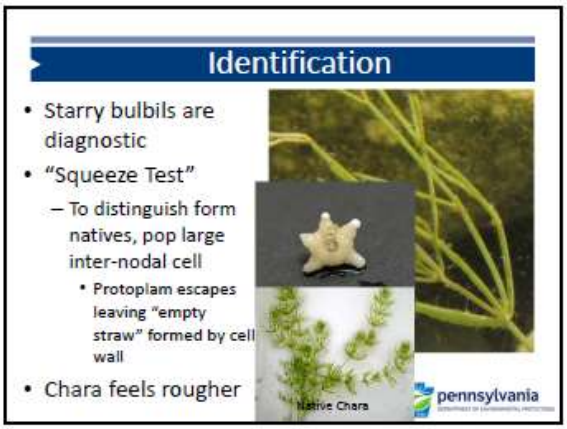
www.paseagrant.org/wp-content/uploads/2012/09/PA-Rapid-Response-Plan-7_21_2014_Designed.pdf

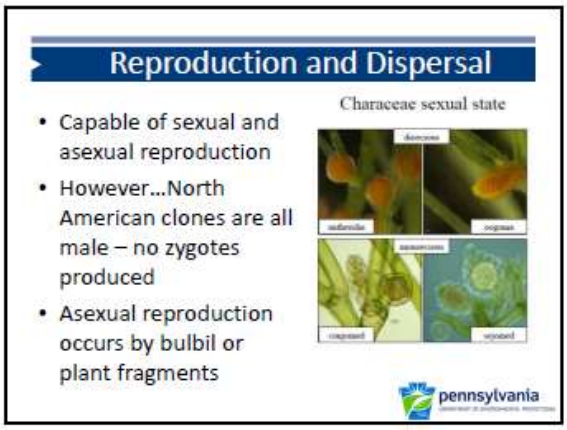
C. Introducing Starry Stonewort

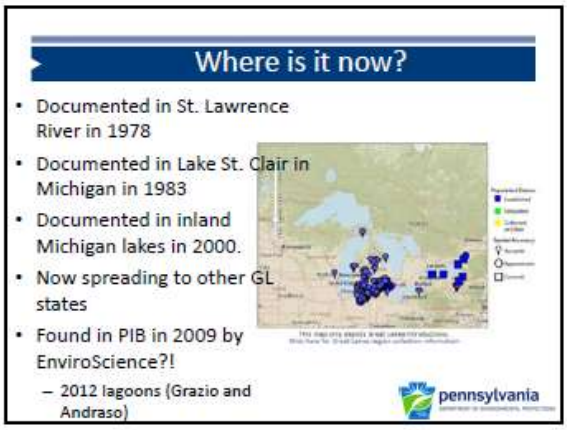
Jim Grazio, Pennsylvania Department of Environmental Protection











Why should I care?

- New Vocabulary
  - Pillow
  - Meac
  - Packi
  - Chee
  - Hairc
- *"It is the Michiga species, such as E* Pullman *eed"*

  - However, not always dominant in every lake
- Accelerate sedimentation of lagoons??

pennsylvania

What can we do?

- First, assess the amount of starry stonewort present and **determine management goals.**
- Chemical control
  - Copper sulfate + endothall (Hydrothol)
  - Flumioxazin (Clipper)
    - Low success rates in other states
    - Application timing unclear
- Physical control
  - Hand pulling and diver assisted suction harvest (DASH)
  - Dredging
  - Mechanical harvest

- Biological control – no control method known.
- "Wait and see" – monitoring and assessing

pennsylvania

Permitting Requirements?

- Herbicide Permit
  - "91.38"
  - Administered Jointly by DEP and PFBC*
  - Can be processed quickly if amendments needed

pennsylvania

Resources

- Pullman and Crawford. 2009. A decade of Starry Stonewort in Michigan
  - http://aquaweed.com/pdf/Starry%20Stonewort%20Lakeline%20report.pdf
- Hackett RA, Caron JJ, and Monfils AK (2014) Status and Strategy for Starry Stonewort (*Nitellopsis obtusa* (N.A.Desvaux) J.Groves) Management. Michigan Department of Environmental Quality, Lansing, Michigan.

pennsylvania

Contact:
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D. Mock Scenario: Starry Stonewort Found in Presque Isle Bay

Mock Scenario: Starry Stonewort Found in Presque Isle Bay

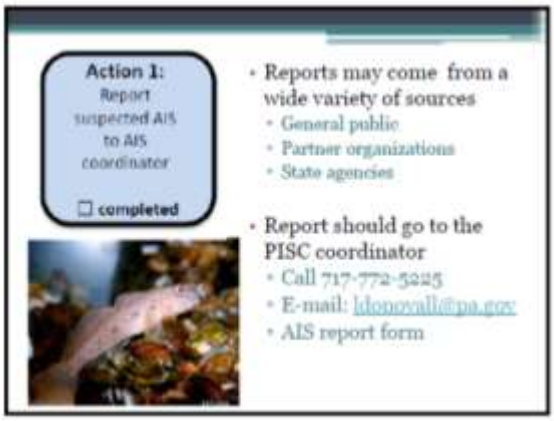
Sid Shandy is an avid nature enthusiast who enjoys his regular Sunday morning kayaking through the Presque Isle Bay lagoon system. While many times, Sid simply enjoys bird watching and taking photographs of his beautiful surroundings, this particular morning Sid decided to bring his fishing equipment to try to catch some local pan fish, like bluegill and pumpkinseeds. Sid launched his kayak at the Lagoons launches and boat rental, and paddled towards long pond to try to catch some fish near the entry to Marina Lake. As Sid neared the bridge, he began to notice a thick, bushy plant that formed a "meadow–like" appearance under the water.

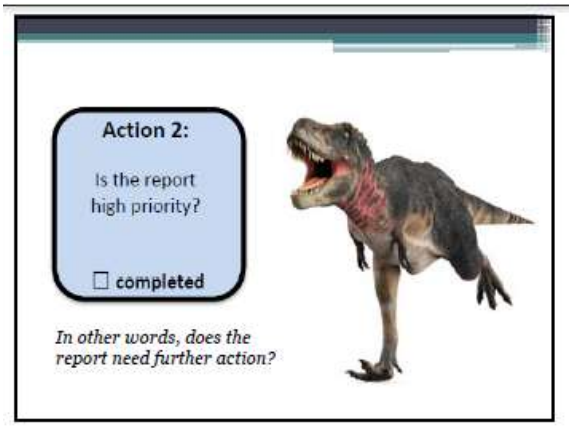
As he neared, he reached down to grab some of the plant. The plant had the look and feel of steel wool! He tried to maneuver through the unknown plant, but it was too thick. Sid decided to take a picture with his smart-phone and continue on his way, unsure of what to make of the plant he had just encountered.

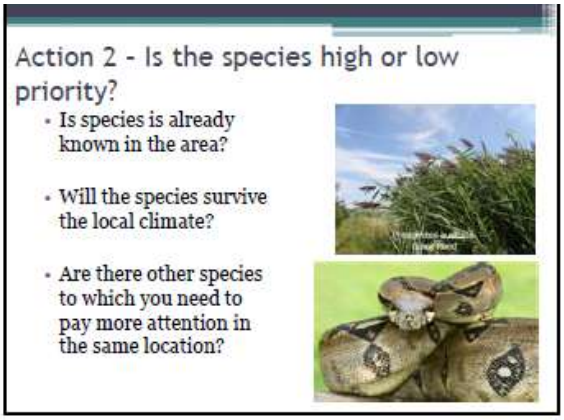
After arriving home, Sid showed his cell phone images to a friend, Frank who spends a lot of time in Presque Isle Bay. When Frank agreed he had never seen this plant before, Sid decided to call his local conservation district for help.

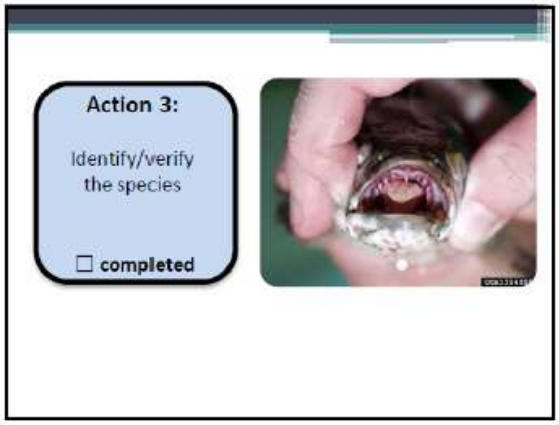
E. Rapid Response Actions 1-4

Sarah Whitney, Pennsylvania Sea Grant









Finding an Expert - Pennsylvania Experts

- Academy of Natural Sciences-Philadelphia
- Carnegie Museum of Natural History
- Pennsylvania Department of Environmental Protection
- Pennsylvania Department of Health
- Pennsylvania Sea Grant
- Tom Ridge Environmental Center Natural History Museum
- Western Pennsylvania Conservancy

Finding an Expert - Regional Experts

- Cleveland Museum of Natural History
- The Aquatic Invasive Species Experts Database
  - Designed by the U.S. Geological Survey.
  - Set up as a 2-tier system
    - first tier accessible to the public. The public portion of the database acts as a filter for information and identifications State agencies will have the ability to log in to the second tier of experts if they need further assistance identifying the specimen.

Shipping Specimens

- Vascular plants:
  - Place in a Ziploc bag with water and newspaper packing
- Invertebrates:
  - Package securely in a small box with plenty of packing material to ensure jars or bags are not broken.
- Vertebrates
  - Work with USPS and recipient due to restrictions on shipping formalin and dry ice

- Once verified, agency will report the occurrence internally and with:
  - Partner organizations
  - Federal contacts
  - State parks
  - Mapping initiatives:
    - iMAP invasive
    - USGS NAS
    - EDDmaps

Action 4:

Conduct risk assessment to determine if the species is a candidate for rapid response action

☐ completed

- Step 1: Is this a new invasion?
  - Yes: Go to Step 3
  - No: Go to Step 2
- Step 2: If a population already exists, is it increasing?
  - Yes: Go to Step 3
  - No: Low Risk
- Step 3: Is the species known to cause significant impacts?
  - Yes/Unknown: HIGH RISK
  - No: Low risk

F. Response Options Template

Response Options Template

- Page 15 of Plan
- Gather all information from the site assessment, and develop and compare all possible response options to determine which is most feasible based on scenario and available resources, funding, etc.
- Interactive .PDF version

Step 1: Objectives

- . Identify your objectives for the response
  - Need to understand what your goal is to be able to choose the best way to achieve that goal
  - May have more than one objective
  - Examples may include:
    - Avoid ecological harm
    - Eradicate the population
    - Prevent further spread
    - Maintain economic value of a resource
    - Etc.

Step 2: Brainstorm all options

- List all possible response options that could be used to address the infestation

Step 3: Decision Making

- Compare all options using the response options table:

Other points to consider if choosing control or eradication:

- Understand and identify any potential environmental, political, social, or economic impacts of the chosen method
- Availability and feasibility of chosen control/eradication method
- Has this method been used before with this species or a similar species?
- Potential to achieve success
- Timetable

Choose best option(s)

- Recommendations to upper level management
- Once finalized, share course of action with appropriate federal and state partners, local municipalities, property owners, relevant stakeholders

Brainstorming Response Options

- Break into two groups
- Each team will receive two different starry stonewort scenarios with additional challenges to consider when formulating response options
- Be sure to use all information collected in the site assessment to develop your options
- At the end, select recommended response(s) to share with the group and why that was the response chosen based on your scenario.

Participant List

Name	Title	Organization	Address	Email
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