



INTRODUCTION TO  
THE SPECIAL ISSUE ON

# Sea Grant

## SCIENCE SERVING AMERICA'S COASTLINES AND PEOPLE

By Mike Allen, Mona Behl, Rebecca Briggs, Kristen Fussell, Brita Jessen, Sarah Kolesar, Ian Miller, and Stephanie Ottis

The National Sea Grant College Program is thrilled to partner with *Oceanography* to publish a special issue focused on Sea Grant's contributions to enhancing the use and conservation of US coastal, marine, and Great Lakes resources to create a strong and sustainable economy, healthy coastal ecosystems, and resilient and inclusive communities. This introduction presents an overview of the National Sea Grant College program and highlights articles in this special issue.

### A BRIEF OVERVIEW OF THE NATIONAL SEA GRANT COLLEGE PROGRAM

The National Sea Grant College Program, established by the US Congress in 1966 (amended in 2020; 33 U.S.C. 1121 et seq), is a federal-state partnership aimed at supporting research, education, extension, and outreach to promote the sustainable use and conservation of coastal and Great Lakes resources (Fambrough et al., 2022). Initially proposed by President Lyndon B. Johnson as part of his "Great Society" agenda, the program was inspired by the success of the Land Grant Program, which had revolutionized agricultural research and extension services.

Sea Grant, administered and supported by the US National Oceanic and

Atmospheric Administration (NOAA), and bolstered by matching support from state institutions and diverse funding sources, boasts 34 tailored programs across its network. These programs collaborate with coastal and Great Lakes communities, governmental bodies, industries, and nonprofits to tackle pressing issues such as coastal erosion, water quality, fisheries management, aquaculture, and climate change adaptation. Through a fusion of rigorous scientific research with hands-on extension, education, and outreach services, Sea Grant propels *environmental literacy and workforce development, healthy coastal ecosystems, sustainable fisheries and aquaculture, and resilient coastal communities and economies*. This special issue of *Oceanography* is broadly organized under these four focus areas.

### ABOUT THIS SPECIAL ISSUE

Working with, and within, communities is a hallmark of Sea Grant's approach to advancing priority marine, coastal, and Great Lakes topics. Sea Grant's commitment to *inclusive engagement*, where two-way communication empowers shared learning among various partners, has only grown over recent years. The program recognizes the importance of inviting all

voices to the table and prioritizes an asset-based approach where co-production of knowledge is essential for finding sustainable solutions to complex coastal challenges (Satterthwaite et al.). Whether it is work that supports community-engaged, traditional agriculture in a Hawaiian fish pond (Engels et al.), or a novel funding approach to support partnerships with tribal and Latinx communities in California and Oregon to address ecosystem change and coastal resilience (Kolesar et al.), Sea Grant is committed to centering community-led, transdisciplinary approaches. The program also acknowledges that various ways of knowing and learning, including traditional and ecological knowledge, can enhance science-based solutions by deploying state-of-the-art science communication techniques (Larson et al.) and exploring artistic interpretations of coastal topics (Benson; Bray). Sea Grant views its work in advancing diversity, equity, inclusion, justice, and accessibility (DEIJA) for coastal people as a fundamental value that can facilitate strong community-based approaches (Morrill-McClure and Lenz). Traditional and local knowledge (TLK) is key to building equitable, inclusive, and sustainable solutions.

Sea Grant programs have a long-standing focus on enhancing *environmental literacy and workforce development* to fill evolving professional roles in marine and coastal sectors. [Oh et al.](#) provide a detailed description of California Sea Grant's fellowship program and the various career pathways into policy and resource management that it has paved for hundreds of students. [Bruno et al.](#) write about four different programs, operating in four different states, that are united by a focus on environmental literacy through student learning programs. This topic is complemented by three shorter "spotlights" illustrating additional activities from across the Sea Grant network that enhance workforce development, including a "Climate Corps" in Connecticut ([Barrett and Arnold](#)), support for the oyster industry in Louisiana ([Kron](#)), and an innovative aquaculture demonstration farm in Maryland that provides valuable training to workers in, or looking to gain access to, the oyster industry in the Chesapeake Bay ([Hood](#)). Finally, the career profiles in this special issue shine a light on Sea Grant's workforce, describing the professional journeys of three Sea Grant staff.

Sea Grant employs cutting-edge science to comprehend, safeguard, and enhance coastal and Great Lakes ecosystems, furthering its goals in the *healthy coastal ecosystems* focus area. Aquatic invasive species provide an excellent example of Sea Grant's commitment to a fully integrated approach to an emerging environmental concern. Sea Grant sponsored early research to understand the impacts and spread of new invaders, developed databases and information warehouses for the community, explored legal and policy issues, and developed education, outreach, and behavior change campaigns to inform constituents and slow the spread of species ([Campbell and Otts](#)). Articles also provide examples of Sea Grant's commitment to generating scientific consensus (e.g., on harmful algae in Florida – [Krimsky et al.](#)), developing behavior change campaigns (e.g., plastic

waste and pollution – [Bartolotta and Bixler](#)), and contributing to new research frontiers (e.g., ocean and coastal acidification – [Bastidas et al.](#); blue carbon – [Jessen and Hill](#)).

Sea Grant advances its *sustainable fisheries and aquaculture* goals through partnerships with community leaders, fishers, researchers, and decision-makers. With a storied history of supporting aquaculture research, Sea Grant's contributions have surged in recent years. The program's impact is evident through increased production of various species, development of new aquaculture technologies, and the economic and scholarly impacts of this work ([Weirich et al.](#)). In a story detailing Sea Grant's local impact on aquaculture, [Hintzen et al.](#) describe how Sea Grant and partners led a community-driven climate needs assessment to restore Indigenous stewardship practices and sustain production of loko i'a (Native Hawaiian mariculture). In addition to aquaculture, Sea Grant programs have an extensive history in research and education for sustainable fisheries, more specifically, bridging gaps between fishers and policymakers by having a long history as a trusted resource ([Lozada et al.](#)), creating educational tools to promote sustainable catch and release practices ([Sidman et al.](#)), and developing innovative data collection techniques using community science to fill a data gap regarding grouper size and abundance in Florida waters ([Collins et al.](#)).

The *resilient communities and economies* focus area presents a growing need across all coastal regions to implement sustainable and innovative planning for novel climate conditions and coastal hazards. To address this topic, [Miller et al.](#) describe how Sea Grant programs across the country play a key role through trusted long-term relationships and place-based work that allows for adaptive strategies to be co-created and evaluated. Locally focused programs provide lessons that can be transferred across regions, such as developing place-based guides and decision-support

tools with input across communities and industries ([Hwang et al.](#); [Meguro et al.](#)) to implement actions that reduce coastal hazard vulnerabilities. Credibility and trust are major factors when planning for long-term change. With this in mind, [Walton et al.](#) describe the value of community science to document king tides as an ongoing coastal hazard. Implementing effective strategies, such as nature-based solutions and green infrastructure, requires new networks and information sharing for private and municipal decision-makers. Articles by [Martin et al.](#) and [Hardy et al.](#) provide insights into effective programs for developing green infrastructure from the Great Lakes and the Gulf of Mexico.

By taking a collaborative network approach that leverages expertise and resources from its partners, Sea Grant tackles current challenges and prepares for those ahead. The program's ability to sustain effective and high-quality coastal work for almost 65 years is a direct result of forming and maintaining meaningful partnerships that provide critical support across local, state, regional, federal, and, sometimes, international sectors. Sea Grant credits a nimble and adaptive framework for maintaining its collaborative, place-based focus. Sea Grant commits to sustaining this approach by cultivating relationships and exploring innovative approaches to swiftly tackle emerging issues that concern America's coastal and Great Lakes resources and people.

## REFERENCE

Fambrough, K., A. Lamm, and L. Perry-Johnson. 2022. *Leading Social Change – Exploring Land-grant University Models of Interaction with the Public*. University of Georgia Extension, 3 pp., <https://extension.okstate.edu/site-files/documents/extension-academy/engagement-outreach-and-extension-a.pdf>.

## AUTHORS

[Mike Allen](#), Maryland Sea Grant  
[Mona Behl](#) ([mbehl@uga.edu](mailto:mbehl@uga.edu)), Georgia Sea Grant  
[Rebecca Briggs](#), National Sea Grant Office  
[Kristen Fussell](#), Ohio Sea Grant  
[Brita Jessen](#), South Carolina Sea Grant Consortium  
[Sarah Kolesar](#), Oregon Sea Grant  
[Ian Miller](#), Washington Sea Grant  
[Stephanie Otts](#), Mississippi-Alabama Sea Grant  
All the authors are guest editors of this special issue.

DOI: <https://doi.org/10.5670/oceanog.2024.238>