Great Lakes Panel Member Updates
Fall 2020

Meeting of the Great Lakes Panel on Aquatic Nuisance Species
November 17-19, 2020 | Virtual Meeting

U.S. Federal

U.S. Fish and Wildlife Service
No update provided.

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

National Oceanic and Atmospheric Administration
Over the last six months, NOAA has conducted activities the following activities:

1) Lake Michigan Long Term Research Program - LTR is an annual monitoring program that assesses the lower food web components along a nearshore to offshore depth gradient. Included among the multiple organisms tracked by the program are key invasive species, in particular dreisssenid mussels and spiny water fleas. Mussels continue to show a population depth gradient. The spiny water fleas are evenly distributed across the sampling transect. [POC: Steve Pothoven, Ashley Elgin]

2) Dreissenid Mussel Research - Assessed quagga mussel body condition and reproductive status at three sites in SE Lake Michigan (July and October). This continues our growing long-term, seasonal record of mussel metrics in this location. Completed processing the 2019 Southern Lake Michigan benthic survey samples. We conduct this survey annually to primarily track dreissenid mussels and diporeia, but the survey also provides an opportunity for early detection of newly introduced benthic species. We were not able to conduct the survey in 2020, but hope to resume it in 2021. [POC: Ashley Elgin]

3) Recent Publications -
- Mehler et al. 2020. Long-term trends of Lake Michigan benthos with emphasis on the southern basin. Journal of Great Lakes Research. https://doi.org/10.1016/j.jglr.2020.03.011(A paper describing long-term trends of Lake Michigan benthos.) [POC: Ashley Elgin]
- Nalepa et al. 2020. Abundance and Biomass of Benthic Macroinvertebrates in Lake Michigan in 2015, with a Summary of Temporal Trends. GLERL Technical Memo 175. https://doi.org/10.25923/g0d3-3v41. (A tech memo which summarizes the Lake Michigan 2015 CSMI Whole Lake Benthic Survey results.) [POC: Ashley Elgin]

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

National Park Service
AIS prevention

- Voyageurs National Park continues to work with Koochiching and St. Louis counties (who receive funds from the State of Minnesota) to prevent the spread of AIS. Counties coordinate boat inspections and operate decontamination stations near VOYA lakes.
- NPS is working to purchase several boat-washing stations in 2021, to be deployed at Voyageurs National Park and near Isle Royale and Pictured Rocks.
- 10 national parks employed AIS prevention educators to prevent spread and introduction

AIS early detection

- NPS conducted citizen-based early detection efforts along 25 miles of Lake Michigan shoreline and 8 inland lakes at Sleeping Bear Dunes, targeting 17 invasive species from the State of Michigan aquatic invasive species watch list.
- NPS and academic partners conducted snorkel-based surveys for invasive mussels in marina settings at Voyageurs National Park, and scuba-based invasive mussel surveys of reef, dock, and nearshore habitats at Apostle Islands and Isle Royale. New invasive mussel detections were reported from several new Apostle Islands locations but densities are very low.
- NPS deployed passive samplers and conducted veliger sampling for invasive mussels at Isle Royale, Pictured Rocks, and Voyageurs. No new detections were reported.

AIS risk assessment

- Voyageurs National Park is working with U.S. and Canadian partners to complete the first phase of an AIS risk assessment completed for the Rainy - Lake of the Woods Watershed. The International Joint Commission has funded the project, and the USGS is the lead agency carrying it out. It is schedule for completion in the spring of 2021.

Invasive mussel monitoring

- NPS and academic partners monitored known low-density invasive mussel infestations at Apostle Islands and Isle Royale using timed SCUBA surveys.
- NPS and academic partners conducted quantitative invasive mussel monitoring at fixed station site at Sleeping Bear Dunes' Good Harbor Reef.

Invasive mussel removal

- NPS and partners conducted follow-up monitoring at invasive mussel removal sites at Sleeping Bear Dunes' Good Harbor Reef, including sites of the 2016 manual removal experiment and the 2019 Invasive Mussel Collaborative-sponsored Zequanox experiment. Invasive mussel densities in treated areas remain lower than control sites for both treatment types, with the lowest densities persisting at the manual removal site. It's likely that goby predation is helping prevent recolonization at removal sites.
- NPS worked with partners from the Invasive Mussel Collaborative on project press and outreach related to the 2019 Zequanox experiment at Good Harbor Reef. The project report and press release are expected in fall 2020.

Round goby research

- NPS and partners are exploring the effects of goby predation on invasive mussel recolonization through two types of goby exclusion experiments at Sleeping Bear Dunes' Good Harbor Reef. Both experiments suggest that gobies do play a role in preventing invasive mussel recolonization of treated areas. Larger scale goby exclusion work is planned for 2021.
- NPS and the USGS Great Lakes Science Center continue research on round goby eDNA transport and detection, with a manuscript entitled "Influence of sediment and stream transport on detecting a source of environmental DNA" currently in review.

Invasive mussel rapid response

- Voyageurs National Park purchased barriers for deployment in marina settings in the event of an invasive mussel detection.

Invasive species impacts

- Voyageurs continues 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." That project produced a publication on effects of zebra mussel and spiny water flea on walleye and yellow perch growth (http://link.springer.com/article/10.1007/s10530-020-02198-5), and a manuscript on food web effects of zebra mussel and spiny water flea is in prep.

Ongoing invasive species 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.

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U.S. Army Corps of Engineers
No update provided.

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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 "salties" generally have to install ballast water management systems (BWMS) to comply.
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 Independent Labs (IL) that are involved in the type approval process.
Since 2013, the Coast Guard Marine Safety Center has received 61 of Letters of Intent from BW management system manufacturers stating they intend to pursue type approval for their ballast water management system. The Coast Guard has received 44 applications for type approval and the Coast Guard Marine Safety Center has type approved 37 BW management systems.

Vessel Incidental Discharge Act (VIDA) Update
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 implementing compliance and enforcement regulations. The Coast Guard and the EPA are working on their respective regulatory mandates.
On Monday, October 26th, the EPA published its "Vessel Incidental Discharge National Standards of Performance" proposed rule in the Federal Register. This proposed rule would establish national standards of performance for discharges incidental to the normal operation of a vessel that will apply primarily to commercial vessels 79 feet in length and above that discharge into waters of the United States or waters of the contiguous zone. The proposed rule also includes procedures for states to petition EPA for additional requirements as provided for under the VIDA. Public comments on the proposed rule are due no later than November 25, 2020.
VIDA requires the USCG to promulgate implementation, compliance, and enforcement requirements for EPA's national performance standards.

- The USCG program will be no less stringent than the EPA's current VGP, to ensure, monitor, and enforce compliance with the EPA's national performance standards.
- Implementing regulations will include vessel management practices, design and construction, testing, approval, installation, and use of marine pollution control devices.
- VIDA includes additional requirements such as developing an intergovernmental workgroup with Federal and State agency cooperation, submitting annual invasive species reports to congress, and developing an invasive species contingency plan.

The Coast Guard established a working group in December 2019 to help implement several of state coordination requirements. The Ballast Water Reporting and Enforcement Data Working Group with interested State partners, the CG's Navigation Center, EPA, and members of the Smithsonian's National Ballast Water Information Clearinghouse (NBIC) continues their work virtually. This workgroup's current focus has been on ensuring States have access to the Marine Traffic Automatic Identification System, as well as information on how to receive commercial vessel BW reporting information from NBIC. The participating states now have direct access to the NBIC data.
Other VIDA provisions, such as the Intergovernmental Response Framework, are currently being researched and developed. Initiation of a response under the VIDA statute is specific to a ballast water related emergency. As a participating member agency of the National Invasive Species Council and the Aquatic Nuisance Species Task Force, the Coast Guard is looking at similar intergovernmental response structures for guidance in our framework development process. The GL states and the provinces of Ontario and Quebec have been invited to participate in this initiative.
Viability Policy Letter. On 26 July 2019, the CGHQ Office of Operating and Environmental Standards (CG-OES) issued a Draft Viability Policy Letter on type approval testing protocols for BWMS that render organisms non-viable. Comments on the draft policy letter were accepted and a final policy letter is still under review. The publication of the Viability Policy Letter required by VIDA remains a priority and the CG has committed significant resources toward this effort. As stated in the Draft Viability Policy Letter, the Coast Guard has not accepted any viability testing methods at this time.

Great Lakes National Center of Expertise for Oil-Spill Preparedness and Response
The Coast Guard Authorization Act of 2018 created the National Center of Expertise for Great Lakes Oil Spill Preparedness and Response (NCOE). Subsequent $1.5M appropriation in FY20 funded the initial start-up of the GL NCOE including updates to the NOAA Environmental Sensitivity Index maps, fund the biological consultations to meet Endangered Species Act requirements for CG contingency planning, and conduct an overview of spill response R&D gaps in the Great Lakes.
Most importantly, the appropriation funded a contract to for a third-party study to evaluate the NCOE's mission, site location, partnerships, and short and long-term goals, in accordance with the requirements set forth in the enacting legislation. This study is scheduled to be completed in May 2021.

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U.S. Forest Service

No update provided.

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

Contact: Vacant

U.S. Department of State
No update provided.

Contact: Nadia Sbeih, U.S. Department of State, 202-647-3228, SbeihND@state.gov

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
No update provided.

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.

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Michigan
No update provided.

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

Minnesota

- An increase to the AIS surcharge on watercraft licenses from $5.00 to $10.60 was passed during the 2019 legislative session. This increase addressed the fund deficit and allowed the invasive species program to award $528,950 in invasive aquatic plant management grants and respond to newly discovered zebra mussel and starry stonewort populations during the 2020 open water season.
- Invasive Species Program staff issued over 300 permits to control invasive aquatic plants and trained 756 local government watercraft inspectors. Staff worked with the public at lake association meetings, the 2019 Minnesota State Fair, conferences, and outdoors shows. Conservation officers completed 11,506 hours of invasive species education and enforcement.
- Level one and level two watercraft inspectors hired by the DNR, and 66 Local Units of Government with delegated authority from the DNR, accomplished over 600,000 watercraft inspections in 2020. This is an increase of 100,000 from 2019, and made MN the second highest state in the nation for watercraft inspections.
- The University of Minnesota, Department of Fisheries, Wildlife, and Conservation Biology, and the MAISRC finalized an assessment to support a strategic coordinated response to invasive Phragmites (Phragmites australis subsp. australis) in Minnesota in 2019. In 2020 the DNR has partnered with the Pollution Control Agency (PCA), Department of Agriculture (MDA), the University of MN, the Minnesota Aquatic Invasive Species Research Center (MAISRC), local units of government, and wastewater treatment plants to move towards eradicating nonnative Phragmites from Minnesota and has received additional funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service.

- The DNR, with funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service, began a project in June 2019 focused on trade pathways for AIS. In 2020 we reached out to more than 3,000 businesses in the pet, horticulture, food, and biological supply trades in Minnesota to provide information about invasive species regulations, invite participation in a survey, and encourage sign-up for an email list for continued communication. Additionally, new web resources were developed specifically for businesses and their customers
- The DNR partnered with the MAISRC, 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 2020, 210 volunteers searched 238 Minnesota Lakes. One new waterbody infested with starry stonewort was discovered, Lake Carnelian in Stearns County. The DNR, in cooperation with local partners arranged for a rapid response of hand pulling followed by algaecide treatment of the starry stonewort.
- DNR has continued working to educate the public about jumping worms, an invasive worm that can dramatically change soils, giving it a unique texture similar to coffee grounds that can't support plant life. DNR is partnering with the University of MN and WI DNR to ensure homeowners and businesses such as garden centers are aware of jumping worms and report them to DNR. As a part of this work DNR created two videos on jumping worms titled "Invasive jumping worms: Impacts and prevention" and "Jumping worms: What anglers should know". They can be found on the DNR jumping worm webpage and have been viewed over 14,000 times by October of 2020.
- Invasive Species Prevention Planners continued to build a network of support with local AIS program managers who oversee the use of their counties' AIS prevention aid funds. The Planners hosted four workshops around the state that attracted 87 attendees, including local government staff, local stakeholders, statewide partners, and DNR staff. The planners also hosted a virtual workshop in August where 57 partners participated in a discussion on how their AIS prevention programs have adjusted during COVID-19. DNR also saw a significant increase in the number of counties participating in submitting a voluntary template summarizing their work from 39 in 2018, to 65 in 2019.
- The DNR Invasive Species Program, with funding from the Great Lakes Restoration Initiative administered by the U.S. Fish and Wildlife Service, continued to work with experts in the science of behavior change to better understand what motivates people in Minnesota to practice AIS prevention behaviors. The DNR has awarded 13 grants totaling $60,000 to local groups to pilot AIS prevention strategies in their communities.
- DNR continues to respond to the threat of invasive carp. DNR is currently working on updating the Invasive Carp Plan in cooperation with stakeholders and is planning a new carp netting exercise in pool 8 of the Mississippi River with partners including Wisconsin DNR, USGS and USFWS which is planned to take place in spring of 2021.

Contact: Heidi Wolf, Minnesota DNR, heidi.wolf@state.mn.us

New York

AIS Updates for New York State

- Northern Snakehead confirmed in Delaware River
- Brazilian elodea confirmed in Erie County
- Hydrilla has made a reappearance at Creamery Pond (treated 2008) in Orange County
    - full-scale treatment of hydrilla infestation in the New Croton Reservoir is now slated to begin in 2021 (NYCDEP)
- Watercraft Inspection Stewards conducted more than 348,000 inspections and made more than 19,000 interceptions of invasive species (two of hydrilla at Lake Ontario and Lake George) in 2020
    - traffic at boat launches increased by 8%-20% this season
- Hydrilla control efforts continue in the Croton River (Westchester County), Spencer and Kuhlman Ponds (Tioga County), Cayuga Lake, Green and Hickory Lakes (Erie County) and in the Erie Canal/Tonawanda Creek (Erie/Niagara Counties)
- Aquatic plant surveys of the Mohawk and Hudson Rivers have yielded no hydrilla (Eurasian watermilfoil and water chestnut are frequently observed)
- DEC will be working with SUNY Stony Brook to conduct a pilot study for treatment of floating water primrose in the Peconic River (Suffolk County) in spring 2021
- DEC is collaborating with OH, PA, MI, SePRO, and University of Hartford to test different management options for European frogbit

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

Ohio

Ohio GLP Report (11/16/2020)

- Continued following the Lake Erie Grass Carp Response Strategy with the deployment of multiple Grass Carp Strike Teams through the University of Toledo dedicated to the eradication of Grass Carp from the western basin of Lake Erie. Close to 300 adult Grass Carp have been removed to date. We continue to track tagged Grass Carp with the GLATOS system and

real-time receivers, and we are working through the University of Toledo to determine Grass Carp catchability and population size. Partners also include Michigan DNR, GLFC, USFWS, and USGS.

- Continue closure 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 completed the closure of the Ohio Erie Canal connection in March 2020; 2) We completed the appraisals for the Little Killbuck Creek and will start landowner negotiations in late 2020; 3) The preliminary design for the final phase to close the connection at Grand Lake St Marys has been completed and final design will be completed in 2021.
- Continue the surveillance of Ohio's bait supply chain to determine if AIS, including Bighead and Silver Carp, are being transported through the bait trade.
- Continue the 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.

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
No update provided.

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
No update provided.

Contact: Carroll Schaal, Lakes & River Section Chief, Bureau of Water Quality, Carroll.Schaal@Wisconsin.gov

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 produced a final report on the invasive mussel control method demonstration and evaluation project initiated in 2019 near Sleeping Bear Dunes National Lakeshore. Convened two work groups surrounding priority issues identified at the September 2019 annual meeting. Re-established the Science Team as the Research Work Group, who began development of an invasive mussel research coordination and prioritization process. Continued to develop and improve a summary document of available control methods and

associated literature, case studies, and permitting information. Hosted two webinars, the first discussing approaches and guidance for socially-distance boater interactions in accordance with COVID-19 safety guidelines, and the second reviewing recent invasive mussel control studies. Maintained an active communication network, including a comprehensive website, email list with over 400 subscribers, and a biweekly newsletter. 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. In current efforts, the GLPC distributed the GLPC Common Agenda in fall 2020, hosted ongoing webinar series, developed audience-specific outreach materials, and convened the *Phragmites* Symbiosis Collaborative, a forum for researchers to share and collaborate on their microbial or genetic research. PAMF has published an virtual learning experience for participants that includes recorded presentations, helpful guides, FAQ documents, and quizzes all structured in easy to follow modules (https://www.greatlakesphragmites.net/pamf/training/). PAMF program has grown, which now includes more than 200 managements units enrolled by 77 participants. Additionally, PAMF has prepared and released the PAMF strategic plan in fall 2020, more information can be found on the GLPC website (https://www.greatlakesphragmites.net/pamf/).

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 continued work on drafting a regional communications plan to be used with the existing response framework developed as part of Phase II of this project. In support of this, the interstate group convened a virtual meeting of project team members to test the regional communications plan under a variety of tabletop response exercises.

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. Recent efforts include investigating additional functionality of novel web tools in the marketplace and potential role in assisting collection, analysis, and dissemination of Great Lakes AIS information.

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: Support for an annual “AIS landing blitz” event to educate recreational users on steps to prevent the movement of AIS (https://www.glc.org/work/blitz), involvement in Great Lakes Water Quality Agreement Annex 6 (AIS) Subcommittee, and participation on the Chicago Area Waterway System (CAWS) Aquatic Invasive Species Stakeholder Group and Asian Carp Regional Coordinating Committee.

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Canadian Federal

Fisheries and Oceans Canada

No update provided.

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Ballast Water Research

No update provided.

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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

- ZM-Cladophora Research, Michigan Sea Grant funding to Dr. Pengfei Xue 2018-2020 - Phosphorus control measures implemented in the 1970s and 80s reduced the frequency of algal blooms but, more recently, increased water clarity related to the filtering activities of invasive mussels have expanded the area of colonization by Cladophora and led to a resurgence in nuisance growth. Management of the phosphorus-Cladophora dynamic is presently in gridlock due to uncertainty regarding the role of mussels as contributors to nuisance conditions. While it is clear that mussels capture, transform and excrete phosphorus in a bioavailable form, the ability for phosphorus-poor offshore waters to support Cladophora growth in the absence of local sources in the nearshore has not been quantified. Additionally, the ability of near-bottom waters to retain excreted phosphorus in the presence of wave-current turbulence has not been described. The research proposed here seeks to resolve those two issues through an integrated program of field monitoring and hydrodynamic modeling. It is anticipated that the proposed research will clarify the ability of mussel phosphorus recycling to sustain nuisance levels of Cladophora growth in the absence of nutrient enrichment in the nearshore.

- Phragmites Research – Pennsylvania Sea Grant funding to Thomas Mozdzer 2020 - Coastal wetlands of the Delaware River Estuary and much of North America are converting at a rapid pace to near-monocultures of the invasive lineage of the common reed Phragmites australis (hereafter Phragmites). Unfortunately, we know surprisingly little about how Phragmites invasion affects coastal blue carbon, specifically carbon (C) sequestration or soil C processes (e.g. soil respiration and methane emissions) in the ecosystems it invades. Furthermore, we know even less about how management of Phragmites affects ecosystem resilience. Effective management of invasive species requires an understanding on the net effects of land management practices on ecosystem processes that drive ecosystem resilience (e.g. soil carbon storage and surface elevation gain). My objective is to evaluate the effects of Phragmites australis management on ecosystem resilience and coastal blue carbon. Leveraging Phragmites restoration at the John Heinz National Wildlife Refuge, I will measure coastal blue carbon pools, C cycle processes, and surface elevation in four different management outcomes. This research aims to generate guidelines for use in wetland restoration and management of Phragmites to improve ecosystem resilience. The information may be particularly important in wetlands restored for carbon sequestration credits or the management of wetlands for ecosystem resilience to sea level rise.

- Flathead Catfish Diet - Pennsylvania Sea Grant funding to Megan Schall 2020 - Flathead Catfish Pylodictis olivaris are an indiscriminate predator of other fish and an expanding invader to large river systems outside of its native range, including the Susquehanna River Basin in Pennsylvania. Research efforts are beginning to provide insight on the distribution of this invader in the Susquehanna River Basin, however, there is considerable uncertainty about the potential ecological impacts of Flathead Catfish. In particular, there are concerns about their impacts on native and migratory fish species and on economically important recreational fisheries. To begin understanding the ecological effects of Flathead Catfish invasion, we propose a comprehensive diet study on Flathead Catfish in the Susquehanna River Basin. We will quantify Flathead Catfish diet composition using morphology and molecular identification of ingested prey items. Our study will help inform future policy and fisheries management in the Susquehanna River Basin by increasing our understanding about the predatory effects and potential ecological consequences of invasive Flathead Catfish.

- EVALUATING THE EFFECTS OF THE RECENTLY DISCOVERED NON-NATIVE, PARASITIC COPEPODS SALMINCOLA EDWARDSII AND S. CALIFORNIENSIS ON BROOK TROUT AND RAINBOW TROUT, RESPECTIVELY IN PENNSYLVANIA INLAND STREAMS AND LAKE ERIE TRIBUTARIES – PENNSYLVANIA SEA GRANT FUNDING TO JASON DETAR 2020 - The primary focus of this project is to determine the distribution, prevalence, and genetic composition of non-native Salmincola spp. (commonly referred to as gill lice) and the potential impacts that Salmincola spp. are having on the Commonwealth's wild trout populations. Of particular concern are the impacts of Salmincola spp. on Pennsylvania's wild Brook Trout and Rainbow Trout including Steelhead in Lake Erie and its tributaries. This project will provide important information on fish health of wild trout and provide insight into whether gill lice may be a host and/or vector for other pathogens resulting in a decrease in wild trout abundance, reduced wild trout genetic diversity, and reduced distribution of wild trout across the state. These data will be beneficial to guiding management decisions to stop the spread of Salmincola spp. including how the Pennsylvania Fish and Boat Commission (PFBC) regulates the stocking and movement of hatchery and wild fish. The importance of gathering additional data to validate concerns that were derived from initial studies, both in Pennsylvania and from other state agencies is imperative to developing polices, regulations, and best management practices that continue to protect, conserve, and enhance Pennsylvania's wild trout populations.

- Environmentally friendly anti-biofouling coatings based on enzymes – MN Sea Grant funding to Dr. Mikael Elias - Preliminary results show that some enzyme-based coatings appear to be even more effective than biocides and are durable for at least 21 months. Bergonzi, Schwab, Naik, Elias. The Structural Determinants Accounting for the Broad Substrate Specificity of the Quorum Quenching Lactonase GcL. Chembiochem. doi: 10.1002/cbic.201900024.

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Minnesota Sea Grant
2020 Upper Midwest Invasive Species Conference (UMISC Online) Pathways to Success: Partnerships and Purpose drew the largest invasive species audience in the world at 1,000+ registrants in Nov. UMISC 2018 registered 730 participants. MNSG Extension Educator Doug Jensen co-chaired the conference, exhibited and presented.
At UMISC, undergraduate intern students Alyssa Hagemeyer and Anna Peterson presented posters based their AIS outreach funded by Minnesota DNR and St. Louis County AIS Program. Hagemeyer's study discovered many unreported sightings of AIS in NE MN, including 104 Chinese and banded mystery snail, 91 rusty crayfish, and 53 curlyleaf pondweed new infestations, which were added to the St. Louis County AIS Risk Assessment Tool. As part of a larger seven county partner effort, Peterson conducted an AIS sign inventory in southern St. Louis County and found that 46 of 70 (66%) public water access had Stop Aquatic Hitchhikers! signs, 10 of 70 (14%) had Clean Drain Dispose signs, and 6 (9%) had the original Minnesota Sea Grant/MNDNR sign still posted. Several river and northern accesses were without signs or damaged. Both projects serve as models and provide recommendations for improvements.
MNSG kicked-off Don't Pack A Pest for Academic Travelers-MN funded by APHIS to educate international students, study abroad students, and research and education faculty about what not to pack in baggage so they are in compliance with regulations. Meeting online with federal and state agencies, University of Minnesota Duluth, Morris and Crookston campuses. Participated in nat'l meeting online.
For the 2020 GL AIS Landing Blitz, Hagemeyer created an infographic based our partnership effort in NE MN (below).

The Boundary Waters Canoe Area Wilderness Coalition, a recently formed civic governance group, launched a social media campaign (FB, Twitter, Instagram) led by MNSG, to bring AIS awareness and prevention messages to MN's NE region and beyond.
Success story that invasive Phragmites may be near eradication in the St. Louis River Estuary.
Continuing to work with MNDNR on Organisms in Trade effort and MISAC to update the state's invasive species management plan.

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Saint Lawrence Seaway Development Corporation
Seaway News
Former U.S. Coast Guard Commander Gary Croot joined the Saint Lawrence Seaway Development Corporation in July as the new Associate Administrator leading the SLSDC's Massena, N.Y. operations. While in the Coast Guard and as a maritime environmental and safety consultant, Gary worked extensively with many of the SLSDC's U.S. and Canadian stakeholders. Gary replaces Thomas Lavigne, who served as the SLSDC's Associate Administrator for over the past five years and before that in various senior roles at the Corporation.

Ballast Water and Invasive Species: The Joint Ballast Management Exam Program
The U.S. Saint Lawrence Seaway Development Corporation (SLSDC) collaborates with both the ship industry and regulators on issues and solutions associated with ballast water and non-native species.

The Great Lakes Seaway Ballast Water Working Group (BWWG), is comprised of representatives from the U. S. Coast Guard (USCG), the U.S. Saint Lawrence Seaway Development Corporation (SLSDC), Transport Canada - Marine Safety & Security (TCMSS), and the Canadian St. Lawrence Seaway Management Corporation (SLSMC). The group is charged with developing, enhancing, and coordinating binational compliance and enforcement efforts to reduce the introduction of aquatic invasive species into the Seaway-Great Lakes system by discharge of ballast water and residuals. This is carried out via the Joint Ballast Management Exam Program.

Since 2006, USCG, TCMSS, and Seaway ballast regulations have required ballast water exchange and/or saltwater flushing for ships entering the Seaway, detailed documentation, increased on-board inspections, and civil penalties. Mandatory salt water flushing for the prevention of potential aquatic invasive species discharge from empty ballast tanks is unique to the Seaway-Great Lakes system. Independent research by the Fisheries and Oceans Canada (Science) indicates that the risk of a ballast water mediated introduction of aquatic invasive species into the Great Lakes has been reduced to extremely low levels by this comprehensive regulatory and enforcement regime. These requirements have been further enhanced by USCG and Environmental Protection Agency (EPA) regulations.

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 verifying compliance of the BWMS with USCG Approved or Alternate Management System requirements. Under this revised policy, USCG officials 1) determine the vessel's ballast water management system compliance date, 2) verify the vessel's ballast water management method(s), 3) verify required reporting and record-keeping requirements, and 4) ensure the vessel is in compliance with regulatory requirements in 33 CFR 151, Subparts C and D. All of the tanks the USCG did not physically sample were tested for salinity compliance by other cooperating agencies.

The 2019 BWWG report was released in January 2020 and is available at:
https://greatlakes-seaway.com/wp-content/uploads/2020/04/2019_BW_Rpt_EN.pdf

It should be noted that during the current 2020 shipping season, the BWWG has been able to maintain the vessel inspection program in spite of the logistical challenges brought by the national health emergency.

Summary: 2019 Results
During the 2019 shipping season:

- 100% of vessels bound for the Great Lakes Seaway from outside the Exclusive Economic Zone received ballast management exams, as described above, on each of 481 vessel transits.
- In total, 9167 ballast tanks were assessed via sampling or administrative review:
- Total tanks physically sampled: 9145 (99.8%).
- Total tanks evaluated by administrative review: 22 (0.2%). [Footnote 1]
- Of the 9167 tanks, 9015 (98.3%) were found to have completed a satisfactory ballast water exchange, and 152 tanks (1.7%) were issued a Letter of Retention (LOR):
- 66 were due to low salinity
- 86 were due to improper reporting, carriage of liquids other than ballast water or not accessible for testing. (Note: In many areas of the Great Lakes Basin, vessels are restricted from discharging sewage, causing vessel operators to temporarily use ballast tanks as holding tanks. An LOR is issued for such tanks).
- Vessel exams for compliance with LORs are conducted when the vessels are outbound from the Seaway. Documentation is reviewed and relevant tanks are sampled to ensure compliance. In 2019, no vessels were found to be in violation of their LOR upon exiting the system.
- In 2019, no vessels were issued a Letter of Warning, or fined for failure to comply with regulations.

The current effectiveness of ballast water exchange/salt water flushing and the BWWG's detailed pre-screening efforts to support aggressive enforcement of current regulations have produced a high compliance rate with industry and are an effective means of managing ballast in the Seaway-Great Lakes system.

[Footnote 1] 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.

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National Wildlife Federation
No update provided.

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