

Great Lakes Panel on Aquatic Nuisance Species Meeting Summary

Virtual Meeting | November 1-3 – Virtual Meeting

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

Welcome and introductory remarks

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 made

GLP Business Items

Eric Fischer, GLP Vice Chair and Ceci Weibert, GLP Coordinator

Approval of June 2022 meeting summary

- Meeting summary was adopted and will be posted to the GLP meeting website

Review of June 2022 action items

- Weibert reviewed the actions items that came out of the Spring 2022 GLP meeting and where their progress currently stands
- Completed action items from the GLP Executive Committee (ExCom), the GLP staff, and GLP members were reviewed
- The actions that are in progress or ongoing include:
 - The ExCom will engage with the Great Waters Research Collaborative
 - The ExCom will consider solutions to address the apparent lack of social sciences expertise on the GLP membership
 - Staff will schedule a webinar to review new function features and data in the USGS-NAS database; tentatively scheduled winter 2023

Committee reports

OIT Ad Hoc Committee

Greg Hitzroth, Illinois-Indiana Sea Grant

- Facilitated small group discussions to understand industry engagement opportunities and goals for the industries that support the 6 main OIT pathways
- Captured past, ongoing, and planned industry engagement activities to identify opportunities for GLP support
- Developed an industry engagement exercise to prioritize which of the identified desired outcomes ranked highest in priority and achievability to GLP members

- A proposal was submitted by the Great Lakes Commission (GLC) with coordination from OIT ad hoc Committee membership from Pennsylvania and Wisconsin Sea Grant to the Richard King Mellon Foundation to support development of Pennsylvania “Plant This, Not That”-style native species campaign for use in landscaping. This proposal was funded and work will begin in 2023
- Two upcoming meetings are planned to include a discussion on interjurisdictional projects to put forward for consideration and continued discussion identifying industry engagement opportunities

Information/Education Committee (I/EC)

Doug Jensen, I/EC Vice-Chair, Wisconsin Sea Grant

- The I/E Committee will continue to focus efforts to address GLP priorities through support of the OIT ad hoc committee’s activities
- Continued to plan GLP website redevelopment
- Committee members will contribute interjurisdictional AIS project ideas for funding
- Provided messaging and outreach support for the Great Lakes AIS Landing Blitz
- Collection of grass carp outreach materials to create an index of materials available (in support of the PCC’s grass carp work)

Research Coordination Committee (RCC)

Lindsay Chadderton, The Nature Conservancy

- Committee members worked to develop a workshop focused on invasive aquatic plant (IAP) research needs and identified key invitees
- The committee will send formal request to the Great Lakes Water Research Collaborative for access to their summarized data and/or research plans

Policy Coordination Committee (PCC)

Patrick Kočovský, U.S. Geological Survey (USGS)

- The PCC reconvened in spring 2022 and is focusing on updating efforts by the prior Grass Carp Ad Hoc Committee, including:
 - Clarifying status of various grass carp initiatives
 - Council of Great Lakes Fishery Agencies diploid letter
 - Aquatic Nuisance Species (ANS) Task Force response to 2015 grass carp recommendation
 - Contacting the Great Lakes Grass Carp Advisory Committee for any formal documentation on the question of prohibiting diploid species nationally
- Committee staff will clarify extent of Federal Advisory Committee Act status and provide guidance on the appropriate level of advising policy. The committee is working with the ANS Task Force on this action item
- Continued to plan GLP website redevelopment

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

Alisha Davidson, GLC Contractor, and Theresa Gruninger, GLC

- Literature reviews for each designated priority IAP species have been completed and are out for expert review with final feedback due early December
- The workshop that will likely be moved to a virtual format, January 24-25, 2023
- Gruninger reviewed the draft agenda for the IAP workshop
 - Twelve species, three groups of four, will be the focus of workshop sessions and breakout group discussions
- The full GLP membership will be invited to attend the workshop. State and provincial agencies have been asked to provide a list of appropriate personnel who should be invited to participate in the upcoming workshop

Programmatic Updates

GLANSIS

Rochelle Sturtevant, GLANSIS Program Manager, Michigan Sea Grant Extension

- GLANSIS established a new partnership with Lake Champlain and USGS-NAS to improve information sharing opportunities
- There have been minimal changes to the GLANSIS species list since the Spring 2022 GLP meeting. Several reptiles and amphibian species are in the final stages of the review process
- Impact widgets, quick reference icons to visually communicate impacts, are being added to make the species pages a more user-friendly experience.
- Sturtevant reviewed the updates to the regulations map, a tool that shows species regulations in a geographical format, and called for state representatives to review the regulations listed: <https://www.glerl.noaa.gov/glansis/raT2Explorer.html>
- Sturtevant reviewed the educator hub which houses education and outreach resources that are available for download and use. GLANSIS is currently soliciting additional, already developed materials that can be posted to the educator hub, found at: <https://www.glerl.noaa.gov/glansis/educatorHub.html>
- Two new story maps have been released:
 - Managing Great lakes Invaders: https://www.youtube.com/watch?v=sH_aXtOvAEs
 - Using the GLANSIS Map Explorer: <https://storymaps.arcgis.com/stories/dfa9b8dfa1cd427fbc8ebc1d07cc3bc3>
- There is a data sharing agreement between USGS-NAS and EDDMapS, which will soon include Canadian data
- Similarities were noted between the regulation map and information available via the Blue Accounting website
 - GLP members voiced concern on if and how the GLANSIS regulatory map information is going to be kept updated. Members suggested providing a clearer disclaimer on the map directing viewers to governmental websites where the most updated regulations could be found
- Reviewers for the GLANSIS species list are asked to review the content for correctness. The federal review requirement dictates that each species included needs at least one external review prior to release

ANSTF

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

- Pasko covered the history, structure, and strategic plan of the ANS Task Force
- An ANS Task Force meeting was held in May and Pasko reviewed highlights of what was discussed. Notably, at this meeting, the ANS Task Force approved the revised “Minnesota Aquatic Nuisance Species Management Plan”.
- Pasko reviewed the five action items that came out of the ANS Task Force meeting
- For 2022, the Prevention Subcommittee has been focusing on identifying priority pathways and species of concern and encouraging implementation of measures to manage high priority pathways and species
- The Early Detection and Rapid Response Subcommittee is focusing on ways to facilitate monitoring to detect and report new ANS sightings and aid in the development of capacities to respond rapidly to new invasions
- The Control Subcommittee is working to update several species management plans, including Green Crabs and New Zealand Mudsnails. Additionally, the Control Subcommittee is working to coordinate the development and implementation of ANS management and identify gaps in available control and restoration measures
- The Research Subcommittee is working to establish ANS Task Force research priorities and identify prospective partners. The subcommittee is facilitating activities that support priority ANS research needs and track and disseminate study results to incorporate into ANS management decisions
- Lastly, the Outreach Subcommittee is working to evaluate ANS communication, education, and outreach efforts to ensure they are consistent and effective and developing processes to share information and consistently implement ANS outreach strategies
- The ANS Task Force is currently working on updating their website
- Those interested in keeping up-to-date with the ANS Task Force can subscribe to their weekly newsletter and let Susan know if you would like to highlight anything in the newsletter
- Next meeting is January 11-12, 2023 in Falls Church, Virginia, to be held in-person with a virtual option available

Metabarcoding project updates

Nick Frohnauer, U.S. Fish and Wildlife Service

- Frohnauer reviewed the various genetic tools that are used for eDNA analysis including metabarcoding which is a technique used to identify multiple species present in an area through rapid DNA sequencing
- Frohnauer reviewed the project timeline for the metabarcoding project. The initial phase will include retrofitting the Whitney Lab and hiring additional staff to process samples
- Internal discussions are occurring to establish plans and protocols for monitoring to be implemented in 2023
- Additional funding will be pursued to support the outreach component of the projects
- Samples were collected in 2022 and more will be collected in 2023
- Species of interest include snakehead, ruffe, goldfish, American eel, tench and weatherfish

Emerging issues and announcements

- Craig Middlebrook retired on September 30, leading to a change in Great Lakes Seaway representation. The new representative as the Great Lakes Seaway's GLC member is Elizabeth Fox
- For those who attended UMSIC, please respond to the feedback survey. The next meeting will be November 12-15, 2024 in Duluth, Minnesota

Public comment period

- No public comments received
- GLP Business Session was adjourned

Plenary Session: Invasive carp

Welcome and introductory remarks

Patrick Kočovský, Policy Coordination Committee chair, U.S. Geological Survey (USGS)

- Kočovský called the meeting to order and reviewed the agenda for this session

Copi marketing launch

Brian Schoenung, The Illinois Department of Natural Resources (DNR)

- There are many invasive carp that could be harvested from the Illinois River (20-50 million pounds annually), yet nowhere near that number is currently being harvested. As a healthy protein, the larger question for the Illinois DNR was how do we get people to harvest more?
- Outside the United States, invasive carp are a highly regarded food fish and consumed in many different cultures in a variety of ways
 - Unfortunately, U.S. citizens have not view invasive carp as a food fish. Commercial fishers have been slow to target invasive carp, due to their low value from a commercial standpoint
 - When U.S. consumers hear the term "carp", they think of common carp, which are unliked for consumption due to their strong taste. The Illinois DNR investigated how to help consumers distinctly understand the difference between common carp and the palatable bighead and silver carp
- As a solution, Illinois re-branded bighead and silver carp products for consumption as "Copi"
- A Business Process Analysis was conducted to understand how to promote the utilization of invasive carp in local businesses
 - Researchers reviewed over 40 studies and conducted over 35 stakeholder interviews
 - Key findings found that invasive carp have value, but they are often viewed as "trash fish" by consumers. The negative connotation we use to talk about the invasive species often carryover to how consumers view the species beyond their ecological impact
 - Additionally, from a processing standpoint, due to the high levels of histamines within the fish, they spoil quickly. Keeping the fish fresh will take a bit of a learning curve
- The Illinois DNR worked with a number of different companies on a marketing and branding strategy, as there was a need for a new positive image of invasive carp as a food fish to countermand the negative perceptions. Additionally, fish re-naming to increase consumption (e.g., Chilean sea bass, orange roughy) has been very successful in the past

- Marketing has largely focused on the fact that copli are locally sourced, sustainably caught, and a responsible choice; doing good by eating them (and were ranked as a good choice by the Monterey Bay Aquarium Seafood watch). All of which are a key driver in changing buyers' motivation)
- The underlying goal is to reduce invasive carp's population, spread, and impacts on native fish species

Black carp incentive program

Brian Schoenung, Illinois DNR

- Schoenung gave a quick background on the spread of invasive carp (bighead, silver, black and grass carp) in the U.S.
- Black carp were first sighted in Illinois in 2003 and since, diploid fish and natural reproduction have been documented and the species is expanding within the state
 - Black carp have been difficult to detect with common gear and are hard to monitor. Illinois is entirely reliant on commercial fishers to collect the fish and report them
- Back in 2015, a reward program of \$100 per black carp was established
 - Since 2015, 437 black carp have been paid out
 - In 2020 alone, 268 of the reported 278 black carp were solely caught by commercial fishers
 - Funding for the grant program expired in 2022 but the state has been awarded funding from the Great Lakes Restoration Initiative (GLRI) to continue the program
- Since the start of the incentive program, black carp have been reported in multiple states (WV, TN, MS, MO, LA, KY, IN, IL, AR)
 - In 2022, reporting of black carp captures in IL dropped, likely due to angler incentive not being available during the summer. As the program re-starts, reporting will likely rise again
- Additionally, the incentive program captures a great deal of information from the fish such as location, ploidy, size, sex, etc.

Grass carp research updates

Chris Mayer and Rob Hunter, University of Toledo

- Mayer gave a brief overview of grass carp's impacts on the Great Lakes, including a timeline their first stocking for aquatic plant management in 1963, introduction of triploids in 1983, the nuisance of multiple invasion pathways, and subsequent invasion and spread
 - In 2015, grass carp eggs were found in Ohio's Sandusky River
 - In 2018, the first strike teams were deployed when grass carp larvae were found in Ohio's Maumee River. Since then, there has been continued effort to manage grass carp in the area
 - There is a Lake Erie Grass Carp Adaptive Response Strategy and a Lake Erie Committee plan in place to prevent grass carp from increasing in abundance
 - As of now, grass carp are still relatively rare and are in need of long-term control and action
- The grass carp control and research collaborative is the product of a lot of different agencies, all led by the Lake Erie Committee and the Great Lakes Fishery Commission
- Grass carp have been found to gather in rivers during states of high flow to spawn. This is where eggs have been found and are the focus of egg sampling and early detection efforts

- USGS created a tool, “SpawnCast”, to help predict when grass carp are likely to spawn in the Sandusky, Maumee and Cuyahoga River
- The grass carp strike team is able to capture fish during spawning and non-spawning events
 - During spawning, the fish are aggregated, and electrofishing is used
 - During non-spawning, trammel nets and electrofishing are both utilized but catch rates are low
- Efforts to manage grass carp (total sampling days and number of crews) are increasing each year. Capture rates are also increasing but with variability year to year
- Part of the research in understanding how to catch grass carp is looking at the efficiency of catching carp using electrofishing versus trammel nets
 - When total crew time is considered, it takes 2.7 times longer to utilize a trammel net versus electrofishing
 - Finding have re-evaluated when and where to utilize trammel nets since time cost is so high
- Another research project is investigating the relative capture probability by using habitat data, which hopes to help to direct crews where focus their capture effort
- At the University of Toledo, grass carp are tagged to track movement and target control using telemetry data. This will help provide a lot of valuable information on where grass carp are and where they are moving
- The USGS is working on a project that will investigate whether bait and attractants can aggregate grass carp and make them easier to capture
- There is cause for optimism regarding grass carp populations. Large, coordinated efforts for removal and research with new technologies are being deployed. So far, there is no evidence of populations increasing within the Sandusky River
- Additionally, important data is being collected from captured grass carp. There is work from Southern Illinois University to investigate the source of origin, age, and growth rates from collected carp

Grass carp management updates

John Navarro, Ohio DNR

- A structured decision making (SDM) process was used to create the Lake Erie Grass Carp Response Strategy Planning (which will be updated in 2023). The goal of the strategy plan is to prevent grass carp expansion beyond western Lake Erie and prevent populations from reaching levels that compromise aquatic communities
- Out of the SDM came five outcomes:
 - Removal target: 390 diploid grass carp per year
 - If one could remove 390 adults per year and put in a barrier to suppress spawning, the population overtime could be eradicated
 - Sampling method: A paired gear method of electrofishing and trammel nets
 - Concentrated removal: Commercial catch and dedicated strike teams
 - Address critical uncertainties: Grass carp abundance and gear efficacy
 - Barrier evaluations: Reducing spawner passage with removal actions
 - The team looked into the feasibility of adding a barrier on the Sandusky River. The goal is that the barrier is not needed all the time, just to inhibit spawning
 - The proposed barrier would be a behavior barrier, utilizing sound and bubbles to deter grass carp. The barrier would extend across the Sandusky River and

- guide grass carp to a section of the river where there would be an installed capture device
 - A side benefit for the bubble curtain is that it could be used as a two-way barrier (keeping adults from going upstream and prevent eggs from coming downstream)
 - The U.S. Army Corps of Engineers (USACE) will be working on the viability of the behavior barrier and the design phase. The feasibility study is planned to be complete by 2025
 - Research will be done to look at the impact of the barrier on native species
- There are 11 removal crews on Lake Erie that have removed over 800 fish total with surveillance occurring in high priority areas
 - There has been no increase in grass carp populations so far

Development of new technologies for carp deterrents

Rob Simmonds, USFWS, Marybeth Brey, Andrea Fritts, and Aaron Cupp USGS

Bioacoustic Fish Fence

- A Bioacoustic fish fence (BAFF) is a combination of strobe lights, sounds, and bubble curtains to deter carp from moving through Barkley Dam lock chamber, which is where the effectiveness study took place. Results presented here are from the first year of an ongoing three-year study
- The project's primary objective is to determine the effectiveness of the BAFF in deterring upstream movement of silver carp and gain insight to any effects on native fish
- Translocated silver carp were captured (254 in 2020 and 400 in 2021), tagged and deployed below the BAFF in hopes that they would attempt to move upstream, and efficacy of the BAFF could be confirmed
- The BAFF is operated on a one week on/ one week off schedule
- Native fish were not translocated but 20 paddlefish, 20 small mouth buff and 20 freshwater drum were tagged. Native fish locations are not able to be triangulated (like the silver carp) so detection zones were created
- In the fall/winter of 2020, 141 translocated silver carp encountered the BAFF. 129 crossed upstream when the BAFF was off, compared to seven that crossed upstream when the BAFF was on
- From the 2021 spring/summer translocated carp, 539 crossed when the BAFF was off and 163 crossed when the BAFF was on
- This study will be continued with additional analysis
 - Grass carp will be added to the study
 - Additional native fish will be added
 - The project team will look at the fine-scale behaviors and a time-to-event analysis

Underwater Acoustics

- Brey provided a brief overview of the impacts of invasive carp and how many population pinch-points occur at dams within the U.S.
- One control method that has been investigated for a while now is utilizing sounds to deter fish from accessing areas. The goal is to develop an acoustic playback that can alter invasive carp behavior in a predictable manner while limiting impacts to native fishes
 - The project started with a sound field sensitivity study to investigate how particle acceleration and sound pressure are detected within invasive carp species. The

- researchers found that bighead, silver, and common carp registered similar frequencies, and could hear a frequency above what many native fish can hear
- The study progressed to lab, pond, and field studies to test the effectiveness of acoustic sound barriers
 - The environment in which the acoustic deterrent is placed will greatly affect the design of the deterrent. Understanding the surrounding ambient sound is very important (locks and dams are already very noisy)
 - The next step was to investigate long-term deployment to get this technology to a Technology Readiness Level (TRL) of seven, a level that allows the technology to be used by management agencies
 - A field study took place at lock-19(LD19), which was identified by Upper Mississippi Rivers partners as a “pinch-point” for limiting upstream carp movement and a good location for testing deterrents
 - The soundbars projects from 16 underwater speakers on an 80-hour on-off schedule
 - Fish were tagged with two types of transmitters. Around 900 invasive carp and 400 native fish species were tagged in 2021/22
 - Native species do not seem to be hindered by the deterrent sounds, while invasive carp seemed deterred from passing through the lock when speakers were on
 - Next, Brey and their team will be investigating a time-to-event analysis and understanding the fine-scale behavior of tagged fish

Carbon Dioxide Infusion Systems

- Since 2019, carbon dioxide (CO₂) was registered as an aquatic pesticide. It is also approved as a behavior deterrent for invasive carp. The CO₂ can be applied to water to deter and limit occupancy of carp in certain areas
 - It is important to note that applications are indiscriminate across species
- In a study project, CO₂ was applied to an outdoor pond. The project goals were to clear fish from the areas where treatment was applied, as this may be applicable to lock chambers and deterring fish from entering areas that may allow them to move upstream. Bighead and grass carp were tagged and were found to avoid the treated areas
 - [A full report of the study is available](#) for additional information
- A larger scale application was then tested at a recirculating lock system. This was done on the Fox River in Wisconsin. Two pesticide delivery systems were designed that could emit CO₂ at a larger scale
 - [Study results are published](#)
- A second application used a direct gas system, where liquid CO₂ stored in tanks is vaporized to gas and then injected into water using pore diffusers. This type of system is great because it can handle flowing water
 - A fluid-dynamic model is currently in the works to visualize how this system would be applied in locations such as the Tennessee or Ohio River
- If a management agency is interested in utilizing CO₂, U.S. Fish and Wildlife Service (USFWS) is finalizing an e-permit on their website. Their website also has the standard operating procedure for using CO₂ to manage invasive carp
 - Individual state registration is also required before application
 - Users can purchase CO₂ from their local suppliers and can obtain the pesticide label from USGS. The product label is registered as “Carbon dioxide-Carp”

- Other considerations:
 - The method is inexpensive and does not leave behind harmful residue and is widely available
 - Non-target organisms should also be considered. Management agencies will have to determine what level of impact is acceptable
 - The Engineer Research and Development Center (ERDC) found that the CO₂ did not damage the concrete structure or cause any corrosion to the lock system

Q&A and Discussion

GLP Members

- As commercial fishers are reliably catching black carp, have they been able to pinpoint capture methods that are more effective than others?
 - They are definitely fishers that are more successful than others and it is possible that those folks recognize certain habitat components that facilitate better capture
 - Patrick Kroboth of USGS is a good person to ask regarding black carp and capture methods and he can be contacted at pkroboth@usgs.gov
- What is the cost-estimate for the CO₂ barrier per unit?
 - The product cost is relatively low, usually around 5-10 cents per pound. The cost will depend on application volume and if flow causes dilution over time. Aaron Cupp has cost estimates for certain locations, if people are interested, they can contact him at acupp@usgs.gov
- Has there been any pushback on the copi rebranding in terms of creating a stronger market for an invasive species?
 - Yes, that is a concern, but these fish are in such a high volume, so the risk is minimal. Additionally, fishers would prefer to not be catching carp because the price value is so low, and they are doing it out of the incentive provided by the state agency
 - Considering how large the population of invasive carp is in the midwestern rivers, this is one of the few economically viable solutions to removing fish in a large number. So, there is minimal risk but the benefits outweigh that
 - Is the risk still low for areas that do not have invasive carp yet? (i.e., Pennsylvania)
 - Yes, there are plenty of fish to be captured locally. The incentive for fishers to purposely move the fish seems low
- There was conversation regarding when the term “copi” is used and when should we say “carp”. The term carp is still used for the species itself, when discussing the food products of bighead and silver carp, the term copi should be used. This will be similar to how we use the terms “beef” and “cattle”

Plenary Session: Language of AIS

Welcome and introductory remarks

Eric Fischer, GLP Chair, and Tim Campbell, Information/Education Committee vice chair, Wisconsin Sea Grant

- Fischer called the session to order and introduced the session. The agenda, objectives, and discussion prompt were reviewed

What's in an invasive species' name?

Alien Language: Reflecting on the Rhetoric of Aquatic Ecology and Beyond

El Lower, Michigan Sea Grant/NOAA-GLANSIS

- Lower provided an overview of their pre-pandemic work that involved science communication at outreach events
- Lower reviewed species naming conventions and how underrepresented groups are discriminated against using many current conventions
- A recent success story is the successful name change of the Spongy Moth, which previously had a derogatory common name
- Place-based names can also be problematic due to the political implications from the negative notoriety. One example of this is the term “Asian Carp” being used for the four invasive carp species
- The legacy of naming conventions has been problematic and is changing in some positive ways including using traditional indigenous species names as an alternative
- Lower highlighted the importance of continuing the conversation on acceptable naming practices
- Metaphors are critical to communicating complex scientific topics in a way that is easily understood
- Invasion metaphors include military and nativist metaphors
 - Problems with these metaphors include “good vs. evil” framing within ecology, which come across as xenophobic or racist
- There are alternative metaphors that exist and can replace the harmful rhetoric such as, “non-local beings” health based frameworks, or ecological bullies
 - These alternative metaphors provide non-space based alternatives that focus on the behavior of the invasive or restoring balance to the system

Words have power: time to revisit invasive species nomenclature?

Sam Chan, Oregon Sea Grant

- Chan introduced how he got involved in invasive species nomenclature
- Chan provided examples of a bee and hornet, where they were commonly referred to by place-based names, along with other derogatory descriptors (e.g., killer, murder)
- Species names can be culturally insensitive when the names use derogatory slurs
- Mistaken place-based names lead to negative public attitudes towards otherwise desirable species
- Scientific names can also be problematic. An example of this is the Xenocyprididae family which includes grass carp, where the name is derived from “foreign”
- Chan provided an overview of naming success stories but highlighted how the work is incomplete and similar species still have problematic names
- Common names are associated with a place or ethnicity in 15% of cases
- Most place-based common names of invasive species are independent of their scientific names
- Species are not often easily renamed. Renaming species can confuse the public and even cause political backlash
- Not all common names serve to foster better communication

- A minority (15-30%) of common names in invasive databases have human ethnicity, place, and/or lifestyle references
- The often-militaristic context used in AIS management may steer the public into unintended beliefs and actions towards people rather than invasive organisms
- By examining how we can more effectively name invasive species, we can advance our profession and mission to conservation, natural resources, and society
- Place-based and ethnic names for invasive species should be avoided, as they can unintentionally lead to discrimination and harm towards people, especially when invasive species management is framed in militaristic term
- New names should aid public awareness in identification and impacts
- When possible, we can use scientific names in regulations, although scientific names may not always be neutral
- Agencies can benefit from model policy language on the source and use of scientific and common names
- Chan stressed the importance of continuing this conversation with others across the globe

Decisions and activities in support of species' name changes

Minnesota Invasive Species Community of Practice

Megan Weber, University of Minnesota Extension; MAISRC

- Weber provided a background on the University of Minnesota (UMN) Extension group, Community of Practice, whose work intersects with invasive species and eventually led to developing the “Guiding principles to inform selecting common names for a new non-native species”
 - The ‘Manchu tubergroud’ became the initial case study that drove this effort
 - The UMN Extension group grew to included UMN Extension Foreign Born Affinity Group
 - New guiding principles lead to use of “red hailstone” for *Thladiantha dubia* and a process was created to evaluate other names
 - The group reached out multiple invasive species databases to implement the name change
- The guiding principles that UMN Extension encourages includes encouraging scientific names, evaluating other common names in use, look for desirable common name traits
 - Adversely, UMN Extension are consciously avoiding place-base names, derogatory works, common names that can be confused with other species or cultivars
- To date, the effort has had a mainly terrestrial focus, with only one aquatic species, *Corbicula fluminea* which was eventually renamed “freshwater golden clam” through using their previously established guiding principles
- Weber identified a series of challenges as the Community of Practice group tries to make forward progress including:
 - Limitations of the collective group’s expertise and confidence properly assessing species’ common names
 - The community accepting the recommended common names suggested by the group
 - Limited sphere of influence
 - No everyone is ready to accept change
 - Some species do not have acceptable alternatives

- Leigh Greenwood suggested expanding their outreach beyond Minnesota and start contacting other regional agencies. Weber acknowledged that they may have reached a phase to engage additional outside facilitators to help guide that work
- Minnesota DNR and Department of Agriculture have been supportive of the recommendations that come out of the Community of Practice group

Renaming moths and more

Leigh Greenwood, TNC

- Greenwood reviewed a statement from the Entomological Society of America (EntSoc) President Michelle Smith regarding names that are unwelcoming to marginalized communities run directly counter to the goal of common names, which is to make communication easier between scientists and the public
- Greenwood reviewed the naming guidelines for establishing new names and highlighted some of the conceptual “dos” and “don’ts”
- EntSoc created a new process in 2021 for renaming that includes clear best practices, and also includes avoiding stereotypes related to the previous common name. The process also incorporates public engagement
- Greenwood reviewed the history and timeline for the process to rename *Lymantria dispar*
 - They highlighted the difficulty of the process and the backlash that EntSoc experienced as a result of the announcement of “spongy moth”
 - Updating this name led to additional moth renaming efforts
 - Greenwood encouraged everyone to comment on the six pending moth names
- The context around invasive species management amplifies the naming issue. Names that are place-based or associated with a group of people are especially problematic when management campaigns aim to “kill” the species
- Greenwood ended with a call to make science and conservation more inclusive in this space by selecting names more accurate and descriptive of the physical or behavioral characteristics

Professional society management of names

Larry Page, Names of Fishes Committee Chair, Florida Museum

- Page reviewed the history of the Names of Fishes Committee
- Page reviewed the International Code of Zoological Nomenclature which is a set of rules for the naming of animals and the associated Rule of Priority which has been used for 300 years
 - Page emphasized that without the Rule of Priority, scientific names would be chaotic
- The Names of Fishes Committee spends 95% of their time updating scientific names and occurrence data and only 5% of the names dealing with common names
- The committee has a set of principles to establish a common name, including avoiding duplication, correctly representing phylogenetic relationships, and persistence
- Page reviewed the revised common names approved by the Committee for the four invasive carp species: “Sharpbelly” in English

GLP Q&A and Discussion

GLP Members and Speakers

- Members agreed about the importance of continuing the conversation and suggested collaborating with an international audience through the International Conference on Aquatic Invasive Species (ICAIS) or a similar association
 - Chan suggested convening a community of practice through the Global Biodiversity Information Network (<https://www.gbif.org/>)
- The I&E Committee and Research Committee should continue to discuss ways the GLP can stay engaged and keep the conversation moving forward

Closing remarks

Eric Fischer, GLP Chair

- Fischer thanked the speakers and closed the session

Plenary Session: Regional AIS Coordination through GLRI Interjurisdictional Projects

Welcome and introductory remarks

Sarah LeSage, Michigan Department of Environment, Great Lakes, and Energy

- LeSage called the session to order and provided an introduction to the session.
- LeSage reflected on the states' perspective of interjurisdictional funding. Notably, the power of working collaboratively
- The GLP provides an opportunity to build relationships, both personally and professionally. These relationships allow us to build interjurisdictional relationships
- GLRI funding is being used to support many of these collaborative projects through the funding provided through the U.S. Fish and Wildlife Service
- The first GLRI AIS interjurisdictional project was funded in 2014. A need was identified to collaborate on early detection and response activities. The project is now on phase 4 and many other interjurisdictional projects have been funded since

Background on interjurisdictional projects and selection process

Rob Simmonds, USFWS

- Interjurisdictional funding is available to any entity, as long as it benefits states and Tribes and coordination is done with the states
- The GLC, universities outside of the Great Lakes, and for-profit organizations and not-for-profit organizations are now leading projects and receiving funding for projects that benefit the Great Lakes basin
- Simmonds reviewed the funding stream. U.S. Fish and Wildlife Service (USFWS) receives GLRI funding from the Environmental Protection Agency (EPA). USFWS then puts out a notice of funding opportunity (NOFO), and states and Tribes work in parallel to guide the development of project ideas. The ideas are generated by the GLP with states and Tribes
- The interjurisdictional effort is not driven by USFWS, however, they are ultimately responsible for ranking the project proposals for funding. The ranking criteria is largely based on state and Tribal support
- Simmonds encouraged all non-state and Tribal representatives to bring up potential value-added project ideas. The fall is an ideal time to generate project ideas
- Weibert reviewed the voluntary Interjurisdictional Project Development and Selection Process document that was developed last year by the Great Lakes Panel. There are three phases of project development: initial idea generation within the GLP and its partners, deliberation and

prioritization of project ideas by states and Tribes, and project refinement and proposal submission

Watermilfoil Management Given Variations in Response to Herbicides for Different Strains

Ryan Thum, Montana State University

- Thum provided a background on the need to understand how genetic variations in invasive watermilfoil influence the plant's response to herbicide
- Objective 1 of this project is to build a bioinformatics pipeline to integrate new genetic strain state into a central database capable of real-time updates
 - One major accomplishment was identifying a naming scheme for all of the strains
 - Current workflow is not automated
- Objective 2 is to create an interface with a stakeholder-facing dashboard that can be used to inform herbicide management options and permitting
 - A prototype database of genetic information is available through ArcGIS map
- Objective 3 is to add to the existing database of strain herbicide responses by characterizing several Minnesota strains
 - Watermilfoil's response to triclopyr at different dosages has been reviewed, and it was found that 2,4-D and triclopyr have different responses
- Objective 4 is to add simulations to estimate in-field responses to herbicides for different strains
 - Of the greatest interest are strains that are the most common/widespread and for credible accounts of herbicide resistance
 - This process is not as straight forward as conducting typical aquatic vegetation surveys
 - Different strains are tracked over time given a set of key factors (spot vs whole lake treatments, frequencies of strains, spatial distribution, and vegetation survey design)
- There are plans to expand this project beyond Minnesota and eventually have it as a nationwide resource
- If there are lake samples that others would like to provide, contact Ryan at ryan.thum@montana.edu

Boater Behavior Survey

Tim Campbell, Wisconsin Sea Grant

- Campbell provided a background on the beginning of the boater behavior project, which included promoting consistent evaluations of boater programs
- A meeting in 2014 identified inconsistencies in programs implemented across the Great Lakes
- Campbell reviewed the history of boater surveys in Wisconsin
- The workgroup of this project set out to publish a literature review of boater behavior change, establish consistent social science methods for evaluating boater behaviors, and establish priorities for message testing
- The project team includes representatives from all eight Great Lakes states
- The literature review is focusing on the watercraft pathway, understanding boater behavior, attitude, and beliefs, and interventions to change boater behavior and reduce invasion risk
- A survey team is implementing consistent boater behavior change surveys
- An ad agency has been contracted with to develop social media content and have been able to gauge effectiveness of different formats via impressions

- The project team also utilized YouTube. A video created by Wisconsin Sea Grant was advertised on YouTube to test if the platform has advertising benefits and if so, what viewer metrics does it capture
- Campbell reviewed the timeline for the remainder of the project

Supporting transition from nonnative *Phragmites* at wastewater treatment facilities

Julia Bohnen, University of Minnesota (UMN)

- Bohnen provided an overview of *Phragmites* invasion in Minnesota. In 2013, *Phragmites* was listed as a Restricted Noxious Weed
- 2017-2019 UMN documented the distribution of *Phragmites* throughout the state
- In 2021, *Phragmites* was updated to the status of Prohibited Noxious Weed in Minnesota
- Currently, there are over 1,600 documented populations across the state. The project team has been continuing scouting efforts in areas that are at highest risk of invasion
- Approximately 75% of *Phragmites* populations were treated in or before 2022 and more than 1,000 sites were visited in 2022. All this work is documented in EDDMapS
- Currently, 18 wastewater treatment facilities (WWTF) have reed beds: two with native *Phragmites*, eight with invasive *Phragmites*, and eight that are working to remove invasive *Phragmites*. The eight still using invasive *Phragmites* may continue to do so until a better alternative is identified
- Many invasive *Phragmites* populations occur within a 5-mile buffer of WWTFs currently or recently using invasive *Phragmites* in their reed beds, which suggests that WWTFs are a source of invasive *Phragmites* in the landscape
- An important next step is to explore cost effective practices to remove the invasive *Phragmites* and transition reed beds to non-invasive alternatives
 - The project team is providing guidance and limited financial support to WWTF operators to make the transition
 - The project team is planning herbicide treatment using imazapyr for the fall that will continue over a series of seasons to remove the *Phragmites*
- Additionally, the project team is currently screening robust native populations of *Phragmites* as an alternative
 - Another uncertainty is trying to determine the most effective way to establish native *Phragmites* in the reed bed. Alternatives include seeding, transferring rhizomes, or stem cuttings
- Bohnen is looking at some alternative species including river bulrush, Canada blue joint grass, prairie cordgrass, etc., as well as considering some companion planting alongside native *Phragmites*

Aquatic Plant Survey Implementation

Julie Heinlein, Great Lakes Environmental Center

- This is the first year for this project
- The project is working on early detection of aquatic invasive plants within the Great Lakes' high priority areas
 - The project will target 25 previously un-surveyed priority sites
- The Great Lakes Environmental Center is the implementor with oversight from The Nature Conservancy (TNC)

- Sampling maps have been developed for five of these sites and rake sampling has been conducted for sites in Michigan, Ohio, and Indiana
- Next steps include working with the 2022 data to develop data visualizations, descriptive statistics, and survey performance measures. Heinlein will finalize specimen vouchers collected and make updates to the sample grid location selections for 2023 sampling efforts
- For 2023, the focus is on sites in Michigan, Wisconsin, Pennsylvania, and Ohio

Interstate Early Detection & Rapid Response (IEDRR)

Lindsay Chadderton, TNC, Amanda Grimm, GLC, and Andrew Tucker, TNC

- Phase IV of the IEDRR program (2021-2023) has four objectives:
 - Objective 1: Facilitate interjurisdictional surveillance planning and coordination
 - Objective 2: Refine the Great Lakes site priority models
 - This will incorporate ports within the Great Lakes and investigate how to build natural connectivity and environment suitability.
 - Objective 3: Expand the site prioritization system to inland waters of Great Lakes states and Tribal territories
 - This objective will bring existing state prioritization efforts together
 - Objective 4: Building out invasive aquatic plant sampling methods to inland lakes
- A larger grid cell for the revised Great Lakes site prioritization (15 km grid cell, rather than the original 9 km) is being used because it better captures the area of interest plus the surrounding area
 - The grids are manually centered on high-risk sites (as determined via the original 9 km grid square framework) across the basin
- Grimm reviewed the work underway for the third objective to develop an inland lakes surveillance prioritization model
 - Currently working to gather datasets of inland lakes and ponds that can be incorporated into the project
 - One model input will be centered around invasion pressure from public boat access sites, population within a radius of the lake, connectivity to waters known to be invaded, and the recreational boating connectivity model
 - Additionally, habitat suitability data and lake condition are being evaluated as part of this objective
 - Next steps are to collect and clean up existing datasets and work with the core team to identify the best indicator invasive species that should be used to develop habitat suitability indices
- Within the fourth objective, a technical workshop will be hosted on IAP early detection monitoring methods
 - This will also result in an annotated bibliography and a best practices guidance document

Invasive Crayfish Early Detection and Surveillance

Brian Roth, Michigan State University

- Roth reviewed the problems invasive crayfish pose to the Great Lakes, including ecosystem threats and human infrastructure costs

- This project includes three objectives: (1) identify introduction pathways and data gaps, (2) quantify the prevalence of crayfish in the retail aquarium trade, and (3) develop stakeholder relationships for educational outreach (agencies and retail trade)
- This project includes partners from across the Great Lakes basin including Tribes, states, and provinces
- Over 2,000 articles have been compiled from the primary literature, in which only 27 contained information relevant to invasive crayfish pathways. The next steps for this effort include organizing a core team to analyze and summarize the findings and eventually develop a manuscript
- In 2022, a survey of retail outlets was conducted in the eastern portion of the basin to develop a basin-wide database. The project team visited 382 retail outlets and surveyed employer knowledge and attitude towards invasive crayfish
 - The next steps will be to gather and integrate data from previous surveys in Wisconsin and Minnesota
 - Quantify knowledge and attitude responses
- The next step for this project will be to use the knowledge and attitude responses to prioritize outreach topics and meet with regional partners to discuss outreach produce for retail
- Thum highlighted existing efforts like Reduce Invasive Pet and Plant Escapes (RIPPLE) that this project is regionally expanding on but with a focus on a singular organism of concern
- There was no enforcement action when crayfish were found. This was a decision relevant to the Institutional Review Board approval to protect the survey respondents

Great Lakes AIS Landing Blitz

Ceci Weibert, GLC

- Weibert provided background and history of the Landing Blitz events
- The project team, which is representative of Great Lakes states and Tribes, provide project oversight. There was great engagement from provincial partners this past year as well
- Weibert reviewed the three project objectives: (1) improve capacity for boat inspections and in-person outreach, (2) expand outreach efforts through mass and social media, and (3) develop tools to recruit and retain local event partners
- In 2022, eleven subaward recipients received a total of \$65,000. Additionally, subrecipients received virtual training and starter kits to use during outreach efforts
 - Starter kits included postcards to hand out and a boater's reference guide to aquatic invasive species as an optional resource to help subrecipients identify invasive species found on boats. Development of these materials was made possible due to past work of project team members
- Weibert reviewed the timeline for developing the RFP and awarding the selected subrecipients funding
- In 2022, there were a total of 42 media engagements, over 31,000 social media impressions, nearly 5,200 boaters engages, and 10,500 site impressions. Also identified a mix of native and non-native species. Identified non-native species detection locations were passed on to the relevant AIS coordinator for the jurisdiction
 - Additionally, subaward reporting requirements include sharing video media of the event
- In 2022, the marketing outreach focused on utilizing geo-targeting with social media

- John Navarro noted that the state of Ohio doesn't have the capacity to implement a boater inspection program and rely on partners like the Landing Blitz to lead some of those efforts within the state
- Kits were only distributed to the subrecipients; however, digital files may be posted on the website in the future. Considerations will also be made for purchasing kits

Plenary Session: Regional AIS Coordination through upcoming GLRI Interjurisdictional Projects

Great Lakes Detector of Invasive Aquatics in Trade (GLDIATR) enhancement

Ceci Weibert, GLC

- Weibert provided a background overview on the GLDIATR project
 - The project started in 2016 as a tool to help advance management efforts by targeting online aquatic invasive species (AIS) sellers. The GLC received GLRI funding to create a web-based software to collect and analyze AIS availability for sale on the internet
 - Over the past two phases of GLDIATR, the GLC utilized an advisory committee to target outreach activities and coordination while the webcrawlers searched online for the set priority AIS species
 - In Phase II of GLDIATR, the project team worked with third party developers to use their software, instead have having one specifically built (as was the case in Phase I)
- For the next phase, the project team hopes to maintain and expand the advisory committee and engage with the LAW Committee to guide the upcoming work and facilitate information sharing among stakeholders
- The GLC will remain the centralized home for the webcrawling software and will provide each jurisdiction their relevant data, that way all partners will receive the same level of information
- Phase III will start on January 1, 2023, by re-establishing the advisory committee and a re-established contract with the webcrawling provider

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

Lindsay Chadderton, TNC, and Ceci Weibert, GLC

- Weibert provided background information on this new project and how it relates to the ongoing Invasive Aquatic Plant Control and Research Needs project. This project will expand to include invasive fish and invertebrate
- Additionally, this project will take a comprehensive look at the degree to which priority AIS have been the focus of control efforts
- This project will build off of the initial Research Coordination Committee project to identify a priority species list
- The objectives of this project will be:
 - To identify a priority list of established invasive animals and their current control tools
 - Assess the site-based control efforts that have occurred and build our knowledge of restoration priorities
 - Establish decision support tools to help managers understand what control methods should be at a site based on the species present and restoration goals
- The project started on Oct 1, 2022
- Literature reviews have been in progress to address objective one. The project team is also currently working with the RCC to help establish a governance structure

- A timeline of the project was presented

Evaluate data sharing options for watercraft pathway

Ceci Weibert, GLC

- There are a variety of ways to reduce AIS spread via recreational watercraft and the way that managers approach this work can differ. Data collected at boat landings is not currently being shared among organizations and jurisdictions
- As of now, there is not a lot of shared knowledge on who is collecting data, what data is being collected, what the data is being used for, etc.
 - The goal of this project is to bring all the relevant groups together and host a workshop to see if there is a need to share watercraft data within the Great Lakes
- Project objectives:
 - Inventory the existing data systems used by state and Tribal recreational watercraft prevention programs
 - Once data is collected, a summary report of the data will be made available, and the project team will host a data sharing workshop in the spring
 - After the workshop, the GLC will write and present options for data sharing processes and platforms, and help answer the question of how can we make data available and what can this data be used for
- The project started on October 1, 2022. An advisory team is being organized and the workshop will be held in the spring of 2023

Exploring Stakeholder and Community Perspectives on Genetic Biocontrol for Invasive Species

Jason Delborne, North Carolina State University

- This project is set to start in January 2023
- Delborne presented a background on the importance of stakeholder engagement in gene drive research and use
- The goal of this project is to understand the kind of decisions that should be made surrounding biocontrol and the information different stakeholders need to form thoughtful opinions
- The project objectives are:
 - To complete a landscape analysis of the research and development of genetic biocontrol technologies for AIS management in the Great Lakes region
 - Next will be to use that landscape analysis to help inform the kinds of questions that need to be asked of stakeholders and what are their perspectives/concerns/priorities surrounding AIS management
 - Next will be to organize meaningful dialogue via workshops
 - Lastly, the project will support Tribal partnership and foster collaborations. It is important to connect with Tribal partners and think about the initiatives or questions they would have surrounding this project and possibly support and fund these initiatives in the future
- The advisory board will play a key role in defining how to approach objectives 2-4. The advisory board will meet twice per year, and the project team is looking for members or recommendations of those who would want to join the advisory board
 - Recommendations can be sent to Jason at jason_delborne@ncsu.edu
- Delborne was asked, what is the landscape globally on the acceptance of biocontrol tools?
 - There is a general sense of excitement since this technology is so new but also a sense of fear and skepticism that these kinds of technologies are not good for the

environment or would have unintended impacts. The International Union for Conservation of Nature (IUCN) convened a task force to investigate this technology so there is global interest. The general knowledge of this technology is low, but education is important for citizens to have an opinion especially if we are using genetic biocontrol in their area

Creating science-based outreach products and resources for aquatic plant management

Tim Campbell, Wisconsin Sea Grant

- This project will build off the work the Wisconsin DNR funded to investigate management approaches of AIS and how familiar waterfront owners were with these management techniques
 - It was found through this study that many waterfront property owners are not familiar with some management approaches and there was a different perception of risk and benefits depending on the management type
 - To find more information on a certain management approach, people are searching through online results, which often takes a bit of effort for them to find good result, such as a state management plan
 - For example, if one searches “milfoil treatment”, a DIY treatment appears first, which often does not include accurate information
- The goal of this project is to develop science-based outreach materials for waterfront property owners and lake organization members that influence knowledge and behaviors to improve aquatic plant management (APM) outcomes
- The project objectives are:
 - To design and host a website dedicated to APM information geared toward waterfront property owners
 - Develop a APM decision guide for lake organizations
 - This objective would utilize work already done by Alisha and the IAP project for technical information and by collecting state outreach documents
 - Create scientifically informed APM outreach materials
 - The goal is to optimize some of the positive feelings and encourage people to learn more about AIS management and ensure that the outreach materials are not perpetuating any of the negative feelings
 - Manage a multi-state advisory group to inform the development of project materials
- Another approach this project may investigate is what queries are the general public using to find information online about APM (i.e., are they looking up “aquatic weed”? Will they reach a scientific page that uses the term “aquatic macrophyte”?)
- The project will start in January 2023. The project team will continue to engage with the Great Lakes Panel and other parties to ensure they are promoting the right type of message

Enhancing the European Frog-bit Collaborative

Sam Tank, GLC

- Tank reviewed the origins of the European frog-bit (EFB) collaborative
 - In 2018, the formation of the EFB Collaborative was initiated. At this time, the collaborative was centered on Michigan stakeholders and administrative support was provided by Central Michigan University

- With GLRI funding, the EFB collaborative is looking forward to expanding their reach outside of Michigan and to all Great Lakes jurisdictions and the GLC is providing administrative support
 - Next for the collaborative is to establish a collaborative governance structure. The first collaborative meeting will take place on November 29 and nominations for a steering committee will take place
- The group will utilize the already in-place adaptive management framework and continue to support the ongoing three workgroups (Delimitation, Monitoring Assessment, and Education and Outreach). This also includes the continued use of the Standard Treatment Impact Monitoring Protocol (STIMP), delimitation, and prioritization ESRI applications
- For the next six months, the EFB Collaborative will work on transferring the already existing apps the GLC's ArcGIS platform and update them as needed. The collaborative hopes to start an EFB based webinar series and create a collaborative website to house related resources. Additionally, the collaborative plans to hold a full-body meeting in the spring and provide training opportunities before the start of the field season
- Anyone interested in joining the EFB Collaborative can contact Sam Tank at sam@glc.org

Q&A and Discussion

GLP Members

- There appears to be some overlap with projects recently presented by the ANS Task Force. Is there any way to make them aware of what we are already doing as a Panel?
 - Tim Campbell commented that it has been helpful to be involved in the Great Lakes Panel's I/E Committee and the ANS Task Force's Outreach subcommittee. This helps to ensure any effort also meets the ANS Task Force's goals. When Great Lakes Panel members are regularly involved with the ANS Task Force, it provides opportunity to promote work and avoid too much overlap
 - The integration of the Great Lakes Panel committees and ANS Task Force subcommittees and the alignment of their activities is going to naturally inform how we view upcoming projects
- What role could the Great Lakes Panel play in future project submissions and/or selections?
 - How can the Panel serve as a forum for those who are not directly a part of the state or Tribe who receive the interjurisdictional funding?
 - Last year, the list of tentative projects were discussed with the standing committees and reviewed to see if they align with Panel AIS priorities
 - It has been discussed "how do we balance the list of project ideas that have been nominated with new project ideas that are not on the list?", as there may be some hesitation for non-state or non-Tribal employees to come up with new project ideas. This is still a conversation to be had in terms of what the project idea process should look like
 - Individual state and Tribal projects are often not highlighted as well as many interjurisdictional projects are. Panel members would be interested in knowing what individual states/Tribes are working on. Is there a mechanism for the Great Lakes Panel to play in this type of information sharing?
 - This could be something as easy as states/Tribes sharing project abstracts
 - The Mid-Atlantic Panel hosts a [webpage](#) that highlights their funded projects. Would it be helpful for Great Lakes Panel to host something similar or for the

ANS Task Force to encourage all regional panels to do something similar? This may be a big lift, but it seems like a good way to help make others aware of what is going on without having to look at meeting minutes

- Some of these projects are recorded in the Panel Member updates
- State and Tribal ANS projects could be as standing session for the spring meetings
- The Panel could highlight where there are gaps in regional AIS priorities, and this may help pinpoint where funding should go moving forward

Closing session:

Kelly Pennington, Great Lakes Panel Vice Chair, Minnesota Department of Natural Resources

- Pennington called the meeting to order and reviewed agenda

Committee programmatic updates

Committee chairs and GLP members

- Committee chairs reviewed outcomes and discussions held during committee meetings; committee meeting notes are available separately

Spring 2023 meeting plans

- The Executive Committee has started discussing spring meeting plans. At this point, it is likely that we will be utilizing a similar approach to the fall meeting and allowing Panel members to give feedback on their comfort and interest of meeting in-person.
- Two different locations are being considered (Michigan DNR's Outdoor Adventure Center in Detroit or the Maumee Bay Toledo area). As usual, a date poll will be sent out to determine the best dates for May/June. Any known conflicting dates now?
 - None were stated

Adjourn meeting

- There were no additional comments from members and the meeting was adjourned