

CONNECTICUT SEA GRANT STRATEGIC PLAN 2014-2017

The Connecticut Sea Grant College Program (CTSG) is part of the National Sea Grant network, established by Congress in 1966 and administered by the National Oceanic and Atmospheric Administration (NOAA). The National Sea Grant Office, 33 university-based state programs, the National Sea Grant Advisory Board, a National Law Center, a National Sea Grant Library, and hundreds of participating institutions comprise this national network. It is a highly leveraged federal and state partnership that harnesses the intellectual capacity of the nation's universities to solve coastal, ocean and Great Lakes problems. With its strong research capabilities, local knowledge, and on-the-ground workforce, Sea Grant offers NOAA and this country an unmatched ability to rapidly identify and capitalize on opportunities, and to generate timely practical solutions to real problems in real places. As one of Sea Grant's university programs, CTSG partners with public and private sector organizations to apply research discovery to balance human and environmental needs, and create measurable benefits for coastal and ocean environments and communities through integrated research, extension, education and outreach programs.

The University of Connecticut is the State's Sea Grant institution. The Connecticut program began with a marine extension program in 1974 and grew in scope to achieve full-fledged Sea Grant College status in 1988. For nearly a quarter century, CTSG has worked to foster the wise use and conservation of coastal and marine resources of the Long Island Sound (LIS) estuary, as well as working regionally, nationally and globally. The strategy for success of any individual Sea Grant College Program must be consistent with the overall vision and direction of the National Sea Grant Program. It must also be tuned into the environmental, social and economic priorities and problems presented within the Program's specific venue. For CTSG this includes the State of Connecticut as well as the adjoining water bodies and the larger New York/New England Region.

VISION

Connecticut Sea Grant envisions a future where the balanced use and conservation of coastal and marine resources and ecosystems optimize environmental, economic and social benefits for Connecticut and beyond.

This vision complements both the vision of National Sea Grant - "a future where people live, work and play along our coasts in harmony with the natural resources that attract and sustain them...and where we use our natural resources in ways that capture the economic, environmental and cultural benefits they offer, while preserving their quality and abundance for future generations" as well as the vision articulated in NOAA's Strategic Plan - "Healthy ecosystems, communities, and economies that are resilient in the face of change."

MISSION

Connecticut Sea Grant generates and provides science-based information to achieve healthy coastal and marine ecosystems and consequent public benefits.

GEOGRAPHIC FOCUS

Connecticut Sea Grant focuses on Connecticut, Long Island Sound, and its watershed, addressing relevant local, regional, national and international issues. As a member of the Northeast Sea Grant Consortium, Connecticut Sea Grant addresses issues critical to the northeastern United States.

OPERATIONAL PHILOSOPHY

Connecticut Sea Grant supports and leverages integrated, locally and nationally relevant research, outreach (extension and communications) and education programs in partnership with stakeholders.

CORE VALUES

As stated in the National Sea Grant 2014-2017 strategic plan, a strong set of core values has been the foundation of Sea Grant's work from its inception. Sea Grant was founded on a belief in the critical importance of university-based, merit-reviewed research and constituent engagement (i.e., being responsive, accessible, respecting partners, maintaining scientific neutrality, integrating diverse expertise, coordinating efforts, and building resource partnerships). Meaningful and sustained engagement has allowed Sea Grant to form strong partnerships with leading coastal state research universities, with other NOAA programs, and with a wide range of public and private partners at the federal, state, and local levels. This has proven to be a highly effective way to identify and solve the most relevant problems facing coastal communities.

Sea Grant's unique integration of research with constituent engagement is at the heart of its mission. As a pioneer in what NSGO refers to as "translational research" (from discovery to application), Sea Grant ensures that unbiased, science-based information is accessible to all. The diverse capabilities of Sea Grant's personnel and partners enable the organization to be creative and responsive in generating policy-relevant research and disseminating scientific and technological discoveries to a wide range of audiences. Because it is science-based, non-regulatory, and has a long-term history of engagement with local communities, Sea Grant is a trusted source of information.

Through the strategic planning process, CTSG identified the following seven key institutional core values that underpin all that CTSG does as an organization.

1. **Partnerships** – CTSG staff undertake collaborative and mutually-beneficial partnerships with local, regional, national and international organizations and institutions, both public and private sector, and with the end users of our outputs. CTSG staff utilize and coordinate with networks of interested individuals and organizations whenever possible. CTSG staff strengthen the capacity of its partners to engage in research, outreach and education.
2. **Integrity** – CTSG staff are honest, respectful, transparent, accountable, and professional. CTSG staff believe that learning is essential to improvement, and that honesty regarding

challenges and failures promotes learning and improves CTSG's capacity to effect positive change. CTSG staff are held accountable for meeting the programmatic and financial obligations of their work.

3. **Objectivity** – CTSG staff serve as neutral and objective brokers of science-based information for the purpose of informing and engaging stakeholders in dialogue on coastal and marine ecosystem challenges and opportunities.
4. **Teamwork** – CTSG staff encourage and support each others' work and strive to be both innovative and dynamic. CTSG staff promote learning in a multidisciplinary team approach by communicating effectively, sharing information, and working together.
5. **Innovation** – CTSG staff recognize that science can and should benefit all people, and that knowledge, practically applied, can change the world. CTSG staff are committed to generating and sharing skills, knowledge and information in a creative and effective manner.
6. **Responsiveness and Relevance** – CTSG staff maintain the professional interdisciplinary skills necessary to provide information and services effectively to partners and stakeholders. CTSG staff are poised to respond quickly and adaptively to new information, changing conditions, and stakeholder needs and opportunities.
7. **Leadership** – CTSG staff inform and inspire others while working towards bold goals in purposeful, strategic, and resourceful ways.

STRATEGIC PRINCIPLES

In addition to its seven institutional core values, CTSG has identified five strategic principles that guide its efforts to achieve its strategic goals and objectives:

1. CTSG focuses on and integrates thematic priority programs in research, outreach and education in order to develop a locally and nationally relevant identity and legacy;
2. CTSG leverages and diversifies funding and funding sources for CTSG;
3. CTSG solicits high quality and relevant research proposals that address the program's thematic areas and emerging priorities;
4. CTSG is inclusive of underserved and underrepresented audiences which are culturally diverse; and
5. CTSG strives to make Connecticut residents, stakeholders, University of Connecticut administrators, elected officials and state agencies more aware of CTSG and the services it offers, and to increase support for CTSG programs.

THEMATIC AREAS

This strategic plan, inspired by the recognition of the environmental and economic importance of coastal and marine resources and the need to foster the sustainable stewardship of these resources, will guide the program through 2017. During this period, CTSG will focus its effort on four thematic areas that respond to both local and national priorities, in which the program staff has particular expertise and can therefore more efficiently and effectively strive to achieve significant local, regional and national outcomes and impacts:

- Healthy Coastal Ecosystems and Economy
- Seafood Production and Consumption
- Hazard Resilient Coastal Communities
- Ocean and Coastal Literacy and Workforce Development

Each thematic area has an articulated vision, one or more goals, a series of anticipated outcomes and performance measures. The goals describe the desired long-term direction for each thematic area. The outcomes are benchmarks that CTSG will use to track its progress toward achieving each goal. The performance measures (or targets) are quantitative ways of measuring outcomes.

Outcomes are commonly categorized as short-, medium- and long-term. In this plan, learning, action and consequence outcomes are synonymous to short-, medium- and long-term outcomes and have been chosen to more easily identify the transition across outcome categories to demonstrate in a more or less linear process how goals are achieved.

- Learning (short-term) outcomes lead to increased awareness, knowledge, skills, changes in attitudes, opinions, aspirations or motivations through research and constituent engagement, typically within one to two years after program initiation.
- Action (medium-term) outcomes lead to behavior change, social action, adoption of information, changes in practices, improved decision-making, or changes in policies, typically within three to five years after program initiation.
- Consequence outcomes are long-term outcomes over five years or more, and in most cases, require focused effort over multiple strategic planning cycles. By including them in a four-year strategic plan, they serve as reference points toward reaching thematic area goals between the current and future strategic plans.

For each learning and action outcomes, one or more performance measures or targets are identified to help measure CTSG's progress towards achieving these outcomes over time. Consequence outcomes will be reported as they occur beyond the life of this strategic plan.

Throughout the plan, the target audience for CTSG programs is collectively referred to as coastal and watershed stakeholders. These include public and private user groups, managers, industry members, decision-makers, and educators. The numbers in parentheses after the articulated goals indicate alignment with specific goals outlined in the National Sea Grant 2014-2017 Strategic Plan.

Thematic Area: HEALTHY COASTAL ECOSYSTEMS AND ECONOMY

Long Island Sound is a nationally significant estuary located in the densely populated metropolitan New York City region. The Long Island Sound estuary provides both economic and ecological benefits. Pressures from the region's large population have resulted in estuarine habitat loss and degradation. In the past century, more than one-third of the Sound's tidal wetlands have been lost. Eelgrass beds that once grew throughout the Sound are in a state of decline. Today's coastal forests and coastal grasslands comprise only a fraction of their original acreage around the Sound. The rapid loss of wetlands and other important habitats has slowed due to state and federal wetland protection legislation and coastal management plans, but pollution and invasion by non-native species continue to degrade Long Island Sound habitats. Unless these trends are altered by the preservation and appropriate management of significant habitats, the restoration and enhancement of degraded habitats, and the protection of species diversity, the Long Island Sound ecosystem-even as it currently exists-will not be sustained for the future.

The achievement/reality of healthy ecosystems is closely tied to a healthy economy. The Long Island Sound watershed is home to more than 8 million people, with millions more flocking yearly to its shores for recreation. Over 20 million people live within 50 miles of the Sound, utilizing it for marine transportation, defense, commercial and recreational fishing and shellfishing, aquaculture, recreational boating, swimming and sunbathing, and other pursuits such as bird-watching. The ability of the Sound to support these diverse uses is dependent on the quality of its waters, living resources, and habitats, as well as broad-based planning that factor in social, economic and environmental considerations. As of 1992, Sound-related or dependent activities were estimated to contribute more than \$5 billion annually to the regional economy. With the uses it serves and the recreational opportunities it provides, Long Island Sound is among the most important and valuable estuaries in the nation.

Vision: Coastal and watershed stakeholders are knowledgeable and take action to support healthy coastal ecosystem services and economies.

GOAL 1: Water quality improves in Connecticut, Long Island Sound and its watershed (8).

Learning Outcomes:

- 1.1. Coastal and watershed stakeholders are aware of the value of clean water and factors and practices that affect water quality, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 1.2. Coastal and watershed stakeholders are aware of critical scientific, management and restoration needs and strategies for improving Long Island Sound water quality, identified through research, outreach and education provided by Connecticut Sea Grant and partners.

Action Outcomes:

- 1.3. Coastal and watershed stakeholders practice behaviors that reduce the impact of human activities on water quality.
- 1.4. Coastal and watershed stakeholders adopt mitigation measures, best management practices, and improved site designs to address water quality concerns.
- 1.5. Coastal and watershed stakeholders develop and implement growth plans, policies, and strategies to protect water resources.

Consequence Outcomes:

- 1.6. Changes in public and private practices, behaviors and policies result in improved water quality.

GOAL 2: Vital coastal habitats, species and ecosystems in Connecticut, Long Island Sound and its watershed are used and conserved (protected, enhanced and/or restored) in balance. (1, 3)

Learning Outcomes:

- 2.1. Coastal and watershed stakeholders are aware of the value and function of species, habitats and ecosystems as well as factors and practices that affect them, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 2.2. Coastal and watershed stakeholders are aware of critical scientific, management and restoration needs and strategies for the Long Island Sound ecological system,

identified through research, outreach and education provided by Connecticut Sea Grant and partners.

- 2.3. Coastal and watershed stakeholders can identify and access data, methodologies, models, indicators and training that support ecosystem-based planning and management approaches, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 2.4. Coastal and watershed stakeholders are aware of the importance of proactive and comprehensive land use planning to guide management decisions, minimize user conflicts, and improve resource conservation efforts, through training and resources provided by Connecticut Sea Grant and partners.
- 2.5. Coastal and watershed stakeholders can identify and access information and tools that facilitate the compatible, efficient and flexible management of multiple human uses and users of the Sound, in balance with the conservation of its natural resources and critical habitats, at least in part because of programs provided by Connecticut Sea Grant and partners.

Action Outcomes:

- 2.6. Coastal and watershed stakeholders apply scientific information and tools to the balanced use and conservation of the resources of the Long Island Sound ecological system.
- 2.7. Federal, state, and local Long Island Sound resource managers adopt/amend laws and policies to facilitate, implement, or require ecosystem-based management (EBM) principles.

Consequence Outcomes:

- 2.8. The application of ecosystem-based management approaches results in the balanced use and conservation of habitats, species and ecosystems in coastal areas.
- 2.9. Populations of species that are currently depleted, threatened, or endangered are stabilized or increased; protected species currently enjoying improving status continue to increase in abundance; and populations of non-threatened species remain stable, helping to maintain biodiversity.

GOAL 3: A healthy, viable coastal and marine economy and the rational use of coastal and marine space and resources in Long Island Sound and beyond, are supported (2, 6, 7).

Learning Outcomes:

- 3.1. Coastal and watershed stakeholders are aware of the social and economic values of coastal related industries, species, habitats and ecosystems, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 3.2. Coastal and watershed stakeholders understand how to access information and tools that facilitate the compatible, efficient, and flexible management of multiple human uses and users of the Sound with the conservation of its natural resources and critical habitats, at least in part because of programs provided by Connecticut Sea Grant and partners.

Action Outcomes:

- 3.3. Coastal and watershed stakeholders use estimates of the social and economic values, impacts, and benefits of coastal industries in decisions related to balancing compatible human uses of Long Island Sound with the conservation of its natural resources and critical habitats.

Consequence Outcomes:

- 3.4. Traditional and culturally significant uses of Long Island Sound are supported; new, appropriate and compatible uses are facilitated; and unavoidable conflicts are minimized through a comprehensive, stakeholder-engaged, coastal and marine spatial planning process.
- 3.5. The social and economic values, impacts and benefits of coastal and marine -related industries and ecosystem goods and services are factored into economic development and environmental planning processes, fully informing decisions and generating policies that optimize benefits.

Healthy Coastal Ecosystems and Economy Performance Measures

Progress towards meeting these performance measures will be assessed and reported annually.

NPM1: Number of Sea Grant/NOAA tools, technologies and information services that are used by our partners/customers to improve ecosystem-based management by 2017. Target: 12

- NPM2: Number of ecosystem-based approaches used to manage land, water and living resources in coastal areas as a result of Sea Grant activities by 2017. Target: 5
- NPM3: Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities by 2017. Target: 10
- NPM6: Number of coastal and watershed communities that adopt and implement at least one sustainable (economic and/or environmental) development practice or policy (e.g. land-use planning, working waterfronts, energy efficiency, climate change planning, smart growth measures, green infrastructure, low impact development), as a result of Sea Grant activities by 2017. Target: 10
- CTPM1: Number of coastal and watershed stakeholders trained by 2017. Target: 75
- CTPM2: Number of trainings / workshops / programs held for coastal and watershed stakeholders by 2017. Target: 40
- CTPM3: Number of gallons of stormwater diverted from direct discharge to surface waters within Connecticut or the Long Island Sound watershed, as a result of CTSG and partner activities by 2017. Target: 750,000

Thematic Area: SEAFOOD PRODUCTION AND CONSUMPTION

Capture fisheries in Long Island Sound and the Northeast region, as well as nationally and globally, are in states of flux, due to stress, disease, pollution or climate change effects, stock re-building measures, adjustments in fishing pressure, a constantly-evolving regulatory environment, and increasing consumer interest in consuming local, sustainable seafood products. Industry and resource managers alike must respond and adapt to changing conditions as they seek to build flexibility, diversity, consistency and stronger economic returns into commercial fishing. They work to preserve, enhance, or restore traditional stocks sustainably, and yet at the same time, they must consider and embrace alternative livelihoods. Marine aquaculture is also in a state of flux. Opportunities posed by new species, products, and technologies augment the production of traditionally cultured species, such as oysters and clams. With these new opportunities come new pressures for the regulatory and permitting processes to evolve and adapt at the same time. For both capture and culture fisheries, producing and maintaining safe, high quality products remain critical goals.

USDA dietary guidelines¹ recommend people eat about 8 ounces or more, or about 20% of the total recommended weekly intake of protein, of a variety of seafood every week; however, many people fail to do so as current mean intake is about 3 ½ ounces per week. Consumers seek readily accessible and easily understood information about the benefits they can derive from eating a variety of seafood products as well as the risks inherent with certain products, health conditions or age groups. With 86%² of the seafood consumed in the U.S. coming from imports (which translates into an \$10B³ seafood trade deficit), domestic seafood harvesters and producers find it difficult to compete

with import market prices. Efforts focusing on direct marketing of domestic and locally produced seafood, such as Community Supported Aquaculture and Community Supported Fisheries, are increasing in popularity as a means for seafood producers to stay competitive.

Vision: A sustainable⁴ seafood industry⁵ that supports people eating safe seafood⁶, and more of it, particularly that which is locally-produced.

GOAL 4: Consumption of safe and sustainable seafood increases (5).

Learning Outcomes

- 4.1. Connecticut seafood consumers, providers, and dietary /health care professionals are aware of science-based information that can be used to evaluate the source and sustainability of seafood choices, through outreach and education provided by Connecticut Sea Grant and partners.
- 4.2. Connecticut seafood consumers and dietary /health care professionals are aware of health benefits and risks associated with specific commercial or recreational seafood products, through outreach and education provided by Connecticut Sea Grant and partners.

Action Outcomes

- 4.3. Connecticut seafood consumers preferentially purchase or catch safe and sustainable, local seafood products.
- 4.4. Connecticut seafood consumers apply their understanding of the health benefits and risks associated with specific commercial or recreational seafood products to their acquisition and consumption decisions.

Consequence Outcomes

¹U.S. Departments of Agriculture and Health and Human Services, *Dietary Guidelines for Americans, 2010*

²Food and Agriculture Organization of the United Nations

³U.S. Department of Agriculture Foreign Agricultural Service statistics

⁴Based on NOAA's FishWatch concept, sustainability involves "meeting today's needs without compromising the ability of future generations to meet their needs. In terms of seafood, this means catching or farming seafood responsibly, with consideration for the long-term health of the environment and the livelihoods of the people who depend on the environment.")

⁵Seafood industry includes all sectors: aquaculturists, fishermen, processors, wholesalers, retailers, and supporting businesses.

⁶Seafood includes product originating from all sectors of the fishing and aquaculture industries.

- 4.5. Connecticut residents increase their consumption of safe, sustainable and local seafood products with associated health benefits.

GOAL 5: **Production of safe and sustainable seafood increases (4).**

Learning Outcomes

- 5.1. Seafood industries are aware of new technologies, tools, and approaches to supply safe and sustainable seafood and minimize deleterious environmental impacts, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 5.2. The commercial fishing and aquaculture industries are aware of innovative marketing strategies to add value to their products, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 5.3. Fisheries managers and commercial and recreational fishermen in New England, U.S. and internationally are aware of sustainable alternative fisheries management practices, through research, outreach and education provided by Connecticut Sea Grant and partners.

Action Outcomes

- 5.4. Seafood industries adopt new technologies, tools, and approaches to supply safe and sustainable seafood.
- 5.5. Seafood industries adopt techniques and approaches to minimize deleterious environmental impacts.
- 5.6. The commercial fishing and aquaculture industries adopt innovative marketing strategies to add value to their products.
- 5.7. Fisheries managers and fishermen adopt alternative fisheries management or production strategies that sustain current harvests and potentially expand the diversity of species harvested.

Consequence Outcomes

- 5.8. The seafood supply is sustainable and safe.
- 5.9. Economically and environmentally viable seafood industries increase production.

Seafood Production and Consumption Performance Measures:

Progress towards meeting these performance measures will be assessed and reported annually.

- NPM4: Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities by 2017. Target: 225
- NPM5: Number of seafood consumers who modify their purchases using knowledge gained in fisheries sustainability, seafood safety and the health benefits of seafood as a result of Sea Grant activities by 2017. Target: 50

- CTPM4: Number of Connecticut seafood consumers, providers, and dietary /health care professionals trained by 2017. Target: 150
- CTPM5: Number of trainings / workshops / programs held for Connecticut seafood consumers, providers, and dietary /health care professionals by 2017. Target: 5
- CTPM6: Number of commercial fishing and aquaculture businesses that adopt innovative marketing strategies to add value to their products, as a result of CTSG and partner activities by 2017. Target: 5
- CTPM7: Number of seafood industry members (non-HACCP) trained by 2017. Target: 100
- CTPM8: Number of trainings / workshops / programs held for seafood industry members by 2017. Target: 25
- CTPM9: Number of new aquaculture businesses assisted, as a result of CTSG and partner activities by 2017. Target: 20
- CTPM10: Number of new tools, technologies or approaches developed to enable fishing and aquaculture industries to supply safe and sustainable seafood, as a result of CTSG and partner activities by 2017. Target: 3
- CTPM11: Number of seafood processors or regulators trained in the application of HACCP principles to seafood processing by 2017. Target: 125
- CTPM12: Number of times alternative fisheries management strategies are discussed and/or adopted by fisheries managers or fishermen, as a result of CTSG and partner activities by 2017. Target: 1

Thematic Area: HAZARD RESILIENT COASTAL COMMUNITIES

Connecticut’s coast is subject to sporadic and potentially severe coastal hazards such as flooding, erosion and high winds. Hurricanes, nor’easters, high tide events, and heavy precipitation can impact

Connecticut's coastal as well as inland communities. With coastal geology ranging from sands to metamorphic rock, the shoreline is in a constant state of flux due to erosion and accretion. Climate change adds another dimension to existing coastal hazards with predictions of more intense coastal storms and precipitation events, as well as rising sea levels.

Climate change is predicted to (and in some cases, is already causing): increased storm intensity, sea level rise, increases in coastal flooding due to storm surge, and increased coastal erosion. Increased flooding causes not only property damage, but also blocked low lying roads, underpasses and evacuation routes. An increase in extreme precipitation events within the LIS watershed is already occurring and has caused more frequent local and regional flooding. Connecticut's communities are beginning to partner with federal, state and local agencies, academic institutions, and others to identify and implement measures that will foster their resilience to coastal hazards and climate change impacts.

Vision: *Coastal communities are resilient⁷ and able to adapt to coastal hazards⁸ and climate change impacts on coastal areas.*

GOAL 6: Coastal and watershed communities are more resilient to coastal hazards and the impacts of climate change on coastal areas (9)

Learning Outcomes:

- 6.1 Coastal and watershed stakeholders are aware of coastal hazard and climate change issues, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 6.2 Coastal and watershed communities understand how to apply tools and techniques to assess aspects of local risk vulnerabilities and climate change, through research, outreach and education provided by Connecticut Sea Grant and partners.
- 6.3 Coastal and watershed communities understand how to apply data, tools, and techniques to reduce their vulnerabilities to hazards and climate change, through research, outreach and education provided by Connecticut Sea Grant and partners.

Action Outcomes:

⁷Resilience is determined by the degree to which a community is capable of organizing itself to increase its capacity for learning from past economic, natural or technological disasters.

⁸Natural hazards include hurricanes, nor'easters, tropical storms, extreme rainfall events, flooding, wildfires, tornadoes, droughts, tsunamis, blizzards, and heat waves. Technological hazards include chemical and oil spills and nuclear reactor accidents.

- 6.4. Coastal and watershed stakeholders apply science-based information, tools, technologies and policies on coastal hazards and climate change impacts on coastal areas to their planning and decision making processes.
- 6.5. Coastal and watershed stakeholders develop and adopt climate adaptation strategies.

Consequence Outcomes:

- 6.6. Coastal and watershed stakeholders implement climate adaptation strategies and prepare for coastal hazards, thereby increasing their resiliency.

Hazard Resilient Coastal Communities Performance Measures

Progress towards meeting these performance measures will be assessed and reported annually.

- NPM6: Number of Connecticut / Long Island Sound coastal and watershed communities that adopt and implement at least one sustainable (economic and environmental) development practice or policy (e.g. land-use planning, working waterfronts, energy efficiency, climate change planning, smart growth measures, green infrastructure, low impact development), as a result of CTSG and partner activities by 2017. Target: 10 *(also included under HCEE)*
- NPM7: Number of communities that implement hazard resiliency practices to prepare for, respond to, or minimize coastal hazardous events, including climate change-related ones, as a result of Sea Grant activities by 2017. Target: 4
- CTPM13: Number of coastal communities trained by 2017. Target: 12
- CTPM14: Number of trainings / workshops / programs held for coastal communities by 2017. Target: 10
- CTPM15: Number of coastal municipalities that incorporate current scientific, policy and legal research and information into the development of local coastal hazard and climate change adaptation plans and policies, as a result of CTSG and partner activities by 2017. Target: 4
- CTPM16: Number of landowners and entities that are aware of, and/or adopt/implement practices enhancing their resilience to hazards/climate change, in order to prepare for, respond to, and if possible, minimize hazardous coastal events, as a result of CTSG and partner activities by 2017. Target: 150

Thematic Area: OCEAN AND COASTAL LITERACY AND WORKFORCE DEVELOPMENT

The education of future environmental professionals and leaders is critical to the responsible use and management of our nation’s ocean and coastal resources. Science and engineering majors, future

marine scientists and education professionals need opportunities to learn science in real world settings and apply their skills at work under the mentorship of practicing scientists. Producing an environmentally and scientifically literate society as well as a group of technical, policy and managerial professionals is essential.

However, the omission of ocean, coastal and Great Lakes content from the *National Science Education Standards* (NRC, 1996) has resulted in a generally uninformed and apathetic public regarding the value and vulnerability of our nation's coastal resources. This has led to a lack of understanding of coastal conservation and management decision-making for an entire generation of Americans who will become tomorrow's voters, workforce, and political and community leaders.

Successful and comprehensive ocean literacy and workforce development programs need to address issues relevant to an array of constituents. Chief among issues affecting Connecticut is the minimal amount of ocean and coastal (including Long Island Sound) topics in state and national science education frameworks, and the need to ensure linkages to the Ocean Literacy Campaign - a grassroots, consensus-driven effort to identify what every person should know about the ocean upon high school graduation.

Vision: *Diverse audiences make informed decisions about ocean and coastal issues.*

GOAL 7: An environmentally literate public (10)

Learning Outcomes

- 7.1. Formal and informal educators are aware of environmental literacy principles and State of Connecticut and national standards, through research, outreach and education provided by Connecticut Sea Grant and partners.

- 7.2. Formal and informal educators are aware of resources, datasets, research findings, and techniques that enhance their ability to teach about ocean and coastal science, through research, outreach and education provided by Connecticut Sea Grant and partners.

- 7.3. Lifelong learners are aware of educational opportunities and resources that increase their awareness and appreciation of Long Island Sound, coastal and ocean issues, through outreach and education provided by Connecticut Sea Grant and partners.

- 7.4 Scientists are aware of effective strategies and provided with opportunities for translating their research appropriately for different audiences, through research, outreach and education provided by Connecticut Sea Grant and partners.

- 7.5. Educators and scientists are aware of educational research, as well as assessment and evaluation strategies to improve and enhance the teaching and learning of ocean and coastal science content, through research, outreach and education provided by Connecticut Sea Grant and partners.

Action Outcomes

- 7.6. Formal and informal educators apply the results of educational research, assessments and evaluations to enhance their ability to teach about Long Island Sound, ocean and coastal science.
- 7.7. Formal and informal educators adopt environmental literacy principles, and utilize resources, datasets, research findings, and techniques enhance their ability to teach about Long Island Sound, ocean and coastal science.
- 7.8. Lifelong learners make decisions that reflect their increased awareness and understanding of Long Island Sound, coastal and ocean issues.
- 7.9. Scientists utilize a variety of strategies to translate their research appropriately for different audiences.

Consequence Outcomes

- 7.10. Environmentally literate public conserves coastal and marine resources to optimize environmental, economic and social benefits for Connecticut and beyond.

GOAL 8: A workforce that generates, provides, and / or utilizes science-based information to achieve healthy coastal and marine ecosystems and consequent public benefits (11).

Learning Outcomes

- 8.1. Students and professionals are aware of ocean and coastal-related careers through research, outreach and education learning opportunities provided by Connecticut Sea Grant and partners.

Action Outcomes

- 8.2. Students and professionals pursue ocean and coastal-related careers.

Consequence Outcomes

- 8.3. A workforce in ocean and coastal-related careers that provide environmental, economic and social benefits for Connecticut and beyond.

Ocean and Coastal Literacy and Workforce Development Performance Measures

Progress towards meeting these performance measures will be assessed and reported annually.

- NPM8: Number of Sea Grant facilitated curricula adopted by formal and informal educators by 2017. Target: 0
- NPM9: Number of people engaged in Sea Grant supported education programs by 2017. Target: 7,500
- NPM10: Number of Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation. Target: 3
- CTPM17. Number of formal and informal educators reached, as a result of CTSG and partner activities by 2017. Target: 500
- CTPM18. Number of K-12 students reached, as a result of CTSG and partner activities by 2017. Target: 5000
- CTPM19. Number of lifelong learners reached, as a result of CTSG and partner activities by 2017. Target: 2000
- CTPM20. Number of scientists who translate their research appropriately for different audiences, as a result of CTSG and partner activities by 2017. Target: 10
- CTPM21. Number of students (undergraduate, graduate) involved in CTSG funded projects by 2017. Target: 50

Cross-cutting Performance Measures

- NPM11. Economic (market and non-market; jobs and businesses created or retained) benefits derived from Sea Grant activities by 2017.
- Target for number of jobs created by 2017: 0
- Target for number of jobs retained by 2017: 0
- Target for number of businesses created by 2017: 0
- Target for number of businesses retained by 2017: 0
- Target for market benefits by 2017: 0
- Target for non-market benefits by 2017: 0

Note: Connecticut Sea Grant did not anticipate targets for NPM11 because these are not targets we can realistically plan for. They will be reported annually as numbers become available.

NPM12. Number of peer-reviewed publications produced by CTSG and number of citations for all peer-reviewed CTSG publications from the last four years.
Target # new peer-reviewed CTSG publications produced between 2014 and 2017: 8
Target total # citations for all peer-reviewed CTSG publications from the last four years:
50

IMPLEMENTATION STRATEGY

This plan provides a framework for the work of Connecticut Sea Grant during the 2014-2017 period. It is aligned with the National Sea Grant Strategic Plan but focuses specifically on local and regional needs priorities. Implementation of this strategic plan will be outlined in the 2014-2017 omnibus work plan for Connecticut Sea Grant, including merit-reviewed research, outreach (communications and extension), and education projects. Progress towards meeting the goals outlined in this strategic plan will be measured and reported annually. The plan will be re-visited annually to ensure that Connecticut Sea Grant is accomplishing its four-year goals while maintaining enough flexibility to address new trends and opportunities as needed.