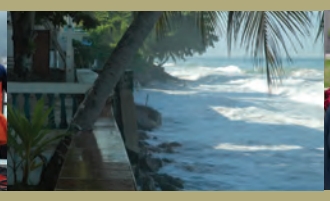
THE STATE OF SEA GRANT 2010

Impacts, challenges and opportunities

Biennial Report to Congress by the National Sea Grant Advisory Board, November 2010

CONTENTS

The State of Sea Grant 2010: *Impacts, Challenges and Opportunities*
Biennial Report to Congress by the National Sea Grant Advisory Board, November 2010

Biennial Report Staff
Amy Painter, National Sea Grant Office
Elizabeth Waters, planning consultant, Charlottesville, Virginia
Greg Aylsworth, graphic designer

On the covers (from l-r)
Sleeping Bear Dunes National Lakeshore, Lake Michigan (Michigan Sea Grant);
A Taku Fisheries processing plant worker shows off a nice coho salmon just offloaded from a troller at the company's dock in downtown Juneau, Alaska. Alaska Sea Grant works with Alaska seafood processing plants to educate managers on how to write Hazard Analysis and Critical Control Point Plans and develop sanitation control procedures, both required by federal law (Kurt Byers, Alaska Sea Grant);
Puerto Rico Sea Grant actively participates in the promotion and implementation of a Caribbean tsunami warning system, similar to the one in the Pacific Region (Puerto Rico Sea Grant);
Earth Force Summit (Pennsylvania Sea Grant);
Pleasure boats abound on Peconic Bay during the Annual Maritime Festival in Greenport, New York, a working waterfront since the 18th century. This historic harbor, used by whalers, commercial fishers and even rum runners, is now a haven for artists, writers and musicians. The Peconic Estuary is vital to the ecological and economic health of Long Island's East End. (Barbara A. Branca, New York Sea Grant).

Dear Member of the Congress of the United States of America,

It is my pleasure to transmit to you on behalf of the National Sea Grant Advisory Board this report of the state of Sea Grant college programs throughout the United States. The 2008 Sea Grant Act (PL110-394) requires the Advisory Board, a federal advisory committee established by Congress, to prepare biennial reports to congress on the state of Sea Grant. This is the first report provided in response to this requirement.

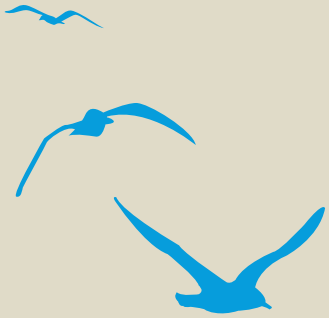
In preparing this report the Advisory Board reviewed all elements of the Sea Grant enterprise including the activities of the national office, the state programs and the Sea Grant Association. We assessed the effectiveness of the Sea Grant program, noted the constraints to realization of the Sea Grant potential to benefit the people of the United States and we recommend ways to maximize the future contributions of the Sea Grant program.

The Advisory Board finds the Sea Grant program to be an effective program that responds to local needs of the coastal and marine-related community while at the same time addressing critical national needs. Sea Grant's recently developed national strategic and implementation plans with which each state program is aligned, ensure that throughout the 32 state programs national goals as well as local needs will direct research, aggressively engage society and educate the public to enhance informed decision making concerning our marine and coastal resources.

In spite of its many accomplishments, constraints do exist that have impeded Sea Grant's achievement of its full potential. The recommendations that conclude this report provide guidance to Sea Grant, to the National Oceanic and Atmospheric Administration and the Congress of the United States which, if followed, will materially benefit the people of the United States.

The National Sea Grant Advisory Board looks forward to working with Congress, NOAA and the entire Sea Grant team to capture the academic capacity of the Sea Grant colleges and to maximize the benefits Sea Grant can provide to our country and its coastal communities.

John T. Woeste,
Chair, National Sea Grant Advisory Board



The National Sea Grant Advisory Board,

a federal advisory committee established by Congress under the Federal Advisory Committee Act, is pleased to report to the U.S. Congress on the status of the National Sea Grant College Program. This is the first response to the requirement under PL 110-394 for a biennial report on the status of Sea Grant. Included in the report are the Advisory Board's assessment of Sea Grant impacts, the program's effectiveness in responding to changes in national priorities, the constraints that prevent Sea Grant from living up to its originally envisioned promise and the outlook for the future. The report concludes with recommendations for action that will enhance Sea Grant's ability to contribute to the fulfillment of national goals in the future, building on past national investments.

The Sea Grant Model

Congress established Sea Grant in 1966 to bring practical scientific information from the nation's universities to coastal businesses, citizens and all levels of government in order to capture the economic and social benefits of the nation's oceans, coasts and Great Lakes in a sustainable way. In its first four decades, Sea Grant has worked with thousands of public and private partners across the country to create and preserve coastal jobs, balance economic development and resource protection, and create an informed coastal citizenry.

Today, Sea Grant is a network of 32 university-based state programs administered by the National Oceanographic and Atmospheric Administration (NOAA) through the National Sea Grant Office.

The Sea Grant model—integrated research, stakeholder engagement and education—offers many advantages in addressing contemporary coastal challenges. The network supports and draws on the work of more than 3,000 scientists at over 300 colleges and universities to build a sound scientific foundation for the use and preservation of the nation's coastal and Great Lakes resources. Sea Grant has been a leader in public engagement activities in coastal communities for decades. Over 375 Sea Grant extension agents are working directly with stakeholders to prepare for climate change impacts, preserve and build the nation's fishing and aquaculture industries, and deal with such coastal crises as Hurricane Katrina and the Deepwater Horizon oil spill.

Sea Grant's impacts are impressive for the federal investment directed to the program. Federal dollars invested in Sea Grant require a 50% state match, and most state programs exceed that requirement. In 2010, federal Sea Grant investments of $59.3 million federal, $9.6 million pass thru, $33.1 million match dollars and more in private support, magnifying the impact of taxpayers' investment.

National Priorities and Impacts

Sea Grant's 2009-2013 strategic plan includes four national priority areas chosen to align with NOAA agency-wide priorities:

- healthy coastal ecosystems
- sustainable coastal development
- safe and sustainable seafood supply
- hazard resilience in coastal communities

Within these focus areas, Sea Grant programs are helping communities make decisions concerning coastal land use and offshore energy development. They are preventing seafood-related illnesses and saving consumers millions of dollars by training seafood handlers. Sea Grant is conducting research and outreach activities that are building the nation's aquaculture industries and are resulting in more effective fishing practices, saving jobs and building local economies. Sea Grant is helping communities prepare for climate change and working with other parts of NOAA to design regional approaches to coastal resource protection and use.

The 2009-2013 strategic plan is part of Sea Grant's new Planning, Implementation and Evaluation (PIE) system adopted in 2009. The new system puts renewed emphasis on national priorities and includes national and state performance measures that will track Sea Grant contributions toward advancing national priorities and achieving national goals.

Constraints on Realizing Sea Grant's Potential

During its earliest years, NOAA was regarded as a science agency. Local capacity and service to the public were not highlighted, leaving Sea Grant's outreach and education functions somewhat disconnected to NOAA's central focus. As the outreach/engagement functions of NOAA increase, the Sea Grant program can play a significant role in helping to marry national programs with local and regional presence. Realizing Sea Grant's potential in this arena will require NOAA leadership at all levels to embrace the importance of engaging the public in carrying out its mission. Finding ways to integrate Sea Grant with other NOAA coastal programs so they function together as one is also a challenge. Clearer delineation of individual program roles and responsibilities within NOAA is needed to help Sea Grant—and other coastal programs—maximize their contributions.

Despite Sea Grant's many accomplishments and contributions to national goals, there have been perceptions among some leaders and decision-makers that Sea Grant is not a national program, but rather a collection of independent state programs. In the past two years, Sea Grant has taken a number of steps to strengthen its national focus: adoption of national priorities for the entire network, alignment of state plans with the national plan, and adoption of performance measures to demonstrate national impact. However, past perceptions, combined with Sea Grant's difficulty in aggregating and communicating its significant national contributions, may have contributed to level appropriations for Sea Grant over the past two decades. Level appropriations combined with inflation have resulted in a loss of buying power for Sea Grant. This erosion in buying power has impeded Sea Grant's capacity at both the national and state levels to respond fully to national coastal challenges and opportunities.

Last year alone, SEA GRANT

- Created or retained over 3,500 jobs and 650 businesses
- Assisted 160 coastal communities to adopt or implement hazard resiliency practices
- Supported nearly 1,700 undergraduate and graduate students to develop a diverse, highly qualified workforce

Outlook and Recommendations

The outlook for Sea Grant and other NOAA ocean and coastal programs is one of increased complexity and uncertainty. Population growth, climate change, increased pressure on coastal and marine environments and more conflicts related to the use of limited natural resources all point to unprecedented challenges. To respond effectively, Sea Grant must be a strong, well-integrated national program that concentrates its energies where it has the most to offer. The program needs to support research in high priority areas and serve as a leader in engagement activities. Sea Grant must bring its broad base of academic expertise to coastal crises whenever and wherever they occur.

If Sea Grant is to achieve its potential to help address pressing national needs, important actions need to be taken as soon as possible.

1. **The entire Sea Grant network must focus its efforts on advancing national priorities, while remaining sensitive to local needs.**

2. **The ability to track and report the cumulative measurable impacts of Sea Grant activities on achieving national goals should be a high priority for Sea Grant.**

3. **NOAA coastal programs, including Sea Grant, should be more fully integrated in order to maximize NOAA's contributions to national goals.**

4. **Sea Grant should capitalize on its nationally recognized leadership in stakeholder engagement within coastal and Great Lakes communities as federal-state-local communication and collaboration become more critical to addressing needs and responding to crises.**

5. **Sea Grant should continue to re-examine its priorities and methods of operation in order to respond to the nation's most urgent needs.**

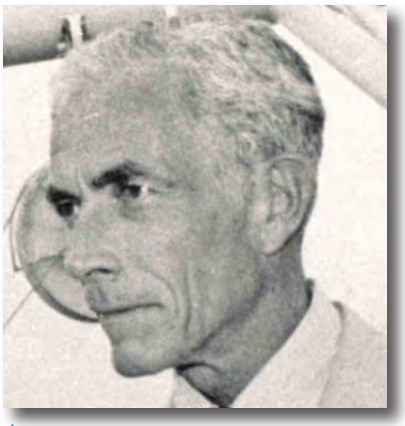
6. **Significant additional resources should be provided to the National Sea Grant College Program in order to reverse the erosion of buying power and maintain a dynamic program with rapid response capability.**

INTRODUCTION

The National Sea Grant College Program was created in 1966 at a time of major national concern about the future of our coasts and oceans. Then, as now, population growth along the coasts, decline in wild fisheries, and tension between protection and use of ocean and coastal resources threatened the future health and vitality of ocean and coastal resources and communities.

Congress established Sea Grant to unite the academic power of the nation's universities with public and private sector partners in order to capture in a sustainable way the economic and social benefits of the oceans, coasts and Great Lakes. Inspired by the contributions of the Land Grant college system, Senator Claiborne Pell of Rhode Island and others saw the need to create a similar program to harness the best science available to inform public and private decision-making "for the wise use and protection" of America's complex and dynamic coastal and ocean environments.

Pell Library



Senator Claiborne Pell

Today, Sea Grant is a national network of 32 university-based state programs (Appendix 1), administered by the National Oceanic and Atmospheric Administration (NOAA) through the National Sea Grant Office (National Office). Sea Grant is advised by the National Sea Grant Advisory Board (Advisory Board), and supported by the Sea Grant Association (SGA), an association of the academic institutions that serve as host institutions for Sea Grant within their respective states. The broad reach of the Sea Grant network provides NOAA and the nation with direct links to an extensive array of scientific expertise and to the people living and working on America's coastlines and beyond.

From the outset, the Sea Grant Program has taken a leadership role in identifying and addressing emerging coastal and ocean issues. Sea Grant has been instrumental in bringing national attention to issues such as coastal land use, aquaculture, wild fisheries technology, invasive species and coastal literacy. Often, the programs started by Sea Grant have been embraced and expanded by other agencies and organizations, frequently in partnership with Sea Grant.

The Sea Grant reauthorization process provides Congress with regular opportunities to guide, adjust and enhance the program. Over the years, Sea Grant has made numerous operational and programmatic changes in response to this guidance. The 2008 Sea Grant Act (PL110-394) requires the Advisory Board, a federal advisory committee established by Congress, to prepare biennial reports to Congress on the state of Sea Grant. This is the first report provided in response to this requirement. In preparing the report, the Advisory Board has reviewed the Sea Grant enterprise in order to assess the current status of the program and to suggest ways to maximize the contributions of the program in the future. The Board's findings and recommendations are included in this report.

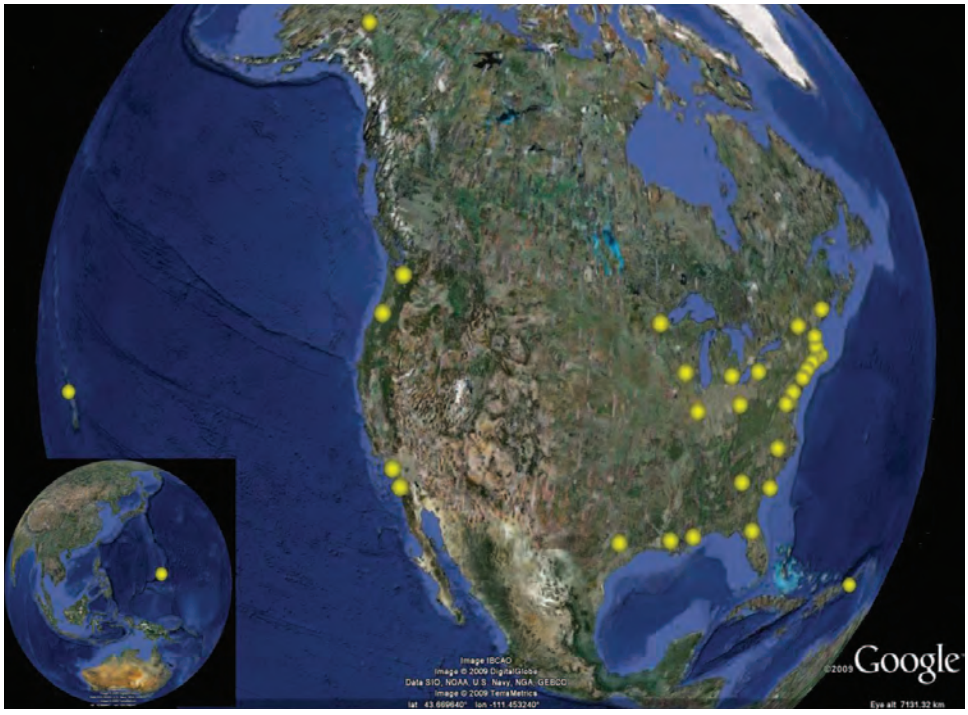
The report is organized into the following major sections:

- **The Sea Grant Model**
- **National Priorities and Impacts**
- **Constraints on Realizing Sea Grant's Potential**
- **Outlook and Recommendations**

It includes an assessment of recent Sea Grant impacts, the Program's effectiveness in responding to changes in national priorities, the challenges it faces in trying to fulfill its originally envisioned promise and an outlook for the future. The report concludes with recommendations for action designed to enhance Sea Grant's ability to contribute to the fulfillment of national goals in the future, building on past investments.

Web links to all reports cited in the document may be found in Appendix 2.

SEA GRANT'S 32-PROGRAM NATIONAL NETWORK



THE SEA GRANT MODEL

Sea Grant researchers, extension agents and educators provide a multi-dimensional way to address national priorities and respond rapidly to crises and opportunities that arise in coastal, ocean and Great Lakes environments.

The Sea Grant model is designed to combine research, outreach and education in ways that allow for an integrated approach to solving problems and capturing opportunities. On-the-ground experts, located in every coastal and Great Lakes state, translate sound scientific information into tools, products and services that benefit coastal residents and their communities every day. Sea Grant experts address national priorities at the local level, while identifying citizens' needs in ways that help guide state and national research agendas. This two-way flow of services and information enables Sea Grant and NOAA to meet demonstrated needs, support businesses and help policy-makers make balanced, well-informed science-based decisions.

From its inception, the hallmarks of Sea Grant's work have been:

- **quality research** to answer critical questions and generate solutions that often include new technologies
- **local technical assistance** teams in communities around the country that share and explain new discoveries and empower stakeholders to address national, state and local issues as they emerge
- **education programs** that create informed citizens in coastal and Great Lakes communities and help prepare the next generation of citizens, workers and professionals involved with our nation's coastal resources, communities and economies

Mobilizing a nationwide team of scientists

The location of state Sea Grant leadership in major universities gives the Program access to researchers working to identify the best ways to use and manage our coastal, ocean and Great Lakes resources in a sustainable fashion. Today, Sea Grant draws on and supports the work of over 3,000 scientists and researchers from over 300 institutions. Sea Grant supports natural, biological and social science research in a wide array of disciplines. It helps illuminate scientific, technical and socio-economic issues related to the use and management of coastal, ocean and Great Lakes resources. Peer-reviewed Sea Grant research provides practical scientific information to support the work of Sea Grant and other agencies, organizations and businesses. When urgent new questions arise, Sea Grant can call on this network of scientists for information and science-based solutions.

Lynn Ketchum, Extension, Oregon State University

Oregon State University professor Chris Langdon holds juvenile Kumos oysters raised from eggs. With grants from Oregon Sea Grant and cooperation from Oregon shellfish growers, Langdon has developed a system that uses ultraviolet light to rid hatcheries of a highly pathogenic organism, *Vibrio tubiasii*.

Providing local presence and expertise for every coastal locality

Sea Grant provides an on-the-ground workforce in coastal communities to help them address problems of local, regional and national significance. Collectively, the 32 state Sea Grant programs have over 375 extension agents engaging directly with citizens, businesses and local governments to address national and regional priorities and respond to state and local needs. These extension agents have experience in a broad range of scientific and technical areas. They have access to highly specialized scientists and they understand the particular cultures and constituencies they serve. Extension agents are skilled at sharing new knowledge and convening stakeholders at the local, state and regional levels to forge informed consensus on new policies and management strategies. This experienced team of experts mobilizes to respond to needs wherever they arise and transfers research needs back to their university communities.

Educating workers, citizens and tomorrow's professionals

Sea Grant is a leader in K-12, undergraduate, graduate, professional, technical and public education in coastal and Great Lakes states. It works closely with its host universities, the NOAA Office of Education, the National Marine Educators Association, the Centers for Ocean Sciences Education Excellence (COSEE) and others to develop school programs, workforce training and professional education for the next generation of coastal leaders.

Sea Grant education and outreach specialists around the country are providing training in seafood safety regulations, use of new fishing gear and other topics that advance the safety and productivity of coastal-related commerce. Sea Grant pioneered the first U.S. program training volunteers to conduct sampling and analysis of water quality indicators, an approach used widely today by Sea Grant and countless other governmental and non-governmental organizations. Sea Grant funding supports graduate students in coastal-related biological, natural and social sciences. Sea Grant's Knauss Marine Policy Fellowship Program has brought over 800 graduate students interested in natural resource policy to Washington, D.C. to work with federal agencies and congressional offices as part of their professional training.

Sea Grant research, extension and education programs are supported by a cadre of nearly 90 communications specialists who provide information to many constituencies through a variety of media, including print, web, video, radio and television outlets.

Michigan Sea Grant

Students learn about aquatic plants on the R/V Clinton during a Great Lakes Education Program (GLEP) cruise on the Detroit River. The GLEP program is designed to stimulate interest in the Great Lakes and help students understand their role in protecting these vital freshwater resources.

Focusing on critical national issues

In recent years, Sea Grant has stepped forward to assist with some of the nation's most critical coastal crises and challenges. In the earliest stages of the Hurricane Katrina crisis, Sea Grant programs issued public service announcements in multiple languages with basic public health information related to the adverse effects of contaminated water. Louisiana Sea Grant built a website to serve as a clearinghouse for hurricane recovery resources for the public, businesses and policymakers. In the ensuing months and years, the Sea Grant network has provided technical assistance throughout the region to support the recovery of coastal communities and economies.

NOAA

Hurricane Katrina

In response to the Deepwater Horizon oil spill, Florida, Louisiana, Texas and Mississippi-Alabama extension and legal specialists have been working with fishing communities to provide information on the spill and facilitate interaction with BP to help with the damage claim process. Mississippi-Alabama and Florida Sea Grant are providing hazmat clean-up training for both professionals and citizens in the Gulf region. Four South Atlantic state programs held summits to identify potential risks and precautions that should be taken in response to the oil spill. Sea Grant has worked with NOAA's Coastal Data Development Center to create a web-based clearinghouse for information on oil spill research and monitoring activities that can be used by interested stakeholders throughout the Gulf region and beyond.

Georgia Sea Grant (from expedition led by Dr. Samantha Joye)

Throughout the oil spill disaster, Georgia Sea Grant worked with the state's Department of Natural Resources to develop a comprehensive monitoring and sampling protocol for Georgia's waters and coastal ecosystem.

Louisiana Sea Grant

St. Tammany, LA Oil Spill Forum, June 1, 2010. Sea Grant has facilitated communication between local stakeholders and incident response personnel to identify and address immediate concerns and provided timely, science-based information to the public, including Vietnamese and Hispanic communities, and the tourism, fishing and recreational sectors.

Sea Grant is also applying the strength and diversity of its network to address the impacts of climate change in coastal communities. At the request of the governor, Maine Sea Grant collaborated with the University of Maine Climate Change Institute and others to produce a document that serves as the foundation for statewide climate preparation. North Carolina, Oregon, Washington, Wisconsin, Woods Hole and other Sea Grant programs are participating with government and other partners in statewide climate-change planning. As a result, our nation is becoming better prepared to deal with anticipated climate change impacts such as sea level rise, changes in fisheries ranges, and loss of habitat.

Delaware Sea Grant, University of Delaware

Sea Grant programs are investigating renewable energy options to aid the transition to a clean energy economy. The University of Delaware and Gamesa Technology Corporation installed this utility-scale 2-megawatt wind turbine in Lewes.

Since the oil spill, Sea Grant has organized 47 meetings involving over **4,500 participants** in Florida, Alabama, Mississippi, Louisiana and Texas to provide science-based information to communities and to facilitate communication between local stakeholders and incident response personnel.

A PRESCRIPTION FOR CLEAN WATER:

SEA GRANT PROGRAMS TEAM UP TO KEEP DRUGS OUT OF DRINKING WATER

Whether flushed down toilets or disposed of in garbage cans, unwanted drugs are contaminating our drinking water and causing deformities in fish. A 2008 investigation launched by the Associated Press found pharmaceuticals in the drinking water of at least 41 million Americans and in the water supplies of 24 major metropolitan areas. **Illinois-Indiana**, **Michigan**, **New York**, **Ohio**, **Minnesota** and **Pennsylvania Sea Grant** are working to help citizens address dangerous drug disposal habits by establishing safe, legal collection programs in communities. Sea Grant educators and outreach experts have created programs and activities for 4-H youth, scouts and after-school youth clubs. The idea is that these youth will serve as important agents for change to help protect and improve the quality of our waters. Sea Grant and the U.S. EPA Great Lakes Office developed a resource kit for those interested in starting a "take-back" program or creating other disposal programs. The kit includes background information on unwanted medicines, what's known about their impact on the environment, and numerous resources for addressing the problem, including extensive collection program case studies, and is available online at www.iisgcp.org/unwantedmeds.

Fostering partnerships

Working with a wide range of coastal interests and users—fishermen, ports, tourism industries, seafood processors, energy producers and others—makes public-private partnerships central to Sea Grant's activities. In an era of growing complexity in the interactions between human activities and the natural environment along the coasts, Sea Grant, with a long history as a trusted partner and source of objective information, offers NOAA the crucial capacity to solve problems and resolve conflicts at local, state and regional levels.

New Jersey Sea Grant

Congressman Frank Pallone (6th District) (center) who worked for the New Jersey Sea Grant Extension Program, presented this year's Stew Tweed Fisheries and Aquaculture Scholarships at Ocean Fun Days, one of Sea Grant's showcase public outreach events sponsored by private sector partner New Jersey Natural Gas.

Within NOAA, Sea Grant partners regularly with the National Marine Fisheries Service, the National Weather Service, the National Ocean Service, including the Coastal Services Center and the National Estuarine Research Reserve System, and the Office of Oceanic and Atmospheric Research, including the Climate Program Office, to advance NOAA's mission. State Sea Grant programs cooperate regionally and throughout the network on sustainable fishing gear development, preserving waterfront access for citizens and water-dependent businesses, and protecting water quality and habitat.

Pingguo He, New Hampshire Sea Grant

Dave Goethal, left, a fisherman in Hampton, N.H, and deck hand Paul Kuncho hauling back one a new topless shrimp trawl designed reduce finfish bycatch in the pink shrimp fishery in the Gulf of Maine. New Hampshire Sea Grant collaborated with Goethal on the design, and secured funds from NOAA's National Marine Fisheries Service to make several topless trawls for demonstration purposes. The trawl has reduced Gulf of Maine herring by-catch by 90% without loss of shrimp.

Leveraging federal dollars for greater impact

Sea Grant is required to match every $2 of federal funding with $1 of non-federal funds, and many state programs far exceed this match. Total investments in the Sea Grant program over the past two years have been "XXX." Of these "XXX" are federal dollars, "XXX" are state match, and "XXX" are from other partners and sources. By leveraging federal funds, Sea Grant expands its reach and effectiveness in planning for and managing the future of America's ocean, coastal and Great Lakes resources.

NATIONAL PRIORITIES AND IMPACTS

Sea Grant is increasingly focused on advancing national priorities while also attending to state and regional planning and management issues.

Since its creation in 1966, Sea Grant has continued to evolve in response to new guidance from Congress and changing priorities within NOAA and in coastal communities and industries.

In its 2002 Sea Grant reauthorization (PL107-299), the United States Congress directed NOAA to contract with the National Academy of Sciences/National Research Council (NRC) to review Sea Grant's process of program evaluation and make recommendations to improve its effectiveness. The resulting NRC report, *Evaluation of the Sea Grant Review Process* (2006), included recommendations for revising and strengthening the process of evaluating state Sea Grant programs.

The NRC's recommendations were followed with new Congressional authorizing legislation in 2008 which supported the NRC's recommendations. The reauthorization encouraged collaboration at the regional and national levels and highlighted Sea Grant's role in supporting coastal and ocean resource management. The legislation also changed the name of the National Sea Grant Review Panel to the National Sea Grant Advisory Board. It called for an elevated role for the Advisory Board, including providing the National Sea Grant Office with strategic advice and submitting biennial reports to Congress on the state of Sea Grant.

Sea Grant has responded to this most recent Congressional input with a substantial realignment of the Sea Grant program that includes:

- **2009-2013 national priorities**
- **a new planning, implementation and evaluation system**
- **an ongoing commitment to regional leadership**
- **new roles for the National Sea Grant Advisory Board**

All elements of the Sea Grant network—the National Office, the state programs, the Sea Grant Association and the Advisory Board—are working closely to produce the desired outcomes from this realignment.

2009-2013 Sea Grant National Priorities

The *NOAA National Sea Grant Strategic Plan 2009-2013: Meeting the Challenge* was adopted in 2009. It includes four national focus areas chosen to align with current NOAA agency-wide priorities: healthy coastal ecosystems, sustainable coastal development, safe and sustainable seafood supply and hazard resilience in coastal communities. The plan also embraces three cross-cutting goals—sound scientific information, an informed public, and open decision-making processes—that form an integral part of the work in which Sea Grant engages.

Specific goals, objectives and performance measures have been set for each of the four focus areas in the *Sea Grant Implementation Plan 2009-2013*. National teams have been established to guide implementation of the national, regional and state plans in an effective, coordinated manner. Significant contributions in all of the national focus areas are documented on an ongoing basis.

IN 2009, 186 COASTAL COMMUNITIES RESTORED DEGRADED ECOSYSTEMS AS A RESULT OF SEA GRANT ACTIVITIES.

Alaska Sea Grant – Kurt Byers

HEALTHY COASTAL ECOSYSTEMS

NATIONAL GOALS →

- **Sound science to support ecosystem-based management**
- **Widespread use of ecosystem-based approaches to managing land, water and living resources in coastal areas**
- **Restored function and productivity of degraded ecosystems**

Healthy coastal ecosystems are the foundation for life along the coast, but increasingly rapid coastal development, global overfishing, and other human activities are leading to water quality degradation, decline of fisheries, wetlands loss, proliferation of invasive species and a host of other challenges that need to be understood in order to restore and maintain these ecosystems.

← A brightly colored blood star (*Henricia leviuscula*) on the rocky Alaska coastline.

Millions of Americans suffer from waterborne illnesses each year. Sea Grant has helped redefine approaches to contaminant monitoring, develop molecular fingerprinting methods that can distinguish between human and nonhuman sources of fecal matter, and reduce chemical pollutants in waterways by organizing pharmaceutical collection events. In 2009, California Sea Grant scientists identified methyl mercury, a highly toxic form of mercury, in the groundwater at two sites. Findings indicated that the amount of mercury being introduced into coastal waters from these two sites may be as great as the total amount of mercury entering these coastal waters as a result of atmospheric deposition. Illinois/Indiana Sea Grant, MIT Sea Grant and other state programs have contributed significantly to advancing understanding about toxic pollutants in water and wetlands.

→ Sea Grant supports the development of new policies, technologies and processes that promote restoration of ocean, coastal and Great Lakes ecosystems in ways that balance the needs of the natural systems with the needs of the humans who inhabit them.

Washington Sea Grant

Sea Grant programs nationwide have mobilized to control and mitigate the negative impacts of invasive species through their research, outreach and education activities. In a two-year period, more than 3,000 fish producers learned about control of invasive species from Sea Grant workshops. Maryland Sea Grant developed a comprehensive invasive species rapid response plan template for use by states in the Mid-Atlantic region and beyond for responding to newly introduced invasive species. Every coastal and Great Lakes state that has an aquatic nuisance species plan did so with input from their Sea Grant Program. Appendix 3 provides a link to additional impacts.

IN 2009, 435 COASTAL COMMUNITIES ADOPTED OR IMPLEMENTED SUSTAINABLE (ECONOMIC AND ENVIRONMENTAL) DEVELOPMENT PRACTICES AND POLICIES (E.G., LAND-USE PLANNING, WORKING WATERFRONTS, ENERGY EFFICIENCY, CLIMATE CHANGE PLANNING, SMART GROWTH MEASURES, GREEN INFRASTRUCTURE) AS A RESULT OF SEA GRANT ACTIVITIES.

Ruperto Chaparro, Puerto Rico Sea Grant

SUSTAINABLE COASTAL DEVELOPMENT

NATIONAL GOALS →

- **Healthy coastal economies**
- **Coastal communities that make efficient use of land, energy and water resources**
- **Informed coastal citizenry to balance multiple uses and achieve environmental sustainability**

Michigan Sea Grant

↑ Fishtown Harbor, Leelanau Peninsula, Michigan. Changing development patterns along the coast are threatening to displace traditional water-dependent industries and cut off water and beach access for coastal residents. Sea Grant provides information, tools and techniques to support working waterfronts.

← The San Juan coastline. Citizens and decision-makers have an urgent need for tools that will help them evaluate the implications of land-use changes, coastal development pressures, and increased resource use in approaching the policy and management decisions they face. Sea Grant's well-established role as a trusted broker makes it a key player in facilitating the development and implementation of new coastal policies, plans, management approaches and consensus-building strategies.

According to NOAA's *State of the Coast Report*, the U.S. coastal zone contributed $7.9 trillion to the nation's GDP in 2007. Coastal and marine waters provide 69 million jobs. Economists estimate non-market economic value from the nation's ocean and coastal resources to be over $100 billion a year. Coastal communities provide vital economic, social and recreational opportunities for millions of Americans. However, decades of population migration have transformed our coastal landscapes and intensified demand on finite coastal resources. In 2010, approximately 160 million people (52%) of the nation's population lived in the 673 U.S. coastal counties, an increase of 49.6 million people since 1970. That growth trend continues. The increase in population has resulted in new housing developments and recreation facilities, a new generation of energy development activities, port expansions and other new business activities. These changes are placing tremendous pressure on coastal lands, water supplies and traditional ways of life.

Sea Grant is engaging a diverse array of stakeholders to work on building vibrant coastal economies and communities that function within the carrying capacity of their ecosystems. USC Sea Grant is bringing science and policy research to the ports of Los Angeles and Long Beach, CA to advance sustainable management practices at this complex that handles close to 45% of all marine freight entering the U.S. Texas Sea Grant facilitated the testing of new fuel-efficient trawl gear. In Brownsville, Texas, more than 85% of the vessels have adopted the experimental gear, saving almost $9 million in fuel costs in 2009 alone and an estimated 200 jobs. Virginia Sea Grant, Maine Sea Grant and others are leading an emerging national coalition on maintaining working waterfronts and coastal access in partnership with state coastal zone management programs, Boat US, the Urban Harbours Institute, the Coastal States Organization, and others, and work done by Delaware Sea Grant helped advance the development of a $1.6 billion wind farm project that will generate renewable energy for the state. Appendix 3 provides a link to additional impacts.

IN 2009, 27,748 STAKEHOLDERS MODIFIED THEIR PRACTICES USING KNOWLEDGE GAINED IN FISHERIES SUSTAINABILITY, SEAFOOD SAFETY AND THE HEALTH BENEFITS OF SEAFOOD, WHILE 366,687 FISHERS USED NEW TECHNIQUES AS A RESULT OF SEA GRANT ACTIVITIES.

Ben Young Landis, North Carolina Sea Grant

SAFE AND SUSTAINABLE SEAFOOD SUPPLY

NATIONAL GOALS →

- **Sustainable supply of safe seafood**
- **Healthy domestic seafood industry**
- **Informed consumers who understand sustainable harvesting, health benefits of seafood consumption and seafood safety**

Fisheries provide over $60 billion to the U. S. GDP annually (NOAA FY 2010 Budget Summary). At the same time, the U.S. has witnessed the decline of many of its major fisheries while seafood consumption is on the rise, resulting in a multi-billion dollar seafood trade deficit. Seafood safety is also a growing concern as international trade increases and fish diseases and contamination become larger problems.

Sea Grant is working closely with a wide range of federal, state and local partners to find ways to balance the protection of species with the protection of economies. Sea Grant programs in Rhode Island and New Hampshire supported research on new shrimp trawls and haddock nets that resulted in larger shrimp being caught, with 90% reduction in bycatch of herring—a fish that is important to both the economy and the marine food web. In Alaska, longline fishing fleet solutions developed by Washington Sea Grant reduced bycatch of endangered short-tailed albatrosses by nearly 100 percent, preventing the closure of a fishery worth $300 million annually. Connecticut Sea Grant training programs have led to the reopening of 1,219 acres of shellfish grounds.

Louisiana Sea Grant

↑ Louisiana Sea Grant's Lucina Lampila, an associate professor with Louisiana State University shows how experts sniff fresh seafood for signs of oil contamination. The Gulf Sea Grant programs have conducted seafood safety sensory trainings and offered workshops on safe handling procedures for processors in several states.

← Oyster shells are recycled to restore reefs in North Carolina as part of a federal stimulus project in April 2010. North Carolina Sea Grant will work with the N.C. Coastal Federation to evaluate the economic benefits of the restored oyster reefs.

A number of Sea Grant programs are working on both wild fish restoration and aquaculture development. In South Carolina, field trials performed by the S.C. Sea Grant Consortium and its partners have determined that stocking red drum in estuaries contributes significantly to restoring the state's most popular coastal recreational fish population. In Florida, Sea Grant research and outreach are enhancing the production and profitability of the Florida hard clam industry, which produces more than 500 jobs, $1.3 million in business taxes and $25 million in income annually. Wisconsin Sea Grant research has opened the door to commercial yellow perch aquaculture, leading one private company benefiting from the research and technical assistance to invest $50 million in the industry with plans to expand within the next five years to employ 100 people and harvest 8.5 million pounds annually, at a value of more than $1 billion.

In addition to its efforts to enhance the supply of U. S. seafood, Sea Grant provides training activities that prevent seafood-related illnesses, thereby saving consumers millions of dollars. Sea Grant extension professionals across the country have been core partners in the National Seafood Hazard Analysis and Critical Control Point (HACCP) Alliance. This intergovernmental partnership with industry and academia has provided seafood safety training to about 90 percent of all nationally-based seafood processing firms and more than 26,000 people since 2001. The U.S. Department of Health and Human Services estimates that the HACCP program has prevented between 20,000 and 60,000 seafood-related illnesses a year, translating into savings of about $155 million annually. The U.S. Department of Agriculture awarded the Seafood HACCP Alliance its "Group Award for Excellence." New York Sea Grant has taken a lead role nationally in providing on-line training in HACCP. Appendix 3 provides a link to additional impacts.

IN 2009, 160 COASTAL COMMUNITIES ADOPTED OR IMPLEMENTED HAZARD RESILIENCY PRACTICES TO PREPARE FOR AND RESPOND TO OR MINIMIZE COASTAL HAZARDOUS EVENTS AS A RESULT OF SEA GRANT ACTIVITIES.

Madeline Gotkowitz, University of Wisconsin-Extension

HAZARD RESILIENCE IN COASTAL COMMUNITIES

NATIONAL GOALS →

- **Widespread understanding of the risks of living, working and doing business along the coasts**
- **Community capacity to prepare for and respond to hazardous events**
- **Effective response to coastal disasters**

Sea level rise, the increased number and intensity of coastal storms, the ongoing threat of oil spills and other natural and human hazards are putting more people and property at risk along the nation's coasts, with major implications for human safety and the economic and environmental health of coastal areas. Sea Grant is using its established presence in coastal communities to help local citizens, decision-makers and industries plan for hazardous events and optimize the ability of their communities to respond and rebuild.

North Carolina Sea Grant helped lead a two-year review of the state's ocean policies, which resulted in numerous recommendations, including the creation of a coastal vulnerability index. Texas Sea Grant's policy guidance on creating a resilient coast is contributing to planning for "smart growth" along the Gulf coast, as is the Louisiana Sea Grant Legal Program's guidebook on coastal hazard mitigation. Hawaii, Alaska and Oregon Sea Grant have research and education programs underway to prepare their states and communities for anticipated tsunamis.

A central focus of Sea Grant's work in building hazard resilience in coastal communities involves helping communities prepare for and respond to the impacts of climate change. Connecticut Sea Grant, Mississippi-Alabama Sea Grant and many other state programs are working with local communities to develop climate change management strategies as part of local planning processes.

In response to the new national emphasis on climate change, Sea Grant has allocated $6 million to climate change initiatives that provide $1.5 million for community preparedness activities; $2.9 million for local and regional climate change mitigation and adaptation research; $200,000 in regional climate engagement grants to strengthen partnerships between Sea Grant and NOAA regional teams; and $500,000 for small business alternative and renewable energy projects. The Sea Grant Association is maintaining an up-to-date summary of Sea Grant climate change work in regions around the country entitled: *Sea Grant's Role in Understanding and Preparing for Climate Change along America's Coast.* Appendix 3 provides a link to additional impacts.

Delaware Sea Grant

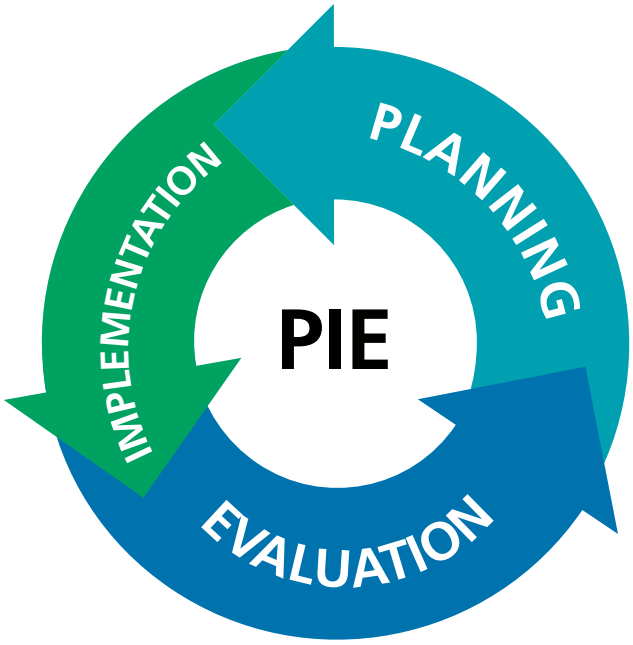
↑ Broadkill Beach, Delaware. Coastal communities are increasingly vulnerable to shoreline erosion and hazardous events brought on by climate-related and land-use changes. Sea Grant's work with NOAA's National Weather Service and the National Ocean Service, regional ocean observation systems, and other partners to make hazard-related data and data-derived products available during crisis events.

← Communities need information and tools to help assess the risks they face and to identify options to minimize those risks. Sea Grant works with partners to develop risk assessment tools, economic and environmental impact models, and other mechanisms to help families, businesses and communities understand their risks and take them into account in making decisions.

Sea Grant's new Planning, Implementation and Evaluation System enables programs to report national successes. In 2009, for instance, **31,817 acres** of degraded ecosystems were restored across the nation as a result of Sea Grant activities.

A new Planning, Implementation and Evaluation System

The adoption of the national strategic plan and the four national priority areas is just one part of Sea Grant's new Planning, Implementation and Evaluation system (PIE), developed in response to the NRC recommendations regarding Sea Grant's evaluation processes. PIE is fully outlined in: *An Enhanced and Integrated Strategic Planning and Program Assessment Strategy for the National Sea Grant College Program*. The system includes development of a national strategic plan every four years, adoption of individual state plans aligned with the national plan, and a peer-review evaluation process at the end of the four-year process to assess the success of state programs in meeting goals and objectives.



Ohio Sea Grant

Ohio Sea Grant Director, Jeffrey M. Reutter presents to a site review team (SRT). Once every four years, a SRT visits each Sea Grant Program. The SRT reviews and discusses broad issues related to: 1) Program Management and Organization; 2) Stakeholder Engagement; and, 3) Collaborative Network/NOAA Activities.

During 2009, all state Sea Grant plans went through a rigorous review process by a sub-committee of the Sea Grant Advisory Board and the National Sea Grant Office to be sure they were aligned with the national strategic plan and that state efforts will continue to advance national priorities. As part of the new evaluation and accountability process, Sea Grant is also developing and implementing a National Information Management System (NIMS) that will provide a uniform, centralized reporting process to track Sea Grant performance over the four-year planning period.

Sea Grant's new PIE system aligns the resources of the entire Sea Grant network to address national priorities and presents a way for Sea Grant and outside evaluators to measure the program's success in achieving stated objectives. At the same time, the process respects the federal/university partnership structure of Sea Grant. It allows individual Sea Grant programs the flexibility needed to develop state plans that pursue national goals and objectives in ways that also address urgent state and local concerns.

Ongoing commitment to regional leadership

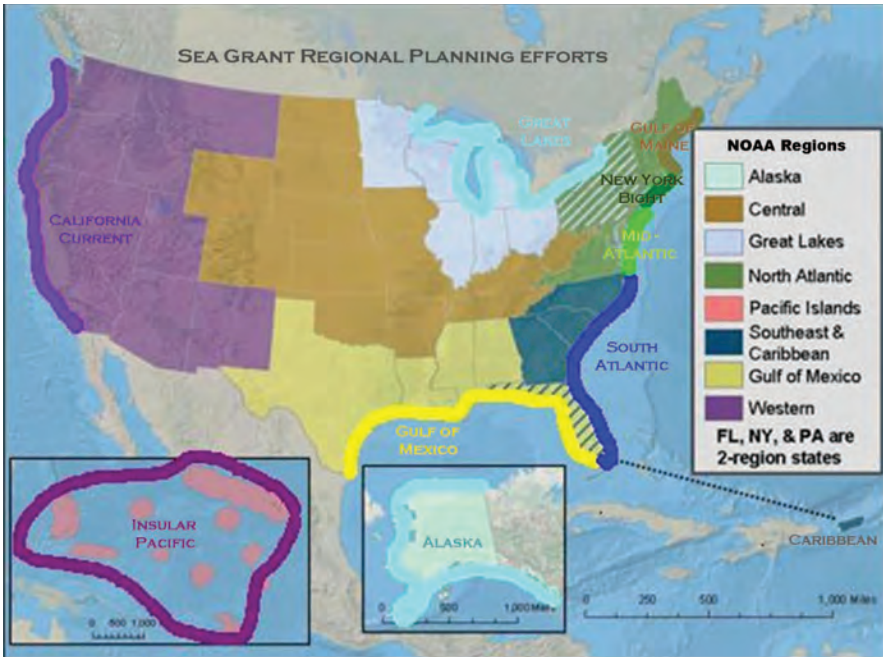
Part of Sea Grant's focus on national priorities is its ongoing leadership role in regional approaches to planning and problem solving. In recent years, coastal scientists and resource managers have realized that many of the critical issues facing the coastal zone such as fisheries management, nutrient enrichment and invasive species cannot be addressed solely at the local or state levels or through a single national approach. This has led NOAA and others to emphasize that these issues require regional approaches that encompass ecosystems, watersheds and coastal socio-economic factors. Sea Grant has been a leader in bringing stakeholders, managers and scientists together to address regional issues. State Sea Grant staff members typically work collaboratively beyond state boundaries in support of regional and national goals.

In 2006, in response to recommendations by the U.S. Commission on Ocean Policy and the Pew Oceans Commission, a competitive National Sea Grant Strategic Initiative was developed. The initiative supported the creation of regional science priority plans to highlight the science gaps considered most critical to the successful implementation of regional ecosystem-based approaches to coastal marine spatial planning and management. These plans, created by regional Sea Grant teams in partnership with other NOAA coastal programs, EPA, U.S. Fish and Wildlife and numerous other public and private stakeholders at the regional, state and local levels, have provided a framework for science and policy initiatives on the West Coast, in the Gulf of Mexico, in the Gulf of Maine and in NOAA regions throughout the United States.

Sea Grant regional planning efforts have been integrated with NOAA regional teams as well as several regional governor's associations such as

Texas Sea Grant

Fisher Patrick Riley discusses fuel savings and additional savings associated with the switch to new shrimp fishery gear and netting developed by Texas Sea Grant and partners. His fleet is seeing between 25 and 28 percent fuel savings.



The map shows NOAA regions along with highlights denoting Sea Grant regions.

"Sea Grant continues to be a catalyst for answering practical research questions in a rigorous way, providing us with a platform for co-management of Maine's fisheries."

Robin Alden, Penobscot East Resource Center

the Northeast Regional Ocean Council organized by northeast governors from New York to Maine. The Western Governors Association for the states of California, Oregon and Washington has asked Sea Grant to serve as the lead coordinating body for regional coastal science priorities. Rhode Island Sea Grant has been the leader in the development of the Rhode Island special area management plan, one of the leading efforts for state-based, and now regionally-focused, coastal marine spatial planning efforts.

A key player in developing regional approaches to climate adaptation and mitigation, Sea Grant is representing NOAA in a partnership with the state Land Grant institutions and other federal agencies to develop and implement strategies designed to minimize the economic and environmental impacts associated with changing climate in the coastal zone.

New roles for the National Sea Grant Advisory Board

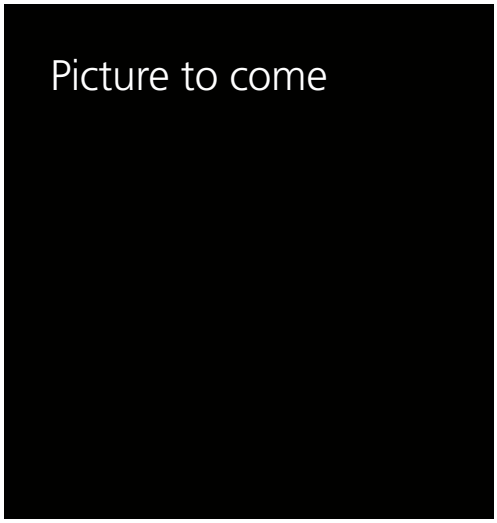
The 2008 Sea Grant reauthorization called for the National Sea Grant Advisory Board to provide strategic advice and direction to Sea Grant. The Advisory Board has responded in a number of ways.

The Advisory Board appointed a committee to revisit Sea Grant funding allocation policies and is continuing a long-standing tradition of conducting in-depth reviews of the Program. In 2009, the Advisory Board issued three reports on topics it deemed important to the future of Sea Grant:

- *Sea Grant Research: A Report of the National Sea Grant Advisory Board*
- *Communications/Engagement: A Report from NOAA's National Sea Grant Advisory Board*
- *National Sea Grant Advisory Board Futures Committee Report*

Sea Grant Research: A Report of the National Sea Grant Advisory Board resulted from a year-long examination of Sea Grant's operation and funding, as well as a review of the status of Sea Grant research. As part of this effort, extensive interviews were conducted within and outside of NOAA to measure how Sea Grant is perceived. The information gathered by the research report committee was used to develop a range of options for Sea Grant to consider with regard to future organization, operation, research and collaboration. *Communications/Engagement: A Report from NOAA's National Sea Grant Advisory Board* identified actions needed to allow Sea Grant to build on its leadership role in engaging stakeholders in coastal communities. The *National Sea Grant Advisory Board Futures Committee Report* recommended some near-term strategic directions for the program.

These reports have informed the Advisory Board's assessment of the current state of Sea Grant and the recommendations in this report. Links to the full reports may be found in Appendix 2. This process of self-examination will continue. A Futures II committee has been established and charged with assessing the role and capacity of Sea Grant to address such emerging issues as climate change, green energy sources and economic stress in coastal regions, as well as the implications of changes taking place within NOAA.



The National Sea Grant Advisory Board, 2010.

CONSTRAINTS ON REALIZING SEA GRANT'S POTENTIAL

SEA GRANT KNAUSS FELLOWSHIP:
BUILDING A POWERFUL WORKFORCE

Sea Grant fellow, Long Zhou (Rhode Island Sea Grant) meets Dr. Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator.

The National Sea Grant College Program supports the Dean John A. Knauss Marine Policy Fellowship. The fellowship brings to Washington highly qualified graduate students with an interest in national policy decisions affecting natural resources. This prestigious program places 40-48 highly qualified Master and Ph.D.-level students within the Executive and Legislative branches of government for a one year fellowship in marine policy. This program has over 800 alumni who currently hold positions within the federal and state government, as well at universities, non-governmental organizations and private businesses. During 2007-2010, the National Sea Grant Program trained 184 new Sea Grant Knauss fellows who have joined an extensive fellowship alumni network.

While Sea Grant has many accomplishments to be proud of and a demonstrated ability to respond to emerging needs and demands, a number of factors are limiting full utilization of Sea Grant capabilities.

The health and productivity of America's oceans, coasts and Great Lakes are central to the health and vitality of the nation. NOAA's mission, *"To understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs,"* is more vital than ever. Sea Grant, with its integrated research, outreach and education capabilities and its on-the-ground presence in coastal communities, is positioned to play a major role in fulfilling NOAA's mission, but a number of factors have inhibited the program from realizing its potential.

Unrealized opportunities in the Sea Grant-NOAA relationship

The 2008 Congressional declaration of policy regarding Sea Grant states:

> *" The vitality of the Nation and the quality of life of its citizens depend increasingly on the understanding, assessment, development, management, utilization, and conservation of ocean, coastal, and Great Lakes resources . . . (which) requires a broad commitment and intense involvement on the part of the Federal Government in continuing partnership with State and local governments, private industry, universities, organizations and individuals concerned with or affected by ocean, coastal, and Great Lakes resources. The National Oceanic and Atmospheric Administration, through the National Sea Grant College Program, offers the most suitable locus and means for such commitment and engagement." (PL 110-394, Congressional declaration of policy)*

Sea Grant is a federal-state-university partnership, built from a bottom-up relationship between state and local capacity and national leadership. This is an excellent way to address the nation's complex array of ocean and coastal resource management and protection challenges, which are at varying times international, national, regional and local in nature. During its earliest years, NOAA was regarded as a science agency. Local capacity and service to the public were not highlighted. This left Sea Grant's outreach and education functions somewhat disconnected from NOAA's central focus and resulted in Sea Grant not being fully embraced by NOAA leadership.

Conditions today are different, not only opening doors to new possibilities, but calling strongly for a direct connection between federal agencies and the people those agencies serve, something Sea Grant's extensive experience with stakeholder engagement can provide. Sea

Grant's emphasis on national priorities, directly linked to NOAA's goals, and its extension agents located in all coastal states, help to strengthen the connection between the federal agency and local users of the Agency's services. As the outreach/engagement functions of NOAA increase, as articulated in *Engaging NOAA's Constituents: A Report from the NOAA Science Advisory Board* (2008), the Sea Grant Program can play a significant role in carrying out these functions. Realizing Sea Grant's potential will require NOAA leadership at all levels to fully embrace the importance of engaging the public in carrying out its mission and to use existing capacity in Sea Grant to provide these critical stakeholder connections.

> "As the outreach/engagement functions of NOAA increase, the Sea Grant Program can play a significant role in carrying out these functions."

Ability to demonstrate national impact

Historically, some national leaders and decision-makers have viewed Sea Grant more as a collection of independent state programs than as a national program with state-local presence. Before its recent adoption of integrated strategic planning and program assessment, it was difficult for Sea Grant to demonstrate cumulative national benefits from the work of individual Sea Grant programs around the country. Planning was carried out at the state level and, while there were substantial accomplishments, there was a limited amount of data available on cumulative investments and impacts at the national level.

The adoption of national priorities for the entire Sea Grant program, the alignment of state plans with the national plan, and the incorporation of performance measures in both state and national plans are important steps forward in demonstrating national impact. However, the ability to measure cumulative national impacts with regard to performance measures remains a work in progress. Progress in developing the National Information Management System (NIMS) has been slowed by a lack of resources available to support this necessary initiative at both the national and state levels and by the challenges of integrating information from 32 different programs into a single national system. Having a fully operational NIMS in place is critical to being able to measure Sea Grant's success in making meaningful contributions to national goals.

Coastal program integration challenge

In the years since NOAA was created, its coastal programs have continued to evolve. In some instances, in order to meet particular needs, new programs were developed rather than assigning these tasks to existing programs. The result of these changes over time is that some of the distinctions between and relationships among programs have been blurred, leading to a greater likelihood of overlap in mission and perceived duplication of effort.

There is a strong mandate from the administration to integrate the nation's coastal programs. NOAA has embraced this goal and established working groups to identify ways to achieve greater integration among its coastal programs and with coastal programs of other agencies. NOAA's Coastal Services Center, the Office of Ocean and Coastal Resource Management, the National Centers for Coastal Ocean Science, the National Marine Fisheries Office of Habitat Protection and Sea Grant are working to integrate their efforts more effectively. The purpose of this collaborative planning

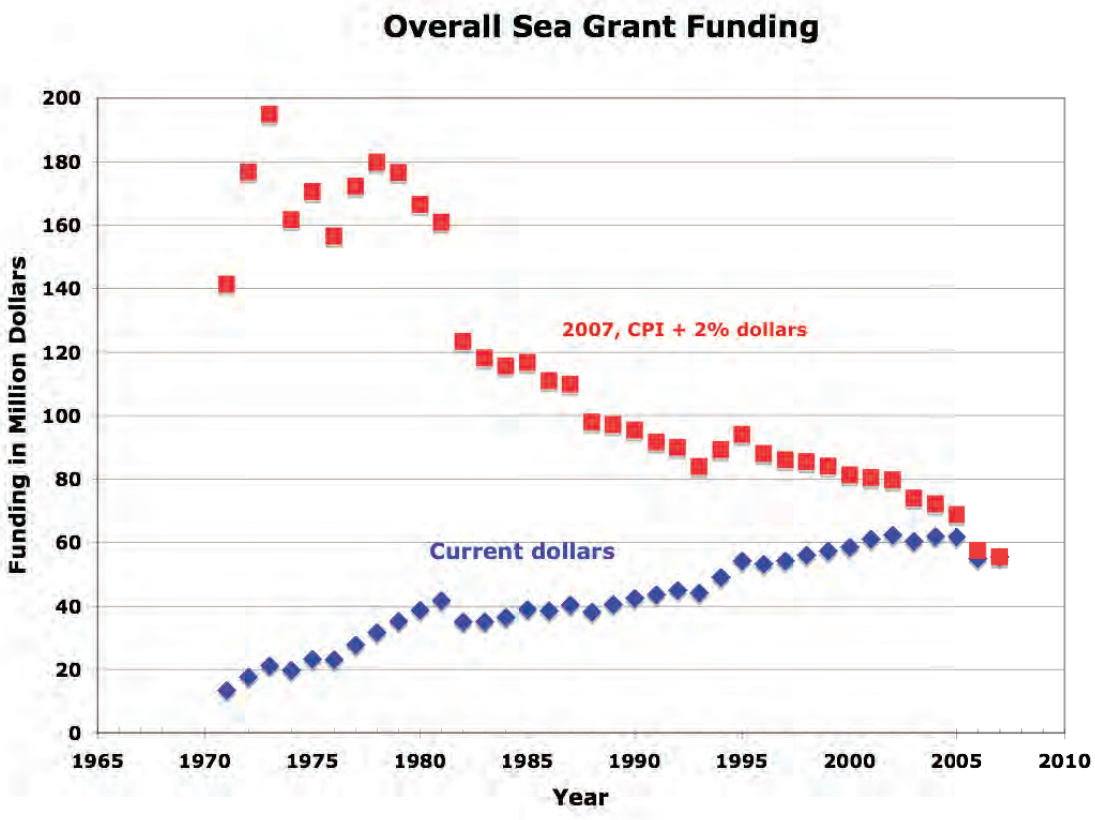
is to ensure that the individual NOAA coastal programs are focused on national priorities and that their work is synergistic, outcome-oriented and built around each program's strengths in ways that avoid duplication. The short-term goal is to collaborate on strategic planning, budgeting and implementation. The long-range goal is to develop a joint coastal strategic plan that articulates agreed-upon priorities, functional responsibilities, outcomes and metrics.

> "Most state Sea Grant programs are currently struggling to maintain the staff necessary to respond effectively to new national, regional and local priorities and requests."

While Sea Grant and its partners have been working diligently on coordination and integration efforts, significant progress has yet to be achieved. Sea Grant and all of NOAA's coastal programs would benefit from clear guidance on how the Agency wants to move forward with more effective coastal program integration.

Decline in Sea Grant buying power and loss of national capacity

The buying power of federal Sea Grant funding has decreased dramatically over the last two decades, leaving state Sea Grant programs with only about one-third the buying power they had in the early 1980s. While a review of annual appropriations over time shows a modest rise in federal allocations for Sea Grant, those same dollars, when adjusted for inflation, show a significant decline in federal support and buying power. This loss of buying power, described in greater detail in *Sea Grant Research: A Report of the Sea Grant Advisory Board*, 2009, is illustrated in the chart below.



This decline places significant constraints on Sea Grant's ability to respond with sound science and on-the-ground presence to growing coastal challenges. The decline has continued during a period when Sea Grant has been working to strengthen its national focus, dedicating significant energy at both the national and state levels to accomplish this. Loss of federal funding on an inflation-adjusted basis has significantly decreased the ability of state programs to work with stakeholders to address the nation's coastal, ocean and Great Lakes priorities through their research, extension and education programs. Most state Sea Grant programs are currently struggling to maintain the staff necessary to respond effectively to new national, regional and local priorities and requests.

> "At the current level of staffing, the National Sea Grant Office lacks the capacity to carry out all of its leadership functions for the Sea Grant network."

According to the NSGAB's *Communications/ Engagement* report of 2009, this decline in Sea Grant buying power has had major effects on the capacity of the National Office as well. With a cap of 5% on what may be spent on administrative costs at the national level, the National Office has seen its staffing decline significantly over time. Presently, the National Office has roughly half the staff it had in 1991: 29 full-time equivalent staff positions in 1991 versus 16 today. There has been a 36% loss in capacity just since 2005.

National Sea Grant Office Workforce

Year	Full Time Staff (FTEs)
1991	29
2005	22
2010	16

The Sea Grant Advisory Board reviewed the role of the National Sea Grant Office in 2002 in *Building Sea Grant: The Role of the National Sea Grant Office* and concluded that staff erosion in the National Office had seriously diminished the ability of the National Office to provide the leadership necessary to support the Sea Grant network and respond to increasing demands at the federal level. This was revisited by the Administrative Review Committee of the then Sea Grant Review Panel in 2008 in a report entitled *Staffing the National Sea Grant Office*. That report recommended an increase of staffing to 29.5 FTEs to allow the NSGO to fulfill its core responsibilities. The erosion of national capacity discussed in these reports has continued, as demonstrated below. The new planning, implementation and evaluation process, designed to emphasize national priorities, has created significant new demands on the National Office and state program staffs. The design and implementation of network-wide planning efforts, liaison work, site visits to state programs, and the collection and management of network-wide performance data have all added to the work loads of already burdened staff.

At the current level of staffing, the National Sea Grant Office lacks the capacity to carry out all of its leadership functions for the Sea Grant network. It is becoming increasingly difficult for the National Office to employ the number and kinds of personnel needed to participate effectively at the federal level and to respond to a growing number of information requests and calls for assistance. The National Office is working actively with NOAA on its new climate initiatives and coastal program integration efforts, but they are participating in these and other high-level NOAA activities with about one-quarter the number of FTEs per dollar of grants managed as other similar NOAA programs.

OUTLOOK AND RECOMMENDATIONS

Sea Grant is in a strong position to harness its full range of resources to advance national priorities and respond to national crises while continuing to be responsive to state and local needs, ***if NOAA and Congress choose to capture this opportunity****.*

There is reason for optimism about the role Sea Grant can play helping NOAA carry out its mission in the decade ahead, tempered by a realistic outlook on the external and internal factors that will affect this. The recommendations in this report suggest what must be done to ensure that Sea Grant will fulfill the promise it carried when it was established: to help the country respond in an integrated way with the sound science and collaborative decision-making processes needed to protect and use the nation's ocean, coastal and Great Lakes resources for the benefit of present and future generations.

Outlook

In 2000, the Sea Grant Review Panel (now the Advisory Board) issued a report entitled *A Mandate to Engage Coastal Users*. It opened with the following prospect for what the nation would face in the coming years:

> *"In 1999, world population reached 6 billion people. It has doubled in less than 40 years, is continuing to increase rapidly, and is projected to reach 8 to 10 billion people in the next 50 years. The accompanying pressure on world resources will be extreme, but none more so than on coastal resources. Today, over half the population of the United States lives in coastal counties; it is estimated that by 2025 roughly three-fourths of all Americans will live in coastal areas. As the demand for seafood increases, fisheries are being depleted or eliminated. When world production of oil peaks in the first decade of the 21st century, there will be increased pressure to drill in offshore and coastal areas. The conflict in use of the coastal areas between recreational and industrial users can only increase. The world economy is expanding, and by 2020 goods traded worldwide are expected to triple. With the U.S. as a major consumer of goods, the pressure on American ports will be immense. And then there are the threats from coastal hazards, the rise in sea level associated with global climate change, inadequate water supplies and water treatment—the list goes on. The economic, environmental, and social demands on our coastal oceans and shorelines will be unparalleled in human history, and these demands will be similar throughout the world. The need for solutions to coastal problems, resolution of conflicts and help in general will continue to grow as the threats to coastal areas increase. It will be imperative that all governments—local, state, and federal—engage their citizens and attend to their needs."*

While some of the specific numbers would change, this assessment of the situation we face holds as true today as when this was written ten years ago. The outlook for Sea Grant and other NOAA ocean and coastal agencies is one of increased complexity and pressure. Population

" Just the other day I had an email from a company in Germany that wants to import our whitefish. This is a 19th century industry that is now competing in the 21st century. That never would have happened before this initiative was launched by Michigan Sea Grant."

Jill Bentgen,
Founder of Mackinac Straits Fish Company

growth and the demands this is placing on the coastal zone, climate change impacts, increased demands and conflicts related to the use of limited natural resources, over-use of ocean fisheries, and pollution of the environment all point to unprecedented challenges for Sea Grant in the years ahead.

The nation, NOAA and Sea Grant must respond to this increasingly complex array of coastal issues during a period of major resource constraints. The current administration has indicated that it will ask for a reduction of 5% in many agency budgets. State and higher education budgets are stretched tighter than they have been in decades. It is essential for Sea Grant to concentrate its energies in areas of highest priority where opportunities for meaningful impacts are greatest. Plans must be generated on the assumption that resources will not increase significantly. At the same time, Sea Grant must make it clear that continued loss of buying power and the administrative cap of 5% will diminish Sea Grant's ability to serve NOAA and respond to the nation's needs.

A way forward for Sea Grant

In moving forward, it is important to have a vision for what the National Sea Grant College Program can become. While it may not be possible to realize this vision in the near-term, it can inspire and guide actions of the program today and serve as a beacon for Sea Grant as the program continues to evolve.

Looking to the future, Sea Grant will be an integral component of NOAA, contributing significantly to fulfilling NOAA's mission. Sea Grant will do this not by making radical changes in what it does and how it does it, but by building on its strengths and recent commitment to a stronger national focus.

Sea Grant will be a strong, well-integrated national program. It will draw its expertise from its university bases throughout the United States and from NOAA, its federal parent agency. It will have a strong National Office that provides direct contact with other elements of NOAA, with other federal agencies, and with the Congress of the United States, linking them to a robust Sea Grant network at the state level.

Sea Grant will concentrate its energies where it has the most to offer to advance national priorities. It will use its model of integrating research, outreach and education to translate sound scientific information into tools, products and services that benefit the country and its coastal communities. It will concentrate these efforts on identified national priorities such as climate adaptation and community coastal development and response to coastal hazards, where its ability to facilitate honest exchange of information, informed decision-making and rapid response are most valuable. It will continue to educate the next generation of informed citizens, environmental professionals and the ocean-coastal-Great Lakes related workforce.

Sea Grant will lead engagement with coastal stakeholders, including fishermen, coastal industries, local governments and citizens. As a main program in NOAA dedicated to transferring ocean and coastal knowledge to users, Sea Grant Extension will become a central part of NOAA's day-to-day work. Extension work will expand and its benefits will more closely mirror those envisioned in the founding legislation.

Sea Grant will respond immediately to problems and crises with broad-based expertise. Experts from the entire Sea Grant network will be mobilized to respond to needs wherever they occur. Sea Grant will be one all-encompassing program, addressing national needs without sacrificing state program responsiveness.

Sea Grant will grow in size and capacity to help address the increasing array of coastal, ocean and Great Lakes challenges facing the nation. Sea Grant will grow selectively, by building capacity in areas such as applied research, technology transfer, and stakeholder engagement where it already has a strategic advantage. Sea Grant will continue to build the specific expertise and array of skills needed to address emerging coastal issues to be of maximum benefit to the nation as a science-based first responder.

THE NATIONAL SEA GRANT ADVISORY BOARD RECOMMENDATIONS

The National Sea Grant Advisory Board believes that realizing this vision and positioning Sea Grant to respond to the nation's coastal challenges and possibilities will require clear demonstration of Sea Grant's contributions to achieving national goals, a more effective integration and coordination of the nation's coastal agencies and programs, achieving maximum benefit from existing Sea Grant resources and the addition of strategically-directed new resources for Sea Grant.

1. The entire Sea Grant network must focus its efforts on advancing national priorities, while remaining sensitive to local needs.

Sea Grant is a national program built on a foundation of strong federal-state-university partnerships. Partnerships remain strong when the needs of all parties continue to be met. The new Planning, Implementation and Evaluation system adopted in 2009 represents a conscious commitment on the part of the Sea Grant National Office and its state/university partners to undertake the significant coordination and accountability activities required to ensure that the program maintains a strong focus on national priorities, while also responding to the most urgent priorities found at the regional, state and local levels.

2. The ability to track and report the cumulative measurable impacts of Sea Grant activities on achieving national goals should be a high priority for Sea Grant.

The Sea Grant network needs to work together to make the National Information Management System (NIMS) fully functional as quickly as possible. It is fundamental to the new planning and accountability process and to being able to communicate the national benefits of Sea Grant activities and programs in measurable ways.

3. NOAA coastal programs, including Sea Grant, should be more fully integrated in order to maximize NOAA's contributions to national goals.

It is essential in this era of limited resources that NOAA build on the specific strengths of existing coastal programs, use them to meet emerging needs and provide clear direction on future roles and responsibilities. Sea Grant should continue joint planning with other coastal programs and communicate more effectively within NOAA and beyond about what it has to offer with regard to research, outreach and education to advance the over-all NOAA coastal, ocean and Great Lakes agenda.

4. Sea Grant should capitalize on its nationally recognized leadership in stakeholder engagement within coastal and Great Lakes communities as federal-state-local communication and collaboration become more critical to addressing needs and responding to crises.

With its presence in all coastal counties and its strong outreach, education and communication staff, Sea Grant can play a significant role for NOAA as demand for these services increases. Sea Grant's ability to provide rapid response in recent crises such as Hurricane Katrina and the Deepwater Horizon oil spill demonstrate the value of its national network and local presence in engaging with stakeholders to respond to crises and pursue other shared goals.

5. Sea Grant should continue to re-examine its priorities and methods of operation in order to respond to the nation's most urgent needs.

The National Sea Grant Office, state Sea Grant programs and the National Sea Grant Advisory Board should review the full range of Sea Grant activities and determine which could be reduced, redirected, expanded or terminated so new opportunities can receive investments. Sea Grant research programs should be targeted to address Sea Grant and national strategic priorities such as climate-related research, coastal and offshore energy development, sustainable fishing technologies and socio-economic issues related to sustainable growth in coastal environments.

6. Significant additional resources should be provided to the National Sea Grant College Program in order to reverse the erosion of buying power and maintain a dynamic program with rapid response capability.

The 21st century has brought unparalleled challenges to coastal America. Twice in recent years, the nation has faced dramatic human and natural resource crises in the Gulf of Mexico. Both times, Sea Grant, with staff already in these coastal communities, was among the first to respond by communicating with and bringing together affected constituents. Sea Grant participated in or led scientific and technical reviews of the extent of damages and efforts to design effective responses to repair damaged communities, natural resources and economies. Even in a time of serious budget constraints, consideration should be given to providing Sea Grant with additional resources. Twenty years of level funding combined with significant inflation over that same time period have left state Sea Grant programs and the National Sea Grant Office with substantial reductions in buying power. This has had pronounced effects on the National Office's ability to provide leadership and coordination and the ability of state programs to leverage additional funds and carry out their responsibilities. Sea Grant urgently needs additional funding to continue its critical 21st century involvement in coastal crisis response and management and its leadership role in meeting the nation's growing coastal, ocean and Great Lakes challenges.

The National Sea Grant Advisory Board welcomes this opportunity to provide Congress with a report on the State of Sea Grant and looks forward to working with Congress, NOAA and the entire Sea Grant team to maximize the benefits this program can provide to this nation and its coastal communities.

APPENDIX 1

Sea Grant Programs

GREAT LAKES REGION

Illinois-Indiana Sea Grant College Program

Lake Champlain Sea Grant Project

Michigan Sea Grant College Program

Minnesota Sea Grant College Program

New York Sea Grant Institute

Ohio Sea Grant College Program

Pennsylvania Sea Grant Institutional Program

Wisconsin Sea Grant Institute

NORTHEAST REGION

Connecticut Sea Grant College Program

Lake Champlain Sea Grant Project

Maine Sea Grant College Program

Massachusetts Programs:

Massachusetts Institute of Technology Sea Grant College Program

Woods Hole Oceanographic Institution Sea Grant Institutional Program

New Hampshire Sea Grant College Program

New York Sea Grant Institute

Rhode Island Sea Grant College Program

MID-ATLANTIC REGION

Delaware Sea Grant College Program

Maryland Sea Grant College Program

New Jersey Sea Grant Consortium

Virginia Sea Grant Institutional Program

SOUTHEAST, GULF OF MEXICO AND CARIBBEAN REGIONS

Southeast

Florida Sea Grant College Program

Georgia Sea Grant College Program

North Carolina Sea Grant College Program

Puerto Rico Sea Grant College Program

South Carolina Sea Grant Consortium

Gulf of Mexico

Louisiana Sea Grant College Program

Mississippi-Alabama Sea Grant Consortium

Texas Sea Grant College Program

PACIFIC REGION

Alaska Sea Grant College Program

California Programs:

California Sea Grant College Program

Southern California Sea Grant Institutional Program

Hawaii Sea Grant College Program

Oregon Sea Grant College Program

Washington Sea Grant College Program

Guam Sea Grant Project

APPENDIX 2

The following reports are referenced in this document.

A Mandate to Engage Coastal Users, Sea Grant Review Panel, 2000
http://www.seagrant.noaa.gov/GreenBook/gb_documents/pdf_otherfiles/byrne_report.pdf

America's Living Oceans, Charting a Course for Sea Change, Pew Oceans Commission, 2003
http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Protecting_ocean_life/env_pew_oceans_final_report.pdf

An Enhanced and Integrated Strategic Planning and Program Assessment Strategy for the National Sea Grant College Program, Sea Grant Response Integration Team, 2007
http://www.seagrant.noaa.gov/other/admininfo/documents/ppe/sea%20grant%20planning,%20implementation,%20and%20evaluation%20system%20-%20final.pdf

Building Sea Grant: The Role of the National Sea Grant Office, Sea Grant Review Panel, 2002
http://www.seagrant.noaa.gov/GreenBook/gb_documents/pdf_otherfiles/ducereport.pdf

Communications/Engagement: A Report from NOAA's National Sea Grant Advisory Board, Sea Grant Advisory Board, 2009
http://www.seagrant.noaa.gov/leadership/advisoryboard/Reports/Communications%20Final%20Report_2009.pdf

Engaging NOAA's Constituents: A Report from the NOAA Science Advisory Board, 2008
http://www.sab.noaa.gov/Reports/EOEWG/EOEWG_Final_Report_03_20_08.pdf

Evaluation of the Sea Grant Review Process, National Research Council,
National Academy of Sciences, 2006
http://www.seagrant.noaa.gov/other/rit/NRC_evaluation.pdf

National Sea Grant Advisory Board Futures Report, Sea Grant Advisory Board, 2009
http://www.seagrant.noaa.gov/leadership/advisoryboard/Reports/Final%20Report%20Futures%20Committee_2009.pdf

NOAA FY 2011 Budget Summary,
http://www.corporateservices.noaa.gov/~nbo/11bluebook_highlights.html

NOAA FY 2010 Budget Summary,
http://www.corporateservices.noaa.gov/~nbo/10bluebook_highlights.html

APPENDIX 2

NOAA Sea Grant Strategic Plan 2009-2013: Meeting the Challenge, National Sea Grant College Program, 2009
http://www.seagrant.noaa.gov/other/admininfo/documents/0209_stratplan.pdf

Ocean Blueprint for the 21st Century, U.S. Commission on Ocean Policy, 2004
http://oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf

Population Trends along the Coastal U. S. 1980-2008, National Ocean Service, 2008
http://oceanservice.noaa.gov/programs/mb/pdfs/coastal_pop_trends_complete.pdf

Sea Grant Implementation Plan 2009-2013, 2009, National Sea Grant Office
http://www.seagrant.noaa.gov/other/admininfo/documents/09_13_implementationplan.pdf

Sea Grant Research: A Report of the National Sea Grant Advisory Board, Sea Grant Advisory Board, 2009
http://www.seagrant.noaa.gov/leadership/advisoryboard/Reports/Research%20Final%20Report_2009.pdf

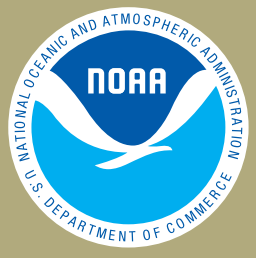
Sea Grant's Role in Understanding and Preparing for Climate Change Along America's Coast, Sea Grant Association, 2009, updated 2010
http://www.seagrant.noaa.gov/whatwedo/climate/noaa_sea_grant_and_climate_change.pdf

Staffing the National Sea Grant Office, Sea Grant Review Panel Administrative Committee, 2008
http://www.seagrant.noaa.gov/leadership/advisoryboard/ARC_Report_50208.pdf

APPENDIX 3

Sea Grant Program Impacts

http://www.seagrant.noaa.gov/newsevents/impacts2010.html



The State of Sea Grant 2010:
Impacts, Challenges and Opportunities

Biennial Report to Congress by the National Sea Grant Advisory Board, November 2010

Sea Grant
NOAA National Sea Grant College Program