Delaware Sea Grant College Program Strategic Plan
February 1, 2028 through January 31, 2032.

This strategic plan outlines the response of Delaware Sea Grant to the needs of Delaware's coastal residents, communities, elected officials, businesses, and organizations. It builds on the prior iteration of the Delaware Sea Grant strategic plan, which identified priority issues, objectives, and performance measures for functional work areas[1], and guided our operations from February 1, 2024 through January 31, 2028. The intent of this strategic plan is to provide an intuitive, user-friendly document that will build on the past four years of work and guide the programmatic operations of Delaware Sea Grant from February 1, 2028 through January 31, 2032. The following sections identify the program's mission, vision, and core values, and outline priority issues and objectives for each functional work area, including cross-cutting principles. Goals of the National Sea Grant College Program that will be addressed are also presented. Strategic objectives of the National Sea Grant College Program are embedded within Delaware-specific objectives. Additional information regarding Delaware Sea Grant and the strategic planning process is included in Appendix A.

Program Mission

Delaware Sea Grant was established in 1976 to foster the wise use, conservation, and management of Delaware's coastal resources through an integrated program in research, extension, education, and outreach. To achieve this mandate, Delaware Sea Grant staff lead hands-on projects, deliver workshops and trainings, develop balanced written assessments, and provide one-on-one consultations regarding a range of issues pertaining to resilient communities and economies, healthy coastal ecosystems, sustainable fisheries and aquaculture, environmental literacy, and workforce development. Delaware Sea Grant also leverages federal and state funding to provide financial support to external partners for innovative research, community and economic development, and conservation projects. Benefits of this work are provided to a broad suite of coastal residents, communities, elected officials, businesses, and organizations.

Program Vision

The vision of Delaware Sea Grant is to create and maintain a healthy coastal environment that supports thriving, resilient coastal communities[2] and a robust coastal economy.

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[1] Functional work areas, or the broad areas within which Delaware Sea Grant operates, were used to structure the strategic plan, instead of the broader focus areas identified by the National Sea Grant Office, to make the document more intuitive and to facilitate easier tracking of progress towards the successful achievement of programmatic goals and objectives.

[2] While many Delaware residents outside of the state's beach communities may not consider themselves members of a "coastal community," 95% of the state falls within the Atlantic Coastal Plain, and the entirety of the state's landmass falls within the northeastern two-thirds of the Delmarva Peninsula, the low-lying, sandy spit of land located between the Chesapeake Bay, Delaware Bay, and Atlantic Ocean. Therefore, though many residents may not consider themselves as living in a coastal community, or state, Delaware is in fact almost entirely coastal, and the majority of its communities are directly adjacent to coastal waters, are reliant on or directly impact coastal waters, or are impacted by coastal processes.

CORE VALUES

Delaware Sea Grant values the following principles:

- The work of Delaware Sea Grant is informed by the needs of Delaware's coastal residents, communities, elected officials, businesses, and organizations. Foundational questions for research, extension, education, and outreach include: (1) who needs this information, and (2) what change in action, behavior, or management may occur as a result of knowledge transfer.
- The work of Delaware Sea Grant provides benefits to Delawareans. This necessitates considering a range of views and opinions in project planning and implementation.
- The work of Delaware Sea Grant goes beyond defining problems or providing information; Delaware Sea Grant is a problem-solving and solutions-oriented organization.

FUNCTIONAL WORK AREAS

The Delaware Sea Grant College Program supports work across six functional areas, which generally correspond to the focus areas of the National Sea Grant College Program. The following table identifies priority issues that will be addressed for each:

Table 1: Functional Work Areas and Associated Priority Issues

Functional Work Area	Identified Priority Issues	
Coastal Community Resilience and Planning	• Resilience to coastal hazards and extreme weather • Community resilience in Wilmington	• Capacity building • Sustainable development
Economic Development	• Local economic development • Working waterfront communities	• Enhancing the coastal economy
Healthy Coastal Ecosystems	• Marine debris • Marine plastics • Contaminants of emerging concern • Working estuary restoration	• Loss of habitat and ecosystem function • Water quality
Sustainable Fisheries and Aquaculture	• Economic growth of aquaculture • Aquaculture ecosystem services	• Fisheries support • Recreational fishing
Environmental Literacy	• Responsive programming • Teacher professional development	• Principles of environmental and ocean literacy • Mobile teaching lab
Workforce Development	• Career exposure • Professional development, Career and Technical Education, and Workforce Training	

How We Work

Delaware Sea Grant addresses priority issues through an integrated program in applied scientific research[3], extension, education, and outreach[4]. Applied research helps our program advance understanding of Delaware's coastal ecosystems, resources, management approaches, economy, and communities. This detailed understanding of the physical, chemical, biological, and human dimensions of our coastal environment allows our program to craft innovative extension, education, and outreach programs that are intended to maintain a healthy coastal ecosystem that supports thriving coastal communities and a robust coastal economy. While the needs presented in this plan may appear to be focused separately on research, extension, education, and outreach, it is the integration of these different aspects that allows Delaware Sea Grant to have a positive impact in Delaware and the mid-Atlantic region. To this end, as this strategic plan is implemented, careful consideration will be given at every opportunity as to how research and extension activities can be integrated to address identified priority issues.

Cross-Cutting Principles

While priority issues and objectives are presented separately for each functional work area, there are four cross-cutting principles that are found within each:

1. Adaptation to dynamic coastal conditions
2. Collaborations that amplify impacts
3. Flexibility

First, adaptation to dynamic coastal conditions was identified as *the key issue* across all functional areas. In the context of this strategic plan, the phrase "dynamic coastal conditions" refers to on-going changes that occur where land, water, and the atmosphere intersect. These include, but are not limited to, changes in weather patterns, prevailing winds, precipitation, heat, ocean currents, tides, waves, inundation, flooding, and erosion, all of which interact with and impact human interventions (e.g., infrastructure, development, agriculture, etc.). It is abundantly clear that over this four-year period, the actions of Delaware Sea Grant must support measures to adapt to these dynamic coastal conditions, regardless of whether this is working with businesses, communities, or individuals. Issues that warrant support from Delaware Sea Grant include, for example, how to manage fisheries that are shifting in response to changing water temperatures; how to plan for anticipated changes in community flooding; and how marshes should be managed as inundation increases, among many others. Accordingly, this overarching theme—adaptation to dynamic coastal conditions—is a cross-cutting principle that is present in each

[3] Consistent with the National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-115A, Delaware Sea Grant considers applied research to be "original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective. Applied research is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving specific and predetermined objectives."

[4] In accordance with *Fundamentals of a Sea Grant Extension Program*, the broad goal of extension, education, and outreach is to effect change by having individuals, groups, or institutions use science-based information. Delaware Sea Grant considers extension to be using research results to inform decision-making; education to be the teaching of Sea Grant and other relevant coastal and environmental information as part of a formal learning process (e.g., focused on K-16 students/teachers); and outreach to be education that occurs in a more informal setting (e.g., summer camps, festival exhibits).

functional work area. It is anticipated that by focusing on this issue in many different places, and in many different ways, at the end of the four-year period, Delaware residents will be better prepared to live and work in a dynamic coastal environment.

Collaboration is the second cross-cutting principle. While each functional work area is presented separately within this plan, there is significant overlap between them. For example, efforts to improve environmental literacy through education are ubiquitous, and are found in all functional work areas. Similarly, there is significant work that addresses both coastal ecology and fisheries, and resilience and economic development that blends the distinction between these functional areas. As such, it is anticipated that Delaware Sea Grant staff will collaborate extensively, both within our program and with external partners, including with volunteers, though these collaborations are not expressly identified within this plan.

Finally, flexibility is the third cross-cutting principle. While this plan presents very specific, actionable objectives for each priority issue, it is anticipated that additional needs will arise and will be addressed by Delaware Sea Grant over the course of this work period. Our program prides itself on our ability to be flexible in response to the changing needs of our audiences both at the issue level but also within individual programs (e.g., workshops, community meetings, education plans, etc.).

Keeping these cross-cutting principles in mind, the following sections identify the priority issues, and objectives for each of Delaware Sea Grant's functional areas that will be addressed between February 1, 2028 and January 31, 2032.

Note to Researchers: *Specific research priorities are identified throughout this strategic plan, including research needs associated with adaptation to dynamic coastal conditions, exploration of the coastal and maritime economies in Delaware, and ecosystem restoration. In addition to these, there are countless other opportunities to advance the objectives of Delaware Sea Grant through applied research, though these opportunities may not be explicitly identified. Researchers should carefully consider the priority issues and objectives identified within this strategic plan to identify areas where applied research will help address identified needs.*

COASTAL COMMUNITY RESILIENCE AND PLANNING

GOAL: Coastal communities have the capability and resources to prepare for and adapt to extreme and chronic weather and coastal hazards, economic disruptions and other threats to community health and well-being.

1. **Resilience to Coastal Hazards and Extreme Weather:** Delaware has the lowest mean elevation in the United States. Its flat, low-lying terrain makes it especially susceptible to flooding, and it is also subject to other coastal hazards and extreme weather, including heat. Delaware communities will need to implement a range of adaptation measures to address these challenges. There is a need to assist communities with resiliency planning through outreach, training, and technical assistance. Additional work is needed to assist our communities, to understand risk and specific constraints regarding risk, to develop successful adaptation strategies to dynamic coastal conditions, and to advance understanding of potential obstacles and opportunities for adaptation, including unintended consequences.

   Rationale: In 2020 and 2021, Delaware had two federally declared disasters: a record-breaking tornado north of Dover and widespread flooding in Wilmington from the remnants of Hurricane Ida. Delaware also had a federally-declared disaster in 2026 due to a February blizzard that impacted the entire state, and especially Kent and Sussex counties. Extreme events in our region like these appear to be increasing and our current land use practices, population growth, and demographics are increasing population exposure and susceptibility to these hazards. More attention is needed to improve the resilience of our communities so they are better prepared to respond and recover from disasters. This includes defining what could and should a more resilient coastal Delaware look like and determining what practices, at what scale, will be needed to reach a target level of resilience. Additional research is needed in Delaware to fully contextualize and understand these issues and the constraints of our communities, specifically the human and social dimensions that influence the implementation and success of coastal adaptation strategies.

   Objective 1: Support research that advances understanding of the nuances associated with coastal resilience, and develops measures that will help Delaware communities achieve resilience goals.

   Objective 2: Improve and expand exchanges of knowledge to better identify the needs of communities and to increase the public's understanding of changing conditions, including coastal hazards, weather, and extreme events, and related impacts and opportunities.

   Objective 3: Provide technical assistance to help individuals and communities undertake the necessary plans, policies, and strategies needed to adapt to dynamic coastal conditions, manage weather-related risks, and improve emergency preparedness. Work will support personal choice, participatory decision-making, and community planning processes.

   Objective 4: Through the Delaware Sea Grant Coastal Resilience Design Studio, provide free conceptual design services for projects that will promote community resilience.

   Objective 5: Assist state and local authorities with planning for the needs of Delawareans before, during, and after emergencies.

2. **<u>Community Resilience in Wilmington</u>:** Urban coastal communities and businesses in Wilmington, Delaware need support to address a myriad of issues associated with changing coastal conditions. There is a need for resources and solutions that come from within the community and address the specific needs of the community.

   ***Rationale*:** The City of Wilmington, Delaware is located at the confluence of two tidal rivers; many city neighborhoods are susceptible to increased precipitation, extreme storm events, flooding, and increased temperatures, which pose an increasing threat to communities and the city's economy. In both east and south Wilmington substantial inundation is expected and adaptation measures will be needed. The Port of Wilmington, one of the largest employers in the area, is also extremely susceptible to flooding. An estimated 36 to 73% of the Port could be inundated by 2100. As such, there is an urgent need for support to address a myriad of issues associated with changing coastal conditions within Wilmington.

   Objective 1: Foster partnerships with communities, local governments, businesses, and other relevant organizations to address issues pertinent to Delaware's urban communities in Wilmington. These include access to safe greenspaces and waterways, and development of natural infrastructure that provides valuable ecosystem services, such as evaporative cooling and infiltration of rainwater, which can help mitigate the impacts of urban heat islands and changing coastal conditions, among others.

3. **<u>Capacity Building</u>:** There is a lack of capacity within communities to work on resilience planning, procurement of funds, project implementation, and long-term ownership and maintenance of coastal resilience projects. There is a distinct need to develop missing "institutional infrastructure," expertise and processes that could help address this need.

   Rationale: More than two-thirds of Delaware's municipalities can be characterized as mid-sized (5,000 to 10,000 people) or small (5,000 or under). Additionally, more Delaware residents live outside of incorporated areas than inside of them. This has profound implications for governance at the community level. Many Delaware towns lack staff, expertise, time, and resources to carry out the necessary planning to develop and execute projects that improve resilience to dynamic coastal conditions, extreme weather, and other disruptive events such as economic recessions. In addition, the three counties in Delaware vary in size, structure, and the scope of services they provide. With increased funding anticipated for infrastructure and resilience in the near-term, capacity issues create a serious bottleneck.

   Objective 1: Continue to foster partnerships and networks that increase the capacity of Delaware communities to undertake resilience and adaptation planning. This will include connecting communities to existing private and public resources, developing beneficial partnerships that address staffing limitations, and supporting the development of grant proposals for training and projects.

4. **<u>Sustainable Development</u>:** A surge in population growth over the past decades, combined with Delaware being identified as a favorable location to retire, is driving an abundance of land use changes within our state. There is a need to provide support to communities so these changes occur in a thoughtful and strategic fashion that enhance the local economy, minimize impact to existing natural resources, and promote resilience.

Rationale: At the county level, Sussex County, Delaware has been put forward as an example of unfettered growth, with its population increasing nearly 20% between 2010 and 2019. However, growth in certain portions of southern New Castle County and northern Kent County, Delaware, has exceeded the growth rates observed broadly in Sussex. Regardless of location, current land use practices promote development in the floodplain and along the coast, the loss of open space, and encroachment on wetlands and agricultural lands. This has resulted in development occurring in exposed areas in some instances; in others, development is negatively impacting or degrading natural resources, like coastal wetlands, which is reducing the capacity of natural systems to buffer the effects of dynamic coastal conditions and making new and existing communities more susceptible to flooding, and severe coastal storms. Surging development is also exacerbating a lack of adequate infrastructure (e.g., roads, transit, wastewater, and healthcare) to support new residents and resulting in increased energy needs for growing businesses, homes, and transportation, as well as higher demands for water use, which is constrained by saltwater intrusion into groundwater supplies.

Objective 1: Broadly share relevant information regarding development practices, associated risks, and best practices that should be incorporated into new and existing communities with existing homeowners and potential homebuyers in coastal Delaware. This may include conveying information regarding proximity to delineated floodplains, changes to anticipated flood conditions, or how flooding may impact access to required medical care facilities, A key element of this is sharing information regarding the sustainable, efficient use of resources, including energy and water.

Objective 2: Engage communities and associated organizations (e.g., county government, municipal planning commissions) in long-range land use planning that proactively anticipates and prepares for dynamic coastal conditions, extreme events, and other megatrends (such as demographic shifts or changes in our economy). Factors to be considered include tolerance for routine flooding / inundation, the potential for some areas to become uninhabitable, and potential planning and zoning changes that may maintain thriving communities well into the future despite significant changes to the coast.

ECONOMIC DEVELOPMENT

GOAL: Water resources are enhanced, sustained and protected to meet existing and emerging needs of the communities and economies that depend on them.

1. **Local Economic Development:** There is a need to examine new and innovative ways to promote local economic development, resulting in long-term community changes, and to work directly with communities to identify available opportunities.

   Rationale: Delaware's communities are primed for economic development – in proximity to major markets in Philadelphia, Baltimore, and Washington, D.C., yet removed enough to maintain a unique charm. The state is also blessed with abundant natural resources and a favorable tax structure. However, many coastal communities are struggling to develop and implement strategies to attract business and promote downtown revitalization and development.

   Objective 1*:* Partner with community economic development organizations to develop commercial, small-business growth capacity that capitalizes on existing coastal assets and resources to create, promote, and/or retain new businesses.

2. **Working Waterfront Communities:** There is a need to provide technical assistance to Delaware's working waterfront communities[5], which consist of a relatively small number of incorporated towns with limited staff capacity and a shared heritage of economic, physical, and social connections to Delaware's waterways.

   Rationale: Many of Delaware's working waterfront communities continue to experience significant economic and social decline due to the loss of commercial fishing and processing industries, while new growth and development pressures create decision points about the future trajectory of these communities. Examples of working waterfronts in Delaware include, Port Penn, Leipsic, Little Creek, Bowers Beach, Cedar Creek, Lewes, and Indian River. Building on prior assistance, there is an opportunity to continue providing technical assistance to these communities.

   Objective 1: Provide economic and community development assistance to working waterfront communities by: (1) designing and delivering training programs to help communities understand their physical, institutional, and economic environments and develop community action plans; (2) developing and hosting a resource bank of issues facing similar communities nationwide and successful development approaches these communities have used; and (3) providing professional technical assistance to guide communities in the implementation of economic and community development projects.

[5] Consistent with the definition used by the National Working Waterfront Network, this strategic plan defines a working waterfront as a community that is adjacent to navigable waters that supports direct water-dependent private or public operations and activities that positively affect the economy of the surrounding community. Example operations include: commercial and recreational fishing, and associated facilities; aquaculture; seafood processing; marine transportation and shipping; port and harbor operations; boat building, sales, and repair; offshore mineral harvesting; coastal tourism and water-based recreation; and other activities that require direct use and/or flow of coastal inland waters that necessitate direct use of the waterfront. Municipal water intake, usage, or delivery are not included in this definition.

3. **<u>Enhancing the Coastal Economy</u>:** There is a need to augment the existing foundation of Delaware's coastal economy, which is based on tourism and agriculture, with opportunities in other sectors, including knowledge and innovation-based opportunities, in order to expand the coast's economic base and create a more balanced economy for individuals and communities.

   Rationale: Both tourism and agriculture primarily support low-paying jobs that do not offer robust benefits (e.g., paid time off, health insurance, retirement planning); this has resulted in a challenge for much of coastal Delaware with the people that support these two industries often struggling financially. Supporting the development of coastal and ocean economic sectors, including knowledge and innovation-based economies, will bring new money into the state, potentially creating better employment opportunities for existing and new residents. Delaware's unique geographic position, in close proximity to both Philadelphia and Washington, DC, put Delaware's coastal communities in a unique position to attract professional talent that can help facilitate the growth of new economic sectors. Within our state, there is a need to specifically define opportunities and obstacles. For example, what assets does Delaware have that could position it to capitalize on emerging opportunities? Research and extension efforts need to focus on articulating a potential path forward for developing a robust and thriving coastal economy in our state.

   Objective 1: Work with communities and partners to support diversification, strengthening, and sustainability of coastal and ocean economic sectors and to improve access to and participation within these sectors. To do so, explore the potential for development of knowledge and innovation-based opportunities and technologies that grow the state's coastal economy through applied research and extension.

HEALTHY COASTAL ECOSYSTEMS

GOAL: Coastal habitats, ecosystems and the services they provide are protected, enhanced and/or restored.

GOAL: Land, water, and living resources are managed by applying science, tools and services to sustain resilient coastal ecosystems.

1. **Marine Debris:** Marine debris, including derelict fishing gear (e.g., crab pots) and post-consumer waste, is a ubiquitous problem both globally and within Delaware's waterways. Due to the prevalence and magnitude of the issue, there is a need to support efforts focused on prevention, interception, removal, and disposal of marine debris through research, extension, outreach, education, and the development of infrastructure at the community level.

   Rationale: Marine debris includes everything from lost fishing gear to fast food containers and household waste; it is essentially any man-made material that is found in coastal waters and oceans. Marine debris reaches coastal waters through a number of pathways, including misuse, improper disposal, and catastrophic loss during storms (in the case of boats that are lost during large storm events, for example). Regardless of the material or pathway, marine debris has far-reaching effects on the coastal environment and even the deep sea, and warrants additional attention. Within Delaware, derelict fishing gear is of particular concern, and has not been adequately addressed to date.

   Objective 1: Connect partners across Delaware who work on marine debris issues to encourage collaboration and sharing of resources. In doing so, support research and perform education events focused on marine debris, including best approaches for prevention and removal.
   Objective 2: Continue to support the removal of marine debris from Delaware's estuaries, in collaboration with partner organizations, regulatory agencies, and volunteers by developing the infrastructure to facilitate removal in a systematic and productive fashion.

   Objective 3: Provide information and expert analysis to policymakers and regulators about marine debris to facilitate the creation and implementation of improved management.

1. **Marine Plastics:** Plastics, a specific form of marine debris that warrants special attention, are a rapidly growing segment of municipal solid waste, with containers and packaging, including plastic bottles, single-use containers, bags, and wraps, constituting the largest proportion. A significant amount of this plastic waste reaches coastal waters due to littering, dumping, loss in transportation to landfills, and loss from landfills themselves. There is a need to both broadly educate the general public about ways that the overall consumption of disposable plastics could be reduced and to work with specific target audiences to reduce the use of disposable plastics in specific sectors (e.g., the restaurant industry) and to improve post-consumer management.

   ***Rationale*:** The accumulation of plastics in our waterways, along the coast, and in the ocean is a concern at multiple levels. For example, plastic waste has the potential to leach chemicals that may impact ecological and human health; it also results in mortality in avifauna, marine mammals, and fish through ingestion and entanglement. Addressing these effects requires a multifaceted approach focused on reduced use of disposable and single-use plastics, as well as targeted efforts to improve post-consumer management.

Objective 1: Broadly share relevant information regarding the potential impacts of plastic waste on coastal and marine ecosystems along with practices that consumers may use to reduce their consumption of disposable and single-use plastics with people in Delaware, including elected officials at multiple levels of government.

Objective 2: Work with collaborating partners to reduce the amount of plastic waste reaching Delaware's coastal waters by both reducing the amount of disposable and single-use plastics being used in different sectors and by improving the management and disposal of post-consumer waste.

2. **Contaminants of Emerging Concern (CECs):** Emerging contaminants, such as per- and polyfluoroalkyl substances (PFAS), pharmaceuticals, and microplastics, have increasingly been documented in coastal ecosystems around the world, including in Delaware. Currently, there is a limited understanding regarding the prevalence, distribution, and potential effects of CECs. Through research and extension there is an opportunity for Delaware Sea Grant to play a role as new information becomes available and understanding and management strategies evolve.

   ***Rationale**:* A regional project, led by Connecticut Sea Grant, developed a national framework to guide Sea Grant's involvement with CECs. This framework identified several opportunities for engagement, including connecting various people and organizations (e.g., researchers, regulators, resource users, and the public), developing a connection between ecosystem effects and people, and addressing community needs, including those of communities that may be disproportionately impacted by CECs.

   Objective 1: Support research and provide extension and education services that increase awareness of CECs in Delaware's estuaries, including information regarding distribution, prevalence, and potential effects.

3. **Working Estuary Restoration**[6]**:** There is a need to understand the ecological value of industrial portions of the Delaware Estuary, north of the Chesapeake and Delaware Canal, to articulate this value to adjacent communities and businesses, and to undertake intentional efforts to restore this section of the estuary.

   ***Rationale*:** The extent of the Delaware Estuary located within northern New Castle County, Delaware has been impacted by a dense human population and a legacy of historical and ongoing industrial and chemical manufacturing and shipping uses. Public perception of this portion of the estuary is poor, despite its ecological significance, and efforts solely focused on restoring this portion of the estuary and reestablishing an intimate connection between the water and residents within the adjacent city of Wilmington, Delaware have lagged behind efforts undertaken in other areas.

   Objective 1: Continue to foster partnerships with communities, local governments, businesses, and other relevant organizations in industrial portions of the Delaware Estuary Continue to evaluate similar programs in other states that have focused on industrial waterways, for example the Elizabeth River Project in Virginia, that may be used as a model. Increase

[6] Restore America's Estuaries defines a "working" estuary as an estuary that supports industrial and commercial activity, like manufacturing, marine transportation, and oil and gas production, as well as other uses, such as commercial and recreational fisheries, that rely on the health of the ecosystem for their continued existence.

awareness about the importance of this reach of the Delaware Estuary, and provide restoration support.

4. **<u>Loss of Habitat and Ecosystem Function</u>:** Habitat loss—including historical losses in industrial portions of the Delaware Estuary, continued losses due to ongoing development and land use change throughout the estuary, and future losses of habitat due to changing coastal conditions—is a pressing concern that impacts the resilience of our state's natural and human communities.

   ***Rationale**:* Historically, the Delaware Estuary supported expansive oyster reefs, tidal marshes, and a mosaic of coastal grassland and forested habitats. However, over the past several centuries, the estuary has been subject to substantial habitat alteration and loss, primarily due to human disturbance. As a result, stable, resilient coastal ecosystems that feature a range of intact habitats are increasingly rare, which has made coastal areas and communities susceptible to the effects of dynamic coastal conditions and weather hazards. Today, human and environmental influences continue to threaten coastal habitats, including riparian areas, estuarine marshes, mudflats, and nearshore submerged aquatic vegetation. The Delaware Department of Natural Resources and Environmental Control cites residential development as the leading cause of coastal habitat loss in the state, either through direct conversion to building sites, lawns, or roadways in areas not protected by existing regulations, or conversion of natural shorelines to bulkheads and other forms of armoring. Indirect effects like increased flooding of coastal habitats due to runoff and prolonged submergence of nearshore habitats also have detrimental effects. These impacts are further exacerbated by dynamic coastal conditions. Higher tides and increasingly frequent and intense coastal storms are submerging and eroding many coastal habitats, which contributes to poor water quality, sequesters less carbon, and provides less flood protection for neighboring communities. Addressing these challenges, and restoring ecosystems and the services that they provide is therefore of utmost importance.

   Objective 1: Support efforts to restore coastal ecosystems and associated services by funding applied research focused on improving restoration approaches in light of changing conditions and developing decision-support tools by integrating research, observations, monitoring, and modeling that includes community engagement and local knowledge to provide a scientific basis for informed decision-making.

   Objective 2: Engage with partner organizations to actively restore coastal habitats, ecosystems, and the services that they provide. This may include designing, permitting, and constructing riparian buffers, living shorelines, and intertidal and subtidal oyster reefs.

5. **<u>Water Quality</u>:** There is a need to support efforts to both monitor and improve water quality throughout Delaware's coastal waterways.

   ***Rationale**:* Water quality affects habitat, fisheries, and recreational use as well as a plethora of other activities, and is of significant concern in Delaware. In particular factors contributing to eutrophication (i.e., excess sediment, nitrogen, and phosphorous), need to be monitored and addressed throughout the state.

   Objective 1: Use engagement and information exchange to advance the understanding of how

actions impact water quality, both positively and negatively, and inspire action towards improving water quality.

SUSTAINABLE FISHERIES AND AQUACULTURE

GOAL: Domestic fisheries, aquaculture and other coastal and freshwater living resources supply food, jobs and economic and cultural benefits.

GOAL: Natural resources are sustainably managed to support coastal communities and working waterfronts, including commercial, recreational, subsistence fisheries and aquaculture.

1. **Economic Growth of Aquaculture:** There is a need to grow the Delaware aquaculture industry by supporting the development of new businesses associated with shellfish farming.

   Rationale: While currently small, the commercial oyster aquaculture industry in Delaware, both within the Delaware Inland Bays (cage culture) and in the Delaware Bay (wild harvest / bottom culture), is growing and is anticipated to someday equal that of similarly sized states, like Rhode Island. There, shellfish aquaculture supports over 200 aquaculture-related jobs and generates $6 million in annual revenue, which presents a reasonable target for the future growth of the industry within Delaware. However, a substantial amount of work is needed to grow the Delaware industry from its current size to its full potential.

   Objective 1: Operate an Eastern Oyster hatchery at the University of Delaware Hugh R. Sharp Campus in Lewes, Delaware to demonstrate the technical and economic viability of a Delaware-based hatchery, and to support applied research.

   Objective 2: Produce eyed larvae for remote setting to support the Delaware wild harvest oyster industry and ecosystem restoration efforts, and single seed larvae to support the Delaware Inland Bays caged oyster aquaculture industry.

   Objective 3: Lead informal educational opportunities focused on Eastern Oyster cage-based aquaculture methods to support harvesting, culturing, and processing techniques that lead to safe, sustainable, high-quality products; result in economic and ecosystem benefits; support development and retention of a trained workforce to reduce barriers of entry; and increase the number Delaware aquaculture businesses.

   Objective 4: Host regular shellfish forums where information can be shared regarding challenges to industry growth, sustainable considerations to enhance economic output in shellfish aquaculture, and other relevant topics that enhance technology transfer in a manner that recognizes a variety of methodologies and approaches.

   Objective 5: Increase the number of species cultured in the Delaware aquaculture industry by evaluating the aquaculture potential of new species or groups of organisms, for example kelp, clams, etc., for use in the state.

2. **Aquaculture Ecosystem Services:** Shellfish aquaculture provides ancillary benefits that can buffer the effects of coastal storms, improve water quality, and provide structural habitat for other fishes. There is a need to examine these interactions. Understanding these additional benefits and strategically aligning aquaculture efforts with ecosystem services and habitat restoration will further amplify the value of the fishery.

   Rationale: Throughout Delaware, stable, resilient coastal ecosystems that feature intact shellfish reefs are rare, which has made shorelines especially susceptible to the erosive effects of dynamic coastal conditions and flooding. To address these concerns, efforts are

being made throughout the state to stabilize eroding shorelines using nature-based solutions, which typically incorporate minimal structural elements with native vegetation and shellfish that, in combination, are intended to address erosion by protecting, restoring, and/or enhancing natural coastal functions and processes. Shellfish used in commercial aquaculture enterprises provide many similar benefits. Despite clear synergies between these enterprises, efforts to integrate shoreline restoration and shellfish aquaculture have been lacking. Understanding these additional benefits and strategically aligning aquaculture efforts with ecosystem restoration will further amplify the value of the fishery.

Objective 1: Continually evaluate the impacts of current and experimental shellfish aquaculture practices on local aquatic communities and water quality, and potentially how these ecosystems services could be monetized. Share findings with coastal residents, policymakers, regulators, and other interested parties.

3. **Fisheries Support:** There is a need for an unbiased broker to facilitate conversations between multiple users of the same resource to address potential conflicts, whether these are between commercial and recreational fishers, aquaculture growers, or surf fishers. There is a concurrent need to understand how anthropogenic impacts may affect fisheries, including threatened and endangered species, and to communicate these findings to resource managers. Finally, there is a need to expand existing markets by promoting Delaware seafood, including aquaculture products, to the public to increase demand and therefore broadly incentivize increased output.

   Rationale: Conflicts between resource users are a challenge that is likely going to become further exacerbated as fisheries shift in response to dynamic coastal conditions, and shipping within the Delaware Estuary expands with further growth of the Port of Wilmington. As a well-respected, unbiased broker in the state, Delaware Sea Grant is well-positioned to help navigate potential conflicts by participating in conversations between multiple resource users and performing and sharing applied research. Delaware Sea Grant is also well-prepared to expand existing seafood markets and interest to raise awareness of Delaware fisheries and increase the size of the seafood market.

   Objective 1: Serve as a scientific liaison for planning groups that may include state government, industry, and communities, on challenging topics such as harvesting approaches, anthropogenic impacts, fisheries response to dynamic coastal conditions, and emerging offshore technology.

   Objective 2: Support applied research to investigate potential impacts of anthropogenic disturbance, ecologically significant species (e.g., horseshoe crabs), and mechanistic relationships; share findings, services, and tools with resource managers to inform decision-making.

   Objective 3: Engage in efforts to expand interest in Delaware seafood products, increase demand, and grow existing seafood markets across Delaware.

4. **Recreational Fishing:** Given the magnitude of the recreational fishing industry in Delaware, there is a need for engagement on the management of recreational fish stocks, and with fishers to encourage best practices.

Rationale: Recreational fishing in coastal Delaware is a significant industry that engages both residents and visitors. It is estimated that each year, approximately 93,000 recreational fishing licenses are issued. Given the magnitude of the industry, and its impact on coastal resources, there is an opportunity for Delaware Sea Grant to positively engage with recreational fishers and resource managers to improve conditions.

Objective 1: Provide unbiased expert analysis that will assist in the management of recreational fishing resources.

Objective 2: Provide science-based information to new and experienced recreational fishers on best practices related to gear, regulations, target versus bycatch species, and the catching and handling of invasive species, including fin- and shellfish species.

ENVIRONMENTAL LITERACY

GOAL: An environmentally literate public participates in lifelong formal and nonformal learning opportunities.

1. **Responsive Programming:** There is need to be responsive to the needs of individual educators, schools, and partners throughout the state of Delaware, and to use the resources available to Delaware Sea Grant to create and deliver programs that broadly advance Environmental and Ocean Literacy[7] while meeting the learning objectives and curriculum goals of individuals and partner organizations.

   Rationale: Historically, a broad suite of individuals and organizations have approached Delaware Sea Grant with specific requests for educational programming, lessons, and resources. These have ranged from K-12 teachers to the Boy Scouts of America to Wilmington youth programs. Being flexible and responsive has allowed our program to address these needs while broadly advancing environmental and ocean literacy in our state; continuing to do so is paramount to supporting an environmentally literate public.

   Objective 1: Provide education programming to K-12 students and lifelong learners through formal and nonformal[8] learning opportunities regarding coastal and marine science, coastal and maritime economies, dynamic coastal conditions, aquaculture, and other areas related to the mission of Delaware Sea Grant independently, and/or in partnership with other Delaware informal education providers. This work shall strengthen the ability of individuals, communities, and organizations to make informed and responsible decisions regarding coastal issues.

   Objective 2: Prepare and deliver educational materials, including classroom supports (e.g., lesson plans, classroom activities, data visualizations, educational media, etc.), for K-12 students to audiences across the state via workshops, conference presentations, webinars, and meetings. These resources will focus on coastal and marine science, marine debris, emergency preparedness, dynamic coastal conditions, aquaculture and other identified areas that allow for multiple ways of learning and knowing.

2. **Teacher Professional Development:** There is a need to continue to engage with teachers from around the state in order to provide them with high-quality professional development that supports their classroom instruction and state education standards, such as the Next Generation Science Standards.

   Rationale: Data indicate there is a significant challenge in Delaware in engaging teachers in professional development opportunities outside of those provided by their school and/or district.

[7] The efforts of Delaware Sea Grant will advance the Delaware Environmental Literacy Plan and the Sea Grant Environmental Literacy Vision. Principles of Ocean Literacy are clearly defined by the Ocean Literacy Network.
[8] Non-formal education is organized, planned learning but outside the formal education system. Conversely, informal education is unstructured with no specific learning goals. (Johnson, M. and D. Majewska. 2022. Formal, non-formal, and informal learning: What are they, and how can we research them? Cambridge University Press & Assessment Research Report).

Objective 1: Provide professional development opportunities annually for K-12 teachers and informal science educators in areas such as coastal and marine science, dynamic coastal conditions, aquaculture, and marine careers.

3. **Principles of Environmental and Ocean Literacy:** There is a need to have a better trained community of formal educators, informal educators, and outreach and extension staff that can infuse the Essential Principles and Fundamental Concepts of Ocean Science and Environmental Literacy into their work.

   Rationale: In addition to supporting environmental and ocean literacy, there is a need to raise awareness of specific environmental and ocean literacy principles/concepts to current and future educators (both formal and nonformal), so that those educators can deliver the common, shared messages (i.e., the core principles) to their respective audiences. Common messaging heard from multiple sources supports content reinforcement, which leads to better understanding and potentially improved decision-making.

   Objective 1: Provide focused professional development opportunities annually on Ocean Literacy and Environmental Literacy to teachers, informal educators, pre-service teachers, school administrators, faculty, college students and the general public.

4. **Mobile Teaching Lab:** There is a need to develop mobile immersive teaching experiences that can be administered at different schools and venues throughout the state.

   Rationale: School districts and K-12 teachers are increasingly challenged to support transportation to external sites, and to find time within the curriculum for full-day immersive programs. However, there is a great need for hands-on educational opportunities that complement curriculum. This creates an opportunity to engage students and teachers in an immersive mobile lab experience.

   Objective 1: Continue to explore different options to develop mobile teaching resources, and pilot a mobile teaching lab that will support multiple ways of learning and knowing.

WORKFORCE DEVELOPMENT

GOAL: A skilled and environmentally literate workforce that is engaged and able to build prosperous lives and livelihoods in a changing world through traditional and innovative careers.

1. **Career Exposure:** There is a need to share information about environmental and marine careers so that students and early career professionals are aware of the range of career paths that support the needs of Delaware's coastal communities, including industrial and technical positions, engineering, resource management, etc.

   ***Rationale*:** Basic awareness of the multitude of environment-related careers evades most Delaware students. Given even cursory exposure to the kinds of careers that exist in marine and environmental science, as early as elementary school and as late as technical and 4-year colleges and graduate school, can provide students with the information they need to pursue well-paying, lifelong jobs that are critical to the protection, restoration, and enhancement of our natural resources.

   Objective 1: Engage middle schools, high schools, and community colleges across Delaware in environmental and marine career exposure programs in fields such as emerging offshore technology, robotics, fisheries, and aquaculture.

   Objective 2: Prepare environmental and marine career resources (e.g., fact sheets, activities, media) for middle and high school students as well as two- and four-year college students on topics such as robotics, fisheries and aquaculture, and other identified fields of study.

2. **Professional Development, Career and Technical Education, and Workforce Training:** There is a need to provide professional development, Career and Technical Education (CTE[9]), and workforce training programs that help students, early career professionals, and current workers develop skills that lead to careers that support the current and emerging needs of Delaware's coastal communities.

   ***Rationale*:** As the state with the lowest mean elevation in the country, Delaware needs to be at the forefront of developing solutions to the challenges presented by changing coastal conditions. This includes performing innovative research to understand future coastal challenges, designing and constructing new forms of infrastructure, and restoring degraded habitats to buoy the resilience of adjacent communities, all of which require a skilled workforce capable of succeeding in traditional and innovative careers.

   Objective 1: Support graduate student research, education, and professional development by providing funding for student tuition and stipends through our competitive research program and semi-annual workshops focused on career skills.

   Objective 2: Support part-time and seasonal professional development internship opportunities for high school students, undergraduates, and/or graduate students.

[9] The National Center for Education Statistics defines Career and Technical Education as, "courses (at the high school level) and programs (at the postsecondary subbaccalaureate level) that focus on the skills and knowledge required for specific jobs or fields of work."

Objective 3: Continue to work with Delaware Technical Community College to offer innovative internship, training, and certification programs that teach job skills to DelTech students through hands-on work and projects.

Objective 4: Continue to develop and implement workforce training programs that enhance the career prospects of participants and support a range of career paths that address the needs of coastal communities and economies in response to changing opportunities and conditions.

APPENDIX A
Background Information and Overview of Strategic Planning Process

THE DELAWARE SEA GRANT COLLEGE PROGRAM

Delaware Sea Grant resides within the College of Earth, Ocean, and Environment at the University of Delaware, which was designated as the nation's ninth Sea Grant College in 1976. The program was initially tasked with revitalizing a decimated Delaware Bay oyster industry, but has evolved over time as conditions within Delaware's coastal environment, and associated needs, have changed.

Delaware's Geography and Demographics

Delaware lies along the Atlantic coast of the United States, occupying the northeastern two-thirds of the Delmarva Peninsula. Delaware features 381 miles of tidal shoreline, including 24 miles of ocean coastline, and approximately 90,000 acres of tidal wetlands. It is bordered by the Atlantic Ocean and Delaware Estuary to the east, and Maryland's Eastern Shore and the Chesapeake Bay to the west. Delaware has the lowest mean elevation of any state in the country, and no point in the state is farther than eight miles from a tidal waterbody. Both the Delaware Estuary and the Delaware Inland Bays, which are located in the southern portion of the state, have been designated National Estuary Programs. The Chesapeake and Delaware Canal, which connects Chesapeake Bay with Delaware Bay, is also an important asset to the nation's commerce, carrying not only recreational boaters, but also commercial vessels navigating between the busy ports of Baltimore, Wilmington (Delaware), and Philadelphia. The Port of Wilmington itself is a significant economic resource; it has the largest dockside cold storage facility in the country and leads the nation for imports of fresh fruit and juice concentrate.

Delaware is also densely populated; with only three counties and a land area of 1,982 square miles, Delaware is home to approximately 485 people per square mile – sixth most in the United States - which is anticipated to grow 22% over the next 30 years. Demographics are also shifting, with an increasing proportion of retirees, estimated as a 2.6% increase in the population that is 65 and older.

Challenges and Emerging Concerns

Population growth and associated development, significant commercial and industrial investments in the state, a $3.3 billion tourism economy, and the predominance of agriculture over much of the land area all affect our coastal environment, resources, and communities. Changing coastal conditions are also having an impact and will continue to in the future.

The Approach of Delaware Sea Grant

Delaware Sea Grant has been at the forefront of addressing these concerns throughout the state for 50 years. Our program provides scientific information and hands-on guidance to the public, industry, and government on issues related to our coastal environment, resources, economy, and communities.

To do so, Delaware Sea Grant invests in applied scientific research and extension, education, and outreach efforts. Applied research is performed by external partners and increasingly Delaware Sea Grant staff. Much of the extension, education, and outreach work is performed by our Marine Advisory Service, which includes staff with expertise in a range of fields, such as coastal hazards, economic development, fisheries, coastal ecology, and water quality. Our team has provided one-on-one consultations, prepared and delivered workshops and trainings, and provided balanced written assessments and white papers regarding a broad array of coastal issues. Throughout these efforts, our team has strived to serve as an unbiased source of information to support the needs of our coastal residents, communities, businesses, and organizations.

The size of Delaware, which is the second smallest state in the nation, has allowed our staff to form meaningful connections throughout the state. Approximately half of our staff are housed at the University of Delaware Hugh R. Sharp Campus in Lewes, Delaware, which is in proximity to the southern portion of the Delaware coast. The remainder of our staff are located at the main campus of the University of Delaware, in Newark, which is in the northern portion of the state in close proximity to Delaware's largest coastal city, Wilmington, and portions of the coast classified as a "working" estuary.

Partnerships

Delaware Sea Grant works closely with a number of partners both regionally and within the state. This includes federal agencies like the National Oceanic and Atmospheric Administration and the U.S. Fish and Wildlife Service; other Sea Grant programs in the mid-Atlantic (and more broadly across the Sea Grant network); state agencies and organizations like the Delaware Department of Natural Resources and Environmental Control, the Delaware National Estuarine Research Reserve, the two National Estuary Programs in Delaware; academic institutions across the state; and a number of industry and nonprofit organizations.

In addition to these broader partnerships, Delaware Sea Grant staff have also been instrumental in forming and/or leading three additional partner organizations that are critical to our organization: the University of Delaware Sustainable Coastal Communities Initiative, the Delaware Sea Grant Coastal Resilience Design Studio, and the Resilient and Sustainable Communities League.

The Sustainable Coastal Communities Initiative is a unit within the University of Delaware that leverages existing expertise within the state to help analyze and offer solutions to the issues and challenges facing coastal communities to help them achieve their sustainable development goals. The Coastal Communities Specialist on the Delaware Sea Grant Marine Advisory Service has a joint appointment as Director of the Sustainable Coastal Communities Initiative. This allows our program to leverage resources and amplify the benefits of our work.

Similarly, the Delaware Sea Grant Coastal Resilience Design Studio is a partnership between Delaware Sea Grant and University faculty in landscape architecture, which provides undergraduate and graduate students from academic institutions across Delaware with a hands-on, community-engaged learning experience. Using this approach, interdisciplinary student teams work to provide real-world solutions to many of the pressing challenges facing Delaware's

coastal communities, primarily focusing on issues associated with resilience and economic development. Delaware Sea Grant provides the core funding for this program, serves on its leadership team, and provides technical project support.

Finally, the Resilient and Sustainable Communities League (RASCL) was co-founded by the Delaware Sea Grant Coastal Hazards Specialist. RASCL is a collaborative network of state, nonprofit, and academic partners working to create a more resilient, sustainable Delaware by holding annual conferences and informal coffee hours to bring together members for collaborative discussions. Members include Delaware state agencies, nonprofit organizations, and communities.

It is important to note that it is through these partnerships—both with external organizations and with organizations that are more directly connected to Delaware Sea Grant—that our program has been able to achieve many of our accomplishments.

Program Finances

Today (2026), Delaware Sea Grant manages approximately $2.8 million in combined federal and state funding. In addition, the College of Earth, Ocean, and Environment at the University of Delaware has historically contributed funding to our program each year; these funds have historically been used to support approximately 20% of the Delaware Sea Grant Marine Advisory Service staff salaries. Contributions from these funding sources have evolved over time, and are anticipated to continue to do so as financial opportunities and challenges arise. It is anticipated that the work and obligations of Delaware Sea Grant will continue to evolve as a result.

As a member of the National Sea Grant College Program, Delaware Sea Grant is required to invest between 30% and 50% of the program's core funding in applied research. Dedicated research funding supports independent investigation by qualified researchers, as well as opportunities for associated graduate student education. The remainder of our funding supports extension, education, and outreach efforts, including the work of our staff and work performed by partner organizations.

Strategic Planning Process

The work of Delaware Sea Grant is guided by our strategic plan, which is intended to provide a path for our program to address the needs of Delaware's coastal residents, communities, elected officials, businesses, and organizations. Delaware Sea Grant also operates under the guidelines of the National Sea Grant College Program, which is part of the National Oceanic and Atmospheric Administration within the U.S. Department of Commerce. Development of this strategic plan therefore focused on identifying needs in Delaware, and aligning programmatic operations to address those needs with the elements required by the National Sea Grant College Program.

The current iteration of this plan builds on work that was done to develop the Delaware Sea Grant strategic plan that guided our operations from February 1, 2024 through January 31, 2028. This process began in 2022 by having our staff reflect and identify what they perceived to be the most important issues for their functional work areas (e.g., economic development, sustainable

fisheries and aquaculture, etc.). This was a logical starting point since Delaware Sea Grant staff have a wealth of experience and come from backgrounds working with federal and state agencies, nonprofit organizations, industry, and academia. They also have connections to coastal residents, communities, elected officials, businesses, and organizations throughout the state and have the benefit of routine communications with them.

Concurrent with this effort, members of the Delaware Sea Grant management team participated in facilitated interviews with key individuals across functional work areas. An outside consulting firm, BridgeWater Education Consulting, LLC, guided these discussions. A broad suite of people were consulted, which included partners that work closely with Delaware Sea Grant staff, members of the Delaware Sea Grant Advisory Council, and those with limited connections to and understanding of our organization and operations. The intent of engaging such a broad range of people was to verify staff-identified priority issues, and to identify important issues of which our staff might not be aware. The people that were consulted and guiding discussion questions are included in Attachment A.

Following the interview process, members of the Delaware Sea Grant management team worked with staff to reconcile staff-derived priority issues with issues identified by those external to our organization. Associated objectives were developed through these discussions. Performance measures that document progress towards the successful achievement of objectives were also created.

The final list of priority issues and objectives for each functional work area were then shared with the Delaware Sea Grant Advisory Council to solicit one additional round of feedback. Comments were addressed as needed.

This process resulted in specific, actionable objectives for each priority issue; however, at no point was the plan a static document. Instead, it served as a living document that allowed our program the flexibility to adapt to changing circumstances and address emerging needs. To this end, the February 1, 2024 through January 31, 2028 strategic plan was routinely consulted, evaluated, and modified throughout its implementation. This occurred most recently in September 2025 when it was formally modified and subsequently accepted by the National Sea Grant Office. This on-going evaluation and refinement ensured that the plan continued to accurately represent the needs of Delawareans and the best approaches for our program to provide support. It also verified that the plan was appropriate to guide the operations of Delaware Sea Grant beyond its initial end date of January 31, 2028.

This new iteration of the Delaware Sea Grant strategic plan, which will guide our program from February 1, 2028 through January 31, 2032, further refines the most recent version of the prior plan (from September 2025) based on additional input from program management, staff, and our Advisory Council, which was solicited through requests for targeted feedback in early 2026. The following table presents its alignment with the performance measures and metrics of the National Sea Grant College Program.

Table 2: Performance Measures and Metrics Addressed By Delaware Sea Grant

National Sea Grant College Program Performance Measures and Metrics	Addressed by Delaware Sea Grant
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	✓
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	✓
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 resilience practices to prepare for and respond to/ minimize coastal hazardous events	✓
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 nonformal education programs	✓
Number of Sea Grant-supported graduates who become employed in a job related to their degree within two years of graduation.	✓
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 and benefits derived from Sea Grant activities market and non-market; jobs and businesses created or sustained; patents)	✓
Sea Grant staffing: Number of individuals and full-time equivalents (FTEs) devoted to Sea Grant	✓
Core funding proposals: 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 marinas certified as "Clean Marina" by the Clean Marina Program as a result of Sea Grant activities	
Number of individuals certified or recertified in Hazard Analysis Critical Control Point (HACCP) as a result of Sea Grant activities	
Number of peer-reviewed publications produced by Sea Grant	✓

Table 2: Performance Measures and Metrics Addressed By Delaware Sea Grant (Continued)

National Sea Grant College Program Performance Measures and Metrics	Addressed by Delaware 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	✓

ATTACHMENT A
Strategic Planning Interviewees and Interview Questions

In 2022, members of the Delaware Sea Grant management team participated in facilitated interviews with key people across functional work areas. In total, 29 people were interviewed over approximately 45 hours. Interviews were facilitated by Beth Day, owner of BridgeWater Education Consulting. Ms. Day has more than twenty years of experience in strategic planning, organizational leadership, programmatic evaluation, and marine extension and education. Ms. Day's prior positions have included working for South Carolina Sea Grant, the National Sea Grant Office, and as Assistant Program Director for Ocean Sciences Education at the National Science Foundation. In her role with the National Sea Grant Office, Ms. Day served as the program officer for Delaware Sea Grant. She is therefore intimately familiar with historical operations of our program, including both our strengths and weaknesses, and brings additional perspective from her years working with other Sea Grant entities and programs.

Of the 29 people that were interviewed, approximately 40% were members of the Delaware Sea Grant Advisory Council (SGAC). The remaining 60% of the interviewees consisted of partners who work closely with Delaware Sea Grant staff and people with limited connections to and understanding of our organization and operations. The intent of engaging such a broad range of people was to verify staff-identified priority issues, and to identify important issues of which our staff might not be aware.

LIST OF INTERVIEWEES

- Cristina Archer, Ph.D.
  - Professor and Unidel Howard Cosgrove Career Development Chair in Environment, University of Delaware
- Philip Barnes, Ph.D.
  - Faculty Director, Stavros Niarchos Foundation Ithaca Initiative
  - Policy Scientist, University of Delaware Institute for Public Administration
- Michael Bott
  - Environmental Scientist, Delaware Department of Natural Resources and Environmental Control
- John Clark
  - Delaware Department of Natural Resources and Environmental Control, Division of Fish and Wildlife, Fisheries Section (SGAC)
- Kimberly Cole
  - Coastal Program Section Administrator, Delaware Department of Natural Resources and Environmental Control (SGAC)
- Brad Dennehy
  - Parks and Recreation Director, Milford, DE (SGAC)
- Kathleen Doyle
  - Retired teacher, author (SGAC)
- Patti Drago
  - Sussex County resident

- Kate Hackett
  - Executive Director, Delaware Wildlands (SGAC)
- Simeon Hahn
  - Regional Resource Coordinator, Mid-Atlantic Region, NOAA Office of Response and Restoration (SGAC)
- Stephanie Hansen
  - Delaware General Assembly, Democrat, New Castle County (SGAC)
- Kate Hutelmyer
  - Senior Engagement Manager, Partnership for the Delaware Estuary
- Maddy Lauria
  - Freelance writer, formerly Cape Gazette, News Journal, Delaware Center for the Inland Bays
- Ernie Lopez
  - Delaware General Assembly, Republican, Sussex County (SGAC)
- Susan Love
  - Climate and Sustainability Section Administrator, Delaware Department of Natural Resources and Environmental Control
- Troy Mix
  - Policy Scientist and Associate Director, University of Delaware Institute for Public Administration
- Paul Morris
  - Continuing Education Leader, Workforce and Economic Development, Delaware Technical Community College
- Jennifer O'Donnell, Ph.D.
  - Chief Executive Officer, Principal, Engineer, Coastal Ocean Analytics
- Kimberly Oremus, Ph.D.
  - Assistant Professor, College of Earth, Ocean, and Environment, University of Delaware
- David Rudders
  - Associate Director, Marine Advisory Program, Virginia Institute of Marine Science
- Guy Simmons
  - Senior V.P. of Marketing/Product Development/Fisheries Science/Government Relations, Sea Watch International (SGAC)
- Kari St. Laurent, Ph.D.
  - Research Coordinator, Delaware National Estuarine Research Reserve
- Namsoo Suk
  - Director of Science and Water Quality Management, Delaware River Basin Commission (SGAC)
- Cristine Taylor
  - Teacher, Caesar Rodney High School
- Fabrice Veron, Ph.D.
  - Dean, College of Earth, Ocean, and Environment, University of Delaware (SGAC)
- Jennifer Volk

- Associate Director of Cooperative Extension & Environmental Quality Extension Specialist, University of Delaware Cooperative Extension
- Marianne Walch, Ph.D.
  - Science and Restoration Coordinator, Delaware Center for the Inland Bays
- Jon Wickert, Ed.D
  - Education Associate, Postsecondary Program Administrator, Career and Technical Education, Delaware Department of Education
- Matthew Williams
  - Executive Director, Conscious Connections, Inc. (SGAC)

INTERVIEW QUESTIONS

Name:

Area of Specialty:

- ☐ Applied research
- ☐ Coastal community resilience and planning
- ☐ Economic development
- ☐ Coastal ecology and healthy coastal ecosystems
- ☐ Aquaculture and commercial and recreational fisheries
- ☐ Coastal and marine education
- ☐ Coastal and marine workforce development
- ☐ Communications

Interview Purpose: To identify important issues, goals, and objectives relevant to each of the aforementioned areas of work that will be addressed by Delaware Sea Grant between February 1, 2024 and January 31, 2028.

Overview of Delaware Sea Grant: The Delaware Sea Grant College Program was established in 1976 to promote the wise use, conservation, and management of Delaware's coastal resources. To achieve this mandate, Delaware Sea Grant leverages federal and state funding to provide financial support to external partners for innovative research, community development, and conservation projects. Our staff also provide one-on-one consultations, deliver workshops and trainings, develop balanced written assessments, and lead hands-on projects regarding a broad array of issues pertaining to healthy coastal ecosystems, resilient communities and economies, sustainable fisheries and aquaculture, and environmental literacy. Benefits of this work are provided to a broad array of coastal residents, communities, elected officials, businesses, and organizations.

1. **What does Delaware Sea Grant do that impacts you?**

2. **Within your area of work what are the most important, pressing issues here in Delaware?**

3. **How are you / your organization addressing these issues?**

4. **Are there gaps in your current ability to address these issues? In other words, what needs to be done that you are not, or cannot, currently do?**

5. **For each of these issues, what major goals would you like to see accomplished in the next four years? What big things would you like to see happen?**

6. **Are there smaller objectives that you feel are important to help address these issues?**

7. **What role do you think Delaware Sea Grant could play in helping to achieve these goals and objectives?**

8. **What issues or concerns exist that you think, "I wish DESG could help with this."**

9. **Are there ways that you / your organization and Delaware Sea Grant could collaborate more effectively to address these issues, goals, and objectives?**

10. **What is your/your org's definition of partnership/collaboration? In what ways do you wish your organization and DESG worked together more?**

11. **What do you consider as Delaware Sea Grant's weaknesses?**

12. **In addition to the routine work of our program, we are striving to identify one or two "themes" to build interdisciplinary projects across our areas of work. With that in mind, what major themes do you think Delaware Sea Grant's work should coalesce around over the next four years? For example, Addressing the impacts of development? The risk posed by emerging contaminants? Working with Delaware's urban community?**