EXAMPLES OF SEA GRANT EFFORTS TO IMPROVE

AQUATIC INVASIVE SPECIES RESEARCH, OUTREACH, AND MANAGEMENT

By Tim Campbell and Stephanie Otts

ABSTRACT. The NOAA Sea Grant College Program is well suited to address aquatic invasive species issues based on the roles Sea Grant institutions play within their communities and the resources available to them through university systems. The three primary areas of a Sea Grant program—research, education, and outreach—can be used to limit and prevent the impacts of invasive species. Specifically, Sea Grant has expertise in natural science, social science, education, communication, legal support, and community science, all of which can help communities and aquatic invasive species management programs address these problematic species. This article shares examples of Sea Grant work as well as tips designed to inspire new communities and aquatic invasive species management programs to partner with Sea Grant to address these issues.

INTRODUCTION

Aquatic invasive species (AIS) are non-native species that cause environmental or economic harm, or harm to plant, animal, and/or human health, when introduced to the coastal ocean or the Great Lakes (Executive Order 13112). The discovery of new species in novel environments requires new research to understand their impacts, coordination to facilitate information sharing, and collaboration to help prevent their spread and establishment. These are all functions that National Sea Grant College Programs excel in and use to help communities understand and manage AIS.

Initially, there was a strong need for basic physical science research to better understand the biology and ecology of invasive species and their impacts, and to inform management decisions. Over time, the ways in which Sea Grant has engaged with communities to help them manage AIS issues has changed. With an emphasis on research and an ability to administer responsive state-level research programs, Sea Grant was and still is in an ideal position to support this science. As federal, state, tribal, and regional AIS programs evolved and began to think more holistically about managing invasive species and the human pathways that move them, other aspects of Sea Grant programming and research have become more important, including work in social science, education, communication, law and policy, and community science.

This article highlights different ways in which Sea Grant programs have assisted communities and natural resource management agencies with AIS issues. It is beyond the scope of this article to include all the work done across the nation by individual Sea Grant programs on AIS. Rather, we focus primarily on projects with which we have direct experience, intending to provide inspiration for finding new ways to work with Sea Grant on AIS issues.

NATURAL SCIENCE TO SUPPORT AIS MANAGEMENT

A key role for Sea Grant programs is to fund research that enhances understanding of the functions of new AIS in the environments they invade and what impacts they may have on both the environments and surrounding communities. Significant work is conducted by state Sea Grant programs using funding obtained from the NOAA and other federal and state agencies. This programming helps connect state and federal resources to AIS issues most relevant to local communities.

Research on AIS and their impacts on Great Lakes food webs are tied into larger management goals and questions. For example, the Great Lakes Sea Grant Network (GLSGN) has a history of funding ecological research on invasive macroinvertebrates and forage fish species that can alter Great Lakes food webs that include commercially, recreationally, and culturally valuable species. Sea Grant programs have supported numerous projects to help understand the impacts of AIS in the Great Lakes. Wisconsin Sea Grant alone has funded 35 research projects on zebra mussels, while Illinois-Indiana Sea Grant synthesized round goby research (Charlebois et al., 1997) and identified research needs to improve fisheries management (Charlebois et al., 2001).

The Great Lakes Aquatic Non-indigenous Species Information System (GLANSIS; https://www.glerl.noaa.gov/glansis/), a database co-managed by the NOAA Great Lakes Environmental Research Laboratory and Michigan Sea Grant, synthesizes Great Lakes research on AIS into species-specific fact sheets based on peer-reviewed literature. It also hosts distribution data for invasive species found in the Great Lakes region, risk assessments for species not yet broadly distributed in the region, and search tools that allow users to find species by taxa, location, vector of introduction, and other resources. This extensive repository makes GLANSIS a great resource for researchers, managers, and others interested in the biology, ecology, and impacts of a particular AIS.

Sea Grant programs on the Atlantic and Pacific coasts have funded research on the biology and ecology of marine invasive species, such as lionfish and European green crabs, including determining how harvest-focused fishing tournaments impact lionfish population dynamics (Stalling et al., 2016). Similarly, research completed and funded by Sea Grant has examined the impacts of European green crabs in well-established populations on the Atlantic coast, including a study of how the species could be used commercially (McMahan and Bradt, 2018). On the Pacific coast, Sea Grant has supported work that helped identify the sources of recently discovered green crab populations (Brasseale et al., 2019) and helped to determine how environmental DNA monitoring approaches could

provide additional distribution information to managers (Keller at al., 2022).

Additional information on Sea Grant funded research can be found on the Sea Grant website at https://seagrant.noaa.gov/impacts/.

SOCIAL SCIENCE AND BEHAVIOR CHANGE

Because AIS are a problem caused and experienced by people, social science will always be an important aspect of AIS management. Social science can be the key to identifying both how human behavior spreads invasive species and what might be done to change that behavior to minimize this movement. Opportunities to improve AIS management through better integration of social science can include building on advancements by Sea Grant programs nationally (Campbell and Shaw, 2023).

Sea Grant was a member of the initial partnerships that created two national invasive species campaigns, Stop Aquatic Hitchhikers! (**Figure 1**;

https://stopaquatichitchhikers.org/) and Habitattitude (https://www.habitattitude.net/). Both campaigns were created in the early 2000s in partnership with the US Fish and Wildlife Service, the Aquatic Nuisance Species Task Force, and public relation firms. Their objective was to shift invasive species efforts from basic awareness about the issue to specific actions recreational water users and pet hobbyists can take to prevent the spread of AIS. These campaigns align with community-based social marketing principles that identify sustainable behaviors, locate barriers to performing those behaviors, and offer wide implementation and evaluation programs (McKenzie-Mohr, 1999). These programs provide reminders and prompts for people to perform actions and use social norms to help influence behaviors. Sea Grant has created or supported similar regional prevention programs, including the Be a Hero campaign by Illinois-Indiana Sea Grant (https://www.transportzero.org/) and the Don't Pack a Pest campaign by Oregon

FIGURE 1. Stop Aquatic Hitchhikers! outreach materials were a key part of the Great Lakes Sea Grant Network's aquatic invasive species prevention actions for a fishing tournament project. Sea Grant's ability to be present with consistently branded outreach materials helped build trust and relationships with the fishing tournament organizations and their anglers. *Photo credit: Wisconsin Sea Grant*

Sea Grant (https://seagrant.oregonstate.edu/sites/seagrant.oregonstate.edu/files/menacetothewest/2018-02_dpap-brochure_v2_4.pdf).

The GLSGN has a strong history of implementing both Stop Aquatic Hitchhikers! and Habitattitude through Sea Grant program investments as well as investments from the Environmental Protection Agency's Great Lakes Restoration Initiative. Outreach done by the GLSGN, with emphasis by Minnesota Sea Grant, has resulted in 24.2 million campaign views for Stop Aquatic Hitchhikers, and 10.6 million people were reached with the Habitattitude message since the creation of each campaign in the early 2000s. Sea Grant's efforts in these two campaigns include the creation of informational outreach publications, prompts to encourage behavior change, and establishment of novel approaches like pet rehoming events. Outreach for these campaigns included in-person presentations at events like trade shows and club meetings as well as earned and paid media.

These specific investments in outreach led to Sea Grant's work leveraging social science to both better understand invasive species problems and evaluate AIS prevention programming. As a leader in this work, Minnesota Sea Grant provided the design and administration of surveys in multi-state regions to gather information on boater attitudes and invasive species prevention behaviors. A key effort was a five-state survey completed in 2000 in California, Kansas, Minnesota, Ohio, and Vermont. The percentage of boaters performing AIS prevention actions varied widely across the states surveyed, with the highest levels of behavioral compliance occurring in Minnesota and Vermont, where invasive species prevention outreach was receiving considerable investment at the time. When these results were compared to a similar 1994 survey done in Ohio and Minnesota, the number of Minnesota and Ohio boaters performing AIS prevention actions had improved, suggesting that outreach efforts had an impact (Jensen, 2010). This

work positioned Sea Grant as a leader in evaluation of AIS outreach and prevention programs and was used as a template for other states administering surveys to evaluate their programs. The template was used again in 2023 for survey efforts led by Wisconsin Sea Grant to examine boater behaviors in Great Lakes states. The revised survey was developed by a Great Lakes-wide working group that incorporates the best approaches from previous survey efforts, including both practical and theoretical communication elements. This approach engaged academic researchers, who implemented similar surveys, and it has helped invasive species outreach programs in evaluating the different approaches.

Current research dives deeper into the social sciences and is using communication and behavior change theory to reach recreational water users that may spread AIS. This approach can help natural resource managers better align prevention strategies with each audience and maximize the prevention benefits of AIS programming. An examination of social norms that impact recreational boaters can help create messaging that makes boaters feel the social pressure that may be needed to encourage them to perform prevention actions (Witzling et al., 2015; Hammond, 2019). Further exploration of how threat and self-efficacy messages impact trout and salmon angler behaviors can help managers craft messages that promote the right behaviors without provoking resistance (Hutchins et al., 2023). Social scientists can also tie different environmental values to AIS prevention actions, again allowing managers to craft programs most likely to work for their audiences (Golebie et al., 2021). Sea Grant has had varying roles with this research, from direct involvement with the research to leading the application of the results into programming. Continued Sea Grant involvement in these efforts will increase the number of recreational water users performing AIS prevention actions.

Sea Grant social science work has also been instrumental in characterizing

a broad number of invasion pathways. For example, interviews and surveys of natural resource managers and practitioners of the Buddhist practice of life release have identified motivations and needs of the practice in the United States (Campbell et al., 2021). This work found common ground with managers for identifying acceptable behaviors and practices (Campbell et al., 2023). Similar interviews and focus groups with water gardeners and aquarium hobbyists have outlined attitudes of and beliefs about those hobbyists, what they believe risks to be, and what they might be willing to do to reduce invasion risk (Seekamp et al., 2016; Golebie et al., 2023).

FORMAL AND INFORMAL EDUCATION

Educational settings have been recognized as vectors for the spread of invasive species through the release of classroom specimens. They also present opportunities to raise awareness about local issues and empower individuals to actively participate in invasive species management. Sea Grant works with K–12 students, teachers, and young community members in both formal and informal settings to use invasive species curricula to educate both students and teachers about actions they can take to prevent the introduction of invasive species. Through partnerships with K–12 educators, Sea Grant has produced and disseminated curricula and resources that adhere to public education standards, address local issues, and are used by educators.

The "Aquatic Invasions! A Menace to the West" (https://seagrant.oregonstate.edu/menacetothewest) curriculum (Oregon Sea Grant) was created by the Oregon, Washington, and California Sea Grant programs to help educators teach students about AIS. The curriculum consists of 20 lessons, an extensive glossary, fact sheets, and learning activities for 12 aquatic invaders. Oregon Sea Grant also administers a program that enables educators to borrow activity suitcases containing guidebooks and examples

of invasive species to use in their classrooms. In 2016, an estimated 130 teachers implemented the curriculum, reaching an estimated 3,900 students. Federal agencies, such as the US Fish and Wildlife Service, and nonprofit organizations, such as the Aquarium of the Pacific, are continuing to use this curriculum and its resources in their programming.

Another K–12 education resource, Illinois-Indiana Sea Grant's Nab the Aquatic Invader website (https://www.iiseagrant.org/NabInvader/), serves as a resource for teaching about AIS with activities for grades 4–10, as well as resources to supplement student-led learning. The strength and success of this project have been linked to the highly collaborative networking strategy that brought together education specialists in six Sea Grant Programs, informal education institutions such as the Hatfield Marine Science Center (Oregon), the US Department of Agriculture Extension Service, and large school systems such as the Chicago Public School District. Even though the website was developed in the early 2000s, a recent survey of GLANSIS users found that Nab the Aquatic Invader is still one of the most widely used AIS educational resources in the Great Lakes region. Given its value and longevity, Illinois-Indiana Sea Grant is in the process of revising the Great Lakes portion of the website to align with current invasive species issues and communication approaches.

Sea Grant excels in maintaining close community ties that allow informal education or learning opportunities to occur in places where learning may not be the primary objective. Sea Grant programs often host educational booths at public community fairs or industry events where target audiences will be in attendance. These events provide excellent opportunities to raise awareness about specific invasive species issues and have open-ended conversations with community members. They can be a very cost-effective way to reach many people and be visible within a community.

Sea Grant also conducts informal education at targeted events. The GLSGN AIS Prevention for Professional Fishing Tournaments project integrated AIS experts into professional and elite fishing tournament circuits. The first two years of the project included educational efforts with tournament anglers and organizers as well as observations and surveys to better learn about tournament operations that led to the development of prevention protocols for tournaments. The second two years of the project featured revised educational and AIS prevention efforts that helped fishing tournaments implement their own prevention programs using community volunteers. The success of this project was the result of being present and developing relationships and trust with the tournament anglers.

COMMUNICATION

Communication programs are critical to broad educational and behavior-change efforts. The pairing of topical Sea Grant experts with communication professionals is one reason why Sea Grant programming is effective. As a responsive organization with community ties, Sea Grant often develops some of the first and most popular outreach materials on a topic, including invasive species. The invasive species watch card series produced by Minnesota Sea Grant and the Great Lakes Sea Grant Network through the GLRI is a well-received example of responsive print materials that promote AIS awareness and behavior change while providing the needed information for people to report potential new populations. A total of 199 different publications with consistent calls to action were produced through this network and distributed throughout the Great Lakes region. The ability for Sea Grant to coordinate across states to produce simple and inexpensive outreach materials for distribution by educators and managers helps grow outreach programs and maximizes taxpayer dollars.

The emergence of the internet has diversified the number of communication products and services Sea Grant can provide. With the current ease of hosting and creating videos, Sea Grant has produced many training and education videos on AIS topics. In 2018, Sea Grant staff documented an invasive carp sampling workshop that brought together national experts on silver and bighead carp sampling. The footage was turned into a playlist of training videos that have been shared internationally to train students and fisheries staff. Sea Grant also has expertise in producing long-form podcasts that allow for greater examination of AIS topics and promote a deeper understanding of issues. The podcast *Introduced*, produced by Wisconsin Sea Grant, covers AIS and Wisconsin's changing waters (**Figure 2**). The 20 episodes explore topics that include the barrier keeping invasive carp out of the Great Lakes and Wisconsin's response to a red swamp crayfish discovery. These

FIGURE 2. The Introduced podcast (https://www.seagrant.wisc.edu/audio/introduced/) offers listeners long-form stories and interviews on invasive species topics that would be difficult to provide otherwise. This format allows deeper engagement with these topics in a narrative format that can have beneficial impacts on learning. *Image credit: Wisconsin Sea Grant*

educational and entertaining episodes are effective because they tell stories about events in the words of the people who experienced them. In some cases, like the red swamp crayfish invasion and response, this information isn't available in other formats and serves as a unique record of the events. Podcasting offers a way to gather information with minimal effort from interviewees and archive it for future use. Further information on AIS and natural resource podcasting can be found in Larson et al. (2024, in this issue).

Sea Grant can also help with promoting AIS resources and information through the use of digital advertising tools, for example, a coordinated multi-state advertising campaign that used Meta, Google Ads, and geofence technologies and featured a video Wisconsin Sea Grant produced (https://www.youtube.com/watch?v=Bs7KD5hQoVI). Such efforts have extended the reach of AIS communication projects and can better target audiences with AIS prevention messages. The Great Lakes Commission-led AIS Landing Blitz Project (https://www.glc.org/work/blitz), which provides resources for AIS outreach to recreational boaters over the 4th of July and includes most GLSGN programs as partners, included multi-state advertising that helped reach 136,500 people while also providing Great Lakes AIS partners with better understanding of the cost-effectiveness and utility of different approaches.

Sea Grant has always emphasized the value of program evaluation, including appraising the impacts of our communication efforts. This can include assessing the cost-effectiveness of different promotional methods (Campbell et al., 2019) and the impacts of different storytelling techniques (Campbell et al., 2023). A recent focus has been on language use for invasive species communication and its impacts. Research by Sea Grant staff has evaluated how the use of metaphor may impact behavior (Shaw et al., 2021), how different naming conventions may help people identify invasive species (Catherine de Rivera, Portland State University, *pers. comm.*, 2024), and how language generally may impact invasive species management (Lower and Campbell, 2024, in this issue). This research is directly informing AIS communications that are improving desired behaviors among target audiences while reducing the number of unintended consequences of language use.

LEGAL RESEARCH

The National Sea Grant Law Center at the University of Mississippi School of Law and state-specific legal programs such as the Louisiana Sea Grant Law and Policy Program and the Rhode Island Sea Grant Legal Program offer legal research and policy support to federal agencies, state programs and partners, and coastal communities. This assistance can range from fielding questions about newly enacted legislation or regulations and completing small research projects about particular legal issues to assisting with large, multi-jurisdictional projects. This work helps increase the knowledge of federal and state resource managers and policymakers about the existing legal landscape and provides support for legal reform efforts that may be relevant to AIS management. The relevant documents can be found in the National Sea Grant Law Center Advisory Service Database (https://nsglc.olemiss.edu/Advisory/).

The National Sea Grant Law Center provided significant legal support to "Building Consensus in the West," an initiative of the Western Regional Panel, one of six Aquatic Nuisance Species Task Force panels (https://nsglc.olemiss.edu/projects/model-legal-framework/). The goal was to develop a multi-state vision for watercraft inspection and decontamination programs to reduce the risk of AIS spread through recreational watercraft. To accomplish this, AIS managers, assistant attorneys general, and law enforcement officials from the 19 western states and four Canadian provinces consulted extensively over the course of six years. This process resulted in the publication of a series of consensus documents, which the National Sea Grant Law Center translated into a model legal framework (legislation, regulations, and a memorandum of understanding) to guide state program implementation and enhance regional consistency. Funding was provided by a range of partners that included the US Fish and Wildlife Service, the National Sea Grant College Program, and state management agencies. Dozens of states took legislative and regulatory action to align their state regimes with the model legal framework. The "Building Consensus in the West" initiative demonstrates that it is possible to build policy consensus on a regional level around a discrete environmental topic if the deliberative process is well designed, fully funded, and sustained over a sufficient amount of time to promote the development of trust and collaborative learning among participants.

The National Sea Grant Law Center also supports the development and implementation of effective state laws, regulations, and policies to prevent the introduction and spread of AIS by conducting national and regional comparative analyses. The Law Center has assessed variability in the regulated species lists of the Great Lakes states and provinces and in each jurisdiction's laws for six pathways of concern: pet stores, live food markets, nurseries, biological supply houses, aquaculture, and bait. The Law Center updated a matrix of species-specific regulations maintained by project partners and created one-page summaries for each of the region's 21 "least wanted" species, providing snapshots of classifications and restrictions across the region. These infographics and a spreadsheet summarizing the results of the pathway analysis have been shared by project partners with a variety of AIS stakeholders in the Great Lakes area and are helping to inform priorities for legal reform and outreach efforts. These resources have also helped businesses understand rules and regulations relevant to them as they buy and sell aquatic organisms.

The National Sea Grant Law Center conducts legal research on AIS issues on behalf of state Sea Grant programs that do not have legal capacity. This has allowed the state programs to help communities access interpreted information about rules and regulations regarding AIS problems. For example, a legal brief outlining where property damage and personal injury liability might exist for Wisconsin watercraft decontamination providers helped state agencies and communities understand how to best structure watercraft decontamination programs within Wisconsin to limit any legal exposure. Another legal brief helped both Great Lakes and western states understand where opportunities for enforcement exist for watercraft that are purchased in the Great Lakes region and transported to western states.

State Sea Grant programs can also help with legal and regulatory support. The Take AIM (Aquatic Invaders in the Marketplace; https://takeaim.org) Program developed by Illinois-Indiana Sea Grant, which featured both a web resource and printed materials, compiled regulations related to organisms in trade relevant to each state. The website includes a database of state and federal regulations, lists of agency contacts, and species prediction tools for the Great Lakes and beyond. This helped consumers and retailers make better purchasing decisions by making it easier to access regulations about what is legal to buy and sell. It also gave AIS managers a single easy-to-access resource for regulations and outreach products related to the topic. Unfortunately, even though demand for this information continues to exist, lapses in funding have made it difficult to keep these tools up to date. This highlights the need for these types of projects to receive continuous investment.

COMMUNITY SCIENCE

Community science, also referred to as citizen or participatory science, involves engaging community members in experiences that allow them to collect environmental data with the guidance of natural resource professionals. Given Sea Grant's history and experience in community-centered work, Sea Grant is a natural fit for designing and implementing these types of programs to help communities collect the data they need to help address invasive species issues.

Washington Sea Grant piloted "Crab Team" (https://wsg.washington.edu/crab team/) in 2015, a volunteer and partner-based monitoring network carefully designed to maximize the likelihood of detecting invasive European green crab while populations are manageable (Figure 3). The Crab Team provides all the training, gear, and data infrastructure to support a volunteer network that now includes 61 sites across western Washington. The monitoring protocols are standardized for the network and repeated year after year, leading to the creation of a long-term robust data set that researchers and managers use to increase understanding of invasive crab populations and potential impacts on existing biological communities and habitats. It was through this participatory monitoring that volunteers captured the first invasive European green crab ever detected in Washington's Salish Sea in 2016 (Grason et al., 2016). The Crab Team is still operational in Washington and its success is being used as a model for similar programs elsewhere along the Pacific Coast.

In addition to coordinating the Crab Team community science network, Washington Sea Grant staff provide scientific guidance, technical support, and formalized training for partners that include tribal departments, private industry, and

FIGURE 3. The Washington Crab Team is an example of a Sea Grant organized and supported community science initiative that is helping communities in Washington respond to new populations of the invasive European green crab. These initiatives help communities collect the data they need to improve management decisions. *Photo credit: Washington Sea Grant*

agency staff who are starting their own green crab trapping and control programs. They work with approximately 20 partner groups across Washington to help build trapping capacity at the community level, providing guidance and support during classroom sessions and field trainings. The team contributes to the development of research needs and projects, which not only enhances outreach and communications around the issue, but also helps bridge the gap between community, science, and policy leaders all working on a common issue. Community science initiatives like the Washington Sea Grant Crab Team can help a community build support around an issue, for example, as the Metlakatla and Alaska partners begin to address a new population of European green crab in their communities.

HOW TO WORK WITH SEA GRANT

Most of Sea Grant's invasive species work fits within the NOAA Se Grant College Program's Healthy Coastal Ecosystems focus area, which can include everything from research on the impacts of invasive species to prevention, control, or restoration projects. However, invasive species work can also fit into Sea Grant's other focus areas of Resilient Communities and Economies, Sustainable Fisheries and Aquaculture, and Environmental Literacy and Workforce Development, depending on what aspects of a problem are addressed. Examples of work in these areas include evaluations of the impact of harvest on lionfish stocks and what a commercial market for these fish might look like (Sustainable Fisheries and Aquaculture) and the creation of AIS Attack Pack teaching kits to help K–12 teachers better present AIS issues in the classroom (https://www.seagrant.wisc.edu/our-work/focus-areas/education/for-educators/attack-pack-a-grab-and-go-teaching-tool/; Environmental Literacy and Workforce Development). Thinking about how their particular invasive species programming fits into these categories can help Sea Grant staff determine the best way to approach a specific issue.

Sea Grant programs are primarily funded through federal funds that require a 50% match of state funds. While the specifics and amounts vary across programs, this investment allows for a base level of work to be done on issues impacting coastal communities. Outside of this investment, Sea Grant programs are administered through university systems or organizations representing universities, and they have the ability to pursue outside funding sources. This can include direct agreements with funding agencies as well as competitive grant programs. These additional funding sources can better direct Sea Grant efforts and allow staff to focus on specific invasive species issues impacting communities locally. For example, funding from the Wisconsin Department of Natural Resources supports a Wisconsin Sea Grant outreach specialist that assists communities in southeast Wisconsin in implementing invasive species monitoring and prevention programs, while state funding in Washington supports Washington Sea Grant's Green Crab Team.

Sea Grant extension staff can connect researchers, agency staff, and community members to expertise that exists within Sea Grant programs to increase the reach or effectiveness of AIS initiatives. Sea Grant communication staff can provide guidance on the design and distribution of research and outreach products. Fellowship programs can be created in partnership with state agencies and other partners to build capacity around specific topics while providing opportunities for recent graduates to work on timely projects. Fiscal staff within Sea Grant can help manage large and small programs on behalf of partners, with Maryland Sea Grant's past fiscal management of the Mid-Atlantic ANS Panel and Pennsylvania Sea Grant's assistance with USFWS GLRI funds for Pennsylvania serving as examples. Working with Sea Grant staff can help educators, managers, and researchers to identify the opportunities that may exist within a Sea Grant program to grow AIS work.

A future opportunity to further engage Sea Grant programs in AIS research would be to leverage reauthorization within the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA; 16 U.S.C. § 4721-28). NANPCA directs the Aquatic Nuisance Species Task Force, which coordinates AIS work across 13 federal agency and 13 ex officio members, to allocate funds to a competitive AIS research program administered by the NOAA Sea Grant College Program. However, limited funds have been allocated for this purpose and the authorization for the legislation has lapsed. Support from state agencies and state-level partners like Sea Grant could help reauthorize NANPCA and create a pathway for using these resources that could positively impact the communities Sea Grant serves.

Sea Grant College programs have long been involved with helping communities address AIS issues. The diversity of skills and expertise available within Sea Grant allow it to be flexible and responsive to the needs of communities as the impacts and pathways of AIS change, and the needs of communities evolve. This will continue to keep Sea Grant relevant and helpful as communities work to address AIS issues within our Great Lakes and ocean resources.

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ACKNOWLEDGMENTS

AUTHORS

Tim Campbell (tim.campbell@wisc.edu), University of Wisconsin Sea Grant Institute, Madison, WI, USA. **Stephanie Otts**, National Sea Grant Law Center, Mississippi-Alabama Sea Grant, University, MI, USA.

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