

# Upper Great Lakes Invasive Species Discussions

November 5, 2009  
Algoma University  
Room SH 402

9:00 – coffee and reception

9:15 – Welcome and Introductions – Errol Caldwell (for Celia Ross), Algoma University

9:30 – Invasive Species Centre – Al King, Ontario Ministry of Natural Resources and Wayne Fiset, Ontario Forest Research Institute

10:00 – Great Lakes Forestry Centre – Tony Hopkin, Canadian Forest Service <http://cfs.nrcan.gc.ca/regions/glfc>

10:30 – Fisheries and Oceans – Mike Steeves, Sea Lamprey Control Centre and Tom Pratt, Great Lakes Laboratory for Fisheries and Aquatic Sciences <http://www.dfo-mpo.gc.ca/regions/central/science/sea-lamprey-lamproie-mer/index-eng.htm> and <http://www.dfo-mpo.gc.ca/regions/central/science/greatlakes-grandslacs/index-eng.htm>

11:00 – Invasive Species Research Institute - Errol Caldwell, Sault Ste Marie Innovation Centre <http://www.algomau.ca/about-algoma-u/research/isri>

11:30 – LSSU (Aquatic and Invasive Species) – Greg Zimmerman, LSSU Biology <http://www.lssu.edu/programsofstudy/biology/>

12:30 lunch

1:00 – Great Lakes Research Center – Charles Kerfoot, Michigan Tech.

[http://www.doe.mtu.edu/news/2009/great\\_lakes\\_research\\_lab.html](http://www.doe.mtu.edu/news/2009/great_lakes_research_lab.html)

2:00 – Roundtable discussion

3:00 – Tour of Great Lakes Forestry Centre

4:00 - adjourn

In attendance,

Al King

Betsy R

Tony Hopkin

Greg Zimmerman

Tom Pratt

Mike Steeves

Ashley Moerke

Charles Kerfoot

Kristen Berger

Errol Caldwell

ISTvan Imre

Brandon Schamp

Celia Ross

Arthur Perlini

Speaker	Topic and Discussion	Outcome
<p><b>Al King, Ontario MNR ,</b></p>	<p>Invasive Species center: partnership with organizations that have invasive species mandate to improve efficiencies and provide opportunities for collaboration  ALB and EAB collaboration initiatives: 2002-03 need for collaboration on the fight became evident  Looked at as a business case, once it was defined as a good business idea, the center became a reality  Location: SSM because of Invasive projects already here and government decision, deciding on regional, national or international center</p> <p>AU's role collaborative now but could become a major player once chair is hired and other aspects are fulfilled</p> <p>Several major focuses Ex: Research</p> <p>Next Steps:</p>	<p>The creation of the Invasive species center. 15million over four years to establish a centre in SSM. \$9million for insect rearing and associated quarantine recently funded for Great lakes Forestry Centre</p> <p>Regional center focused on the great lakes, regional provinces and great lake states  The center will support federal and provincial mandates by:</p> <ol style="list-style-type: none"> <li>1) collaborative role</li> <li>2) facilitating collaboration and capitalizing efficiencies for partners</li> <li>3) training and focusing on gaps</li> </ol> <p>MNR has committed financial commitment (\$800,000 for research chair over 5yr, \$22M potential investment for containment facility)</p> <p>Developing a detailed agreement and MOU's appointment of a Board of Directors, partnerships (agreement and commitment), secure moneys.</p>
<p><b>Tony Hopkin, Canadian Forest Service (CFS)</b></p>	<p>Invasive Pests, An old issue  Research organization, alien pests one of the first projects  Primary concern in SSM is insects (EAB &amp; ALB), sirex woodwasp (pine trees),</p> <p>Team developments, EAB. Primary role to provide science advice and science</p>	<p>Many organizations working together such as CFIA, MNR, Vaughan, Ontario gov</p>

	<p>direction.</p> <p>Eradication of ALB (under direction of Dr. Jean Turgeon)</p> <p>Communication, not a large mandate</p> <p>Spend a lot of resources and time on monitoring, detection and control</p> <p>Bioforest technologies, ecoject pesticides only system in Canada for dealing with EAB</p>	<p>etc)</p> <p>Put out science information in collaboration with MNR, ex: “ A visual guide to detecting EAB”)</p> <p>Attachment to the recent building, rearing facility will be created and studies on aliens will finally be allowed, quarantine insects will also be available (level 2, alien insects safely contained</p>
<p><b>Mike Steeves, Sea Lamprey Control</b></p>	<p>See attached sheet. What do we do?</p> <p>Perspectives of balancing brook lamprey and sea lamprey?</p> <p>Why is there a fluctuation in population and how is program funded during the fluctuation?</p>	<p>Management program from April to October, partner when possible with other organizations. One of the few facilities able to use lampricide, aquatic pesticides, work from Thunder Bay to lake Ontario.</p> <p>Experiences in aquatic pest management, rapid response is important, transport Canada as a partner due to transport of invasives. Overlap, of both is trouble, since treatment is non selective. Often brook lamprey and sea lamprey do not share the same habitat or niche. Populations of silver (native) lamprey are not severely effective.</p> <p>Funding is spread amongst the lakes that are effected. Some years lake superior will be the main focus and other years it will be lake Ontario. Give and take program. Seems that the years that lake superior is the focus, population goes down drastically.</p>

	<p>What happens after the 5yr funding allocation comes to an end?</p>	<p>Think funding through 2010 is present. Putting in a new bill through cabinet for the next 5yrs as of now. Funding also from 69%(US) and 31% (Canada), trying to even out where the money is coming from. Want Canada to match the aquatic invaders funding from US. Department of fisheries and oceans needs to step up.</p> <p>Change in funding structure, US is leading the way and Canada needs to match it.</p> <p>Early detection and rapid response is the key to success, or issues of invasive pests become an endless pit. Funding for prevention programs would be the best solution. Especially true with aquatic species, quagga mussel could be managed but is it too late for the round goby? Large issue when happens in great lakes, but the in land lakes can be saved since they are isolated.</p>
<p><b>Tom Pratt, Great lakes laboratory for fisheries and aquatic sciences</b></p>	<p>Great lakes lab, DFO 6 members in SSM. Based out of Burlington. Becky Cudmore responsible for creating national standards for conducting national risk assessment program.</p> <p>Ballast water research</p> <p>GLLFAS focus on sea lamprey, St Mary's river AIS surveys.</p> <p>Sea lamprey control research</p> <p>Migration and barriers</p> <p>Lampricide</p> <p>St Mary;s River AIS survey</p>	<p>Sarah Bailey working with CAISN</p> <p>Sterile male lamprey behaviour research, looking btw sterilized and non sterilized males. Looking at compensation levels, must take population down to zero.</p> <p>Look at spawning of lamprey and fish, block lamprey but not fish, outcome can't block without lamprey without blocking other things. Field tested this theory. Fishways: trap fish and remove sea lamprey by hand, then let fish out, demonstrated a significant improvement rate of fish movement now about %70. Inter-stream movement of sea lamprey.</p> <p>Baby sturgeon could be susceptible to lampricide. No mortality in field studies but death in lab studies.</p> <p>Round goby and the ruffe are making their way up St. Mary's river. Near shore fish community impacts will continued to be researched bi annually.</p>

	<p>Great lakes water agreement with US</p> <p>Lamp meetings</p>	<p>DFO will be the lead, putting together a monitoring program, submitted proposal to environment Canada. Not memorandum but written right into budget. Coordination's and opportunities for organizations to collaborate and talk with each other. Efforts coordinated as common group through lamp. Other opportunities to collaborate and coordination (St Mary's work force)</p>
<p><b>Errol Caldwell, ISRI &amp; innovation centre</b></p>	<p>ISRI Interim board has been established, incorporated in 2008 (spring)</p> <p>Biosciences and technology convergence centre</p> <p>Public outreach and education</p> <p>ISRI Database</p> <p>ISRI buildings</p>	<p>Public outreach, focused on universities research and bioscience. Research chair has been hired, Pedro Antunes to start Jan 2010. Possible chair in chemical ecology of invasive species.</p> <p>Completion March 2011, home of ISRI,</p> <p>Lots of events going on for interns.</p> <p>Fill out form and input it to database.</p> <p>CFI Containment Facility proposal. Modify without rearing section, new facility will have a level 2 &amp;3 containment facility. To allow for study of insects and pathogens. Modifications to reflect invasive plants and diseases, not considered aquatics as of yet, the CFI review panel requires more a specific research focus, with the chair coming we will be able to design a better facility, revised. Original plan: 25,000square foot facility and \$25M project.</p> <p>Al King: more facilities present we can try guessing what new Aliens will be coming and rear the disease or alien in the facility to create prevention programs instead of after the invasion solutions.</p>
<p><b>Greg Zimmerman, LSSU biology</b></p>	<p>Bio program at LSSU</p> <p>His research and work</p>	<p>250 biology students, conservation biology new program, strictly undergraduate but all students to a senior thesis project.</p> <p>Biocontrol of purple loosestrife, spotted knapweed, buckthorn and EWM. Collaboration initiatives are welcome, upper peninsula plant council to return. Sugar island monitoring workgroup, contaminants crossing the river. Bellevue green park (Canadian or US?), purple loosestrife beetle release successful, but being replaced with Himalayan touch me not.</p> <p>Would be interested in having Pedro come over to talk to his students.</p>
<p><b>Dr. Ashley Moerke Aquatic</b></p>	<p>Location</p>	<p>250 biology students, conservation biology new program, strictly undergraduate but all students to a senior thesis project.</p>

<b>research lab</b>	<p>History</p> <p>Fish Cam</p> <p>Mission</p> <p>Research</p> <p>Outreach</p> <p>Renovation</p>	<p>Collaborative with MDNR and Edison Sault Electric Co and LSSU, hatchery focus, now focusing on Atlantic salmon. Focus also on AIS and water quality. Raise Atlantic salmon. One of the only facilities that does this, as an educational training tool. Grayling are native but Atlantic salmon and rainbow trout are not native.</p> <p><a href="http://www.lssu.edu/arl">www.lssu.edu/arl</a>, wooding rates of lamprey and uses in the classroom for teachers.</p> <p>Undergraduate education, education and research focused. Undergraduate training, provide valuable scientific information, provide support for researchers</p> <p>Lots of collaborations, basic aquatic ecology and water chemistry, student integration is a focus. Able to conduct AIS, sea lamprey repellent work, willing to collaborate with AIS research.</p> <p>Collaborative opportunities, science camp, display, highschool ecology camps, tours.</p> <p>From 3500sq ft to 16,000 sq ft, classroom and research space, discovery centre (K-12), aquatic animal diagnostic lab – MDNR collaboration, visitors center, research facilities, office and accommodations for collaborators. Level 3 facility. Opportunity to sample ballast water due to location at locks, army core collaboration on ballast water.</p> <p>Al King: CAISN out of Windsor is doing ballast water research. Field crews across the province collecting information for researchers.</p> <p>Errol: are we not encouraging the transfer of the problem from fresh water to salt water if it is reversed.</p> <p>Charles: ocean saline kills most organisms but some can tolerate the saline levels. Entire transfer is the major concern.</p>
<b>Charles Kerfoot, Michigan Tech</b>	<b>Aquatics</b> Great Lakes Research Center	At Michigan tech, at Keweenaw peninsula, collaboration amongst faculty (EEGLE grant and KITES grant), 12 faculties working together, 3 main faculties focusing at center.

<p>Pressing Issues in Upper great lakes coastal research</p> <p>Building diagrams</p> <p>Vessels</p> <p>Projects</p> <p>S2 Yachts (Tidas) S 900 buoy testing with GLOS program,</p> <p>Invasive species grant team</p> <p>Collaborations</p> <p><b>Forestry Portion</b> Christopher Webster, works on Norway Maple</p> <p>Andrew J Storer, EAB</p>	<p>Global climate, develop realistic coastal models, impacts of AIS, restoration of native fish, habitat restoration, historical contamination ect.</p> <p>Geo display in glass house, lots of display materials for students to see and interact with. Docking area for boats both small and large vessels. 40,000sq ft costing \$25M. in initial ground phase, start building now. \$16M from US gov. Many laboratories, one dedicated to invasive species. NSF/NOAA projects. Complete is 2011.</p> <p>R/V Agassiz, fast twin motor boat of the center.</p> <p>Deal with coastal issues. NSF easy to get large education grants (\$1.1M), for water availability in great lakes \$2.2M for a school program GSK to 12, 18 fellowships Research grants include: NOAA GLOS, Army corps, Exotic species, NSF Carbon Cycling, laboratory for dating sediments, daphnia research(not present in superior til 1850 when the locks were implemented), quagga mussels (lake michigan comb 2/3 of bottom), Parameters measured are: buoy string water column temperatures, climate change, conductivity, chlorophyll A, turbidity, nitrate probe is available but no phosphate probe is reliable as of yet, problem is solar power, lots of energy required for running of the probes and sensors</p> <p>Caudal spines (spiny waterflea) projects, unusual eggs ability to pass through fish guts in viable condition, thick wall, fish spreading it through excrement, single fecal pellet can have 12-32 eggs. Boat ramp access to lake, bait fish (eggs living in bait fish guts)</p> <p>Looking for collaboration for spiny waterflea research and control, partners with ERDC (engineer research and development center viksberg lab), CESU, CRADA</p> <p>Spread of invasive plants and control techniques, dendroecology (tree ring analysis), EAB expert, does lots of outreach and education</p> <p>EAB, check out his public information site (similar to what Barry Lyons wants to create for sault ste marie?) Beech bark disease, risk assessment</p>
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	Linda M Nagel, Garlic Mustard	EAB, Garlic Mustard, risk modeling and management of exotic weeds, and EAB phloem reduction (with AJ Storer)
<b>Round Table Discussion</b>	<p><b>Brandon:</b> Knowledge of what others research is, how they do it what techniques and the skill sets they have, collaborative skill sets. Infrastructure availability list would be helpful as well, equipment list available for other researcher then basing projects on mutual interests.</p> <p><b>Errol:</b> the Directory and the methods and the data that they have, so they can share. Put a list about the data they have and encourage researchers to contact each other. Data collection that is standard amongst researchers.</p> <p>Inland lakes and cyanobacteria (blue green algae) seems to be a focus.</p> <p>Opportunities to get together should be pondered, can be more formal or less formal a bi-national invasive species council, sharing of workshops and other events and opportunities for a conference on AIS that affect the great lakes. Academic institutions can reach across the border more easily. MNR remote sensing, data is available, put in database.</p> <p>Bioterrorism! Can completely destroy any efforts in ecosystem monitoring, and invasive species management.</p> <p><b>Ashley M:</b> Wisconsin Northwood conference, a symposium, present a 10min show and working groups were then created</p>	<p><b>Charles:</b> NOAA lab, information should be available from this data archive and will one day be real time collection, could expand program and put a buoy in Canada. Standardization of the data important, working on techniques and rules for this.</p> <p>Instrumentation for cyanobacteria, higher resolution needed. HAB program (lake Ontario and lake eerie). Lydar planes also an option, expensive and independently run. Lydar goes with mss, less than a meter resolution so you can separate blue and green algae. Pigment signatures can be separated. Spectro signature of EWM! Monitoring an obvious option.</p> <p>GIS usage for aquatics? But can be used for coastal and similar terrestrial tools are used for coastal projects. Professionals can merge in regards to some techniques and methods. GLOS (buoy) sharing of information is trying to be implemented. 900 series buoys can have additional surveys implemented, looking into current flow and water sampling NRG needs insufficient at the moment.</p> <p>Decrease the introduction of invasive species in order to have a chance at management.</p> <p><b>Ashley:</b> Canadian masters program interests LSSU students. Senior thesis project, ideas to LSSU students can start project and get training move into masters program.</p> <p>International funding? How do we get it? No conclusion. It is rare and extremely hard to get. US/Canada programs not the focus of international projects. Is not for profit or conservation groups a possibility for fund transfer? Could be an option. World Wildlife fund? NSERC strategic grant?</p> <p><b>Al King:</b> Drive work that is being done. Where do you flag and put proposals to see if researchers that are interested in the research your organization wants to do? Post on organizations website for researchers and grad students to look at and then apply. Contact person.</p> <p>Collaboration may be an issue among certain professionals. Discussions in small presentations and meetings a good start.</p>

	<p>from that. Start with this then create a council. A network for aquatic great lakes species. Working groups could break off from symposiums.</p>	<p><b>Next Steps:</b> Another meeting with Pedro What is the focus of this group, is it management, research, control? Look for areas for collaboration and joint projects. Being aware of others interests and skill sets is an important step. Pedro will want to establish a research focused group, not sure of the focus yet.</p> <p>MNR wants network, what is the focus of this.</p> <p>3 goals of invasive biology, base this groups focus on the goals. Priority issues should also be a focus.</p> <ul style="list-style-type: none"><li>1) detection</li><li>2) management</li><li>3) prevention</li></ul> <p>Prepared to look at another meeting mid January and February. Educational sharing too, outreach/education. Information sharing, basic information is available, GLOS model as an example of what we can do here.</p>
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