Maine Sea Grant Strategic Plan 2018–2023

Marine Science for Maine People in a Time of Rapid Change

January 2021 version

with 2022–2023 additions to the 2018–2021 plan

Contents

Introduction . . . 1

Program Overview . . . 3

- Vision . . . 3
- Mission . . . 3
- Core Values . . . 3
- Cross-cutting Principles . . . 3

Strategic Planning Process *for January 2021 update* . . . 5

Strategic Focus Areas . . . 6

- Healthy Coastal Ecosystems . . . 6
- Resilient Communities and Economies . . . 10
- Safe and Sustainable Seafood . . . 14
- Communities Responding to a Changing Climate . . . 18
- Environmental Literacy and Workforce Development . . . 22

Performance Measures and Targets . . . 27

NOTE: Photographs of students and others not wearing masks were taken prior to the coronavirus pandemic. The University of Maine and University of Maine at Machias follow federal and state Centers for Disease Control and Prevention health and safety guidance, which includes social distancing and use of face coverings for the start of the 2020–21 academic year.

Introduction

Maine's extensive coastline, home to more than half a million year-round residents and millions of seasonal residents and summer visitors, supports significant aspects of local and state economies and quality of life. Commercial and recreational fisheries, many other parts of the seafood supply chain, coastal cultural heritage and economy, and tourism are interdependent sectors that rely on healthy coastal and marine resources.

Maine Sea Grant's Strategic Plan for the 2018-2023 period reflects our intent to continue to provide high-quality, science-based information, outreach, education, and support needed by Maine's coastal communities as they face economic and environmental transitions of the 21st century.

The Maine Sea Grant College Program is a state-federal partnership based at the University of Maine and sponsored by the National Oceanic and Atmospheric Administration (NOAA), the State of Maine, and many partners. Part of a network of 34 Sea Grant programs throughout the coastal and Great Lakes states and territories, Maine Sea Grant supports integrated scientific research, outreach, and education programs. The Maine Sea Grant vision, mission, core values, cross-cutting principles, and strategic goals and objectives are aligned with the 2018-2023 NOAA National Sea Grant College Program Strategic Plan, and Maine Sea Grant reports to a set of common National Sea Grant Program performance measures and metrics.

We support scientific research that is relevant to the issues and needs of coastal communities in Maine and the Gulf of Maine region. Research in our program is accomplished in three ways, which are often connected: (1) competitive research grants from both Maine Sea Grant research funds and national solicitations; (2) program development grants to investigators in the state and region; and (3) research activities conducted by our Marine Extension Team (MET). Maine Sea Grant staff cultivate effective working relationships with the research community by linking our extension, education, and communications efforts with principal investigators and graduate students, and through our biennial research symposia. We take seriously our responsibility to serve as unbiased liaisons between research institutions throughout the state and our diverse constituents and stakeholders of all ages. We strive to share research findings related to our strategic goals with our many audiences, using formats and approaches that serve each best.

With a strong link to the scientific community of the University of Maine System and other institutions in the state and region, Maine Sea Grant staff provide science-based support to practical needs within the State of Maine. The program serves a wide variety of stakeholders and constituents, including industry; local, state, and federal governments; nonprofit organizations; research and academic institutions; and the public. Diverse forms of support are tailored to the particular needs of each entity or project. Sea Grant staff provide a balanced approach to decision-making by: (1) facilitating discussions between potentially disparate points of view; (2) inspiring scientific inquiry that can provide for better information and credibility for subsequent decisions; and (3) providing learning opportunities for students, teachers, industry members, and the public.

In partnership with University of Maine Cooperative Extension, place-based members of the MET focus on issues of concern to Maine's coastal communities. Their work extends current knowledge and expertise to stakeholders, while helping to ensure that Sea Grant supports research that is relevant to Maine people. From the Wells National Estuarine Research Reserve in southern Maine to the Eastport waterfront at America's eastern shores, MET

outreach staff live in the communities they serve. As a fundamental feature of Maine Sea Grant, the MET makes us unique within the state. No other coastal or marine focused organization in Maine has such a reach, or such a long history in Maine's coastal communities. Our formal partnership with Cooperative Extension has been in place for nearly two decades, and has been recognized as a model for effective fiscal and programmatic collaboration during federal program evaluations.

Marine Extension Team members use various methods to achieve a balanced approach. Examples include education programs, applied research projects, and organization and facilitation of workshops and forums to help stakeholders understand and address important issues. An important attribute to our approach is the role of partnerships and professional relationships. These are frequently formalized either through MOUs that describe the respective roles of the parties, or through collaborative, extramurally funded initiatives. Sea Grant is committed, nationally, regionally, and locally, to leveraging core funds to maximize investment and outcomes.

Our formal and informal education programs support the ecological health, economic vitality, and resilience of Maine's coastal communities and marine-related resources by: (1) fostering an environmentally literate public who can use scientific knowledge to identify questions, draw evidence-based conclusions, and make decisions about issues that affect them and (2) supporting development of a workforce skilled in science, technology, engineering, mathematics, and other disciplines critical to Maine's coast. We strive to reach diverse audiences, as well as professionals seeking workforce development opportunities in marine and coastal sectors. Our programs include place-based, participatory research opportunities and community science programs that link volunteers with local scientists and resource managers around locally relevant issues.

A three-person communications team with skills in graphic design, web design and programming, writing, and editing supports all elements of the program, with a long-term goal of enhancing environmental literacy among public audiences. Our communications strategies and products are developed in partnership with the MET and the research community, who help identify information needs of target audiences and relevant stakeholders. In addition to communicating the results of Sea Grant-funded research and other research related to our strategic goals, the communications team produces independent projects to advance the Maine Sea Grant mission.

A twenty-five-member Advisory Committee provides input to strategic planning, programmatic direction, and funding decisions. Members are nominated by committee, with an effort to seek a balanced representation of the interests and expertise of Maine's geographically distinct and socially, culturally, and economically diverse coastal communities and stakeholder groups. Members are appointed by the University of Maine President and serve renewable three-year terms. They work closely with Maine Sea Grant staff to evaluate opportunities and gaps in research and programming, set priorities, and provide guidance and feedback on each new strategic plan and Omnibus proposal to National Sea Grant.

Program Overview

Vision

Maine Sea Grant envisions thriving coastal communities and ecosystems supported by an engaged public and informed decision-makers.

Mission

Maine Sea Grant's mission is to support the responsible use and conservation of coastal resources in order to sustain thriving coastal communities and ecosystems.

Core Values

The Maine Sea Grant College Program's core values are essential and enduring tenets that influence the organization and support our mission. The core values support a culture of integrity and inclusivity, with the intent to maintain our role as a trusted source of science-based information among all people with whom we live and work. The Maine Sea Grant College Program will be:

- **Visionary** We strive to address existing and emerging challenges with creative and relevant science and stewardship.
- **Collaborative** We seek and nurture partnerships that amplify our impact. We approach our partnerships with responsiveness, inclusiveness, and respect for diverse knowledge. We facilitate communication among diverse interests.
- **Dedicated to sustainability** We practice and promote stewardship activities, and build capacity for applied research and monitoring to sustain and restore Maine's marine and coastal ecosystems and the communities they support.
- **Accountable** We operate with integrity and transparency, and maintain quality and equity in our service to Maine people.
- **Connected** We draw upon resources and expertise from NOAA; the University of Maine; and other state, regional, and national networks to address complex challenges in partnership with Maine communities from Kittery to Eastport, all 5,300 miles of our coast line.
- **Responsive** We recognize and respond to emerging needs in coastal communities. We strive to make sense of changing trends and are poised to support new ideas for addressing evolving challenges.

Cross-cutting Principles

In alignment with the National Sea Grant 2018-2023 Strategic Plan, Maine Sea Grant will strive to address two specific areas that deserve attention in all facets of our work to enhance the Program's capabilities to meet future needs. The Maine Sea Grant Program will:

- **Enhance Diversity and Inclusion** by seeking and engaging diverse perspectives to enhance understanding and enable the network to pursue its vision and mission with equity and integrity.

Maine Sea Grant reaffirms our commitment to programming and outreach that promotes diversity, equity, and inclusion, as framed by the National Sea Grant Network vision, ***Reaching Outward and Looking Inward and NOAA's Diversity and Inclusion Strategic Plan***. As a network, we have

committed to work as a catalyst of conversation. Maine Sea Grant has a concerted effort underway to integrate education and awareness of racism and social justice into our team's approach and activities at all levels. We are committed to converting our learning into change, through work with our many partners and communities toward a shared goal of ending systemic racism.

- **Cultivate Partnerships** by integrating the expertise and capabilities of partners from international, federal, tribal, state, and local communities and from academia, nongovernmental organizations, and industry.

Maine Sea Grant strives to leverage its capacity, expertise, and resources at every opportunity, and we rarely enter into any project or program without numerous partners. The breadth and strength of local, state, regional, national, and international collaborations the program has established and maintained is demonstrated by the many partnerships that have been in place for decades. Demand for our partnership is high. We carefully consider our own role and capacity to be effective, and define the scope of our engagement and deliverables in each project proposal or contract. For larger or longer-term partnerships, we frequently draft MOUs to outline these roles, as we have done with University of Maine Cooperative Extension for their joint support for members of our MET. Our capacity to develop and support diverse and often unconventional partnerships enables us to leverage resources and expertise that would not otherwise be available, and facilitate far greater outcomes than we could accomplish on our own.

We do not typically separate the types of individuals or organizations we work with as partners from those we consider stakeholders. We form partnerships around areas of mutual need and to leverage complementary capacity to achieve various outcomes. For example, while we often partner with the Maine Department of Marine Resources, seafood businesses, and organizations such as the Gulf of Maine Research Institute, they also frequently apply for Sea Grant research funding.

Strategic Planning Process *for January 2021 update*

This strategic plan update reflects input from the Maine Sea Grant Advisory Committee (AC) and staff. We took the following steps to complete the 2022-2023 update to the 2018-2021 strategic plan:

December 2019: Maine Sea Grant Management Team discussed a process for revising and extending the 2018-2021 strategic plan with the Advisory Committee to collect their input on our approach.

January – February 2020: The Maine Sea Grant Team reviewed the Maine 2018-2021 strategic plan and assessed gaps and opportunities to extend the plan to 2023.

March – May 2020: The Maine Sea Grant Team continued revisions and completed an internal plan draft. The Team developed an online survey for the twenty-five Advisory Committee members.

May 2020: Concurrent with outreach to the Advisory Committee, Maine Sea Grant staff assessed the plan (based on their own work, and internal and external partnerships) to compose a collective vision for 2022-2023.

June 2020: Responses to the Advisory Committee survey were coded and summarized. Results from internal planning and the survey were presented at a June Maine Sea Grant Advisory Committee meeting, and commentary was returned to the Maine Sea Grant staff for additional discussion and input.

July – August 2020: Edits to the 2018-2021 were annotated and the Maine Sea Grant extended 2018-2023 Strategic Plan was finalized based on revisions from the Advisory Committee and the Maine Sea Grant Team.

September 2020: Strategic Plan was reviewed by University of Maine leadership, revised, and then submitted to the National Sea Grant Program for review.

October 2020: Initial Maine Sea Grant 2022-2023 Strategic Plan was shared with Advisory Committee members ahead of a December Advisory Committee meeting.

November – December 2020: Feedback was received from the National Sea Grant Program, and from Advisory Committee members during the Advisory Committee meeting.

January 2021: NSGO feedback was reviewed by staff, plan language and content was revised, and the plan was finalized. The final plan was submitted to the National Sea Grant Office.

Strategic Focus Areas

A national framework of focus areas describes the National Sea Grant Network's overarching priorities based on national and regional needs and initiatives. The focus areas provide a structure to organize relevant accomplishments, impacts, and outcomes with applicable priority. Each university-based Sea Grant program contributes to the national focus areas and goals. Program strategies are aligned with the national network, but participation in individual focus areas, goals, and performance measures are determined after consultation with local and regional stakeholders and advisors. This iterative and flexible planning process, as outlined above, allows for local level input to identify and develop methods to address emerging issues while ensuring alignment with the national strategic plan. National strategic focus areas are *Sustainable Fisheries and Aquaculture, Healthy Coastal Ecosystems, Resilient Communities and Economies*, and *Environmental Literacy and Workforce Management*. Maine Sea Grant has an additional Focus Area: *Communities Responding to Changing Climate*, and our focus area names have been refined through local level input. Each is described below.

Healthy Coastal Ecosystems

Maine's extensive coastline varies from sand dune systems and barrier beaches in the south, to rocky peninsulas and numerous islands in the central portion of the state, to the steep-cliffed and rugged shores Downeast. Large bays, salt marshes, mud flats, beaches, rocky intertidal zones, and rivers and streams support commercial fisheries and tourism, all of which depend on clean water, plentiful marine resources, and diverse wildlife. Our coastal ecosystems are relatively intact, a situation that presents challenges, e.g., preserving ecosystem health and beauty, as well as opportunities for innovative resource management, restoration, and student engagement. In this time of rapid change, we must stay abreast of issues and challenges affecting Maine's coastal ecosystems, while remaining aware of those affecting ecosystems and communities in other states. Our work in this focus area informs and improves state- and community-based ecosystem management efforts through research, monitoring, and facilitation and coordination for water quality, habitat, and ecosystem management initiatives. Our research investments are as diverse as the ecosystems in the state, with a focus on applied research with the potential to address complex challenges.

Coastal water quality, sea-run fish research, and habitat restoration are major areas of our work in this focus area. Maintaining and restoring coastal water quality and coastal ecosystems is critical for sea-run fishes, public health and the continued vitality of Maine's coastal tourism economy. Water quality is also essential for Maine's valuable seafood industry, supporting production of clams, mussels, oysters, seaweed, and scallops. Maine's coastal watersheds are home to 12 species of diadromous or sea-run fishes, some supporting commercial fisheries. Our research and extension efforts with sea-

run fishes informs other related research, management, and habitat restoration efforts within and outside of Maine, and are supported in part through a long-term partnership with NOAA's Northeast Fisheries Science Center. Diverse, cross-sector collaborations are necessary to make progress in this area of work.

Maine Sea Grant's primary partners and constituents in this focus area include resource managers; local, state, and national researchers and conservation organizations; citizens of all ages; municipal officials; and private businesses.

GOAL

Maine people will understand the links between healthy ecosystems and resilient communities, and take action to ensure the long-term health of coastal resources.

OBJECTIVE 1 Support research, education, and cross-sectoral collaborations that protect and restore coastal ecosystem health and function.

Activities to address this objective include applied research and science communication related to coastal and marine ecosystem health, support and coordination for environmental monitoring programs and community engagement, and facilitation for public decision-making related to ecosystem health.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand the impacts of stressors such as impaired water quality, climate change, and other human activities on ecosystem health.
- learn about policy, management, monitoring, and planning tools and approaches that can be used to protect or restore coastal and marine ecosystems.
- access timely and relevant scientific information about coastal and marine ecosystems.

Act

- review and adopt best practices for conservation, and fisheries and community resilience.
- assess ecosystem function, services, impairment, and potential for restoration and protection.
- support or participate in applied research, environmental monitoring, ecosystem protection, planning, or restoration initiatives.
- practice or support community engagement efforts to increase participatory decision-making.
- practice or support consideration of coastal and marine ecosystem science in policy, planning, and management decisions.

Achieve Impact

- protect or restore coastal ecosystem health and function by using long-term, climate-smart approaches based on applied research and informed community engagement.
- protect or grow environmental resource-based economies that depend on ecosystem health.

OBJECTIVE 2 **Support research, education, and cross-sectoral collaborations that protect and improve coastal water quality.**

Activities to address this objective include applied water quality research, community engagement and informal education related to planning, decision-making, and management of water quality and water infrastructure.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand the value of ecosystem services provided by healthy watersheds and coastlines.
- understand the sources and effects of harmful bacteria and other pollutants on coastal water resources, and what actions help to ensure clean coastal waters.
- understand the impacts of climate-related environmental change on water quality.

Act

- use ecosystem-based approaches to planning, decision-making, and management of coastal water quality.
- repair and improve coastal wastewater/stormwater infrastructure.
- conduct or participate in applied research, education, and outreach activities to protect water quality.
- practice or support stewardship and community engagement efforts to increase participatory decision-making and ecosystem-based management.

Achieve Impact

- maintain coastal water infrastructure that protects water quality and improves social-ecological resilience to climate-related environmental change.
- sustain community-based water pollution monitoring, source identification, and remediation initiatives.
- improve coastal water quality.

OBJECTIVE 3 **Support research, education, and cross-sectoral collaborations that protect and improve habitat for native sea-run (diadromous) fishes.**

Activities to address this objective include applied research in watershed function, fish populations, and fish habitat restoration; coordination and support for sea-run fish monitoring efforts, outreach, and community engagement; and science communication related to sea-run fish habitat protection and restoration.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand the value of ecosystem services provided by connected coastal watersheds and robust populations of native sea-run fishes.
- understand the value of native sea-run fish populations as forage species in the Gulf of Maine.

- understand the effects of human activities (including restoration efforts) and environmental changes on coastal watershed resources.
- increase scientific understanding of ecosystem-level effects of habitat restoration on marine-coastal food webs and water quality.

Act

- use ecosystem-based approaches for management and stewardship of native sea-run fish populations and habitat restoration.
- restore coastal habitats and their connectivity to inland watersheds (e.g., sea-run fish passage restoration projects), and engage in related research, education, and outreach activities.
- increase monitoring capacity to observe ecosystem-level effects of restoration efforts.
- build capacity for local management and stewardship of individual fish populations.

Achieve Impact

- improve habitat access and passage for native sea-run fishes.
- increase capacity for local management and stewardship.
- increase native sea-run fish populations.

Performance metrics for this focus area are listed in the Performance Measures and Targets section of this plan.

Resilient Communities and Economies

Maine's coastal communities were founded on natural resources, from fish and shellfish to granite and salt, and a tradition of building wooden ships that connected the forests of inland Maine to the coast. Where these communities continue to depend on marine resources, demographic, economic, political, and environmental changes often manifest as user conflicts, increase demand on the coastal environment, and have the potential to erode Maine's natural and cultural heritage. Including coastal islands, Maine's vast shoreline stretches for 5,300 miles, yet only 20 miles of coastline support water-dependent industries. The majority of commercial access points are privately owned and vulnerable to conversion to residential and other private uses, as well as the impacts of climate change. Year-round residents in Maine's coastal communities often struggle to find housing, afford their rent or mortgage and property taxes, find employment, and pay their bills in the face of increasing costs.

Resilient coastal communities require a sustainable future. The state's extensive undeveloped coastline may provide opportunity for tidal and offshore wind resources, and as such, Maine is at the forefront of the emerging ocean energy sector. Maine Sea Grant envisions a future in which Maine's coastal communities are resilient to challenges and changes – resilient communities continually gather the necessary skills, knowledge, and resources (human and physical) to plan for, cope with, and thrive in the face of both predicted and unexpected ecological, economic, and demographic changes.

Maine Sea Grant's primary partners and constituents in this focus area are coastal communities, their residents, and the industries that drive their economies. To achieve the outcomes listed below, we work with a range of community audiences. These include municipal officials, resource industries and managers, researchers, private businesses, property owners, cultural organizations, and residents and visitors of all ages. While coastal communities are the focus areas of our work, we recognize the need to work at a broader, regional scale to build awareness of the interdependence between coastal and inland communities.

GOAL

Maine's coastal communities will draw upon relevant science and their assets to recover from, adapt to, prepare for, and mitigate the environmental, economic, and social/cultural vulnerabilities they have identified and prioritized.

OBJECTIVE 1 **Enhance public decision-making processes related to marine and coastal resource use and community planning initiatives.**

Activities to address this objective include social science research and science communication related to marine and coastal issues; workshops and training courses in community engagement and facilitation skills; and coordination, facilitation and support for community, state, and regional planning and resource management issues.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand the value of community engagement and skilled facilitation in public decision-making processes.
- understand the varied perspectives and interests held by constituents and stakeholders.
- develop a range of community engagement and group facilitation skills.
- learn strategies to access and share science-based information relevant to the decision-making and management processes at hand.

Act

- participate in community dialogue about ocean and coastal resource use.
- apply community engagement and facilitation in public processes.
- share skills or resources gained with other communities seeking to address similar challenges.
- support community-based efforts to evaluate assets, opportunities, and vulnerabilities in order to plan for preferred futures.
- create decision-making processes that acknowledge the needs of various stakeholders and employ strategies to honor shared values.

Achieve Impact

- achieve and maintain local capacity in community engagement and group facilitation skills.
- make marine and coastal resource use and planning decisions that reflect community input and values, relevant science, and information about historical and contemporary uses.

OBJECTIVE 2 Assist coastal communities in activities that value and preserve their cultural heritage, including fisheries, working waterfronts, and other unique assets related to the sea.

Activities to address this objective include leadership and coordination for cultural heritage education and outreach initiatives. We support community, state, and national efforts to document and preserve working waterfront assets, and produce outreach materials for a variety of media that engage people in learning about current issues and challenges for coastal communities.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand the value of marine and fisheries heritage to community, state, and regional identity and economic opportunity.
- understand the challenges facing working waterfront communities.
- learn about their unique connection to place through personal stories told by Maine residents.

Act

- use stories, science, and other information produced by Sea Grant to help document or protect fisheries heritage, working waterfronts, or shared values in a community or region.
- use Sea Grant information, science, and other resources about changes and challenges facing coastal and working waterfront communities to inform community planning, cultural and natural resource management, and decision-making processes.

Achieve Impact

- value and protect Maine coastal communities' unique history and working waterfront heritage.

OBJECTIVE 3 Support marine and coastal business and infrastructure development by identifying opportunities and vulnerabilities and prioritizing how to address them.

Activities to address this objective include leadership and coordination for coastal community development initiatives, support for social science and economic analysis, evaluation of coastal infrastructure and assets, and public engagement support for community-based planning efforts to identify and prioritize risks, vulnerabilities, efficiencies, and opportunities for growth.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- identify bottlenecks or barriers to marine and coastal business development or growth at community, sector, or regional scales, and ways to address these barriers.
- identify the economic questions relevant to upgrading or maintaining waterfront and seafood industry infrastructure.
- learn strategies to cope with and mitigate the effects of environmental and economic "shocks" on Maine's marine economy.

Act

- establish, grow, or diversify individual or cooperative enterprises in marine and coastal sectors.
- address barriers to growth and diversification in marine and coastal sectors.
- share knowledge and lessons learned from experiences with new technologies and infrastructure that benefit multiple sectors.
- work collaboratively to sustain and grow Maine's marine economy.

Achieve Impact

- ensure accurate economic information and the best available science and technology are used to guide the maintenance, expansion, and diversification of marine and coastal business sectors.
- create resilient coastal communities that include affordable housing and services for year-round residents and thriving waterfronts.

OBJECTIVE 4 **Facilitate collaboration across sectors, including the seafood, tourism, and fisheries/aquaculture sectors to enable diversification and mutually beneficial action.**

Activities to address this objective include leadership, coordination, and support for cross-sector networking opportunities; discussion forums; professional training; and industry exchange workshops designed to facilitate collaboration among seafood, culinary, and tourism industry members. These initiatives are supported with a range of print and web-based resources and field tours of successful cross-sector business operations.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand examples of mutually beneficial relationships between tourism, seafood industries, and heritage or marine education-related organizations.
- understand the value of marine and fisheries heritage to community identity and seafood/culinary and tourism enterprises and opportunities.
- understand how new technologies and infrastructure transform Maine's marine economy.

Act

- use Sea Grant-supported information or content in heritage tourism activities.
- develop new partnerships between fisheries, aquaculture, tourism, and seafood/culinary industries.
- establish new or expanded cross-sector partnerships in sustainable tourism and seafood industries.
- support innovation and entrepreneurship in Maine's seafood economy.

Achieve Impact

- maintain cross-sector partnerships, information exchange, and networks capable of evolving to support diverse, healthy economies and sustain traditional working waterfronts and other natural and cultural assets.

Performance metrics for this focus area are listed in the Performance Measures and Targets section of this plan.

Safe and Sustainable Seafood

Many residents of Maine's coastal communities rely on the sea for their economic and cultural livelihood. According to NOAA's National Marine Fisheries Service, the proportion of Maine workers employed in commercial fishing industries is more than ten times the national average. Yet, Maine has lost most of its groundfishing fleet and related infrastructure since 1980. What was once a diverse fishing culture is now overwhelmingly dependent on lobster, a vulnerable situation that has been referred to as "a gilded trap." For this reason, much of the seafood-related work undertaken by Maine Sea Grant is related to sustainable diversification along the working waterfront: adding to what we catch or grow, broadening income opportunities for those in the seafood industry, widening the geographic scope of working waterfronts, and expanding opportunities for Maine citizens to enter the seafood industry.

Maine Sea Grant's work in this area is focused on developing and supporting aquaculture and fisheries that are sustainably managed by the state and/or communities. This scale enables fishermen and aquaculturists to be involved in science, monitoring, and management, and communities to realize direct benefits. Our work in aquaculture includes continued development of new culture techniques and target species, marketing, and industry support, as well as facilitating connections with conservation groups, resource managers, consumers, adjacent landowners, and other waterfront and community assets.

Because of the overwhelming importance of fisheries and aquaculture to the state, much of Maine Sea Grant's work in this focus area also addresses seafood-related education, professional training, and science communication needs. To ensure a resilient and sustainable future for Maine's fishing and aquaculture industry, Maine residents and visitors need to be knowledgeable about seafood: how it is produced, processed and distributed, as well as the management and science that guide the seafood industry and influence related tourism, recreational, and career opportunities. Programming in other focus areas also addresses ecosystem health, economic and community resilience, climate impacts, and education and workforce issues related to seafood.

GOAL

Maine's wild harvest and aquaculture sectors and the communities that depend on them are economically viable and environmentally sustainable.

OBJECTIVE 1 Develop and support opportunities for wild harvesters and aquaculture producers to strengthen or diversify their seafood-related businesses and collaborate to increase economic resilience and sustainability across the Maine seafood industry.

Activities to address this objective include leadership, coordination, and support for cross-sector networking, collaborative research, and professional training opportunities. These initiatives are supported with a range of educational resources and field tours or skills workshops with industry members interested in supporting and collaborating with others.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- produce or access science and management information on the dynamics of wild fish, shellfish, and seaweed populations.
- understand species-specific and integrated aquaculture methods, leasing structures and requirements, siting, safe product handling, and regulations associated with establishing production of cultured species.
- learn business development skills, including business planning, marketing, product branding, and new and value-added product development.
- meet other seafood industry professionals across the wild harvest, aquaculture, culinary, and tourism sectors, and learn about the needs, timelines, and perspectives of each sector.
- learn about how new technologies and infrastructure enhance production and enable new opportunities.

Act

- use science-based information and skills gained through Sea Grant training to improve business management practices, establish a new business, or diversify or expand an existing business to include a new or additional aquaculture or wild harvest species.
- participate in or create networking opportunities with researchers and other seafood industry professionals.
- establish new or expanded partnerships or collaborations with seafood, tourism, or culinary industry professionals.
- improve seafood product safety and handling practices.
- leverage business/organizational capacity and impact through partnerships and collaborations.
- diversify products and overall business portfolios.
- increase consumer awareness and understanding of seafood businesses, products, and culinary uses.

Achieve Impact

- achieve a more diverse, resilient, and sustainable seafood industry in Maine, where fewer individual operators, businesses, and communities are dependent on a single commercial species.

OBJECTIVE 2 Support applied research initiatives to diversify commercial seafood species and products through aquaculture, harvesting, and post-harvest processing innovation.

Activities to address this objective include applied research and technology transfer initiatives related to growth, population dynamics, harvest or culture methods, and feasibility and sustainability of new species or products. In support of the research and technology transfer, we provide coordination and support for cross-sector networking, collaboration, and information exchange.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- produce, access, or disseminate research and development information related to new or innovative culture harvest, fishing methods, products, or target species.
- access technical assistance and the scientific and extension support required to test new methods, products, markets, or species.

Act

- identify needs and initiate trials of new aquaculture methods, species, or products.
- participate in applied research and development initiatives in aquaculture.
- engage in and/or create networking activities and/or industry collaborations.
- assist with technology transfer, including connecting with other growers and researchers who are working with innovative culture methods, products, or species.
- use knowledge or experience gained to develop a new or expanded business or product.

Achieve Impact

- achieve a more diverse, resilient, and sustainable seafood industry in Maine, in which fewer individual operators, businesses, and communities are dependent on a single commercial species, and who become less vulnerable to environmental or economic changes affecting those species.

OBJECTIVE 3 Support applied research and extension services to improve coastal and marine resource monitoring and management, and inform community, statewide, and regional management planning processes.

Activities to address this objective include applied research related to population dynamics, efficiency and accuracy of monitoring, management, and regulatory tools, ecosystem change, and biological responses to ecosystem change. We provide leadership, coordination, and facilitation for community engagement in planning and decision-making processes that affect harvest and culture fisheries. We also provide and support opportunities for state and regional communication among industry, research, and management sectors, and the public.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- produce or access timely, accurate information about the management status, regulations, and monitoring data and practices for wild harvest and culture fisheries, and about changes therein and related planning or public decision-making processes.

Act

- identify research and technical assistance needs related to building ecological, social, and economic resiliency.
- facilitate engagement in public planning or decision-making processes that affect wild harvest or culture fisheries.
- adapt fishing, aquaculture, or monitoring practices in response to changes in management status, regulations, monitoring requirements, or environmental conditions.
- participate in Sea Grant-supported applied research that seeks to improve coastal or marine resource monitoring, management, or related planning initiatives.
- engage in Sea Grant-facilitated meetings or other information exchanges among and between sectors, such as research scientists, industry members, resource managers, and the public.

Achieve Impact

- support a more adaptive, efficient, and transparent marine and coastal resource planning and regulatory structure in Maine.

OBJECTIVE 4 Increase the availability and quality of science-based information about Maine seafood.

Activities to address this objective include production of educational products and outreach materials to provide consumers and the public with information about both wild harvested and aquaculture-produced species. We also produce fact sheets and feature articles for a variety of publications with broad circulation. Both print and web-based products are updated as new scientific information becomes available.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- learn about harvest and culture methods, management and regulations, seasonality, safety and handling, and culinary and wholesale sources of Maine seafood.
- learn about the seafood industry, its people, and its heritage.

Act

- seek out information about Maine-grown and harvested seafood.
- provide information about safe seafood processing, storage, serving, and consumption.

Achieve Impact

- increase awareness of and demand for sustainable, local seafood options.

Performance metrics for this focus area are listed in the Performance Measures and Targets section of this plan.

Communities Responding to a Changing Climate

Coastal residents and towns need strategies to respond and adapt to climate change and its effects on sea-level rise, shoreline erosion, marine and coastal resources, and coastal flooding. Extreme weather events can cause billions of dollars in damage and threaten coastal ecosystems and local economies that rely on tourism and fishing, both vital sectors of Maine's economy. Ocean acidification, increasing ocean water temperatures, and other climate-related changes in Maine's coastal ecosystems threaten the state's valuable wild and culture fisheries, and the marine heritage and cultural identity of many coastal communities. Maine Sea Grant is working with local, state, and national partners to help Maine's communities and coastal and marine industry sectors to respond to local impacts of climate change and prevent or minimize damage from extreme rainstorm events and coastal hazards. One of the challenges communities and businesses face in a changing climate is applying regional and global-scale information and data to the local environment. Information, tools, and knowledge must also extend to the next generation through targeted education and workforce development programming.

Research investments and community science programs supported by Maine Sea Grant and other institutions throughout the state help communities understand and predict climate-related impacts on Maine's coastal and marine ecosystems. To make this information as accessible and useful as possible, community leaders, industry members, and others working to adapt to changing environmental conditions also need a means to communicate and collaborate around shared goals and activities. To address this need, Maine Sea Grant provides leadership, coordination, and community engagement support for a range of climate-related science, management, and education initiatives.

Maine Sea Grant's primary constituents in this focus area are coastal communities and marine and coastal industry sectors, including fisheries, aquaculture, tourism, and alternative energy. To achieve the outcomes listed below, we work with a range of partners and community audiences across the state and Northeast region. These include municipal officials, coastal property owners, resource managers, state and federal agencies, researchers, fishing industry members, aquaculturists, private businesses, and community members of all ages.

GOAL

Maine communities, businesses, and individuals understand the risks and opportunities that result from a changing climate, and develop effective strategies that enhance preparedness for and resilience to uncertainty and change in environmental conditions.

OBJECTIVE 1 **Support community, state, and regional efforts to understand, communicate about, and respond to climate-related changes in the marine and coastal environment. These changes include ocean acidification; increased water temperature; and changes in native and non-native species populations, distributions, and diseases.**

Activities to address this objective include applied research related to the impacts of climate change on coastal and marine ecosystems in Maine, and leadership, coordination, and community engagement support for cross-disciplinary science, management, and education initiatives addressing climate change-related issues that affect Maine's coastal communities.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- produce or access relevant, science-based information about how expected changes may affect specific species and ecosystem-scale health and function.
- collaborate to share and generate diverse types of knowledge and conduct joint fact finding on climate-related changes and impacts in the marine and coastal environment.
- understand community values, barriers to action, and social structures related to climate change impacts and responses.

Act

- use shared knowledge on climate-related changes in the marine environment to develop synergistic, multifunctional approaches to prepare for, adapt to, or mitigate potential climate-driven changes to marine species or ecosystems.
- make adaptive changes in community or state marine resource planning, management, and regulatory practices to minimize the potential impacts on marine species, ecosystems, and communities that rely on them.

Achieve Impact

- greater capacity to respond, adapt to, recover from, and mitigate climate change-related disruptions to life and economy.

OBJECTIVE 2 Conduct applied research and support community, state, and coastal industry risk assessment and planning initiatives related to the impacts of sea level rise, extreme storm events, and related erosion on coastal infrastructure.

Activities to address this objective include applied physical and social science research and science communication and education related to the impacts of sea level rise, extreme storm events, and erosion on coastal resources and infrastructure. We also provide leadership, coordination, community engagement, and facilitation support for state and community-based risk assessment, planning, and decision-making processes related to these issues.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- produce or access timely data on the impacts of sea level rise, severe storms, and erosion on coastal infrastructure.
- produce or access information about how expected changes may affect infrastructure at site-specific, community-wide, or regional scales.

Act

- use information supported or provided by Sea Grant to respond, adapt to, or mitigate climate-related impacts on coastal infrastructure.
- make adaptive changes in community or state infrastructure planning, management, and regulatory practices to minimize the impacts of sea level rise, severe storms, and erosion on coastal communities and coastal and marine industries.

Achieve Impact

- achieve greater capacity to respond, adapt to, and mitigate climate change-related disruptions to life and economy.

OBJECTIVE 3 Enhance and expand climate literacy and community science initiatives to increase understanding of the impacts of climate change, and address geographic and temporal gaps in climate data.

Activities to address this objective include support for applied research related to geographic and temporal gaps in local-scale climate change data, and leadership and participation in state, regional, and national community science organizations. We coordinate community science programs focused on the dual goals of increasing climate literacy and observing and recording data related to changes in phenology (timing of seasonal biological events), marine water chemistry, and coastal erosion.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- access timely, local-scale data and audience-specific information on climate-related changes in Maine's environment.
- learn science observation and data management skills related to phenology, coastal erosion, and marine water chemistry.
- meet and interact with community scientists, climate scientists, and educators in Maine and across the nation.

Act

- participate in Sea Grant-supported community science skills training workshops.
- use standardized community science monitoring protocols to collect and report local scale phenology, coastal erosion, and water chemistry data to Sea Grant-supported (and other) data management tools.
- engage other community members in climate related community science, outreach, communication, or stewardship initiatives.
- engage in public decision-making or planning processes to help respond, adapt to, or mitigate climate-related impacts on coastal, marine, and upland ecosystems, and coastal communities.

Achieve Impact

- greater capacity to understand, communicate about, respond to, adapt to, and mitigate climate change-related disruptions to life and economy.

OBJECTIVE 4 **Support local and state outreach, community engagement, and applied research efforts related to offshore wind and tidal renewable energy development initiatives.**

Activities to address this objective include leadership, coordination, and facilitation support for community engagement, outreach, and education initiatives related to offshore and tidal renewable energy development in Maine.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- produce or access available site- and project-specific data and proposed plans for project design, engineering, potential human or environmental impacts, cost, timeline, and expected benefits of proposed or permitted offshore wind and tidal energy development initiatives.
- access user-appropriate, science communication resources that help translate available project-related data into accessible information about how the expected changes or impacts may affect specific species, marine ecosystems, or adjacent communities.
- access opportunities to interact with, ask questions of, and provide feedback to project engineers; climate, social, and environmental scientists or consultants; and business development professionals.

Act

- organize, engage in, or help to facilitate as needed public and resource-user specific planning meetings to support all relevant stakeholders' access to decision-making processes surrounding proposed or permitted projects.
- provide input and feedback to project engineers and developers based on personal experience, environmental knowledge, and existing uses of proposed alternative energy sites or project resources.
- share new data, information, and resources as they become available, and create and maintain lines of communication and feedback between project engineers, planners, and community residents and stakeholders.
- use an adaptive approach to site- and project-specific design, planning, permitting, construction, testing, and operations, to respond to stakeholder interests and/or limit potential impacts on marine species, ecosystems, and communities that rely on them.

Achieve Impact

- improved coastal and marine stakeholders' access to and engagement in decision-making related to offshore wind and tidal energy projects in Maine.
- improved efficiency and sustainability of alternative energy generation initiatives in Maine.

Performance metrics for this focus area are listed in the Performance Measures and Targets section of this plan.

Environmental Literacy and Workforce Development

Maine Sea Grant seeks to provide workforce development opportunities for Maine people and increase environmental literacy for both residents and visitors of all ages. Sea Grant extension, education, and communications staff work in collaboration with formal and informal education institutions, researchers, and others throughout the state, region, and nation to provide professional training, participatory research opportunities, community science programs, informal education, and free-choice learning opportunities. We serve as the point of contact for graduate students interested in marine-related fellowships through NOAA, and support graduate and undergraduate students working with faculty on a wide range of marine-related research projects. Maine Sea Grant also awards undergraduate student scholarships in marine science and supports students and professionals in coastal and marine fields through internships and other professional opportunities.

Maine Sea Grant's communications team works with our staff and partners to produce science communication and educational materials in a variety of media formats that support all five focus areas. Our informal education activities range from public presentations, workshops, and exhibits at regional and local events to public lectures and interpretive tours. Free-choice learning opportunities include public displays at landmarks and museums and interactive "trails" that offer information and experiences for residents and visitors. Formal science education opportunities engage PK-16 students, educators, undergraduate and graduate students in evidence-based learning, research, and monitoring. Professional training programs for adults include formal courses on a variety of topics and coordination for peer-to-peer learning communities. Maine Sea Grant community science programs provide educational opportunities and engage residents of all ages in collecting environmental data used by researchers and resource managers throughout the state. Each of these initiatives involves numerous partners.

Our primary partners and constituents in this focus area are coastal and marine professionals, PK-16 students and educators, graduate students in coastal and marine fields, coastal tourism operators, and lifelong learners. It should be noted that many of the other focus area goals described above include topics related to environmental literacy and workforce development. Below, we outline goals that strictly target environmental literacy and workforce development.

GOAL 1

Maine's environmentally literate public can use scientific knowledge to identify questions, draw evidence-based conclusions, and make decisions about issues that affect the ecological health, economic vitality, and resilience of Maine's coastal communities and ocean-related resources.

OBJECTIVE 1 **Support inquiry-based learning related to Sea Grant focus areas, through partnerships with informal and formal education institutions throughout the state and across the Sea Grant Network.**

Activities to address this objective include professional development opportunities and curriculum support for formal and informal educators, direct engagement with PK-16 students through field trip and classroom-based programming, and classroom/field instruction for undergraduate students.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- access science-based information, experiences, and inquiry-based curriculum resources related to Sea Grant focus areas.
- engage in formal and informal science education opportunities focused on marine and coastal topics.

Act

- engage students or other audiences in evidence-based learning.

Achieve Impact

- increased environmental literacy in topics related to Sea Grant focus areas through reported or observed changes in attitudes, behavior, or personal decisions.

OBJECTIVE 2 **Support community science programs that engage participants of all ages in environmental monitoring and educational activities that increase environmental literacy and generate environmental data that advance critical research and environmental management efforts.**

Activities to address this objective include facilitating outreach and research partnerships to develop and deliver community science programs related to Sea Grant focus areas. These activities include leadership for the National Sea Grant Community Science Network and support for both new and ongoing initiatives.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- participate in Sea Grant-supported community science training opportunities.
- access scientific information produced through Sea Grant community science programs.

Act

- collect and contribute data to Sea Grant-supported community science programs and applied research projects.
- use data generated through Sea Grant community science programs to advance research or resource management related to Sea Grant focus areas.
- engage in public decision-making or stewardship activities as a result of knowledge gained through Sea Grant-supported activities.

Achieve Impact

- data or input from environmentally literate community scientists is incorporated in public planning, management and stewardship processes.
- community science data is used to improve health of coastal and marine ecosystems, or increase coastal community resilience.

OBJECTIVE 3 Identify and address science communication needs that are critical to reduce inequities in scientific and environmental literacy and increase informed public engagement in research and management issues related to Sea Grant focus areas.

Activities to address this objective include production of print, web-based, video, and audio education and science communication products, and educational experiences and free choice learning opportunities tailored for audiences associated with each Sea Grant focus area.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- understand how the scientific process works and how non-scientists can contribute to and benefit from science.
- consume and share science-based information presented in a variety of accessible formats.
- understand new research findings and different perspectives on issues related to Sea Grant focus areas.

Act

- use or encourage others to use scientific information when making personal or public decisions related to Sea Grant focus areas.
- change attitude or behavior based on information gained through Sea Grant-supported educational materials or science communication resources.

Achieve Impact

- an engaged and environmentally literate public familiar with planning, policy, and resource management processes related to Sea Grant focus areas.
- increased equity in public access to and use of scientific information results in reported or observed changes in attitudes, behavior, or personal decisions.

GOAL 2

Maine will have a diverse workforce skilled in disciplines critical to the ecological health, economic vitality, and resilience of Maine's coastal communities and marine-related resources.

OBJECTIVE 1 Recruit and support a diverse workforce in fields related to the Sea Grant focus areas.

Activities to address this objective include recruiting and supporting diverse applicants for NOAA and Sea Grant scholarship, fellowship, internship, and professional opportunities, and provide support, mentorship, and career counseling services for individuals filling these positions.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- learn new skills through Sea Grant-supported academic and professional training opportunities.
- broaden academic and professional networks through Sea Grant-supported opportunities for cross-sector engagement and information exchange.

Act

- support or engage in Sea Grant-supported academic and professional opportunities that recruit individuals from under-represented communities.
- initiate and expand mentorships or collaboration with or among diverse professionals representing a variety of marine and coastal industry, community, management, research, outreach, education, or local, state, or federal government partners.

Achieve Impact

- a more diverse workforce trained in marine and coastal academic and professional fields and skilled in outreach, community engagement, and science communication skills.
- Advancement of resilience and economic vitality of Maine's coastal communities and conservation or restoration of the ecological health of marine and coastal resources.

OBJECTIVE 2 Improve secondary and post-secondary academic instruction and mentorship opportunities related to Sea Grant focus areas.

Activities to address this objective include developing and delivering high-quality instruction and academic advisory services related to Sea Grant focus areas for secondary, undergraduate, and graduate students at educational institutions in Maine.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- develop or access classroom, lab, or field instructional materials that build knowledge and skills applicable to marine and coastal workforce needs.
- develop or access opportunities to align or integrate classroom, lab, project, or field-based learning with local or state efforts to address issues or challenges related to Sea Grant focus areas.

Act

- improve alignment of secondary and post-secondary academic preparation with local and state marine and coastal issues and workforce needs.
- provide or support academic instruction, mentorship, and internship opportunities that connect students with interest in marine and coastal issues with academic and/or community advisors working in fields related to their career paths.
- improve connections between public and private secondary and post-secondary academic mentorship and career-planning services in Maine learning institutions, including career and technical education (CTE), and the community college system.
- establish or support expanded career pathways related to Sea Grant focus areas.

Achieve Impact

- increased and diversified enrollment in and graduation from secondary and post-secondary academic programs related to Sea Grant focus areas.
- increased number and diversity of Sea Grant-supported graduates from secondary and post-secondary academic programs who transition to professional positions within their chosen marine and coastal fields within two years.

OBJECTIVE 3 Increase professional training opportunities that address documented workforce needs related to the Sea Grant focus areas.

Activities to address this objective include developing and providing professional training, curriculum, instruction, and supporting workforce development networks for documented needs related to the Sea Grant focus areas. These include technical training and business development support related to onshore and marine aquaculture and wild harvest fisheries, as well as ocean energy research and development, climate resilience planning and adaptation, community engagement, facilitation, and science communication.

Outcomes: through these activities, we work with our partners to develop the information, resources, and support our constituents need to:

Learn

- undertake or support periodic needs assessments and social science research that help to document workforce development needs in fields related to the Sea Grant mission.
- support diverse partnerships to develop innovative curriculum and learning opportunities targeted for and accessible to participants with diverse backgrounds and experiences.
- recruit and equitably support diverse applicants or participants in Sea Grant-supported workforce development opportunities.

Act

- provide or engage in opportunities for diverse professionals at all stages of their careers to engage in training opportunities that address documented workforce needs.
- provide or engage in professional communities of practice or mentoring opportunities that support new entrants to the workforce in areas of need and help to keep abreast of new or emergent needs.

Achieve Impact

- adaptation of workforce development and training opportunities to serve the spectrum of people and disciplines critical to the ecological health, economic vitality, and resilience of Maine's coastal communities and marine-related resources.

Performance metrics for this focus area are listed in the Performance Measures and Targets section of this plan.

Performance Measures and Targets

2018-2023 Targets **These targets are based on averages of data submitted to NSGO between 2017 and 2020.**

National Measures

Performance Measure	Relevant Focus Areas	6-year Target*
Number of fishermen, seafood processing, and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities.	SSS, ELWD	900**
Number of communities (or community stakeholders) that adopt or implement sustainable economic and environmental development practices and policies as a result of Sea Grant activities.	RCE, CRCC	1,500**
Number of acres of coastal habitat protected, enhanced, or restored as a result of Sea Grant activities.	HCE	600
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.	HCE, SSS	450**
Number of Sea Grant tools, technologies, and information services that are used to manage, protect, or restore ecosystems.	HCE	90
Number of communities that adopt or implement hazard resilience practices to prepare for and respond to or minimize coastal hazardous events as a result of Sea Grant activities.	RCE, CRCC	150**
Economic and societal impacts derived from Sea Grant activities impacts derived from Sea Grant activities, including market and non-market benefits, and jobs and businesses created or sustained.		Categorized 6-year Targets Below
Economic Benefits (including market and non-market benefits)	ALL	$60 million
Jobs Created	SSS, CRCC, ELWD	240
Jobs Sustained/Expanded	ALL	1,200
Businesses Created	SSS	36
Businesses Sustained/Expanded	SSS	480
Number of people engaged in Sea Grant-supported informal education programs.	ELWD	66,000**
Number of Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation.	ELWD	120
Number of Sea Grant products that are used to advance environmental literacy and workforce development.	ELWD	90

State Performance Measures

Performance Measure	Relevant Focus Areas	6-year Target*
Number of Sea Grant-trained citizens who collected and submitted environmental data that were used to improve resource management and advance environmental research.	RCE, CRCC, ELWD	2,700**
Number of legislation, policy, or management changes resulting from Sea Grant activities.	HCE, RCE, SSS, CRCC	30
Number of strategies implemented to advance DEI initiatives within the program.***	ALL	60

* 6-year targets were calculated based on averages of Maine Sea Grant impact data from 2017-2020

** Note: individual communities, community stakeholders, resource managers, seafood industry members, and participants in informal education and community science programming may be counted annually, as long as the actions taken and counted occurred in the year in which they are counted.

*** Our plan is to adopt more specific strategies in this area along with national metrics that may be adopted in the near-term.

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