Great Lakes Panel Member Updates
Fall 2019

Meeting of the Great Lakes Panel on Aquatic Nuisance Species
November 13-14, 2019 | Ann Arbor, Michigan

U.S. Federal

U.S. Fish and Wildlife Service
Lake Huron

- Ongoing non-native species early detection and monitoring efforts were conducted targeting juvenile and adult fishes at the St. Marys River, Saginaw River/Bay, Thunder Bay River, Cheboygan River, AuGres River, AuSable River, Rogers City (MI), and Port Dolomite (Cedarville, MI). No invasive fish new to the Great Lakes were collected.
- Two tubenose gobies were captured with trawls at one new location, the Cheboygan River (Cheboygan Co.) in Michigan. Sighting information is available on the USGS Nonindigenous Aquatic Species (NAS) database at the following links: https://nas.er.usgs.gov/queries/SpecimenViewer.aspx?SpecimenID=1546825, https://nas.er.usgs.gov/queries/SpecimenViewer.aspx?SpecimenID=1546826. One ruffe was captured with a trawl at one new location, the lower St. Marys River (Chippewa Co.) in Michigan. Sighting information is available at the following link: https://nas.er.usgs.gov/queries/SpecimenViewer.aspx?SpecimenID=1548308.
- Invertebrate samples were collected from the Saginaw River/Bay. No new invasive crayfish sightings were reported. Benthos samples are currently being examined for the presence of target invasives.

Lake Erie

- Ongoing non-native species early detection and monitoring efforts were conducted targeting juvenile and adult fishes at Maumee Bay, Sandusky Bay, Cleveland Harbor, Detroit River, Lake St. Clair, Fairport Harbor (OH), Lorain (OH), Monroe (MI), and Marblehead (OH). No invasive fish new to the Great Lakes were collected.
- One tubenose goby was captured at a new location, northern Maumee Bay (Monroe Co.) in Michigan. Sighting information is available on the USGS NAS database at the following link: https://nas.er.usgs.gov/queries/SpecimenViewer.aspx?SpecimenID=1617532.
- Invertebrate samples were collected from Maumee Bay, Sandusky Bay, Detroit River, and Cleveland Harbor. Red swamp crayfish were collected in Sandusky Bay, however this is not a new sighting. No other invasive crayfish sightings were reported. Benthos samples are currently being examined for the presence of target invasives.

Contact: Amy McGovern, U.S. Fish and Wildlife Service, 612-713-5109, amy_mcgovern@fws.gov

National Oceanic and Atmospheric Administration
No update provided.

Contact: Felix Martinez, National Oceanic and Atmospheric Administration, 734-741-2254, felix.martinez@noaa.gov

National Park Service
1) Experimental removal of invasive mussels at Sleeping Bear Dunes National Lakeshore; preparations for similar work at multiple parks:
NPS and partners sampled the long-term monitoring site and invasive mussel removal sites at Sleeping Bear Dunes National Lakeshore in October 2019. Both manually-treated and Zequanox-treated areas remain relatively mussel-free, but the Zequanox treatment site still has a few live mussels attached to rocks, suggesting mortality was not 100 percent. It will be important to check these treated areas for invasive mussel expansion and recolonization next year, to gauge the treatment's effectiveness over longer time scales.

NPS and partners also checked on some ongoing goby exclusion experiments at Sleeping Bear Dunes. In these experiments, gobies were prevented from predating on invasive mussels using elevated tripods and cages. In the absence of goby predation, small clusters of mussels have begun recolonizing some of the rocks on the tripods. This observation suggests that round gobies are helping to suppress invasive mussel recolonization in the treated areas.

In summer 2019 NPS enhanced manual zebra mussel removal efforts at Isle Royale National Park following the discovery of an infestation at one of the park's main docks in 2018. An intensive scuba-based survey and removal effort took place at this dock and other high-risk areas during late June/early July 2019, followed by several smaller scale removal events. The 2018 infestation site continues to yield multiple zebra mussels per diver search effort, but numbers have decreased by orders of magnitude from the

several thousand in detected in 2018. Zebra mussel survey and removal efforts will continue at this and other sites at Isle Royale in the coming year.

2) Rapid Response Preparations
Voyageurs National Park has created a rapid response kit for invasive species, focused on Dreissenid mussel preparations. Their supply list and experience is being shared with other parks along the Great Lake lakeshores. This winter they will work on compliance reviews and their communication strategy, should a rapid response be needed.

3) Ballast Water treatments on Ranger III at Isle Royale National Park:
Presentation at meeting

4) Ongoing control efforts at multiple parks with GLRI funding:
High priority areas at 7 national park sites that are threatened by terrestrial and aquatic invasive species, were treated totaling over 500 acres.

5) Ongoing education efforts at multiple parks with GLRI funding:
Education/outreach efforts regarding the challenges that invasive species pose, as well as strategies to reduce their spread were conducted at 10 national park units this summer.

Voyageurs National Park (VOYA):
We continue to collaborate with the University of Minnesota, the Minnesota Department of Natural Resources, and Natural Resources Research Institute on a study titled, ""Sustaining Walleye Populations: Assessing Impacts of AIS."" A draft manuscript on effects of zebra mussel and spiny water flea on walleye and yellow perch growth is in peer review and a manuscript on food web effects of zebra mussel and spiny water flea is in prep.

We are working with many partners in the U.S. and Canada on getting the first phase of an AIS risk assessment completed for the Rainy - Lake of the Woods Watershed. The International Joint Commission has not announced a final funding decision, but it looks likely that this work will be funded in the near future (2020).

We continue to work with Koochiching and St. Louis counties who receive funds from the State of Minnesota to prevent the spread of AIS. They coordinate boat inspections and operate decontamination stations near VOYA lakes.

Contact: Erin Williams, National Park Service, 612-624-7286, erin_williams@nps.gov

U.S. Army Corps of Engineers

Ohio and Erie Canal, Summit County, OH

- In 2019, the Corps began constructing barriers at various low points along a four-mile stretch of the watershed boundary, as well as installing screens or fencing at many locations. These extensive improvements maintain the scenic and historic significance of the area while reducing the potential for inter-basin movement of nuisance species. Except for some minor work that is likely to extend into the spring, construction should be completed by the end of December 2019, contingent on weather this fall.

Photo 1: Gabion baskets separating floodwaters of the Great Lakes and Mississippi River Watersheds

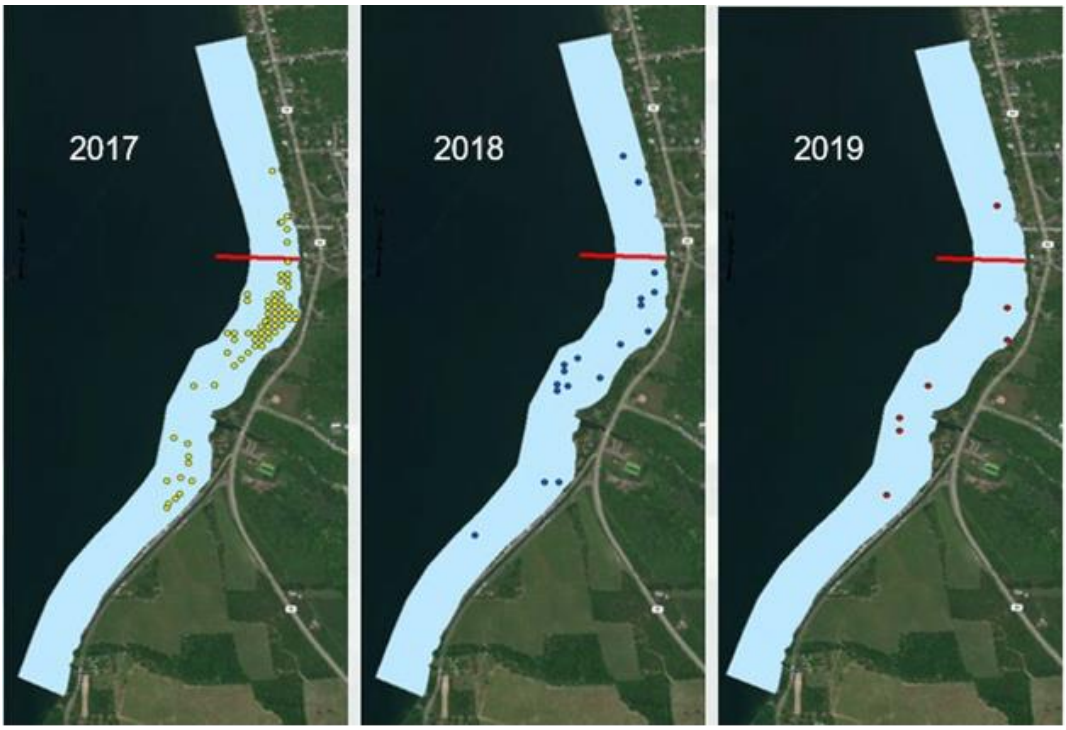
Photo 2: Fencing to block movement into the canal from the Tuscarawas River

Photo 3: Steel sheet pile intended to prevent floodwater overtopping at watershed boundary

Photo 4: Minor fill and top-dressing of the towpath trail to address low spots

Hydrilla – multiple locations

- Demonstration projects will continue at Tonawanda Creek/Erie Canal, NY; Cayuga Lake at Aurora, NY; and Cayuga Lake at Ithaca, NY in 2020. Generally achieved good control at all 3 locations.



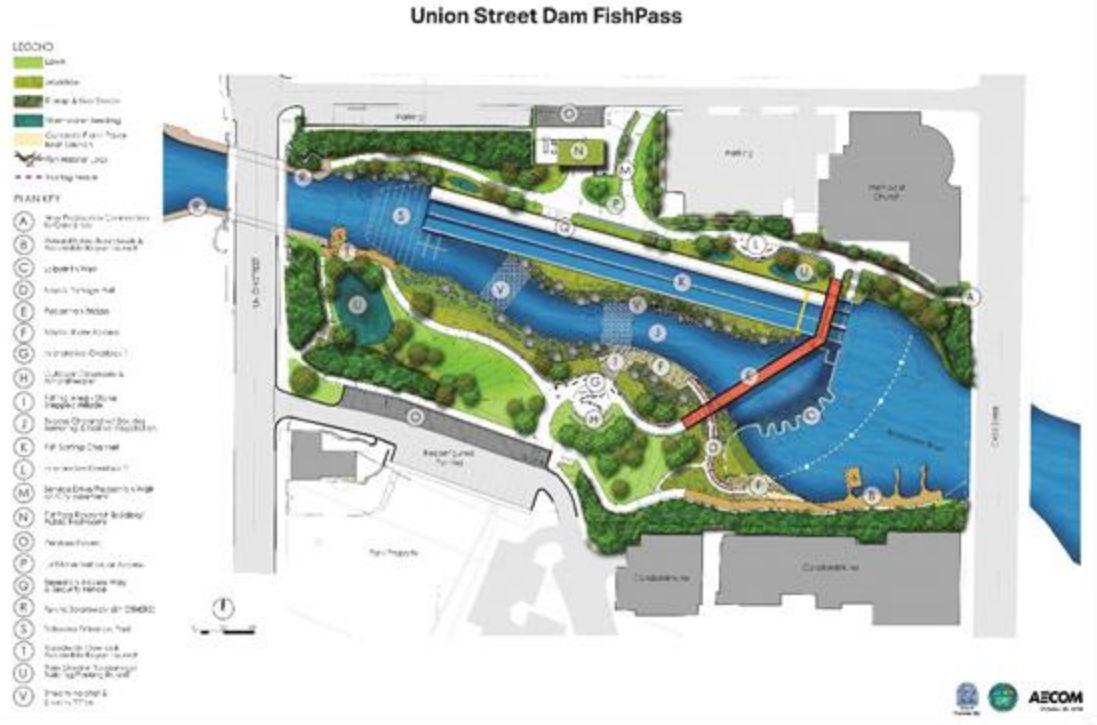
Maps above depict the reduction in hydrilla occurrence at the Aurora, NY project on Cayuga Lake.

- Buffalo District staff partnered with the NE ANS Panel in June 2019 to discuss hydrilla monitoring, methods, and treatment on the Connecticut River. Also conducted a field exercise. Genetic testing on the hydrilla found in the Conn River confirmed the presence of a new genotype.

Sea Lamprey Control- multiple locations

- Harpersfield Dam, Grand River, OH: A construction contract was awarded for the removal of an obsolete dam and construction of a modem sea lamprey barrier with trap. Construction is expected to be complete by... Live construction video: https://app.truelook.com/?u=ehl538150665#tl live

- Bi-directional Fish Passage Project, Union Street Dam, Traverse City, Michigan: The project is located at the Union Street Dam in Traverse City, MI. The Great Lakes Fishery Commission U.S. Section (GLFC) seeks to develop novel and effective techniques to pass desirable fishes while simultaneously blocking harmful species (i.e. sea lamprey) on Great Lakes tributaries. The Boardman River's Union Street Dam, located in Traverse City, MI will serve as the research site to test and develop new selective fish passage technologies. Once the best techniques and technologies to selectively pass fish at the Union Street Dam are determined, the facility will be converted into a permanent fish passage structure. Under this scope of work the US Army Corps of Engineers (USACE) will use FY20 funds to review the /95% plans and specs that are being completed by AECOM for the preferred design. In addition, USACE will solicit the construction contract for a potential award in the 2nd quarter of 2020.



- Grand River Habitat Restoration and Invasive Species Control Project, Grand Rapids, Michigan: The U.S. Fish and Wildlife Service (USFWS) and the Great Lakes Fishery Commission (GLFC) are tasked with protecting federally endangered species and managing invasive sea lamprey populations in the Great Lakes, respectively. These agencies approached the U.S. Army Corps of Engineers (USACE), Detroit District, to assist with the evaluation of a proposed multipurpose restoration project in the Grand River, in downtown Grand Rapids, Michigan, which may include the construction of a new sea lamprey control structure on the Grand River and potential for modifications of the existing barrier to sea lamprey at the 6th Street Dam. As such, the USACE, Detroit District, is preparing a draft Environmental Impact Statement (EIS) on behalf of the GLFC related to the proposed Grand River Habitat Restoration and Invasive Species Control Project in Grand Rapids, Michigan. The proposed project reach has been expanded and now stretches from Ann Street downstream to the Bridge Street overpass. The proposed project must provide a means to block sea lamprey from moving upstream, must maintain or reduce the current risk of flooding upstream, and must provide for fish passage into upstream areas. In addition, if implemented, the project must mitigate for adverse impacts to a known existing healthy mussel population, which includes the federally-listed endangered snuffbox mussel as well as a number of state-listed mussel species. The USACE, Detroit District, held a Draft EIS Public Scoping meeting on 8 April 2019. Based on public and agency comments and input, draft project alternatives were developed. Since that public scoping meeting, the USACE has facilitated multiple working meetings with project partners, stakeholders, and agencies to finalize the draft EIS project alternatives, discuss the alternatives evaluation criteria, and develop a list of resources to use for the alternatives analysis. In addition, the USACE has also facilitated multiple meetings to develop a Scope of Work (SOW) for the GLFC's contract with AECOM to conduct the 30% design of the draft EIS project alternatives. The meetings (with project partners, stakeholders, and agencies) finalized the SOW and determined the appropriate approach for modelling the EIS alternatives to ensure that State permitting requirements are considered or met by models and output.

Contact: Mike Greer, U.S. Army Corps of Engineers Buffalo District, 716-879-4229, michael.j.greer@usace.army.mil

U.S. Coast Guard

Ballast Water Regulation

The Coast Guard published its ballast water discharge standard regulation in the Spring of 2012. The standard aligns with the IMO D-2 standard and will require the installation of type-approved ballast water management systems (BWMS) on "salties". The use of type approved ballast water management methods are required on those new ships constructed after 1 DEC 2013 and will be implemented on existing ships during the vessel's first scheduled drydock after 2014 or 2016 depending on the vessel's BW tank capacity and availability of type approved systems.

The Coast Guard anticipates that more than 3,000 United States domestic vessels in various classes will be required to install an approved ballast water management system (BWMS). In addition, about 9,000 foreign vessels that enter U.S. waters each year will be subject to the rule. The IMO estimates that more than 60,000 vessels worldwide will need to comply with the Ballast Water Management Convention when it enters into force.

CG Type Approval

The multi-faceted type approval process consists of land-based and shipboard-based testing (by independent labs) focused on the biological efficacy of the BWMS. For those systems whose performance could be affected by the cold and pure fresh water of the Great Lakes, additional testing may be necessary. Assessment of the BWMS' ability to properly operate in the harsh marine environment is also undertaken and all of the system's components are examined to ensure compliance with marine engineering, electrical, and mechanical standards. This testing and certification is usually conducted by vessel classification societies. The Coast Guard has certified five Independent Labs (IL) that are involved in the type approval process. Duluth-Superior's Great Ship Initiative is part of a certified IL.

Since 2013, the Coast Guard Marine Safety Center has received 59 of Letters of Intent from BW treatment system manufacturers stating they intend to pursue type approval for their ballast water treatment system. The Coast Guard has received 33 applications for type approval and the Coast Guard Marine Safety Center has type approved 23 BW treatment systems.

Alternate Management Systems (AMS)

The Coast Guard anticipated that some time would pass from the effective date of the rule to its acceptance of independent laboratories and its subsequent type approvals of BWMS. Therefore, the Coast Guard developed an interim program to accept the use of some BWMS that have been type-approved by other flag states. AMS is intended as a bridging strategy to allow for the use of BWMS type-approved by foreign administrations in accordance with the IMO Convention. The AMS must be installed and approved and would be used in lieu of ballast water exchange until full type approval can be obtained, but for a period of no longer than 5 years after the ship was otherwise required to comply with the ballast water discharge standard. The Coast Guard has issued 123 AMS Determination Acceptance Letters to date including several for fresh water operations.

Extensions

Many vessel owners are hesitant to install a BWMS accepted as an AMS because there is no guarantee that the BWMS will be granted U.S. type approval. If vessel owners would prefer to wait until Coast Guard type approved systems are commercially available, they may apply for an extension to their respective original compliance date listed in the regulations only if they can document that despite all efforts compliance with the regulations is not possible.

Because the Coast Guard has only recently type-approved BWMSs, the Coast Guard has been granting extensions to the compliance schedule for ships with scheduled drydock dates through 2018. Currently, over 12,000 extensions have been granted to qualifying vessels.

Now that type approved systems are becoming commercially available, the Coast Guard will continue to balance the need to ensure timely compliance with the regulations and the practical realities associated with the availability of type approved systems, manufacturing, and shipyard capacity. Whether a type-approved system is “available” will be based on evidence submitted by the vessel owner/operator with the application for extension.

The length of compliance date extensions, when granted, will be based on the availability of Coast Guard type-approved systems and detailed installation plans. Vessel owners and operators should anticipate that this would not typically align with scheduled drydocking.

Ballast Water Working Group (BWWG)

The Ballast Water Working Group has completed the 2018 annual report and it is posted on this website; http://www.greatlakes-seaway.com/en/pdf/2018_BW_Rpt_EN.pdf

In 2018, 100% of vessels bound for the Great Lakes Seaway from outside the Exclusive Economic Zone (EEZ) received ballast management exams on each Seaway transit. All 9,343 ballast tanks, during 498 vessel transits, were assessed; (100% of the ballast tanks on inbound vessels were assessed in 2009-18).

Vessel Incidental Discharge Act (VIDA)

On December 4th, 2018, the Vessel Incidental Discharge Act was signed into law as part of the Coast Guard Authorization Act. The title provides for a uniform, national standard to govern discharges that are incidental to vessel operations, such as ballast water discharges. It makes the Environmental Protection Agency the lead for establishing these standards, and it makes the Coast Guard the lead for monitoring and enforcing the standards.

The Coast Guard and the EPA are working on their respective regulatory mandates.

The Coast Guard plans to establish working groups in early 2020 to help implement the coordination with states as required by the Act.

On 26 July 2019, the CGHQ Office of Operating and Environmental Standards (CG-OES) issued a draft policy letter on type approval testing protocols for BWTS that render organisms non-viable. Comments on the draft policy letter were accepted until 30 Sep 2019 and a final policy letter will be published.

Contact: Lorne Thomas, U.S. Coast Guard Ninth District, 216-902-6022, Lorne.w.thomas@uscg.mil

U.S. Forest Service
No update provided.

Contact: Amanda Kunzmann, USDA Forest Service, 414-297-3431, akunzmann@fs.fed.us

U.S. Department of Agriculture-APHIS
No update provided.

Contact: Vacant

U.S. Department of State
No update provided.

Contact: Vacant

U.S. Environmental Protection Agency
No update provided.

Contact: Kevin O'Donnell, U.S. EPA- Great Lakes National Program Office, 312-353-0813, ODonnell.Thomas@epa.gov

U.S. Geological Survey
Grass Carp
The US Geological Survey (USGS) funds a Cooperative Agreement with the University of Toledo to assess Grass Carp reproduction in Lake Erie tributaries and its effects on vegetation throughout western Lake Erie. Our work includes sampling for direct evidence of reproduction in the Sandusky and Maumee Rivers from Mid-May through the end of August and using both hydroacoustic and physical samples of vegetation in nearshore areas, embayments, harbors, and river mouths throughout western Lake Erie to assess Grass Carp habitat and their effects on it.

Egg sampling in 2019 identified four spawning events on the Sandusky River. Eggs were captured on the 29th and 30th of May, the 3rd, 5th, 18th, and 20th of June, and the 23rd of July. Two of these events expanded our understanding of the spawning window for Grass Carp. The 29-30 May spawning event was at lower flows than those at which Grass Carp spawning had been observed in the past. The maximum mean daily flow for that event was 47 m3/s (1640 cfs; 83rd percentile); the previous lowest maximum mean daily flow was 153 m3/s (5420 cfs, 95th percentile). Eggs sampled on the 23rd of July was 8 days later in the calendar year than eggs had been captured previously. Sampling on the Maumee and Cuyahoga rivers produced no eggs.

The first estimate of the number of individuals that spawned during the 2017 sampling events from genetic microsatellite analysis was ~250 individuals from two spawning events in the Sandusky River. No estimate was available for eggs captured in the Maumee River. As of this update additional analyses using RAD-Seq analyses were underway.

We completed the 4th and final year of mapping and inventorying vegetation in nearshore areas and embayments of Lake Erie in 2019. Sites initially assessed in 2017 were re-sampled. Additional sites were sampled in the Cleveland area in collaboration with Cleveland Metroparks and The Nature Conservancy. Two manuscripts are in preparation assessing remote sensing methods for mapping and characterizing vegetated areas at coarse scales and identifying areas of preferred Grass Carp forage species and densely vegetated areas for potential control.

Great Lakes Phragmites Collaborative
The GLC and USGS are jointly leading a regional partnership – the Great Lakes Phragmites Collaborative (GLPC) – to improve communication and collaboration leading to more coordinated, efficient and strategic approaches to non-native Phragmites across the Great Lakes basin. The GLPC provides educational resources tailored to diverse interest groups, connects invasive species managers with the latest research and technology, encourages the use of adaptive management, and facilitates alignment of partner efforts across jurisdictional barriers.

- Finalized a Common Agenda to guide the work of the GLPC based on the principles of collective impact and continued work on a proposed measurement system to evaluate progress toward the Common Agenda

- Continued to provide information via the website www.greatlakesphragmites.net with thousands of page views in 2019 alone
- Hosted 5 webinars as part of an Applied Techniques webinar series
- Continued to draft audience-specific outreach materials across various multi-media formats
- Created a database and dynamic map of regional organizations (including CISMAs, CWMAs and PRISMs) working on invasive species in the Great Lakes
- Created new case studies of Phragmites management including a unique profile of a contaminated site in southeast Chicago
- Convened an Advisory Committee to guide the work of the GLPC and foster interjurisdictional partnerships
- Improved the representation of tribes and tribal governments on the Advisory Committee
- Shared the work of the GLPC at the Natural Areas Association conference

Phragmites Adaptive Management Framework (PAMF)

The GLC and USGS are working to promote effective Phragmites management and track the effectiveness and resource efficiency of management activities through the PAMF program (http://www.greatlakesphragmites.net/pamf/). PAMF engages a variety of land managers across the basin, from state and federal employees to private citizens, in a strategic attempt to help and learn from people actively managing Phragmites. The program needs your participation to develop data-driven best management practices as quickly as possible.

- Conducted 21 total training sessions (hosted 7 training sessions in 2019) across the Great Lakes basin to educate Phragmites managers about PAMF and encourage their participation; reached approximately 100 individuals from a wide variety of organizations at 2019 trainings
- Traveled to new management units and worked with managers to enroll their units into PAMF and assist with the initial monitoring
- Increased total enrolled management units to 181 across all eight Great Lake states and Ontario; provided management guidance to 132 enrolled management units for the 2019/20 cycle
- Working daily with PAMF participants, who represent nearly 50 different organizations, to effectively coordinate efforts
- Attended 8 conferences and >5 CISMA meetings; gave 7 oral presentations and hosted 1 booth.
- Drafting a formal strategic plan for to guide the future of PAMF
- Currently enrolling new management units for the 2019/2020 PAMF cycle year – contact the PAMF Coordinator at pamf@glc.org

USGS Phragmites research update

The USGS Great Lakes Science Center is conducting research into innovative control measures for non-native Phragmites australis (common reed), a highly invasive species with wide-ranging social, economic, and ecological impacts, based on the bacteria, fungi, and other microbes that it supports. A USGS-led group developed a science agenda (Kowalski et al 2015, https://pubs.er.usgs.gov/publication/70147339) that is guiding a nation-wide effort to develop new management approaches that promote the microbes that are harmful to this invasive plant and inhibit those that help it outcompete native plants.

Close partnerships with the University of Michigan, Rutgers University, Tulane University, Indiana University, and other organizations are identifying the key microbes to target for manipulation as a form of plant control. Field and greenhouse studies during the summer of 2019 tested the virulence of harmful microbes on Phragmites plants and evaluated how the application of non-toxic antimicrobial treatments affect plant growth. These and other studies are helping identify the mechanisms associated with plant-microbe mutualisms and leading to the development of new management tools for managers of Phragmites and other non-native plant species.

Several recently published papers offer insight into how microbes may be helping Phragmites and other invasive plants take over the landscape. White et al. (https://link.springer.com/book/10.1007/978-3-030-10504-4) show how seed-vectored microbes improve seedling fitness and can play a role in invasive species. Bickford et al. (https://pubs.er.usgs.gov/publication/70201540) didn't find many differences in the microbiomes found in native Phragmites vs non-native Phragmites, and Bell et al. (https://pubs.er.usgs.gov/publication/70202626) discussed how plant microbiomes can be manipulated and what the ecological outcomes may be.

GLSC: Research updates

GLSC scientists are studying the application of environmental DNA (eDNA) for detecting aquatic invasive species using early detection monitoring. Recent comparisons of genomic-based analysis with traditional capture techniques (e.g., trawling) showed a higher detection rate of the invasive round goby using eDNA. The analysis also indicted potential cross-reaction of the test, so GLSC scientists are working with US Fish & Wildlife Service to resolve potential detection conflict with the invasive tubenose goby. An eDNA marker specific to tubenose goby would benefit monitoring and assessment programs as concern is increasing over the recent detection of species spread.

Scientists at GLSC are also examining the usability of eDNA and interpretation of eDNA results for early detection of aquatic invasive species in partnership with the National Park Service. In a series of experiments, scientists have measured the accumulation of eDNA in sand and sediment and transport of eDNA in streams. Resource managers continue to ask how to interpret eDNA results and what detection means in terms of recent invasion or occupation. Understanding how to interpret the persistence of the eDNA signal will aid in initiating mitigation efforts for any recently detected species.

A recent study by the GLSC explored the potential for a newly installed artificial reef to be populated by invasive species. A reef was installed near the Grand Calumet River Area of Concern as part of restoration efforts to encourage native species establishment and aid the shoreline fishery. GLSC scientists partnered with Purdue University and the U.S. Army Corps of Engineers to study the fish present using metabarcoding for entire fish community. Scientists compared metabarcoding to traditional capture techniques and also single species primers to the MiFish primer set. Genomic results generally had higher detection rates and were comparable to historic species detection in the region. Continued measurements at the site will help inform future artificial reef establishment in degraded habitats.

Contact: Patrick M. Kočovský, U.S. Geological Survey, 419-625-1976, pkocovsky@usgs.gov

State/Provincial

Illinois
No update provided.

Contact: Kevin Irons, Illinois Department of Natural Resources, 217-557-0719, kevin.irons@illinois.gov

Indiana
No update provided.

Contact: Eric Fischer, Indiana DNR, 317-234-3883, efischer@dnr.in.gov

Michigan
Michigan Department of Natural Resources (MDNR) Fisheries Division continued early detection and response efforts in 2019 to address infestations Red Swamp Crayfish in collaboration with Michigan State University (MSU). The eradication efforts led to the removal of over 34,000 crayfish in 2019, and several high priority ponds have had substantial reductions in abundance compared to previous years. The team has emphasized improving the effectiveness of eradication strategies in an adaptive management framework by evaluating different gear types and trapping densities, sound attraction trials, and lab-based predator biocontrol studies. MDNR and MSU have worked collaboratively with USGS to develop plans for chemical treatments in the 2020 field season. MDNR Fisheries Division has also continued to implement their Lake Erie Grass Carp response plan in coordination with USFWS, Ohio DNR, MSU, and other regional partners. The MDNR response crew has helped address critical uncertainties related to Grass Carp movement and catchability, and continues to participate in coordinated response efforts in Ohio tributaries where Grass Carp spawning has been observed. Partnerships with commercial fishers continues to be an effective means of increasing response capacity and provides additional information on Grass Carp in Lake Erie.

The Department of Environment, Great Lakes, and Energy (EGLE, formerly DEQ) initiated an aquatic invasive plant control and eradication grant program for inland lakes in accordance with a law passed in 2018. EGLE awarded $12,300 under the Aquatic Invasive Plant Control Grant Program for 13 projects to control aquatic invasive plant species using chemical or physical methods. The grants to lake associations and local governments in 12 counties will reimburse permit fees for the inland lake projects.

During the 2019 field season, EGLE Water Resources Division conducted targeted AIS surveys at 23 locations including 19 inland lakes and 4 river locations. At least one AIS was found at every lake and there was one new watch list species detection (European frog-bit) in one of the lakes. EGLE Water Resources Division also implements new and ongoing control and response actions to eradicate aquatic invasive plants on Michigan's watchlist. In 2019 staff led 13 new or ongoing aquatic invasive plant responses actions. Of these responses, 4 were newly discovered infestations (2 European frog-bit, 1 yellow-floating heart, 1 water lettuce). Key new findings include a range expansion of European frog-bit into western Michigan in a tributary to Lake Michigan and water lettuce in a tributary to Lake Michigan. There are now two successful eradications of yellow floating heart in Michigan. The state considers an invasive plant eradicated when a site is free of the species for three consecutive years. In addition, staff are participating in a collaborative effort to develop an adaptive management framework with Central Michigan University, Cooperative Invasive Management Areas, and others.

New boating laws, including a pull the plug law and strengthening other aspects of regulating the movement of AIS via recreational boating, went into effect in 2019. In addition to implementing a EGLE and DNR statewide communication and education strategy, DNR Law Enforcement Division initiated an AIS boating enforcement plan, dedicating 3,184 enforcement hours to be utilized at state

owned boating access sites. Officers worked these sites, many times in conjunction with fellow stake holder groups, to educate the boating public on the new law requirements. As with any new law, LED uses the first year of enactment to help educate the public on the new requirements. In addition, officers also conducted numerous AIS targeted covert enforcement patrols of the live food markets in the larger metropolitan areas of Michigan.

A team of six officers investigated twenty live food market facilities in the Metro Detroit area, several of which have been found in violation in the past. A high level of compliance was discovered, with no violations being found. Officers also conducted similar patrols in the Grand Rapids area, contacting seven markets with similar outcomes. LED officers also continued to monitor a pond stocking business from Arkansas, that was found to be in violations of transporting AIS in Michigan. As part of the court sentencing decision, the business is required to report its activity and routes whenever entering Michigan. Additionally LED responded to numerous delinquent wholesale fish reports within the bait industry. This being a known AIS pathway, officers made contact with each establishment to rectify the delinquencies and to take enforcement action when appropriate.

Key AIS outreach activities include 1) Boater registrations: Informational flyers with law updates were included in the Secretary of State boater registration mailings in spring of 2019 to 250,000 boat owners in Michigan 2) Boat cleaning stations: Since 2014, the WRD has partnered with Michigan State University (MSU) and the U.S. Forest Service to deliver face-to-face outreach and boat washing for AIS decontamination at boat ramps, fishing tournaments and other events around the state using two EGLE-owned mobile boat wash units and student field crews. During 2019, the partnership washed more than 489 boats during 69 separate events and reached more than 2,100 boaters and anglers around the state with face-to-face AIS prevention messaging 3) AIS Landing Blitz: In conjunction with Michigan's Aquatic invasive Species Awareness Week, the 6th annual AIS Landing Blitz, an outreach event for boaters, was held June 30 - July 7, 2019 at boat landings around the state. Over 200 local volunteers worked to educate boaters in how to prevent the spread of these harmful species and comply with current aquatic invasive species-related laws. Volunteers and conservation organizations organized blitzes at 79 sites, educating over 5,000 boaters on how removing aquatic plants and organisms from boats and gear, draining stored water and cleaning or drying gear sufficiently between uses can help prevent the spread of invasive species that adversely affect recreation and habitat in Michigan's waterways.

Bighead, silver, and grass carp continue to be priorities as well as red swamp crayfish and prohibited/restricted aquatic plants in trade.

Contact: Sarah LeSage, Michigan DEQ, 517-243-4735, lesages@michigan.gov

Minnesota

- The Minnesota Department of Natural Resources (DNR) Invasive Species Program, with funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service, worked with a contractor on a project to better understand motivations and barriers related to taking aquatic invasive species prevention behaviors. The outcomes of this project will include recommendations and strategies to promote the adoption of desirable aquatic invasive species prevention behaviors and create positive social norms around AIS prevention in Minnesota, including pathways such as bait and water gardens.
- The DNR provided watercraft inspection training to 922 local government authorized inspectors in 2019. DNR and local government inspectors conducted a record 511,000 inspections of watercraft in 2019.
- The DNR, with funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service, hired a full-time, temporary staff person in June 2019 to focus on trade pathways of introduction and spread of aquatic invasive species, such as aquarium, water garden, live food, biological supply, and bait. This added capacity will strengthen our ability to prevent the introduction and spread of AIS through these pathways by working with partners to promote AIS prevention behaviors.
- The DNR, with funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service, worked with partners at the University of Minnesota, the U.S. Fish and Wildlife Service, and the U.S. Geological Survey to organize a meeting about the scientific, legal, and public participation aspects of genetic biocontrol technologies for invasive species in June 2019. The DNR invasive species program will continue to look for ways to continue to engage partners in further discussions.
- The Minnesota Department of Natural Resources partnered with the Minnesota Aquatic Invasive Species Research Center, University of Minnesota Extension, and many counties and local partners, on an annual statewide search for new populations of starry stonewort, called Starry Trek. In 2019, 252 volunteers searched 270 public accesses and confirmed no new starry stonewort populations.
- The DNR continues to work with western Lake Superior area partners from multiple jurisdictions, including representatives of federal, tribal, state and local authorities, to discuss aquatic invasive species monitoring and response efforts in the region. Meetings of this group are supported by funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service.

Contact: Kelly Pennington, Minnesota DNR, 651-259-5131, kelly.pennington@state.mn.us

New York

- NYS had three additional hydrilla infestations reported this past field season: Hickory and Green Lakes in Orchard Park, NY and another infestation on Cayuga Lake in the Finger Lakes Marina in Lansing, NY. Both have been treated and next steps are being discussed.

- Our first season of the expanded watercraft inspection steward program yielded more than 247,000 surveys with invasive aquatic organisms found on more than 12,000 boats. We are currently reviewing use of locations in preparation for next year.

- The first meeting of the Long Island-Metro AIS Task Force was convened on October 24th. Current emphasis of this group is identifying knowledge gaps for monitoring/surveying and prevention efforts.

- We have received bids for a three year project focused on surveying the Mohawk River for aquatic plants. We will be using this data to inform management and control efforts and to determine effective of those efforts in the future.

Contact: Catherine McGlynn, New York State Department of Environmental Conservation, 518-408-0436, catherine.mcglynn@dec.ny.gov

Ohio

- Continued control efforts of Phragmites and Hydrilla in the Lake Erie basin and Hydrilla in Pymatuning Lake on the Ohio and Pennsylvania boarder (within 10 miles of Lake Erie watershed).
- Continued to monitor for Bighead Carp and Silver Carp in Lake Erie and the Muskingum River using eDNA, routine sampling activities, and telemetry.
- Following the Lake Erie Grass Carp Response Strategy, deployed a Grass Carp Strike Team through the University of Toledo dedicated to the eradication of Grass Carp from the western basin of Lake Erie. Working with partners to monitor Grass Carp movement through the GLATOS system.
- Continue to investigate closure options for the three of the four Great Lakes Mississippi River Interbasin Study connections in Ohio at the Ohio Erie Canal, Little Killbuck Creek, and Grand Lake St Marys: 1) The USACE will complete the closure the Ohio Erie Canal connection in 2019; 2) USACE completed the Value Engineering of the NTH 25% Study and Report for Little Killbuck Creek project. Briefed the new ODNR administration on the project and selected the preferred option and received permission to start landowner negotiations; 3) The engineering firm for the preliminary design for the final phase to close the connection at Grand Lake St Marys has been selected and will be completed in early 2020.
- Continue the surveillance of Ohio's bait and Grass Carp supply chain to determine if AIS, including Bighead and Silver Carp, are being transported through the bait trade.
- Continue an AIS outreach campaign through Wildlife Forever to target anglers moving bait. This outreach program includes billboards, print media, and items for distribution at events with the slogan "Trash Unused Bait".
- Participated in the following groups: Great Lakes Panel, Ohio Aquatic Invasive Species Committee, and Asian Carp Regional Coordinating Committee.
- Developed a risk assessment policy to screen potential new aquatic invasive species and we will be adding New Zealand Mudsnail and Marbled Crayfish to the list of injurious species in Ohio.

Contact: John Navarro, Ohio DNR Division of Wildlife, 614-265-6346, john.navarro@dnr.state.oh.us

Ontario

No update provided.

Contact: Francine MacDonald, Ontario Ministry of Natural Resources, 705-755-5136, Francine.macdonald@ontario.ca

Pennsylvania

- A Northern Snakehead (Channa argus) was caught by a fisherman on or about September 27, 2019 in the Monongahela River near Pittsburgh. This is the first documented occurrence of the species in the Ohio River basin of Pennsylvania. Electrofishing surveys conducted prior to and subsequent to the snakehead catch failed to detect any additional specimens. The Pennsylvania Fish and Boat Commission believes that this was most likely an isolated pet release
- The Bloody Red Shrimp (Hemimysis anomala) was documented for the first time in the Pennsylvania waters of Lake Erie (specifically the entrance channel to Presque Isle Bay) by student researchers from Penn State University. The species was previously known to occur in the New York and Ohio water of the lake.

- The Pennsylvania Invasive Species Council now has its first full-time coordinator. The new coordinator, Kristopher Abell, can be reached at krabell@pa.gov
- The Pennsylvania Fish and Boat Commission, the state's lead jurisdictional agency on AIS, also plans to hire its first full-time AIS coordinator.
- A new noxious weed law was enacted in October of 2017 that replaced the old law that had been in effect since 1982. An important component of the new law was the creation of a Controlled Plant and Noxious Weed Committee that greatly improved the Commonwealth's ability to regulate invasive plant species. This year the Committee added Brazilian waterweed (Egeria densa), European frogbit (Hydrocharis morsus-ranae), European water chestnut (Trapa natans), Water primrose (Ludwigia grandiflora ssp. Hexapetala), Water soldier (Stratiotes aloides), Parrot feather (Myriophyllum aquaticum), and Yellow floating heart (Nymphoides peltata) to the state's noxious weed list.
- Pennsylvania Sea Grant's Pennsylvania's Field Guide to Aquatic Invasive Species (http://seagrant.psu.edu/sites/default/files/AIS%20Field%20Guide_2015_11-3_FINAL.pdf) will soon be available to download from the Apple App Store.
- Pennsylvania sea Grant held two rapid response mock exercises this spring (March 2019- New Zealand Mudsnail; May 2019- Water Chestnut). After-Action reports are available on the PASG website

Contact: Jim Grazio, Pennsylvania DEP, 814-217-9636, jagrazio@pa.gov

Quebec
No update provided.

Contact: Olivier Morissette, Quebec Ministère des Forêts, de la Faune et des Parcs, 418-627-8694 x7519
olivier.morissette@mffp.gouv.qc.ca

Wisconsin
Since the spring GLP meeting in May, Wisconsin swung into implementation mode. The Clean Boats Clean Waters Program, Citizen Lake Monitoring Program, Snapshot Day, Landing Blitz, Early Detection Monitoring, and Response Actions kept Wisconsin staff and partners busy. In addition participation on local, state and regional panels, committees, or teams added to the frenzy that staff anticipate. Attending the ACOE's Great Lakes Mississippi River Interbasin Study - Brandon Road Stakeholders Group, Wisconsin Lake Partnership meetings, and Genetic Biocontrol workshops were among the many topics that drew our attention. Wisconsin continues to look for opportunities to work regionally on AIS prevention, monitoring and control.

We are looking at the impacts of AIS message frames on actions and behaviors of stakeholders. We tested these different message frames on Facebook using people in Wisconsin that have indicated that they are interested In short, how we talk about invasive species impacts how people react and the actions they take.This work was presented at ICAIS and Dr. Bret Shaw and I are working on a publication for this work.

We have an evaluation report for our regular boater/angler survey. About every five years we do a randomized mail survey of registered boaters in Wisconsin to better understand boater knowledge, attitudes, and behaviors in regards to AIS. The results from this survey suggest that awareness and compliance with some core behaviors remains high, while some of the more nuanced prevention behaviors (eg bait) are not as well understood. When compared to similar surveys done in 2009 and 2013, we saw positive changes in many metrics. The final report will, which is in draft form, will be available in early 2020.

Sea Grant has a local AIS coordinator (Molly Bodde) that works in southeast Wisconsin and is funded by a DNR grant. She managed the WISG watercraft inspection program throughout the summer, while also implementing multiple statewide AIS programs within her service area. She has funding through December 2020.

CD3, the makers of the waterless watercraft inspection station, contracted with WISG to help determine AIS removal rates of their station relative to hand removal and high pressure washing using methods similar to the Rothlisberger et al 2019 paper. Work should be completed in December 2019 with a report to follow. The work is being done by Molly Bodde as part of her MS project.

The MRBP partnered with WISG to produce training videos based off the bighead carp sampling workshop that was hosted at Kentucky Lakes during their April meeting. The videos captured both the classroom and field portions of the workshop, and the videos will be available on the WISG and MRBP websites by 2020.

Contact: Bob Wakeman, Wisconsin DNR, 262-574-2149

Regional/Binational

International Joint Commission

No update provided.

Contact: Mark Burrows, International Joint Commission, 519-257-6709, burrowsm@windsor.ijc.org

Great Lakes Fishery Commission

No update provided.

Marc Gaden, Great Lakes Fishery Commission, 734-662-3209 x14, marc@glfc.org

Great Lakes Commission

Invasive Mussel Collaborative: The IMC was established in 2015 to share information, identify regional research and management priorities, and advance scientifically sound performance-based technologies for invasive mussel control. Founding members include the Great Lakes Commission, U.S. Geological Survey, the National Oceanic and Atmospheric Administration and the Great Lakes Fishery Commission. The IMC Strategy to Advance Management of Invasive Zebra and Quagga Mussels, released in 2018, offers a Basin-wide roadmap to advance science and understanding of invasive mussel control. Most recently, the IMC implemented a control method demonstration and evaluation project near Sleeping Bear Dunes National Lakeshore to begin implementation of the Strategy; met in September 2019 in Traverse City to advance IMC activities; continued to develop and improve a summary document of available control methods and associated literature, case studies and permitting information and hosted webinars to discuss invasive mussel impacts on native fish, and eDNA monitoring. Visit the IMC website for more updates and recordings of the latest webinars (www.invasivemusselcollaborative.net).

Great Lakes Phragmites Collaborative (GLPC) & Phragmites Adaptive Management Framework (PAMF): The GLC and USGS are jointly leading the GLPC to improve communication and collaboration leading to more coordinated, efficient and strategic approaches to non-native Phragmites across the Great Lakes basin. The GLPC provides educational resources tailored to diverse interest groups, connects invasive species managers with the latest research and technology, encourages the use of adaptive management, and facilitates alignment of partner efforts across jurisdictional barriers. See www.greatlakesphragmites.net for more of the latest news, updates, and progress of the collaborative. The GLC and USGS are also working to promote effective Phragmites management across the Great Lakes basin and tracking the effectiveness and resources efficiency of those management activities through the PAMF model. PAMF requires working with a variety of Phragmites managers across the basin, from state and federal employees to private citizens, in a strategic attempt to engage, learn from, and assist all levels of Phragmites managers.

Interstate Aquatic Invasive Species Prevention, Early Detection, and Response: The GLC is supporting the eight Great Lakes states in their efforts to plan and coordinate interstate AIS prevention, early detection, and response activities. Current efforts are focused on developing a communications protocol to complement the previously completed regional surveillance and response plans.

Great Lakes Detector of Invasive Aquatics in Trade: The GLC developed the web-based software tool Great Lakes Detector of Invasive Aquatics in Trade (GLDIATR). GLDIATR collects, analyzes and allows users to access information about how many and what types of Great Lakes AIS are available for sale on the Internet. This information is being used by invasive species managers to inform and help target a variety of activities, including outreach and education, risk assessment, monitoring and surveillance, and enforcement.

Analysis of Great Lakes Aquatic Invasive Species Funding: The GLC worked with the Great Lakes ANS Panel (GLP) to develop a summary and analysis of AIS funding in the Great Lakes region. This effort considered how investments made over the last five years align with priorities identified by the GLP. This includes developing a project database using Great Lakes Restoration Initiative funding information and summarizing the projects and funding across different categories and attributes (e.g., pathway focus, species focus, etc.).

Blue Accounting Aquatic Invasive Species Pilot: The GLC is working with The Nature Conservancy and regional partners to develop and implement an AIS pilot project under the Blue Accounting program. The AIS pilot is focused on surveillance and rapid response to new species introductions, the organisms in trade pathway of spread, and control and management of invasive species. GLC and TNC are working with a group of regional AIS experts and managers to provide input and guide implementation of the AIS pilot. More detail is available at https://www.blueaccounting.org/issue/aquatic-invasive-species.

Other: The GLC continues to engage with partner groups and support its member states and provinces on other high priority AIS issues facing the Great Lakes region, including ballast water and Asian carp.

Contact: Tom Crane, Great Lakes Commission, 734-971-9135, tcrane@glc.org

Canadian Federal

Fisheries and Oceans Canada
No update provided.

Contact: Lynn Bouvier, Fisheries and Oceans Canada, 905-336-4981 Lynn.Bouvier@dfo-mpo.gc.ca

Ballast Water Research
No update provided.

Contact: Sarah Bailey, Fisheries and Oceans Canada, 905-336-6425 Sarah.Bailey@dfo-mpo.gc.ca

Contact: Becky Cudmore, Fisheries and Oceans Canada, 905-336-4474, becky.cudmore@dfo-mpo.gc.ca

Transport Canada
No update provided.

Contact: Chris Wiley, Transport Canada, 519-464-5092, chris.wiley@tc.gc.ca

LOCAL COMMUNITIES

United States
No update provided.

Contact: Vacant

Canada
No update provided.

Contact: Vacant

Private Environmental/User Groups

Great Lakes Sport Fishing Council
No update provided.

Contact: Dan Thomas, Great Lakes Sport Fishing Council, 630-941-1351, dan@great-lakes.org

Tribal Authorities

Great Lakes Indian Fish & Wildlife Commission
No update provided.

Contact: Miles Falck, Great Lakes Indian Fish & Wildlife Commission, 715-682-2124, miles@glifwc.org

Chippewa Ottawa Resource Authority
CORA represents five tribes in Michigan with regard to the tribes' commercial and subsistence fisheries in the 1836 treaty-ceded waters of Lakes Huron, Michigan and Superior. The tribes which are party to the 1836 Treaty are the Bay Mills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians and Sault Ste. Marie Tribe of Chippewa Indians.

CORA participates on the Council of Lake Committees under the Great Lakes Fishery Commission and is helping to establish sea lamprey control plans for Lakes Huron, Michigan and Superior. CORA also participates on the Annex 6 (AIS) Subcommittee under the Great Lakes Water Quality Agreement. CORA assisted the U.S. Fish and Wildlife Service and partners by providing a staging area for sea lamprey control efforts in the St. Marys River in the summer of 2019. Through participation in the Lake Michigan Committee's Native Planktivore Restoration Task Group, CORA is scoping the feasibility of enhancing native cisco populations in Lake Michigan. Cisco populations have been inhibited in the past due to competition from invasive alewife.

Contact: Mike Ripley, Chippewa Ottawa Resource Authority, 906-632-0043, mripley1@chippewaottawa.org

PRIVATE/COMMERCIAL

Council of Great Lakes Industries
No update provided.

Contact: Vacant

Lake Carriers' Association
No update provided.

Contact: Tom Rayburn, Lake Carriers' Association, 440-333-9994, rayburn@lcaships.com

University/Research

Great Lakes Sea Grant Network-Research and Extension
No update provided.

Contact: Rochelle Sturtevant, NOAA Great Lakes Sea Grant Network, 734-741-2287, Rochelle.Sturtevant@noaa.gov

Cooperative Research Unit
No update provided.

Contact: Tom Johengen, Cooperative Institute for Limnology and Ecosystems Research, 734-741-2203, johengen@umich.edu

At-Large

Invasive Species Centre
No update provided.

Contact: David Nisbet, Invasive Species Centre, 705-541-5752, DNisbet@invasivespeciescentre.ca

Minnesota Aquatic Invasive Species Research Center
No update provided.

Contact: Nick Phelps Minnesota Aquatic Invasive Species Research Center, 612-624-7450 phelp083@umn.edu

Invading Species Awareness Program, Ontario Federation of Anglers and Hunters
Ontario's Invading Species Awareness Program (ISAP) is a collaborative initiative led by the Ontario Federation of Anglers and Hunters (OFAH) in partnership with the Ontario Ministry of Natural Resources and Forestry (MNRF) to prevent the introduction and spread of invasive species to Ontario's forests and waters and to protect Ontario's biodiversity.

With funding support from the Great Lakes Fishery Commission, the program participated in the Great Lakes Regional Aquatic Invasive Species Landing Blitz from July 1-7, 2019. The ISAP engaged boaters at launches in Mississauga, Trenton, Whitby, and Sibbald Point Provincial Park, as well as coordinated digital outreach campaigns to inform boaters of our efforts, and to reiterate the Clean, Drain, Dry message. In total, the ISAP reached more than 48,000 people.

The ISAP continues to work with Fisheries and Oceans Canada to increase awareness and facilitate the early detection of Asian carps. Staff worked with the Invasive Species Centre to produce a social media campaign focused on Asian carps and their native look-a-likes. A new fact sheet was produced and translated into simplified and traditional Chinese, and staff are working with the Chinese Anglers' Association to distribute the fact sheets to their membership and/or at events. With the commencement of the new school year in September, staff have been delivering classroom presentations, reaching over 435 students since September.

The ISAP continues to work as part of a multi-agency, coordinated response seeking to eradicate water soldier from the Trent-Severn Waterway, Ontario. Staff worked alongside MNRF and Parks Canada to monitor the extent of the water soldier population to inform the large-scale herbicide application that occurred in the beginning of October. The program also supports efforts to address water soldier populations established in private ponds. In 2018, the ISAP coordinated the treatment of 10 private ponds containing water soldier in Ontario. Following up with landowners this past field season has shown that these efforts have been successful. To date, we have connected with 6 landowners who report no signs of water soldier in their ponds after treatment. An additional pond was reported to the program in 2019 and program staff worked with the landowner, Lake Simcoe Region Conservation Authority and several volunteers to remove the water soldier from this pond and fund a follow-up herbicide treatment to address remaining plants. Additional monitoring in 2020 will gauge the success of this effort.

Contact: Sophie Monfette, Ontario Federation of Anglers and Hunters, 705-748-6324 ext. 274, sophie_monfette@ofah.org

The Nature Conservancy
No update provided.

Contact: Lindsay Chadderton, The Nature Conservancy, 574-217-0262, lchadderton@tnc.org

Wildlife Forever
Wildlife Forever's Clean Drain Dry Initiative has been busy continuing to expand partnerships across the county with local, state, private, Tribal, and Federal partners to increase coordination and consistent outreach and education materials.
This summer marked the release of the new Clean Drain Dry Rapid Response Communication Kit, a suite a ground ready media and outreach materials for partners to use in the event of a new infestation including PSA's, radio & TV, print materials, social and digital, and community engagement handouts. This kit was created in partnership with the U.S. Forest Service.
Another new project is nearly finished to create outreach materials to Wake boaters on how to properly Clean Drain Dry their unique equipment and ballast tanks. A video PSA and brochure will be available soon for partner use nation-wide. Residual water left in ballast tanks of wake boats is a potential vector for spread of zebra and quagga mussel veligers among other AIS species.
An exciting MOU is underway to formalize a partnership between DOI agencies (NPS and USFWS), Wildlife Forever's Clean Drain Dry Initiative, and NAISMA's Play Clean Go campaign. The purpose is to to elevate cooperation between parties, increase public awareness through education, and create clear calls-to-action that empower people to prevent the spread of invasive species. This agreement respects the authorities and jurisdictions of other public and private organizations across North America, and is intended to promote the joint-planning and implementation of mutually-beneficial projects, programs, training, and outreach activities that support research, prevention, and management of aquatic and terrestrial invasive species impacting the lands and waters under the jurisdiction of the Parties.

Contact: Pat Conzemius, Wildlife Forever, 763-253-0222, pconzemius@wildlifeforever.org

Minnesota Sea Grant
Since April, MN Sea Grant and partners including 1854 Treaty Authority, Fond du Lac, and MNDNR Law Enforcement and Water Craft Inspection Program educated 13,485 adults and youth at 46 events while distributing 17,131 education materials. Without our partners and support from Sea Grant's interns (six), we would not have been able to have this reach. Post event evaluations from 10 events not only showed that awareness increased to 99% (an increase of 23%), behavior actions increased to 93% (an increase of 31%). In local news, August Bent Paddle Tales and Ales Crawfish Boil was a great success, 225 lbs of crayfish and 225 people (# coincidence) were educated about invasive crayfish regulations and use. MN Sea Grant co-hosted with Animal Allies Humane Society and World of Fish, a Habitatittude Surrender event. Five fish were rehomed and 70 visitors educated including 20 Youth Allies. Over the past three years, Habitattitude Collaboratives rehomed over 580 animals! Doug is facilitating response to a Twin Ponds goldfish infestation, Duluth. He initially met with City of Duluth and UMD Facilities Management (who dealt with '04 UMD's Rock Pond goldfish infestation) and is working to secure a MNDNR permit for Tom Hrabik, UMD, who will head up a field study. At the state level, he worked with Chelsey Blanke, MNDNR, on the pathways project, and Laura Van Riper, MNDNR, to update MISAC aquatic animal and plants risk assessments. In national news, a new Habitattitude web site (www.habitattitude.net) was soft-launched and will be populated with model products. Similarly, work has been initiated to populate the Stop Aquatic Hitchhikers! Campaign website (www.stopaquatichitchhikers.org) with graphics that can be adapted/adopted by partners.

Contact: Doug Jensen, Minnesota Sea Grant, 218-726-8712, djensen1@umn.edu

Saint Lawrence Seaway Development Corporation
The U.S. Saint Lawrence Seaway Development Corporation (SLSDC) collaborates with the ship industry and regulators on issues and solutions associated with ballast water and non-native species. SLSDC, along with Transport Canada – Marine Safety and Security (TC), the Canadian St. Lawrence Seaway Management Corporation (SLSMC), and the U.S. Coast Guard USCG), are members of the Great Lakes Ballast Water Working Group (BWWG). The group's mandate is to develop, enhance, and coordinate binational compliance and enforcement efforts to reduce the introduction of aquatic invasive species via ballast water and ballast residuals. The BWWG carries out this mandate through a joint inspection effort to verify that the Great Lakes harmonized ballast water management procedures and regulations are followed and to assure ships entering the Great Lakes pose minimal risk of introducing new species.

BWWG verification efforts, initiated in 2006, have been aimed at making sure that noncompliant ballast water is not discharged in the Great Lakes Seaway system.

- Vessels that do not exchange their ballast water or flush their ballast tanks are required to either retain the ballast water and residuals on board, treat the ballast water in an environmentally sound and approved manner, or return to sea to conduct a ballast water exchange.

- Vessels that are unable to exchange their ballast water/residuals and that are required to retain them onboard receive a Letter of Retention (LOR) before being allowed to continue their inbound transit. A verification exam is conducted during their outbound transit prior to exiting the Seaway.

The effectiveness of ballast water exchange/salt water flushing, the BWWG's detailed pre-screening efforts to support enforcement of current regulations, the high industry compliance rate, and the federal ballast water discharge standard have proven to be an effective means of managing ballast on the Great Lakes/Seaway system.

The 2018 BWWG report was released in January 2019. The complete 2018 report is available at:
http://www.greatlakes-seaway.com/en/pdf/2018_BW_Rpt_EN.pdf

Summary

The Joint Ballast Management Exam Program uses a comprehensive approach to vessel inspections. The inspection begins with a detailed review of ballast water reports, logs, records, and ballast water management plans. The crew is interviewed to assess their understanding of the requirements of the vessel's Ballast Water Management Plan as well as answer questions on actual practices. Finally, ballast tanks are sampled (SLSDC, SLSMC, TC) for salinity or the presence of mud that would suggest a satisfactory management practice was not employed.

For vessels fitted with Ballast Water Management Systems (BWMS), the USCG updated its policy in 2017 regarding ballast water exams, transitioning from conducting physical tank sampling to verification of compliance of the BWMS with USCG Approved or Alternate Management System requirements. Under this revised policy, USCG officials 1) determine the vessel's BWMS system compliance date, 2) verify the vessel's BWMS method(s), 3) verify required reporting and recordkeeping requirements, and 4) ensure the vessel is in compliance with regulatory requirements in 33 CFR 151, Subparts C and D. Under this revised policy, the USCG continued physical sampling of ballast water tanks on vessels that do not have treatment or alternate management systems, while the Seaways sampled 100% of ballast water tanks on all vessels, regardless of the presence of treatment or alternate management systems.

During the 2018 shipping season:

- 100% of vessels bound for the Great Lakes Seaway from outside the Exclusive Economic Zone (EEZ) received ballast management exams, as described above, on each Seaway transit, including a review of all ballast water reporting forms to assess ballast water history, compliance, voyage information and proposed discharge location.
- In total, 9343 ballast tanks were assessed during 498 vessel transits.
  - Total tanks physically sampled for salinity verification: 9270 (99.2%).
  - Total tanks evaluated by administrative review: 73 (0.8%). Administrative review means an evaluation of a tank where sampling could not be performed or the tank was not being used as a ballast tank at the time of the review. This review includes an examination of vessel documents and interviews with vessel officers.
  - LORs were issued for 58 vessel transits involving 166 tanks.
    - 50 were due to low salinity
    - 86 were due to improper reporting, carriage of liquids (other than ballast water) or not accessible for testing.
    - 30 of the 166 tanks were on one ship which did not have a BWMS installed and was past its compliance date.
    - In 2018, no vessels were found to be in violation of their LOR upon exiting the system.
  - One ship had to pump ballast water ashore to a specialized company.
- 100% of ballast water reporting forms were screened to assess ballast water history, compliance, voyage information and proposed discharge locations. In 2018, one vessel received a monetary penalty of $6,000 from TC for making false declarations. Its ballast tank physical test results were inconsistent with information found on the ballast water reporting forms.

Contact: Craig Middlebrook, Saint Lawrence Seaway Development Corporation, 202-266-0091, craig.middlebrook@dot.gov

National Wildlife Federation

No update provided.

Contact: Marc Smith, National Wildlife Federation, 734-887-7116, msmith@nwf.org