

Great Lakes Panel Member Updates

Fall 2015

Meeting of the Great Lakes Panel on Aquatic Nuisance Species
May 3-4, 2016 | Traverse City, Michigan

U.S. Federal

U.S. Fish and Wildlife Service

No update provided

Contact: Mike Hoff, U.S. Fish and Wildlife Service, 612-713-5114, michael_hoff@fws.gov

National Oceanic and Atmospheric Administration

No update provided

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

National Park Service

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

Contact: Jim Galloway, U.S. Army Corps of Engineers, 313-226-6760, jim.e.galloway@usace.army.mil

U.S. Coast Guard

No update provided

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

U.S. Forest Service

No update provided

Contact: Dan McKinley, U.S. Department of Agriculture-APHIS, 414-297-3431, dmckinley@fs.fed.us

U.S. Department of Agriculture-APHIS

No update provided

Contact: Vacant

U.S. Department of State

No update provided

Contact: Vacant

U.S. Environmental Protection Agency

No update provided.

Contact: James Schardt, U.S. EPA- Great Lakes National Program Office, 312-353-5085, schardt.james@epa.gov

U.S. Geological Survey

USGS and University of Toledo Grass Carp Update
[Sandusky River reproduction](#)

As part of a two-year project to assess the spawning potential of Grass Carp in the Sandusky River, Holly Embke, a USGS-funded grad student at the University of Toledo, sampled ichthyoplankton using paired bongo net tows and larval light traps June through August 2015. She collected, identified, and estimated developmental stage of eight eggs that were morphologically consistent with Grass Carp. Five eggs were confirmed as Grass Carp using quantitative PCR and DNA sequencing directed against portions of the cytochrome oxidase I mitochondrial gene, while three were retained for future analysis. All eggs were collected during high flow events, either on the day of or 1-2 days following peak flow, supporting the general consensus that high flow conditions favor Grass Carp spawning. A manuscript reporting these findings is in review at the Journal of Great Lakes Research. Sampling will continue through the 2016 field season using bongo nets to further inform the relationship between spawning and flow. Larval light traps will also be used to attempt to capture larvae, which will inform recruitment potential.

Data from 2015 spawning events will be used for hydrologic modeling to calculate maximum-likelihood probability distributions of spawning and hatching locations for eggs. Additionally, she will be using rainfall, discharge, water and air temperature observations to determine the most likely conditions under which spawning will occur.

Vegetation mapping and sampling

The University of Toledo and USGS are collaborating on a project to determine distribution and community composition of submersed aquatic vegetation (SAV) in the western basin of Lake Erie. The project was developed in support of Grass Carp research to provide baseline SAV data for future use in monitoring and risk assessment. We have created a 3-tier assessment tool using object-based image analysis from existing aerial and satellite imagery, hydroacoustics, and physical field sampling to characterize SAV. To date we have generated maps of all nearshore areas of US waters of western Lake Erie and are identifying where hydroacoustic and physical sampling have occurred. Field sampling in 2016 will be done in areas where remote sensing has identified presence and absence of SAV to provide verification of both presence and absence of SAV. We will also compare SAV community composition and relative abundances between areas where Grass Carp are known to have been captured and those where Grass Carp are thought to be absent to determine if there is a detectable effect of Grass Carp herbivory. Findings will be presented at the American Fisheries Society meeting in August 2016.

Grass Carp Age and Growth and Recent Captures in Lake Erie

Managers and Researchers throughout the Great Lakes region have been providing Grass Carp to USGS researchers for ploidy, age, and growth analysis for several years. We now have a sufficient data set to address longevity and growth potential of Grass Carp in Lake Erie. Preliminary findings suggest Grass Carp in Lake Erie are long lived, attaining ages up to 20 yrs. This maximum age exceeds the maximum reported in the primary scientific literature. Growth is robust, with some fish attaining 1 m in length by age 6. Preliminary data were presented at the Midwest Association of Fish and Wildlife Agencies conference in January 2016. A manuscript on the same subject is in preparation.

Tributary and otolith chemistry for identifying potential spawning locations

In 2016 the USGS initiated a 1-yr project in collaboration with DFO-MPO, Ohio DNR, USFWS, and the University of Toledo to collect water samples from dozens of tributaries of Lakes Erie, Michigan, and Ontario to establish a "library" of water chemistry, particularly ions and isotopes of Mg, Ca, Sr, and Ba, as a reference for inferring movements and potentially spawning-related movements of Grass Carp. These data will also be of value for other similar projects, such as evaluating use of tributaries by Cisco and non-native salmonids. Results will be published as a data series following the 2016 field season.

Uptake rates of Grass Carp

The USGS, Bowling Green State University, and Ohio DNR are collaborating on a project to assess uptake rates of divalent cations into otoliths of Grass Carp. Knowing uptake rates and relationships between concentrations of divalent cations in water and otoliths is critical to interpreting movements and possible spawning locations of Grass Carp. To date uptake rates for Common Carp, the closest taxonomic relative, have been used, but dietary differences between Grass Carp and Common Carp make Common carp a poor substitute. We will be stocking several individual triploid Grass Carp into Ohio DNR fish culture ponds and three ponds on the grounds of the National Aeronautics and Space Administration's Plum Brook Station in Sandusky, Ohio with varying levels of the divalent cations Ca and Sr to quantify relationships between water chemistry and otolith microchemistry. Relationships will be used to interpret movement patterns and potentially spawning locations of Grass Carp from the Great Lakes.

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State/Provincial

Illinois

No update provided.

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

Indiana

No update provided.

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Michigan

Michigan is entering into the 3rd year of administering its invasive species grant program. The grant program supported expansion of Cooperative Invasive Species Management Areas to cover most of the state; projects to advance management of Eurasian watermilfoil, starry stonewort, and European frogbit, and education and outreach efforts.

Continuing response efforts are planned for 2016 to address new infestations of New Zealand mudsnails in the Pere Marquette River, nuisance blooms of *Didymo* in the St. Marys River, and yellow floating heart in southeast Michigan. An interdepartmental team is investigate options to address two infestations of European water clover in southeast Michigan. Removal efforts for known infestations of European frog-bit, water lettuce, and water hyacinth will continue in 2016.

Collaborative efforts among the Great Lakes states, The Nature Conservancy, and other partners on developing an interstate Early Detection and Response Plan will continue through 2016 with a focus on wrapping up the development of the interstate surveillance plan and the development of an interstate response plan.

The MDARD and MDNR are implementing modifications to statute that became effective in April, 2015 regarding prohibited and restricted species. Specifically, the statute calls for the development of permitted species lists as well as the use of science-based risk assessments to evaluate plant and animals for prohibited and restricted listing.

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 launched a new interdepartmental invasive species website www.michigan.gov/invasives to streamline public access to information. Key education and outreach activities for 2016 include the third annual AIS "Landing Blitz" to raise awareness about preventing the spread of AIS through recreational boating and the launch of Michigan's new campaign "RIPPLE- Reduce Invasive Pet and Plant Escapes" to prevent AIS via organisms in trade pathways.

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Minnesota

No update provided.

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

New York

No update provided.

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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. Recent evidence of Snakehead eDNA in the Killbuck Creek (tributary to Muskingum River) prompted a follow-up survey where not live fish were observed. We will continue to monitor this situation.
- Continue surveillance for grass carp to determine if diploid (fertile) fish were present in the wild.
- Continue to investigate closure options for the four Great Lakes Mississippi River Interbasin Study connections in Ohio at Little Killbuck Creek, Ohio Erie Canal, Grand Lake St Marys, and Mosquito Creek Lake. The USACE has initiated final design for the closure of the Ohio Erie Canal connection. Selecting engineering firms for the final closure designs at Little Killbuck Creek and Grand Lake St Marys.
- Completed the first year of inspection program to determine if AIS, including Bighead and Silver Carp, are being transported through the bait trade.
- Initiated 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.

•Participated in the following groups: Council of Great Lakes Governors, Mississippi River Basin Panel, Great Lakes Panel, Aquatic Nuisance Species Task Force, Ohio Aquatic Invasive Species Committee, Grass Carp Binational Committee, Chicago Area Waterway System Advisory Committee, 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: Isabelle Simard, Quebec Ministry of Sustainable Development, Environment and Parks, 418-521-3907 x4417
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Wisconsin

Wisconsin has taken a large step in reducing the advancing front of *Phragmites* in the state and in the Great Lakes basin. A concentrated effort to control *Phragmites* has significantly reduce the threat to critical habitat in the Great Lakes basin. Our strategic Plan is also being updated. Round goby's have made it to the Lake Winnebago doorstep so extreme measures are being taken to prevent their continued upstream march up the Fox River. Bait bucket release is believed to be the primary means for this AIS to pass so far upstream past numerous lock and dam structures. We will be testing a new survey method to help set our program priorities. The survey method is called conjoined analysis and is very different than the traditional "rank your priority" type of survey.

Contact: Bob Wakeman, Wisconsin DNR, 262-574-2149, robert.wakeman@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

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

Great Lakes Commission

Asian Carp and Chicago Area Waterway System

The GLC continues efforts to investigate, forge consensus and advance solutions to the threat of Asian carp and other aquatic invasive species (AIS) passing through the Chicago Area Waterways System (CAWS) while maintaining current uses of the system. Specifically, the GLC supports and serves on a 30-member advisory committee that is the primary regional stakeholder forum seeking solutions to the problem of AIS transfer through the CAWS. The committee entered a new consensus-seeking phase in 2014 with support from an experienced facilitation team (Gail Bingham, president emeritus of RESOLVE, and Tim Brown, founder and president of Wabashco LLC) and has developed consensus positions on short- and long-term recommendations. The committee met ten times during the current phase, most recently on December 17. The Committee recently finalized its recommendations on the most promising avenues for a long-term solution to preventing AIS transfer through the CAWS. In a letter to President Obama and Congress, the Committee shared its conclusion "that a system of possible control points in the CAWS to address AIS is worth further study." The Committee requested that "sufficient funds be allocated, beginning with the proposed fiscal year 2017 budget, that will allow the U.S. Army Corps of Engineers (USACE), under existing authorities, to complete specific studies necessary to develop a Chief's Report on a system of control points" and that the USACE investigate two specific questions:

"1. Whether an AIS lock or system of AIS locks can be designed and implemented in the CAWS to be effective at two-way prevention, compared to other alternatives, including what is known to be most effective; and

2. Whether and how control points could be implemented consistent with the mid-system locations identified in several GLMRIS alternatives.”

In addition, the committee continues to support the evaluation of the Brandon Road Lock and Dam as a control point to prevent Asian carp and other species moving from the Mississippi River into the Great Lakes basin.

Significant technical analysis was conducted for the Advisory Committee by HDR Engineering, Inc. This has provided important new information on options for configuring control measures in a navigation lock and the level of risk reduction that can be achieved, which is estimated to be between 85% and 95%, depending upon species. While this level of risk reduction can be theorized, actual rates will depend upon the specific control measures selected and the targeted species. The uncertainty of control measure application, weakest pathway link, and potential cumulative effects of multiple control points drives overall risk reduction estimates.

This work likely will set the foundation for more extensive future studies and demonstrations to be conducted by the Army Corps of Engineers, MWRD, and other agencies. Further research and development, combined with adaptive management, is expected to improve efficiencies and reduce uncertainty, including investigation of a focused set of control measures and combinations, evaluation of mixing effects in lock chambers and interactions of control measure combinations, and assessment of criteria related to maritime safety and operations. Demonstrating how ANS locks can be incorporated into an AIS-free buffer zone concept, together with infrastructure to address existing problems in the CAWS, offers significant potential to couple a regional benefit (increased AIS risk reduction) with local benefits (reduced flooding and CSOs) to generate both regional and local cost-share partners.

The members of the Advisory Committee have expressed a desire to continue meeting to receive information on the Brandon Road Feasibility Study, the work of the Asian Carp Regional Coordinating Committee, and related efforts. The committee likely will not work on new consensus statements at this time, although such statements could be developed if warranted.

The committee’s complete letters from January 2016 and August 2015 are included in the Speaker Topics section of the briefing book. All of the Advisory Committee’s products, along with the consultant’s report to the Commission summarizing technical research conducted for the committee, are available online at <http://glc.org/projects/invasive/chicago-waterway/>.

Organisms in Trade

Work is wrapping up on a Great Lakes Restoration Initiative-funded project to develop software and tools to track, identify and monitor the sale of invasive species via the internet. The web-crawling software system – the Great Lakes Detector of Invasive Aquatics in Trade (GLDIATR) – is complete and in operation. The GLC will be reporting on the overall effort later this year and plans are underway to continue to make improvements and maintain and operate the software system for basinwide use. Funding proposals were submitted in 2015 to support continued enhancement and implementation of GLDIATR and coordinate outreach, and staff are optimistic that this work will be funded and sustained. Ongoing work will be coordinated with a multi-stakeholder team that includes NGOs, industry, and state and federal agencies.

The GLC continues to support federal efforts to prevent the importation of potentially harmful non-native species. The GLC responded in support of a recent move by the U.S. Fish and Wildlife Service to list eleven new species as “injurious” under title 18 of the Lacey Act. As the GLC is previously on record calling for more effective pre-import screening efforts, staff undertook several activities to communicate GLC support for this action, including a letter to the Service submitted through the public comment process, a press release, and a resolution passed at the 2015 Annual Meeting in Chicago: <http://glc.org/files/main/resolutions/FINAL-GLC-Resolution-Lacey-Act-Listing-20150929.pdf>.

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 control of zebra and quagga mussels. A steering committee for the Collaborative has been convened and has met several times; a science team was convened early in 2016 to work towards developing a research and science agenda for mussel control. The Collaborative is hosting webinars to facilitate learning and information sharing on topics related to control of dreissenid mussels; webinar recordings are available online at www.invasivemusselcollaborative.net. The Collaborative website was recently updated with more comprehensive information about the issues and a web-form for submitting ongoing research projects and published work. An email listserv is also established to share information, webinar announcements and recent news, and to connect researchers and managers.

Great Lakes Phragmites Collaborative

The GLC continues to expand a partnership with the USGS-Great Lakes Science Center to lead communications and research on the non-native plant *Phragmites*. The Great Lakes *Phragmites* Collaborative, established in 2012, engages the resource management community, reduces redundancy, links science and management, facilitates adaptive management, and encourages a systems approach to management and conservation efforts for this invasive species. The Collaborative supports an interactive web hub (www.greatlakesphragmites.net), webinar series, social media presence and email list, and is guided by a regional advisory

committee, which is currently developing a formalized governance structure. The GLC also supports the Collaborative for Microbial Symbiosis and *Phragmites* Management, established in partnership with the USGS, to bring together researchers to explore symbiotic relationships to both control non-native *Phragmites* and encourage establishment of native plants. These collaboratives use the principles of Collective Impact to address this natural resource challenge and staff developed a manuscript to showcase this approach as a novel strategy to align priorities and resources for complex issues, which was submitted to the journal Biological Invasions for publication. Several products are being developed, including best practices case studies, a strategic plan, and an adaptive management decision tool.

Sea Lamprey Barrier Mapping

The GLC, in collaboration with the Great Lakes Fishery Commission, has been enhancing the barrier mapping application. The application is available at <http://data.glfsc.org>. Enhancements have been added to further improve the search, inset map and user interface. Approximately 7,000 more barriers have been added to the original ~900 in the system. Historical max extent data has been added to show how far up a given waterway sea lamprey larvae have been found, barrier fact sheets have been added, and images of lamprey traps where relevant.

Contact: Tim Eder, Great Lakes Commission, 734-971-9135, teder@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 No update provided

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

IL-IN and PA Sea Grant submitted the following lists of AIS-related research which their programs are funding...

IL-IN Sea Grant

Tomas Hook and Sergiusz Czesny, Purdue University/Illinois Natural History Survey, Constructing the nearshore Lake Michigan food web using multiple trophic indicators

Sergiusz Czesny, Illinois Natural History Survey, Assessing Nearshore-Offshore Connectivity in the Lake Michigan Food Web Using Multiple Trophic Indicators

Cary Troy, Purdue University, Alteration of nutrient cycling and food web structure by profundal quagga mussels in Lake Michigan

Gary Lamberti, Notre Dame, Quantifying Coastal Wetland – Nearshore Linkages in Lake Michigan for Sustaining Sport Fishes

PA Sea Grant

Geoffrey Smith, PA Fish and Boat Commission - Preliminary determination of density and distribution of Flathead Catfish *Pylodictis olivaris* in the Susquehanna River and select tributaries.

Anya Goldina, Elizabethtown College - Investigation of Chemical Signals for Improving Trapping Efficiency and Preventing Further Expansion of Invasive Crayfish Species

Casey Wilson, Allegheny College and Jay Stauffer, Penn State - Determination of invasive round goby populations within the main stem of French Creek and their potential impact on benthic fishes

Casey Bradshaw, Allegheny College - Microhabitat partitioning of round gobies (*Neogobius melanostomus*) in Elk Creek and the French Creek Watershed

Kelly Grant, Gannon - Assessing the Utility of eDNA to Track Lake Strugeon and Invasive Gobies

Sarah Meiss, California University of PA - Using DNA technology to identify invasive cattail, native cattail, and their hybrid to better manage and control the spread of the invasive in PISP

Brian Mangan, King's College - Rusty Crayfish and Smallmouth Bass in the Susquehanna River: Who's eating Whom?

Matthew Shank, Susquehann River Basin Commission - *Didymosphenia geminata* in Pennsylvania: an Investigation of Current and Historic Distribution, Habitat Suitability, and Nutritional Content

Jay Stauffer, PSU - Population Genetics Structure and Morphometric Analyses of Round Goby Collections from Lake Erie, Presque Isle Bay, and Three Erie County, Pennsylvania Streams

Benoit Van Aken and Sasha Eisenman; Erik Silldorff, Temple University and DRBC - Development of a real-time PCR method for the early detection of aquatic invasive species in Pennsylvania watersheds

Kelly Grant and Greg Andraso, Gannon University - PCR tracking of predation on non-native species in Lake Erie

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

No update provided

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

The Nature Conservancy

No update provided

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

Wildlife Forever

No update provided

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

Minnesota Sea Grant

First Regional AIS Outreach Campaign:

The Great Lakes Sea Grant Network (GLSGN) led by Minnesota Sea Grant completed the region's first multi-media campaign aimed to raise awareness and change behaviors to help prevent the spread of AIS. Funded by three EPA grants through the Great Lakes Restoration Initiative, efforts by the GLSGN and its partners generated 24.8 million exposures since 2010. Efforts featured [Stop Aquatic Hitchhikers!TM](#), [Nab the Aquatic Invader](#), [Habitattitude!TM](#), and [AIS-HACCP](#). Over 500 talks and nearly 200 education tools were produced, which serve as models for adaption or adoption use elsewhere in the U.S. Four hundred twenty five booths hosted at boat shows and other events educated nearly 322,000 people. Social and mass media generated 20.4 million impressions. Nearly 130,000 teachers and students learned about AIS through Nab *the Aquatic Invader!* training workshops, events, and website. GLSGN efforts were supported by nearly 540 partners. Promotion of the campaign communicates simple and consistent messages that avoids duplication of effort, and promotes guidelines that foster sustained preventative actions by watercraft users, consumers, educators and students. Exposure to prevention messages from education events not only raised public awareness, but importantly reported behaviors significantly rose by 40%. More people are cleaning off their boats, educating others, and finding new homes for unwanted pet fish than ever before.

Surrender Event:

The first-ever *Habitattitude Aquarium Fish and Plant Surrender and Auction* was a huge success! Hosted by the Minnesota Aquarium Society (MAS) and co-sponsored by Minnesota Sea Grant (January 23, 2016; Bloomington, MN), over 200 people purchased 24 entries of donated and society-raised aquarium fish. It was a four-way win for the environment protection, aquarists who found new homes for unwanted pets, as a fund raiser for MAS, and for the 1+ million exposures generated across Minnesota from mass and social media pick-ups.

[Minnesota Sea Grant News On-line](#)

[Minnesota Aquarium Society Website](#)

[Reef to Rain Forest Media Article](#)

Upper Great Lakes Policy Symposium:

The *Upper Great Lakes Law and Policy Symposium: Managing Water Across Boundaries* (March 24, 2016; Duluth, MN) was crafted to zero in on how recent activities (i.e., the *Great Lakes Compact* and the *Great Lakes Ballast Water Collaborative*) might serve as models for tackling other Great Lakes trans-boundary issues like climate, mining, crude oil/energy movement, and water levels. Three panel discussions focused on: 1) Water Diversion and Water Levels, 2) Non-native Aquatic Species, and 3) Contaminants, Climate and Emerging Challenges. Over 100 participants helped achieve the symposium's goals. Keynote presenters included: [Lana Pollack](#), Chair of U.S. Section of the International Joint Commission, Washington, D.C.; [Peter Annin](#), author of *The Great Lakes Water Wars* and Co-director of Northland College's Burke Center for Freshwater Innovation, Ashland, WI; [Cameron Davis](#), Senior Advisor to the Administrator, U.S. Environmental Protection Agency, Chicago, IL; and Michael Goffin, Regional Director General, Environment and Climate Change Canada, Toronto, Ontario. Organized by Minnesota Sea Grant, it was supported by the National Sea Grant Law Center, University of Minnesota Law School, and University of Minnesota Duluth's Pre-Law Club, [Consulate General of Canada \(Minneapolis\)](#) and the [University of Minnesota Duluth](#).

Ballast Water:

Sea Grant continues to serve as a member of the Executive Committee for the Great Lakes Ballast Water Collaborative, which communicates on regulatory and science-based actions by the IMO, U.S. and Canada. Recent examples include: implications of IMO ratification of the Ballast Water Convention for the U.S. Great Lakes fleets, a science based review dealing with U.S. Coast Guard non-acceptance of "Most Probable Number" methodologies to evaluate treatment system efficacy, and zeroing out some of the most promising UV ballast treatment systems. Sea Grant regularly speaks to private industry and government agencies about their concerns and questions. In March, a "Great Lakes Policy Workshop for Minnesota Legislators" was held at the Minnesota Senate Building in St. Paul, which was attended by Minnesota state and federal legislators. At the invitation of the Great Lakes Legislative Caucus, Gary Croot, President, IMESA, Inc. and Sea Grant's Dale Bergeron co-presented an update on international, federal, and state activities concerning ballast water regulation, and ballast water treatment technology.

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Additional Contacts: Marte Kitson 218/726-8305, mkitson@d.umn.edu; Sharon Moen, 218/726-6195, smoen@umn.edu, or Dale Bergeron, 218/726-7672, dbergero@umn.edu, Minnesota Sea Grant

Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation (SLSDC) continues to be very interested in the issues of aquatic invasive species in the Great Lakes and St. Lawrence Seaway and continues to work with the ship industry and regulators on associated issues and solutions. 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), a joint effort to enforce harmonized ballast water management procedures and regulations and assure ships entering the Great Lakes pose minimal risk of introducing any new species.

The 2015 Summary of the BWWG was released in February 2016. 100% of vessels bound for the Great Lakes Seaway from outside the Exclusive Economic Zone (EEZ) in 2015 received ballast management exams on each Seaway transit. In total, all 8361 ballast tanks were assessed during the 455 vessel transits. 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 a verification exam during their outbound transit prior to exiting the Seaway. In addition, 100% of ballast water reporting forms were screened to assess ballast water history, compliance, voyage information and proposed discharge locations.

All (100%) ballast water reporting forms were screened to assess ballast water history, compliance, and intentions. Outcome of 2015 ballast tank exams:

- Total tanks capable of carrying ballast water – 8361
- Total tanks with a satisfactory ballast water exchange – 8109 (97%)
- Total tanks issued a Letter of Retention – 252 (3 %)

BWWG agencies issued a Letter of Retention for 63 vessel transits involving 252 tanks. Because of pre-arrival screenings, no vessels had to alter course to enable satisfactory exchange, avoiding major delays later in their transit and the issuance of Letters of Retention. Six bulk carriers approaching the Seaway with residual contaminated water in their Hold Wash Tanks were required to flush or retain their hold tanks to protect their vessel's potable water supply and the Great Lakes marine environment.

BWWG verification efforts assured that noncompliant ballast water was not discharged in the Great Lakes Seaway system. The BWWG anticipates continued high vessel compliance rates for the 2016 navigation season. Since 2006 no new ballast-attributed species have been identified in the Great Lakes.

The complete 2015 report is available at:

http://www.greatlakes-seaway.com/en/pdf/2015_BW_Rpt_EN.pdf

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

National Wildlife Federation

No update provided.

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

North Central Regional Aquaculture Center, Department of Fisheries and Wildlife

Investigators from Michigan State University, Michigan Sea Grant, University of Minnesota and the North Central Regional Aquaculture Center are working on a project, funded through the State of Michigan, to assess the feasibility for a voluntary 3rd party

AIS prevention verification program for aquaculture and baitfish sectors. In a preliminary assessment we reported on current strategies for AIS Management in Aquaculture and Baitfish Sectors in the Great Lakes Region. We have also recently completed a feasibility study (in final draft) in which we made the following recommendations for moving this project forward: i) adhering to nomenclature referring to this as a “verification” program (as opposed to certification) to avoid confusion with international 3rd party certification programs; ii) model the program based on AIS HACCP principles and incorporate elements from both AIS HACCP and the Arkansas Certified Bait programs; and iii) proceed with a case study to test application of a model AIS HACCP verification program. Our goal is to complete the development of the model program and conduct a case study with one or more aquaculture and baitfish facilities in Michigan and/or Minnesota in the fall of this year (2016).

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