



***Getting Ahead of the Learning Curve – Ontario Lessons
Learned in Response to Aquatic Invasive Species***

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Round Goby (*Neogobius melanostomus*) :

Pefferlaw Brook, near Lake Simcoe (2004-2005)

- Led by a multi-agency response team – MNRF, DFO, Lake Simcoe Conservation, OFAH, MOECC & local stakeholders
- Goby captured in Aug. 2004 by an angler (subsequent interviews revealed they had been in the stream for 2 years)
- Rotenone treatment of 5 km of stream in 2005, including use of backpack sprayers in backwater areas/marinas
- Ultimately unsuccessful – more Round Goby found in lower river in spring 2006 and 1 goby in L. Simcoe in summer 2006
- Agencies learned a lot about a collaborative response effort
- Tremendous profile for issue of invasive species



More Round Goby:

West Credit River, Mississauga (2013-2014)

- Eradication planned several times & put on hold
- Ultimately, land owner permission could not be obtained & eradication abandoned

Lessons Learned:

- Landowner cooperation is essential to success
 - Early engagement is key
 - Access to private land is a gap
 - Tools provided in *Invasive Species Act* (2015)
- Multiple chemical treatments should be planned
- Early detection affects likelihood of success



European Water Chestnut (*Trapa natans*):

Ottawa River, Voyageur Prov. Park (2008 - present)

- Field response led by Ontario Parks (MNR); support from: ISC, OFAH, OIPC; technical advice from Quebec
- Preliminary response focused on manual removal (by canoe)
- More aggressive management needed:
 - Park staff designed specialized mechanical harvester that cuts rosettes, followed by a collector boat
 - Objective is to cut plants before seed production
 - Cut plants contained by a floating boom (>1km long)
- Successfully contained; prognosis for eradication is good
- Significant investment in staff and equipment, as on-going effort will be needed to exhaust the seed bed (up to 10 years)





Water Chestnut in Ottawa River at Voyageur Provincial Park

More European Water Chestnut:

- Detections in the Lake Ontario watershed
 - Bayfield Bay, Wolfe Island, Lake Ontario (2013), and Rideau River (2014)
 - Field response led by Ducks Unlimited Canada; support from MNRF and ISC
 - Smaller infestations, manual control is feasible, good prognosis for eradication

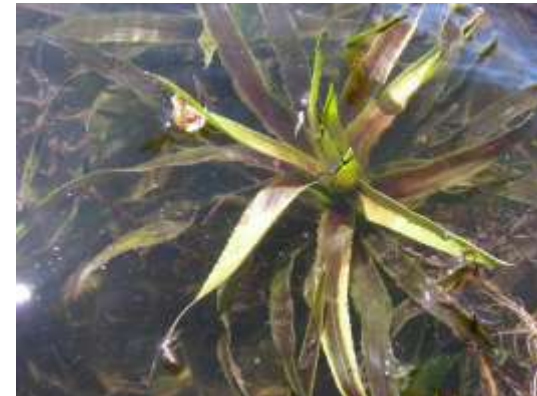
Lessons Learned from European Water Chestnut Management:

- Quick response is critical – to contain and prevent spread
- Engagement of ENGOS such as DUC are essential (Government can't do this work alone)
- Support innovation to enable adaptive management (e.g. design of new harvester by VPP staff)
- Important to engage bi-national, inter-provincial partners with a shared interest in the species or geography (share expertise)

Water Soldier (*Stratiotes aloides*):

Trent Severn Waterway, (2009 – present)

- Led by MNRF and OFAH, with an inter-agency working group
- First report in North America
- Initially, many unknowns due to lack of invasion history in NA
- Research required on biology and management approaches by Trent U. & US Army Research and Development Center
- Management of large populations (>150ha) relies on use of herbicide (diquat);
 - Needed label extension
- Some sites eradicated; others more challenging (water depth, turbidity)



Water Soldier control in the Trent River



Herbicide application via air boat

More Water Soldier:

New detection in the Black River, near Lake Simcoe (fall 2015)

- Small population (<1ha total) controlled manually & with herbicide by MNRF
- Surveillance & monitoring to assess efficacy (standard & testing use of eDNA)
- Also detected in several private ponds; need to address the key pathway (water garden trade)

Lessons Learned from Water Soldier:

- Need additional aquatic herbicides (diquat is the only tool available)
- Public is supportive of use of chemical control tools
- Research and adaptive management are critical to effective management
- Black River rapid response built on the experience of the Trent River project
- Partnerships are key to leveraging expertise, financial and in-kind support

Tench (*Tinca tinca*):

Orangeville, ON, (2014-2015)

Please See Maria Jawaid's Poster at the Session Tonight!



Recommendations for Improving Response Capacity

- In January 2015, a workshop with staff from across MNRF was held to share experiences and provide advice to inform policy on invasive species response and control.
- Recommendations from the workshop, followed six key themes;
 - 1) Leadership and Coordination
 - 2) Improving Business Processes
 - 3) Tools to Support Response
 - 4) Effective Partnership Network
 - 5) Public Engagement
 - 6) Funding and Resources

Leadership and Coordination

- Need for an inter-Ministry working group to provide provincial coordination, facilitate approvals, share knowledge
- Confirm leadership, roles and responsibilities for MNRF and partners
- Incorporate invasive response in annual work-planning
- Prioritize species for response (where possible)
 - *Risk assessment & Invasive Species Act (2015)*

BUT

- Recognize that response actions/objectives will vary depending on the situation
- Something unexpected may come along that shifts priorities

Improve Business Processes

Successful response actions require – flexibility, ability to mobilize quickly and adapt approaches, and expedited decision-making.

- Develop Decision Support Tools to
 - Determine if, when, how to respond
 - Provide guidance on appropriate response actions
- Streamlined approval mechanisms
 - Develop protocols to facilitate permitting (e.g. permits under the *Pesticides Act*)
- Streamline mechanisms for mobilizing staff and equipment
 - Use forest fire model/approach, with “SWAT” team of trained staff to respond quickly in event of emergency



Tools to Support Response

- Expand the “control” tool box for eradication, control and containment
 - Ensure key pesticides required for effective control are available (support label expansions, registrations, efficacy testing before they are needed)
 - Support development of “non chemical” controls – e.g. bubble barriers, biological control options
 - Develop best management practices for containment of different taxa groups
 - Support innovation – e.g. Voyageur Provincial Park – developed specialized plant harvesters to control European Water Chestnut
- Improve information management and sharing tools
 - Share experiences with response and promote knowledge transfer
 - Develop notification protocols within and amongst agencies to communicate new detections



An effective network of partners

- Partnerships are key to effective response – a single government agency cannot succeed alone. Partners include:
 - All levels of government, including binational, state, provincial & municipal agencies
 - Conservation Authorities
 - ENGOs (e.g. Ontario Federation of Anglers and Hunters, Ducks Unlimited Canada)
 - Academia
 - Private businesses
- Development of formal relationships/ agreements amongst partners would facilitate response
 - Mutual Aid Agreement between Great Lakes States/Provinces,
 - Asian Carp Regional Coordinating Committee,
 - Prevention and Response Plans made under the *Invasive Species Act*
 - Enables certain activities by partners related to regulated invasive species

Public Engagement is Critical

Citizens have a powerful role in prevention, detection, response and management....

- Continue to build capacity for invasive species detections by citizens
 - Tools such as EDDMaps, and the Invading Species Hotline
- Build community support for response actions, particularly when these may impact public use/access to a resource (e.g., access to water body, water use after pesticide application, etc.)
- Build support for biological control and use of pesticides
- Assistance with managing expectations for the outcome(s) of response actions
 - What can be accomplished, reasonable timelines, etc.

Funding and Resources

- Response actions can be costly and are often “unplanned” in budgets
- There is a need to ensure that resources are available & “ready to go”
- Learn from experiences from MNRF fire management program
- Invest in staff expertise in advance (training, workshops for knowledge transfer and specialized training)
- Need for long term commitments to funding eradication and containment measures for priority species

Questions?

