Woods Hole Oceanographic Institution Sea Grant
2024-2027 Strategic Plan

Enabling Healthy Massachusetts Coastal Communities and Economies Through Marine Science Research and Outreach

1. Introduction

The Commonwealth of Massachusetts is one of the smallest states in the U.S. with only 7,800 square miles of total area, yet is the third most densely populated state, with a population of over 7 million people (U.S. Census, 2020). Coastal communities in Massachusetts have seen dramatic growth when compared to the rest of the state. The population in the coastal communities of southeastern Massachusetts (Barnstable, Bristol, Dukes, Nantucket, and Plymouth counties) represents 20% of the total population, and Boston and the North Shore (Essex, Middlesex, Norfolk, and Suffolk counties) represent another 56%. The Commonwealth's 1,980 miles of coastline include extensive wetlands, tidal flats, dune systems, and salt marshes, totaling 12% of the landmass. Thus, over three-quarters of the state population places pressure on coastal watersheds and ecosystems.

The Commonwealth's coastal communities are among its most valuable natural and economic resources, providing jobs, transportation, and recreation to residents and visitors. In 2019, the Massachusetts marine economy accounted for $8.2 billion in gross domestic product (GDP), equal to more than one-third of the northeastern U.S. Marine Economy (NOAA, 2022). Sectors include commercial and recreational fishing, tourism, shellfish aquaculture, sand and gravel mining, marine technology, marine shipping, coastal construction and real estate, and recreational boating, totaling more than 100,000 employees. From 2009-2019, employment and GDP in the MA Marine Economy increased by 27% and 38%, respectively. Despite the strength of the marine economy within Massachusetts, there are concerns that need to be addressed to ensure future growth and prosperity. These issues include education and job training, supporting sustainable seafood and aquaculture production, and improved water quality to sustain tourism and recreation, which produces 60% of the state's GDP and 80% of its employees in this sector.

Furthermore, COVID-19 has led to fundamental changes in how these marine-focused business sectors operate, with implications for their needs moving forward.

The protection of Massachusetts' coastal watersheds, waterbodies, and landforms requires wise planning of both land and aquatic resources. Such planning efforts are in the hands of coastal decision makers, who range from professional natural resource managers to boards or committees consisting of elected or appointed individuals with varying levels of expertise. In addition, many required or desired actions require taxpayer resources and support, which can only be achieved if coastal communities have a sufficient level of environmental awareness. The fact that towns in Massachusetts have the right to self-governance in local matters (the so-called "home rule") further highlights the need for planners and community members of all backgrounds to have access to the latest science information to inform decision making.

Massachusetts is served by two Sea Grant programs – Massachusetts Institute of Technology (MIT) Sea Grant and Woods Hole Oceanographic Institution (WHOI) Sea Grant. In its extension and outreach activities, WHOI Sea Grant primarily serves southeastern Massachusetts, including Cape Cod, the islands of Martha's Vineyard and Nantucket, the South Shore along Cape Cod Bay, and the South Coast along Buzzards Bay. This region is a center of marine science-related industries, including marine instrumentation, research, fishing, aquaculture, and coastal tourism. The Cape Cod Chamber of Commerce has been active in promoting sustainable economic development in the region, with projects spanning sustainable tourism, advanced marine technology, water-healthy communities, and workforce development. WHOI Sea Grant plays a critical role in supporting these efforts to ensure sustainable and resilient communities, not only for southeastern Massachusetts but the entire state.

Many of the challenges the Commonwealth of Massachusetts faces to maintain sustainable and resilient communities are similar to challenges identified in coastal regions

throughout the U.S. and are discussed extensively in the Pew Oceans Commission report, *America's Living Oceans: Charting a Course for Sea Change*, and the U.S. Commission on Ocean Policy report, *An Ocean Blueprint for the 21st Century*. In 2009, the Commonwealth of Massachusetts became the first state in the nation to pass a comprehensive Ocean Management Plan. The plan was amended in 2015 and fully revamped in 2022. The new plan focuses on the advances made in both management and science priorities since 2015 and sets the stage for regional priorities and programs. In 2016, the Northeast Region Ocean Council (NROC) approved the first regional ocean plan, *Northeast Ocean Plan*, with major program objectives directed at improved understanding of critical coastal habitats and resources, tribal cultural resources, socioeconomic conflicts in coastal regions, coastal community vulnerability, environmental impacts to coastal habitats and communities, and ecosystem-based management. The work laid out in WHOI Sea Grant's 2024-2027 strategic plan not only aligns with state needs, but will also advance these larger, regionally-focused efforts by coordinating with our partner programs in the Northeast Sea Grant Consortium.

2. Vision

WHOI Sea Grant envisions thriving coastal ecosystems, communities, and economies that are resilient in the face of change because they are supported by an environmentally literate public and informed decision makers.

3. Mission

WHOI Sea Grant's mission is **to enhance the practical use and conservation of coastal and marine resources by developing and sharing science-based knowledge to create a sustainable economy and environment for Massachusetts communities**. To fulfill this mission requires: (1) acquisition of science-based information on how ecosystems function and

how human activities affect habitats and living resources; (2) education of people to inform them of the complexities of coastal environments and the interactions between human use and coastal ecosystem health; (3) development of decision-making processes that include the best scientific and technical information, the engagement of interested parties, and mechanisms to evaluate trade-offs between human and environmental needs; and (4) incorporation of the social sciences into ecosystem-based management decisions.

Furthermore, we seek input and advice from state and federal agencies, resource users, and the public, and recruit talent and expertise from public and private academic institutions throughout the Commonwealth of Massachusetts. Our outreach efforts are conducted in a cooperative partnership between the Woods Hole Oceanographic Institution and Barnstable County Cape Cod Cooperative Extension. On various state-based Sea Grant activities, we partner with our sibling program MIT Sea Grant. Regional initiatives are pursued in collaboration with member programs of the Northeast Sea Grant Consortium and their partners.

4. Strategic Plan Development

The foundation of this strategic plan is the four topical focus areas adopted by the National Sea Grant College Program: Environmental Literacy and Workforce Development (ELWD), Healthy Coastal Ecosystems (HCE), Sustainable Fisheries and Aquaculture (SFA), and Resilient Communities and Economies (RCE). These focus areas build on the long-standing strategic goals of NOAA and the unique strengths and capabilities of the Sea Grant network, including that of our program. Most importantly, they encompass the most critical needs in coastal regions of the United States as well as issues that are of greatest importance to the Commonwealth of Massachusetts and the Northeast region.

This strategic plan was further informed by a 2020 WHOI Sea Grant survey that solicited

input on issues of concern from local community members and organizations including coastal property owners, coastal business owners, natural resource managers, regulators, educators, researchers, commercial and recreational fisheries members, and environmental group representatives throughout the Commonwealth of Massachusetts. The plan includes input from members of our advisory board, the Marine Outreach Guidance Group (MOGG), which consists of regulators at the state and local level, business owners, educators, researchers, and communicators, among others. Lastly, the plan aligns with WHOI's strategic plan: *Vision 2030: Ocean Science for the Global Good*, in particular its "advancement of science based solutions to societally relevant problems".

5. Program Focus Areas and Goals

The WHOI Sea Grant Program is based at the Woods Hole Oceanographic Institution and supports research, education, outreach, and extension projects that encourage environmental stewardship, long-term economic development, and responsible use of the nation's coastal and ocean resources. The program's affiliation with WHOI began in 1971 with support for several individual research projects. In 1973, WHOI was designated a Coherent Sea Grant Program and, in 1985, was elevated to an Institutional Sea Grant Program.

The WHOI Sea Grant Program channels the expertise of world-renowned ocean scientists and engineers toward meeting the research and information needs of users of the marine environment. Public and private institutions throughout the Commonwealth of Massachusetts, and collaborators outside of Massachusetts, participate in the WHOI Sea Grant Program. Inherent to the National Sea Grant College Program and individual state programs is integrity and scientific neutrality, with a commitment to distributing information to a representative range of interested parties that reflects our region and who rely on us as a trusted broker of information.

Our program is guided by a set of core values that reflect our commitment to scientific integrity, effective partnerships, and practical impact. These values include:

- *Vision* – WHOI Sea Grant supports innovative solutions to address coastal monitoring, resilience planning, and protection of valuable coastal resources.
- *Collaboration* – We seek partnerships that broaden and deepen our reach and complement our strengths, especially within southeastern Massachusetts and throughout the northeastern U.S.
- *Sustainability* – We work with communities to promote the long-term use and protection of natural resources.
- *Accountability* – We conduct all activities with integrity and transparency.
- *Non-advocacy* – We provide unbiased information, tools, and services to inform decision making.
- *Responsiveness* – We are prepared to quickly address emerging issues and evolving community needs.

WHOI Sea Grant is organized around four core functional areas: extension, education, research, and communications. The WHOI Sea Grant Extension Program is carried out in partnership with the Barnstable County Cape Cod Cooperative Extension (CCCE) Service and emphasizes the application of social and natural science research to coastal resource issues. Our educational activities are designed to reach people of all ages and abilities to prepare them to make informed decisions regarding coastal resources and community well-being. The research portfolio is developed through competitive solicitations informed by an extensive feedback process to address pressing coastal and marine issues. Finally, WHOI Sea Grant's communications program produces materials that provide users and managers of marine and coastal resources with technical assistance and reliable information via our newsletter, website,

and social media platforms.

WHOI Sea Grant's relatively small staff leverages expertise and talent at the parent organizations and extends opportunities throughout the Commonwealth of Massachusetts, with a focus on the southeastern portion of the state including Cape Cod and the Islands. Our advisory board (MOGG) provides oversight of program plans and strategic planning. Through these efforts the WHOI Sea Grant Program strives to maintain organizational excellence and engage partners throughout the Northeast region to support program goals and expand the reach and relevance of its activities across the range of communities encompassed in our region.

As noted before, the WHOI Sea Grant program addresses priority issues through four focus areas: Environmental Literacy and Workforce Development, Healthy Coastal Ecosystems, Sustainable Fisheries and Aquaculture, and Resilient Communities and Economies. The goals within each focus area were informed by local and regional input—including community members, technical experts, and our advisory board—and are intended to guide research, education, extension, and outreach efforts that support the sustainable use and stewardship of marine and coastal resources across the Commonwealth.

Environmental Literacy and Workforce Development

WHOI Sea Grant recognizes the important role of science education in supporting, promoting, and coordinating formal and informal educational activities at all levels to enhance public awareness and understanding of coastal ocean resources. To this end, we aim for integration of research, education, and outreach to develop an environmentally literate citizenry that will make informed decisions about coastal resilience.

In Massachusetts, citizens use coastal and marine resources in a variety of ways. Our team members will work to improve the environmental literacy of all community members through coastal conferences that bring scientists and decision makers together. Teacher

workshops will be designed to inform teachers and informal educators of new advances in science and technology and share the importance of the ocean and incorporating marine systems in instruction. We will engage K-12 students through classroom visits and experiential learning opportunities to inspire them and give them access to our research and the marine resources in their community. Science education also plays a role in preparing students to access further training and jobs in the Marine Economy, a growing business sector in Massachusetts (Cape Cod Commission, 2019).

Trainings will keep decision makers up to date on scientific advances that inform policy, while research projects will provide hands-on experience for undergraduate, graduate, and postdoctoral students. In partnership with MIT Sea Grant, we also administer the Massachusetts Sea Grant Graduate Research Fellowship, expanding support for graduate-level inquiry. Because each audience has different needs, we tailor the depth, format, and delivery of technical information to maximize learning. Through integrated research, education, and outreach, we foster an environmentally literate public capable of making informed choices about coastal and marine resource usage. For students specifically, our programming highlights the breadth of marine-based career paths and the preparation required for them. Our Environmental Literacy and Workforce Development program goals are as follows:

Goal 1.1: Promote ocean and coastal literacy across all ages and communities.
Objectives:

- Develop and deliver formal and informal educational programs that encompass the unique experiences and meet the needs of Massachusetts coastal communities to increase understanding of coastal and marine environments.
- Engage educators, students, and the public through classroom visits, educator workshops, public events, and community-based learning.
- Provide science-based resources that support integration of marine topics into K–12 and lifelong learning settings.

Expected Outcomes:

- Increased public awareness of coastal and marine issues in Massachusetts.
- Educators and learners have access to current information and instructional tools.

- Communities are more informed and engaged in stewardship of coastal resources.

Goal 1.2: Support a skilled workforce prepared for careers in marine and coastal fields.
Objectives:

- Offer internships, research experiences, and career exploration opportunities to meet the needs of high school, undergraduate, and graduate students.
- Collaborate with academic institutions and employers to promote career pathways in coastal science, policy, and management.
- Provide professional development and training opportunities for natural resource managers and decision makers.

Expected Outcomes:

- Students are better prepared for employment in marine and coastal sectors.
- Decision makers apply science-based knowledge in resource planning and management.
- Coastal communities benefit from a workforce equipped to address emerging environmental and economic challenges.

Healthy Coastal Ecosystems

The coastal ecosystems of Massachusetts are experiencing trends also seen in many other areas of the U.S.: decline in water quality, loss of habitat, invasion of non-native species, and increasing pressure on coastal resources. More specifically, nutrient over-enrichment of coastal waters from wastewater and fertilizer have led to dramatic shifts in the marine ecosystems of coastal embayments, for example, loss of eelgrass beds and the commercially important species that use them for refuge. Nutrient runoff has also exacerbated acidification of coastal waters, which increases the biological stress felt by shell building organisms like oysters, as well as the prevalence and geographic range of harmful algal blooms (HABs). Marine debris, including microplastics, is a rising threat to the health of a wide range of marine organisms from quahogs to whales. These are problems that not only impact the environment, but also tourism and fisheries, two integral components of our Massachusetts coastal economy.

Solving or mitigating these fundamental threats to healthy coastal ecosystems requires scientific and engineering-based solutions. WHOI Sea Grant is committed to funding research

that addresses these needs and providing the extension services that will ensure that such protection, enhancement, and restoration measures are put into practice by natural resource managers and other key interested parties.

WHOI Sea Grant extension and outreach personnel are well positioned to provide the tools and services needed to sustain coastal ecosystems. We will continue to maintain a network of water quality sensors in southeastern Massachusetts estuaries and make the data available to the public, including local shellfish farmers. Our extension program staff will coordinate a network for river herring managers designed to help current wardens solve problems, set goals, manage conflicts, and facilitate discussions with harvesters and other interested parties. Teacher workshops organized by our education specialist will be designed to help the next generation of coastal stewards understand how environmental change will impact coastal ecosystems. Outreach specialists will educate the public on marine debris impacts and prevention. New topics, techniques and approaches will be added to this portfolio as discussions with community members help identify new challenges. Specific goals, objectives, and outcomes for the Healthy Coastal Ecosystems focus area are as follows:

Goal 2.1: Support science-based protection, restoration, and management of coastal ecosystems.

Objectives:

- Fund applied research on water quality, habitat loss, harmful algal blooms, and other key stressors to ecosystem health.
- Develop tools and synthesize data to inform local and regional natural resource management.
- Collaborate with partner organizations to share research findings and best practices.

Expected Outcomes:

- Local decision makers have improved access to data and tools for managing coastal ecosystems.
- Research findings are used to inform restoration and conservation efforts.
- Coastal habitats and the services they provide are protected and sustained.

Goal 2.2: Facilitate the use of coastal ecosystem science through applied outreach and community engagement.

Objectives:

- Develop and disseminate resources that translate ecosystem research into actionable guidance for resource users and managers.
- Support collaborative initiatives with community groups, municipalities, and nonprofit partners to promote ecosystem stewardship.
- Encourage public participation in habitat monitoring and protection efforts.

Expected Outcomes:

- Local groups and practitioners apply scientific findings to improve ecosystem outcomes.
- Community involvement contributes to ongoing monitoring and stewardship.
- Coastal users adopt practices that enhance long-term ecosystem resilience.

Sustainable Fisheries and Aquaculture

The southeastern Massachusetts region contains 98% of the Commonwealth's marine aquaculture growers and 99% of the acreage. The industry is primarily based on two bivalve species: the quahog, *Mercenaria mercenaria*, and the American oyster, *Crassostrea virginica;* however, there is increasing interest in farming other shellfish species as well as seaweed. The total value of Massachusetts shellfish aquaculture production grew from $3,691,182 in 2004 to over $29,858,281 in 2019 (Division of Marine Fisheries, 2004, 2019). Since 1996, oysters have been the primary species contributing to the establishment of new shellfish farming communities throughout coastal Massachusetts. In contrast with other states, the aquaculture industry is composed mostly of independent, small-scale growers.

The coastal communities of Massachusetts maintain active recreational shellfisheries and regulate them in partnership with the state Division of Marine Fisheries. Municipal shellfish departments engage in enhancement and propagation activities to provide a constant supply of oysters and quahogs to residents of the Commonwealth. In Barnstable County, the 15 towns issue more than 17,000 recreational permits every year.

Given the economic and cultural importance of commercial and recreational fishing and

aquaculture to the region, WHOI Sea Grant will continue to work with both the Division of Marine Fisheries, the lobster industry, the aquaculture industry and municipal natural resources and shellfish managers to provide technical information, engage in cooperative research, translate research results into practice, and maintain long term monitoring datasets on water quality and shellfish growth. Efforts will also be put toward assisting the aquaculture industry with diversifying their crops by developing culture and marketing techniques for seaweeds and surf clams. Open communication will be maintained with industry members and natural resource managers through workshops, industry-sponsored meetings, and discussions to assess needs.

During 2019-2021, WHOI Sea Grant staff played a leading role in the development of the Massachusetts Shellfish Initiative's strategic plan. When appropriate, the program will assist state agencies and local managers with projects and objectives under the 6 categories listed in the plan: (1) fostering communication and coordination among local, state, and federal managers and developing improved guidance for such communication; (2) building capacity to support shellfish resources and shellfish fisheries; (3) development of management, research, and industry resources; (4) supporting and promoting balanced and sustainable economic opportunities around shellfish; (5) supporting and promoting cultural and historical uses of shellfish; and (6) ensuring ecologically sound management and enhancement of shellfish resources and coastal ecosystems. WHOI Sea Grant's program goals for Sustainable Fisheries and Aquaculture are as follows:

Goal 3.1: Support safe, sustainable, and economically viable seafood production and harvest in Massachusetts.

Objectives:

- Provide technical support and training on best practices and new technologies that meet the needs of aquaculture growers, shellfish managers, and seafood harvesters.
- Conduct and communicate applied research related to seafood safety, water quality, and production efficiency.
- Assist with product diversification efforts such as developing markets and techniques for

alternative species.

Expected Outcomes:

- Fisheries and aquaculture operations maintain safe and sustainable practices.
- Growers and harvesters adopt innovations that support productivity and profitability.
- Massachusetts seafood producers are better positioned to meet market and regulatory demands.

Goal 3.2: Strengthen knowledge sharing and coordination across the fisheries and aquaculture sectors.

Objectives:

- Engage regularly with seafood producers, natural resource managers, and regulatory partners to identify priorities and share information.
- Translate scientific findings into user-friendly guidance to support decision making, permitting, and resource management.
- Facilitate forums, trainings, and discussions that promote collaboration across commercial, recreational, and municipal fisheries interests.

Expected Outcomes:

- Improved communication and alignment among harvesters, managers, and regulatory agencies.
- Science-based tools and data inform policy and resource management decisions.
- Local and regional efforts are more effective in sustaining working waterfronts and marine resources.

Resilient Communities and Economies

Coastal communities in the U.S. support a wide range of economic, social, and recreational opportunities. In Massachusetts seventy-five percent of the population lives in coastal counties. The coastal geological environment in the southeastern part of the Commonwealth consists primarily of thick glacial deposits in the form of outwash plains and moraines. Typically, this terrain has low topography and consists of easily erodible, unconsolidated sediment. Erosional forces (such as wave action) associated with sea level rise over geologic time have produced sandy shores fronting sea cliffs and downdrift barrier beaches. Extensive salt marshes have developed in the protected lagoons and bays that lay behind the barrier beaches. All these landforms are particularly vulnerable to storm damage, flooding, and erosion.

Coastal ponds, embayments, open coasts, and coastal resources are impacted by commercial, recreational, and residential activities. Furthermore, coastal communities in Massachusetts are increasingly being threatened by sea-level rise, which is occurring in the northeast at a rate 3-4 times the global average (Wang et al., 2022). Other major impacts include shoreline erosion, conflicts between the protection of waterfront upland property and the preservation of the beneficial functions of coastal landforms and resources, conflicts between private ownership of the coast and public access, and recreational demands on the coast through boating, fishing, shellfishing, and the use of beaches for swimming and sunbathing.

Our Resilient Communities & Economies efforts aim to ameliorate this resource management dilemma through education, applied research, and technical assistance. In implementing this strategic plan focus area, WHOI Sea Grant will share information with coastal resource managers and the public about the forces that shape the coastal environment, provide technical information to local regulators and planners, and assist communities with applying to and maintaining participation in the Community Rating System (CRS). We will also engage in work to determine new floodplain management activities that will improve flood safety, provide technical assistance on the National Flood Insurance Program, and produce extension bulletins and other information on sea level rise, coastal erosion, flooding, hurricanes, and other storms. The distribution of the Massachusetts Homeowner's Handbook to Prepare for Coastal Hazards, now in its 3rd edition, will also be a focus of the program. Our program goals for Resilient Communities and Economies are as follows:

Goal 4.1: Provide communities with tools, training, and information to reduce risk from coastal hazards.

Objectives:

- Identify and assess the specific needs and experiences of Massachusetts coastal communities to inform effective risk reduction strategies.
- Develop and distribute educational resources such as the Massachusetts Homeowner's Handbook to Prepare for Coastal Hazards.

- Support communities in understanding flood risk and improving floodplain management, including participation in the Community Rating System (CRS).
- Offer technical assistance and training on erosion, flooding, storm impacts, and regulatory frameworks.

Expected Outcomes:

- Local officials and residents have improved knowledge of hazard risks and response strategies.
- Coastal communities implement practices that increase resilience and reduce vulnerability to coastal hazards.
- Municipalities enhance their preparedness through access to science-based guidance and planning tools.

Goal 4.2: Promote sustainable land and water use practices that protect coastal resources and support long-term community well-being.

Objectives:

- Share information on watershed function, coastal landforms, and the effects of development and infrastructure on natural systems in accessible forms for Massachusetts coastal communities, including residents, decision makers and managers.
- Support water quality protection through outreach, applied research, and collaborative planning.
- Engage with planning boards, conservation commissions, and other local groups to assess community needs and encourage informed decision making.

Expected Outcomes:

- Communities adopt strategies that support both resource protection and responsible growth.
- Local decision makers incorporate science-based guidance into land use and water resource planning.
- Coastal and estuarine health is supported through sustainable management actions.

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WHOI Sea Grant Supported Performance Measures 2024-27

Healthy Coastal Ecosystems (HCE)

- Number of resource managers who use ecosystem-based approaches in the management of land, water, and living resources as a result of Sea Grant activities
- Number of acres of coastal habitat protected, enhanced, or restored as a result of Sea Grant activities

Sustainable Fisheries and Aquaculture (SFA)

- Number of fishers, seafood processors, aquaculture industry personnel or seafood consumers who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities

Resilient Communities and Economies (RCE)

- Number of communities that adopt/ implement sustainable economic and environmental development practices and policies as a result of Sea Grant activities
- Annual number of communities that adopt/ implement hazard resiliency practices to prepare for and respond to/ minimize coastal hazardous events

Environmental Literacy and Workforce Development (ELWD)

- Number of Sea Grant products that are used to advance environmental literacy and workforce development
- Number of people (youth and adults) engaged in Sea Grant-supported informal education programs
- Number of Sea Grant supported graduates who become employed in a job related to their degree within two years of graduation

Cross Cutting National Focus Area Measures

- Number of Sea Grant tools, technologies and information services that are used by our partners/customers to improve ecosystem-based management
- Economic and societal impacts derived from Sea Grant activities (market and non-market; jobs and businesses created or sustained)

Cross Cutting Performance Metrics Outputs

- Number of individuals and full-time equivalents (FTEs) devoted to Sea Grant
- Number and Origination of Core Funding Pre- and Full Proposals
- Number of Volunteer Hours
- Number of Postsecondary Students and Degrees Financially-Supported by Sea Grant in Higher Education Programs (Undergraduate, Graduate)
- Number of P-12 Students who participated in Sea Grant-supported formal education programs
- Number of P-12 Students Reached Through Sea Grant-Trained Educators
- Number of educators who participated in Sea Grant-supported professional development programs
- Number of Sea Grant-Sponsored/Organized Events
- Number of Attendees at Sea Grant-Sponsored/Organized Events
- Number of Public or Professional Presentations
- Number of Attendees at Public or Professional Presentations
    - Number of peer-reviewed publications produced by Sea Grant
    - Visitor Attendance: Number of people that visit museums, aquariums, and other informal education institutions hosting NOAA-supported exhibits or programs
    - Environmental Actions: Number of people participating in environmental actions through NOAA education programs