Great Lakes Panel Member Updates
Spring 2018

Meeting of the Great Lakes Panel on Aquatic Nuisance Species
June 26-27, 2018 | Chicago, Illinois

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

The following is an annotated list of recent (last six months) and future (next six months) NOAA activities related directly and indirectly with aquatic invasive species in the Great Lakes.

(POC: Steve Pothoven)
1) Re-started in Spring NOAA's long term research program on Lake Michigan off Muskegon, MI. The program assesses lower food web components along a nearshore to offshore gradient. Collections include invasive species (e.g., including quagga mussels, spiny water fleas). Collections will continue over the summer and fall.
2) Completed a project on the long term assessment of consumption requirements of spiny water flea (Bythotrephes) relative to zooplankton production in Lake Michigan. Manuscript to be submitted within next 6 months.
3) Completed a project on the assessment of round goby energy density in Lake Michigan (in collaboration with USGS GLSC). Manuscript to be submitted within next 6 months.

(POC: Ashley Elgin)
4) Continued work on year-long Quagga mussel field growth studies in multiple lakes: the Lake Huron experiment concluded last month; the Lake Erie experiment is now running; and we will set up the Lake Ontario experiment in mid-June. The work will continue over the summer and fall.
5) Continued the processing of samples from the 2017 benthic surveys: 1) Lake Huron (whole-lake), 2) southern Lake Michigan.
6) Continued collaborating with NOAA's Mussel Watch Program on a temporal study of quagga mussel body condition and metabolomics. The work will continue over the summer and fall.
Looking forward for the next 6 months:
7) Conducting the 2018 southern Lake Michigan benthic survey and tracking Lake Michigan quagga mussel body condition and reproductive status throughout the season.
8) Participating in the 2018 Lake Ontario whole-lake survey.

(POC: Hank Vanderploeg)
9) Initiated major EPA GLRI project in Lake Erie (Elgin co-PI) the "Role of Dreissenid mussels in transforming nutrient loads in to harmful algal blooms." Two major feeding and nutrient excretion experiments have been carried out. The project seeks to elucidate the connection of dreissenid mussels to harmful algal blooms in Lake Erie

(POC: Rochelle Sturtevant)
10) GLANSIS has launched a beta site for a new Risk Assessment Clearinghouse (https://www.glerl.noaa.gov/glansis/riskAssessment.html). The Risk Assessment 'Explorer' Tool is designed to provide access to risk assessment methodologies allowing quick comparison/selection of tools to meet your needs. So far, the site is populated with information for a handful of tools prioritized and compiled by the risk assessment committee. We will be seeking other tools not currently listed. (Note: GLANSIS will be presenting an update in the plenary session of the Panel meeting. A demonstration is planned to solicit feedback.)

(POC: Cassie Lovall)
11) Treated 67 acres of the Clinton River Spillway in Clinton Township, Michigan and 61 acres of Black Creek Marsh in St. Clair, Michigan to remove invasive aquatic vegetation (i.e., phragmites).
12) Treated 4.5 acres at Veterans Memorial Park in Muskegon, MI to remove invasive aquatic vegetation (i.e., cattails).

(POC: Sommer Abdel-Fattah)
13) Installed a carp barrier at the Howard Marsh habitat restoration site in Lucas County, Ohio.

(POC: Terry Heatlie)
14) Monitored at the St. Mary's River Little Rapids restoration site in Chippewa County, Michigan for Didymosphenia geminata (didymo), an AIS diatom in cold water stream systems. This alga was found in the project area and is being sampled for its presence and extent during water quality sampling.
15) Removed invasive aquatic vegetation (i.e., phragmites, reed canary grass) and planted native riparian vegetation at Ulao Creek, Milwaukee River AOC in Ozaukee County, Wisconsin as part of routine invasive plant management in floodplain and riparian areas of Ulao Creek.
16) Cleared approximately 10 acres of invasive aquatic vegetation (i.e., cattail, Phragmites) at Stony Island in the Detroit River AOC in Detroit, Michigan.
17) Removed invasive aquatic vegetation (i.e., phragmites) at the Bear Creek habitat restoration site in Muskegon, Michigan associated with the restoration of former celery agricultural ponds.

(POC: Ed Rutherford)
18) Submitted a manuscript with results from a study using an Ecopath with Ecosim model to evaluate the potential ecological impacts of ruffe, golden mussel and killer shrimp on Lake Erie food web.
19) Completed for submission a manuscript with results from a study using Individual Based Model to evaluate the potential impacts of bigheaded carp on the food web of Saginaw Bay, Lake Huron.
20) Drafted a manuscript with results from a study looking at bigheaded carp impacts on different Great Lakes habitats.
21) Revised for resubmission a manuscript with results from a study evaluating the bioeconomic impacts of dreissenid mussel reduction scenarios in Lake Erie and Lake Michigan.
22) Revised for resubmission a manuscript with results from a study evaluating the bioeconomic impacts of bigheaded carp in Lake Erie with coupled economic and ecological models.
23) Revised for resubmission a manuscript with results from a study evaluating habitat suitability of Lake Michigan to bigheaded carp considering multiple prey items (phytoplankton, zooplankton and detritus), and subsurface prey sources.
24) Developed an Ecopath with Ecosim model for Lake Ontario with emphasize on the nearshore communities to study the potential impacts of bigheaded carp.
25) Continued calibration of an Atlantis ecosystem model on fish spatial distributions to evaluate the bigheaded carp impacts on different habitat of Lake Michigan and proved inputs to economic models to assess the economic impacts.
26) Used a Growth Rate Potential model to study how climate change, nutrient loads and invasive species (dreissenid mussels) affect habitat suitability of Lake Michigan to bigheaded carp.
27) Started a project to understand the relationship between nutrient loads and fish production in the Great Lakes and how invasive species have influenced that relationship.
28) Contributed to a white paper on food web disruption in Lake Michigan now in print with the Great Lakes Fishery Commission.

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National Park Service
No update provided.

Contact: Phyllis Green, Isle Royale National Park 906-487-7140 Phyllis_Green@nps.gov

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 will require the installation of type-approved ballast water management systems (BWMS) on "salties". The use of type approved ballast water management methods is 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 dozens of Letters of Intent from BW treatment system manufacturers stating they intend to pursue type approval for their ballast water treatment system. For the past year months, there have been up to 16 different systems at one time undergoing landside and shoreside testing at the Coast Guard accepted Independent Laboratories. The Coast Guard has type approved six BW treatment systems. Two additional applications for type approval are under review at this time and the U.S. Coast Guard Marine Safety Center is reviewing those applications.

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 111 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 2017 annual report and it is posted on the Ninth Coast Guard District website. In 2017, 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 8,350 ballast tanks, during 457 vessel transits, were assessed; (100% of the ballast tanks on inbound vessels were assessed in 2009-17).

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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: Vacant

U.S. Environmental Protection Agency
No update provided.

Contact: Kevin O'Donnell, U.S. EPA- Great Lakes National Program Office, 312-886-0813, ODonnell.Thomas@epa.gov

U.S. Geological Survey
USGS and University of Toledo Grass Carp update

The US Geological Survey (USGS) has 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 hydroacoutics and physical samples of vegetation in nearshore areas, embayments, harbors, and river mouths throughout western Lake Erie.

Egg sampling in 2017 identified three spawning events on two rivers. On the Sandusky River, spawning was documented between 30 May and 1 June and on 12 July. Approximately 1,200 eggs were captured during the first event, and over 5,000 were captured on 12 July. We documented spawning on the Maumee River on 13 July, capturing 4 genetically-verified Grass Carp eggs just downstream of the Interstate-80 bridge, approximately 18 km upstream of Lake Erie.

Genetic analyses of eggs from all spawning events on both rivers are underway to estimate the number of individual Grass Carp that produced the eggs. As of this report, we estimate approximately 25 males and 25 females produced the eggs from the 30-May – 1-June spawning event on the Sandusky River. Analyses are incomplete and continuing. Further analyses might cause those numbers to increase. An update on those analyses will be provided at the fall GLPANS.

Several research papers are in progress using data from these efforts. Topics include determination of probable spawning locations, an evaluation of remote sensing (imagery) data for coarse-scale mapping of vegetation, validation of the FluEgg model used for estimating spawning and hatching locations of Grass Carp eggs, using FluEgg to hind-cast recruitment potential for inferred past spawning events, and a chronology of spawning during the 2017 events.

Efforts to sample eggs and to assess vegetation will continue through 2018.

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State/Provincial

Illinois
No update provided.

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

Indiana
The Indiana Department of Natural Resources continues its efforts to prevent the spread of AIS species throughout the state of Indiana but especially across the Watershed divide from the Mississippi River basin watershed to the Great Lakes watershed.

In the Fall of 2017 we finished the 12th year of the hydrilla eradication effort at Lake Manitou in Rochester– There had been 10 consecutive years of intensive and prolonged Sonar (aquatic herbicide) treatment being performed at the 735 acre lake in Fulton Co Indiana. In 2014 no Hydrilla was located throughout the entire season including the intensive one and a half day diver survey, no hydrilla was located for the first time since the inception of the program. Aggressive treatment with sonar continued through the 2016 season with continued support from state funding. (https://collab.dnr.in.gov/connect.ti/LARE/view?objectId=8400133). 2017 was the first year since the project started that no herbicides were applied, no hydrilla was detected even with increased monitoring methods that included In addition to the two standard plant surveys(Tier II surveys) and the intensive diver survey we had been using, an additional late season intensive diver survey and monthly diver spot checks were added.

We also continue to fight the spread of EWM and the growth of Starry Stonewort in northeast Indiana. This macro algae especially has proven very difficult to control but we continue to try different chemical prescriptions and are coordinating with universities and plant control companies with hopes of finding better tools that are effective at limiting the growth and success of this invasive aquatic plant. The aggressive and large scale control and eradication efforts have slowed the spread of this aggressive macro alga but have yet to provide the answers to the best path forward.

Along with many other representatives of the Great Lakes region we were engaged and participated in the following groups: Great Lakes Panel, Mississippi River Basin Panel, the Invasive Mussel Collaborative, Interstate ANS planning group, Indiana Invasive Species Council and Asian Carp Regional Coordinating Committee.

Contact: Eric Fisher, Indiana DNR, 317-234-3883, efisher@dnr.in.gov

Michigan

In January 2018 the Michigan Invasive Species Grants Program distributed $3.6 million dollars. Newly funded AIS projects are focused on testing responses of different Eurasian watermilfoil hybrids to herbicide treatments; evaluating control options for European frog-bit, assessing methods of grass carp management in Lake Erie; and providing opportunities to paddlers and other recreational users on 12 water trails across the state to identify, report and reduce the spread of aquatic invasive species.

MDNR Fisheries Division is continuing surveillance and response efforts in 2018 to address infestations Red Swamp Crayfish in collaboration with USGS and Michigan State University. The MDNR will be working on Lake Erie this summer to work towards eradication of grass carp. Fisheries Division Lake Erie Management Unit is hiring a team to respond and remove grass carp in known locations and assist Ohio in continuous removal program.

The Great Lakes Invasive Carp Challenge concluded with a Carp Tank event. Four finalists and six runners-up were identified and staff continue to work towards developing feasibility planning and testing to further some of the winning solutions.

The MDEQ Water Resources Division is continuing to lead surveillance and response work to address watch list aquatic invasive plants. partnering with Central Michigan University to develop and build consensus around strategies for European frog-bit.

The MDARD and MDNR's Law Enforcement Division are continuing inspections and education efforts for wholesale/retail bait dealers, plant nurseries, the pet industry, and will increase activities targeting trade via the internet. Bighead, silver, and grass carp continue to be priorities as well as red swamp crayfish and prohibited/restricted aquatic plants in trade.

Michigan's 2017 annual report is posted on the interdepartmental invasive species website www.michigan.gov/invasives. Links to MDEQ's one minute video series including videos on New Zealand Mudsnail and Parrot Feather are also available on the website. In 2017 the MDNR and MDEQ collaborated on a project to develop and distribute materials to teachers. Key education and outreach activities planned for 2018 include the annual AIS "Landing Blitz" to raise awareness about preventing the spread of AIS through recreational boating and the development of a new guide to AIS issues and programs for riparian landowners.

Contact: Sarah LeSage, Michigan DEQ, 517-284-5472, lesages@michigan.gov

Minnesota

Prevention

- Workshop: With the support of Great Lakes Restoration Initiative funding and generous sponsorships from seven counties, the MN DNR hosted a two-day workshop in October 2017 for county partners and DNR personnel to learn how to promote behaviors and create positive social norms associated with aquatic invasive species prevention. The workshop was presented by Dr. Doug McKenzie-Mohr, author of "Fostering Sustainable Behavior," and attracted 77 participants representing 34 counties.
- County prevention metrics: The Minnesota Legislature provides $10 million directly to Minnesota counties to help prevent the spread of aquatic invasive species. MN DNR's two Aquatic Invasive Species Prevention Planners created a template of metrics so that county programs can track their accomplishments and demonstrate that "AIS Prevention Aid" is making a difference in their communities.
- Permit training: The MN DNR launched a new online lake service provider permit training in 2017 to make it easier for providers to get their permits year-round. A total of 1,220 businesses were permitted lake service providers at the end of 2017.

Inspection and Enforcement

- Stopped zebra mussels: Watercraft inspectors found zebra mussels on 205 watercraft in 2017, and stopped watercraft from launching at 23 different water bodies where zebra mussels had never been found.
- Over 450,000 inspections: Between April-October 2017, 103 DNR watercraft inspectors inspected 84,824 watercraft/trailers at water accesses.
    - The DNR can also delegate watercraft inspection authorities to authorized inspectors working for tribal and local government units: in 2017, DNR trained a record 949 authorized inspectors working throughout the state, and those authorized inspectors inspected 365,986 watercraft/trailers at water accesses.
    - In 2017, DNR and authorized inspectors decontaminated 4,512 watercraft.
- High compliance rates: In 2017, about 97% of the watercraft inspected were complying with Minnesota's "drain plug law" when they arrived at the access. 98% of inspected watercraft arrived at an access without vegetation attached.
- Zebra mussel detection dogs: The MN DNR Enforcement Division's four zebra mussel detection canine officers assisted officers and inspectors during aquatic invasive species enforcement efforts. The dogs improve the efficiency of conservation officers, with faster and more thorough inspections of water-related equipment. The canine teams also provided educational demonstrations at the Minnesota State Fair, Aquatic Invader's Summit, Upper Midwest Invasive Species Conference and several other public events.

Management

- Plant grants: The MN DNR awarded over 90 grants to support management of invasive aquatic plants by partners, offering up to $200,000 in reimbursements in 2017.
- Starry stonewort: In order to understand the efficacy of starry stonewort control methods the MN DNR requires monitoring the results of starry stonewort treatments; in 2017, the MN DNR made $20,000 in grants available to help fund that monitoring.
- Zebra mussels: The MN DNR permitted two attempts to control newly discovered zebra mussel populations using pesticides in 2017: EarthTec QZ was used at Lake Minnewashta (Carver County) and Lake Marion (Dakota County), where MN DNR staff coordinated with U.S. Geological Survey research staff to conduct bioassays to determine treatment efficacy.

Detection and Response

- Carp: The 2017 Minnesota Legislature granted the MN DNR the authority to tag and re-release invasive carp for research purposes. The MN DNR tagged its first carp on July 28, 2017 in the St. Croix River. Fish biologists tracked its movement using active boat tracking and the passive receiver array present in the river system. In May 2018, while tracking the tagged carp, the MN DNR captured two other bighead carp on the St. Croix River: a 46-inch, 39-pound mature male, and the second was a 43-inch, 46-pound mature female.
- Starry stonewort: The MN DNR partnered with the Minnesota Aquatic Invasive Species Research Center (MAISRC), University of Minnesota Extension, and many counties and local partners on a statewide starry stonewort search effort: "Starry Trek." During the event, volunteers searched 211 accesses on 178 lakes identified by MAISRC as high-priority search locations. Because of these efforts, we found starry stonewort at Grand Lake (Stearns County), and the MN DNR was able to complete a hand removal of the starry stonewort population there. The MN DNR will continue work on this ongoing project and monitor the efficacy of the hand removal.
- New mapping system: The MN DNR is using EDDMapS Midwest for reporting and mapping aquatic and terrestrial invasive species. See www.EDDMapS.org/midwest or download the "GLEDN" app to a mobile device. In fiscal year 2017, DNR staff and contractors made 12,606 reports of invasive species, mostly terrestrial invasive species.
- Response exercise: In 2018, the MN DNR hosted a meeting of Northeast Minnesota area partners to debrief on the *Hemimysis anomala* discovery in the Duluth-Superior harbor and to build capacity for future surveillance and detection work in western Lake Superior.

Legislative

- No surcharge increase: The legislature did not approve the Governor's 2017 budget recommendation to increase the aquatic invasive species surcharge on watercraft registration fees from $5 to $12; watercraft registrations are valid for three years. Minnesota has had an aquatic invasive species surcharge on watercraft registrations since 1991, and the surcharge has been $5 since 1993.

Golden shiner import report: The MN DNR reported to the legislature on the potential risks of importing golden shiner minnows into Minnesota in 2018. Previous versions of the 2017 legislation that required the report would have allowed importation of golden shiner minnows from Arkansas.

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

New York

- Completed first season of Croton River Hydrilla Control Project (2017) and have now begun second season with a Project Manager in place.
- Poised to begin first full season of Tioga County Hydrilla Control Project
- USACE continues as lead on Tonawanda Creek/Erie Canal Hydrilla Control Project and Aurora (Cayuga County) Hydrilla Control Project with assistance from NYS stakeholders including DEC; USACE is providing assistance as needed with Ithaca (Tompkins County) Hydrilla Control Project
- Continuing work to expand watercraft inspection steward programs through out New York State (this season we have more than 200 locations covered).
- First full season for Watercraft Inspection Steward Program app- standardized data collection and a centralized database
- In particular, NYSDEC helps to manage the Adirondack AIS Spread Prevention Program which involves both stewards and decontamination stations
- Public comment period for the NYS Invasive Species Comprehensive Management Plan has ended and the document will soon be finalized.

Contact: Catherine McGlynn, New York DEC, 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.
- Hosted the second Grass Carp Planned Action from June 12 – 14, 2018 with 71 representatives from 14 organizations. A total of 31 Grass Carp were collected from the Sandusky and Maumee Rivers using electrofishing and trammel nets. Nine were implanted with transmitters for future tracking and 21 were removed.
- Developed the Lake Erie Grass Carp Response Strategy to provide a road map for the next five years.
- Continue to investigate closure options for the four GLMRIS connections in Ohio at Little Killbuck Creek, Ohio Erie Canal, Grand Lake St Marys, and Mosquito Creek Lake. The USACE has completed the final design for the closure of the Ohio Erie Canal connection; NTH has completed preliminary closure designs at Little Killbuck Creek; and we are implementing the final phase for closing the connection at Grand Lake St Marys. Mosquito Creek Lake is considered very low risk to AIS movement and no further action is required.
- 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".
- In partnership with Ohio Sea Grant, The Ohio State University, and ODNR Division of Wildlife, published the "Ohio Field Guide to Aquatic Invasive Species".
- 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.

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

Ontario

No update provided.

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Pennsylvania

No update provided.

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

Quebec
No update provided.

Contact: Olivier Morrisette, Ministère des Forêts, de la Faune et des Parcs, 418-627-8694, poste 7519, olivier.morissette@mffp.gouv.qc.ca

Wisconsin
Wisconsin has been in the process of updating its ANS Management Plan. Following the lead of other Great Lake states the Wisconsin plan is focused on pathways and will help drive our future activities. We expect to approach the ANS Task Force for approval in the fall of 2018.

GLRI reporting and new applications for upcoming funding cycles has required significant effort on Wisconsin's AIS staff. GLRI has resulted in a tremendous number of accomplishments not only in Wisconsin but regionally as well. We greatly appreciate the federal grant program.

Representing the Great Lakes Panel at the Chicago Area Waterway System Advisory Committee has been an interesting and frustrating responsibility. Seeing several Great Lake states come together under the leadership of Michigan Governor Snyder, and now seeing Illinois offer to be the non-federal sponsor suggests significant interest in making something happen at Brandon Road.

As the outgoing Chair of the GLP I'd like to express my appreciation to the Executive Committee and the entire membership of the Panel. I have really enjoyed my reign of terror…hope you have as well. I'd like to express a special thank you to the staff of the Great Lakes Commission for their outstanding dedication to the Panel with special recognition of Ceci Weibert and Erika Jensen. It's been a rewarding experience and I encourage all Panel members to consider taking a leadership role. Thank you.

UW-Extension/UW Sea Grant updates

- The 2nd Great Lakes Briefs on Invasive Organisms Symposium (GL BIOTIC) will be hosted as part of the Upper Midwest Invasive Species Conference (UMISC) in October. There will 25 OIT-related speakers that cover topics including outreach, risk assessment, enforcement, industry perspectives, live bait, and responding to OIT invasions. Register for UMISC to take part in the GL BIOTIC Symposium.
- We are working with Dr. Bret Shaw at UW-Madison on two separate projects
    - The first is to develop acceptable alternatives to the religious and cultural release of live animals. This project will involve a survey of natural resource managers to determine what practices would be acceptable to them while also interviewing animal release practitioners to learn what alternative practices could be used that also meet the intent of the practice. The results will be reported into two fact sheets – one for natural resource managers and one for practitioners. A conversation guide will also be created to help natural resource managers talk about the issue. This should be completed by spring 2019.
    - The second is a social media experiment to test how different message frames used in invasive species communication affect stakeholder engagement. With the help of a graphic designer, we operationalized these message frames into illustrations that we have been using in standardized paid Facebook advertising. By the end of the experiment we should know which message frames are most engaging which should lead to more efficient communications. This project should be completed by fall 2018.
- We will be hosting our 5th Drain Campaign and our 10th annual 4th of July Landing Blitz. The Drain Campaign targets anglers and promotes better compliance with our water movement laws by providing anglers with ice packs to use to transport their catch home. The 4th of July Landing Blitz targets the infrequent boater while also thanking those that are taking AIS prevention actions with SAH! towels. We inspected more than 20,000 boats were inspected and contacted more than 35,000 people between the two efforts in 2017.
- UWEX will be administering our boater/angler survey in fall of 2018. We administer this survey every five years to measure awareness and compliance of AIS regulations. We can also use it to find knowledge gaps that we can then address with new outreach programs (e.g. the Drain Campaign). The report for this survey will likely be complete by spring 2019.

With the help of GLRI funding, we are working with the Great Lakes Civilian Conservation Corps (GL CCC), based in Racine, WI, to implement watercraft inspections along the Great Lakes coast in southeast Wisconsin. They have submitted applications to other funding sources to expand their program in WI. Other CCC programs, especially ones that use Americorps funding, may be a way to expand watercraft inspections in other states.

Contact: Bob Wakeman, Wisconsin DNR, 262-574-2149 // Tim Campbell, UW-Extension/WI DNR/WI Sea Grant, 608-267-3531

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

Great Lakes Detector of Invasive Aquatics in Trade

The GLC is continuing operation of the web-crawling software system – the Great Lakes Detector of Invasive Aquatics in Trade (GLDIATR). In addition, the GLC is working under a GLRI grant to make improvements to the system and target reductions in the availability of specific species. The GLC also convened a stakeholder advisory committee to provide input on system updates and coordinate outreach and management activities. In 2018, GLC staff will be conducting training workshops with management agencies to facilitate their use of the system. Current funding will support work into 2019.

Invasive Mussel Collaborative

Working in partnership with USGS, the Great Lakes Fishery Commission, and NOAA, the GLC is supporting the Invasive Mussel Collaborative, which is providing a framework for communication and coordination among scientists, managers, and others to share information and lessons learned, guide supporting research, and inform management actions related to the promise of future means for controlling zebra and quagga mussels. This year the collaborative is working on a strategy for dreissenid research and management in the Great Lakes. The collaborative met in-person on March 13-14, 2018 in Ann Arbor, Michigan to discuss the strategy and other matters relevant to collaborative operations. At the meeting a short-term GLRI funding opportunity to support priority activities identified by the IMC and potential projects were discussed. The collaborative continues to host regular webinars to facilitate learning and information sharing on topics related to management and control of dreissenid mussels; webinar announcements and recordings are available online. The website and an email listserv have been established to share information, webinar announcements and recent news, and to connect researchers, managers and other interested parties.

Asian Carp and the Chicago Area Waterway System (CAWS)

The GLC participates as a member of the Asian Carp Regional Coordinating Committee (ACRCC) and the Executive Steering Committee of the Great Lakes and Mississippi River Interbasin Study (GLMRIS), and serves as convener of the CAWS Advisory Committee. The GLC continues to convene the 30-member advisory committee that is the primary regional stakeholder forum seeking solutions to the threat of Asian carp and other AIS passing through the Chicago Area Waterways System (CAWS) while maintaining current uses of the system. The committee last met March 12, 2018 in Chicago. The meeting provided updates on monitoring and response activities in the Illinois waterway system and an overview of the USACE Brandon Road Feasibility Study and Tentatively Selected Plan.

Binational Great Lakes Aquatic Invasive Species Forum

The GLC convened a second Binational Great Lakes Aquatic Invasive Species Forum on November 9, 2017 in Ann Arbor, Michigan. The Forum brought together approximately 50 representatives of federal, state and provincial agencies, research facilities, environmental groups, private industry, and other key stakeholders from the United States and Canada to share information and lessons learned on AIS issues. It featured sessions on regional coordination and collaboration, grass carp, ballast water, and non-native crayfish. Materials from both the June and November forums, including an agenda, proceedings summaries, and presentations, are available on the GLC website.

Great Lakes Aquatic Invasions Publication

The GLC continues to work with members of the Great Lakes Panel on Aquatic Nuisance Species (GLP) to revise, update, and reprint the Great Lakes Aquatic Invasions booklet, last published in 2007. Draft content for the updated booklet is currently under review by GLC staff and GLP members. This effort is anticipated to be completed in 2018.

Great Lakes Phragmites Collaborative (GLPC)

The GLC continues to expand a partnership with the USGS-Great Lakes Science Center to lead communications and regional coordination efforts to address the invasion of non-native Phragmites. Phragmites is an aggressive invasive plant that outcompetes native wetland vegetation, resulting in management challenges for a diversity of stakeholders. More than 60,000 acres of Great Lakes coastal areas are now dominated by Phragmites and millions of dollars are spent annually on management. To address this regional challenge, the GLPC engages the resource management community by facilitating regional collaboration, supporting

technology transfer, linking science and management, and identifying and developing desired information products and tools. The GLPC is guided by Advisory and Steering committees using a Collective Impact approach to align partners around a shared vision and a common agenda to achieve the vision. By mobilizing partners through a communications-focused working group, the GLPC continues to advance the development of a common agenda by determining needed tools and products and advancing strategic actions. The GLPC was described in the GLRI Action Plan II as a model for invasive species collaboratives and continues to provide guidance and leadership to others in the invasive species community. Staff continue to coordinate with researchers in both Canada and the U.S. to pursue biological control agents and other novel research to advance management and control of Phragmites. In response to requests from Phragmites managers, the GLPC hosted a six-part webinar series this fall and winter focused on emerging research, including the effects of herbicide and the ecological and economic impacts of Phragmites management. The GLPC website continues to be the source for comprehensive information on Phragmites in the Great Lakes region and beyond. Content is continually developed and adapted as new information and approaches are identified.

Phragmites Adaptive Management Framework (PAMF)

The GLC continues to work with the USGS, the University of Georgia and a team of Phragmites experts to develop and promote the Phragmites Adaptive Management Framework (PAMF). PAMF is a basin-wide collaborative learning effort that will improve the management of Phragmites at both the local and regional scales and result in ecologically resilient and diverse ecosystems by increasing management efficiency and reducing uncertainty associated with treatment options. PAMF will use a predictive model, a monitoring protocol, and an online database to analyze the effectiveness of treatment alternatives and provide site-specific treatment guidance. PAMF puts the power of a regional data set and robust mathematical models into the hands of land managers to improve the effectiveness of a significant management issue. This approach may be emulated to advance and refine the management of other priority species and habitats.

Last fall PAMF built on the summer's soft launch of the PAMF program by soliciting feedback from 35 organizations that participated in the initial season of data collection. Staff conducted a participant feedback survey to begin incorporating lessons learned and user feedback to improve the program. The first round of Phragmites treatment reports were collected and the PAMF participant guide was refined. The project team is preparing for a basin-wide launch in June 2018. The GLC will coordinate this effort and provide training and information sessions around the basin to enroll new Phragmites management sites into the program. The GLC also continues to present PAMF at professional conferences and regional meetings to grow awareness and participation in the program.

Great Lakes Blue Accounting – AIS Pilot

GLC AIS program staff are working with staff at The Nature Conservancy to develop and implement the AIS pilot of the Great Lakes Blue Accounting initiative. The pilot is focused on enhancing AIS collaborations and developing tools and metrics to advance progress on regional goals for AIS prevention and control. AIS pilot meetings were held in September 2017 and May 2018 to develop specific focus areas for the pilot, including early detection and rapid response, and organisms in trade. Next steps are to develop specific metrics and supporting data to track progress on these issues.

Aquatic Plant Pathway Risk Assessment

The GLC is conducting a pathway risk assessment for the movement of aquatic invasive plants into and around the Great Lakes region. The results of this effort will help the states, provinces, and regional partners understand pathway activity for invasive aquatic plants; characterize potential risks associated with different pathways; and identify gaps in management, compliance and law enforcement, and education for each pathway. This work is being conducted under a subaward to support continued work on an Interstate Aquatic Invasive Species Prevention, Early Detection, and Response planning initiative. The risk assessment will be completed by the end of 2018.

Ballast Water Discharge Regulations in the Great Lakes Region

GLC staff are updating a briefing paper summarizing the status of ballast water discharge regulations in the Great Lakes region. This paper was previously distributed in November 2016 as part of a regional workshop on ballast water. The paper is being updated to reflect developments since that time and will include identification of differences in standards. In addition, new information will be added to the paper summarizing additional requirements and conditions in ballast water rules and permits, including limits on the concentration of residual biocides (e.g., chlorine), as well as discharge monitoring requirements.

Advocacy Activities

In March 2018, the GLC held its 2018 Great Lakes Day in Washington and released a statement of priorities for federal legislation and appropriation. Two key priorities focused on funding for the Great Lakes Restoration Initiative and support for critical invasive species programs. Detailed information is available on the GLC website.

Contact: Erika Jensen, Great Lakes Commission, 734-971-9135, ejensen@glc.org

Canadian Federal

Fisheries and Oceans Canada
No update provided.

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: Neil Kmiecik, Great Lakes Indian Fish & Wildlife Commission, 715-682-6619, nkmiecik@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. The tribal commercial fishery on the upper Great Lakes has historically focused on lake whitefish however lake whitefish growth rates and recruitment have declined remarkably during the past decade, resulting in a precipitous decline in commercial harvests in many areas of Lake Michigan. The declines in lake whitefish growth and recruitment coincided with the arrival and proliferation of Dreissenid mussels, as well as the collapse of the amphipod Diporeia, which occurred in both Lakes Michigan and Huron. The slower growth rate has nearly doubled the time it takes for an individual lake whitefish recruit to the fishery.

Efforts to better understand the cause(s) for the declines in lake whitefish recruitment were initiated by the Chippewa Ottawa Resource Authority in early 2017. The near-term objective was to build a collaboration of researchers and agency managers that would help direct management activities and research funding toward identifying the forces impeding whitefish recruitment. The Great Lakes Fishery Trust, a major research funding entity on Lake Michigan, established a theme area for lake whitefish research in 2017, with emphasis on recruitment bottlenecks. Similarly, the Great Lakes Fishery Commission indicated its support for targeted lake whitefish research. These two entities agreed to co-sponsor a workshop in early 2018 to develop research priorities, which in turn, will be used to guide specific research projects.

Contact: Mike Ripley, Chippewa Ottawa Resource Authority, 906 632-0072, mripley@sault.com

PRIVATE/COMMERCIAL

Council of Great Lakes Industries
No update provided.

Contact: Kathryn Buckner, Council of Great Lakes Industries, 734-663-1944, kabuckner@cgli.org

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
MN Sea Grant has 1 new research project on AIS: Perfecting an Enzyme Coating to Reduce Biofouling. PI: Mikael Elias, University of Minnesota Twin Cities
Research funding: $96,111 Graduate student funding: $101,866

Biofouling occurs when mussels, limpets, algae and similar organisms attach to underwater surfaces. It is the bane of shipping and other industries tied to the Great Lakes and oceans. Previously, this research team isolated enzymes that hijack bacterial communication in a way that prevents films of microorganisms from forming. Without this biofilm, species like zebra mussels are far less likely to attach to surfaces. The research team is testing a variant of an enzyme that is a promising ingredient in antifouling coatings. In preliminary two-month experiments, it has also reduced freshwater corrosion rates associated with bacterial films by 50 percent. Antifouling coatings using this enzyme are 1,000 times less toxic than popular copper-based coatings, which are under environmental scrutiny worldwide. The researchers are conducting longer-term tests of enzyme-based coatings in the Duluth-Superior harbor. Among other things, they expect to improve the coatings by optimizing enzyme activity, stability, and durability. This new coating technology could reduce biofouling more effectively and with far fewer environmental consequences than existing methods.

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

Invading Species Awareness Program, Ontario Federation of Anglers and Hunters
The Ontario Federation of Anglers and Hunters has engaged a communications consultant to develop a communications strategy for the Invading Species Awareness Program (ISAP). The strategy will identify strategic goals and set measurable communication objectives. The strategy also seeks to better understand target audience attitudes and communications preferences in order to select the best communication methods and messages that will reach target audiences and motivate them to take action.

In October, 2017 over 270 hectares of water soldier in the Trent Severn Waterway was treated by SOLitude Lake Management. In addition to efforts to control water soldier in public waters, the OFAH hired an herbicide applicator to treat 3 private ponds with Reward to eradicate water soldier from these ponds in order to prevent any new introductions and/or spread in Ontario.

An Education Liaison was hired to deliver invasive species focused classroom programming throughout Ontario. By the end of March, the Education Liaison visited 22 schools, delivered programming to 41 different classes, reaching approximately 950 students. In March, the ISAP hosted an Invasive Species Fair event to celebrate Invading Species Awareness Week; three classes were invited to the OFAH/Mario Cortellucci Hunting and Fishing Heritage Centre to showcase what they have learned about invasive species as a result of the classroom programming delivered by the ISAP.

Program staff attended key trade shows to increase awareness of invasive species: Canadian Ice Fishing Expo, Toronto International Boat Show, Spring Fishing and Boat Show, Ottawa Boat Show, Quinte Sportsman's Show, Toronto Sportsman's Show, Bass Pro Spring Fishing Events, Kawartha Sportsman's Show, Hamilton Bassmasters Tackle Swap.

The ISAP hired an Outreach Liaison to coordinate and deliver education and outreach focused on the Lake Simcoe winter fishery. Educational resource packages were distributed to ice hut operators, baitfish operators, and anglers through access point and on-ice outreach, and attendance at fishing derbies.

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

Invasive Species Centre
The Invasive Species Centre (ISC) continues our mission to connect stakeholders, knowledge and technology to prevent and reduce the spread of invasive species that harm Canada's environment, economy and society. Through 2017-18, highlights of our work on Aquatic Invasive Species include:

Asian Carp Canada Outreach Program

In partnership with Fisheries and Oceans Canada (DFO), the ISC provides information and resources on Asian carps to engage broad audiences. This program includes a project website, www.asiancarp.ca, an ongoing webinar series, social media presence, and public information sessions in key geographic areas. In February 2017 in collaboration with DFO and the Toronto Zoo, the ISC launched an interactive Zoo exhibit where live Asian carps can be seen on display for the first time in Canada.

20th International Conference on Aquatic Invasive Species (ICAIS)

The International Conference on Aquatic Invasive Species (ICAIS) is widely considered the most comprehensive international forum on aquatic invasive species. The ISC is the ICAIS Secretariat and brings together leaders from academia, industry, government, NGOs, and other stakeholders to address new and emerging aquatic invasive species issues by sharing research and policy developments and innovative ideas through presentations and opportunities for collaboration. In October 2017, the ISC welcomed 204 conference participants representing 17 countries to Ft. Lauderdale, Florida for the 20th ICAIS.

Risk Assessment and Policy Research

The ISC continues to work with the Ontario Ministry of Natural Resources and Forestry (OMNRF) to conduct risk assessments and policy research to support the implementation of Ontario's Invasive Species Act. In addition, the ISC has compiled information on existing risk assessments into an accessible and searchable risk assessment database, available at http://www.invasivespeciescentre.ca/LEARN-ABOUT-INVASIVE-SPECIES/Risk-Assessments.

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

The Nature Conservancy
No update provided.

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

Wildlife Forever
No update provided.

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

Minnesota Sea Grant
The Great Lakes Sea Grant Network, led by Minnesota, continues to support Habitattitude, Stop Aquatic Hitchhikers! and Nab the Aquatic Invader outreach and education aimed at changing behaviors to prevent and slow the spread of harmful AIS across the Great Lakes region. From Apr 2017 – Feb 2018, GLSGN and its partners generated 6.3 M exposures through multi-media efforts, including mass (TV, radio, newspaper, e-news) and social media (FB and Twitter). Sixty-six presentations on Stop Aquatic Hitchhikers! and Habitattitude educated nearly 5,500 people and 77 booths educated nearly 82,500 visitors. Teacher trainings and events educated over 5,050 teachers and youth. MN and WI Sea Grant continue to support new and existing Habitattitude Collaborative Networks, which host Surrender events where owners of unwanted reptiles, fish, aquatic invertebrates and aquatic plants can re-home their pets. As an alternative to release, well over 400 pets have been rehomed! Funded by EPA through GLRI.

MN Sea Grant continues to support St. Louis River Quest, a shipboard education program for 1,500 6th graders each spring (http://www.seagrant.umn.edu/riverquest/). During the 2.5-hour excursions, students are introduced to topics ranging from pollution prevention and stopping aquatic invaders, to boating safety and commercial shipping. Since 1993, River Quest has provided hands-on learning to nearly 25,000 students.

In February 2017, the ANSTF rolled out a new Stop Aquatic Hitchhikers! website (www.StopAquaticHitchhikers.org). Co-chaired by Doug Jensen and Elizabeth Brown, Colorado Parks and Wildlife, the Communication, Education and Outreach Committee members wrote and reviewed content, provided comments to the U.S. Fish and Wildlife Service, and helped promote the website. Resources provided will help the ANSTF and regional panel members, campaign partners, and recreationalists to be good stewards to help prevent the spread of AIS via: clean-drain-dispose-wash-dry.

In summer 2017, use of CD3 Cleaning Stations expanded across MN. To reduce AIS spread, five CD3 stations were made available 24/7 at public water accesses in MN. CD3 (or Clean-Drain-Dry-Dispose) Waterless Cleaning Stations provide free tools empowering boaters to take actions to prevent AIS spread. CD3 Stations make it easier than ever to help Stop Aquatic Hitchhikers! MN Sea Grant surveys have indicated what boaters do, but not how they respond to AIS prevention messages. Furthermore, 15-22% of boaters claim not taking action because boat washing stations are not available. Current inspection programs and decontamination stations are limited by resources, so alternative options are needed to help boaters prevent AIS spread. MN Sea Grant worked as a project advisor to provide expertise on AIS outreach awareness and behavior change assessment. Goals of the pilot are to ensure technologies are proven and transferable across the country. Units provide highly visible easy to use tools with 24/7 access. Tool use is monitored with data uploaded to iCloud. Metrics gathered reveal when, how long and what tools are most popular. Within 310 days after five stations were installed, boaters used over 6,600 tools in total, mostly the gabber, brush and wrench followed by blower, water vacuum and lights. An average boater used three tools per visit. Metrics gathered will help improve AIS outreach aimed at getting more boaters to use CD3 Stations. Due to the pilot's success, dozens of resource managers have inquired to adopt CD3 Stations in 2018. https://www.cd3station.com/

In fall 2017, a presentation, Sticky Habits: Insights into Behaviors by Recreational Boaters, we given at the 20th Int'l Conference on AIS (ICAIS), Fort Lauderdale, FL. 80 attended. Presentation examined survey and how values, attitudes and beliefs can be targeted to increase motivation for action through the Stop Aquatic Hitchhikers! campaign.

In fall 2017, we hosted an AIS-Hazard Assessment and Critical Control Program booth at the 38th Annual North American Society of Toxicology and Chemistry Conference, Mpls, MN, November 11-16. Emphasis was on letting researchers know they should have control plans to help prevent spread of AIS via their field work. Message was very well received, visitation was excellent and there was pick up of nearly a thousand education materials.

In winter 2018, U.S Fish and Wildlife Service and WI DNR announced that a bloody red shrimp was found in a sample collected from the Duluth-Superior harbor in July 2017. MNSG was interviewed several times. Resulting media pick-ups from Duluth News Tribune and Twin Cities Star Tribune, including Washington Post, New York Times and two dozen other media, generated 128 M exposures! That is larger than media coverage of sea lamprey taste test in 1997, which was 28 M exposures.

The 2018 Upper Midwest Invasive Species Conference will be held jointly with the North American Invasive Species Management Association, October 15-18, 2018, at the Mayo Civic Center, Rochester, MN. Over 700 attendees are expected from at least 30 states and provinces and include management information on nearly 80 terrestrial and aquatic invaders. Over 250 presentations, 50 posters, 50 exhibitors and 8 field trips will provide updates on how invasive species can be better managed. UMISC is the largest and most comprehensive all taxa invasive species conference nationally. Co-chaired by Doug Jensen, MNSG and Mark Renz, UW Extension. **REGISTRATION IS OPEN** (https://www.umisc.net/).

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

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation (SLSDC) continues to work with the ship industry and regulators on issues and solutions associated with ballast water and non-native species. SLSDC works with the U.S. Coast Guard, Transport Canada – Marine Safety and Security, and the St. Lawrence Seaway Management Corporation on the Great Lakes Ballast Water Working Group (BWWG). The BWWG is 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, which spans all five Great Lakes and the connecting waterways.

- 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 aggressive 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 2017 BWWG report was released in January 2018. The complete 2017 report is available at:
http://www.greatlakes-seaway.com/en/pdf/2017_BW_Rpt_EN.pdf
Summary:

- 100% of vessels bound for the Great Lakes Seaway from outside the Exclusive Economic Zone (EEZ) in 2017 received ballast management exams on each Seaway transit.
- In total, 8350 ballast tanks were assessed during 457 vessel transits.
    - Total tanks with satisfactory ballast water exchange – 8238 (98.7%)
    - Total tanks issued a Letter of Retention (LOR) – 112 (1.3%)
        - No vessels were found to be in violation of their LOR
- Vessels that did not exchange their ballast water or flush their ballast tanks were 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 were unable to exchange their ballast water/residuals and that were required to retain them onboard received an LOR before continuing their inbound transit, and a verification exam during their outbound transit prior to exiting the Seaway.
    - LORs were issued for 54 vessel transits involving 112 tanks
        - 68 were due to low salinity
        - 2 were caused by high salinity
        - 42 were due to improper reporting, carriage of liquids (other than ballast water) or not accessible for testing.
    - After an on-board inspection, one vessel went back to sea from Sorel to exchange 9 BW tanks before entering the Great Lakes/Seaway system.
    - In addition, 8 bulk carriers approaching the Seaway with residual contaminated water in their Hold Wash Tanks were required to flush or retain their hold tanks.
- 100% of ballast water reporting forms were screened to assess ballast water history, compliance, voyage information and proposed discharge locations. Four vessels received an Administrative Monetary Penalty (AMP) of $6,000/vessel; totaling $24,000 from Transport Canada Marine Safety & Security for making false declarations. Ballast tank test results were inconsistent with information found on the Ballast Water Reporting Forms.

The BWWG anticipates continued high vessel compliance rates for the 2018 navigation season. During the 2018 season, the U.S. Coast Guard will continue sampling ballast tanks on vessels that do not have treatment or alternate management systems; the Seaways will continue to sample 100% of ballast water tanks on all vessels, with or without treatment or alternate management systems.

Contact: David Reid, Saint Lawrence Seaway Development Corporation, 734-663-0198, dfrBWR@gmail.com

National Wildlife Federation

- Currently working to advance the USACE Brandon Road Lock and Dam TSP to help reduce the risk of Asian carp entering the Great Lakes.
- Implementing Asian carp communications strategy that focuses on outdoor writers and developing materials for the hunting/angling and outdoor recreation industry.
- Working to strengthen current ballast water standards at the federal and state level.

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

North Central Regional Aquaculture Center, Department of Fisheries and Wildlife
No update provided.

Contact: Chris Weeks, Department of Fisheries and Wildlife, 517-353-2298, weekschr@msu.edu