

## Great Lakes Panel on Aquatic Nuisance Species Meeting Summary

Invasive Species Centre

1219 Queen St E, Sault St. Marie, ON P64 2E5, Canada | June 25-27, 2024

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Additional meeting information including a final agenda and presentations are available on the Great Lakes Panel website (<https://www.glpanel.org/meetings-admin/past-meetings/>)

### Fisheries and Oceans Highlight

#### Fisheries and Oceans Canada welcome and introductory remarks

*Ceci Weibert, Great Lakes Panel (GLP) Coordinator, Great Lakes Commission (GLC); Sarah Bailey, Department of Fisheries and Oceans Canada (DFO)*

- Weibert gave introductory remarks and housekeeping information
- Bailey provided introductory remarks on behalf of DFO
- In Canada, invasive species management authority spreads across federal, provincial, and territorial governments. At the federal level, there are four main players responsible for AIS management: Canada Border Services Agency, DFO, Parks Canada Agency, and Transport Canada
- Bailey reviewed the history of DFO invasive species funding, which began in 2005 with a \$20 million Canadian investment over 5 years. This program was renewed in 2010 at \$4 million Canadian per year
- As of 2023, the DFO receives \$36.6 million Canadian over 5 years for invasive species programming
- DFO has two core aquatic invasive species (AIS) groups, the National Core Program (focused on management) and a science group (focused on science)
  - The National Core Program works to implement regulations, report on AIS, and act on science advice. The group also facilitates the Asian Carp Program and Sea Lamprey Control Program
  - The science group has five focus areas: monitoring, research/tool development, science advice/policy development, data management, and risk assessment
  - Science research is focused on developing novel tools, control and mitigation, and risk assessments of various AIS especially as it relates to climate change
- DFO is wrapping up investigations on eDNA as an early detection tool and looking at Canadian ballast water data to inform management and decision making
- Upcoming projects include work on Eurasian water milfoil in Quebec and operationalizing DNA detection systems to detect risk of dreissenid dispersal vectors
- DFO is leading risk assessment work on various species
  - A science advisory document updates on dreissenid mussel risk assessments are publicly available
  - Advice was recently developed on the likelihood of introduction of four different fish species (chain pickerel, goldfish, Prussian carp, and black crappie) and should be published soon

- Summer 2024 work involves establishing watch lists for different species using horizon scans
- A published crayfish risk assessment found four crayfish species of high risk: rusty, virile, signal, and red swamp crayfish (<https://cdnsciencepub.com/doi/full/10.1139/cjfas-2021-0245>)

### DFO invasive carp update

*Maude Tremblay, DFO*

- DFO administers an Asian Carp Program with four focal species: bighead, silver, black, and grass carp
  - The Asian Carp Program's pillars are prevention, early warning, response, and management
  - Risk assessments helped form the basis of the program
- DFO collaborates with non-governmental organizations, indigenous communities, and other governmental groups to form Asian Carp Canada which is a group of organizations that is dedicated to preventing invasive carps from establishing in Canadian waters. This partnership reduces redundancy and money spent on similar activities, reaches more audiences, and utilizes one reporting tool which in turn leads to faster responses
  - The Ontario Federation of Hunters and Anglers (OFAH) focuses on educating children, the public, and boaters about grass carp via billboards, classroom education, trade shows, social media and more. OFAH also runs the Invading Species Hotline which is the main AIS reporting system for Ontario
  - The Invasive Species Centre creates social media content and runs the Asian Carp Canada website ([www.AsianCarp.ca](http://www.AsianCarp.ca)) which is a central resource for the public to learn about Asian carps
  - The Magnetawan First Nation is an indigenous partner located on north shore of Lake Huron where they do eDNA early detection work. They lead carp identification training and grass carp outreach in their community
  - The Toronto and Region Conservation Authority does early detection and surveillance work on behalf of Asian Carp Canada along with hosting virtual workshops and social media campaigns
- To engage with target audience groups, DFO has created coloring books, aquarium exhibits, and waterproof identification cards. They have also created videos focused on how an invasion would impact commercial and tribal fishers, animated graphics on ecosystem changes post invasion, and carp life cycle graphics
- DFO works together with partners to implement early warning efforts to find and remove invasive carp detected in Canadian waters
  - Surveillance efforts began in 2013 with emphasis on Lake Erie where grass carp captures have occurred but also include locations in the Superior Huron corridor. Overall, early detection work occurs at about 200 sites in the Great Lakes and three grass carps were captured in 2023 and 32 grass carps have been captured since 2012
  - Captured grass carp are brought back to lab to determine diploid/triploid status. If captured grass carp are fertile, DFO initiates additional EDRR efforts in the area

- Trembley played a video explaining the lab testing process after a grass carp capture

### Canadian border watercraft inspections

*Brenden Spearin, DFO*

- In 2019, the Commissioner of Environment and State of Development did an audit of Canada's AIS program which called for DFO and the Canadian Border Service Agency (CBSA) to work together more effectively. DFO and CBSA developed a working group to test and develop new and existing AIS prevention tools
- The Stowaway Pathway Protection Pilot project is a product of the DFO/CBSA collaboration. The Pilot project included inspecting watercraft and collecting survey data from boaters at the Pembina–Emerson border crossing where Manitoba, North Dakota, and Minnesota meet
  - This project was piloted in 2022 with two shifts a day (13-hour coverage) Thursday through Monday. In 2023, less funding was available and only allowed for one crew a day (9-hour coverage) during the peak times of day
  - Boats who passed inspection were educated and released into Canada. Violations were dealt with depending on the offense. A drain plug violation led to a verbal warning, standing water initiated full decontamination, and attached dead or alive AIS resulted in entry refusal
- In 2022, the Stowaway Pathway Protection Pilot project conducted 607 inspections of those 190 boats failed, and 122 led to decontaminations. Nine of 22 boats that were inspected in America prior to reaching the border failed
  - Most inspected boats (70%) hailed from five US states (Minnesota, Nebraska, Iowa, North Dakota, and South Dakota)
  - Several invasive plants and invertebrates, dried baitfish, drain plugs left in, and hundreds of gallons of standing water were found during inspections
  - Compliance by jurisdiction was relatively similar, but Minnesota had the highest failure rate, most for live well violations
  - Most boaters (98%) claimed they had clean, drained, and dried, however, inspections found that only 69% of boats did. In 2022, all 6 entry refusals were people that said they had cleaned, drained, and dried
- A broad climate matching analysis showed potential for 154 species to be introduced into Manitoba from the waterbodies the boaters were coming from
- In 2023, 802 watercraft inspections occurred with 382 failures, 139 decontaminations, and 6 watercraft fouled with mussels
  - Minnesota had the lowest pass rate followed by Wisconsin and Ontario in 2022/23
  - From 2022-24, there was a decrease in compliance and increase in mussel fouled boats detected
- The next step for the Stowaway Pathway Protection project is to boat inspection compare programs across jurisdictions

### DFO science program update

#### **Results of a jurisdictional scan for prioritizing introduction pathways**

*Andrew Drake, DFO*

- In 2019, an audit showed that DFO lacked proper ways to assess pathways
- DFO's three objectives for assessing risk pathways include identifying primary arrival pathways, identifying and ranking secondary pathways, and identifying species pathways whose introductions seem imminent
- A survey focused on primary pathways, pathways of secondary spread within and among DFO regions, and pathways of emerging species of concern, was administered to 32 AIS experts in various DFO regions and a 30% response rate (~10 respondents) was received. The data was analyzed using a discrete Bayesian network pathway analysis
  - Primary pathways for fish included stocking programs and aquaculture, and primary pathways for invertebrates included shipping and ballast water. Secondary pathways for fish within and among DFO regions included recreational fishing and private aquaculture, and secondary pathways for invertebrates included other biological transfers, aquariums/ornamental industry and canals/aquatic diversions
  - Across both primary and secondary pathways, there is greatest concern with private aquaculture for fish introductions and recreational boating for invertebrate introductions
  - The top three species (limited to fish and invertebrates) respondents reported on include spiny waterflea, Chinese mystery snail, and zebra mussel
  - On average, 2.3 pathways were implicated per regulated species evaluated
  - Most regulated species appear to be only transported by a few pathways
- Next steps for this work include examining emergent pathways and species of concern

**Invasive carp river flow/temperature tool in support of invasive carp spawning surveillance**

*Andrew Drake, DFO*

- The DFO Asian Carp Program uses early warning surveillance as a prevention tool
- There are now three locations in Lake Erie with signs of grass carp reproduction
- Objectives of this work are to identify the environmental role on the timing and location of grass carp spawning and egg/larval development in addition to developing a spawning forecasting tool
- Invasive carps have specific spawning requirements and eggs must develop while in the water column drifting down the river
- The USGS FluEgg Particle Tracking Model was used to predict grass carp egg drift at different water temperatures and discharges in the Thames River which has no detected grass carp spawning to date
  - A 15-year time series of flow and temperature showed a spawning queue occur on June 1<sup>st</sup>
  - Grass carp prefer to spawn in turbulent areas which limits spawning to the upper quarter of the main branch of the Thames River. This means that grass carp must migrate up stream to have a greater than 90% chance of producing viable eggs
  - When there is low flow and high temperatures, this leads to rapid development and high probability of egg survival when moving through the system
  - This work identified potential areas for grass carp spawning within the Thames River system as a function of turbulence and developed river specific relationships for spawning initiation as a function of temperature

- The model predicted the probability of hatch success per kilometer under different temperatures and velocities and provided guidance to the DFO Asian Carp Program about the timing and locations of potential spawning
- Outputs from this research include a published finalized report, Thames River data being included in the UGSG SpawnCast platform, and the development of a binational Grass Carp spawning model

## **Research to understand efficacy of ballast water management systems in the Great Lakes and St. Lawrence River**

*Sarah Bailey, DFO*

- DFO has been working since 2017 to test different ballast water management systems (BWMS) to assess if they meet regulations (< 50um large organisms/zooplankton and between 10-50um of small organisms/phytoplankton).
  - Between 2017-2018, samples were collected from 31 ships which all met regulation requirements for small sized organisms, but only half met regulations for larger organisms
- In 2019, both uptake and discharge samples were collected to help understand if treatment systems were at fault for the experienced failures or if the intake load was too high
  - 11 paired samples from four different treatment systems (3 UV based and 1 chlorine based) showed that compared to the uptake amount there was a large number of organisms that were removed by the system even though the discharge standards were not met
- Bailey reviewed effort at Hamilton Harbor, which began the focal area of work as regulations were not met at that location
- Work is still occurring to understand what is causing unmet regulations and will require more comprehensive systematic data

## **Great Lakes Panel Business Meeting Welcome and Introductory Remarks**

Invasive Species Centre Welcome, call to order, roll call, and agenda review

*Eric Fischer, Great Lakes Panel (GLP) Chair, Indiana Department of Natural Resources (DNR) and Sarah Rang, Invasive Species Centre*

- A welcome from the Minister of Ontario of Natural Resources, Graydon Smith, was delivered. The Minister highlighted AIS work being accomplished in Ontario, including the *Phragmites* Control Fund and the Invasive Species Action Fund
- Sarah Rang welcomed the Great Lakes Panel to the Invasive Species Centre (ISC) and provided a brief overview of ISC's current work
  - Rang urged collaboration on common AIS messaging across the basin and encouraged partnerships and are willing to engage and leverage more action across the Great Lakes
- Fischer called the meeting to order
- GLP members and observers introduced themselves and a quorum was confirmed
- Fischer reviewed the agenda and no amendments were made

- Fischer acknowledged the ISC, Ontario Federation of Anglers and Hunters, The Nature Conservancy, and the Ontario Ministry of Natural Resources (OMNR) for helping fund and providing meeting space

## **GLP Business Items**

*Eric Fischer, GLP Chair, Indiana DNR; Ceci Weibert, GLP Coordinator, GLC*

### Approval of November 2023 meeting summary

- The November 2023 meeting summary was approved

### Review of November 2023 action items

- Weibert reviewed action items from the Fall 2023 meeting and their status toward completion
  - All actions are either ongoing or complete. Completed action items from the GLP Executive Committee (ExCom), GLP staff, and GLP members were reviewed

### Great Lakes Panel Nominating Committee Report

- All members on the spring 2024 ballot were approved. The installation of new GLP members are: Eric Ficher (outgoing GLP Chair), Kelly Pennington (GLP Chair), Mike Langendorf (GLP Vice Chair), Lindsay Chadderton (Research Coordination Committee Chair), Patrick Kocovsky (Policy Coordination Committee Chair), Doug Jensen (Information/ Education Committee Chair and approved at-large member), Wildlife Forever (approved at-large member)

## **Committee Reports**

### Organisms in Trade (OIT) Ad Hoc Committee

*Greg Hitzroth, OIT Ad Hoc Co-chair, Illinois-Indiana Sea Grant; Francine MacDonald, OIT Ad Hoc Co-chair, Ontario Ministry of Natural Resources and Forestry (OMNRF)*

- The OIT Ad Hoc Committee, with administrations from the GLC, was awarded Great Lakes Restoration Initiative (GLRI) Interjurisdictional project funding to support regional coordination of bait industry outreach engagement from January 2024 - December 2025
  - The project will involve a workshop to engage with bait industry representations and the development of a regional bait guide
  - The OIT Ad Hoc Committee asks for GLP members to share bait guides and outreach materials from their jurisdiction. The GLC established a contract with Pennsylvania Sea Grant to initiate work on the regional bait guide and has begun planning for the bait industry workshop
- The OIT Ad Hoc Committee is currently participating on the GLDIATR Advisory Committee
- The OIT Ad Hoc Committee provided input to the interjurisdictional OIT prevention programmatic analysis project regarding pathway prioritization
- The OIT Ad Hoc Committee provided input on the Choose Native ornamental plant trade project funded through the Richard King Mellon Foundation

### Information/Education Committee (I/EC)

*Doug Jensen, I/E Committee Chair, Minnesota Department of Natural Resources*

- The I/EC provided suggestions and recommendations for the potential GLP recommendation regarding the Ruffe Control Plan archival
- The I/EC has been aiding in the creation of a standing committee charge
- The I/EC is discussing a potential name change, as “I/E” comes from an outdated information deficit model. A name change will also help keep naming consistent among other panel committees and the Aquatic Nuisance Species (ANS) Task Force
- The I/EC continues helping with interjurisdictional project brainstorming and hosting a space for member updates

#### Research Coordination Committee (RCC)

*Lindsay Chadderton, RCC Chair, The Nature Conservancy (TNC)*

- The RCC finalized the [Invasive Aquatic Plant Research Agenda](#)
- The RCC participated in the Control of Priority Established Species project
- The RCC is helping with the development and review process for the standing committee charge
- The RCC is in current discussion around the waterfowl hunter pathway to assess current research needs. Next steps for this work will be to identify how the RCC might fund a future project
  - It was noted that there is not much comprehensive outreach for this pathway and getting a baseline of the current outreach/actions would be beneficial
  - Chadderton encouraged anyone working on the waterfowl hunter pathway to reach out to the RCC

#### Policy Coordination Committee (PCC)

*Patrick Kočovský, PCC Chair, U.S. Geological Survey (USGS)*

- Grass carp letters that were created by the PCC were distributed to the regional ANS panels and were discussed at the most recent ANS Task Force meeting
  - There is now an industry for triploid grass carp, but they are more expensive than diploid which remains a problem when aiming to cut off the diploid pathway
  - Grass carp are imported to Ontario as a food fish and are a commodity in the Chicago food market, likely being imported from Arkansas
- The PCC is working on a committee charge. There has also been discussion regarding changing the Committee name to be more focused on management or control

#### **GLP Interjurisdictional Project updates**

*Ceci Weibert and Alisha Davidson, Great Lakes Commission*

#### Regional Invasive Aquatic Plant Control Prioritization and Needs Assessment

- This project is now complete
- The Invasive Aquatic Plant Research agenda is now available online on the GLP website (<https://www.glpanel.org/resource/invasive-aquatic-plant-control-needs-research-agenda/> )
- Davidson has submitted a manuscript for this project

## Evaluating Control of Priority Established Species: Species- and site-based analysis of control efforts in the Great Lakes region

- The project team, in consultation with the RCC, has identified and finalized 21 priority animal species to be included in this project. Species determinations can be found in a project update within the [Fall 2023 GLP meeting summary](#)
- Literature reviews were completed for all 21 animal species and can be found on the [RCC's webpage](#). The literature reviews identified the gaps and challenges to control that can drive future research and on-the-ground management
  - Davidson reviewed high-level conclusions from the literature reviews
- Davidson presented a draft of the site-based control mapper which was developed as part of this project. The mapper includes ten years of GLRI data, filtered across AIS control project records to be mapped. This mapper will help address what species are currently being managed and what should be managed with the available tools
  - Each point on the map includes data on who received the funding, which species were targeted, and what control method was used
  - There is currently limited GLRI project data included. Project staff have requested additional data from the U.S. Environmental Protection Agency (USEPA)
  - The next step will be to overlay data with USGS Nonindigenous Aquatic Species (NAS) species occurrence data of the 21 priority animal species
  - The map is still in development, but it will be shared publicly once complete
  - GLP members expressed the importance of the mapper and hope for it to be implemented GLRI wide
  - It has not been discussed whether the mapper will be cross-referenced with the Annex Water Quality Agreement
- Next steps for this project include the development of a decision tree that uses published criteria associated with successful management of AIS along with the trait-based data to identify the management approaches with the highest probability of enabling control at both local and regional scales. This portion of the project is being led by TNC and Minnesota Aquatic Invasive Species Research Center (MAISRC)

## **Programmatic Updates**

### GLRI Action Plan IV

*Kevin O'Donnell, U.S. Environmental Protection Agency*

- The GLRI Action Plan IV is in draft phase, with three months remaining until finalization. The latest version of the draft can be found online at: [https://glri.us/sites/default/files/glri\\_apiv\\_draft\\_for\\_public\\_input\\_april\\_11\\_2024.pdf](https://glri.us/sites/default/files/glri_apiv_draft_for_public_input_april_11_2024.pdf)
- Following the new plan, there will likely have to be slight adjustments and reorientation to programs
  - The draft plan will have additional emphasis on prevention though pathway management, maintaining and enhancing surveillance, climate adaption, and underserved communities



- Projects focusing on technology development, species-specific collaboratives, and control of established invasives species need to be rooted in the needs of managers and land stewards to receive funding
  - Pathway specific collaboratives will still be considered for funding, but there will be a pivot towards more engagement with managers
  - Additionally, Tribal nations perspectives on “non-local beings” and the idea of learning to live with invasive species in some cases should be incorporated to receive support
- The Action Plan IV period (FY2025-2029) may reflect a transition period away from the recent increases to GLRI through the Bipartisan Infrastructure Law (BIL) funding, due to the BIL funding ending in FY2026
  - As the BIL funding ends, the Action Plan IV period may have leaner years of GLRI funds (but this is subject to change based on any new congressional action)
  - In FY22, Focus Area II was increased by 72 million
- The public comment period for the draft has wrapped up. In most cases, there are no significant changes to the structure, commitments, etc.
  - A total of 12 comments were received on Focus Area II
- The GLRI Virtual Tribal Forum will take place June 27<sup>th</sup>, with an early to mid-July deadline for further comments from Indigenous Nations

#### Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS)

*Rochelle Sturtevant, GLANSIS Program Manager, Michigan Sea Grant Extension*

- Sturtevant reviewed recent staff changes at GLANSIS
- One new species, *Urnatella gracilis* (freshwater goblet worm), has been added to the database since the fall GLP update. *U. gracilis* has been listed as a range expander to Lake Superior and the St. Lawrence River. In most cases, it has been assumed to be ballast mediated movements
- There have been 25 new assessments of species. All assessments are online in the [database](#)
  - 109 total species assessments have been completed
- GLANSIS has published two new articles:
  - [Spotlight - Alien Language: Reflections in Rhetoric of Invasion Biology](#)
  - [The Great Lakes' Most Unwanted Characterizing the Impacts of the Top ten Great Lakes Aquatic Invasive Species](#)
- GLANSIS now has the ability to search the impact database on the name of the impacted native species. This is not yet a public feature, but can be requested if needed
  - GLANSIS joined the Great Lakes Fisheries Commission- Lake Erie Cisco Workshop and was able to provide maps of historical cisco spawning in the Great Lakes and created a hotspot map of where impacted species coincided. This is just one example of how this new feature could be utilized
- At the 2024 International Conference on Aquatic Invasive Species (ICAIS) meeting, Amy Fowler of George Mason University presented her lab’s worldwide effort to do genetic verification of mystery snail species (*Cipangopaludina spp.*) and parasitology of the samples. GLANSIS is helping coordinate sending Great Lakes mystery snails to the Fowler lab
  - The [landing page](#) includes a map of where these snails have been historically found in the Great Lakes regions

- They are accepting specimens through 2025. GLP members were encouraged to share the word with others that may be in the field collecting species
- If anyone sends collection data to the Fowler lab, they should CC' GLANSIS ([oar.glerl.glansis@noaa.gov](mailto:oar.glerl.glansis@noaa.gov)) so the genetically identified snails can be mapped

### Aquatic Nuisance Species Task Force (ANSTF)

*Susan Pasko, U.S. Fish and Wildlife Service (USFWS)*

- Pasko provided a brief overview of the structure of the ANS Task Force
- The last ANS Task Force meeting was in May 2024, and the full meeting minutes will be available online soon. Outcomes from that meeting include approval of the “New Jersey State AIS Management Plan” and approval of the final “European Green Crab Management Plan”
- Pasko reviewed the action items from the May ANS Task Force meeting:
  - Complete the survey to inform the Legislative Gap Report to Congress. ANSTF Chairs will distribute this email and survey to ANSTF Federal Member Agencies;
  - Follow up with DOT and the WRP regarding the recommendation to develop standardized prevention language within interstate transportation permit applications;
  - Work with USCG and EPA to develop a charge that defines the scope of work, timeline, and potential membership, and structure for a workgroup to assist the development of the VIDA Intergovernmental Response Framework;
  - Work with the US Coral Reef Task Force to explore establishing a joint working group focused on the invasive soft coral issue in the Pacific and Caribbean;
  - Control Subcommittee to review their recommendation on a Genetic Biocontrol Subcommittee to determine potential next steps; and
  - Distribute recommendations from the ISAC/ ANSTF EDRR Framework Advisory Group to ANSTF members and panels
- Pasko reviewed work occurring within the ANS Task Force subcommittees and work groups
  - The Prevention Subcommittee is advising a Seaplane Risk Analysis, looking into gaps in prevention and legislation, developing a framework for ballast water discharge, and supporting the OIT workgroup in investigating the pet trade pathways
  - The Outreach Subcommittee conducted an assessment of a campaign targeting outdoor recreators, organizing a National AIS Outreach Summit in Fall 2024, populating the Stop Aquatic Hitchhikers website, and continued to support the ANS Outreach Community of Practice
  - The Early Detection and Rapid Response (EDRR) Subcommittee is helping to build capacity for the NAS database, developing horizon scans and watchlists, modernizing and expanding the Invasive Species Experts Database, developing a Rapid Response Template, administering a pilot Rapid Response Fund for AIS, and developed a joint working group with the Invasive Species Advisory Committee (ISAC) to provide non-federal input to the National EDRR Framework
  - The Control Subcommittee is revising the European Green Crab and New Zealand mudsnail control plans, working on the potential archival of the Ruffe Control Plan, establishing on a decision-making process for approval to develop new species control

and management plans, and developing a process to support and track existing species plans

- The Research Subcommittee is working on an update to the National AIS Priority Research List, creating a database to track completed studies that address priority research needs, and implementing measures to communicate results from priority research to the ANS Task Force and appropriate audiences

### Ruffe Control Program

*Nick Frohnauer and Mike Rucinski, USFWS*

- Rucinski briefly reviewed the timeline of the Ruffe Control Program and its review process
  - The Ruffe control plan was developed in 1996, and it is now being proposed for archival
  - A Summary of Actions report was developed between January 2023-2024 which reviewed the Ruffe control plan accomplishments. Based on the findings of the report, USFWS drafted a recommendation for plan archival, which was presented to the GLP
  - The USFWS will provide their recommendation to the ANS Task Force when GLP is ready to provide input and/or recommendations. The ANS Task Force will take formal action in November
- Rucinski noted that archival of the plan will not impact Ruffe's status as a priority species
  - Ruffe is still included in USFWS surveillance activities and EPA confirmed that Ruffe will be incorporated into Focus Area II surveillance work

### **Decisional: GLP member discussion on Ruffe Control Program Archival**

*GLP members*

- Chadderton provided a brief background of Ruffe in the Great Lakes, including basic biology, invasion history and spread, and proposed climate match
- Chadderton reviewed the original objectives of the Ruffe Control Program
- Chadderton reviewed the memo that the GLP Executive Committee had drafted prior to the GLP spring meeting which included options between deciding to support plan archival, do not support archival, or request a revision of the plan
  - Weibert mentioned that a fourth option not listed on the memo is to archive the current Ruffe Control Plan and request creation of a new plan
  - Whether there would be additional funding with the creation of a new plan is dependent on the plan liaison to find the funding to achieve that work. The ANS Task Force does not provide funds to aid in the creation of species plans
- Chadderton asked members, in the absence of a plan, what would happen if there was a need for Ruffe control for the future (e.g., range expansion)?
  - A new plan could be made for a more specific/current scenario
  - A rapid response plan may also fill this need
- Attendees noted that there are still relevant objectives within the Ruffe Control plan including: bait fish management, connection of the Chicago Canal, population reduction, and ballast water
- GLP members will re-convene virtually, at a later date, to continue this conversation and vote on a recommendation before the Fall ANS Task Force meeting

## Public comment period

- The Upper Midwest Invasive Species Conference is going to be held in Duluth, MN from November 12-14<sup>th</sup>, 2024. The first ever crayfish identification workshop will take place at the conference
- Jensen is co-author on a new chapter in a book on AFS Sampling Protocols, which is available for pre-order now
- The ANS Task Force Outreach Subcommittee will be holding a workshop at the fall North American Invasive Species Management Association (NAISMA) conference and those interested should email Tim Campbell ([tim.campbell@wisc.edu](mailto:tim.campbell@wisc.edu))

## Plenary Session: Shipping

### Welcome and introductory remarks

*Lindsay Chadderton, RCC Chair*

- Chadderton called the session to order

### Great Waters Research Collaborative

*Christine Polkinghorne, University of Wisconsin-Superior*

- The purpose of the Great Lakes Ballast Water Research and Development (R&D) Plan is to determine if approved ballast water management systems (BWMS) reach discharge standards using existing or adapted methods
- Polkinghorne reviewed the timeline of versions 5 and 6 of the R&D Plan
  - Public comments received on version 5 of the plan indicated that it was too broad and should be more narrowly focused on the Great Lakes
  - Thus, version 6 of the R&D plan was developed to determine whether existing U.S. Coast Guard (USCG) type-approved BWMS can treat Great Lakes ballast water effectively to meet current discharge standards, using existing methods or adapted methods to reflect the different environmental conditions of the Great Lakes and operational realities of laker vessels. Version 6 focused on operational realities, environmental conditions, and biological effectiveness
  - The Lake Superior Research Institute has and is continuing to conduct research as part of the R&D plan version 6 that includes water quality testing on five Laker vessels in ports and shipboard to monitor seasonal variation in ports
- Crew log forms are used to record observations during ballasting and de-ballasting. Forms were revised with input from ship owners and crew for simplification. The revised crew log forms include whether the BWMS was able to keep pace with ballast operations, if UV radiation was used, and provides space for notes
- A total of 459 crew logs were collected and 342 autolog files, which are files generated by the system itself, were collected from the DESMI (a ballast water management system made by De Smithske Jernstøberier og Maskinværksteder) and Bio-Sea B UV (a ballast water management system made by Bio-UV Group) systems
  - DESMI systems were more frequently bypassed and unable to keep pace with cargo operations than Bio-Sea B systems

- Nine events with paired uptake and discharge information were collected from 2022-2023 where both UV and Chlorination systems (DESMI Compact Clean, Bio-UV BIO-SEA B, AlfaLaval Pure Ballast, and TeamTec Senza) were evaluated
  - With these systems, discharge standards were met 100% of the time for microorganisms (<10 microns), 80% for the 10-50 micron sized organisms, and 30% of the time for organisms >50 microns
  - Bio Sea B systems not meeting discharge standards, however, the organism concentrations were greatly reduced from their initial uptake
- Recent literature completed on 228 global fleet sampling events found that 56% of the time discharge standards were met when this research found that only 30% compliance with discharge standards was reached
- Late in 2024, work will begin to complete ballast water filter performance testing in addition to testing the impacts of ice buildup on the filters in winter. Fifteen ship visits will be completed, and water quality sampling will occur in 25 ports looking at abiotic and biotic factors
- In 2025, a new ship will be added to the Lake Superior Research Institutes' research team's roster and testing will continue

## **Soo Locks**

*Jeff Harrington, U.S. Army Corps of Engineers*

- The Soo Locks provide passage for eight thousand boats each year, passing through two operational locks including the smaller MacArthur Lock and larger Poe Lock
- Hydropower infrastructure on site at the Soo Locks supplies all the energy needed to run the locks and more for the grid that powers the eastern half of Michigan's Upper Peninsula
- The locks are a registered historic landmark with a park and visitors center on site
- By 2030, two locks that date to the early 1900's, Sabin and Davis, will be reconstructed to create one larger lock with increased vessel capacity
- The Soo Locks are the main iron ore shipping location with secondary products including coal, limestone, steel, and grain
- Onsite operations involve a mix of 140 trade and professional workers
- The locks experience heavy ice from December to May and a steam system is used to prevent ice from building up on the locks. For ice pushed into the system by vessels, a compressed air and bubbler system are used. Tug and steam lances remove ice collars from lock walls
- The Soo Lock operating season is March 25 – January 15
- Annual gate inspections are performed to maintain safety and make repairs
- Sea Lamprey trapping and didymo sampling activities occur at the Soo Locks

## **VIDA update**

*Jack Faulk, USEPA*

- The USEPA has been working on a new rule as required in the 2018 Vessel Incidental Discharge Act (VIDA) that will set new discharge standards, primarily for commercial vessels 79 ft or longer. Under VIDA, the USCG will then be responsible for developing implementing regulations for USEPA's discharge standards. Once both USEPA and USCG regulations are final, states will then

be pre-empted from enforcing more stringent requirements than the federal requirements although VIDA does give states authority to enforce these new federal regulations

- The USEPA's 2020 proposed rule included proposed requirements for all incidental discharges, discharge-specific requirements for 20 different discharges, and several state petition options established under VIDA
- The USEPA issued a supplemental notice to the proposed rule in 2023 that included an analysis of available USCG ballast water treatment system data to determine appropriate numeric discharge standards as well as proposing additional regulatory options
  - The USCG data showed that the existing ballast water numeric standards are still appropriate
  - Additional regulatory options in the supplemental notice addressed best management practices (BMPs) for ballast water uptake, an equipment standard for new Laker ballast water discharges, hull cleaning requirements, and revised gray water management exemptions
- The USEPA was sued by an environmental group for failing to meet the statutory deadline for finalizing its VIDA regulations. However, USEPA is on track for rule signature by September 23, 2024
- Of the 530 commercial vessels that reported operating in the Great Lakes, about 200 reported discharging ballast water. Most foreign ships have ballast water management systems on board whereas few Canadian and U.S. ships do
- There are four opportunities where states can petition for more stringent standards under VIDA
  - Governors can request more stringent standards based on best available technology
  - States can apply for no discharge zones where greater environmental protection is needed
  - Governors can petition for emergency orders due to invasive species risks or water quality concerns
  - Great Lakes states working together can establish more stringent requirements for the Great Lakes
- VIDA includes a requirement for the USCG and USEPA to develop an Intergovernmental Response Framework to evaluate and respond to ANS risks from vessel discharges
  - The USEPA is now working on this effort with the USCG and ANS Task force. A new ANS Task Force workgroup is likely to form on this issue
- Visit the USEPA's commercial vessel discharge page to keep updated on discharge standards: <https://www.epa.gov/vessels-marinas-and-ports/commercial-vessel-discharge-standards>
- New Lakers constructed after USCG VIDA regulations are final will be required to install, operate, and maintain USCG type approved ballast water management systems to be able to discharge ballast

## Transport Canada Update

*Ben Hayes, Transport Canada*

- Hayes reviewed the timeline of ballast water regulations in Canada, which began with voluntary ballast water guidelines in 1989. In 2004 the International Ballast Water Convention was

established by the International Maritime Organization (IMO) creating standards for the management and control of ship ballast water and sediment

- In 2006, Canada began to require international ships entering Canadian waters to exchange ballast water mid-ocean or treat with a BWMS
- Canada promulgated the Canada Ballast Water Regulations in 2021 which required ships built after 2009 to treat ballast water by 2024 and ships built before 2009 to treat by 2030 with few exemptions
- Transport Canada policy areas of focus include work in domestic, binational, and international spheres
- Domestically, Transport Canada is focused on the implementation of BWMS on ships using the Great Lakes and the Canadian industry is aiming for full instillation of BWMS by 2030
  - Transport Canada recognizes that consistent region-wide regulations are important, and are working with the USEPA and USCG to make progress towards binational compatibility in the Great Lakes
- Internationally, the Convention at IMO is a new aspirational instrument that needs improvements. IMO parties are completing a review of the Convention through an experience-building process, taking into account developments with its initial implementation, which will culminate in a package of amendments to improve the Convention
- The experience building process involves collecting and analyzing data into a report that is used complete their holistic review
  - Parties have made progress on developing the package of amendments to the Convention, which is expected to be adopted in 2026. Once the amendments to the Convention take effect, the current non-penalization phase for exceedances of the D2 standards will end
- Now that 20 years have passed since the Convention was signed, the current priorities include more detailed information on BWMS profiles and better testing conditions, period biologic efficacy testing to ensure ships remain in good working order, strengthening maintenance requirements, and creating conditions to support a healthy market for BWMS
- Lakers transport 95% of the ballast water within the Great Lakes region, posing a higher risk of AIS spread than ocean going ships. However, ballast water treatment will significantly reduce this risk
  - DFO science predicts that the spread of invasive species to Canadian ports is expected to drop by 99% if the US follows Canada in regulating lakers
- Transport Canada's Ballast Water Innovation Program (BWIP) provides contribution focused to optimize BWMS performance in the Great Lakes and St. Lawrence. Hayes reviewed three projects funded by this program

### **Lake Carriers Association updates – Lakers and Ballast Water**

*Debra DiCianna, Lake Carriers' Association*

- Flagged lakers are vessels confined to the Great Lakes, primarily Lake Superior, Lake Michigan, Lake Huron, and Lake Erie
  - Current lakers were built as early as 1906 with modifications made between 1946-1998
  - Lakers have uncoated ballast tanks which limit treatment options due to corrosion



- Lakers are shut down seasonally and are not in service from mid-January to mid-March
- Lakers are used for quick and easy offloading of goods that requires high ballast pumping rates
- Early AIS prevention lakers activities included voluntary participation Ruffe Control Plan actions following Ruffe introduction to Duluth harbor in 1993
- International shipping led to the first introduction of non-native organisms and now the Lake Carriers' Association is aiming to mitigate secondary spread via lakers
- Lakers use manifold and independent ballast pumps to uptake up to 60K cubic meters of water
- The state of Minnesota requires an annual analysis for existing Lakers that evaluates stability, corrosivity, holding times, and water quality
  - USCG BWMS are not compatible with lakers
- Lake Carriers' Association believes issues with current BWMS include no requirement for shipboard testing in freshwater or coastal waters with high turbidity, unclarity with the current definition of "treatment rated capacity", and manufacturers largely uninterested in lakers because of the small market
  - During BWMS freshwater testing, a large reduction in flow occurs, thus BWMS 2-3 times larger are needed to meet flow requirements. Larger systems would change the type of approval
- The Lake Carriers' Association has filed a petition with the Federal Maritime Commission (FMC) regarding a trade barrier they believe is negatively impacting U.S. lakers

## **Q&A and Discussion**

*Lindsay Chadderton, TNC*

- Canada's views with respect to the FMC investigation are posted on the federal register
- Creating a good market for BWMS is important, but is difficult when there is not clarity from regulators on the approach needed to provide systems that are attuned to the ballasting rates used by U.S. ships; there is nothing in Canadian law that lists impacts to operations as justification for differential treatment
- USEPA's new ballast water discharges standards are based on VIDA which is based on best available technology and economically achievable standards that are independent of risk, so there is a different between US and Canadian obligations which may delay or complicate full binational consistency

## **Closing Remarks**

*Lindsay Chadderton, TNC*

- Chadderton closed the session
- Weibert gave information regarding the Soo Locks field trips

## **Plenary Session: Binational Species of Concern**

### **Welcome and introductory remarks**

*Kelly Pennington, Minnesota DNR*



- Pennington welcomed the speakers and provided opening remarks

### **Water soldier in the Trent-Severn waterway**

*Randy Power, Parks Canada Agency and Mary Gunning, Quinte Conservation*

- Power provided an overview on 2023 Parks Canada water soldier treatment (149 hectares treated) under a 5-year management plan established by the Ontario Ministry in 2017. Parks Canada will be beginning a new 5-year management plan and are evaluating progress made under the current management plan and herbicide program
  - With the herbicide program, they reduced water soldier as much as 85% in some areas
  - Challenges they experience include persistent water soldier establishment regardless of management interventions and the need to adjust monitoring methods for the purpose of eradication
- The original goals of Ontario's Integrated Management Plan (IMP) were to prevent water soldier spread, implement EDRR, eradicate established populations in Ontario, and work with the private sector to identify new populations
- The new 5-year plan (2024 – 2029) is focused on local eradication in upstream reaches, management in lower reaches, and protection of uninfested waters
  - Control options will include herbicide, manual removal, diver assisted suction harvesting, bottom barriers, and mechanical harvesting
- Gunning provided an update on water soldier in the Bay of Quinte
  - The Trent River is the largest source of water soldier introduction into the Bay
  - The Bay of Quinte was designated as an Area of Concern (AOC) in 1985 and has extensive coastal wetlands which provide ideal habitat for water soldier
  - With water soldier being relatively new to the Bay of Quinte, most action has been focused on monitoring. eDNA sample positives are confirmed via visual surveys, point transect surveys, or more eDNA sampling. Drone work was introduced in 2023 and will continue in 2024
    - Unable to determine if eDNA detections are from live to dead plants
  - The Ontario Federation of Anglers and Hunters are providing a 2024 field crew focused on water soldier monitoring, management, and public outreach
  - 2023-24 survey results show water soldier appears to be moving in correspondence with wind and wave patterns within the Bay
  - 2023 was the first year of active management in the Bay and water soldier populations were treated with either shade cloths, manual removal, and herbicide application
- Trent University is conducting a study on the efficacy of different water soldier management techniques

### **Marbled crayfish in Ontario**

*Colin Lake, ONMRF and Brook Schryer, OFAH*

- Marbled crayfish (*Procambarus virginalis*) first appeared in the German pet trade in the 1990s
  - They are small, all triploid females that reproduce via cloning
- The Ontario Invasive Species Act categorizes the *Procambarus* genus as prohibited

- Marbled crayfish was first reported in North America in Burlington, Ontario in 2021 in a small network of stormwater control ponds that were unconnected to any other waterbodies
  - In 2022, weak eDNA detections were collected but no specimens were found
  - In winter of 2022/23, a water drawdown occurred to freeze and kill all crayfish
  - Live adults and juveniles were captured from July to October of 2023
  - Additional eDNA work indicated that City View Park (a manmade pond) is the only additional location where both individuals and eDNA were detected. Follow up eDNA surveys in late 2023 yielded negative results
  - Another drawdown occurred in December 2023 and 54 crayfish were collected
- Regular trapping is ongoing in 2024 with no eDNA positive samples to report
- Priorities moving forward are monitoring, better understanding life history to improve monitoring and management, limit/ prevent spread, and education and outreach
- OFAH has been engaged in this effort since the initial positive identification
- DFO provided funding to create a guide to the crayfish identification in Ontario
- One positive marble crayfish report was received from a pet owner looking to surrender/ euthanize
- Extensive eDNA is planned for summer 2024 at 82 sites across Ontario
- OFAH is providing live crayfish to labs to look at thermal preferences and other life history traits
- There is little information on predators that prefer or avoid them

### Signal crayfish in Minnesota

*Don Eaton, MN DNR*

- Signal crayfish are native to the Pacific Northwest and were detected in Lake Winona, Minnesota in October 2023 by a commercial harvester (one female and nine males)
- Lake Winona is not an ideal crayfish habitat, but is connected to more suitable waters
  - Delimitation efforts are being completed in 8 neighboring lakes
- Trapping efforts occurred in fall 2023, but no signal crayfish were captured
- In late winter of 2024, a commercial crayfish harvester completed a 21-day trapping period with 2,973 total trap days that resulted in zero signal crayfish. However, the trapping efforts worked well for native crayfish and the natives caught appeared to be smaller than normal
- The Minnesota Aquatic Invasive Species Research Center (MAISRC) completed eDNA sampling and refuge trapping in spring 2024
- The Minnesota Department of Natural Resources received rapid response funding from the USFWS to detect and eradicate any additional signal crayfish
  - The first step in the rapid response process will determine where and how many are present
  - A gear comparison will be completed to find optimal trapping methods
  - This work will also assess how to increase crayfish predation
- Mitochondrial DNA (mtDNA) sequencing was conducted by the University of Illinois and MASIRC on the originally captured individuals from Lake Winona
  - Of the 9 signals captured, 8 were very similar to the European invasive populations and one was similar to the Pacific Northwest native range
  - This genetic analysis is being used to develop an eDNA assay for signal crayfish

- Signal crayfish are an unlisted nonnative species in Minnesota therefore it is illegal to introduce them, but legal to import with a permit (aquarium trade, food industry, science classrooms, etc.)
- Overall, all efforts have resulted in zero signal crayfish detections
- *Additional updates as of November 2024 includes no additional signal crayfish captures from June through October, 2024 during collaborative trapping efforts by MN DNR staff and MAISRC researchers in Lake Winona and 8 nearby lakes*

### **Invasive Crayfish Collaborative fish year strategic planning process update**

*Natalia Szklaruk, Illinois-Indiana Sea Grant*

- Invasive Crayfish Collaborative (ICC) established in 2017 using GLRI funds and has 140 members
  - The ICC hosts meetings, identification trainings, social media campaigns, and conducts research
  - The ICC website is [invasivecrayfish.org](http://invasivecrayfish.org)
- ICC developed a 5-year strategic plan with member input through a survey, workshops, and member meetings. The strategic plan aims to facilitate interjurisdictional and interdisciplinary collaboration
- ICC followed the National Oceanic and Atmospheric Administration's (NOAA) strategic planning model including gathering information on membership priorities, developing goals and strategies, and planning for implementation and evaluation
- ICC members expressed they would like to see a strategic plan that includes priorities related to the OIT pathway as well as regulations and enforcement, research, and outreach
- Member feedback informed the 5 focus areas of the strategic plan including 1) detection, response, control containment, and eradication, 2) OIT pathways, 3) interjurisdictional collaboration, 4) education, outreach, and participation from diverse partnerships, and 5) program sustainability
  - Future actions the ICC plan to take include leading conservation law enforcement crayfish identification trainings and developing a crayfish curriculum for educators
- ICC has a couple of projects focused on teachers including assessing the use of crayfish in the classroom, trainings with Illinois educators on sampling and identification, and giving alternatives to using crayfish in classrooms
- Next steps for strategy implementation are to identify partners and prioritize proposed projects
- Partners at Michigan State University created a Great Lakes Almanac to Invasive Crayfish as a tri-fold brochure and poster and free copies are available at [bit.ly/GLcrayfishposter](http://bit.ly/GLcrayfishposter)

### **Michigan red swamp crayfish structured decision-making planning process**

*Kathleen Quebedeaux, Michigan DNR*

- Quebedeaux reviewed the history of red swamp crayfish (RSC) in Michigan
  - RSC were initially reported in Michigan in 2013 and prohibited in 2015
  - In 2017, RSC were discovered in metro Detroit and are now distributed across 40 waterbodies with most being small isolated manmade ponds
  - Eradication is still the goal given the limited distribution in the state

- The 2017 RSC response plan which utilized adaptive management, is now being updated to incorporate lessons learned and feedback from state partners
- Structured decision-making (SDM) is being utilized to create a 5-year plan for managing RSC in Michigan between 2025 - 2030
  - A partner workshop occurred in March 2024 to define problems, objectives, and solutions
  - Now Michigan DNR is working through feedback from experts and determining consequences of various alternative solutions identified
  - SDM facilitators supporting this work are out of the Wildlife Division of Michigan DNR
  - There were 22 participants from various organizations that attended the workshop
  - Next steps are to engage an expert panel, which is yet to be formally established
- During a secondary workshop, the problem statement and five main objectives for the 5-year plan were established including minimizing crayfish impacts, minimizing non-target impacts, maximizing system resiliency, maximizing public support, and minimizing cost
  - Thirty-two actions were categorized into control, outreach, prevention, and misc. and corresponding strategy themes including research, control, prevention via outreach and regulation, increase management tools, decrease population growth, prevent introductions, and eradicate
  - Minimizing crayfish impacts was intentionally made distinct from eradication as eradication may not be possible
- Next steps include reaching out to an expert panel for feedback on alternatives and strategies
- Michigan DNR aims for the strategy to be applicable to all systems in Michigan, current and future

### **New OMNRF species regulations and implications for listing**

*Francine MacDonald, OMNRF*

- MacDonald provided an overview of the Ministry's role in invasive species management with focuses on prevention, detection, response, management, and collaboration
- The Ontario Invasive Species Act (ISA) regulates terrestrial and aquatic invasive species (excluding agricultural pests) and focuses on prevention
  - Risk and economic assessments are required prior to listing a new species
  - Invasive species are classified as either prohibited or restricted and most of the species regulated under the ISA are aquatic
- As of January 2024, 15 new species have been regulated including ide, eastern and western mosquito fish, red shiner, the crayfish genera of *procambarus* and *pacifastacus*, nutria, oxygen weed, *salvinia spp.*, Eurasian watermilfoil, *azolla spp.*, floating primrose willow, flowering rush, and tree of heaven
- OMNRF has been working with industry on the latest round of regulations to ensure that the economic impact will not be overly damaging to industry partners
  - Industry supported and helped communicate the proposed list of species regulations
  - OMNRF has also been working with the garden industry to create a short course for nursery growers, promoting an invasive species code of conduct, and exploring label approaches and garden alternatives

- OMNRF is also working with enforcement officers to train them on identification of the newly regulated species which has led to prompt responses on detections. However, identification confirmation for enforcement is delayed leading to challenges
- The Ontario Invasive Species Strategic Plan is under renewal for the next 10 years
  - During the renewal process, OMNRF is working with provincial ministries, federal agencies, strategic partners, key stakeholders, the public, and indigenous communities
  - They aim to share a draft in 2024 for public comment
- A new funding announcement was made in June 2024 for \$16 million CAD over 3 years to address invasive species with a focus on *Phragmites*
  - The Invasive Species Centre and The Nature Conservancy Canada will administer funds
  - Recipients will be municipalities, conservation authorities, indigenous communities, and non-governmental organizations. Funding is not available for individual landowners, however collaboration with eligible partnerships would be supported
  - The majority of funds will be available in years 2 and 3
  - The Ontario *Phragmites* Action fund will receive the bulk of the available funding (\$11 million CAD) to control populations, fund biocontrol efforts, and support research

## MN DNR new species listings

Kelly Pennington, MN DNR

- Minnesota listed 13 new prohibited species/species groups in spring 2024 including mitten crab, Nile perch, the snakehead fish family, walking catfish, yellow floating-heart, tench, freshwater golden mussel, marbled crayfish, golden clam, tubenose goby, easter mosquitofish, and non-native *Phragmites*
  - Effective July 2024, jumping worms (*Amyntas* and *Metaphire spp.*) will be listed
  - None of these species are known to be present in Minnesota at this time and were added for consistency with Great Lakes and St. Lawrence Governors and Premiers Aquatic Invasive Species Task Force “Least Wanted” list and Federal injurious wildlife list
- Pennington reviewed the process for rulemaking in the state of Minnesota
  - The legislature, through a statute, gives the Minnesota DNR explicit authority to add species as prohibited, regulated, unlisted, or unregulated nonnative species
  - Emergency rule making is a quicker but transient option for the state to get species listed
  - Criteria for the classification of invasive species are in the Minnesota Statute and Rule
  - A classification summary is required for proposed listed species and includes introduction, survival, spread, control ability, impacts, and other factors like pathway regulations. A template for the classification summary document is publicly available: <https://www.dnr.state.mn.us/invasives/ais/classification.html>
- Pennington reviewed the stepwise process for an idea becoming a legal rule within Minnesota
- Regulations are not self-enforcing and require new capacity to enforce
- Internal discussions are ongoing to update classification options to make them more current

## Q&A and Discussion

- When OMNRF regulated crayfish at the genus level, they engaged with Pets Canada, a Habitatatude partner, who didn't indicate concerns. Early engagement with industry partners is important to assess potential concerns prior to the official rulemaking
- OMNRF has a Bayesian risk assessment tool for both aquatic and terrestrial species, however they are not restricted to using that and can adopt other methods if deemed valid
- In Minnesota, pathways are generally federally regulated (e.g., jumping worms transported in soil) and the approach remains focused on education and prevention

## **Plenary Session: Management of Shared Waterways**

### **Welcome and introductory remarks**

*Mike Langendorf, Chippewa Ottawa Resource Authority*

### **AIS surveillance in the St. Marys River**

*Mike Rucinski, USFWS and Ryan Grow, Sault St. Marie Tribe of Chippewa Indians*

- The St. Marys River stretches 74.5 miles, connecting two Great Lakes separated by the Soo Locks. The St. Marys River has high habitat diversity that supports a diverse fish community, leading to high recreational fishing pressure, which in turn increases the potential for invasive species introductions
  - Current invasives include sea lamprey, ruffe, round and tubenose goby, didymo, European frog-bit (EFB), and dreissenids
- Invasive species prevention, control, and containment are supported through an Annex 6 binational strategy with USFWS leading early detection activities
- The USFWS conducts annual AIS Early Detection sampling across all five Great Lakes to carry out early detection and rapid response activities
- The Ontario Ministry of Natural Resources (OMNR) is completing broad scale monitoring at St. Joseph Island in the St. Marys River using gill nets
- A partnership between USFWS, the Michigan DNR, DFO, Bay Mills Indian Community, and Sault St. Marie Tribe of Chippewa Indians enables agencies to conduct a comprehensive fishery survey using multiple gear types and standardized gear and protocols
  - Invasive species of highest concern include snakehead, zander, ruffe, and wels catfish, silver carp, grass carp, red shiner, and bighead carp
  - Efforts under this partnership have achieved a fishery survey wherein 550,000 fish in the upper St. Marys River and 160,000 fish in the lower portion of the river with 75 total species encountered including ruffe
  - Working in partnership across jurisdictions has allowed them to achieve a 95% species detection efficiency target
- Species persisting in the lower St. Marys include ruffe, round goby and tubenose goby. Ruffe detected in the St. Marys are small in size. Additional efforts are underway to capture larval ruffe in the river to determine age groups present
- Sampling efforts in the St. Marys River are ongoing with additional agencies being engaged each year

### **European Frog-bit in the St. Marys River**

*Mike Hindy, Three Shores (Cooperative Invasive Species Management Area) CISMA*

- EFB was first detected in 2010 during Coastal Wetland Monitoring Program surveys in Munuscong Bay. However, managers did not become aware until 2013
- Significant mapping efforts began in 2013 with multiple partners involved
  - Management efforts focused on hand pulling was attempted alongside mapping efforts
    - Over 40K pounds of EFB have been removed by hand within the last 9 years
  - The initial detected EFB population spread down river faster than management could keep pace and is now found established in the Drummond Islands and along Lake Huron
  - Priorities shift to management of current established populations with lead to some successful eradication efforts
    - A proposal through the Sustain Our Great Lakes Program helped increased efforts
- In the St. Marys, the window for EFB growing and management is short, beginning the end of June through early August
- Other species on Three Shores CISMA's radar include invasive *Phragmites*, cattails, and Himalayan balsam

### **European Frog-bit in the St. Marys**

*Shane Lishawa, Loyola University Chicago*

- The Lishawa lab out of Loyola University of Chicago began EFB work in Michigan waters of the St. Marys River 8-9 years ago
- The Lishawa lab received several rounds of funding from the State of Michigan for EFB research to develop different management strategies and evaluate ecological responses to those methods
  - Recent research includes development of an EFB habitat suitability model (led by Louis Jochems, Boise State), work on water level fluctuation and EFB habitat impacts, and using muskrats to control EFB
- Lishawa displayed the habitat suitability model which was developed based on known presence and absence locations of EFB in the St Marys River and surrounding waters
  - Model selection considered the correlation between a suite of variables and EFB presence to develop a habitat suitability model for unsampled areas
  - Satellite imagery was used to increase EFB detection
  - A web application of this model will be available publicly soon
  - This work has potential to be replicated for other species of interest
  - A second iteration of the habitat suitability model focused on water level fluctuation and was developed as a collective effort led by Louis Jochems as part of his dissertation research. This model includes EFB presence data, water level data, digital elevation models, and NOAA lidar coastal bathymetry data, a vegetation index, wave energy, and boat launch location. The highest driver of EFB occurrence is distance to known EFB population, followed by vegetation index values, and distance to boat launch
  - Field surveyors have reported less EFB during high water periods, however the model showed there was more habitat availability for EFB during high water and the observed absence was due to EFB movement to new locations



- Lishawa shared highlights from their muskrat biological control investigations which looked at the effect of muskrat activity on vegetation communities in the St. Marys River. Results showed a reduction in both EFB and Typha suggesting that the muskrats are either eating EFB or creating less favorable environments for EFB to persist
  - An attendee suggested looking at muskrat stomach contents using harvest data
  - Lishawa has only looked at muskrat impacts at the plot-scale but is interested in investigating the relationship between plot and regional scale
- Future work includes running inland specific models and ground truthing models in summer of 2024
- Uncertainty if EFB is sensitive to warmer climates

## GLWQA Annex 5

*Kirk Beckman, USCG*

- There are 10 annexes under the Great Lakes Water Quality Agreement and Annex 5 covers regulations and protections related to human mediated discharge (e.g., oil/hazardous materials, garbage, wastewater, ballast water, etc.) that impact water quality
- Since 1987, the Great Lakes Water Quality Protocol, there have been significant increases in international ship safety and pollution prevention conventions, laws and regulations related to safe shipping, protection of environment, and protection of cargo
- USCG and Transport Canada believe both nations have a robust inspection program to ensure compliance with international standards
  - Any vessel coming into the Great Lakes is inspected and examined for compliance
- Annex 5's priorities for action include working with stakeholders to increase environmental protection compatibility and implementation, maximizing compliance with ballast water rules, sharing BMPs and agreements for compliance and enforcement of wastewater discharge, and reviewing and sharing BMPs for the management of vessel biofouling
- Annex 5's priorities for science include using the best available science to examine greywater discharge requirements, conducting coordinated ballast water and biofouling AIS research, collaborating on technical challenges related to BWMPs, and examining wash water discharge risk
- The new USEPA VIDA rule is under development with a goal is to have that signed by September 2024, after which the USCG will have two years to comply

## GLWQA Annex 6

*Mike Weimer, USFWS*

- Annex 6 is working to address the threat of AIS to Great Lakes water quality
- Annex 6's priorities are developed every 3 years, and are currently set for 2023-2025
- The rate of introduction of invasive species has slowed in recent decades, especially for fish and mollusks. While that is positive, there is still risk especially for range expansion
- Annex 6's current priorities for science include advancing technologies for AIS prevention, early detection, and control/eradication by supporting efforts including:
  - Weimer reviewed current efforts under the priorities for science



- Annex 6's current priorities for action include preventing new AIS introductions to the Great Lakes, conducting EDRR for invasive carp, implementing control projects for already established species, identifying gaps in regulations to reduce pathway risk, and collaboratively updating the "Least Wanted" species list
  - Weimer reviewed current efforts under the priorities for action
- For more information about Annex 6 contact Aaron Woldt, USFWS ([aaron\\_woldt@fws.gov](mailto:aaron_woldt@fws.gov)) and Mike Steeves, DFO ([mike.steeves@dfo.mpo.gc.ca](mailto:mike.steeves@dfo.mpo.gc.ca))
- There is no intersection with the Lakewide Action and Management Plans (LAMP) and Annex 6 with regards to the new VIDA rule

### **Q&A and Discussion**

- Annex 6's "Least Wanted" list update involves looking at new risk assessments to see if there is opportunity and need to expand the list
  - Species analysis conducted by the USFWS will help inform additions
  - There is a need for an Annex 6 subcommittee meeting in the new future at which time they plan to check in on a potential list update
- A priority of the Law Enforcement Committee was to develop a watchlist for law enforcement in the Great Lakes. There are plans to resuscitate this initiative at upcoming meetings or to propose as a potential future Interjurisdictional project

### **Closing Remarks**

- Langendorf asked if there were any further discussions and concluded the session

### **Great Lakes Panel Closing Session**

*Ceci Weibert, GLP Coordinator, GLC; Kelly Pennington, GLP Chair, Minnesota DNR*

- The Fall meeting of the GLP is typically held in Ann Arbor, Michigan
  - The ANS Task Force has been discussing having their fall meeting in Ann Arbor as well so there may be coordination or co-hosting opportunities with that group
- Weibert asked if there are any other dates to avoid for a fall GLP meeting besides the Upper Midwest Invasive Species Conference and the North American Invasive Species Management Association Annual Conference
  - The Sea Lamprey Control Board has their meeting in the fall as well
- A date poll will be sent out to decide a fall meeting date
- Weibert has accepted a position with Michigan EGLE as the AIS state coordinator and this will be her last meeting as coordinator of the GLP. The GLC will assign a new GLP coordinator
- Pennington thanked all the presenters, attendees, GLC staff and the Invasive Species Centre for hosting and Great Lakes Forestry Centre, Ontario Federation of Hunters and Anglers, DFO, U.S. Army Core of Engineers
- Pennington adjourned the meeting