









Implementing Rapid Response to Aquatic Nuisance Species in the Northeast: **Key Components** of a Successful Program

A workshop held May 3, 2005 in Portsmouth, NH by the























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OVERVIEW

When dealing with aquatic nuisance species, prevention is always the first line of defense. However, when invasions occur, eradication is far more likely if there is a plan in place that allows for early detection and rapid response. In May 2003, the Northeast Aquatic Nuisance Species (NEANS) Panel sponsored a workshop entitled, "Rapid Response to Aquatic Nuisance Species in the Northeast: Developing an Early Detection and Eradication Protocol." This workshop laid the groundwork for developing a rapid response protocol in the Northeast. In May 2005, the NEANS panel sponsored a follow-up workshop entitled, "Implementing Rapid Response to Aquatic Nuisance Species in the Northeast: Key Components of a Successful Program." This workshop offered in-depth information about the key aspects of a successful early detection and rapid response program by featuring presentations on developing a rapid response protocol, model state legislation, obtaining emergency powers, getting legislation passed, alternatives to legislation, and rapid response protocols for other sectors. The workshop concluded with a wrap-up session that allowed states to share their progress in rapid response planning, as well as the successes and failures they have experienced along the way. Workshop participants represented state and federal government agencies, nonprofit organizations, and universities.

WORKSHOP PLANNING COMMITTEE

Jay Baker, Massachusetts Office of Coastal Zone Management Susy King, New England Interstate Water Pollution Control Commission Anne Monnelly, Massachusetts Department of Conservation and Recreation Susan Park, NOAA Fellow hosted at the Massachusetts Office of Coastal Zone Management

Implementing Rapid Response to Aquatic Nuisance Species in the Northeast:

Key Components of a Successful Program

A Workshop Sponsored by the Northeast Aquatic Nuisance Species Panel Urban Forestry Center Portsmouth, NH • May 3, 2005

AGENDA

8:00 - 8:30 AM	Check-in and morning refreshments
8:30 - 8:40 AM	Welcome Anne Monnelly, MA Department of Conservation and Recreation Judith Pederson, MIT and NEANS Panel co-chair, workshop moderator
8:40 - 9:15 AM	Overview of Rapid Response Protocol Susan Park, NOAA Fellow hosted at the MA Office of Coastal Zone Management
9:15 - 10:00 AM	Maine Rapid Response Plan John McPhedran, Maine Department of Environmental Protection
10:00 - 10:15	Break
10:15 - 11:00 AM	Model for State EDRR Legislation Lisa Goldman, Environmental Law Institute
11:00 - 11:45 AM	Emergency Powers: California's EDRR protocol for invasive aquatic plants Lars Anderson, Ph.D., USDA-ARS Exotic and Invasive Weed Research
11:45 AM - 12:30 PM	Lunch (provided to registrants)
12:30 - 1:15 PM	Marketing the MessagePassing Successful Invasive Species Legislation in Maine Shippen Bright, Maine Lakes Conservancy Institute
1:15 - 2:00 PM	Voice and Choice in the Lake Champlain Basin: Alternatives to Legislation and Regulation Based in Voluntary, Cooperative Approaches to Solving Natural Resource Protection Challenges Michaela Stickney, VT Agency of Natural Resources
2:00 - 2:15 PM	Break
2:15 - 3:00 PM	Learning from Other Sectors: The National Incident Management System Roy Nieder, Training Officer, Richard M. Flynn Fire Academy
3:00 - 4:00 PM	Discussion and Wrap-up Judith Pederson

⁴ Implementing Rapid Response to Aquatic Nuisance Species in the Northeast: Key Components of a Successful Program

ABSTRACTS

Overview of Rapid Response Protocol

Susan Park, NOAA Fellow hosted at the MA Office of Coastal Zone Management

The negative impacts of aquatic invasive species are becoming increasingly evident to coastal resource managers, and while we recognize that prevention is the most effective means of minimizing these impacts, new species may still invade. Therefore, an early detection and rapid response (EDRR) plan will be necessary to manage these incipient invaders. In May of 2003, the Northeast Aquatic Nuisance Species Panel (NEANS Panel) hosted a workshop entitled "Rapid Response to Aquatic Nuisance Species in the Northeast: Developing an Early Detection and Eradication Protocol." During this workshop, several key elements of an EDRR plan were identified: detection, delineation, quarantine, assessment, implementation, and monitoring. These elements have both pre- and post-invasion components. For a full description, please see the workshop proceedings, which can be downloaded at http://www.northeastans.org/rr_proceedings_9.2003.pdf.

As a follow-up to the workshop, the Massachusetts Office of Coastal Zone Management, in conjunction with the NEANS Panel, is working towards a model rapid response plan for the state and the Northeast region. Objectives of this plan include:

- (1) Establishing a bioinvasion reporting and verification network;
- (2) Developing a risk assessment protocol for potential new invaders;
- (3) Developing an advisory list of rapid response trigger species; and
- (4) Developing generic and species-specific rapid response plans.

The final deliverable of the project will be a web-based resource that will allow managers to quickly and effectively respond to new aquatic invaders. The plan will serve as a model rapid response protocol for aquatic invaders that will be transferable to other states and regions.

Maine Rapid Response Plan

John McPhedran, Maine Department of Environmental Protection

The Maine Departments of Environmental Protection and Inland Fisheries and Wildlife are nearing completion of a Rapid Response Plan for Aquatic Species in Maine. This administrative plan will guide agency response and interaction when new introductions are discovered, in keeping with existing state laws and policies, and sound professional practice. The plan is composed of three parts, including an introduction and separate protocols for plants (Part 1) and fish and other fauna (Part 2). Consultants worked with the departments to prepare the draft, relying upon information available from other states and jurisdictions found on the Internet, in our files, or from staff.

The goal is to mobilize and deploy to control a new illegal introduction as quickly as possible. To achieve rapid response, the agencies will follow the principles listed below. Rapid response initiatives will:

- 1. reflect sound biology;
- 2. facilitate eradication or management;
- 3. facilitate fast action and interagency decision-making at the lowest level possible;
- 4. be a priority for staff attention so that water use restrictions may be lifted as soon as possible;
- 5. minimize infringement on public access, parks, and other facilities;
- 6. be fair and safe to all users; and
- 7. facilitate efficient use of personnel and resources.

This talk will outline the rapid response steps laid out in Maine's draft plan and will focus on response to new introductions of invasive aquatic plants.

Model State EDRR Legislation Lisa Goldman, Environmental Law Institute

Invasive species are widely recognized as posing an urgent environmental threat across the U.S. and around the world, with aquatic invasive species like the zebra mussel, salvinia, caulerpa, and hydrilla imposing particularly high environmental and economic costs. Although state and federal governments have put into place prevention programs to guard against new outbreaks of aquatic invasive species, the number of species and pathways is simply too great to rely on prevention efforts alone. Once invasive species first become established in a new ecosystem, early detection and rapid response (EDRR) efforts hold the most potential to quickly and effectively address these invasions, before they become more widely established and eradication becomes impractical or even impossible.

As federal and state governments become increasingly aware of the importance of early detection and rapid response to the fight against new aquatic invasive species, attention is turning to the development of legislation to create and implement EDRR plans. At the federal level, the newly reintroduced National Aquatic Invasive Species Act of 2005 (NAISA) charges the Aquatic Nuisance Species Task Force (ANSTF) with developing a Model State Rapid Response Contingency Strategy for aquatic invasive species. Other model plans and guidelines that have been developed at the federal level include the *Model Rapid Response Plan for Aquatic Nuisance Species*, prepared for the Western Regional Panel on Aquatic Nuisance Species; *General Guidelines for the Establishment and Evaluation of Invasive Species Early Detection & Response Systems*, prepared by the National Invasive Species Council (NISC); *A National Early Detection and Rapid Response System for Invasive Plants in the United States*, prepared by the Federal Interagency Committee for the Management of Noxious and Exotic Weeds (FICMNEW); and a *Review of Systems for Early Detection and Rapid Response*, prepared by the U.S. Forest Service for NISC.

States remain the most important on-the-ground actors in the fight against aquatic invasive species. A number of states, including Massachusetts, Maine, Michigan, New York, and Washington, have written comprehensive aquatic nuisance species management plans that may lay the foundation for EDRR programs, and at least one state (Washington) has already drafted an EDRR plan for aquatic invasive species. These fledgling state plans, as well as EDRR programs in other areas, provide suggestions and examples for model state EDRR legislation. Key issues to be considered include: funding and emergency powers; inter-agency coordination and the designation of lead response agencies; compliance with environmental laws such as NEPA and the ESA; quarantine establishment and enforcement; aquatic nuisance species lists and comprehensive definitions; detection and monitoring systems; risk assessment procedures; and training. In addressing these and other issues, states should build on their own experiences and expertise in invasive species prevention, control, and management to authorize and develop effective EDRR plans that may mitigate some of the significant economic and environmental damage caused by aquatic invasive species.

Emergency Powers: California's EDRR Protocol for Invasive Aquatic Plants Lars W.J. Anderson, Ph.D., USDA-ARS Exotic and Invasive Weed Research

Historically, protocols and strategies for responding to invasive aquatic plants were developed in reaction to infestations of alligatorweed (Alternanthera philoxeroides [Mart.] Griseb.) and hydrilla (Hydrilla verticillata (L.f.) Royle) 30 years ago. Mandates to eradicate these species derive from their inclusion in a general crop-pest priority state "list" that ranks agronomic and horticultural pests. This list is developed and acted upon by the California Department of Food and Agriculture (CDFA). "A" rated pests are given greatest urgency and have certain emergency exemptions (i.e., from some environmental laws) associated with their eradication. Important components of these rapid response and eradication actions include: statutory prohibition on possession, sale, and movement in-state; general and other ear-marked funding for surveillance; control/eradication; provisions for accessing private property; use of "science advisory panels"; and public education/outreach. Although the pest-rating system is primarily focused on agronomic pests, over the past 15 years, it has been broadened to include some weeds that impact natural/wildlands, riparian zones, and other aquatic sites. Although this approach has been successful in preventing the spread of hydrilla and alligatorweed, delays in responding in like fashion to other species such as purple loosestrife (Lythrum salicaria L.) and perennial pepperweed (Lepidium latifolium L.) have permitted these species to expand widely. The most recent rapid response success has been with *Caulerpa taxifolia*, a marine alga that was never on the CDFA list, even though it had been listed on the Federal Noxious Weed List in 1999. However, approaches and strategies were developed to cope with *C. taxifolia* that are similar to those used successfully for hydrilla, but without CDFA's direct role. Instead, a consortium of federal, state, local, and private groups (Southern California Caulerpa Action Team, SCCAT) provided the focal point for decision-making, legal clearances, and implementation of eradication actions. In response to the apparent gap between well-defined responses to agronomic crop pests and responses to non-agronomic pests, state legislation was enacted to form an aquatic invasive species council. Funding was also allocated to develop a state aquatic nuisance species plan. Both efforts have been held up in review for nearly two years. Last year, a bill was introduced that would have provided for an all-encompassing state invasive species council with primary duties directed toward increasing coordination among several state agencies. The Governor vetoed it. Thus, California's readiness to act against aquatic invasive species is still an ad hoc patchwork of various state and local agencies and NGOs and has no formal, well-defined structure. Preparatory approaches to deal with state environmental laws and the federal Endangered Species Act are likewise absent, and will need to be addressed in order to implement fully effective rapid response actions.

Marketing the Message...Passing Successful Invasive Species Legislation in Maine Shippen Bright, Founder and Executive Director of the Maine Lakes Conservancy Institute, Current Chair of the United States Federal Invasive Species Advisory Committee, and founding Director of Save Maine's Lakes, a political action committee In a hard fought battle the Maine legislature passed invasive aquatic plant prevention legislation in April of 2001. By one vote "An Act to Prevent The Infestation of Invasive Aquatic Plants and Other Species" was signed into law despite an initially indifferent Executive branch and hostile political interests over its dedicated funding mechanism.

The law was constructed around a bill that Save Maine's Lakes introduced in the Maine Legislature. We'll talk about the challenges and the opportunities of raising awareness at the political and decision-making levels. This is a story of grassroots activism that fought against indifference, ridicule, and hostility to the measure. It shows that one can prevail with credible data, the ability to craft a message designed for "the people," and perseverance in a system that is purposely designed to make the passage of new laws difficult.

Legislative response was heavily influenced by the use of environmental and economic arguments for support of the bill. Since the legislation was enacted there has been overwhelming public support for the program with a 91% public approval rating of the Milfoil Sticker program.

In summary, the environment and the economy are inseparable and the use of economic data is the foundation of public education and galvanizes support for natural resource conservation efforts. This presentation is about empowerment of the individual to make a difference on a large scale for the common good. While good science is necessary for good public policy it is most often not sufficient.

Voice and Choice in the Lake Champlain Basin: Alternatives to Legislation and Regulation Based in Voluntary, Cooperative Approaches to Solving Natural Resource Protection Challenges

Michaela Stickney, Vermont Agency of Natural Resources

Lake Champlain's vast watershed is shared by Vermont, New York, and Quebec. Transboundary relations are characterized by consensus reached through a continuous sequence of nonbinding, non-regulatory environmental agreements. Since the historic 1988 Memorandum of Understanding on the Management of Lake Champlain, 14 additional agreements have been signed—nearly one per year. They range from joint declarations and watershed plans to phosphorus standards and toxic spill responses. They are renewable agreements bearing the support and participation of state, provincial, and federal agencies; local government; and businesses with a very strong citizen component. This progression of cooperative agreements falls under the auspices of the Lake Champlain Basin Program (LCBP), a quasi-governmental partnership among Vermont, New York, and Quebec that coordinates Opportunities for Action, Lake Champlain's long-term management plan. The LCBP achieves significant watershed improvements through its consensus-based decision-making policy bolstered by state-state and , stateprovince agreements (Stickney et al 2001; Harris et al 2001). This incremental approach, steeped in multi-level partnerships and institutions, epitomizes the theory of natural resource regimes, which emphasize the roles of intermediate institutions in environmental management (Drost & Brooks 1998; Young 1994). This non-regulatory, cooperative approach lends itself well to deploying rapid responses to aquatic nuisance and other invasive species infestations. Use of non-binding, renewable agreements more easily bridges differences among jurisdictions, whether interstate, intrastate, or international, and can be more timely than pursuing a traditional regulatory or legislative response. Additionally, such agreements can be updated more immediately as new information and technologies emerge from the realm of invasive species spread prevention, control, and management.

PRESENTER BIOGRAPHICAL SUMMARIES

Lars Anderson, U.S. Department of Agriculture, Agricultural Research Service, RS Exotic And Invasive Weed Research, Weed Science Program, UC Davis

Dr. Anderson has 30 years' experience in research on the biology and management of invasive aquatic weeds, including two years with the US Environmental Protection Agency and 28 years with the US Department of Agriculture. He is currently Lead Scientist for the USDA-ARS Exotic and Invasive Weed Research Laboratory on the UC Davis campus.

Current research projects include: (1) responses of plant canopy structure to neighboring plants; (2) development of cost-effective herbicide application systems for management of invasive aquatic weeds in tidal waters of the Sacramento-San Joaquin Delta; (3) eradication of Caulerpa taxifolia in California; (4) rapid response/early detection of aquatic invasive species; (5) explorations in South America for biological control agents for Egeria densa (2005). Lars's other involvements include the Editorial board of Aquatic Nuisance Species Digest; Hydrilla Control Technical Advisory Committee; Waterhyacinth Technical Advisory Committee; Egeria Control Technical Advisory Committee; Chair, Salvinia Science Advisory Committee (1999); Chair, Salvinia molesta Advisory Committee, APHIS/CDFA, (1999); and Chair, Technical Committee, Southern California Caulerpa Action Team (2000-present). He has received the USDA Unit Distinguished Service Award (1989), a team award for biological control of Hydrilla in Imperial Irrigation District). ,

Dr. Anderson is Co-founder of the Western Aquatic Plant Management Society (WAPMS)-1985; Past President, Aquatic Plant Management Society; Past President, Western Aquatic Plant Management Society; Past President of the California Weed Science Society (2001); and Past President, current trustee of Explorit Science Center (Davis). He holds a BA from the University of California, Irvine, Biology, 1967; MA-San Diego State University, Biology, 1970; and a Ph.D.-University of California, Santa Barbara, Biology 1974.

E. Shippen "Ship" Bright, Executive Director, Maine Lakes Conservancy Institute

Ship is the Executive Director and Founder of the Maine Lakes Conservancy Institute [MLCI], a 501[c]3 nonprofit environmental education organization devoted to understanding, preserving, and sustaining the health and values of Maine's freshwater natural resources. He presently is Chairman of the US Federal Invasive Species Advisory Committee and has made presentations before Congress, around the United States to various organizations, and at International conferences. Ship served as Deputy Commissioner for the Maine Department of Conservation under two Governors (one Republican and one Independent), where he managed the legislative and political program. After graduating from Bates College in 1978, Ship served for five years as a United States Naval Officer. After his Honorable Discharge he owned and operated a real estate company. Ship has an MBA from Southern New Hampshire University and an MPA from Harvard's John F. Kennedy School of Government. He is married to Sarah Stiles, they have four children and live on Pemaquid Lake in Midcoast Maine. He is a registered Maine Guide and a certified Ski Instructor.

Lisa Goldman, Staff Attorney, Environmental Law Institute

Lisa Goldman is a staff attorney at the Environmental Law Institute (ELI), where she is working on invasive species issues as part of ELI's Invasive Species Project. She is currently conducting a review and analysis of federal invasive species authorities for the National Invasive Species Council, and is leading a new project on state invasive species programs and global climate change for EPA's Global Change Research Program. She has given presentations on state invasive species tools, based on ELI's publication Halting the Invasion, to the Mid-Atlantic Regional

Panel on Aquatic Nuisance Species, the New Jersey Invasive Species Council, and the Maryland/ DC chapter of The Nature Conservancy. Ms. Goldman received a BA in Human Biology from Stanford University, a JD from the University of Pennsylvania, and an LL.M. from the Georgetown University Law Center.

John McPhedran, Maine Department of Environmental Protection

John has a long-standing connection to Maine lakes, first from summers on Little Sebago starting at nine months of age and later growing up on Maranacook Lake, west of Augusta. He came to working on aquatic plants in a roundabout way, working on municipal land use plans in New Hampshire and Vermont, and later on water quality monitoring and watershed management in Maine. Graduate work in botany at the University of Vermont led to consulting work conducting botanical inventories and, in December 2001, to his current position coordinating the invasive species program at Maine DEP. At the DEP John conducts aquatic plant inventories, manages plant control projects, and oversees the state's plant monitoring and boat inspection programs.

Anne Monnelly, Massachusetts Department of Conservation and Recreation

Anne received her Masters Degree in Aquatic Ecology from the University of Michigan, School of Natural Resources and Environment. She has over ten years of experience in the field of water resources protection and management. Anne joined the Massachusetts Department of Conservation and Recreation (DCR), Office of Water Resources, in September 2001 as an aquatic ecologist with the Lakes and Ponds Program. Anne's work with DCR includes managing a grant program for lake and pond restoration, and providing statewide technical assistance, policy development, and education/outreach on water resource protection, restoration and management issues including lake watershed management, AIS prevention and control, stormwater management, and water conservation.

Roy Nieder, FEMA Federal Emergency Management Agency State Training Office, New Hampshire Bureau of Emergency Management

Roy Nieder is the FEMA State Training Officer for the New Hampshire Bureau of Emergency Management (BEM) and is the state coordinator for the Civilian Corps program in New Hampshire. Roy resides in Bow, New Hampshire and began his public service as a Field Representative for BEM in 1992 after having operated his own business for 29 years. A Field Representative functions as the liaison between BEM and New Hampshire communities and State Agencies. Since being appointed as the State's Training Officer in 1998 Roy has been teaching courses throughout New Hampshire and New England.

Susan Park, NOAA Coastal Management Fellow, Massachusetts Office of Coastal Zone Management

Susan Park is currently a NOAA Coastal Management Fellow for the Northeast Aquatic Nuisance Species Panel and the Massachusetts Office of Coastal Zone Management. During her two-year fellowship, she will be working with the Panel and MA CZM on an Early Detection and Rapid Response Protocol for Massachusetts and the Northeast Region. Before coming to Boston, she attended the University of Delaware where she received her Ph.D. in oceanography. The focus of her dissertation research was the larval transport and range expansion of the invasive shore crab Hemigrapsus sanguineus. Susan obtained her B.A. in biology and M.A. in conservation biology from the University of Pennsylvania.

Judith Pederson, Massachusetts Institute of Technology Sea Grant

Judith Pederson received her Ph.D. from Clark University in marine ecology. She directs the MITSG Center for Coastal Resources at the Massachusetts Institute of Technology Sea Grant College Program that facilitates access to scientific and technical information for policy makers, students, and the public. Dr. Pederson's research interests are in marine bioinvasions and coastal pollution. She is a member of two ICES Working Groups, is co-chair of NEANS, organized rapid assessment surveys for New England, convened International Marine Bioinvasions Conferences and Workshops, and edited several conference proceedings, including a Special Issue of Biological Invasions.

Michaela Stickney, Vermont State Coordinator, Lake Champlain Basin Program

Michaela Stickney's background is in watershed planning and aquatic biology with specialties in community-based natural resource protection and sustainable development. Her twenty years' experience involve work in twenty Vermont towns, four states, and seven countries, including Russia, Macedonia, Albania, Bulgaria, Bolivia, and Japan. Currently, Ms. Stickney is the Vermont State Coordinator for the Lake Champlain Basin Program, an international partnership among Vermont, New York, and Quebec. She and her husband sell hay and framing lumber from their 150-acre hilltop farm, and she is a pretty good backyard engineer on weekends.

WRAP-UP DISCUSSION

Discussion questions

- 1. How prepared is your jurisdiction to conduct EDRR?
- 2. What is currently in place?
- 3. What is lacking?
- 4. What are your next steps to implement EDRR/what approach is appropriate?
- 5. Please provide a case history of an RR.

Connecticut

- 1. The CTDEP and other groups have been trying to respond to Hydrilla but none have authority to regulate the plant on private lands. Another challenge is presented in different departments having responsibility for different species.
- 2. CT is developing a state aquatic invasive species management plan for both freshwater and marine species.
- 3. There is no dedicated funding or staff. There is no database for tracking, verifying, and responding to reported sightings. Although the state is working on a comprehensive state plan, it is still waiting for federal and dedicated funding.
- 4. Overall, CT needs to build capacity and coordination to respond. An ad-hoc committee or network of monitors should be created to conduct surveys and identifications.
- 5. There is varying progress in different regions of the state. The southeastern CT population has received no action. The southwestern part of the state has two populations: one that has been treated with no tubers found. Another is waiting on a plan that involves cooperation from a private landowner.

Rhode Island

- 1. For the most part, RI is not prepared to conduct EDRR for ANS.
- 2. A structure is in place but requires coordination. Most responses have been ad-hoc. The RI Emergency Management Agency is designed for RR in emergencies. A capacity for response has been demonstrated with their oil spill response group. They could develop an ecosystem management capacity. The CRMC has some capacity for response. Its staff has responded to emergencies such as hurricanes where they distributed emergency permits for those whose homes had been damaged by the storm. There have been reports that RIDEM has been working on an invasive species response but this was not confirmed at the workshop, indicating a need for increased communication. RI Sea Grant has an oil response group that has responded to barge spills. There is a RI Monitoring Collaborative and Narragansett Bay Rivers and Watersheds Commission collaboration. The RI Natural History Survey is the lead for invasive species. They are strong on terrestrial and freshwater aquatics but not as much with marine species. The RI Invasive Species Council has some educational and training materials and has a good framework for outreach.
- 3. A comprehensive plan is needed: an intern is currently working on a draft. Funding is lacking as is personnel and storage for voucher specimens.
- 4. RI should develop a comprehensive Aquatic Invasive Species Plan and secure funding to implement it.
- 5. No RI case study was provided

New Hampshire

- 1. NH is fairly well prepared, but the level of preparedness is agency specific. The freshwater plant program already implements various components of EDRR but it's not in writing as a step-by-step process.
- 2. NH has a draft ANS management plan in place with a deadline of September 2005 for a final version. EDRR will be addressed in that document. The ANS management plan will have information on freshwater and marine species.
- 3. The state needs a written EDRR plan that has buy-in and agreement on cooperation and implementation by all parties that necessarily will be involved.
- 4. NH should finish its ANS management plan and have it approved by the federal ANS Task Force. The state wants to view EDRR from two stances: 1) new species to the state and how to respond to them; and 2) new infestation to a new waterbody of a statewide established species.
- 5. There is a history with aquatic plants: variable milfoil in Dublin Lake and Eurasian water milfoil in Lake Mascoma.

Vermont

- 1. VT is currently not well prepared but this characterization varies on a case-by-case basis and has been improving.
- 2. Although not specific to EDRR, VT has an excellent structure and management plan for the Champlain Basin Program. The Basin Program has early detection through its Weed Watchers Programs in VT and NY but no good system to follow up on detections. There are other monitoring programs that have been provided with ANS alerts. They could be better equipped to fulfill an RR role if they were provided with more training. The state has species-specific management programs such as that for Water Chestnut. The State of VT has program authority, but NY might not. The state does not have general permits for response activities.
- 3. The state needs to provide monitors with additional training and to develop a systematic reporting network. They need a state plan that includes institutional arrangements to conduct RR including MOAs. The state needs to obtain general permits for chemical control.
- 4. Convene the EDRR committee for a meeting at which it will discuss what approach to take including drafting a plan and soliciting input, and gauging cooperation and collaboration. The state plan should be developed, approved, and implemented and support should be developed for it.
- 5. Alewives (likely intentionally introduced) were found in Lake Saint Catherine (which drains into Lake Champlain). There was no RR plan in place and agencies didn't know how to respond. Rotenone was suggested but concerns were raised about its application, so no action was taken. The population is well established in Lake Saint Catherine and some Alewives have been found in Lake Champlain. There has been some success with Water Chestnut RR. Volunteer monitors first detected it and there was a Water Chestnut Plan in place to initiate a rapid response effort.

Massachusetts

- 1. The capacity for EDRR has been improving in MA.
- 2. The state has in place an Aquatic Invasive Species plan as well as staff, funding, and monitors for several systems. MA has developed lists and risk assessment methods along with a science advisory council. There are plans in place for specific species.

- 3. There is a need for enabling legislation that provides the authority to implement the necessary elements of RR and to execute MOAs. The authority needs to include emergency powers and general permits.
- 4. The state should get better representation from its agencies and formal recognition of lists and advisory groups. Lead agencies should be identified and permitting processes streamlined. MA should work with agencies, NGOs, and regional groups to form an invasive species council and work together on monitoring, prevention, and eradication.
- 5. Hydrilla is 90% eradicated in the areas that it has been found. One snakehead fish has been found. There are active populations of Eurasian water milfoil and water chestnut.

Maine

- 1. For freshwater plant systems, ME is well prepared. There is in place a good ED system. The system for fauna needs improvement. The status for marine systems response would be characterized as unprepared.
- 2. ME has a statute that charges its DEP to develop a plan that may include ED and RR and has in place a draft RR plan. The Marine Invasive Working Group is in place and growing. It has educational materials and baseline data and is planning a monitoring system. The group is identifying issues and species. A pamphlet has been created and distributed. Rapid assessment in Cobscook Bay.
- 3. ME needs to revise its current plan and refine the technical section that includes tools and species-specific response. The plan should also enable general permits for herbicides in the marine area. More funding, personnel (including a central staff), and baseline data are needed. Interstate plans and a framework for cooperation/collaboration are needed. There is a bill in the legislature that directs all the natural resource agencies to work together to prevent IS (the language is broad but it informs the legislature). There is no general permit for Rotenone. For marine invasions, the agency is not prepared for EDRR—the science is good but the necessary framework is not there.
- 4. ME should finish its plan (a contractor is working on general permit). The enabling legislation will likely pass so the next step will be to work with MEDEP.
- 5. Hydrilla in Limerick was discovered late in the year. This allowed time for consulting with other states. It was treated for two years with herbicides (90% kill rate) and a third year is planned. Back in the 1950s, there was a response to the green crab invasion but it has not been successful. On the marine side, there has been some success with green crabs.

Participant Observations

- Lars Anderson (USDA ARS) noted the many similarities between states and the reciprocity between them.
- Cynthia Boettner (USFWS) noted the regional cooperation opportunities.
- Larry Harris (UNH) indicated the need to improve coordination in marine systems.
- Les Mehrhoff (UConn) said that RR efforts must be by a government or landowner and that efforts with aquatics are out in front of those for terrestrial species. ED should be separated from RR.
- Ralph Bathelt (U.S. Coast Guard Auxiliary) said that the Coast Guard has priorities other than EDRR but the Auxiliary might be able to help with monitoring and other EDRR efforts.
- Judy Pederson (MIT Sea Grant) noted the need for improvement in the planning process, keeping open the lines of communication, having relationships with politicians, and that there were few marine examples of EDRR.

Judy's summary

As moderator of the workshop, NEANS Panel Co-Chair Judy Peterson presented an oral summary of the key themes she heard during the wrap-up discussion. They are as follows:

Needs of States

- Many of the states need to improve their planning process. Of the six reporting states, only two had ANS Plans or Rapid Response Plans.
- One of the biggest hurdles to conducting EDRR is the lack of funding.
- States lack the authority to conduct rapid response, especially legislative.

How to Move Forward

- Political contacts in the region could help with funding. The NEANS Panel could help to identify these folks and bring them in the loop via briefings on ANS.
- A surprising number of rapid response case histories were shared today. A compilation of these would be a great resource and is a project that the NEANS Panel should consider.
- The NEANS panel should ask itself, "What can the NEANS Panel do to help states and provinces as well as facilitate communication, cooperation, and collaboration?".

The NEANS Panel should determine what legislation or Memoranda of Agreement are needed to move forward with EDRR.

- One option would be to develop a generic EDRR plan for region, and states can use it and be part of it voluntarily.
- An agency list and contact person on the NEANS Panel website for EDRR is great, but it has to be kept current.

WORKSHOP PARTCIPANTS

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NOTES

Cover images

From left to right: Sea Lamprey, Great Lakes Sea Grant exotic species graphics library; Hydrilla, California Department of Food and Agriculture; Green Crab, University of California Sea Grant; Water Chestnut, VT Department of Natural Resources; and Zebra Mussel, US Fish and Wildlife Service.













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