

## Great Lakes Panel on Aquatic Nuisance Species Meeting Summary

Virtual Meeting | November 17-19, 2020

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

### Call to order, introductions, agenda review

*Eric Fischer, Great Lakes Panel (GLP) Vice Chair, Indiana Department of Natural Resources*

- Fischer called the meeting to order
- GLP members and observers introduced themselves and a quorum was confirmed
- Fischer reviewed the agenda and there were no changes

### GLP Business Items

*Eric Fischer, GLP Vice Chair and Ceci Weibert, Acting GLP Coordinator, Great Lakes Commission (GLC)*

- The 2020 spring GLP meeting summary, incorporating revisions previously provided by GLP members, was approved
- Weibert summarized progress on and the status of the 2020 spring GLP meeting action items

### GLP Work Plan update

- 2018 – 2020 work plan has been closed out
  - Grass Carp Ad Hoc Committee and Risk Assessment Ad Hoc Committee have been dissolved as of May 2019.
  - Risk Assessment Clearinghouse successfully assembled population assessments in December 2019 with responsibility transferred to GLANSIS.
  - Regular GLP meetings in 2020 were held remotely as the COVID-19 pandemic prevented in-person meetings
  - Standing Committees have been working to identify and refine GLP regional AIS priorities
- GLP members were asked to consider the time frame for the upcoming GLP work plan. Previous work plans were planned for a two year period to coincide with GLP elections and turnover in leadership
  - It was proposed that the GLP develop a long-term strategic plan (e.g., 5-10 years) that are supported by short-term (e.g., 2 year) work plans, allowing the GLP to set longer-term goals
    - The revised GLP AIS regional priorities may help support the development of a long-term strategic plan.
  - GLP members expressed support for regular reports at GLP meetings on interjurisdictional projects

### GLP Priorities update: process and status

*Sarah LeSage, Immediate Past GLP Chair, Michigan Department of Environment, Great Lakes and Energy (EGLE)*

- A comprehensive list of regional AIS priorities has been revised and updated by the GLP standing committees, and was shared with GLP members in advance of the fall meeting

- GLP members are asked to review the fully compiled list of priorities and provide feedback to the ExCom

#### Committee reports

*Greg Hitzroth, Organisms in Trade (OIT) ad hoc committee co-chair, Illinois-Indiana Sea Grant*

*Doug Jensen, Information/Education Committee chair, Minnesota Sea Grant College Program*

*David Nisbet, Policy Coordination Committee chair, Invasive Species Centre*

*Lindsay Chadderton, Research Coordination Committee chair, The Nature Conservancy (TNC)*

- OIT Ad Hoc Committee
  - A series of virtual sessions on OIT have been planned in place of an in-person symposium, with funding from NOAA through the Minnesota Sea Grant program, working to identify further areas of coordination between AIS managers, conservation law enforcement, and industry representatives
  - A survey is being drafted to gather insights on OIT programs from management agency and law enforcement perspectives
  - An inquiry to industry representatives will also be drafted to gauge interest and potential for participation in the virtual sessions
- Information/Education Committee (I/EC) – Doug Jensen, Chair
  - Committee members finalized their sections of the AIS priorities and accomplished their other action items from the 2020 spring GLP meeting
  - Will continue work to develop recommended actions to the GLP to improve prevention via recreational boating pathways
- Policy Coordination Committee (PCC)
  - Committee members finalized their sections of the AIS priorities and accomplished their other action items from the 2020 spring GLP meeting
- Research Coordination Committee (RCC)
  - Committee members finalized their sections of the AIS priorities and accomplished their other action items from the 2020 spring GLP meeting
  - Committee members also oversaw the development of a priority species list, including a system to objectively identify priorities species within the basin, led by the work of Alisha Davidson

#### Interjurisdictional Project: Regional Invasive Aquatic Plant Control Prioritization and Needs Assessment

*Lindsay Chadderton, Research Coordination Committee chair, TNC*

- The GLP has applied for funding to undertake an interjurisdictional invasive aquatic plant (IAP) needs assessment, as aquatic plant control has been identified as a regional priority within previous GLP work plans
- The ExCom is proposed as the lead decision-makers for this project, with the RCC guiding implementation and the full GLP membership providing input on and consenting to project outputs. Project activities will be carried out by GLP staff at the Great Lakes Commission
- The budget allows for \$111,000 of funding to complete the four tasks identified in the project proposal over a one year timeframe, with roughly \$20,000 of that to support travel costs and expenses associated with a workshop to refine and prioritize targeted research and management needs (Task 3)

- The prioritization process established by the RCC in developing its priority species list will be refined as part of this project, and will be relevant to other projects as well
- It was suggested to consider using GLANSIS as a clearinghouse for the methodology information gathered as part of this project to improve accessibility
  - It was also offered that NOAA has developed a technical memo on IAP control methods that is species-specific and may be of use to this project
- It is anticipated that work will begin in early 2021 and is currently scoped as a one year project
- Due to the source of funding, the geographic scope of this project will be focused on the United States, but there is flexibility to include Canadian provincial work and knowledge through the coordination of various project tasks, including establishing a comprehensive, baseline understanding of IAP research and management activities and associated gaps in knowledge

## Programmatic Updates

### U.S EPA – GLRI

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

- Under GLRI Action Plan III, Focus Area 2 (Invasive Species) has seen few changes compared with previous action plans, with several key objectives guiding funding allocations, including:
  - Prevent introductions of new nonnative species – 64% of planned Fiscal Year 2021 GLRI Focus Area 2 funding
  - Control established invasive species– 26% of planned Fiscal Year 2021 GLRI Focus Area 2 funding
  - Develop invasive species control technologies and refine management techniques – 10% of planned Fiscal Year 2021 GLRI Focus Area 2 funding
- O'Donnell reviewed the major near-term planned activities associated with the primary objectives of Focus Area 2
- Increased communication with states over the past 3 years has led to a standardized solicitation of state priorities for annual planning purposes
- The GLRI District Tribal Program was recently launched to provide greater flexibility for identification and support of tribal projects and streamline tribes' access to and application for GLRI funds that have historically been difficult for tribes to engage with
- The 2019 Great Lakes and Lake Champlain Invasive Species Program (GLLCISP) Report to Congress has been released and is available on the EPA website: <https://www.epa.gov/greatlakes/great-lakes-and-lake-champlain-invasive-species-program-report>
  - GLLCISP is not funded through GLRI, but is a separate program authorized through the 2018 Vessel Incidental Discharge Act; funding for the program has been authorized by Congress but has yet to be appropriated as part of the EPA federal budget
- The EPA is taking a more active role in monitoring collaboratives to ensure that they are operating at a baseline of advancing technology and ensuring effective communication with partners.
  - In the perspective of EPA, groups that are focused on pathways of introduction are not considered collaboratives at this time, and there are certain operating expectations for species collaboratives to be supported by EPA

- Anyone involved with a collaborative of any kind is welcome to reach out to O'Donnell to discuss the program and opportunities for future work and support

### FWS – AIS Funding Items

*Amy McGovern and Rob Simmonds, U.S. Fish and Wildlife Service (FWS)*

- FWS prevention and risk assessment program in 2020 was minimally impacted by COVID-19. Accomplishments include updating risk assessments more than five years old, testing new horizon scanning methods, and completing risk screenings for nearly 100 new species
  - Tissue samples from eight locations and for six species, including three not known to be in the US, have also been obtained to populate genetic databases and develop genetic markers to be used when conducting genetic sequencing on samples in the future
- Work for 2021 includes continuing to update risk assessments and improve access to them as well as to develop a data management system for ERSS reports and supporting documents
- COVID-19 did impact the FWS early detection & monitoring program, restricting surveillance field work to local scale around the field offices, including some benthic surveys conducted by field offices in the lower Great Lakes
- Additional funding has been received to fully implement the Asian Carp National Management Plan, which has been allocated across five FWS regions, and the bulk of funding was distributed to on-the-ground partners
  - Also plan to fill the eDNA coordinator position shortly
- Travel related to sea lamprey control was also restricted by COVID-19, but staff were able to accomplish location work for larval assessment and control, including treatment in the Manistee River
  - Impact of COVID-19 delay of work to both fish and sea lamprey populations won't be realized for several years, but FWS does plan to continue to identify and track those impacts
- A new grant service, Grant Solutions, has been launched for Department of the Interior agencies. The FWS grant offices were reorganized this year and with other COVID-19 impacts, FWS is behind on processing grant applications
  - Applications with start dates that have already been passed will still be able to receive funding and begin work on requested on start date, even if it is prior to the date of award. Any questions or concerns regarding the period of performance for those applications should be directed to Simmonds
- Four interjurisdictional grants have been funded:
  - Regional aquatic invasive species early detection and response
    - Led by GLC and TNC to refine surveillance site prioritization and expand to inland waters, as well as to develop best practices for aquatic plant surveillance methods
  - Regional invasive plant control prioritization and needs assessment
    - Coordinated by the GLC, led by GLP as discussed earlier in the business session
  - Supporting transition from nonnative *Phragmites* at wastewater treatment facilities
    - Led by Minnesota Department of Natural Resources to develop recommendations for removing nonnative *Phragmites* present at wastewater treatment facilities, identifying the best native strains for each wastewater

- treatment location, and to improve the approaches for growing and establishing the new plants
    - Boater behavior change coordination
      - Wisconsin Sea Grant is coordinating this project building on previous individual efforts to reach a basin-wide approach in identifying the outreach messages and strategies that are most likely to change boater behaviors regarding AIS prevention activities
  - \$4.8 million in funding for states and tribes and \$1 million in funding for interjurisdictional projects has been the baseline funding level in previous years, and it's anticipated that funding level will continue in FY2021

### GLANSIS

*Rochelle Sturtevant, Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS) Program Manager, Michigan Sea Grant Extension*

- A decision tree to determine which species are included in the GLANSIS database has been developed
  - Based on the decision tree, some low risk species will be removed for the GLANSIS watchlist and full species profiles will no longer be maintained
- Many new publications were released in the past year and all are available on the GLANSIS website.
- GLANSIS is planning an education needs assessment to work with teachers and schools to better support teachers who are using the GLANSIS website in addition to AIS managers, and GLP members are asked to contribute names of experts or resources who should be consulted in that process
- GLANSIS staff plan to expand the risk assessment clearinghouse with two new methods, and GLP members are asked to submit recommendation on which methods those should be
- GLANSIS will be adding to the new USGS-NAS impact database but it will take a significant amount of time to make it a searchable database.
- USGS-NAS will begin hosting Canadian species occurrence data in January 2021, and GLP members are asked to submit priority species occurrence data to Rochelle, preferably in Microsoft Excel spreadsheet format
  - USGS-NAS has also begun improving their database to incorporate eDNA data
- New species have been added to the GLANSIS database, and profiles have been updated for other species. GLP members are asked to serve as reviewers for this new content

### ANSTF

*Susan Pasko, U.S. FWS*

- The Aquatic Nuisance Species Task Force (ANSTF) was established in 1990 through federal legislation, and is composed of thirteen federal members, thirteen ex-officio members, six regional panels, and five standing committees that align with the ANSTF strategic plan
- The 2020 spring ANSTF meeting was postponed due to COVID. The next meeting will be held virtually on December 8-10, the 2021 spring ANSTF meeting is tentatively scheduled for May 5-7
  - Two state ANS management plans (Colorado and Indiana) will be considered for approval at this meeting

- There are 43 state and interstate ANS management plans, with one more proposed for approval at the next meeting of the ANSTF
  - Roughly \$3.8 million has been approved to support ANS management plans, resulting in ~\$90,000 for implementation of each
- The ANSTF Strategic Plan outlines six goals, each with a standing committee to support, other than the Coordination goal
- Pasko provided an update on progress towards goals of Strategic Plan and products and outputs of the standing committees, outlined her presentation slides and [available electronically here](#)

### **Emerging issues and announcements**

- GLP members who attended the virtual Upper Midwest Invasive Species Conference were reminded to respond to the post-conference survey and provide feedback to conference organizers
- Meeting materials for the upcoming Aquatic Nuisance Species Task Force are now available online

### **Informational Session: Recreational Activities Pathway**

#### Welcome and introductory remarks

*Eric Fisher, GLP Vice Chair*

- Fischer welcomed participants and provided an overview of the session agenda as well as background on the GLP

#### GLP Draft Recreational Activities Pathway Priorities

*Doug Jensen, I/E Chair, Minnesota Sea Grant*

- These informational sessions follow a dedicated effort by the GLP to consolidate and establish regional priorities for AIS management, including AIS prevention in the recreational boating pathway
- Information shared in this session will help guide future work and engagement of the GLP on this pathway

#### Great Lakes AIS Landing Blitz

*Kevin Walters, Michigan Department of Environment, Great Lakes, and Energy*

- The first AIS Landing Blitz in the Great Lakes was hosted in Wisconsin in 2009. The state of Michigan hosted their first AIS Landing Blitz in 2014, marking the first expansion of the event
  - An AIS Landing Blitz is an opportunity for state/provincial agencies and local partners to coordinate on recreational boating AIS prevention and education events, primarily at boat launches to engage with boaters throughout the period of the event
  - The target audience includes boaters, anglers, and anyone using the water for recreational activities
- Prior to 2019, AIS Landing Blitz events were scattered and managed at a jurisdictional level, but through the GLP and Great Lakes Commission, the first regionally coordinated AIS Landing Blitz was planned and executed

- This is an opportunity to share information on outreach campaigns with common messaging. Each campaign can tailor their events as they would like, operating under the larger umbrella of coordination through the Great Lakes AIS Landing Blitz planning committee
- The Great Lakes AIS Landing Blitz is built around consistent messaging in a concentrated effort, with partners speaking in a unified voice. This regional collaboration extends to individual lakes and communities reaching thousands of people. The concentrated effort over time and area makes a difference
- The Great Lakes AIS Landing Blitz planning committee, which consists of state/provincial coordinating entities, including state/provincial agencies, regional Sea Grant Network, Great Lakes Commission, and the GLP. The planning committee agrees on event dates, coordinates participating locations within their jurisdiction, recruits local partners, agrees on and guides development of messaging and materials, and promotes the event
  - Site hosts and local volunteers may include groups like lake associations, non-profit organizations, townships, CISMAs, PRISMs, and/or community volunteers. The roles provided by these entities include coordination on a local scale and onsite staffing at event locations to deliver messaging and materials to boater and anglers
- The 2019 Great Lakes AIS Landing Blitz engaged with over 115,000 people at over 1,400 locations in all ten states and provinces. More than 103,500 people saw the online information and 780+ people received information from the event site ([www.glc.org/blitz](http://www.glc.org/blitz))
- For the 2020 Great Lakes AIS Landing Blitz, outreach efforts shifted to TV, radio, newspaper and social media due to COVID-19. In-person events that were held safely and in accordance with all public health restrictions educated approximately 128,000 people at 1,000 boat landings in four states
  - Social media guides were created around different aspects of event messaging, providing partners with templates to base their social media posts on or to use directly through their own accounts
  - Over 830,000 people saw information about the event through social media. The event hashtag “#GLAISBlitz” was seen on up to 148,000 different Twitter timelines, and over 1,150 received information through the event site ([www.glc.org/blitz](http://www.glc.org/blitz))
  - The momentum generated by virtual events and social media will likely result in an increased social media presence going forward
- Data on 2020 event locations are available on the event website, and a summary of impact is provided in the event factsheet
  - Inspections are not conducted at all locations, and any inspection data is retained by the agency conducting inspections. These data is not summarized at a regional scale
- A 2021 Great Lakes AIS Landing Blitz is being planned for late June early July 2021

#### Tracking progress on recreational boating pathway prevention

*Ceci Weibert, Great Lakes Commission*

- Weibert gave a background review of the Blue Accounting initiative and the Blue Accounting Aquatic Invasive Species Work Group (BAAWG) progress toward effective management for the recreational boating pathway

- The recreational boating prevention strategy aims to make progress towards effective regional management of the pathway including both the implementation of education and outreach programs encouraging voluntary behavior change, and the adoption of comprehensive and regionally harmonized watercraft inspection and decontamination programs and policies
- No regional standard for recreational boating pathways prevention exists in the Great Lakes, and Blue Accounting did not attempt to define one; rather, this effort focused on identifying the most common practices and policies in place in the Great Lakes region to determine how consistent prevention programs are with each other
- Efforts to track progress began with a series of wide-ranging data requests to state and provincial BAAWG members. These requests were intentionally open-ended to gauge what kind of data state and provinces were interested in and able to report on
  - The data requests did not include federal or tribal information and perspectives, but this information will be added in future development
- Follow-up interviews were conducted by GLC staff with BAAWG members and their relevant watercraft program staff after the initial data collection to further elucidate common themes and gain further insight into the specifics of each jurisdiction's recreational boating program, while TNC staff conducted a regulatory analysis of each jurisdiction's recreational boating policies
- Regulatory analysis and interviews were used to develop a list of 33 program components deemed by the BAAWG to be a comprehensive set of management actions and policies appropriate for pathway management in the Great Lakes. Each jurisdiction's pathway prevention program was then assessed according to each program component, indicating whether or not a jurisdiction had that component in place and notes describing how it is implemented or roadblocks preventing current implementation
  - This assessment was reviewed and confirmed by BAAWG members
  - Regulatory policies and management practices are combined into five different categories: Agency Capacity (8 components), Partnerships (5 components), Outreach (5 components), Reporting and Evaluation (4 components), Inspection and Decontamination (9 components)
- A [visual dashboard](#) was built based on this data to graphically show how consistent each jurisdiction's program is from a holistic perspective, while not passing judgment on if one jurisdiction's program is stronger or "better" than another
  - Differences in regulatory authority, agency capacity, and other factors will always influence what components a jurisdiction is able to incorporate into their program
  - The dashboard provides a number of tools for users interested in learning more about a jurisdiction's program. Selecting a jurisdiction from a dropdown will filter the data figures for the number of boat launches and registered boaters in that jurisdiction, and users can select a program category from the list of layers to learn more about the implementation each category
- Weibert reviewed additional themes and case studies that may warrant future work and more detailed analysis of jurisdictional programs

## GLP Discussion



- Doug Jensen provided a series of discussion prompts for GLP members to react to and brainstorm opportunities for future engagement
- The GLP's continued support for the Great Lakes AIS Landing Blitz through assistance in identifying local partners and outreach/promotion is beneficial to the success of the event
  - Support efforts through regional outreach, including sea grant funding through GLRI
- Attendees discussed opportunities for increased engagement and awareness in prevention pathways related to recreational boating.
  - Attendees relayed importance for the identification and establishment of points of contact to expand upon outreach events like the Great Lakes AIS Landing Blitz where initial resources/materials and interest occur in an area or organization.
- The GLP may build on Blue Accounting analysis by highlighting opportunities for jurisdictions to strengthen their prevention programs
  - Developing a cost/benefit assessment for each of the Blue Accounting prevention program components can also help jurisdictions weigh the value of implementing additional components in their program
- Participants noted interest in a previously record GLP priority action (*Consider hosting a session on identifying and prioritize locations for establishing outreach and inspections*) and the connection to an ongoing interjurisdictional surveillance project. This interjurisdictional project will be modeling invasion risk and site prioritization for surveillance efforts for inland waters, and it may be useful to understand what overlap exists between high priority sites for surveillance (i.e., where the risk of species introduction is high) and where outreach/inspection is occurring
  - There was agreement that the GLP can help support this work
- Boater surveys are key to showing behavior changes and awareness levels in the audiences that we are trying to target with outreach efforts
  - It was noted in discussion that though it is much cheaper to do social media outreach, it is not a direct replacement for in-person connection aspects
  - An analysis on the effectiveness of social media vs in-person outreach campaigns was suggested to inform the future approach for investment in social media campaigns
- There was interest in a potential interjurisdictional project to establish consistent baseline regional data collection for recreational boating programs and their outreach/events like AIS Landing Blitz
- There was also interest in development of a recreational boating outreach toolkit (presentations, resource lists, cost estimates, etc.) to guide both establishment and expansion of existing programs. Participants asserted that there may be potential for regional funding sources for this effort to help provide additional consistency in recreational boating pathway through GLRI or another mechanism
- Future development of Blue Accounting over the next year will include highlighting success stories for recreational boating pathway prevention

Closing remarks

*Eric Fisher, GLP Vice Chair*

- Fischer thanked participants and speakers and encouraged GLP members to participate in the GLP standing committee meetings later this week, where discussion on this pathway and the role of the GLP will continue

### **Informational Session: Ballast Water**

#### Welcome and introductory remarks

*Sarah LeSage, Immediate Past GLP Chair*

- LeSage welcomed participants and provided an overview of the session agenda as well as background on the GLP
- The GLP offers binational AIS support and membership is drawn from eight states, two provinces, research groups, local organizations, universities, commercial interest, regional agencies, and tribal communities

#### GLP Draft Ballast Water Pathway Priorities

*David Nisbet, PCC Chair*

- GLP has been working on priority setting since 2018. The goal is to compile the priorities of the three standing committees (research, policy, and information/education) into one cohesive statement
- Prevention priorities are organized by pathways and shipping is one of the pathways
- Standing committees have also identified action items related to these pathways

#### EPA Proposed Rulemaking

*Jack Faulk, U.S. EPA*

- The proposed Vessel Incidental Discharge Act (VIDA) National Standards of Performance rule is in the comment period and ends November 25, 2020.
- The role of U.S. EPA under VIDA is to develop national standards for ballast water discharge, and the U.S. Coast Guard (USCG) is responsible for developing corresponding implementing regulations within another two years
  - Only after USCG regulations are final do the EPA discharge standards apply. Until that time, the 2013 U.S. EPA Vessel General Permit (VGP), existing USCG regulations, and any state requirements still apply
  - VIDA requires that new standards should be at least as stringent as the 2013 VGP unless new information suggests otherwise
  - Standards under VIDA must be technology-based. Standards may be presented as numeric requirements, best practices, or a combination of both. This differs from U.S. EPA VGP standards that are a combination of both technology- and water quality-based standards
  - State agencies and USCG were consulted by U.S. EPA during the development of VIDA standards
- Proposed standards are drafted to enhance clarity, implementation, and enforceability of similar VGP requirements. Proposed standards reflect changes to the VGP requirements where new information and technology is demonstrated to be available and achievable

- Proposed standards do not address self-monitoring, self-inspection, reporting, recordkeeping, corrective action, and training and education (to be established by USCG)
- Proposed standards also do not address state-specific requirements
- The framework for the proposed EPA discharge standard is organized in five subparts: scope; general standard for discharges incidental to the normal operation of a vessel; standards for specific discharges incidental to the normal operation of a vessel; special area requirements; and procedures for states to request changes to standards, regulations, or policy promulgated by the administrator
  - Faulk reviewed these subparts in detail in his presentation slides and outlined significant changes between the 2013 U.S. EPA VGP standards and the proposed VIDA standards. The presentations slides are [available electronically here](#)
- Generally, VIDA preempts a state's ability to adopt or enforce stricter requirements once both the EPA and USCG VIDA regulations are in force. States will have authority to enforce VIDA standards and continue to monitor and regulate small vessels not regulated under VIDA

#### Great Lakes and Lake Champlain AIS Program

*Kevin O'Donnell, U.S. EPA*

- Great Lakes and Lake Champlain Invasive Species Program (GLLCISP) is a congressionally-authorized and region-based invasive species program administered by U.S. EPA
  - The program was authorized in 2018 as part of VIDA but has not yet received any Congressional funding appropriation
- The 2019 Report to Congress includes a description of ongoing activities and multidisciplinary efforts currently in place in the region covered by GLLCISP and is [now available online](#)
- GLLCISP authorization identifies eight purposes of program including monitoring for the introduction and spread of aquatic nuisance species (ANS), detecting newly introduced ANS prior to establishment, information and assisting with management and response actions, establishing a watch list of possible ANS, monitoring vectors, developing criteria for prioritizing and distributing monitoring efforts, developing and piloting shipboard or land-based ballast water management systems, and to facilitate meaningful implementation of the ballast water regulatory framework
  - Twenty additional activities were identified that are associated with the eight GLLCISP purposes
- The Great Lakes and Lake Champlain have received very different amounts of EPA funding for AIS work: less than \$1 million for Lake Champlain and \$50 million annually for the Great Lakes
- The 2019 GLLCISP Report to Congress includes five recommendations: establish a more robust Lake Champlain AIS program, enhance ballast water technology research and development, increase to program support from states and tribes, increase surveillance and early detection research, and increase capacity to administer the GLLCISP program should it be appropriated in the future
- Possible next steps for Great Lakes and Lake Champlain (does not consider appropriation of GLLCISP) include sharing lessons learned between Great Lakes and Lake Champlain, developing AIS data delivery systems similar to GLANSIS, having Lake Champlain consider taking steps to develop an early detection program for AIS

## Great Waters Research Collaborative

### *Kelsey Prihoda, Great Waters Research Collaborative*

- The Great Water Research Collaborative (GWRC) is managed by the Lake Superior Research Institute. All projects under GWRC are focused on the ballast water pathway, specifically ballast water technology and research
- The technology research and development of Great Lakes-specific ballast water management system (BWMS) is tested at three different scales: laboratory, land-based, and shipboard scale
  - Laboratory scale tests treatment technology prototypes and research and development questions
  - Land-based scale testing includes large-scale controlled treatment technology testing, freshwater validation of treatment processes, and freshwater type approval testing
  - Shipboard scale testing includes treatment technology testing, real-world, freshwater validation of treatment processes, and type approval testing
- Identifying BWMS technology to test is achieved by soliciting developers to apply for testing services. Every developer that applies is unique, so the procedures also need to be unique as well. The data gained from this testing process allows developers to make improvements to design if necessary and generally accelerates the pace of technology development
- Prihoda provided an overview of three recently developed BWMS: the KRIA Ionizer Superoxide Generator; the Nanobubble Ozone Technology, and High Average Power Electron Beam Treatment of Water
- The KRIA Ionizer Superoxide Generator works by increasing superoxide ( $O_2^-$ ) concentration and causing cell damage to organisms in the water
  - Testing was conducted at two different temperatures, 10 and 25 degrees Celsius
  - The testing of this technology begins with water-only testing using dechlorinated municipal drinking water (lab water). It is then tested in amended lab water that is meant to have similar properties to what would be found in the Port of Duluth-Superior (Lake Superior)
    - Water-only testing was able to produce a high level of dissolved oxygen (DO), a proxy for superoxide, in lab water
  - The technology is initially tested with algae and microbes; if the technology is not successful with single-celled organisms, then it will likely not be effective against multi-celled organisms
    - Algae saw no effect after six hours of treatment, while the treatment was effective with microbes after 24 hours. However, it is possible that the ambient temperature increase in the water associated with this technology caused the microbe die-off
- The Nanobubble Ozone Technology (NBOT) BWMS produces ozone in nanobubbles and was developed to treat harmful algal blooms in surface waters
  - Began with lab testing of the NBOT technology
    - Lab-based testing was similar to the KRIA technology, using lab water and amended lab water at two different temperatures (15 and 25 degrees Celsius)
    - The lab water testing saw a quick increase in ozone after 100 minutes (1 hour 40 minutes) while the testing in amended lab water took much longer to generate

- enough ozone for treatment (400 minutes, or 6 hours 40 minutes). The DO was the same for both municipal and amended lab water treatments
- Biological effectiveness testing with lab water yielded 100% mortality in 30 minutes for single-celled organisms and zooplanktons in 60 minutes. The amended lab water yielded 100% mortality of single celled organisms in 4 hours and zooplankton mortality in 6.5 hours
    - The resting stage of zooplankton is difficult to treat, thus there was no effect on hatch rate in either water type
  - A Chronic Residual Toxicity test tested for potential effects on a native water flea, fish, and algae if exposed to ballast water treated with this system. Of the three species tested, no significant effects were seen on growth, reproduction, or survival
  - Land-based testing took place over an eight-day period using in-tank treatment of 225 m<sup>3</sup> Duluth-Superior harbor water
    - Preliminary experiments saw no difference in protist density of treated water as compared to control water, and no measurable ozone in treated water over the eight-day trial
    - Small-scale experiments were also conducted using smaller volumes of water, during which the treatment was seen to be successful and protist levels were quickly reduced
  - The High Average Power Electron Beam Treatment of Water applies radiation to ballast water via high-energy, high power particle accelerator
    - Testing for this technology will begin after COVID-19 travel restrictions have been lifted
  - The GWRC will also be developing a Great Lakes Port Conditions database to record and provide data on water quality conditions relevant to ballast water treatment across the Great Lakes
    - Data on commonly visited ports will be available to ship owners and operators to assist in selecting a treatment option best suited for ports of interest
    - The database is hosted in ArcGIS online and will become publicly available soon, at which point public data may be contributed
  - Great Lakes verification of ballast water compliance monitoring devices is underway to ensure these devices, designed to quickly assess if treated ballast water is meeting discharge standards, are capable of being used in Great Lakes conditions
    - Devices are verified according to their accuracy, precision, sensitivity, and reliability
  - The Great Lakes Ballast Water Research and Development plan seeks to identify approaches, methods, and best available technologies that are effective at reducing propagules in Great Lakes ballast water and to provide essential scientific and technical information that will support science-based decisions during the VIDA rulemaking and implementation processes
    - The GWRC is forming a stakeholder group to help bring proposed projects outlined in the plan from concepts to fully formed project plans

### Industry Technology Development and Testing

#### *Tom Rayburn, Lake Carriers' Association*

- The U.S.-flag fleet is very diverse and has ships as old as 1906 still sailing on the Great Lakes. The diversity of ships means differences in size, ballast water connections, materials used, etc.

- There have been best management practices in place that the ships sailing in the Great Lakes rely on
  - Ocean going vessels that come into the Great Lakes (i.e., salties) conduct ballast water exchange in the open ocean
  - Vessels that operate only within freshwater (i.e., lakers) have re-plumbed most vessels by installing high sea chests and screens to filter out larger organisms
  - Annual inspections have been in place to inspect ballast water systems
  - Loading and discharging ballast water no longer relies on gravity feeding and use ballast pumps instead in an attempt to comminute organisms coming in and going out
- Great Lakes waters present unique challenges to ships and BWMS, including high turbidity and a wide range of water temperatures depending on the time of year
- In response to the 2013 EPA VGP decision, a company named Choice Ballast Solutions was contacted to explore the viability of installing BWMS on U.S.-flag lakers. Choice Ballast Solutions looked at best fit solutions for six classes of U.S.-flag lakers and determined that retrofitting existing vessels would result in major structural modifications to many vessels, require additional power, hence fuel, to run the systems, often result in the loss of cargo-carrying capacity, and would be costly
- There are currently 40 USCG type-approved BWMS. Twenty of them were ruled out for being corrosive to ballast tanks in lakers, leaving ten remaining options, all UV-based disinfection, that are approved for U.S. fleets, and of those only three show potential compatibility with the U.S.-flag fleet.
- Off vessel options for treatment in the U.S. waters of the Great Lakes, such as supplying ballast water from a public water system or discharging to a wastewater facility for treatment, was investigated by Hull and Associates. Hurdles to having a system in place include costs in the tens of billions, time measured in decades to install throughout the Great Lakes states, and huge volumes of water and wastewater to treat to most likely drinking water quality, among others.
- Next steps include working with requirements through the Minnesota Pollution Control Agency to install additional BWMS on vessels, funded by GLRI
- The most important challenge to laker management is getting a BWMS on board a vessel to test how practical and functional it is in the waters of the Great Lakes. A consistent set of data is important
- The BWMS trials are not geared toward matching the operational needs of lakers, rather testing the BWMS in varied waters and gaging its performance to meet numeric ballast water discharge standards
- Pump-only discharge system was implemented into the US laker fleet in the late 1990s or early 2000s at the latest

#### Questions and Discussion

- Best management practices were removed from the U.S. EPA proposed rule because they are impractical to implement and there are few options for vessel operators to modify
- That decision on whether to extend the comment period for the U.S. EPA proposed rule will likely be made this week, prior to the end of the comment period
- Under Canadian regulations, lakers operating in Canadian waters will need to install IMO approved systems with an implementation date of 2023; the U.S. proposed rule differs from

Canada's but the goal is to establish some consistency between the two when regulations are finalized

- U.S. EPA has not yet made a formal budget request for the \$50 million/year appropriated through VIDA for GLLCISP
- Knowledge exchange between the Great Lakes and Lake Champlain regions will build on existing connections between Great Lakes and Lake Champlain AIS managers who have been involved with GLLCISP, including direct conversation between Great Lakes and Northeast ANS Panels. Agency connections have also been made with NOAA and USFWS offices in each region
- The Erie Canal is not included in GLLCISP, although it does have connections to both the Great Lakes and Lake Champlain. U.S. EPA is conducting some AIS activities in the Erie Canal for certain species, and some GLRI supported partners are working in that region
  - There is also quite a bit of invasive species surveillance work for plants and fish conducted in the Erie Canal USFWS. Jake Cochran at that office has prepared a report on those activities, and can be contacted at [jacob\\_cochran@fws.gov](mailto:jacob_cochran@fws.gov)
- The GWRC Great Lakes Ballast Water Research and Development Plan for lakercs is supported by GLRI funding but is implementing priorities of GLLCISP and VIDA. The ballast water pathway was a focus for GLRI prior to the inception of GLLCISP, and GLRI will continue to support work, including ballast water, that aligns with other projects (funded or unfunded) and share information between them
- Officially, there is no GLLCISP right now; without an appropriation, the program is currently unmandated. However, the spirit of the authorization of the program is try and reach out to other geographies and try to understand what others are doing for AIS and improve communications, technology, etc. No formal role for the GLP has been identified in the 2019 Report to Congress, but it recognizes that the ANSTF is a good place to seek and share information on these best practices. Can also engage GL Sea Grant Network
- GWRC testing parameters do not test below 5°C because of limitations with lab and land-based testing. Testing at that temperature can be achieved through ship-board testing, but there is a need to be able to test at low temperature in a lab
- GWRC stakeholder group membership was determined by identifying the organizations that best represent the work GWRC would conduct (i.e., membership that is inclusive, binational, and of varied representation, while allowing GWRC to manage a limited number of members). 1854 Treaty Authority and Great Lakes Indian Fish & Wildlife Commission were invited as stakeholder members. Invitations were sent out a few weeks ago and membership should be finalized at the end of this week
- The GWRC is engaging stakeholders through the stakeholder group and public comment on the R&D plan, which is an informal process available on the website and open to all, including GLP members. The public comment period ends 31 March 21. Stakeholder group membership includes GLP members – Erika Jensen has an invitation through her role at the Great Lakes Commission, and GLP members can engage with the GWRC through Erika or other GLP members who are also a part of the stakeholder groups
  - The public comment is an open call since GWRC is early in the development process. There may be data that already exists that can inform project development through the R&D plan, and the GWRC is working to establish a data research group. GLP members

are encouraged to identify existing data relevant to the R&D plan, particularly monitoring data at commercial ports in the Great Lakes

- Regular updates from the GWRC at GLP meetings are a good option to provide updates on work. Stakeholder group will have access to work that the GWRC is doing in real time, and GWRC intends to publicly share data on their website to the extent possible
- The Lake Carriers Association finds shipboard testing to determine BWMS practicality and functionality as the most promising aspects of the GWRC R&D plan for laker management
- The Lake Carriers Association is hopeful and curious that a BWMS suitable for lakers can be developed, but it really depends on the timeline. It is key to begin testing as soon as possible to understand what is possible right now. Land-based testing is practical and relative low-cost, but shipboard testing will be the most valuable option going forward
- The ballast water best management practices that have been in use by lakers since 2006 include pumping ballast water, annual seachest inspections, minimizing ballast water uptake where possible, and cleaning and disposing of accumulated sediment in ballast tanks to shoreside reception facilities

#### Closing remarks

*Lindsay Chadderton, RCC Chair, and Sarah LeSage, Immediate Past GLP Chair*

- LeSage thanked participants and speakers and encouraged GLP members to participate in the GLP standing committee meetings later this week, where discussion on this pathway and the role of the GLP will continue

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

##### **Committee reports**

- Committee chairs reported back to the full GLP membership on the proceedings of the standing and ad hoc committee meetings
  - Notes from those meetings can be found in the subsequent sections of this meeting summary

##### **Spring meeting plans**

*GLP Staff*

- Members agreed to continue with a virtual meeting format for the spring 2021 GLP meeting
- A request for potential meeting conflicts will be emailed to GLP members
  - Staff will work with GLP Executive Committee to select potential dates for the spring meeting, and members will have the opportunity to vote on those dates

##### **Member round robin**

*GLP Members*

- Members were asked to identify one thing they learned from the meeting, and one thing they would like to see the GLP address next.
- Members highlighted the work presented in sessions, and overall promoted the continued work towards the priorities highlighted throughout the meeting



- The GLP should continue to support regional initiatives, like the Great Lakes AIS Landing Blitz, and showcase their work at future GLP meetings
  - It was suggested that the GLP take a role in coordinating a workshop on boat inspection locations, combining efforts and data from I/EC and RCC and to advance GLP priorities
  - There was interest in continuing to engage with the GWRC on their laker R&D plan, and to submit public comments coordinated through the RCC
- There was support for the ongoing virtual format, including allowing ample time between sessions
- Fischer thanked all attendees for their participation and continued engagement in the temporary virtual format of the GLP