

# Great Lakes Panel Member Updates

## Spring 2024

Meeting of the Great Lakes Panel on Aquatic Nuisance Species  
June 25 - 27, 2023 | Sault St. Marie, Ontario

### 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

Research activities:

NOAA GLERL conducted multiple studies in Lake Michigan focused on invasive quagga mussels, including: (1) sampling mussel veligers frequently to assess growth, timing, and distribution nearshore to offshore; (2) seasonal assessments of invasive quagga mussel body condition and reproductive status; and (3) tracking quagga mussel growth in a long-term field experiment.

Recently published papers:

- Elgin, A.K., P.W. Glyshaw, G.S. Carter. 2023. Western Lake Erie Quagga Mussel growth estimates and evidence of barriers to local population growth. *Aquatic Ecosystem Health & Management*; 26 (4): 120–130. doi: <https://doi.org/10.14321/ae hm.026.04.120>.  
*The findings of this study provide useful mussel growth parameters and indicate substrate or other limitations for dreissenid mussel populations in western Lake Erie.*
- Vanderploeg, H.A., P.W. Glyshaw, H.J. Carrick, G.S. Carter, N. Dahal, V.J. Deneff, D.L. Fanslow, C.M. Godwin. 2023. Seasonal interactions between Quagga Mussel grazing and phytoplankton in western Lake Erie: The view from different measuring technologies. *Aquatic Ecosystem Health & Management*; 26 (4): 111–119. doi: <https://doi.org/10.14321/ae hm.026.04.111>.  
*This study supports the hypothesis that dreissenid mussels, when abundant, can affect seasonal succession of phytoplankton shifting composition to cyanobacteria and even changes within the cyanobacterial community; however, impacts are likely modest now due low mussel biomass.*
- Carter, G.S., C.M. Godwin, T.J. Johengen, H.A. Vanderploeg, A.K. Elgin, P.W. Glyshaw, H.J. Carrick, N. Dahal, V.J. Deneff, D.L. Fanslow, A.M. Burtner, A.C. Camilleri. 2023. Impacts of dreissenid mussel growth and activity on phytoplankton and nutrients in Lake Erie's western basin. *Aquatic Ecosystem Health & Management*; 26 (4): 87–99. doi: <https://doi.org/10.14321/ae hm.026.04.87>.  
*The authors examined the potential impact of invasive dreissenid mussels on in situ populations of phytoplankton and nutrients in western Lake Erie using mussel population estimates from a 2018 survey, results from mussel excretion, grazing, and in situ growth experiments, along with nutrient measurements on collected lake water. In most cases the water column was filtered less than once per day. Based on mussel densities from nearby survey sites, mussels could be expected to clear less than 5% of phytoplankton from the water column each day. Despite the modest potential impact that we measured, spatial variability in mussel density and temporal*

*variability in nutrients and seston suggest that more substantial impact likely occurs in some conditions.*

- Carrick, H.J., C. VanCuren, A. Slate, V.J. Deneff, N. Dahal, G. Carter, D. Fanslow, P. Glyshaw, H.A. Vanderploeg. 2023. Preferential dreissenid mussel grazing on small plankton can favor cyanobacteria: Experimental evidence from western Lake Erie. *Aquatic Ecosystem Health & Management*; 26 (4): 100–110. doi: <https://doi.org/10.14321/ae hm.026.04.100>.  
*This study provides experimental evidence for the effects invasive mussels grazing can exert on a natural assemblage of plankton in western Lake Erie. Their results indicate the potential for mussel grazing to suppress typical, non-harmful plankton species in the nanoplankton size range, thereby favoring the occurrence of less-edible, larger cyanobacteria and chlorophyte species in western Lake Erie.*
- Brockmann, Stephanie, David Finnoff; Nicholas Boucher; Edward Rutherford, Doran Mason; Edward Rutherford; Hongyan Zhang. 2023. Valuing Bioeconomic Impacts of Regulation on Nutrient Loads Mediated by Invasive Mussels in Lake Michigan. J347:119044 *Journal of Environmental Management*. <https://doi.org/10.1016/j.jenvman.2023.119044>.  
*The authors evaluated the economic costs and benefits of hypothetical nutrient regulations in the presence of dreissenid mussels by linking a bioeconomic model with an Atlantis ecosystem model for Lake Michigan. Results suggest that reducing nutrient loads may exacerbate spatially disparate ecosystem issues that generate overall economic losses. Conversely, and counterintuitively, allowing for more nutrient loading could generate economic gains over our assessment timeframe. We concluded that implementation of standard nutrient target policies are costly and likely inadequate for current dreissenid-affected aquatic ecosystems experiencing nutrient imbalances because they disregard the interactive role of invasive mussels in nutrient cycling.*
- Lower, El, Rochelle Sturtevant, Susannah Iott, Felix Martinez, Edward Rutherford, Doran M. Mason, Joseph Redinger, Ashley K. Elgin. 2024. The Great Lakes' most unwanted: Characterizing the impacts of the top ten Great Lakes aquatic invasive species. *Journal of Great Lakes Research*, 102365, <https://doi.org/10.1016/j.jglr.2024.102365>.  
*The authors used an organism impact assessment (OIA) tool developed by the Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS) to identify and quantitatively rank in order of impact the top ten aquatic nonindigenous species (ANS) determined to have the most significant negative environmental and socio-economic effects. The top ten, from highest to lowest rank are: zebra mussel (*Dreissena polymorpha*); quagga mussel (*Dreissena bugensis*); alewife (*Alosa pseudoharengus*); sea lamprey (*Petromyzon marinus*); Japanese stiltgrass (*Microstegium vimineum*); grass carp (*Ctenopharyngodon idella*); water chestnut (*Trapa natans*); common reed (*Phragmites australis australis*); round goby (*Neogobius melanostomus*); and white perch (*Morone americana*).*
- Shay S. Keretz, David T. Zanatta, Todd J. Morris, Ashley K. Elgin, Edward F. Roseman, Daelyn A. Woolnough. 2024. Species distribution models effectively predict the detection of *Dreissena* spp. in two connecting waters of the Laurentian Great Lakes. *Journal of Great Lakes Research*, Volume 50, Issue 1, 102273, <https://doi.org/10.1016/j.jglr.2023.102273>.  
*The objectives of this study were to estimate and document dreissenid densities and their habitat characteristics throughout the St. Clair River, to compare dreissenid species demographics, and predict spatial distributions between two connecting waters of the Great Lakes: the St. Clair and Detroit rivers. The species distribution models created from the Detroit River data reliably predicted presence of dreissenids in the St. Clair River. Depending on the river and species, CART models identified velocity and depth to be important predictor variables, while distance to river inlet/outlet were the most influential variables in the MaxEnt models.*

- Brockmann, S., Finnoff, D., Mason, D.M., Rutherford, E.S., Zhang, H. 2024. Consequences of Ecological Aggregation in General Equilibrium Analysis of Perturbed Ecosystems. 218:108083, Ecological Economics. <https://doi.org/10.1016/j.ecolecon.2023.108083>.  
*The authors linked a Computable General Equilibrium (CGE) economics model to an Atlantis ecosystem model for Lake Michigan to assess the implications of information aggregation towards evaluating the potential economic impacts due to an invasive carp (bighead and silver carp) invasion. Results suggested that economic losses will occur from such an invasion, and that aggregating over multiple dimensions may miss important bioeconomic tradeoffs.*
- Pothoven, SA, Vanderploeg, HA. 2024. Relationships among zooplankton groups and environmental factors at a nearshore site in Lake Michigan during 2007–2022. Journal of Great Lakes Research, <https://doi.org/10.1016/j.jglr.2024.10234>.  
*Dreissena veligers have become one of the most abundant taxa in the nearshore of Lake Michigan, and on average, compose over half the zooplankton assemblage in July.*

Contact: Ashley Elgin, National Oceanic and Atmospheric Administration, 616-414-1059, ashley.elgin@noaa.gov

**National Park Service**

No update provided.

Contact: Brenda Lafrancois, National Park Service, 715-682-0631, brenda\_moraska\_lafrancois@nps.gov

**U.S. Army Corps of Engineers**

No update provided.

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

**U.S. Coast Guard**

No update provided.

Contact: Kirk Beckmann | 9th CG District | (216) 902-6050 | [kirk.j.beckmann2@uscg.mil](mailto:kirk.j.beckmann2@uscg.mil)

**U.S. Forest Service**

No update provided.

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

**U.S. Department of Agriculture-APHIS**

No update provided.

Contact: Vacant

**U.S. Department of State**

No update provided.

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

**U.S. Environmental Protection Agency**

No update provided.

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

**U.S. Geological Survey**

No update provided.

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

**State/Provincial****Illinois**

No update provided.

Contact: Brian Schoenung, Illinois Department of Natural Resources, 217-558-4581, brian.schoenung@illinois.gov

**Indiana**

No update provided.

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

**Michigan**

No update provided.

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

**Minnesota****Inspection and Enforcement:**

- Watercraft inspectors hired by the DNR, and by 66 local units of government with delegated authority from the DNR, inspected 469,038 watercraft in 2023, which makes Minnesota's watercraft inspection program one of the largest in the nation. The DNR installed the first state-owned, on-demand decontamination station at Big Bog State Recreation Area as part of a project with Red Lake Nation, to respond to the discovery of larval zebra mussels, or veligers, in Red Lake. Conservation officers completed 13,121 hours of invasive species education and enforcement. Two new specially trained zebra mussel detection canine officer teams were added to the DNR Enforcement Division.

**Invasive aquatic plant management:**

- Invasive Species Program staff issued 402 permits to manage invasive aquatic plants and the DNR Aquatic Invasive Species (AIS) Management Grant Program funded 141 invasive aquatic plant treatments through 102 grants, totaling \$400,000.

**Education and Public Awareness:**

- A new interactive video game, “Muck Hunt” debuted at the 2023 Minnesota State Fair. In this game visitors could use four cleaning tools to virtually clean aquatic and terrestrial invasive species off equipment.

#### Nonnative Phragmites:

- The DNR continued to work with partners to implement a coordinated response to nonnative Phragmites (*Phragmites australis* subsp. *australis*) in Minnesota. In 2023, DNR contractors visited 420 nonnative Phragmites sites in 38 counties. At 95 of the sites no nonnative Phragmites was found, largely due to previous years’ effective treatment. Most of the treated sites were very small. Of the 292 sites where treatment occurred, 210 of them were less than one tenth of an acre.

#### County AIS Prevention Aid:

- DNR AIS prevention planners continued to build a network of support with local AIS program managers who oversee the use of their counties’ AIS prevention aid funds. In 2023, the Invasive Species Program facilitated a series of five, two-hour online workshops designed to help local AIS program managers and their partners be more successful in their AIS prevention work through peer-to-peer sharing and collaboration. The online workshops were well-attended, with over 60 attendees at each one.

#### Invasive carp:

- The DNR worked with the U.S. Geological Survey to lead a comprehensive series of discussions with stakeholders to evaluate additional options for active invasive carp management in the Mississippi River. The process incorporated public stakeholders and invasive carp experts to evaluate options and the outcomes were used to inform an update to the statewide Minnesota Invasive Carp Action Plan, released in January 2024 ([mndnr.gov/invasivecarp](http://mndnr.gov/invasivecarp)). The DNR tags, releases, and tracks small numbers of invasive carp to better understand patterns of movement and find additional invasive carp. Tracking tagged invasive carp led to the successful removal of 408 invasive carp in Pool 6 of the Mississippi River in late November and early December of 2023.

Contact: Kelly Pennington, Minnesota DNR, 651-259-5131, [kelly.pennington@state.mn.us](mailto:kelly.pennington@state.mn.us)

#### **New York**

No update provided

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

#### **Ohio**

- Continued following the *Lake Erie Grass Carp Adaptive Response Strategy 2024-2028* with the deployment of multiple Grass Carp Strike Teams through the University of Toledo and USFWS dedicated to the eradication of Grass Carp from the western basin of Lake Erie. Over 800 adult Grass Carp have been removed to date. We continue to track tagged Grass Carp with the GLATOS system and real-time receivers, and we are working through the University of Toledo to determine Grass Carp catchability and population size. Partners also include Michigan DNR, GLFC, USFWS, and USGS.

- Working with the GLFC, Michigan DNR, USACE, and USGS to develop a seasonal Grass Carp behavioral barrier on the Sandusky River to prevent their movement to spawning habitat. The USACE is currently working on the feasibility for design and construction.
- Continue closure efforts for the two medium risk Great Lakes Mississippi River Interbasin Study connections in Ohio at the Ohio Erie Canal and Little Killbuck Creek 1) The USACE completed the closure of the Ohio Erie Canal connection in March 2020 and ODNR is maintaining the deterrents; 2) Phase 1 construction for the Little Killbuck Creek closure will be initiated in fall of 2024.
- Continue the surveillance of Ohio's bait supply chain to determine if AIS, including Bighead and Silver Carp, are being transported through the bait trade. To date, no high-risk AIS have been detected.
- Continue to work with Cleveland MetroParks on invasive plant EDRR in the Lake Erie watershed. Partnering with ODNR Parks and USACE on control efforts on Hydrilla just outside the Lake Erie basin at Pymatuning Lake and Mosquito Creek Lake.
- Continue the AIS outreach campaign through Wildlife Forever to target anglers moving bait. This outreach program includes billboards, print media, and items for distribution at events with the slogan "Trash Unused Bait".
- In partnership with Ohio Sea Grant, The Ohio State University, and Cleveland Metroparks, completed the second addition of the Ohio Field Guide to Aquatic Invasive Species: [https://dam.assets.ohio.gov/image/upload/ohiodnr.gov/documents/wildlife/fish-management/OSU\\_AIS\\_FieldGuide\\_Web.pdf](https://dam.assets.ohio.gov/image/upload/ohiodnr.gov/documents/wildlife/fish-management/OSU_AIS_FieldGuide_Web.pdf)
- Participated in the following groups: Great Lakes Panel, Ohio Aquatic Invasive Species Committee, and Invasive 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 Northern Development, Mines, Natural Resources and Forestry, 705-755-5136, Francine.macdonald@ontario.ca

### **Pennsylvania**

No update provided.

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

### **Québec**

No update provided

Contact: Annick Drouin, Québec Ministère des Forêts, de la Faune et des Parcs, 418-654-6984 annick.drouin@mffp.gouv.qc.ca

## **Wisconsin**

No update provided.

Contact: Amy Kretlow, Wisconsin DNR, 920-838-2597, Amy.Kretlow@Wisconsin.gov

## **Regional/Binational**

### **International Joint Commission**

No update provided.

Contact: John Wilson, International Joint Commission, 519-257-6700, John.Wilson@ijc.org

### **Great Lakes Fishery Commission**

No update provided.

Contact: Greg McClinchey, Great Lakes Fishery Commission, 226-980-9193, greg@glfc.org

### **Great Lakes Commission**

No update provided.

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

## **Canadian Federal**

### **Fisheries and Oceans Canada**

DFO Science continues to play a significant role in aquatic invasive species research in the Great Lakes and is at the forefront of research to advance our knowledge and understanding of aquatic invasive species spread, establishment and impacts.

#### Ballast Water and Biofouling Research

- Recent research has demonstrated that new treatment technologies are significantly reducing the number of live organisms introduced by ballast water, though they are not always meeting Canadian and international discharge standards. These results served as a foundational input for a requirement for domestic ships on the Great Lakes to manage ballast water by installing, operating and maintaining suitable treatment technology in the 2021 Canadian Ballast Water Regulations. Current research is focused on examining the influence of harbor water quality on ballast water treatment efficacy and evaluating methods to monitor compliance. This work will provide important knowledge needed to refine ballast water management requirements and compliance enforcement measures.
- New research was initiated in 2023 and is continuing in 2024 to examine the risk of species introductions by ship biofouling. This research aims to identify determining factors for predicting biofouling risk and will compare results to a similar study conducted more than a decade ago to see if the risk has changed because of international voluntary biofouling management guidelines/improvement in biofouling management. National in scope, this project will look at this important vector in the Great Lakes with Hamilton Harbour being one of the study sites.

#### Asian Carp Spawning Suitability Research

- Field research and simulation modeling has been conducted to estimate potential spawning locations for Asian carps in the Thames River. A model has been developed to understand how potential reproduction of Asian carps in the Thames River is influenced by flow and temperature. A research document describing the model, its assumptions, and key applications has been developed, and was peer-reviewed during a recent Canadian Science Advisory Secretariat meeting. Results will be publicly available once finalized.
- DFO Science is creating a management tool that predicts the upstream and downstream limits to Asian carp spawning in the Thames based on real-time inputs of river flow and temperature. This tool will help field surveillance teams identify spawning aggregations of Grass Carp, and will further help to understand the potential establishment of Asian carp species in Canada.

#### Novel Approach to Detect of AIS in Urban Stormwater Management Ponds

- DFO Science is completing a project designed to test and develop eDNA as an early detection tool for aquatic invasive species in urban stormwater management ponds (SWMP). All eDNA laboratory works are in the final stages of processing. The eDNA samples extracted from the ponds will be used to measure the detection efficacy of conventional and eDNA sampling methodologies in small waterbodies and examine the relationship between eDNA concentration and organism abundance. DFO Science has developed a genera-based primer for invasive *Carassius* spp. as a broad-scale screening monitoring tool to detect this high-risk group of species across all regions in Canada.
- Factors contributing to the arrival of Goldfish and other AIS (e.g., Chinese Mystery Snail) and dispersal to proximal natural systems will be assessed during the upcoming year. SWMP managed by the City of Hamilton are present in nine that drain into lakes Erie and Ontario. DFO Science collaborated with the City of Hamilton to develop Goldfish-specific information placards that have been installed at high risk SWMP.

#### AIS Monitoring in Lakes Superior and Huron

- DFO Science is the Canadian lead in the Early Detection and Monitoring Program for aquatic invasives species (AIS) conducted by the US Fish and Wildlife Service in the binational St. Marys River, including upper Lake Huron and Eastern Lake Superior. The research is designed as an early detection program to monitor for new AIS species as well as document any range expansion and potential changes in the native fish community once an AIS species is located.
- In 2022, we detected Eurasian Ruffe in Lake George in the St. Marys River for the first time and in 2023, we sampled them at a new location in Lake George. This coupled with additional Ruffe samples collected by the USFWS and other partner agencies at additional locations in the St. Marys River are indicative of a spreading population both within upper Lake Huron and Eastern Lake Superior. Round Goby and Tubenose Goby were also located in the St. Marys River and the upper north channel of Lake Huron, however, their catchment area has not changed over the last three surveys (July 2021 – August 2023).

#### Perceptions and perspectives on the pathways of freshwater AIS introductions and spread in different regions of Canada.

- DFO Science surveyed AIS experts in different governmental agencies to identify and prioritize relevant pathways for the spread of invasive freshwater fishes and invertebrates in Canada. The specific objectives of the study are to: 1) identify different pathways (e.g., live trade,



recreational boating) of primary AIS introductions to Canada and the level of confidence (certainty) about the importance of those pathways for transporting AIS; 2) identify and rank different pathways of secondary AIS spread within and among DFO regions and understand the rationale for the importance of those pathways; 3) gather information on emerging pathways of AIS introductions; and 5) identify species whose introductions seem imminent (introduction in next 5-10 years).

- Experts were surveyed during winter of 2023, and the preliminary results of the survey will be presented during the Great Lakes Panel meeting. The final results will be published in the primary scientific literature.

We are happy to provide the outputs of our research once those products have been finalized.

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

#### **Transport Canada**

No update provided.

Contact: Vacant

#### **LOCAL COMMUNITIES**

##### **United States**

No update provided.

Contact: Vacant

##### **Canada**

No update provided.

Contact: Vacant

#### **Environmental/User Groups**

##### **The Nature Conservancy**

No update provided.

Contact: Lindsay Chadderton, The Nature Conservancy, 574-631-4992, [Ichadderton@tnc.org](mailto:Ichadderton@tnc.org)

##### **National Wildlife Federation**

No update provided.

Contact: Marc Smith, National Wildlife Federation, 734-887-7116, [msmith@nwf.org](mailto:msmith@nwf.org)

##### **Ontario Federation of Anglers and Hunters**

No update provided.

Contact: Brook Schryer, Ontario Federation of Anglers and Hunters, 705-748-6324 ext. 227, [brook\\_schryer@ofah.org](mailto:brook_schryer@ofah.org)

### **Tribal Authorities**

#### **Great Lakes Indian Fish & Wildlife Commission**

No update provided.

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

#### **Chippewa Ottawa Resource Authority**

No update provided.

Contact: Mike Langendorf, Chippewa Ottawa Resource Authority, 906-632-0043, [mlangendorf@chippewaottawa.org](mailto:mlangendorf@chippewaottawa.org)

### **PRIVATE/COMMERCIAL**

#### **Lake Carriers' Association**

No update provided.

Contact: Debra DiCianna, Lake Carriers' Association, 440-333-9994, [dicianna@lcaships.com](mailto:dicianna@lcaships.com)

### **University/Research**

#### **Great Lakes Sea Grant Network-Research and Extension**

No update provided.

Contact: Rochelle Sturtevant, NOAA Great Lakes Sea Grant Network, 734-741-2287, [Rochelle.Sturtevant@noaa.gov](mailto:Rochelle.Sturtevant@noaa.gov)

#### **Minnesota Aquatic Invasive Species Research Center**

No update provided.

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

#### **Invasive Species Centre**

No update provided.

Contact: Rebecca D'Orazio, Invasive Species Centre, [rdorazio@invasivespeciescentre.ca](mailto:rdorazio@invasivespeciescentre.ca)

### **At-Large**

#### **Doug Jensen- Minnesota DNR**

No update provided

Contact: Doug Jensen, Minnesota DNR, 218-590-7164, [doug.jensen@state.mn.us](mailto:doug.jensen@state.mn.us)

#### **Great Lakes Saint Lawrence Seaway Development Corporation**

No update provided.

Contact: Anthony Fisher, Deputy Administrator, 202-366-0105, Anthony.Fisher@dot.gov

### **Wildlife Forever**

No update provided

Contact: Zach Burnside, Invasive Species Program Coordinator, 763-253-0222,  
[dhuinker@wildlifeforever.org](mailto:dhuinker@wildlifeforever.org)

### **Wisconsin Sea Grant**

#### IJ Project Updates:

- IJ Boater Behavior Project: The data has been analyzed and a simple final report written that Campbell will be getting in touch with each individual state to review results and talk about how any final document can be of the most use to them.
- IJ APM Outreach Project:
  - A paper on online search terms related to APM has been submitted to the *Journal of Aquatic Plant Management* is currently under review. The take home of that paper is that the language state agencies and universities use in their online outreach materials don't match how most people are searching for the information. How most people are searching for APM information better aligns with language commercial websites use and thus is often the first information active information seekers view. Incorporating more general language when talking about aquatic plants can help capture some of this traffic. For example, at the bottom of a webpage put – “The information on this page answers questions about lake weeds that many people have too many of and want to get rid of.” By adding the language as a supplement to whatever more technical information that is listed, you can keep the accuracy while adding the keywords, which I imagine appeals to AIS managers and scientists.
  - Lakeplants.org is almost ready for release. Factsheets are in the process of being loaded into the pages. There is a factsheet version that is the “best outreach effort” and a version that is search engine optimized using the results from the paper under review. The goal is to see if one version or the other is more popular.
  - Google ads are being run with different theoretical framings and SEO framings to see if different language gets more cost-effective engagement. This can be useful for generating headlines.

#### Recent publications:

- Lower, E., & Campbell, T. (2024). Alien Language: Reflections on the Rhetoric of Invasion Biology. *Oceanography*, 37(1). <https://tos.org/oceanography/article/alien-language-reflections-on-the-rhetoric-of-invasion-biology>  
*Summarizes key issues with the language we use when discussing invasive species and highlights some paths forward.*
- Campbell, T., & Otts, S. (2024). Examples of Sea Grant Efforts to Improve Aquatic Invasive Species Research, Outreach, and Management. *Oceanography*, 37(1), 60-67. <https://tos.org/oceanography/article/examples-of-seagrant-efforts-to-improve-aquatic-invasive-species-research-outreach-and-management>  
*Summarizes Sea Grant activities within AIS research, outreach, and management. If you want some ideas on all the different things Sea Grant can do to help your AIS program, this is a great*

place to start. There are also a number of projects and outputs discussed in here that were previously unpublished, so this can serve as a reference for those projects.

- Shaw, B. R., Heinrich, R. J., Brossard, D., Vander Woude, T., & Campbell, T. (2024). Predicting preferences for chemical treatment of aquatic invasive species and implications for outreach. *Biological Invasions*, 1-12.

*This isn't open access, but email [tim.campbell@wisc.edu](mailto:tim.campbell@wisc.edu) for a copy*

*It was found that preference for chemical treatment strategies was predominantly driven by negative emotions about AIS and the perception that AIS were present in the lake that they live by. Political ideology was also found to be a significant predictor of preference for chemical treatment, with socially conservative participants more likely to favor this treatment compared to more socially liberal participants. This work is what informed the IJ APM Outreach Project.*

#### Research in progress:

- USGS NWRI 104g AIS project – AIS opinions and behaviors of trout anglers in Iowa, Minnesota, and Wisconsin
  - Getting a sample of ~1500 trout anglers each from Iowa, Minnesota, and Wisconsin
  - Using a survey similar to the IJBB survey and what was used in [Hutchins et al 2023](#)
  - Given that this is an election year, the survey will be administered either in August (unlikely) or mid-November (likely)
- Portland State, MI Sea Grant, OR Sea Grant, WI Sea Grant, Stonybook AIS Language project
  - Probably saw the survey go out about this. The project team is now setting up analysis for this. There will be qualitative research on emotions and opinions for militaristic language and place-based names, and quantitative work on naming conventions and the utility of different naming conventions.
  - Writing up Sam Chan (OR Sea Grant) and Cat de Rivera's (Portland State) work on invasive species naming conventions and patterns in invasive species databases. In short, place based names are in the minority of common names, and even fewer scientific names feature places. When places are used in names, they aren't always accurate. This work supports the idea that places aren't central to how many species are named and that there may be other conventions that better support outreach and management goals.
- MAPAIS Mini Grant for Phragmites outreach and messaging in NYC
  - Campbell is a collaborator on a project led by a Stonybrook researcher and an NYC Parks ecologist on evaluating outreach and messaging related to a phragmites removal project in NYC. Campbell is really interested in this since the park users and audience of this research is much more diverse than our normal boating and angling populations. The project team will be doing some message tests and qualitative work to see how more diverse groups of people respond to common types of AIS messages and how they perceive invasive species threats. An estimated project start time is set for late summer into the fall 2024.
- Another paper on opinions of boat cleaning and decontamination tools in Wisconsin is under review in *Lake and Reservoir Management*. In short, there is a lot of support for increased enforcement and additional AIS prevention strategies that go above and beyond what is required by law in WI.
- I'm a co-author on another paper led by Nichole Angell and MAISRC researchers in *Management of Biological Invasions* - Quantifying the effectiveness of three aquatic invasive species prevention methods. It should be available online by July 2024.

Contact: Tim Campbell, Wisconsin Sea Grant, 608-265-3727, [Tim.Campbell@wisc.edu](mailto:Tim.Campbell@wisc.edu)

**Alliance for the Great Lakes**

No update provided

Contact: Molly Flanagan, 614-582-6392, [mflanagan@greatlakes.org](mailto:mflanagan@greatlakes.org)

**Université du Québec à Chicoutimi**

No update provided

Contact: Olivier Morissette, Université du Québec à Chicoutimi, 418 545-5011,  
[Olivier.morissette@uqac.ca](mailto:Olivier.morissette@uqac.ca)