

Meeting of the Great Lakes Panel on Aquatic Nuisance Species

November 19-20, 2014

Ann Arbor, MI

Meeting Summary

Wednesday, November 19, 2014

Welcoming Remarks and Call to Order

John Navarro, Great Lakes Panel (GLP) Chair, Ohio Department of Natural Resources (DNR)

Navarro called the meeting to order and welcomed participants. There was a round of introductions and a quorum was confirmed. Navarro reviewed the agenda, which was approved with no changes.

Great Lakes Panel Business

John Navarro, GLP Chair, Ohio DNR

Erika Jensen, GLP Coordinator, Great Lakes Commission (GLC)

The April 2014 meeting summary was reviewed. It was approved with one change put forward by Mike Hoff, U.S. Fish and Wildlife Service.

ACTION ITEM: Staff will update and post the final April 2014 meeting summary to the GLP website.

E. Jensen reviewed key action items from the April meeting, GLP member updates, and other meeting materials. Action items included:

General

- **Membership:** GLP members should consider any constituencies that are not represented to fill the open At-Large Member position and make nominations during the next election. *No suggestions have been made. It was noted that several at-large member positions are open and can be filled at the next election, in the spring of 2016. Any constituency can be nominated for these positions. Members are invited to contact Navarro or E. Jensen to put forward a nomination.*
- **Website:** GLP Members are encouraged to review the new website and provide feedback to Erika. *Some feedback has been provided; members are invited to continue to review and provide feedback.*
- **Chicago Area Waterways (CAWS)/Great Lakes and Mississippi River Interbasin Study (GLMRIS):** The Executive Committee will report to the Aquatic Nuisance Species Task Force (ANSTF) on GLP discussions. GLP committees should consider whether to develop formal recommendations. *A brief update was provided to the ANSTF at the May 2014 meeting. Navarro and Wakeman are participating on the CAWS Advisory Committee as described in an email from Navarro in August.*
- **Meetings:** Staff will work with the Executive Committee to plan the fall 2014 meeting in the Ann Arbor area and pursue a joint panel meeting with the Mississippi River Basin Panel (MRBP) on ANS in the future. *Fall meeting planning is complete. Work is underway for a joint meeting with the MRBP in April 2015 in Chicago.*

Information/Education Committee (I/E)

- **Voluntary Guidelines:** When available from the ANSTF, distribute final recreational, water garden, and classroom guidelines to GLP members for their use and distribution and post to the GLP website. *This item was completed.*
- **Great Lakes Water Quality Agreement (GLWQA):** Working with the GLWQA Annex 6 Subcommittee co-chairs, finalize request to GLP members and interested parties to provide information about existing outreach products and evaluations to inform GLWQA subcommittee efforts. *This item was completed and the inventory is provided in the meeting packets. Next steps will be discussed with the committee.*
- **Grass Carp:** Committee members will submit comments regarding the draft priorities statement on grass carp. Once the policy and research committee priorities are established, the I/E committee will assess their role in helping with the communication of those priorities. *This item was completed and a draft priorities statement is provided in the meeting folder.*
- **Priorities Document:** Committee members will review the I/E priorities document at the fall meeting. *This item is in progress and further discussion is planned with the committee.*
- **Publications:** Entities interested in buying in on publication funding opportunities are encouraged to contact the appropriate project liaisons: *This item is ongoing.*

Research Coordination Committee (RCC)

- Research priorities document
 - Update and incorporate priorities on GLMRIS and canals and waterways
 - Incorporate grass carp priorities
 - Submit updated document to ANSTF

This item is ongoing and will be discussed further in committee. Revisions were made to the canals and connectivity section.

- Grass carp: Integrate research priorities with other committee priorities into revised briefing paper for submission to ANSTF. *This item was completed. A draft priorities statement is provided in the meeting folders.*
- Priority species list: Continue refining the list and integration with other lists and the research priorities document. *This item is ongoing.*
- GLWQA: Provide input to the Annex 6 subcommittee on identifying the top three science priorities for AIS in the region. *Work on this was completed.*

Policy Coordination Committee (PCC)

- CAWS / GLMRIS: Create matrix of GLP member agency comments on GLMRIS and provide input on next steps by December 2014. *This item is ongoing and will be discussed further in committee.*
- Grass carp: Summarize grass carp briefing paper and insert goal and policy recommendations from the National Management plan for review by a subgroup of the committee. *Work on this item was completed. A draft priorities statement is provided in the meeting folders.*
- Conference call: Hold a committee conference call over the summer to provide updates on the GLMRIS matrix and grass carp recommendations. *This item was completed.*

ACTION ITEM: Members are invited to provide a final review and input to the Information/Education Committee inventory document to Hollins by January 16 (khollins@glc.org).

Aquatic Nuisance Species Task Force (ANSTF) Report

Craig Martin, U.S. Fish and Wildlife Service (FWS)

At the most recent ANSTF meeting, the need for adequate funding was brought forward by the regional panels as a high priority, as was the reauthorization of the National Invasive Species Act (NISA). A continuing resolution at the federal level maintains FY14-level funding for FY15. State ANS management plan funding is included in the FWS budget. The ANSTF has approved 42 plans to date, and plans are being drafted for many of the remaining states. The ANSTF understands the concern expressed about the operational funding for regional panels dropping from \$50,000 to \$40,000, but recognizes constraints on the federal budget.

The ANSTF is phasing out the national ANS hotline and a work group will handle the transition from the hotline to other mechanisms for reporting invasive species. The ANSTF co-chairs will engage with U.S. Geological Survey leadership on the importance of the Nonindigenous Aquatic Species (NAS) database. Work is also ongoing to revitalize the Habitattitude campaign, including and broadening the brand to include terrestrial animals. A near-term campaign need is to update the website with new content; an advisory committee will be convened to assist. The ANSTF is developing a report to Congress as required under statute. ANSTF members and regional panel representatives are expected to provide comments on the draft report by November 21. Information has been shared with the ANSTF regarding the use of Sport Fish and Wildlife Restoration Act (SFWRA) funds for activities such as boat washing and decontamination.

The American Boat and Yacht Council will hold a summit on boat design in consideration of AIS. This is an opportunity for AIS managers to meet with boat manufactures to consider designs that reduce the risk of spreading AIS. The summit will be in Las Vegas NV, Jan 27-28, 2015. D. Jensen noted several issues that would be raised during the summit including the difficulty of decontaminating pontoon boats, inboard motors, and ballast water tanks on wakeboard boats. The boating industry is interested in participating to help improve user experience, prevent restrictive regulations, and learn what happens to products in the field.

The FWS was unable to meet cost-share requirements for the two-year memorandum of understanding with Wildlife Forever (WF) regarding their operational lead on the Stop Aquatic Hitchhikers! (SAH) campaign. WF would like to continue

working on this campaign and will remain a resource for states in need of marketing resources. The FWS is committing to maintaining the protectyourwaters.net website and is working through the ANSTF outreach committee to refresh the website content and maintain the campaign.

There was further discussion on the reauthorization of NISA. One suggestion is to elevate key elements as part of a selective reauthorization, specifically funding for state plans and regional panels, which could be sellable to Congress. A letter from the Association of Fish and Wildlife Agencies (AFWA) was previously sent to the Invasive Species Caucus in Congress promoting the state plans and the need for the work and associated support. The GLC, represented by E. Jensen, has volunteered to help organize discussions on reauthorization and funding. E. Jensen noted that the GLC has the ability to coordinate Congressional outreach activities. She also noted that NISA reauthorization would be discussed further with the Policy Coordination Committee.

ACTION ITEMS:

- GLP members should remove references to the national ANS hotline on websites, outreach materials, and/or take other actions as needed, because the hotline will soon be out of service.
- GLP staff will share the ANSTF letter to USGS on the NAS Database (when available).
- GLP staff will share information on the use of SFWRA funds for AIS related activities.

Great Lakes Restoration Initiative (GLRI) Update

James Schardt, U.S. Environmental Protection Agency (EPA) - Great Lakes National Program Office

Schardt provided a summary of past accomplishments under the FY2010-FY2014 GLRI Action Plan, including approximately 50,000 acres of control work completed over the past five years. This is a large amount of work, but only covers 0.06% of the entire Great Lakes basin, indicating more work is needed. He highlighted successes for each of the seven principal actions for invasive species in the first GLRI Action Plan. Advancements in ballast water technology were made and researchers continue to innovate. Vectors of spread AIS have been assessed. Great Lakes organizations are national leaders in reducing organisms in trade, and reducing the time to complete risk assessments. Leadership by the governors and premiers through their list of “least wanted” species and their Mutual Aid Agreement (MAA) has gone beyond what GLRI is able to do. Outreach efforts have been successful, with an estimated 769 million individual impressions occurring through all of the work. The region has been a pioneer in developing new technology such as eDNA detection and genomic approaches for species assessments. Zequanox® and other new control technologies are being developed by many organizations. States have used GLRI funding to ramp up programs, including developing or revising management plans, enhancing rapid response programs, and building capacity. Grants to communities have helped manage impacts from invasive species. An early detection network is forming and has binational commitment. Schardt expressed hope that individual groups will share success stories. The region is a leader in these domains, funders want to know about the successes, and others can learn from the results of the work.

Schardt described the FY2015-2019 GLRI Action Plan, which has a different structure with three main objectives, including prevention, control, and technology/management. “Prevention” programs have a focus on coordination and leveraging the previous work done. “Control” includes messaging to communicate the strategic focus on ecologically rich areas, economically important areas, and establishing long-term sustainable invasive species control. Communities should have long-term commitment to their sites; funding is intended to help reduce infestations to manageable levels for the groups to take on by themselves. Many projects focus on “technology/management,” and it is important to share these best practices. Establishing collaboratives like the Great Lakes Phragmites Collaborative, led by non-federal entities, could facilitate information sharing on control techniques and long-term maintenance. Schardt also touched on funding for the GLRI. He said it is unclear if money will be available in future years, though there seems to be bipartisan support in Congress. The Great Lakes are a potential national invasion pathway, and there is a desire to protect the basin’s globally rare species and the multi-billion dollar fishery.

A question was raised about education and outreach within the three new categories. Schardt responded that they are important components that should be integrated into all the work being done. There was mention of Hydrilla control work being led by the U.S. Army Corps of Engineers (ACE), and managed by Mike Greer who will reach out to inform the GLP members about the project. A question was asked about whether the 50,000 acres of control work completed included habitat work, Schardt said that it did not.

Risk Assessment Tools

Mike Hoff, U.S. FWS

Hoff began his presentation noting that prevention of invasion by AIS is the best line of defense. Several risk assessment tools have been developed and all of them should be used for regulatory and decision making activities, such as federal Lacey Act listings. The Office of Management and Budget has completed peer review for the Ecological Risk Screening (ERS) and Bayesian Network Model tools, and is in the process of completing peer review for the Risk Assessment Mapping Program (RAMP). RAMP matches climate niches for species based on information on source locations and considering current and future climate conditions.

Hoff showed examples of ERS report summaries for the stone moroko and betta fish. The history of invasiveness and climate matching are the two best predictors of species invasion. Climate and weather data from areas where a species is known to be present are compared with those from the target location. If a species has a high climate match and a history of invasiveness, such as the stone moroko, they receive a high score in "overall risk." If a species has a low climate match and a low history of invasiveness, such as the Beta fish, they receive a low score in "overall risk." The risk assessment is then designated with a level of certainty by a trained risk analyst. Risk is uncertain when a species has not been established outside of its native range, there is limited information about it, and/or scientific impact assessments about it have not been clear. For species with uncertain risk, an advanced risk assessment process has been developed to aid in decision making that included data beyond scientific literature. ERS summaries have been completed for 2,000 species in draft form. Approximately 200 will be made available online within the next year. The intention is to also provide information about low-risk species so that industry can be assured that these species are unlikely to be considered for listing as injurious under the Lacey Act. Currently, the FWS is developing a list that includes ten freshwater fish and one crayfish to be listed as "injurious" under the Lacey Act. These species are not currently in trade in the U.S.

The Bayesian Network tool projects the probability of invasiveness based on information such as habitat and disturbance. It is intended for use when ERS characterizes the risk as uncertain. The RAMP tool was developed by the FWS and is currently undergoing expert peer review. Its purpose is to identify climate niches for any species in North America under present and future climate conditions for years 2050 and 2070. This is a quick way to depict climate niche for any species within a variety of scenarios and timeframes. Outputs from this tool will be used for internal FWS decision making, and could be used by states.

One non-regulatory result of these assessments is to implement an MOU with the Pet Industry Joint Advisory Council and AFWA to develop a list of five species not currently in trade that have been assessed as high risk. This list, along with risk assessment materials, is being distributed to partners as a non-regulatory risk management approach.

Hoff also noted the AIS subcommittee of the GLWQA is initiating work on risk assessments for both species and pathways. This includes coordinating species risk assessment for about 30 species that have been identified as possible high-risk species that are not yet in the Great Lakes. The assessment should be completed by 2015. In addition, the subcommittee is working to assess the illegal trade pathway and identify the associated management actions that will be most effective.

ACTION ITEM: GLP staff will send out a link to the available ERS summaries on FWS website.

Response Exercises: Reports and Lessons Learned

Moderator: Sarah LeSage, Michigan Department of Environmental Quality

LeSage introduced the purpose of the session, noting the importance of early detection and rapid response (EDRR) efforts and the significant amount of support for these activities.

Asian carp Binational Tabletop Exercise

Gavin Christie, Fisheries and Oceans Canada; and Bill Bolen, U.S. EPA

Christie focused on the GLWQA Annex 6 Subcommittee Rapid Response Task Team efforts. The purpose of this team was to undertake binational efforts in planning, training, and exercising to increase the capabilities for invasive species responses among stakeholders. A tabletop exercise was held in May 2014 and included many partners from the U.S. and Canada (the executive summary of the after-action report was included in the meeting folder). The exercise focused on AIS in a binational waterway, specifically a hypothetical Asian carp discovery in the Detroit River. Objectives for the

exercise included testing the Binational AIS Rapid Response Pilot Plan for the Lake Huron/Erie Corridor, ensuring communication with stakeholders and among agencies, and demonstrating the National Incident Management System among responding entities. The exercise helped establish a basis for future binational responses by understanding current AIS efforts and supporting interagency collaboration.

Completing the exercise helped agencies recognize the power of working together to strengthen their abilities to respond to AIS threats. It was recognized that many agencies do not have protocols in place to share information regarding AIS or to request assistance from other organizations. In order to work efficiently, U.S. federal agencies are required to use the Incident Command System (ICS); however, not all agency partners needed for AIS responses have ICS training. Additionally, many agencies do not have a system in place to request or share resources, which is important given the limited resources available to each individual agency.

Several items were suggested to improve responses in the future. A Binational Response Framework should be developed to integrate existing response plans. Continued exercises and training should be conducted, such as an exercise that focuses on communication, or training to develop ICS expertise. Additionally, a network of communications should be developed. A resource repository could house agencies' action plans so they can serve as useful resources for others. Finally, the MAA should be built out and additional signatories should be added. A question was raised about who would house the repository of resources. It was noted that the EPA has established website that could be made available to house those materials.

ACTION ITEM: GLP staff will send out the final binational response exercise after action report (when available).

Eurasian Ruffe / Calumet Harbor

Kevin Irons, Illinois DNR

Irons noted that he and Tammy Newcomb, Michigan DNR, are the co-chairs of the AIS Task Force for the Council of Great Lakes Governors (CGLG). Under the MAA an exercise was conducted this past year based on eDNA surveillance. Lakes Michigan, Superior, Huron, and Erie were surveyed for the presence of AIS eDNA; Eurasian ruffe DNA was detected near Calumet Harbor. Ten entities participated in the exercise. Survey efforts included electro-shocking, hydroacoustics, trawling, and minnow traps. At the beginning of the exercise, the resources were assembled and inventoried. Best practices for cleaning boats and equipment were used where necessary, and boats were provided with numbers and safety equipment. An incident management team and a communications team assisted with the media. Specialists from jurisdictions that do not normally work together were brought together. The harbor remained open throughout the exercise. Many species were found, though none were ruffe. Overall, this was a positive experience exercising the MAA and bringing in federal partners. There was a generally positive response from the media. They seemed happy to see everyone working together and bringing in outside resources. The communications team was also able to talk with several public observers.

Grass Carp / Lake Erie

Seth Herbst, Michigan DNR

Herbst spoke on behalf of the command team for the Lake Erie exercise. This was a multijurisdictional event with 60 participants representing 10 agencies. The goals included implementing Michigan's state management plan, building on lessons learned from a 2013 exercise, increasing staff training in a large lake habitat, and getting more training on two large lake fisheries vessels. The exercise also contributed to current information about grass carp threats in Lake Erie that have been developed from reports from individuals and commercial fishing captures. Evidence of the threat of grass carp in western Lake Erie is building. Grass carp have been captured at multiple locations, several at the warm-water discharge of the DTE Energy Co. plant. The capture of diploid individuals and fish representing multiple size classes suggests potential natural reproduction in western Lake Erie. Two projects initiated in the past year are studying grass carp recruitment sources, distribution, diet, seasonal uses, and habitat use.

The Lake Erie exercise was used to engage a multi-agency approach to increase staff preparedness while also increasing the information base of grass carp population demographics in western Lake Erie. An incident command structure was developed with each position being represented by individuals from the Ohio DNR and the Michigan DNR. eDNA samples were taken 1.5 months and 1.5 weeks prior to the exercise. This information was used to help allocate resources and guide traditional sampling, which included electrofishing, gill nets, and seines. Over the three-day exercise, two Grass carp

were collected and a third was observed. The collected grass carp were identified as triploid. Grass carp eDNA results exhibited temporal variation. The time lag associated with the sampling process made planning for traditional gear sampling difficult. During the exercise, water lettuce and European frogbit were also identified. The MAA was implemented successfully for this exercise, showing the substantial dedication to AIS response efforts in the region. The ICS was an effective framework for planning and implementing the response effort, but it needs to be tailored for fisheries responses, and having two individuals for some ICS roles was redundant.

A question was raised about the cost of the efforts. Agencies were asked to use their own funds to participate. Michigan spent over \$100,000 including planning time, equipment, and others items. This expenditure encompasses more than just the three days of sampling. Some individuals questioned the use of scarce resources, however, after it was completed, they saw that it was a good opportunity for the groups to work together and learn from each other.

Several GLP members discussed the use of eDNA in exercises such as this. It was noted that more sample replicates are needed to have a good understanding of the situation. Additionally, a faster turn-around time for reporting results is needed to increase the usefulness of the information for guiding field sampling. It was noted that technologies are being developed that are near real-time. It was also suggested to consider using commercial labs, which are set up for faster processing, rather than university labs. The eDNA sampling used in this exercise was already ongoing at Central Michigan University, and it was viewed as additional helpful information. eDNA can provide useful information for responses with large spatial scales to provide guidance on where to focus efforts.

User Surveys Across the Region

Synthesis presentation

Doug Jensen, MN Sea Grant

D. Jensen noted that the GLP has provided leadership to support outreach and prevention and encouraged that leadership to continue. He presented a high-level overview of several surveys that focused on knowledge, skills, and behavior related to the prevention of the spread of AIS. Six recent surveys were used for the presentation, though several others are available. The surveys often sought to evaluate AIS prevention campaigns and sources for information, determine awareness and behaviors related to AIS, make recommendations for future outreach efforts, and assess whether outreach efforts were effective at reducing AIS impacts. In general they indicate that AIS outreach is working to raise awareness and influence behavior. This is especially true in jurisdictions where AIS outreach is made a priority, the outreach targets specific audiences, and reputable campaigns are used, such as SAH.

Most of the surveys showed awareness about AIS among the respondents, with slightly less knowledge about the prevention steps and AIS regulations. One survey focusing on the SAH campaign indicated an increase in awareness by 50 percentage points after exposure to the SAH campaign. Additionally, even for people unfamiliar with SAH, 9 out of 10 intuitively knew what the logo meant, indicating the power of the brand to promote awareness. The top sources of information about AIS included newspaper, TV, magazine/newsletter, water access signs, and regulation booklets. Some of the differences in sources listed may reflect where outreach organizations have focused their efforts. For example, regulations have been used longer in MN than in other Great Lakes states.

Many of the respondents surveyed indicated that they remove plants and drain water from their boats. Few of them wash or disinfect their watercraft with high pressure hot water. In general, compliance was lower for behaviors related to moving water. When asked about actions taken to prevent the spread of AIS before and after exposure to SAH, an increase from 64% to 97% of respondents always or usually take action. Motivations for taking actions included protecting the environment or preventing the spread of AIS, knowing that their actions make a difference, and influences from others people. When respondents do not take action, the reasons often include the fact that washing equipment was not available, they believe they do not boat on infested waters, and they feel that others are not taking action. Unfortunately, some studies showed that many individuals that believed they were not boating in infested waters actually were. This highlights the importance of taking action everywhere, every time.

Respondents seemed to know less about regulations related to moving water and handling unwanted baitfish, and their behaviors mirrored that. It takes time for new outreach messages and regulation changes to reach audiences. It appears that states that have invested more in outreach are getting better results. It was noted that these surveys were all based on self reported behaviors. Wisconsin has several years of observational data regarding compliance rates.

Ontario 20-year angler survey analysis

Shannon Fera, Ontario Ministry of Natural Resources and Forestry (OMNR)

Fera presented on the efficacy of Ontario's Invading Species Awareness Program. The OMNR and the Ontario Federation of Anglers (OFAH) sent surveys to licensed anglers in 1998, 2004, and 2009, to gain a better understanding of anglers' changes in behavior due to the program. The three main questions they sought to answer were: are anglers receiving information; how frequently do anglers clean their boats; and are anglers releasing bait into the water.

The study results showed that in 1998, most anglers received information about invasive species from OMNR and OFAH, and almost 20% indicated that they did not receive any information. In 2009, OMNR was still the main information provider, but there were also more respondents identifying diverse sources of information, and less than 5% indicated that they did not receive any information. The researchers also evaluated the mode of information delivery. Overall, there was an increase in reported information from brochures, trade shows, bait shops, billboards, and the Internet between 1998 and 2009, and a decrease for radio and books. In 1998 and 2009, print media was indicated as the "best" source of AIS information, followed by television, brochures, and regulations.

Regarding behavior, the study results indicated that the majority of anglers drained water, visually inspected, dried for 5 days or more, and manually removed vegetation and mussels from their boats. When anglers were asked why they did not wash their boats when moving to a new waterbody, responses indicated a perception that the precautions were unnecessary. Interestingly, a "lack of knowledge about precautions" decreased dramatically from 35% in 1998 to under 5% in 2009. In 2004 and 2009, the surveys included questions about how anglers acquire baitfish and if they release live bait. Few anglers indicated that they release live bait, but those that did most commonly indicated it was to avoid killing the bait.

The results of the surveys show that during the 11 years covered, anglers' knowledge increased, but there was not much change in behavior. OMNR and OFAH will use this information to reassess the messages they produce and their methods of dissemination. Future outreach may need to be tailored to those people not affected by previous messaging efforts.

Wednesday, November 19, 2014

Chicago Area Waterway System and Asian Carp

Moderator: John Navarro, GLP Chair

Asian Carp Regional Coordinating Committee (ACRCC)

Todd Turner, FWS

The ACRCC oversees Asian carp work, monitoring, technology, and long-term solutions. Recently the leadership has transitioned to the FWS and the EPA. Both state and federal partners participate in the ACRCC. Two workgroups take on special tasks: the Monitoring and Rapid Response Workgroup, and the Communication and Outreach Workgroup. ACRCC control actions include redundant, effective barriers, as well as nets, gear, and sampling techniques implemented for Asian carp. Ongoing actions include sampling, testing new technologies for control, commercial harvesting, refining technology, and identifying GLMRIS control options. The ACRCC is currently developing a FY15 Control Strategy Framework. It is funded through GLRI and builds off previous years' work. It includes research and development, monitoring and early detection, control and dispersal technology, law enforcement, and communications activities.

In the CAWS, the ACRCC has characterized risk related to bighead and silver carp. The front of verified spawning activity is 143 miles from Lake Michigan and has not moved since 2008. The adult population front is 55 miles from Lake Michigan. The overall leading edge of Asian carp invasion has not changed since 2006. Black carp are also present and moving up in the river system. Asian carp monitoring was conducted above the barriers in the Chicago Sanitary and Ship Canal; no bighead or silver carp were captured or observed. Removal efforts have been focused where Asian carp are moderately abundant, and monitoring has increased along the leading edge. eDNA is being used above the barriers to aid in early detection. Development and integration of new technology continues, and this system is meant to serve as a model for Asian carp response and monitoring for other jurisdictions.

The FWS is leading fish-barge interaction studies to assess the likelihood of Asian carp becoming entrained and transferring through electrical barriers. Tests revealed "void spaces" around the barges that could entrain fish. Additional

studies to be conducted in 2015 will look at whether or not fish will become entrained, how many, how far they can be moved, and what sizes can be entrained past the barrier. The FWS is also leading a regional eDNA surveillance program that serves as an early detection monitoring tool. eDNA is used to identify areas of concern to increase vigilance and inform the use of traditional monitoring gear. New information from eDNA Calibration Studies that provided new marker information has increased confidence in results. FWS, ACE, and USGS are partnering on future eDNA research.

USGS is researching Asian carp life history to gain understanding for future control technology such as microparticle piscicides, attractants, or deterrents. A Tributary Assessment tool was developed to model the suitability of rivers for Asian carp spawning. It was determined that river reaches as short as 16 miles away may allow Asian carp eggs enough time to hatch.

WRRDA was signed into law in June 2014. It directs the FWS to lead a multiagency effort to slow the spread of Asian carp in the Upper Mississippi and Ohio River basins, and report on Asian carp prevention over the past two years. The report includes observed changes in the range of Asian carp, a summary of agency efforts to control Asian carp spread, research that may improve controls, measures documenting control progress, and an account of money spent on control efforts. A draft was sent to agencies on November 17, and the final report is due to Congress on December 31, 2014. After the report is submitted, a public communication plan will be developed.

A question was raised about commercial harvest. Irons noted that commercial fishing companies are contracted by the Illinois DNR, and work on the leading edge with a biologist onboard each fishing vessel. The fishing companies do not make money on the fish they catch, but do as contractors. The fish are usually used as fertilizer. Fishing can cause dips in populations, but the benefits diminish after fishing is stopped. Commercial fishing companies do fish for profit further down the river where populations are higher.

U.S. Army Corps of Engineers
Dave Wethington, U.S. ACE

Wethington presented about the next steps in the GLMRIS. He emphasized that ANS control is a shared responsibility and nonstructural measures must also be implemented for structural measures to be effective. GLMRIS provides a basis for further investigation with the CAWS as a focus. Further efforts are being directed at the Brandon Road Lock and Dam, a site included in three of the six structural alternatives. It is also seen as an effective control point because it can address the upstream transfer of Mississippi River species through all CAWS pathways, controls could be implemented there more quickly, and it can be mechanically closed on a temporary basis if necessary. Although efforts are currently focused on a one-way barrier, eventually a two-way barrier is desired. The use of barrier technology at Brandon Rd. can reduce the risk of transfer at this site and allow evaluations of technologies that could be implementable elsewhere. The dam is the main one-way barrier because there is a 25-foot difference between the upper and lower pools. Efforts, therefore, will focus on the approach channel and lock where species could potentially transfer. Applications of controls are anticipated to have minimal impacts on existing uses. Two-way control adds additional time and cost because of the need to mitigate flooding issues and existing uses. The goal is to develop technologies that address a full range of swimming and floating species. Hull-fouling "hitchhiker" species present different challenges while maintaining navigation because of the environmental concerns and costs of using biocides.

Outcomes of these efforts are anticipated to include a feasibility-level document that can serve as the basis for future actions. An Environmental Impact Statement will be produced as required under the National Environmental Policy Act (NEPA). Additionally, interim products will possibly include updates on analyses from GLMRIS and technical information on an ANS flushing lock and an engineered channel. Stakeholder outreach will include an executive steering committee as well as regular updates through the GLMRIS website to ensure transparency and allow input. Currently the ACE is scoping costs and timelines for the needed analyses at Brandon Rd. Under NEPA, they are holding a comment period for the scope of the effort.

A question was raised about extreme flow events potentially allowing fish to move through the Brandon Rd. dam. It was noted that gates at the bottom of the dam are sometimes opened during extreme flow events, however, the velocity of the water at those locations is faster than the maximum burst speeds of adult fish. It was also noted that this will be an opportunity to demonstrate projects like the flushing lock and other technologies that can help reduce the risk of AIS transfer in the CAWS and elsewhere. Concerns were raised that the short-term measures being put in place in the channel might be slowed by the large task of the flushing lock. Wethington noted that the timeframe for constructing anything will

be slow, and the necessary engineering for the flushing lock can be run parallel to the engineering of the channel. He also noted that USGS will be leading research on the impacts of CO₂, hydroguns, and other technology on navigation structures, so the technologies can be applied as they are developed.

ACTION ITEMS:

- Members are invited to Provide comments regarding the next steps for the U.S. Army Corps of Engineers work at the Brandon Rd. during the Public Scoping Comment period (<http://glmris.anl.gov/brandon-rd/>)
- GLP staff will send out information on the Army Corps of Engineers scope of work for Brandon Road (if/when available).

CAWS Advisory Committee

John Navarro, GLP Chair, and Bob Wakeman, Wisconsin DNR

Navarro and Wakeman serve as the GLP representatives on the CAWS Advisory Committee. Navarro recognized that a number of GLP attendees are also part of the CAWS Advisory Committee. The CAWS Advisory Committee was started in 2010, and includes many groups interested in activities occurring in the CAWS. The Committee's charge is to determine a long-term solution to stop the interbasin transfer of AIS through the CAWS, in both directions. They are evaluating recommendations, while also considering the maintenance or improvement of water quality, transportation, recreational uses, and flood protection. The Committee seeks consensus among members to develop recommendations.

Previously, the Committee developed a letter to the Great Lakes congressional delegation that helped show that a broad coalition is working together on this issue. The letter asked Congress to provide \$8 million to the ACE in FY15 to study an engineered channel to be constructed at Brandon Rd., the design of control technologies to be used in the channel, and research to reconfigure the locks to control AIS. Wethington noted that when the ACE was asked about the views of stakeholders regarding the Brandon Rd. work the Committee's letter was a valuable reference.

Tim Eder, GLC, noted that the Committee has been in place since 2010, but a recent shift was made after the release of GLMRIS. Previously, the Committee provided advice, but now they are working to make consensus-based decisions. A team of professional facilitators contracted to support the Committee have provided great assistance in this. While the GLC is a member and convener of the committee, it is not leading the consensus-building process. GLP members were encouraged to share their ideas and perspectives on the issue with Navarro and Wakeman as their official GLP representatives to the Committee.

Committee Reports

Information/Education Committee (I/E)

Doug Jensen, Chair, I/E Committee

D. Jensen first noted the success of the Upper Midwest Invasive Species Conference and mentioned a 2015 International conference on AIS to be held in Winnipeg. The I/E Committee partnership with the GLWQA subcommittee to develop a list of high-level outreach campaigns and products was successful. Many individuals contributed, and the I/E Committee will continue to work with this document. The I/E Committee is working with the GLC to update the *Great Lakes Aquatic Invasions* booklet; others are invited to participate in this process.

The I/E Committee is in the process of updating its priorities document. The I/E Committee also discussed communication needs, such as those around bait, transfer of water, and boat washing. Members discussed how to handle the phasing out of the ANSTF's ANS Hotline.

Member updates included the following: NY will be updating their AIS plan; IL-IN Sea Grant recently released a risk assessment tool that includes a poster and a brochure; ON is conducting a boater outreach assessment based on type of watercraft; MI hosted a watercraft landing blitz, has posted YouTube videos, and has introduced additional boat launch signs; OH is focusing on SAH and the Clean Marinas program; and MN is augmenting the DNR watercraft inspection program and is increasing enforcement and fines. There are a variety of new products and campaigns, including water garden tip cards, a water garden poster, and waterfowl public service announcements. Additionally a Canadian Asian carp website recently debuted along with several related webinars.

COMMITTEE ACTION ITEMS:

- Distribute the following information/materials:
 - Matt Smith will send the link to the YouTube videos focusing on waterfowl hunter best practices for reducing the spread of AIS
 - Greg Hitzroth will send the link to the new Canadian Asian carp website and information on TakeAim.org when available
 - Katherine Hollins will send the executive summary for the Kawishiwi survey
- Committee members are invited to review the outreach inventory and contact Katherine by Jan. 16 if anything is missing.
- Committee members should send their input on the GLAI booklet to Katherine by Jan. 16. Katherine will compile the input and send it out for review by the committee in January.
- Committee members should send their comments regarding the Priorities Document to Katherine by Jan. 31.
- Convene a committee conference call to discuss next steps on the outreach inventory, the GLAI booklet and the priorities document.

Policy Coordination Committee

Sarah LeSage, Chair, Policy Coordination Committee (PCC)

Regarding GLMRIS and the CAWS, the PCC noted that Brandon Rd. developments are moving more quickly than expected. They discussed the matrix of GLP member comments initiated at the spring meeting. Originally, it was to serve as an informational piece for members to use to support federal funding requests. It was determined that this could provide valuable information for Navarro and Wakeman to present to the CAWS Advisory Committee. If members want their organization's comments included, they are invited to summarize them and submit them. The Committee members want to stay engaged and informed regarding these topics and may want the ACE to present at the spring GLP meeting.

The Committee also discussed the draft grass carp document included in the meeting materials folder. The discussion focused on unintentional stocking in lakes and the need for inspections. They discussed a process for revising the document, and noted that it will be important to have it finished prior to the spring meeting. The Committee circulated basic information on NISA, specifically what its reauthorization would mean for members. Recognizing that the GLP cannot advocate to Congress, the Committee suggested providing information and recommendations for what could be included in this important document, such as through a form letter that could be used by members. E. Jensen is working with other regional panels to discuss the reauthorization. The Committee discussed the state-by-state comparison of watercraft inspection/decontamination laws developed under the auspices of the Western Regional Panel, noting that a model law was circulated a year ago. There was much interest in this topic, recognizing that states' abilities to implement inspection programs may depend on funding and capacity. The CGLG is working on a comparison of laws. The Committee would like to get an update from the CGLG once their materials are compiled.

E. Jensen noted that NISA was the authorizing legislation for the GLP and state AIS management plans. Comprehensive invasive species legislation that would reauthorize the program as well as make other federal AIS policy advancements not included in NISA was last introduced to Congress in 2007. At the most recent ANSTF meeting, two other regional panels recommended that the ANSTF pursue the reauthorization of NISA. It was noted that it would likely be unproductive to simply ask for more money, and the panels should indicate what the results of the funding would be, such as more consistent programs implemented nationally. E. Jensen noted that the regional panels were interested in getting more information prior to discussing specifics about what would be needed and what would be produced with additional funding.

COMMITTEE ACTION ITEMS:

- Consider a letter to ANSTF Co-Chairs on what next steps should be considered to address interbasin transfer of AIS based on ANS control technology matrix
- Incorporate revisions to Grass Carp Priorities Document as discussed with the committee at Nov. 19 meeting
- Consider a joint GLP and MRBP recommendation on grass carp at the joint spring meeting
- Hold a conference call for committee members and other interested parties to discuss NISA reauthorization
- Request a briefing from the Council of Great Lakes Governor's AIS Task Force on their regulatory analysis
- Request ACE briefing on Brandon Road announcement at spring GLP meeting

- Provide input to ANS control technology matrix to inform discussions on CAWS/GLMRIS to Erika by January 16 (ejensen@glc.org).

Research Coordination Committee

Lindsay Chadderton, Chair, Research Coordination Committee (RCC)

The RCC made additions to the grass carp research priorities. They feel there should be population studies of grass carp in the GL basin. The Committee noted the need for a communications strategy both across agencies and to the public, such as regarding information about eDNA. It was suggested that the RCC convene an annual meeting focused on grass carp. The RCC finalized the revisions to the research priorities document, and included some related to canals and connections. The members decided that the document could be used as a reference for a three-to-five year strategy. The Committee would also like to perform a gap analysis for funding and research.

The Committee discussed ways to become more relevant and decided to try to organize quarterly meetings between the GLP meetings. They will set these meetings on the calendar, and will set clear objectives for accomplishments. This will allow more time for other work or plenary sessions at the face-to-face GLP meetings. It was noted that many Committee members felt the standard break-out groups were not useful, but smaller group discussions were valuable to maintain. For example, it would have been useful to have research-focused members participate in the policy discussion about what to do with NISA. The RCC does want to help identify hot-button issues that may be of interest to the larger GLP for plenary sessions.

COMMITTEE ACTION ITEMS:

- Grass Carp Priorities Document
 - Make revisions as discussed with the committee at Nov. 19 meeting
 - Clarify research needs from collected specimens with input from Patrick Kocovsky
 - Send to the committee for review
- Research Priorities Document
 - Make revisions as discussed with the committee at Nov. 19 meeting
 - Clarify structural and non-structural priorities under the Canals and Connectivity section with input from Kevin Irons
 - Send it to committee for review
- Priority Species List
 - Make revisions as discussed with the committee at Nov. 19 meeting
 - Send to committee for review
- Schedule two hour quarterly calls/webinars with the committee

ACTION ITEM: The GLP Executive Committee and staff will integrate revisions to the Grass Carp Priorities Document from the Policy and Research Coordination Committees, send the revised version to the full GLP for review and approval, and finalize it prior to the spring 2015 meeting.

Discussion: Opportunities to Enhance Panel and Committee Operations

John Navarro, GLP Chair, and Lindsay Chadderton, TNC

Navarro introduced the topic of the GLP committees and the desire to use members' time most effectively. He noted that, at these meetings, about one third of the time is reserved for committee meetings. He asked whether this was the best use of face-to-face time, what were the strengths and weakness of this system, where could operations be improved, and if it would make sense for committees to comingle? Comments, suggestions and discussion included the following:

- Committee break-outs allow for valuable discussion and conversation that should be the focus of in-person meetings. If time is an issue, plenary information could be shared through a webinar or some other one-way flow of information.
- Many members GLP wear multiple hats and struggle to fit into one committee only. It was suggested that break-outs could be based on topics instead of the three traditional committees. Many people may still have a hard time choosing which topic to focus on.

- Some committee work could be done between meetings instead of at the meetings, and then at the meetings each committee could facilitate a block of time where the whole GLP could learn about the items of interest.
- Coalescing around different issues could allow the GLP to be more nimble. However, the information-sharing across entities was a very important benefit of the GLP meetings, and losing that element through lack of participation in member updates would be detrimental. The GLP provides an efficient way for members to be informed about key topics as well as for presenters to receive feedback about their presentations.
- Previously, the majority of experts were present at the GLP meetings. However, because of the complexity of today's topics, the needed experts are not always present.
- One question is what could be done to influence the work that will be implemented in the next six months
- Issue specific workshops could be used to cover a topic more comprehensively. In this model, colleagues with the appropriate authority and expertise would be invited. Follow-up on these meetings would be important, so those members who might not be in a position to take action are still able to keep up with the topics.
- There is a question of whether the members of the GLP the "doers"? Alternatively, does the GLP inform the "doers"? It was noted that the GLP is a central place for discussions and that helps frame the changes being considered.
- The GLP is seen as being important to the GLWQA Annex 6 because much of the work the GLP does feeds into the goals of Annex 6.
- Many GLP members are also asked to serve on advisory boards or similar bodies; could the GLP be more directive of other groups?

In conclusion, E. Jensen noted that it is good to hear from GLP members on how they want to use their time. Navarro noted that drastic changes are not imminent, but it would be prudent to survey the GLP members to get additional input on these ideas.

ACTION ITEM: The GLP Executive Committee and staff will assess possible changes in the GLP meeting format or methods of doing business, based on GLP member input regarding current strengths and weaknesses of GLP operations. They will develop a survey or other mechanism for GLP member input.

Organisms in Trade Updates

BIOTIC Symposium Synthesis

Tim Campbell, Wisconsin DNR-UW Extension

Campbell described the successful Great Lakes Briefs on Invasive Organisms Traded in Commerce (BIOTIC) Symposium held in Milwaukee, WI. The symposium was part of a larger GLRI project aimed at bringing together experts to understand the current state of knowledge, identifying research gaps, and facilitating the transfer of information. At the symposium, synthesis presentations considered trade pathways to assess risk and opportunities moving forward. For example, considering live bait, as long as proper guidelines are followed at key points along the way, the likelihood of a trade organism becoming established is low, even if accuracy along the way is not 100%. Efforts should focus on high risk species. However, preventing pathogens and diseases may require a different approach. During the session focused on regulations, attendees discussed species versus pathway regulations. Pathways seem to be more likely to reduce risk, but a species focus may be better for educational purposes. Several talks addressed risk assessment. Many tools exist, but questions remain about how they work together, and how they may be able to inform prohibited or regulated species lists. Several industry representatives were present at the symposium. At the national level, it seems that industry is supportive of many of the same items. However, they have other areas of focus. At the local level, there was a strong sense of responsibility between store owners and consumers. Overall, there was a desire for continuing collaborative efforts. Summaries of the presentations from the symposium will be posted in December 2014, along with presentation slides and contact information. Additionally, a fact sheet will be produced that covers trade pathways and reasons for concern. This document will be a good quick-guide for elected officials or people with no background in this topic to understand why it is a focus for work.

ACTION ITEM: GLP staff will send out a link to Great Lakes BIOTIC Symposium website.

Internet Trade Project

Erika Jensen, GLC

The Internet trade of invasive species project started two years ago. One workshop to discuss a preliminary version of the software was held. Now the software is working, and some preliminary results are available. The project was initiated because the trade of invasive species is an issue that can be exacerbated by the Internet, the Internet is large, changing, and hard to track, and previous studies found that several species of concern to the region were being sold online. The project aims to answer questions about who is selling, what species are being sold, which websites are selling, from where are products being shipped, how many are being sold, and are regulations about these species being communicated? The project objectives were to develop and demonstrate software to assess the availability of invasive species via Internet sales, provide information and management tools, and present information on the Internet marketplace, including risks and options for management.

The GLC hired a local firm to develop the software system that automates the process of searching for species. The search began with a list of 167 species of concern based on federal, state and provincial regulations, watch lists, and a survey of stakeholders. The software searches the Internet for the listed species, including scientific and common names, as well as aliases. It then reviews the search results, and determines if it is a sale page or not. The algorithm making these determinations gets smarter over time based on human feedback. A user interface was developed that includes a list of all the species included in the search. The list can be filtered to see what species are regulated by jurisdiction, when the page was found, or by species name. Experts can access more information through a free account, such as the actual links to sale pages. This security measure prevents the facilitation of trade in these species.

Most of the species found so far have been plants. There are over 500 pages selling plants from the list of species of concern. Preliminary observations indicate that species that are a threat to the region are being sold. It is not yet clear which species are being sold within the region or can be shipped to the region as not all of the sites are US based. This can serve as a warning tool indicating what is in trade and potential emerging species of concern. The GLC continues to develop findings from the software. They will also work with regulators to take action on confirmed findings. A workshop will be held in 2015 to share findings and discuss management options and recommendations.

A question was asked about possibly expanding to cover terrestrial invasive species. GLC will not expand at this point, however this may be a possibility with additional funding. Currently, the number of search terms is at capacity. Some search terms must be removed for others to be added. Additionally, this tool was developed so other organizations can use it on their own. It was noted that Congress is currently discussing bills that create a "white-list" approach for novel species. This tool could be useful to help identify species that are not in trade. The tool does require input of species names to function. A question was raised about the ability to find the source sellers. Jensen noted that the GLC is currently working to determine that and will be able to report about the locations of sellers from the first round of data gathering. However, the GLC will not be able to continue this work beyond the first round of data under the current grant. It is a complex task that would be challenging to automate, but could potentially be done with another project. If more resources were made available, the tool could be expanded and developed further. It was reiterated that the tool was designed using open source coding so that interested agencies can take it, install it on their own servers, and run it on their own. GLC will be running it and allowing others to see what they are finding for as long as the system can run with minimal maintenance.

Invasive Mussel Collaborative

Tim Eder, GLC

Eder presented on behalf of the Collaborative's founding entities, USGS, GLC, NOAA, and the Great Lakes Fishery Commission. He noted that this collaborative is in its early stages and was brought about by the availability of Zequanox as a control agent. Most people agree that the impacts of zebra and quagga mussels have been negative overall, and there is strong interest in minimizing their spread. People in the western U.S. are quite concerned about preventing additional infestations. He noted that the collaborative is not promoting the use of a commercial product, although the availability of Zequanox for open water use has brought about the need for this collaborative. This should be considered one important tool, but not the only tool available. There are many technologies under development and the potential for developing an integrated pest management program. There is currently a tension surrounding Zequanox among individuals that are interested in using it quickly, and others who would like to see more research. Research questions include how it works, what impacts it might have on native mussels, other benefits to native mussels that should be considered, and effects of removing zebra/quagga mussels on the ecosystem.

Because this is a multi-jurisdictional, multi-sector management challenge, the collaborative is following the collective impact approach to bring agencies together on management and science. The collective impact approach brings together multiple interested parties, supports a common understanding of the problem, and develops a common agenda moving forward through the support of a neutral backbone organization. The Invasive Mussel Collaborative is following the successful model of the Great Lakes Phragmites Collaborative. Collaboratives provide a framework for active communication and coordination to determine management objectives and identify and guide research needs to achieve those objectives. Objectives for the Invasive Mussel Collaborative include facilitating information exchange between decision-makers, scientists, and stakeholders; developing and guiding a joint strategic approach to invasive mussels; and implementing communication and outreach activities. The GLC is providing a neutral backbone for the collaborative, with initial funding provided by USGS. Membership will include entities from the U.S., Canada, federal, Tribal, state, and provincial agencies, NGO's, industry, and academia. The GLP is welcome to suggest possible members. There will also be communications externally with various stakeholders. The current plan is to incubate this collaborative in the Great Lakes region, but recognize that it may need to be expanded throughout the U.S. eventually.

Several science questions have been proposed, but are open to input and suggestions. Initial questions cover the development of models and decision support tools, understanding ecosystem effects, and the development of management strategies. Next steps include a webinar and a survey to inform initial management and research needs. This will help shape the collaborative and establish the initial structure. The first meeting of the collaborative will be in February 2015, and will begin the efforts to define a common agenda, management objectives, and research needs.

LeSage noted that the state of Michigan conducted a field exercise to pilot test an application technique in November 2014. The trial was a 75x75ft enclosure near Monroe, MI where a benthic treatment was conducted using drop hoses to apply Zequanox. Water quality was measured over the course of the three-day project. D. Jensen discussed the application conducted at Christmas Lake. He noted the infestation was identified early, and the application was successful within the enclosed area. Unfortunately, the zebra mussels had already spread beyond the area that was managed.

Plans for spring 2015 GLP meeting

John Navarro, GLP Chair

Erika Jensen, GLC

The next GLP meeting is planned for April 14-16, 2015, in Chicago, IL. It will be a joint meeting with the Mississippi River Basin Panel. Grass carp and CAWS might be topics of interest to both panels. GLP members with meeting session topic ideas are welcome to contact Navarro or E. Jensen.

ACTION ITEM: The GLP Executive Committee and staff will plan a joint meeting with the Mississippi River Basin Panel for April 14-16, 2015 in Chicago.

Public Comment

The floor was opened for public comment. None were received.

Emerging Issues and Announcements

No announcements were made.