BIENNIAL REPORT TO CONGRESS
on
Coastal Zone Management
2004 - 2005

Prepared by:
The National Oceanic and Atmospheric Administration
United States Department of Commerce

Message from the Director

2004-2005 Biennium Offers Challenges for Coastal Zone Management

This is, perhaps, the most important time for coastal management in our Nation. In the past two years we have witnessed coastal storms lash coastlines and devastate entire coastal communities. In the late summer and fall of 2005, Hurricanes Katrina, Rita, and Wilma pounded our Nation's Gulf Coast, producing a significant loss of property and life, and sparking national debate on the storm readiness of our coastal areas.

These headline-grabbing events bring the importance of proper management of our Nation's coastal zone under close scrutiny. The increased attention also, for the Office of Ocean and Coastal Resource Management (OCRM) and its partners, helps amplify much of the other, but less publicized, good work conducted along the Nation's 95,331 miles of coastline.

During the 2004-2005 biennium, I am proud to report some remarkable accomplishments that occurred as a result of the Coastal Zone Management Act. Nearly 35 years after the Act was signed into law, all but one coastal state, Illinois, is participating in the National Coastal Zone Management Program. The State of Illinois, working diligently with OCRM throughout the past two years, has made great strides in a lengthy approval process. When the Illinois' program is officially approved (expected in fiscal year 2007), it will become the 35th and final state working to implement the National Coastal Zone Management Program.

Our National Estuarine Research Reserve System is also growing. In May 2006, the 185,648-acre Mission-Aransas Reserve was dedicated in Texas, becoming the 27th reserve to join the system, and adding an important new bio-geographic sub region. Through hard work by OCRM, the University of Texas Marine Science Institute, and the State of Texas, the Reserve, which has been in the planning stages since 2002, finally became a reality. Congratulations to the State of Texas and the University of Texas on this fine accomplishment.

We continue to work with all coastal states, territories, and reserves on the implementation of our Coastal Zone Management Act Performance Measurement System. The System will help communicate the effectiveness of coastal and estuarine reserve programs authorized under the Coastal Zone Management Act. Several state and territory coastal management programs participated in a pilot phase of new coastal management performance measures throughout 2004. Today, all 34 state coastal management programs have begun a phased implementation of performance measures. This System will help us share our successes and progress achieved under the Coastal Zone Management Act.

The National Marine Protected Areas Center, which is part of OCRM, continues to make steady progress in the development of a comprehensive national system of marine protected areas. In 2005, a Federal Advisory Committee finalized the first set of recommendations on the establishment of the System. This effort required working closely with a wide variety of interests—from fishery management councils and tribes, to federal and state agencies—to lay the

groundwork for the future of our marine protected areas. This was a major step in the development of the National Marine Protected Area System.

Finally, OCRM continues to be actively engaged in recovery efforts in the Gulf Coast. We are working hand-in-hand with the Federal Emergency Management Agency, state and local governments, and state coastal management programs, applying our expertise toward ensuring improvements made along the coast are more disaster resilient. This mission will be at the forefront of state coastal management programs in the years ahead.

There is no doubt the implementation of the Coastal Zone Management Act has had a positive impact on our Nation's coastline. This biennium, however, was one of the most challenging since the inception of the program. The demands placed on our coasts through a rapid increasing coastal population and destruction from record coastal storms, coupled with a more challenging fiscal environment, have made the implementation of the Coastal Zone Management Act more difficult. Our job ahead is made much easier through the expertise and knowledge of a dedicated OCRM staff and strong state partners.

David M. Kennedy
Director, Office of Ocean and Coastal Resource Management
August, 2006

Table of Contents

Summary of Responses to
Requirements under the Coastal Zone Management Act, Section 316

The Coastal Zone Management Act was passed in 1972 and provides for management of the Nation's coastal resources, including the Great Lakes, and balances economic development with environmental conservation. Section 316 of the Act requires the Secretary of Commerce report to Congress on the administrative progress of the Act biennially. Below is a description of how National Oceanic and Atmospheric Administration (NOAA) has addressed these requirements, and/or where more information on the requirements can be found in this Report.

§ 1462. Coastal Zone Management Reports (Section 316)

(a) Biennial reports. The Secretary shall consult with the Congress on a regular basis concerning the administration of this title and shall prepare and submit to the President for transmittal to the Congress a report summarizing the administration of this title during each period of two consecutive fiscal years. Each report, which shall be transmitted to the Congress not later than April 1 of the year following the close of the biennial period to which it pertains, shall include, but not be restricted to (1) an identification of the state programs approved pursuant to this title during the preceding federal fiscal year and a description of those programs;

> *No new coastal management or estuarine reserve programs were approved during the 2004-2005 biennium. The State of Illinois, however, has made great progress towards the development of a coastal management program, which is expected to be approved in 2007 (See page 11). Likewise, the State of Connecticut's Coastal Nonpoint Pollution Control Program developed under Section 6217 was approved by both NOAA and the Environmental Protection Agency.*

(2) a listing of the states participating in the provisions of this title and a description of the status of each state's programs and its accomplishments during the preceding federal fiscal year;

> *A table of biennium 2004-2005 accomplishments for each of the participating states with Coastal Management Programs and National Estuarine Research Reserves can be found in Appendices B and C (See pages 58-59). Project highlights for efforts to address coastal habitats, hazards, water quality, public access, community development, and waterfront revitalization can be found in the chapter titled, "Progress in Addressing Major Goals of the Coastal Zone Management Act" (See pages 21-37).*

(3) an itemization of the allocation of funds to the various coastal states and a breakdown of the major projects and areas on which these funds were expended;

> *A table outlining fund allocations per state and breakdown across major programs can be found in the chapter titled, "Itemization of Allocation of Funds" (See Appendix A, page 57).*

(4) an identification of any state programs which have been reviewed and disapproved, and a statement of the reasons for such action;

No state programs were found non-adhering to program requirements during the biennium 2004-2005.

(5) a summary of evaluation findings prepared in accordance with subsection (a) of section 312 [16 USC § 1458(a)], and a description of any sanctions imposed under subsections (c) and (d) of section 312 [16 USC § 1458];

No sanctions were placed on states as a result of evaluations during the biennium. A complete list of Coastal Management and National Estuarine Research Reserve programs evaluated according to subsection 312 can be found in the chapter titled, "New Developments in 2004-2005" under subheading "Program Evaluations: The Coastal Zone Management and National Estuarine Research Reserve Programs" (See pages 14-17).

(6) a listing of all activities and projects which, pursuant to the provisions of subsection (c) or subsection (d) of section 307 [16 USC § 1456(c), (d)], are not consistent with an applicable approved state management program;

State coastal management programs review hundreds of activities per year for consistency with their approved state coastal management program. Of those, approximately 95 percent are certified as consistent. Of the remaining five percent, a certain number from non-federal applicants result in appeals to the Secretary of Commerce. During the 2004-2005 biennium, there were 14 appeals to the Secretary of Commerce. Of those appeals, one resulted in a decision by the Secretary which overrode the state's objection. Eight of the appeals were dismissed by the NOAA Administrator on procedural grounds; and five of the appeals were withdrawn by the appellant.

(7) a summary of the regulations issued by the Secretary or in effect during the preceding federal fiscal year;

No new regulations were issued by the Secretary during biennium 2004-2005.

(8) a summary of a coordinated national strategy and program for the Nation's coastal zone including identification and discussion of federal, regional, state, and local responsibilities and functions therein;

The National Coastal Zone Management Program is a federal-state partnered program. At the Federal level, OCRM has developed a national performance measurement system during the biennium for both state coastal management programs and research reserves and has begun phased implementation. In addition, a new Strategic Plan (2005-2010) was completed for the National Estuarine Research Reserve System. On the state level, coastal management programs completed assessments of their coastal resources and developed five-year strategies for addressing priority issues. Likewise, five state

estuarine research reserves developed revised management plans and received approval from OCRM.

(9) a summary of outstanding problems arising in the administration of this title in order of priority;

There were no major problems during the biennium.

(10) a description of the economic, environmental, and social consequences of energy activity affecting the coastal zone and an evaluation of the effectiveness of financial assistance under section 308 [16 USC § 1456a] in dealing with such consequences;

There was no funding available under section 308 during the biennium. A description of changes to federal consistency regulations in response to the Energy Policy Act are highlighted in the full Report (See pages 18-19).

(11) a description and evaluation of applicable interstate and regional planning and coordination mechanisms developed by the coastal states;

The five Gulf of Mexico state governors established the Gulf of Mexico Alliance in 2004 to develop regional priorities based on recommendations of the U.S. Commission on Ocean Policy. Federal and state officials, including OCRM and other NOAA staff, met twice in 2005 to develop a framework for a Plan of Action to reduce nutrient loading, improve water quality, restore wetlands, identify and characterize Gulf habitats, and build environmental education. The final Plan of Action was expected to be announced in 2006. (See page 49 for more information).

(12) a summary and evaluation of the research, studies, and training conducted in support of coastal zone management; and

Research and training programs are implemented on all levels of government in support of coastal zone management. Some of the programs of note include the System Wide Monitoring Program, Graduate Research Fellowship Program, and Coastal Training Program, all part of the National Estuarine Research Reserve System (See pages 38-49 and Appendix C, page 59). Research on coral reefs and fishing in marine protected areas, as well as social science research on governance of marine protected areas and preservation of cultural resources, was completed during the biennium (See pages 26 and 53-57). NOAA also continues research in support of coastal management through its National Centers of Coastal and Ocean Science, Cooperative Institute for Coastal and Estuarine Environmental Technology, and training through its Coastal Services Center (See pages 7-10).

(13) such other information as may be appropriate.

Please see the full report for other information on both federal and state accomplishments and activities during the biennium.

(b) Recommendations for legislation. The report required by subsection (a) shall contain such recommendations for additional legislation as the Secretary deems necessary to achieve the objectives of this title and enhance its effective operation.

There were no recommendations by the Administration during the biennium.

(c) Review of other federal programs; report to Congress.

OCRM completed a review of other federal programs in the early 1980s, and has met this requirement. More currently, the President established the U.S. Commission on Ocean Policy which reviewed federal coastal and ocean programs and made recommendations on improvements to the federal governance of coastal and ocean resources.

■ The United States as a Coastal Nation

The United States is a coastal nation. Our Nation's 95,331 miles of ocean and Great Lakes coastline serve as home to nearly 153 million people, about 53 percent of the population. The U.S. coastal zone also hosts a wide mix of economic activities which contribute trillions of dollars ($4.5 trillion in 2005[1]) to the economy each year, and produce half of the Nation's Gross National Product.

We are a nation fascinated by the water that surrounds our country and in awe of its tremendous system of inland freshwater lakes. However, despite the beauty — spectacular sunrises and sunsets, expansive sandy beaches and dunes, and a diverse wildlife population — we often fail to recognize our dependence on coastal resources to satisfy our increasing appetite for energy, goods, and services.

Located along the coastlines in the far north reaches of Alaska, the Atlantic and Pacific regions, the Gulf of Mexico, and around the impressive North American Great Lakes system are industries that keep our economy and country moving.

Coastal waters are one of the Nation's greatest assets, yet they are affected by pollutants from a variety of sources. While progress has been made in reducing point source pollution, nonpoint source pollution has increased and is the primary cause of nutrient enrichment, hypoxia, harmful algal blooms, toxic contamination, and other problems affecting coastal waters. Nonpoint source pollution occurs when rainfall and snowmelt wash pollutants such as fertilizers, pesticides, bacteria, viruses, pet waste, sediments, oil, chemicals, and litter into our rivers and coastal waters. Other pollutants, such as mercury and some organic chemicals, can travel vast distances through the atmosphere before reaching the ocean. Our failure to adequately manage human activities that affect the Nation's oceans, coasts, and Great Lakes compromises ecological integrity and diminishes our ability to fully realize the potential of coastal regions, which costs jobs and revenue, threatens human health, and puts our future at risk.

Industries operating along our coastlines — such as fisheries, energy plants, marine transportation and shipping, and recreation—accounted for nearly $42 billion of the Gross National Product in 1985[2]. Other activities linked to the coast — fish processing and marine equipment manufacturing, for example —contributed another estimated $12.17 billion of the Gross National Product, while service oriented activities, such as real estate and wholesale and retail operations, contributed $1.27 trillion in 1985[3].

These industries further attract labor and a continuous migration of people from the inland to the coasts. Since 1980, coastal population growth has generally reflected the same rate of growth as the Nation at large. The increasing population density, coupled with the rapidly expanding economy, makes the task of managing coastal resources increasingly difficult. Our coasts battle

ecosystem degradation and pollution, overfishing, invasive species, and sea-level rise. Adding to the challenge, the Nation's coastal population is expected to increase by more than 7 million by 2008, and 12 million residents by 2015[4].

Despite growing public awareness, we continue to grapple with the challenges facing coastal development. We search for solutions to protect and secure our coasts for future generations, yet the aftermaths of hurricanes make front page news. Coastal management remains an urgent and critical mission for the Nation.

The Importance of Our Coasts

- Coastal watershed jobs: 60 million[5].
- Ports handle over $700 billion in merchandise.[6]
- Cruise industry and passengers account for $12 billion in annual expenditures.[7]
- Nationwide, retail expenditures on recreational boating exceed $30 billion.[8]
- Tourism and recreation are two of the Nation's fastest-growing business sectors.[9]
- More than 37 million people and 19 million homes have been added to coastal areas during the last three decades, driving up real estate values and requiring ever greater support services.[10]
- On average, 3,600 people per day are moving to coastal counties, suggesting that by 2015 coastal populations will reach a total of 165 million. With another 180 million people visiting the coast each year, the pressure on our oceans, coasts, and Great Lakes will intensify, as will the need for effective management.[11]

■ Addressing the Challenges of Growth Through the Coastal Zone Management Act

In 1972, the U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act. The Act, administered by the National Oceanic and Atmospheric Administration (NOAA), provides for management of the Nation's coastal resources, including the Great Lakes, by balancing economic development with environmental conservation. Careful management is necessary to ensure our Nation can enjoy clean water and a healthy ecosystem that support a vibrant coastal economy.

A State/Federal Partnership

The Coastal Zone Management Act provides a unique partnership of federal and state governments, encouraging harmony in approaches to protecting both economic development and conservation. The Act outlines two national programs: the National Coastal Zone Management Program and the National Estuarine Research Reserve System.

The National Coastal Zone Management Program addresses competing land and water uses in coastal areas, while the National Estuarine Research Reserves serve as field laboratories to provide a greater understanding of estuaries and how humans impact them. Through the Coastal Zone Management Act, Congress crafted a unique framework for coastal and ocean management with several key features:

- Implementation is tailored by state or territory
  The Act recognizes that states and territories are responsible for implementing coastal management and estuarine research reserve programs, designing programs which best fit their coastal needs and issues. The Federal Government assists with program oversight and works toward integrating and coordinating the state and national coastal management vision while promoting coastal resource stewardship and balanced application of federal policies. State and territory coastal management programs typically tackle such issues as public access, beach and bluff erosion, water quality, coastal hazards (including hurricanes and flooding), coastal development, and siting of energy facilities.

- A voluntary partnership
  Participation in the Coastal Zone Management Act is voluntary, but states and territories are offered several key incentives to participate in the program. One incentive, federal funding, assists states and territories with their financial needs in implementing the goals of the Act. A NOAA-approved program receives annual federal funding that is matched by state/territory dollars to implement and operate coastal management and estuarine research reserves programs. A second and unique incentive, called federal consistency, requires the Federal Government to be consistent with state laws, regulations, and policies that are part of a state's or territory's approved coastal management program.

- Program objectives that are balanced
  With its call to "preserve, protect, develop, and where possible, to restore or enhance the resources of the Nation's coastal zone," the Coastal Zone Management Act was one of the first

to embrace the notion that it is possible, and essential, to balance coastal development while maintaining environmental quality.

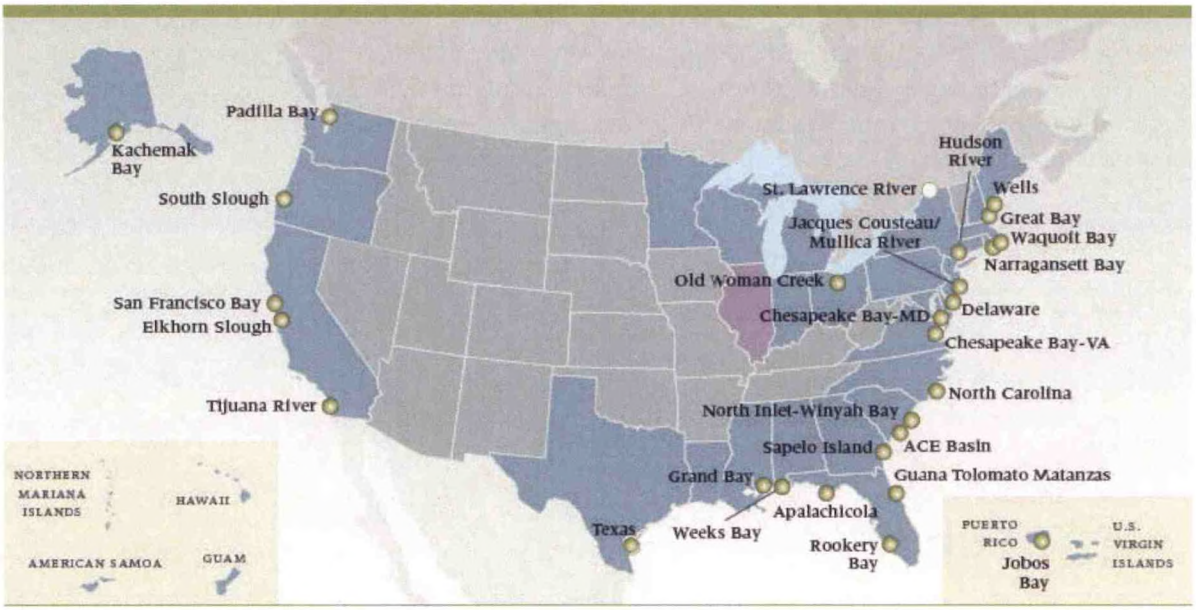
- Encompasses entire coastal area
  While other coastal and ocean programs manage single elements of a coastal area, the Coastal Zone Management Act aims to manage entire coastal areas, including both land and water onshore and offshore, and to involve ocean uses such as fisheries, recreation, and marine transportation. This inclusive approach recognizes the interdependence of a wide variety of coastal uses, and their impacts on one another.

- Programs are managed for performance
  The Coastal Zone Management Act calls for the continuing review of the performance of the states and territories with coastal management and estuarine research reserve programs. The periodic reviews offer an assessment and detailed findings concerning the extent to which the state has implemented and enforced the program, including the opportunity for members of the public to voice their opinions on individual programs.

The Coastal Zone Management Act recognizes that states and territories are the appropriate government level for implementing coastal management and estuarine research reserve programs. Since its inception, 34 of 35 eligible states and territories have established coastal management programs and received federal approval from NOAA, with the final state, Illinois, slated to complete the development of its program in fiscal year 2006-2007. These state and territory coastal management programs address a wide range of issues such as coastal development, water quality, erosion, public access, location of energy facilities, and preparations for coastal hazards like hurricanes and flooding. Individual programs are also working jointly on regional efforts to address common concerns.

National Estuarine Research Reserves

The United States is also home to a network of 26 protected areas representing different bio-geographic regions set aside for long-term research, water-quality monitoring, education, and coastal stewardship. The National Estuarine Research Reserve System, a partnership between the Federal Government and coastal states, protects more than one million acres of estuarine land and water, providing essential habitat for wildlife; offering educational opportunities for students, teachers, and the public; and serving as a platform for research. A goal of the System is to have at least one site representing each of the 29 bio-geographic regions and sub-regions. NOAA has been working with organizations in the State of Texas on the designation of the 27th reserve, Mission-Aransas, north of Corpus Christi, which encompasses unique and diverse estuarine habitats found in the western Gulf of Mexico. The Reserve will add a new bio-geographic sub-region to the Reserve System.



States with active Coastal Management and Estuarine Reserve Programs

Working with State Partners on Coastal Management Issues

NOAA, through its Office of Ocean and Coastal Resource Management, provides national leadership, strategic direction, and guidance to state coastal management and estuarine research reserves. OCRM assists states in the development and implementation of coastal management programs and reserves; allocates federal funds to implement programs; provides evaluations and recommendations for improvements; assists with the interpretation of statutory and regulatory requirements; helps programs obtain technical and informational support; and works with states and territories, and other federal agencies to implement regional approaches and solutions to coastal and ocean governance.

Since the inception of Coastal Zone Management Act nearly 35 years ago, OCRM has assisted states with over $1 billion in federal dollars to address critical coastal issues, supporting projects that are good for the economy and the environment. In the 2004-2005 biennium, over $203.5 million were distributed to states and territories for projects that restore valuable habitats, revitalize urban waterfronts, enhance public access, and protect our coasts.

Funds spent at the state level on improving the coastal zone stimulate investment in local economies from both private and public sources. Management practices developed and refined in one coastal management or estuarine research reserve program are often transferable to another, reducing the need—and expense—with beginning from the ground up. In addition, technical expertise, such as geographic information systems or remote sensing, and other decision support tools, are available to coastal and estuarine program managers through NOAA's Coastal Services Center in Charleston, South Carolina.

The Coastal Zone Management Act also provides states with a mechanism to reduce conflicts between states and federal agencies. Through the Act's federal consistency provision, any federal activities must be consistent to the maximum extent practicable with the enforceable policies of the state coastal management programs approved by NOAA. Federal consistency is a major incentive for coastal states to have an approved coastal program.

■ Coastal Services Center

NOAA established the Coastal Services Center in 1994 to serve state coastal management programs created by the Coastal Zone Management Act. The Center provides new sources of expertise, information, and technology to the state programs, focusing on geographical information systems, remote sensing, training, and social sciences. The staff combines forces with local, state, and federal partners to develop products that address specific coastal resource management issues.

Products developed by the Center vary widely, from training programs that teach leadership and technical skills, to the land cover data that is used to detect trends and manage coastal resources. The Center also develops decision support tools. These tools perform a variety of services, assisting coastal managers to identify and prioritize lands for conservation, and providing visualization and predictive capabilities to various development scenarios and their potential impacts.

Lessons learned from, and the technologies developed by, each project are shared with other states and communities facing similar situations. Below are some examples of the assistance provided by the Center in the 2004-2005 biennium.

Storm Tracking and Forecasting

Most hurricane-related deaths are flood-related. A new tool developed by the Coastal Services Center helps emergency managers predict and track floodwaters. The HURREVAC Inland Flood Module is part of a restricted-use computer program used by government officials to track hurricanes and assist in evacuation decision making. The new component provides the latest flood watches and warnings, rainfall, and river forecast data. Rain forecasts for one, two, and three days and lists of potentially affected areas are available, as well as data graphs for major, moderate, minor, and 100-year flood predictions.

International Forums for Coastal Managers

In summer 2005, NOAA brought together coastal officials from around the world to learn about new projects and ideas. More than 800 professionals gathered for the Coastal Zone Conference '05, the World's largest conference for the coastal resource management community. Participants attended workshops, presentations, exhibits, concurrent sessions, and other events. The focus was on helping each other find new ways to address the land and sea related issues that are crucial to the field of coastal resource management.

Predicting Water Quality Impacts

A new computer tool helps coastal managers and local officials predict potential water quality impacts to streams and rivers from erosion and nonpoint pollution. The Nonpoint Source

Pollution and Erosion Comparison Tool (N-SPECT) allows users to input different land cover scenarios to compute estimated potential impacts to water. The N-SPECT was developed as a decision-support tool for the Wai'anae area of O'ahu, Hawaii; however, the tool can be adapted for use in other coastal regions.

Understanding the Human Dimension of Coastal Management

Sometimes used in conjunction with the term "human dimensions," social science is the process of explaining, describing, and predicting how individuals and groups act and behave. Some of the most challenging decisions in coastal management depend on the relationship between people and the environment. The social science Web site[12], developed by the Center, showcases many of the tools, methods, case studies, and references that can be used to help coastal officials more adequately address the people side of coastal resource management.

Tools to Manage Hawaii's Coast

The State of Hawaii faces many challenges due to its finite land and water resources and its dependence on imported consumptive goods. To develop a natural resource management plan, a compilation of scientific and cultural information was developed for the coastal managers in the Wai'anae region of O'ahu, Hawaii. The effort includes a tool developed to examine potential effects of land use changes on near shore resources, and narrative and graphic information on Wai'anae's terrestrial and marine environment, weather and climate, socioeconomic characteristics, and historic and cultural traditions.

Improving the Coastal Leaders of Tomorrow

The Coastal Management Fellowship is a 2-year program that matches postgraduate students with state coastal management programs to work on a variety of projects. The state programs get fresh perspectives to help implement important initiatives, and the top students in the field get an important real life introduction to coastal zone management. Since its inception in 1996, the fellowship program has matched 52 postgraduate students with 19 state programs.

Training Coastal Managers

State and local coastal managers are the Nation's front line defense when it comes to managing coastal resources. NOAA offers several training courses to help these professionals increase their skills. Classes include technical courses for remote sensing and geographic information systems, as well as management courses that explore, for example, the impacts of visitor use on coastal resources and how to effectively run a public hearing. In fiscal year 2005, 1,554 people in 23 of the Nation's states and territories took advantage of this opportunity. The entire curriculum is available on the Center's Web site[13].

Remote Sensing Technology

State and local coastal programs use remote sensing technology to assess topography, land cover, and benthic habitats over a large area. The Coastal Services Center provides much of the data

and training needed to use this powerful tool. The agency has developed land cover maps for 657,783 square miles of the U.S. coastal regions, and has acquired and developed a total of 9,266 square miles of benthic data in 2005. Approximately 61,300 square miles of topography and bathymetry data have been mapped for the use of state and local coastal programs. Visit the Center's Web site[14] to learn more.

■ The Cooperative Institute for Coastal and Estuarine Environmental Technology

The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), established as a joint partnership between NOAA and the University of New Hampshire in 1997, is located on the University's campus in Durham. CICEET translates the problems of coastal management into the research priorities of scientists at the leading edge of their fields. Through competitive funding programs and strategic partnerships, CICEET develops innovative tools and methods that are affordable, effective, and available to coastal managers nationwide. CICEET-sponsored researchers are committed to collaboration between coastal management and scientists in other fields to provide the tools necessary to resolve issues of common concern.

CICEET makes these tools available to coastal managers through training, outreach, and an active and evolving technology utilization program. During the past two years, CICEET funded 29 projects at 18 of the 26 national estuarine research reserves. CICEET projects are designed to develop new and cost-effective tools to:

- Detect toxic contaminants in estuarine and coastal ecosystems, and to reduce or eliminate toxic contaminant input to coastal watersheds;
- Promote innovative detection and prevention techniques for reducing microbial contaminants in estuaries;
- Detect and reduce nutrient enrichment and eutrophication in coastal waters;
- Develop technologies or methods to restore coastal and estuarine habitat; and
- Make it easier to access and use coastal and estuarine data.

Storm Water Technology Evaluation and Verification Program

Storm water runoff from urban, residential, and agricultural areas has been identified as the major cause of water quality impairment in the United States. Phase II of the Clean Water Act established a schedule for municipalities to meet storm water discharge control regulations by 2003. The regulations are clear. How municipalities will comply, however, remains unclear. The market is full of storm water control products without credible third-party data on the performance of these systems.

In response to this lack of information, CICEET initiated a Technology Evaluation and Verification Program in 2002. The Program focused on engineered storm water treatment technologies and, in collaboration with industry and government, designed, developed, and began operation of a facility that tests storm water control designs. This facility enables officials to see systems in operation before deciding whether to implement them and provide an opportunity to address one of the major causes of coastal pollution.

Technology Commercialization

As human activity on coasts and inland areas increases, so does the problem of nonpoint source pollution in estuaries and coastal waters. Agriculture, urban development, wastewater treatment, and fossil fuel combustion all contribute to the problem. CICEET-sponsored projects have yielded seven commercially available technologies to help coastal resource managers monitor water bodies for nutrients and other types of pollution.

Commercialized CICEET-developed technologies that monitor microbes, nutrients, and other chemicals are listed below.

- YSI 9600 Nutrient Monitor: Measures nitrate and nitrite concentrations in situ at intervals as short as 30 minutes for up to 30 days.
- YSI Fixed (6950) and Pontoon (6951) mounted profiling systems: Sensor modules that allow profiles of water column properties to be collected.
- SubChemPak Analyzer: Takes in situ high resolution, real-time measurements of environmentally important chemicals.
- SEAS Copper sensor: Real-time in situ analysis of copper contamination.
- Luminex: High throughput assay to detect sewage indicating bacteria and toxic algae.
- Data Systems Controller: Provides automated real-time transmission, quality assurance/quality control, and Internet posting of water quality and weather data collected from multiple instruments.
- Remote Access Sensor Link: A satellite-based data communications system that makes real-time data from remote locations available to user via a seamless Web site.

■ Illinois Poised to Become the 35th State with CZM Program

In 2004, the State of Illinois renewed efforts to gain approval for a coastal management program. This followed initial work, including a preliminary program draft, completed by the Illinois Department of Transportation and the Division of Water Resources several years ago. From 1974 through 1978, the State received Coastal Zone Management Act Section 305 Program Development Grants of over $1.7 million. OCRM began working with the Illinois Department of Natural Resources in 2004 to identify and receive input from its various coastal constituents; articulate major issues the State Coastal Management Program would address; determine a vision for the future of the Illinois shoreline and its communities; identify the authority the State has to manage coastal land and water development; and identify support from other state agencies and/or regional councils.

The purpose of the Illinois Lake Michigan Coastal Program will be to enhance the State's role in planning for and managing its natural and cultural resources in the coastal region. The Illinois Department of Natural Resources has been designated the lead agency for developing the State's Coastal Management Program. The Illinois Environmental Protection Agency and the Office of the Lieutenant Governor are assisting in this effort. The State Department of Natural Resources held open houses and workshops on developing a coastal management program in the fall of 2005. Through these workshops, the State worked with local governments, interest groups, and interested citizens to establish a coastal program boundary, identify all areas of particular concern or areas meriting special attention, and establish a framework and process for program administration. The workshops are being used as a forum for input and discussion for inclusion in the Coastal Management Program plan. The inclusion of Illinois within the Coastal Zone Management System is part of the President's Ocean Action Plan.

■ Support for Hurricane Recovery

Hurricanes Katrina and Rita brought unprecedented damage to the Gulf Coast. In the weeks following the storms, the Federal Emergency Management Agency (FEMA) embarked on a partnership with the State of Louisiana to develop priority long-term recovery plans for coastal parishes. FEMA asked OCRM for assistance, and OCRM staff members were detailed to work in the field in Louisiana to support the long-term community recovery process. OCRM staff provided expertise on coastal resource management, habitat restoration, and port redevelopment. They ensured that the Louisiana Coastal Resources Program and other NOAA programs were well coordinated with the long-term community recovery process.

Coastal management programs in Louisiana, Mississippi, and Alabama – with OCRM's support – have been at the forefront of hurricane recovery. Louisiana and Mississippi Coastal Management Programs are full participants in their States' recovery commissions. Their role in the recovery commissions covers issues such as debris removal, habitat protection and restoration, and provides assistance to local communities seeking to become more disaster resilient.

All Gulf Coast states are currently assessing how their coastal management programs address coastal hazards, like hurricanes, and are developing five-year enhancement strategies. The assessments review the current suite of technical tools, policies, and management programs in place in the state, and recommend ways to make improvements that will make the states more disaster resilient. Both Louisiana and Mississippi are integrating their coastal management program enhancement strategies with the recommendations emerging from the Governor-led recovery commissions. OCRM is providing technical and financial support under the Coastal Zone Management Act to assist in these efforts.

■ **Progress on Establishing Texas National Estuarine Research Reserve**

Since August 2002, NOAA has been working with the University of Texas Marine Science Institute and local organizations to designate the Mission-Aransas National Estuarine Research Reserve in Texas. The first phase of the designation process, site nomination, was completed in September 2004. After a rigorous site selection process, conducted by committees convened by the Marine Science Institute, the Mission-Aransas estuary was chosen as the location of the proposed reserve. Located on the southeastern coast of Texas, 30 miles north of Corpus Christi, the 185,648-acre Mission-Aransas Reserve encompasses unique and diverse estuarine habitats found in the western Gulf of Mexico. The Reserve will add a new biogeographic sub-region to the National Estuarine Research Reserve System.

The site nomination package was approved by the State of Texas and NOAA in 2004. The University of Texas Marine Science Institute held several public scoping meetings about the proposed Reserve in November 2004. Following those meetings, a draft environmental impact statement and a draft management plan were developed and completed for the proposed Mission-Aransas National Estuarine Research Reserve in Texas. Public meetings to address the draft environmental impact statement and draft management plan were held in late 2005.

■ **Coastal Zone Management Act Performance Measurement System**

The coastal states and territories and NOAA have had considerable success in achieving the goals of the Coastal Zone Management Act. Quantifying the successes of the Act at the national level, however, presents a challenge. The challenge stems from the complexity of coastal management issues, the physical and ecological diversity of the Nation's coasts, and the difficulty of quantifying the value of sound management in preventing harmful environmental impacts. To meet this challenge, OCRM and its partner program continue to develop and implement a national system of coastal management performance measures to communicate the effectiveness of coastal management and estuarine research reserve programs authorized under the Act.

In 2004, OCRM completed a year-long pilot phase of the National Coastal Zone Management Performance Measurement System with coastal management programs in the Northern Mariana Islands, Florida, Maine, South Carolina, Virginia, Washington, and Wisconsin. The coastal management programs in Alaska and New York also provided input throughout the process. These programs tested and evaluated performance measures in the following six categories, which are tied to the Act's Section 303 objectives: coastal habitats, coastal water quality, public

access, coastal hazards, coastal dependent uses and community development, and governmental coordination and decision-making. All 34 state coastal management programs began a phased implementation of the performance measures in 2005.

In the fall of 2005, the National Estuarine Research Reserve System updated its 5-year strategic plan. This plan focuses on research reserve contributions to understanding and transferring information about four key coastal management issues: land use and population trends; habitat loss and alteration; water quality degradation; and biological threats such as invasive species and over-harvesting. A set of performance measures that correspond to the objectives of this plan was drafted to supplement ongoing performance data collection. The Reserve System's Coastal Training Program also began collecting performance measurement baseline indicators in 2005. This baseline information will be used to create minimum standards and performance targets for the Coastal Training Program.

The Performance Measurement System establishes national and individual program baselines and provides programs with an important management tool. To support its partners in implementation, OCRM has been working to identify support strategies such as data management, training, and site specific technical assistance. This System serves as a powerful tool to quantify accomplishments, track pressures on coastal and estuarine resources, assess resource conditions, and measure success in achieving the goals of the Coastal Zone Management Act, as well as the objectives in the coastal management and estuarine research reserve programs strategic plans.

■ Coastal State Program Enhancement

Section 309 of the Coastal Zone Management Act established the voluntary Coastal Zone Enhancement Grants Program to encourage states and territories to develop program changes in one or more of the following nine coastal zone enhancement areas:

- Wetlands
- Coastal hazards
- Public access
- Marine debris
- Cumulative and secondary impacts
- Special area management plans
- Ocean resources
- Energy and government facility siting
- Aquaculture

Under this program, the Secretary of Commerce issues awards to states and territories that develop and submit program changes for federal approval that will attain outlined objectives in one or several enhancement areas. Section 309 of the Act further requires OCRM to work cooperatively with state coastal management programs to identify priority needs for improvement, and to evaluate and rank state and territory funding proposals.

Section 309 requires each coastal management program to periodically assess the nine enhancement areas in its state. Coastal management programs then develop multi-year strategies to address high priority issues. The strategies outline activities and funding levels of related program changes. Federal funding under Section 309 does not require matching state funds.

In March 2005, revised Section 309 assessments and strategies guidance was sent to state coastal program managers. The guidance was revised to coordinate with the National Coastal Zone Management Act Performance Measurement System. Since the timeline to implement the Performance Measurement System does not coincide with the Section 309 time schedule, state and territory programs are not *required* to include indicator data in their assessments. In the short term, development of the Performance Measurement System should complement the development of new assessments and strategies. In the long term, the System will aid in monitoring the effectiveness of the program changes made under the Coastal Management Enhancement Grants Program.

■ Program Evaluation: The National Coastal Zone Management and National Estuarine Research Reserve Programs

OCRM is required by the Coastal Zone Management Act to perform periodic performance evaluations of all state and territorial coastal management programs and national estuarine research reserves. Program evaluations generally occur at least once every 3 years. These evaluations assess whether the state lead agency is implementing and enforcing the essential elements of the approved program; playing a leadership role in coastal issues; monitoring the actions of state agencies and local governments; basing decisions on enforceable policies of the program; assuring the opportunity for full public participation; addressing national coastal zone management needs; and adhering to the terms and conditions of any financial assistance awards.

The evaluation process includes an extensive visit to the site by an OCRM evaluation team. Prior to the site visit, the evaluation team reviews program documents, grants, work products, and correspondence. During the site visit, the evaluation team interviews program staff members, along with other local and state authorities, and various public and private interest groups. The team also conducts one or more public meetings to give citizens an opportunity to express their views about the operation of the program.

During the 2004-2005 biennium, OCRM issued final evaluation findings of the following programs:

Coastal Management Programs

- Alabama
- Florida
- Maryland
- Massachusetts
- Minnesota
- Mississippi

- New Hampshire
- New Jersey
- New York
- North Carolina
- Ohio
- Oregon
- Texas
- Virginia
- Washington
- Wisconsin

National Estuarine Research Reserves

- Chesapeake Bay (Maryland)
- Chesapeake Bay (Virginia)
- Grand Bay (Mississippi)
- Great Bay (New Hampshire)
- Guana Tolomato Matanzas (Florida)
- Jacques Cousteau/Mullica River (New Jersey)
- Narragansett Bay (Rhode Island)
- Old Woman Creek (Ohio)
- Padilla Bay (Washington)
- South Slough (Oregon)
- Waquoit Bay (Massachusetts)
- Weeks Bay (Alabama)

OCRM also conducted evaluation site visits for the following coastal management programs during the biennium: American Samoa, California, Hawaii, Louisiana, Maine, Pennsylvania, Puerto Rico, and South Carolina; and the following national estuarine research reserves: Elkhorn Slough (California), Hudson River (New York), North Inlet-Winyah Bay (South Carolina), Rookery Bay (Florida), Sapelo Island (Georgia), Tijuana River (California), and Wells (Maine). These evaluations were conducted toward the end of the 2004-2005 biennium and, as a result, the evaluation findings for these programs were expected to be published following the end of this biennium.

Common Themes

Managing a coastal program or reserve became more difficult for many states during the biennium as a result of diminished budgets and a reduction of support at the state's political level. The continued downward slide in financial support for state coastal management and estuarine research reserves was a major concern expressed by many programs during the evaluation process. The reduced funding levels left uncertainties for some key projects, staff vacancies unfilled, and other resources under financial pressure. In addition, many states continued to impose travel restrictions, prohibiting staff from attending coastal conferences and seminars.

Faced with doing the same job with the same (or less) funding, however, programs have become more resourceful. The use of technology—high speed internet connections and geographical information systems, for example—have helped bridge the monetary gap for many programs. The ability to rapidly source, compile, and share information using this technology has been a tremendous aid for both community development and coastal habitat issues.

State programs are also working more closely together, partnering more frequently, becoming more innovative, saving financial resources, and preventing duplication of efforts on similar projects. In the U.S. Territory of American Samoa, for example, users group, consisting of representatives of many agencies, meets regularly to share information about activities related to geographic information systems.

Concerns over public access continue to be at the forefront of nearly every coastal program. Coastal management programs continue to make significant progress on public access issues with some unique solutions. In California, the State's Coastal Trail—a contiguous passage along the entire length of the State's shoreline—continues to develop. The State also worked during the 2004-2005 biennium to address expiring offers-to-dedicate, which are offers made by landowners to grant a public access easement on their property. Programs are also finding more innovative ways to help visitors locate public access points. In Connecticut, coastal points of access are available in an electronic Coastal Access Guide. It is also becoming more and more common to require public access as a condition of a development permit in many states.

Programs to address water quality issues continue to expand and evolve. The Clean Marinas Program—initiatives geared to improve marina and recreational boating facilities management through practices such as environmentally sound vessel maintenance, spill prevention, and proper sewage disposal—spread to six additional states. Nineteen coastal states have now instituted Clean Marinas Programs. Likewise, the National Estuarine Research Reserve System Wide Monitoring Program is ever more frequently able to provide water quality data to aid coastal managers and others in determining where to target water quality improvement initiatives.

Concern over coastal hazards—and the development of plans to address them—continues to be a major focus of state coastal management programs. Long before the devastating tsunami of December 2004 and Hurricanes Katrina, Rita, and Wilma of 2005, program evaluators reported many coastal programs were focused on more "pre-hazard" planning, examining everything from hurricane preparedness to soil erosion.

■ Developments in Federal Consistency

The Coastal Zone Management Act strikes a balance between the need to conserve coastal resources, and the need to provide for development, recreation, and other priority uses of the coastal zone. The Act gives states the primary authority to determine how best to achieve this balance, but requires them to give priority consideration to coastal dependent activities that are of national interest, e.g., siting of energy facilities, national defense, and ports.

Under the Act, a state's primary ability to review federal actions is through Section 307, commonly known as the federal consistency provision. Federal consistency requires that federal agency activities be consistent to the maximum extent practicable with the enforceable policies of state coastal management programs approved by NOAA. Activities by non-federal applicants for federal authorizations and funding must be fully consistent with the enforceable policies of coastal management programs.

Because actions by the Federal Government can impact resources and uses of the coastal zone, the federal consistency authority is the primary incentive for many states to participate in the coastal management program. While there is often negotiation between federal agencies and non-federal applicants under this authority, states concur with approximately 93 to 95 percent of all federal actions reviewed.

In 1990, the application of federal consistency was changed from federal agency activities that "directly affect" the coastal zone to "effects on any land or water use or natural resource of the coastal zone." By removing the word "directly," Congress clarified the importance of the causal relationship between federal actions and coastal effects. Following this change, in 1996, NOAA began an effort to revise the federal consistency regulations, which had essentially remained unchanged since first promulgated in 1979. NOAA published a final rule revising the federal consistency regulations on December 8, 2000.

OCRM has updated its federal consistency website to now include a wide range of federal consistency information, including an overview, rulemakings and consistency resources.

Recent Developments – Energy

In February 2001, Vice President Cheney established the National Energy Policy Development Group to bring together business, government, local communities, and citizens to promote a dependable, affordable, and environmentally sound national energy policy. The Energy Report was sent to President Bush on May 16, 2001.

The Energy Report contains numerous recommendations to meet these goals. The Report found the effectiveness of Coastal Zone Management Act programs is "sometimes lost through a lack of clearly defined requirements and information needs from federal and state entities, as well as uncertain deadlines during the process." To address these issues, the Energy Report recommended that the Department of Commerce "determine if changes are needed regarding energy-related activities and the siting of energy facilities in the coastal zone."[15]

To address these recommendations, NOAA published an Advanced Notice of Proposed Rulemaking in July 2002, seeking comments on whether improvements should be made to NOAA's federal consistency regulations. In June 2003, NOAA published a proposed rule responding to the recommendations contained in the Energy Report and comments received on the Advanced Notice of Proposed Rulemaking.[16] NOAA received 3,066 comments from the House of Representatives, the Senate, states, industry, environmental groups, federal agencies, and the public. The proposed rule, related public documents, and comments are available online.[17]

NOAA carefully evaluated the comments received on the proposed rule and submitted a draft final rule to the Office of Management and Budget. In June 2004, NOAA withdrew its draft final rule from the Office of Management and Budget, believing that it would be premature to issue a final rule before the president-appointed U.S. Commission on Ocean Policy had a chance to review and address comments from the governors on its draft report of recommendations. The final Ocean Commission Report noted the offshore energy issues raised in the Energy Report and that NOAA had issued a proposed rule that would address those issues. The Ocean Commission Report did not make any substantive comments on NOAA's rulemaking.

In January 2005, following issuance of the Ocean Commission Report in late 2004, NOAA reinitiated the Office of Management and Budget intergovernmental review process in order to publish a final rule. On August 8, 2005, the President signed the Energy Policy Act of 2005 (Pub. L. No. 109-58). The Energy Policy Act mandates certain deadlines for Coastal Zone Management Act appeals, and specified that the initial record to be used for appeals of energy projects is the record consolidated by the lead federal permitting agency. NOAA modified the draft final rule to account for the Energy Policy Act. On January 5, 2006, NOAA published the Final Rule in the Federal Register (71 Fed. Reg. 787-831 (January 5, 2006)). OCRM's federal consistency web page contains the Final Rule and a public information document summarizing the changes.

Federal Consistency Workshops

During the fall of 2004, OCRM completed its second round of regional workshops on the Coastal Zone Management Act federal consistency requirement. The workshops were well attended and participants found them very helpful. State and federal coastal management partners have commented that the federal consistency workshops are one of the key management assistance activities provided by OCRM.

OCRM's federal consistency workshops aim to: (1) provide a basic understanding of federal consistency; (2) discuss in more detail some of the problem areas that have occurred over the past few years; and (3) provide a forum for states and federal agencies to learn about each others' programs, coastal management concerns, and federal consistency procedures. The objective is to help states and federal agencies effectively implement their programs by educating personnel on the consistency requirements, learning about each others' programs, and establishing effective working relationships.

OCRM held its first round of regional workshops in the late 1990's. The second round of workshops began in late 2001 through 2002 for the Northeastern States, Mid-Atlantic States, Great Lakes States, Alaska and the Pacific Islands. The workshops in fall 2004 completed this second round of assistance.

The workshops, primarily for state and federal agency personnel working in the coastal management field, include state agency staff, state attorney general staff, and federal agency staff and attorneys (from local, regional and headquarters offices). Other participants have included local government personnel, government contractors, and members of industry and

environmental groups. Workshops were held on the following dates and at the locations described below:

- October 5, 2004, California Workshop, San Francisco. Eighty-one people registered/attended.
- October 7, 2004, Pacific Northwest Workshop (for Oregon and Washington), Portland, Oregon. Forty-eight people registered/attended.
- October 19, 2004, Southeast Workshop (for North Carolina, South Carolina, and Georgia), Wilmington, North Carolina. Fifty people registered/attended.
- December 1, 2004, Gulf Workshop (for Florida, Alabama, Mississippi, Louisiana, and Texas), New Orleans, Louisiana. Sixty-six people registered/attended.
- December 14, 2004, Caribbean Workshop (for Puerto Rico and Virgin Islands), San Juan. Fifty-three people registered/attended.

OCRM is considering a third round of regional federal consistency workshops, possibly starting in fall 2006. Future workshops will depend on availability of funding. Further information on federal consistency and OCRM's federal consistency workshops can be found at OCRM's federal consistency Web site.[18]

■ Marine Protected Areas Federal Advisory Committee Delivers First Set of Recommendations

The Marine Protected Areas Federal Advisory Committee finalized its first set of recommendations in 2005, and members voted unanimously to approve them. The recommendations were delivered to the Departments of Commerce and Interior in June 2005.

The Report, which is consistent with the Administration's U.S. Ocean Action Plan, recommends processes to establish a national system of marine protected areas built upon existing sites and new areas that meet specific criteria. The committee states that the system's goal should be "to enhance effective stewardship, lasting protection, and sustainable use of the Nation's natural and cultural marine resources with due consideration of the interests of and implications for all who use and care about our marine environment."

Highlights of some of the committee recommendations are:

- Primary responsibility for the creation and management of marine protected areas must lie with existing legal, statutory, and legislative authorities to the extent feasible.
- The public, user groups, tribes, and state and local governments must be integral parts of the nomination, planning, implementation, evaluation, and adaptive management process.

- There must be awareness of and respect for the sovereignty of states, territories, tribes, and local jurisdictions. International commitments must also be respected.

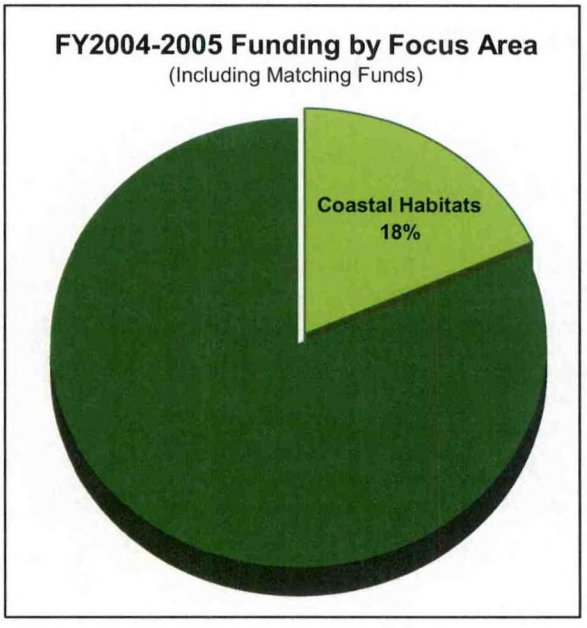
- Incentives for participation and cooperation by government agencies and by existing and future stakeholders must be provided. Incentives might include training, technical assistance, or funding to offset the costs of participating in the national program.

Progress in Addressing the Major Goals of the Coastal Zone Management Act

Section 303 of the Coastal Zone Management Act finds that it is the national policy to protect, preserve, develop, and where possible restore or enhance the resources of the coastal zone for this and succeeding generations. This section also describes the minimal contents of a state coastal management program. During the last biennium, 2002-2003, NOAA completed a study to establish a national performance measurement system to more effectively measure the accomplishments under the Coastal Zone Management Act. The study identified six broad-based focus areas to capture the major objectives of the Act: coastal habitats, coastal hazards, coastal water quality, public access, coastal community development, and coastal dependent uses.

This section describes accomplishments in the 2004-2005 biennium in each of these six goal areas:

- **Coastal Habitats**



As described in Section 303 (2)(A), the Coastal Zone Management Act calls for the protection of natural resources, including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat, within the coastal zone. Coastal habitats are vital, providing water filtration, storing floodwaters, serving as breeding grounds for birds, fish, and other wildlife, among others. These sensitive habitats face significant pressure from development, nonpoint source pollution, and population growth and tourism.

Coastal and Estuarine Land Conservation Program

NOAA has continued to implement the Coastal and Estuarine Land Conservation Program (CELCP), established by the Appropriations Act of 2002 (P.L. 107-77) to help protect estuaries and coastal lands. The program provides coastal states with funding for projects that ensure conservation of these areas for the benefit of future generations.[19]

CELCP funds are intended to complement current federal, state, and local coastal and estuarine conservation plans. Projects under this program are intended to:

- Protect coastal or estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses;

- Give priority to lands that can be effectively managed and protected; and
- Advance the goals, objectives or implementation of federal, regional, state or local coastal management plans.

In the 2004-2005 biennium, $89.3 million was appropriated for 59 congressionally-directed projects in coastal and estuarine areas. For all grants awarded since the Program's creation, 38 acquisitions have closed as of September 30, 2005, resulting in the protection of 10,869 acres in fee and 151 acres under conservation easement.

Projects funded through CELCP have been diverse in scale and scope, ranging from the acquisition of 3,600 acres of relatively pristine woodlands, fields, wetlands, and ponds outside of Charleston, South Carolina (part of a larger purchase of the 10,700-acre former Mead-Westvaco property known as Bonneau Ferry), to the acquisition of one acre in highly urban Stamford, Connecticut in support of that city's efforts to create a greenway along the Mill River in downtown Stamford. Some projects have received funding in more than one year. In 2004, St. Tammany Parish, Louisiana was able to complete its acquisition of the 106-acre former Boy Scout facility known as Camp Salmen through a third and final CELCP grant that fulfilled the lease-purchase agreement with the Trust for Public Land.

NOAA continues to lay the groundwork for implementing CELCP as a national competitive process. In 2003, NOAA published guidance for the Program as required in the Appropriations Act of 2002. The guidelines describe the criteria for grant awards and establish the process for competitive funding when funds become available for that purpose.

CELCP guidelines require states to develop a coastal and estuarine land conservation plan to compete for funding under the Program. These plans are intended to assess the ecological, conservation, recreational, historical, or aesthetic values to be protected through the Program, as well as the threats to those values. The plans also identify each state's priorities for coastal land conservation. The plans can draw on existing conservation plans or ecological assessments, if applicable.

Nearly all coastal states are in the process of developing CELCP plans. At the end of fiscal year 2005, 10 states had completed draft plans for review by NOAA, or submitted final plans to NOAA for approval.

States have identified the following types of areas as priorities within CELCP plans, among others:

- Beach and dune systems, including primary and secondary dunes and barrier island complexes, which serve as protective land features that reduce the impact of coastal flooding and erosion from storms.
- Shoreline habitats along bays, sounds, and other estuaries, including wetlands and uplands, which serve as nursery habitat for fish and shellfish.
- Coastal forests and other large, contiguous tracts of ecologically significant lands, which serve as habitat for a variety of species and provide several ecosystem functions, such as groundwater recharge, flood control, and pollutant filtration within coastal watersheds.

States Working on Coastal Habitat Goals

During the last two years, many state programs have made significant progress in meeting the coastal habitat goals of the Coastal Zone Management Act.

Louisiana's No Net Loss Wetlands Policy

In Louisiana, one of the Gulf states hardest hit by Hurricanes Katrina and Rita in 2005, the State's Coastal Management Division implements its no net loss of wetlands policy through its permitting and mitigation activities. The Coastal Management Division processes approximately 2,000 permit applications annually. In 2003, the Division initiated an extensive review and revision of the wetland mitigation rules to address several problem areas, including mitigation banks, mitigation credit purchases, landowner approvals, and local coastal program mitigation participation. The mitigation rule revisions will result in more effective mitigation of wetland habitat at the state and local level.

During the 2004-2005 biennium, the logging of coastal wetland forests also became a major state concern, which the Coastal Management Division addresses by serving on the governor's Coastal Wetland Forest Conservation and Use Advisory Panel, and by adopting a policy to address its jurisdiction over coastal wetland forests. The Division also contributes to habitat restoration efforts by encouraging beneficial use of dredged material in its consistency reviews and coastal use permit activities, and through participation in a regional restoration plan program.

Restoring Alabama's Dunes

Hurricane Ivan hit the Gulf coast of Alabama in September 2004, causing massive destruction within the communities of Orange Beach and Gulf Shores. In addition to damaging homes and businesses, Hurricane Ivan flattened the dune fields at Gulf State Park, an area that provided habitat for the Perdido Key beach mouse, wintering piping plovers, nesting sea turtles, and many other sensitive beach and dune species. The Hurricane carried the dune sand offshore and into the adjacent Perdido Pass, which needed to be dredged soon after the storm to maintain safe navigation through the channel.

Staff from the Alabama Coastal Area Management Program worked closely with the Army Corps of Engineers, the U.S. Fish and Wildlife Service, the City of Orange Beach, and Gulf State Park officials to quickly develop a plan so that sand dredged from the Perdido Pass channel would be used to rebuild the dune habitat at Gulf State Park. The Corps began dredging operations in February 2005, and by March 4 most of the habitat restoration project was completed. This close coordination between governmental agencies saved taxpayer money and expedited both the emergency dredging project at Perdido Pass and the dune restoration at Gulf State Park.

Florida's Adopt-a-Reef

Florida's Adopt-a-Reef project is performed in partnership with the Florida Coastal Management Program, The Ocean Conservancy, the Florida Keys National Marine Sanctuary, and Monroe County Sea Grant Extension. The ongoing program focuses on the removal of marine debris from underwater environments in the Florida Keys and on the education of residents and visitors about protecting coastal and underwater habitats. With support from the Florida Coastal Management Program, the project was expanded during the 2004-2005 biennium and enhanced to include more volunteer divers, develop and distribute new educational brochures, increase media coverage, and expand and improve the Adopt-a-Reef website.

San Francisco Bay Salt Ponds

San Francisco Bay once supported 190,000 acres of tidal salt marsh, but today only 16,000 acres remain. In 2003, the State of California acquired 16,500 acres of salt ponds in the San Francisco Bay to restore the historic marshes.

During the past two years, the Bay Conservation and Development Commission, one of California's approved coastal management programs, is collaborating with state agencies, NOAA's National Marine Fisheries Service, the California Coastal Conservancy, the U.S. Army Corps of Engineers, regional water quality boards, local governments, neighbors, and many others to develop goals and an adaptive process for restoring the salt ponds. The planning process has brought together managers, scientists, and the public. The restoration plan will need to balance many diverse social objectives, including the needs of freshwater and saltwater species and demand for public recreation with wildlife protection. This is the largest marsh restoration attempted on the West Coast and there are a number of uncertainties. One of the biggest concerns is the possible release of mercury from sediments as the salt ponds are converted to tidal marsh. The South Bay Salt Pond Restoration Project Group is working to make the plan and process flexible and adaptable so these challenges can be met. The restoration will occur incrementally and be monitored so that needed changes can be made. On-the-ground work began in July 2004.

Besides participating in the work group, the Development Commission has also updated its Bay Plan policies which guide development, recreation, and restoration activities in the Bay Area coastal zone. The San Francisco Bay Reserve is also involved in marsh restoration research in the Bay and is contributing to the science needed to implement successful marsh restoration.

Oyster Habitat Restoration in South Carolina

In South Carolina, citizens and businesses participate in oyster habitat restoration by recycling oyster shells at 12 coastal drop-off locations. Since its inception, the South Carolina Oyster Restoration and Enhancement program has built 98 new oyster reefs at 28 sites along the coast.[20] Volunteers have donated over 10,000 work hours for this effort. The Oyster Restoration and Enhancement program is managed by the South Carolina Department of Natural Resources and funded by several NOAA programs.

The Office of Ocean and Coastal Resource Management's Coral Activities

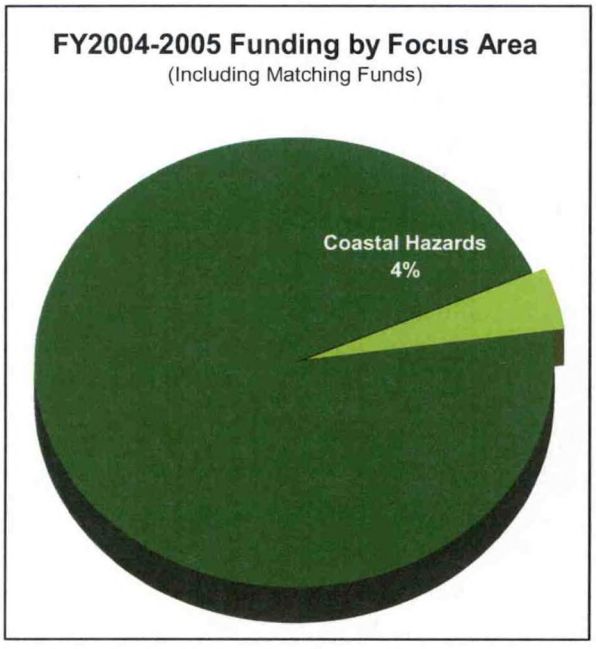
OCRM leads the coordination of NOAA's Coral Reef Conservation Grant Program and administers and manages grants awarded through the Coral Reef Management Grant Program. OCRM is a key partner in local initiatives of the NOAA Coral Reef Conservation Program in American Samoa, Florida, Guam, Hawaii, the Commonwealth of the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands. In the 2004-2005 grant periods, OCRM awarded approximately $4.86 million in coral conservation grants to the seven states and territories with tropical coral reef resources. The states and territories have used this funding locally for coral reef management, including the establishment of new marine protected areas, outreach and education materials, personnel, reducing nonpoint pollution impacts to coral reefs, and reducing anchor damage through the installation of mooring buoys.

Through the Coral Reef Program, OCRM also works directly with the states and territories to identify, develop, and provide priority technical assistance. This includes support for the U.S. Coral Reef Task Force initiative to develop local action strategies which address major threats to coral reef ecosystems, such as land-based pollution, overfishing, and recreational overuse. OCRM assisted the jurisdictions in involving relevant federal partners on the Coral Reef Task Force, bringing stakeholders together to develop local action strategies to address these threats. Currently, OCRM is supporting the NOAA Coral Reef Conservation Program coordination with U.S. Coral Reef Task Force federal partners to address capacity and implementation needs within local agencies. Implementation of local action strategies is an element of the President's Ocean Action Plan.

Other OCRM coral management technical assistance activities from the 2004-2005 biennium that support state and territory priority needs include:

- Joint coordination of a 2-year coral reef management assistantship program in partnership with NOAA's Coastal Services Center and Office of Response and Restoration;
- Workshops on marine protected area management plan development, community-based management of marine protected areas, managing recreational uses of coral reefs, and managing land-based sources of pollution;
- Continued support for economic valuation studies of coral reef resources in American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands;
- Inventory, summary, and analysis of state and territory coral reef marine protected areas in conjunction with the national marine managed areas inventory;
- Development of a community of marine protected area leaders in the Pacific Islands region; and
- Technical capacity support for the development of an marine protected area network in the Northern Mariana Islands and an marine protected area strategy in American Samoa.

■Coastal Hazards



Coastal storms caused billions of dollars in losses during the 2004-2005 biennium. Combined damage estimates from Hurricanes Katrina (the Nation's costliest hurricane on record) and Rita alone now exceed $200 billion[21]. The Coastal Zone Management Act calls for the management of coastal development to minimize the loss of life and property. Improper development in flood-prone areas, storm surge, geological hazards, erosion-prone areas, and areas likely to be affected by, or vulnerable to sea level rise, land subsidence, and saltwater intrusion, are considered in this focus area, as is the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands.

The Coastal Storms Program

The Coastal Storms Program is a nationwide effort to reduce the adverse impacts of storms on life, property, the economy, and environmental health in coastal areas. The Program is a cross-NOAA program that brings local, state, and federal organizations together with NOAA expertise to work on regional projects which develop products that fill local gaps in storm impact mitigation. The projects are selected by local coastal decision-makers in the pilot regions. Over the life of the pilot project, usually several years, products are developed by NOAA personnel in partnership with other federal agencies, academics, local and state governments, and regional associations. The resulting products are made available to those who need them, and training is held to ensure that new products and data are effectively utilized.

To date three pilot regions have either been completed, or are in progress. The first pilot began in fiscal year 2002 in the St. Johns Water Management District in northeast Florida and was completed in fiscal year 2004. Nine products were developed helping local decision-makers mitigate the effects of storms. The products cover navigation safety, observing and predicting storms, and preparing for the impacts of storms, such as reducing the effects of storm water runoff and coastal inundation. Several of the products have been expanded beyond the pilot's initial geographic scope and coastal decision-makers have been trained in product application.

The second pilot is in progress in the Pacific Northwest (including portions of the Lower Columbia River, the northwest Oregon coast and the southwest Washington coast). The pilot began in late fiscal year 2003 and includes six projects. A Sea Grant Extension agent serves as the outreach and extension coordinator for the pilot area. As in Florida, the projects cover

navigation safety, observing and predicting storms, and preparing for the impacts of a storm. An Oregon Coastal Inundation Tool has been created and recently expanded to include a new 17-mile stretch of Oregon coastline. The tool allows users to identify areas along the shoreline and examine the level of erosion or flooding that is expected based on real-time oceanographic data. In addition, users can view information from past storms such as total water level, peak waves, and tide heights.

The third and most recent pilot is taking place in southern California. In early fiscal year 2005, kickoff meetings were held with local coastal decision-makers to determine their needs in mitigating coastal storms. Their input guides product development. Several projects have already begun, slated for 2006.

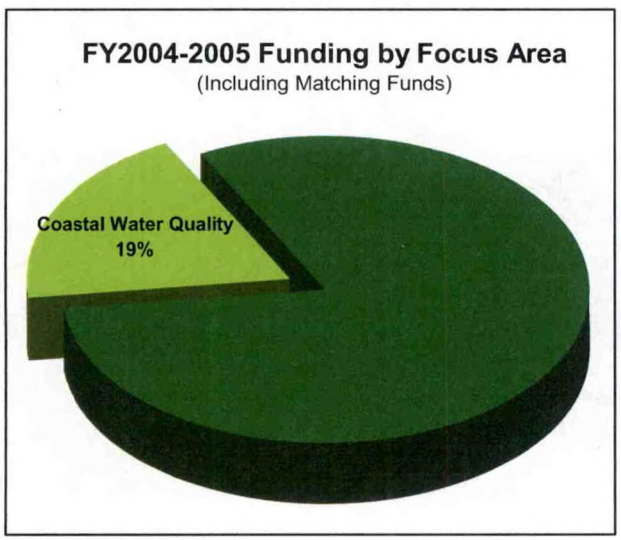
Hawaii Prepares Educational Information on Tsunamis

The Hawaii Coastal Management Program works in partnership with multi-disciplinary groups and agencies to reduce the risks of natural hazards affecting the coast, such as hurricanes, earthquakes, and tsunamis. These collaborations facilitate immediate review of state-of-the-art research and make possible practical implementation of the research.

After approval by the scientific, engineering, and emergency management communities, *Earthquake Hazards and Estimated Losses in the County of Hawaii* was published in 2005. It provides detailed information about the seismicity of the Island of Hawaii and incorporates Hawaii-customized ground motion, building inventories, and soil data in loss estimates for a number of earthquake scenarios. Hawaii County officials, including the mayor and members of his cabinet and county council, were given a briefing on these scenarios in February 2005.

Working hand-in-hand with Hawaii's tsunami community, *Tsunami: The Great Waves* was revised in 2005 to incorporate data from the December 26, 2004 tsunami and to broaden its scope. One hundred thousand copies of this revised booklet were published and are being distributed worldwide, increasing awareness and knowledge of what to do in the event of a tsunami in communities around the globe.

■Coastal Water Quality



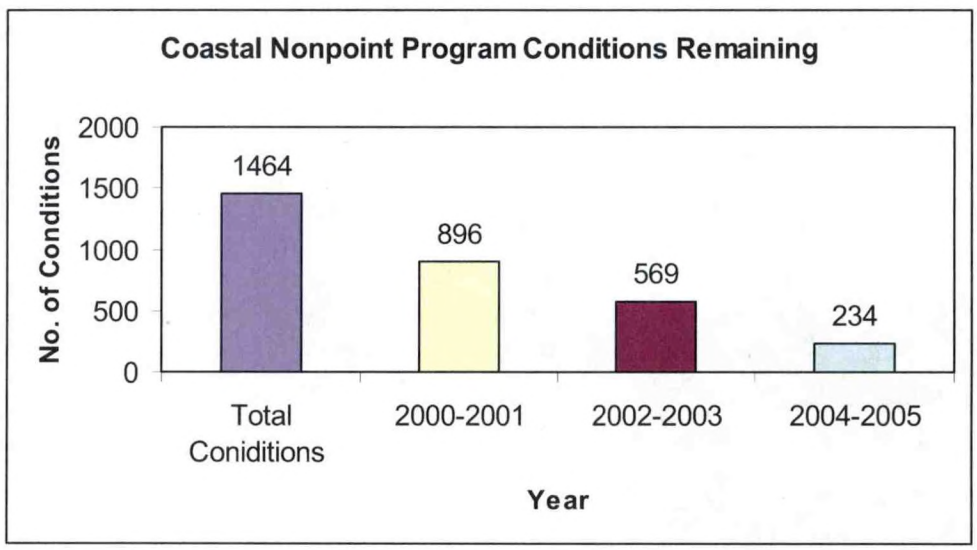
Coastal states and territories have continued to improve their programs to protect and restore coastal waters from the harmful effects of polluted runoff. Many state and territory efforts related to coastal nonpoint source pollution are the result of continued work to meet the requirements of Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. Section 6217 requires states to develop and implement "coastal nonpoint pollution control programs." Under the Coastal

Nonpoint Program, states use a consistent set of management measures, or "best management practices," to solve runoff pollution problems. State and territorial programs incorporate these management measures into a comprehensive plan to address land-based sources of runoff from agriculture, forest harvesting, urban construction and development, marina activities, and modifications of natural drainage patterns. States and territories provide accountability for their efforts through a number of tools, including regulations, voluntary approaches backed by enforceable policies, and outreach and education. State and territory coastal nonpoint programs are focused on pollution prevention—limiting and controlling runoff pollution before problems occur.

All states and territories participating in Coastal Zone Management Act have successfully developed frameworks for solving their unique coastal runoff pollution problems, as required by Section 6217. Indiana, a recent entrant to the National Coastal Management Program, submitted its first program document in March 2005. NOAA and the Environmental Protection Agency (EPA) continue to work with the State to further develop its program.

Following initial review of nonpoint programs, NOAA and EPA issued conditional approval of all plans and identified areas where work remained to meet program requirements. Sixteen states and territories have now achieved full approval. Full approval means a state or territory has developed a program and is equipped to implement the full range of available solutions to coastal nonpoint pollution problems.

Over the past 2 years, NOAA and EPA have worked diligently with those conditionally approved states to meet their remaining conditions and approach full program approval. Five states (Florida, Minnesota, New Jersey, New York, and South Carolina) currently have only one or two conditions remaining. Since the publication of the last biennial report, states have satisfied over 40 percent of their remaining program conditions. As of the end of fiscal year 2005, states have met 84 percent of the initial conditions placed on their programs.



Louisiana Adds to Nonpoint Programs

Beginning in 2003, the Louisiana Coastal Management Division initiated the integration of the Coastal Nonpoint Program into the State's Coastal Use Permit process, by requiring that nonpoint program conditions be attached to permits where appropriate. These nonpoint program changes have been implemented by both the Division and local coastal programs, and the Division is working to formalize guidance for permit staff. During the 2004-2005 biennium, Louisiana also developed a Clean Marina Program, published the Louisiana Clean Marina Guidebook, and certified two marinas. Other activities include a project that trained students to teach their peers about water quality, and a Nonpoint Education for Municipal Officials "NEMO" pilot program in Cameron Parish.

South Carolina Helps Local Governments Address Onsite Disposal Systems

The South Carolina Coastal Nonpoint Program initiated a capacity building grant program for local governments to provide municipalities with the incentive and financial assistance to proactively address nonpoint source pollution issues and educate the public on needed policy changes. In the pilot year of this grant, the South Carolina program funded projects that focused on the development of on-site sewage disposal system model ordinances, maintenance and inspection programs, and public education initiatives.

New Hampshire Builds Local Capacity to Reduce Polluted Runoff

New Hampshire's Coastal Nonpoint Program has been working with two regional planning commissions to develop and support a technical assistance program to address nonpoint source pollution at the local level through municipal land use planning, regulatory review and development, and education. The programs are specifically tailored to address nonpoint source issues unique to each region. Regional planning staff work one-on-one with town conservation commission and planning boards to review existing land use regulations relative to nonpoint source pollution, discuss sources of nonpoint pollution at the local level, and provide recommended changes to local land use regulations. To date, eight recommended regulations covering erosion and sediment control, road design standards, wetland and shoreland buffers, aquifer protection, impervious surfaces, and stormwater management have been accepted and approved by voters at town meetings.

Maryland Launches Web Site to Track Best Management Practices

Maryland developed a program to track restoration and nonpoint source pollution implementation efforts in each of the State's tributaries. The State uses the tracking system to assess its progress in implementing nonpoint point source control measures throughout the State, including those that are part of Maryland's Coastal Nonpoint Program. The types of best management practices tracked include: (1) urban (e.g., the number of acres treated by storm water detention ponds; the number of denitrifying septic systems in place); (2) agricultural (e.g., the number of acres with soil conservation water quality or nutrient management plans in place);

and (3) resource protection and improvements (e.g., the feet of shoreline erosion control projects undertaken; the feet of stream restoration carried out).

Massachusetts Promotes Low Impact Development and Open Space

The Massachusetts Coastal Nonpoint Program recently supported several projects to curb polluted runoff from urban areas, including the implementation of a newly updated Open Space Residential Design bylaw/ordinance in three cities and towns in the Merrimack Valley region. The new model ordinance promotes low impact development land planning and site-design practices that simultaneously conserve and protect land and water resources, while reducing infrastructure costs. All three towns adopted the new ordinance model in the spring of 2005 as a result of the project.

New Jersey Passes New Storm Water Regulations

In January 2004, New Jersey adopted new storm water rules that are among the most comprehensive storm water regulations in the country. The rules prohibit most new construction within 300 feet of high quality rivers, streams, and reservoirs and their immediate tributaries. New buffer requirements are an important tool for protecting critical drinking water supplies and sensitive ecological areas. Built-in flexibility in the rules for new developments exists for approved storm water management plans or minor disturbances occurring in existing developed areas. Also included are required best management practices that reduce runoff of total suspended solids by 80 percent, and promote smart growth principles consistent with the coastal nonpoint program guidance.

Federal Investments Leverage Coastal States' Dividends

Over the past two years, Congress has authorized $13 million for implementation of state coastal nonpoint pollution control programs. These resources have enabled coastal management programs to apply their unique capabilities to control coastal nonpoint pollution by supporting important administrative and project-oriented needs.

NOAA has encouraged states to target implementation funds toward three priority areas: septic systems, clean marinas, and capacity building. These areas have a coastal focus and are often not addressed directly through other federally funded nonpoint source programs. By targeting a portion of coastal nonpoint funds to these priority areas, OCRM and its state and territory partners are filling gaps left by other programs. Examples of how coastal states and territories are investing in these priority areas include:

Clean/Green Marina Programs

These programs improve marina and recreational boating facilities management through practices such as environmentally sound vessel maintenance, spill prevention, and proper sewage disposal. Clean Marina Programs are one of the most visible ways to educate citizens about nonpoint source pollution and their individual impacts on coastal ecosystems. During the past

2 years, six additional states developed Clean Marina Programs, bringing the total of coastal and Great Lakes states with programs to 19.

Florida designated its first Clean Marina under the Florida Clean Marina Program in 2000. In June 2004, Florida designated its 100th Clean Marina. The Clean Marina Program encompasses a multi-component approach consisting of marketing, workshops, technical assistance, publications, distance learning, grant awards, and designation. The Clean Marina Program is an important component in improving the health of Florida's waterways. During fiscal year 2005, another 100 marinas and boatyards were designated part of the Florida Clean Marina Program.

New Partnerships and Program Updates

To combine strengths that address the nexus between land use and coastal water quality, NOAA and the EPA are working together to address the impacts of growth and development on coastal communities, economies, and natural resources. This partnership creates efficiencies by leveraging the assets of each agency, providing a consistent message and new approaches from the Federal Government, and ensuring that both agencies are coordinating to address one of the most critical issues in achieving their missions.

Populations in coastal watersheds are growing rapidly, with 53 percent of the U.S. population already living within 50 miles of a coast. The environmental impacts of development directly affect the ability of communities to balance natural resource protection with economic growth. The pressures of coastal growth also profoundly affect the ability of NOAA and EPA to achieve national goals for sustainable management of coastal resources and protection of human health and the environment. This challenge was highlighted in the 2004 U.S. Commission on Ocean Policy report, "The pressures of continuing growth are acutely felt in coastal areas. While largely attributable to activities taking place along the coast, some pressures originate hundreds of miles away in inland watersheds."

States and local governments have direct authority over land use and development decisions, and play a key role in preventing nonpoint source pollution. Many communities are already moving towards addressing the challenges created by the impacts of current development patterns and practices. Communities are protecting critical watershed areas, adopting environmentally friendly development practices, strategically designating areas for future growth, and reducing pressure on undeveloped land by revitalizing brownfields and existing communities. The Ocean Commission Report recognizes the importance of these efforts, recommending that, "The U.S. Environmental Protection Agency, NOAA, and other appropriate entities should increase assistance and outreach to provide decision-makers with the knowledge and tools needed to make sound land use decisions that protect coastal water quality."

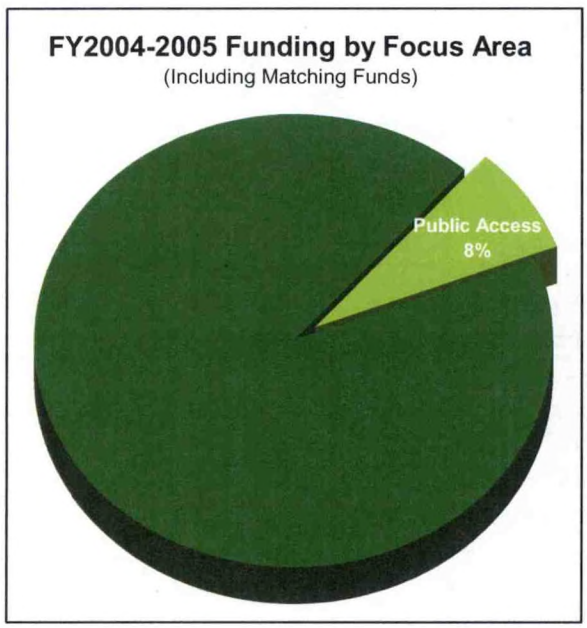
NOAA and EPA have responded to this recommendation by creating a formal partnership to support state and local development innovations. Testing and adopting new growth strategies is challenging, particularly for communities that are busy responding to daily incoming development proposals. The EPA/NOAA Partnership will address their need for resources, research, information, training, best practices, and technical assistance by providing:

- Training for local government staff and officials;
- Citizen workshops in cooperation with local governments;
- Program and policy advice; and
- Access to subject matter experts and other technical assistance to work on locally identified issues.

Challenges for the Future

The problem of nonpoint source pollution is bigger than any single agency or program can solve. It requires the full spectrum of federal, state, territorial, and local agency programs, and a commitment from citizens. Coordinating this myriad of activities and people remains difficult. Several states and territories face significant hurdles in completing the development of coastal nonpoint programs. The largest challenges, in addition to requiring additional financial and technical assistance from multiple sources, often need political support and institutional changes at state and local governments and agencies. The significant reduction of federal coastal nonpoint program funding in fiscal year 2005 ($3 million; down from $9.8 million in fiscal year 2004) is challenging states to support staff to coordinate the program and continue with program implementation and development. In addition to funding challenges, linking program outputs to changes in coastal water quality changes will remain difficult and contentious.

■Public Access



Ensuring public access to our Nation's coastal areas is a prime example of the balance required under the Coastal Zone Management Act, which weighs the interests of private property owners, wildlife and their habitat, against the requirements of the Act to give the public access to the coast for recreation. Population growth within the coastal zone has increased dramatically. In 2003, approximately 153 million people (53 percent of the Nation's population) lived in 673 U.S. Coastal Counties, an increase of 33 million people since 1980.[22] The new popularity of different forms of coastal recreation has increased the demand for places to swim, fish, and boat.

San Francisco Bay Plan Recreation Update

The San Francisco Bay Conservation and Development Commission Plan's recreational element was adopted in 1968 and has not had a major update since. Since the Plan was first adopted, the demographics of the area have changed, new forms of water-oriented recreation, such as sail

boarding, have become popular, and the Bay Trail around San Francisco Bay was initiated and is now almost completed. The Development Commission staff is working with local, regional, state, and federal agencies and non-governmental organizations to develop a report and recommend Bay Plan changes that address the recreational needs of those living in the Bay Area, and the many visitors who come to San Francisco. The revised recreational element will be presented to the Commission for approval, and if approved, will guide the development and improvement of recreational opportunities along the Bay.

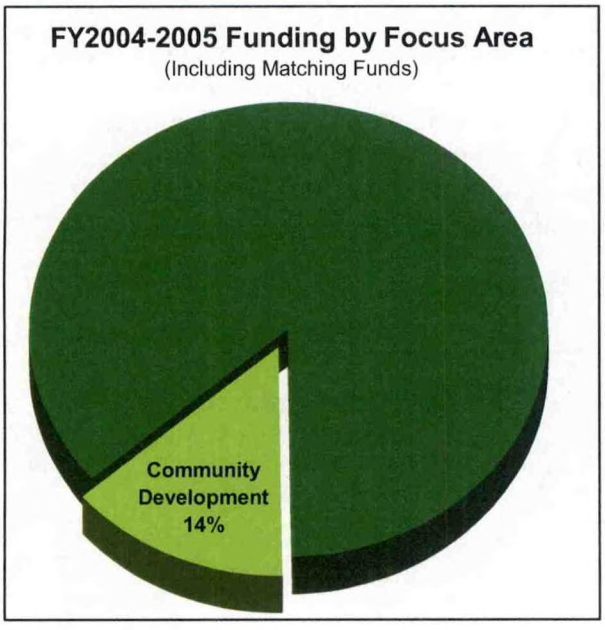
Beach Safety—Warning Signs and Flags

The Florida Coastal Management Program developed and produced beach warning flags and interpretive signs to notify beach residents and visitors of water, tide, and surf conditions. To minimize the risks of drowning or serious injury, the Florida Department of Environmental Protection has worked with the Florida Beach Patrol Chiefs Association, the U.S. Lifesaving Association, and the International Lifesaving Federation to develop a uniform warning flag program for use by Florida's beachfront communities. Local governments can request warning flags and signs to be placed at public beach access locations at no cost. So far, the Florida Coastal Management Program has been able to provide flags and signs to over 40 percent of eligible coastal communities.

Puerto Rico Program Installs Dune Protection

The Puerto Rico Coastal Management Program completed three significant coastal access projects in the Pinones Natural Reserve. Three wooden dune crossovers were constructed, public access signage was installed, and the dunes were restored and replanted at Aviones Surfers Beach. Previously the sand dunes and vegetation had become eroded from the public's use to access the beach. The new dune crossovers provide clear access points to the beach and prevent further dune erosion. An inauguration ceremony for the crossovers was held in June 2005 and was attended by local mayors, school children, and the Secretary of the Puerto Rico Department of Natural and Environmental Resources.

■Coastal Community Development



Coastal counties are the most densely populated areas in the United States. The population of coastal counties is expected to increase by more than 7 million by 2008, and 12 million by 2015[23]. Land development follows such population growth. According to the U.S. Department of Agriculture's Natural Resources Inventory, developed land in the contiguous United States increased 34 percent between 1982 and 1997. During the same 15-year period, the U.S. population

grew by about 15 percent. Land consumption has thus been occurring at more than twice the rate of population growth.

As more people live on some of our Nation's most environmentally sensitive and ecologically productive land, planning to sustain economic growth over the coming decades is essential. State coastal management programs promote activities in coastal communities to accommodate growth and development while ensuring viable coastal resources for future generations. Without long-term plans, growth and development can harm the resources needed to sustain a healthy economy and environment. For example, malfunctioning septic systems servicing shoreline development can contaminate bays and cause fisheries and beaches to close. Concrete and other impervious paving reduces the ability of water to filter the soil and replenish underground water sources. Also, coastal storms, erosion, and mudslides can destroy development located too close to the shoreline.

NOAA and its coastal management partners provide local decision-makers with information on development impacts on coastal resources and alternatives to traditional suburban development. This information helps foster local solutions to managing coastal development. In addition, state and territory coastal management programs have partnered with the reserves to implement coastal decision-maker workshops to educate and incorporate resource protection into the local development process.

State coastal management programs promote sustainable growth in coastal communities by:

1) Working with local governments to develop land use plans, ordinances, and permitting programs to guide the location and impacts of new development;
2) Developing special area management plans to increase protection of significant natural resources while accommodating reasonable economic growth;
3) Providing training and technical assistance to build local capacity to manage growth; and
4) Promoting voluntary stewardship through training programs and funding for restoration and land conservation.

Louisiana's Local Coastal Programs

Louisiana's coastal parishes are encouraged to develop and implement local coastal programs. During the 2004-2005 biennium, two new local programs were approved for Plaquemines and Terrebonne parishes. Through permitting, parishes with local coastal programs have the authority to regulate uses of local concern, such as subdivision development. In addition to financial support from the state, parishes have received technical assistance on contract and budget issues and on Wetland Value Assessment methodology. OCRM has also provided the parishes with various educational materials and opportunities relating to coastal restoration, wetlands identification, and stormwater runoff.

California's Regional Assessment Project

The California Coastal Commission, one of California's approved coastal management programs, is working on a regional cumulative assessment project in the Marina Del Rey

area of Los Angeles County. Marina Del Rey is a heavily populated area surrounding a large artificial bay that provides boating access and recreational opportunities. The first step of the project was to collect and analyze historical and new information to better address public access, water quality, recreational boating, natural hazard risks from earthquakes, tsunamis and liquefaction, nonpoint pollution, and other important local issues. Staff will work on developing recommendations for the County's approved local coastal program to better manage its coastal resources and improve the coastal community of Marina Del Rey. Similar comprehensive planning projects have been completed in targeted areas along the coast, including San Luis Obispo and Monterey.

Mapping South Carolina's Marsh Islands

Development pressures have increased and now affect even the smallest of marsh islands. NOAA's Coastal Services Center worked with South Carolina's Coastal Management Program to map the State's marsh islands and develop a geographic information system to help officials make decisions about the feasibility and potential impact of this type of development. This information is being used as South Carolina studies its existing policies and considers enacting new regulations.

Maui County Shoreline Setback Study

In 2003, to better address shoreline erosion issues within Maui County, the Maui Planning Commission passed a new shoreline setback standard based on historic erosion rates. The new ordinance requires development to be set back 50 times the annual erosion rate plus 20 feet, or adhere to the old arbitrary setback, whichever is greater. Only minor and/or removable structures are permitted seaward of the setback line.

To help in determining the correct erosion rate-based setback, the Maui Planning Department uses the Maui Shoreline Atlas developed by the University of Hawaii Coastal Geology Group. The Atlas divides the shoreline into 20 meter transects and lists the annual erosion hazard rate for each transect. To ease shorefront property owners' concerns that they would not be permitted to rebuild existing structures that were seaward of the setback line if the structure was damaged or destroyed, the new ordinance allows existing structures to be rebuilt if damaged by fire or non-coastal hazards. Rocky shores, or areas of the shoreline that are already artificially hardened, are also exempt from the erosion-based setback, but have to adhere to the state minimum setback requirements.

■ Protecting Water Dependent Uses and Revitalizing Urban Waterfronts

Waterfront revitalization, port development, and protection of water dependent uses are complementary goals under the Coastal Zone Management Act which promote economic development, while balancing competing uses of the coast. Waterfronts traditionally were the center of commercial, industrial, and recreational activities in coastal communities, but economic and technological changes have left many waterfronts underutilized and in disrepair. Because of their industrial history, many urban waterfronts and port properties are brownfields—real estate where expansion or redevelopment is complicated by real or perceived contamination. The

OCRM and state and territory coastal management programs have worked with communities to develop and implement master plans to revitalize waterfronts, clean up brownfields, provide public access, and restore coastal resources. Many coastal management programs have worked with communities to develop harbor management plans to balance competing uses and preserve water dependent uses such as maritime trade. As U.S. ports modernize marine transportation systems, balancing port expansion while maintaining community character and protecting resources is a challenge for coastal managers.

Portfields Initiative – Background

In 2003, NOAA launched the "Portfields" Initiative, a federal interagency effort focused on the redevelopment of brownfields in port and harbor communities, with an emphasis on development of environmentally sound port facilities, environmental restoration, and community revitalization. Reuse of abandoned or underutilized properties in port communities can provide jobs and spur economic development by enhancing port infrastructure and improving the flow of commerce. In addition, port redevelopment can be undertaken in a manner that protects human health, protects and restores critical habitat, ensures homeland security, and provides a better quality of life for community residents. Portfields is led by NOAA, along with the Environmental Protection Agency, the U.S. Army Corps of Engineers, the Economic Development Administration, and the U.S. Maritime Administration.

In 2003, three Portfields pilot communities were selected: New Bedford, Massachusetts; Bellingham, Washington; and Tampa, Florida. The goal of the pilots is to produce on-the-ground results by enhancing coordination among federal, state, and local partners, and improving the delivery of financial and technical resources. By building local capacity and leveraging programs, these pilots are producing new models which are transferable to other coastal communities. All three of the pilot projects were implemented in 2004-2005. The following is a snapshot of the activities implemented at each site.

New Bedford Dredging

New Bedford/Fairhaven Harbor includes one of the most complex Superfund sites in the country. Because of high levels of polychlorinated biphenyl contamination in the harbor, navigational dredging has not occurred in 30 years. Channels are shoaled to levels above authorized depths, limiting the size of ships and volume of cargo that can enter the harbor, which in turn negatively impacts the local economy. New Bedford is applying a simplified procedure known as the "state enhanced remedy" under the Superfund cleanup program to streamline the dredging process. This mechanism streamlines permitting for navigational dredging by linking dredging to the clean up of the Superfund site, saving both time and money. A team consisting of New Bedford and the Town of Fairhaven, NOAA, EPA, the U.S. Army Corps of Engineers, and Massachusetts' Department of Environmental Protection, Division of Marine Fisheries, and Coastal Zone Management Program initiated the port's dredging under the state enhanced remedy. Portfields has also helped leverage $5 million from the Commonwealth of Massachusetts and $200,000 from the private sector for navigational dredging.

Bellingham Waterfront Revitalization

The Portfields federal partners are helping the Port of Bellingham build on its existing planning efforts to address significant environmental contamination and revitalize idle and abandoned waterfront properties. The Port of Bellingham recently completed a new vision and multi-year action plan for revitalizing the city's waterfront. The plan will help the community respond to significant losses in heavy industry and increasing demand for commercial and recreational opportunities. A large component of the revitalization effort centers around 137 acres of waterfront property recently acquired by the Port from Georgia Pacific. Over the next several years the port will be undertaking the cleanup of contaminated upland and sediment sites and will be implementing a comprehensive program of maritime improvements. The Port's plans to redevelop the waterfront include a new marina, a regional sustainable development center, improved public access (trails, parks), and mixed-use buildings, as well as the restoration and protection of natural habitat. The Portfields partners are working closely with the Port of Bellingham to streamline permitting, plan restoration, provide visibility, and leverage resources.

Tampa Stormwater Management

Tampa is serving as a national model for innovative stormwater management by designing and building a network of drainage ditches, retention ponds, and filtration wetlands that will improve water quality and enhance habitat within Tampa Bay. NOAA provided $45,000 to the Tampa Port Authority for planning and design of stormwater improvements on its property. This project has involved the development of a geographic information system to collect and convert property boundary and topography data layers to determine where stormwater runoff travels from each individual parcel. This work will help the Port Authority identify properties best suited for installation of best management practices for stormwater management improvements. The geographic information system component will be followed by site specific engineering designs for best management practices. A number of partners are involved with this project, including the Southwest Florida Water Management District, the Tampa Bay Estuary Program, and Photo Science Geospatial Solutions. This partnership is already providing opportunities to leverage funds for on-the-ground best management practice installations.

National Estuarine Research Reserve System

The National Estuarine Research Reserve System is a network of 26 protected areas representing different biogeographic regions of the United States, set aside for long-term research, water quality monitoring, education, and coastal stewardship. NOAA provides funding, national guidance, and technical assistance. A lead state agency or university manages each reserve with input from local partners. The partnership between NOAA and coastal states protects more than one million acres of estuarine land and water, providing essential habitat for wildlife; offering educational opportunities for students, teachers, and the public; and serving as a platform for research.

Reserve staff work with local communities and regional groups to address natural resource management issues, such as nonpoint source pollution, habitat restoration, and invasive species. Through integrated research and education, reserves help communities develop strategies to deal successfully with coastal resource issues. Reserves provide training to professional audiences on estuarine issues, offer field classes for K-12 students, and support teachers through professional development programs in marine education. Reserves also provide long-term water quality monitoring, as well as opportunities for scientists and graduate students to conduct research in a living laboratory.

Three programs are conducted at all reserves across the country. Each reserve participates in the System Wide Monitoring Program, the Graduate Research Fellowship Program, and the Coastal Training Program.

- Short-term variability and long-term change in coastal conditions are monitored and data is provided to researchers, natural resource program managers, and other coastal decision-makers through the System Wide Monitoring Program.
- The Graduate Research Fellowship Program provides master's degree and doctoral candidates with an opportunity to explore scientific questions of local, regional, and national significance at a reserve.
- The Coastal Training Program provides up-to-date scientific information and skill-building opportunities to individuals who are responsible for making decisions that affect coastal resources.

In addition to participating in these system-wide activities, each reserve is engaged in locally relevant efforts to advance estuarine protection, science, education, and decision-making.

National Investment

While non-regulatory in nature, the National Estuarine Research Reserve System provides long-term protection of natural resources within the System's 26 reserves and is a model for responsible management practices. Since reserve resources are often affected by external activities, reserve staff cooperates with local partners to protect and restore land and aquatic natural resources. The system-wide program provides leadership, coordination, technical support, and consistency for activities at national, regional, and local levels. Stewardship activities in the Reserve System include invasive species removal, prescribed fires, wildlife

management, restoration of habitat, and land acquisition. To increase the diversity of habitats and biogeographic regions that the Reserve System can study, the Estuarine Reserves Division at NOAA also works with interested states to designate new reserves.

During the 2004-2005 biennium, $6.8 million in discretionary procurement, acquisition, and construction funding was awarded to reserves for land acquisition and construction projects, ranging from renovation and expansion projects for education and interpretive facilities, dormitories for visiting scientists and teachers, research labs, enhancements for public access, and acquisition of key land parcels for research, education, and stewardship activity.

Great Bay New Hampshire Land Acquisition Partnership

Situated near New Hampshire's seacoast, Great Bay is a unique inland tidal estuary, fed by five major rivers from a watershed of 450,000 acres. The Great Bay Resource Protection Partnership is a comprehensive approach to identify Great Bay's most critical habitats and to protect them. With The Nature Conservancy as lead acquisition agent, the partners also include the Audubon Society of New Hampshire, Ducks Unlimited, Great Bay National Estuarine Research Reserve, Natural Resources Conservation Service, New Hampshire Fish and Game Department, Society for the Protection of New Hampshire Forests, the U.S. Environmental Protection Agency, and the U.S. Fish and Wildlife Service.

Major funding for the partnership has come from NOAA and the North American Wetland Conservation Act. Funding has also come from matching funds, such as cash donations, and the value of donated and discounted land sales. Since 1997, the partnership has protected more than 4,000 acres in the 24-town focus area, including shoreline frontage along Great Bay and important ecological areas in the watershed.

In 2005, the partnership completed two land conservation transactions that had been long-standing priorities:

- The Shackford Point in Newmarket is an 86-acre tract at the mouth of the Lamprey River and Great Bay. "Because of its location and habitat, this property was one of the first to be identified as a priority for protection when the partnership began in 1994," said Bob Miller, recently retired Great Bay Project Director for The Nature Conservancy. "We've been actively working to protect this piece ever since." The protected property includes fields and forest, important waterfowl nesting areas, and bald eagle roosting sites.

- The Smith Farm tract, a 38-acre parcel on Great Bay in Greenland, includes important habitat for Canada geese, black ducks, mallard and other waterfowl. The tract abuts three other parcels protected by the partnership, all on Great Bay. Combined, the tracts create a 123-acre block of protected habitat on the Bay. The Smith parcel alone protects 1,121 feet of shoreline on Great Bay, and a total of 4,540 feet with the other three parcels. "The work of the Great Bay Resource Protection Partnership has been critical in carrying out this responsibility," said U.S. Senator Judd Gregg. "The addition of the Smith Farm to the network of protected parcels here is another major success for the partnership. I want

to congratulate all the members of the partnership for their continued commitment to Great Bay, and I am pleased to have been able to support these efforts."

■ Graduate Research Fellowship Program

The Reserve System's Graduate Research Fellowship Program funds graduate students on a competitive basis. The program provides master's degree and doctoral candidates with an opportunity to conduct research relevant to key coastal management issues at a reserve. Each reserve can support up to two fellows in any funding year. Funds support research projects that will enhance scientific understanding of reserve ecosystems, provide information needed by reserve management and coastal management decision-makers, and improve public awareness and understanding of estuarine ecosystems.

The Fellowship Program attracts students from all over the country, including states that do not have a reserve. Since its inception in 1997, the Fellowship Program has funded a total of 215 fellows. The program is designed to provide funding awards for multiple years. In fiscal year 2004, the Reserve System funded 20 fellows previously accepted in the program and 31 new fellows (51 out of 52 available positions were filled). In 2005, there were 24 returning and 25 new fellows (48 out of 52 available positions were filled).

Fellowship projects focus on habitat restoration/conservation, nutrient dynamics/nonpoint source pollution, sustaining estuarine resources, invasive species/biodiversity, and economic, sociological, and/or anthropological research applicable to estuarine ecosystem management.

■ System Wide Monitoring Program

A key to protecting coastal waters and restoring estuarine habitats is obtaining and understanding information on how human activities and natural events change ecosystems. The Reserve System has begun a large-scale monitoring effort called the System Wide Monitoring Program to track short-term variability and long-term changes in coastal ecosystems.

The initial phase of the Reserve System's System Wide Monitoring Program began in 1996. This phase focuses on monitoring a suite of water quality and atmospheric information. Since 1996, the System Wide Monitoring Program has collected pH, conductivity, temperature, dissolved oxygen, turbidity, and water level data. In 2001, it began collecting monthly nutrient and chlorophyll-a samples. The Program uses automated instruments to collect water quality data. These data loggers record at 30-minute intervals at four stations in each reserve. The Reserve System's Monitoring Program measures variables that indicate habitat quality for estuarine species, establish health criteria, and determine human uses. The information collected by this program has been used to measure the impacts of restoration projects and to analyze water quality conditions. Data collected are centrally located, managed, and published at the Centralized Data Management Office in South Carolina.

Biological monitoring

The second phase of the System Wide Monitoring Program began in 2004. The central objective of phase two is to characterize biotic diversity in the reserves' estuarine ecosystems by assessing community composition and species abundance and distributions. The System Wide Monitoring Program's phase two builds on phase one monitoring capabilities by developing inquiry-based research projects that explore patterns of inter-annual variability and spatial distribution of estuarine communities, including emergent and submerged vegetation, invasive species, benthic communities, and nekton/plankton communities.

A key component of this phase is the production of biological monitoring data for use by scientists and coastal managers in short-term research planning or management decisions, in addition to the long-term goal of tracking biological changes over time. The Reserves System is working to implement a national biomonitoring program focused on emergent and submerged aquatic vegetation communities. The program monitors the overall spatial distribution of either emergent vegetation or submerged aquatic vegetation communities within the boundaries of the reserves and the detailed vegetative characteristics of selected stands of these communities within a reserve's boundaries.

Sixteen reserves have participated in the biomonitoring effort, and it is anticipated that the remaining 10 sites will be funded to start biomonitoring work in 2006. Biomonitoring projects have focused on developing baseline vegetation distribution maps. These maps can contribute to future research on land use change; determining changes in health and distribution of communities with long-term changes in water quality and quantity; and quantifying changes in marshland cover types. Future biomonitoring efforts within the reserves will likely focus on invasive species, benthos, plankton, and nekton communities.

Land Use and Habitat Change

The third phase of the System Wide Monitoring Program focuses on tracking and evaluating changes over time in coastal and estuarine habitats as they relate to changes in watershed land use practices. In a first step toward system-wide, phase-three monitoring, reserve staff members are working to define a common classification system to assist the reserves in a consistent, nationally comparable habitat and watershed mapping and inventorying effort. Currently, five reserves are piloting the newly designed "NERRS Classification Scheme" to assess if it is suitable for a national effort to map habitat at each reserve.

Observing Systems and Real Time Data for the National Estuarine Research Reserves

The Integrated Ocean Observing System initiative is developing an integrated national observation system for the U.S. coastal zone. The Observing System will be built upon federal monitoring efforts and regional coastal and ocean observing systems that monitor the state and characteristics of the U.S. coasts, oceans, Great Lakes, and estuaries. The Observing System is envisioned as a coordinated network of observation platforms and data management, analysis, and modeling systems that acquire and disseminate data on past, present, and future states of the

U.S. ocean and coastal areas. Users will include coastal resource managers, scientists, educators, mariners, and emergency responders.

The reserves' System Wide Monitoring Program has been identified as a national backbone component for this Integrated Ocean Observing System because of the Reserve System's broad coverage of estuarine and coastal habitats. The data is a particularly valuable component of the Integrated Ocean Observing System network as it is one of the few contributing members that will deliver important estuarine data. The estuarine water and weather data generated by the reserves can be used to provide information to support a number of Observing System goals including: sustaining living marine and estuarine resources, protecting and restoring healthy coastal marine and estuarine ecosystems, improving modeling and predictions about the consequences of coastal climate change, and mitigating the effects of coastal storms and other natural hazards. The reserves are currently working to invest in the new technology and implementation costs necessary to coordinate its System Wide Monitoring Program with the larger Integrated Ocean Observing System initiative.

Regional Synthesis of System Wide Monitoring Program Data

In 2005, the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) funded four projects that will integrate system wide monitoring data, and relevant ancillary research and monitoring datasets, to address important coastal management issues at a regional scale. The bioregions in this effort include: the Pacific, Mid-Atlantic, South Atlantic, and New England. Specific topics that will be discussed in the regional synthesis projects are:

1. Assessing the status of estuarine eutrophication and nutrient management measures;
2. Investigating the effects of human activities on estuarine water quality conditions and living resources (e.g., submerged aquatic vegetation);
3. Increasing the understanding of the impacts of short-term climatic events (i.e., tropical storms and hurricanes), and large-scale events (i.e., El Niño, North Atlantic Oscillation) on estuarine water quality parameters; and
4. Assessing how watershed inputs and oceanic forcing drive changes in estuarine nutrient concentrations.

This will be the third synthesis of reserves' system wide monitoring data. Synthesis reports provide baseline information for future assessments and valuable information about how estuaries function in different tidal regimes, climate conditions, and geographic locations across the Reserve System. These efforts also assist coastal managers in developing appropriate strategies to better manage coastal issues or threats, such as nonpoint pollution, and will help develop predictive capabilities for estuarine and coastal environments.

Using SWMP Data to Inform the Delaware Water Standards

There are 2,500 miles of rivers in Delaware. Nearly all Delaware state waters are listed as "impaired" under Section 303(d) of the Clean Water Act. Approximately 99 percent of these waters do not fully support water quality standards for swimming, and 64 percent of these waters do not fully support water quality standards for fish and wildlife activities. The State of

Delaware is required by the Clean Water Act to develop total maximum daily loads (TMDLs) for each impaired water body, which set limits for the amount of any given pollutant that can be discharged into the water body without exceeding water quality standards.

TMDLs are determined by computer models, which are calibrated and verified with existing water quality data. Sources of water quality data in Delaware and many other states are limited and patchy in terms of geographic and temporal coverage, and there is no standard set of parameters that are monitored in all data gathering efforts. The Delaware Reserve system wide monitoring program has helped state water quality managers by providing large quantities of high quality data for the areas adjacent to the Delaware Reserve's dataloggers. For example, three system wide monitoring stations along the St. Jones River collected approximately 400,000 data points between 1997-2004, which were used to help develop TMDLs for the nearby Mispillion River and Cedar Creek. The high volume and quality of data collected through the reserve's system wide monitoring program helps state water quality managers understand trends in water quality parameters at reserve sites, which allows managers to calibrate models that extrapolate across the gaps in other data sets.

Tijuana River Restoration

The Tijuana River Estuarine Research Reserve has conducted an assessment of the functionality of restored salt marshes. This project included the examination of the influence of experimental tidal creeks on plant and animal populations within a 20-acre experimental marsh. Results of this research will be applied to the adaptive restoration program, which is an effort to integrate high quality science into phased restoration efforts. The Reserve is currently in the feasibility assessment stage for a large restoration project aiming to recover more than 200 acres of salt marsh.

■ Public and Student Education

EstuaryLive

The EstuaryLive Internet field trip through estuaries continues to be a major education and outreach initiative sponsored by the National Estuarine Research Reserve System in partnership with the Environmental Protection Agency's National Estuary Program. Each year in the days just prior to National Estuaries Day (the last Saturday in September), thousands of K-12 students and teachers visit estuaries around the country via a series of live Internet broadcasts. They hear from scientists and educators about the roles estuaries play in the ecosystem, the interactions of wildlife, plants and humans, and the challenges faced in sustaining healthy estuaries. Students interact with the presenters by e-mailing questions, many of which are answered live on the air. Others are answered later by e-mail.

In the 2004-2005 biennium, participation in EstuaryLive has grown exponentially. The number of teachers registering their classes in advance nearly doubled and the number of students who participated in the live event is estimated at more than 15,000 in 2005. An increase of more than a million people had access to the programs through local cable and public television outlets that carried them.

EstuaryLive uses state-of-the-art satellite technology to broadcast over the Internet and KU band satellites. Teacher preparation and support materials are available on the EstuaryLive Web site[24], and EstuaryLive staff members provide personal support for teachers. EstuaryLive content includes history, culture, science (correlated to national science education standards), biology, chemistry, physics, and language.

In 2005, one of the estuaries scheduled to participate in the EstuaryLive program was Grand Bay Reserve in Mississippi, which was hit hard by Hurricane Katrina just three weeks before the broadcast. The storm damaged facilities in the Reserve so the broadcast could not take place there, but Reserve staff were determined that the program would go on. They relocated the event to Mobile Bay, Alabama, with the help of the Environmental Protection Agency's Mobile Bay Estuary Program, and adapted the outline for the show to include relevant information about hurricanes, the effects of coastal storms on estuarine biology and hydrology, and specific information and video about the impact of Hurricane Katrina on Grand Bay Reserve.

Investments in Education Centers

Growing demand for education programs has overwhelmed reserve facilities at some sites. As a result, expansion and improvement of education centers and laboratories have been priorities over the past two years.

In 2004, U.S. Congressman Mario Diaz-Balart joined the Florida Department of Environmental Protection's Secretary Colleen M. Castille to cut the ribbon on the multi-million dollar, 16,500-square-foot Environmental Learning Center at the Rookery Bay Reserve. The Center features 5,000 square feet of exhibits, four marine research laboratories, a coastal training center, art gallery, aquaria, and a visitor's center. Visitors are greeted at the door by an eight-foot sculpted polka-dot batfish illustrating the diversity of life found in the brackish waters of Rookery Bay. Through education, hands-on science, exploration and art, the Learning Center promotes a sense of stewardship for Florida's living waters.

The Guana Tolomato Matanzas Reserve near St. Augustine, Florida, opened a new 21,000-square-foot Environmental Education Center in September 2005. Funded largely by NOAA, this facility includes a multi-media theatre, classrooms and meeting rooms, life-size animal exhibits, and a Nature Store operated by Friends of the Reserve. Interpretive displays address many of the issues facing north Florida, from natural resource management to the inter-connectedness of people, plants, and animals. The center will enhance all of the reserve's education, outreach, research, and coastal training programs.

The Chesapeake Bay Virginia Reserve dedicated the 5,400-square-foot Catlett-Burruss Research and Education Laboratory at the Virginia Institute of Marine Science in Gloucester Point in September 2005. NOAA contributed about $1 million for construction of the facility, which will support water quality monitoring of Chesapeake Bay and tributaries, research in watershed and shallow water habitats, and training programs for targeted groups of students, teachers, and coastal decision-makers. The lab is named for the Catlett-Burruss family, which has contributed generously to the Reserve and to the Institute of Marine Science over the years.

In Washington State, the Padilla Bay Reserve opened two new wings on the Breazeale Interpretive Center in October 2005, including a 100-seat classroom, office space, library, reception area, volunteer room, conference room, and a large training and meeting room. The expansion significantly increases the capacity of the Interpretive Center to handle school groups and other individuals and organizations, including clients of the Coastal Training Program.

A much-needed expansion to the Delaware Reserve's Visitor Center added a small conference room, a large conference room, restrooms with showers, and four small offices and dorm facilities for visiting researchers. NOAA contributed $700,000 to help fund the expansion. These updates to the Delaware Reserve facility increase the Reserve's ability to host teacher training workshops, volunteers, visiting researchers, and local community organizations.

The Kachemak Bay Research Reserve dedicated the Alaska Island and Ocean Visitor Center in Homer, Alaska, in July 2004. This state-of-the-art interpretive, educational and research facility is shared with the Alaska Maritime National Wildlife Refuge. NOAA, the National Fish and Wildlife Service, and the Federal Highway Administration financed the more than $14 million project. The 36,825-square-foot facility provides the reserve with space for administration and support offices, research laboratories, and public interpretation and education displays and forums. The facility enables the reserve to improve the understanding and conservation of the marine environment.

Delaware Reserve's "Green Eggs and Sand"

"Green Eggs and Sand" is a curriculum composed of four educational modules that systematically guide students through an understanding of the horseshoe crab, its connection to a larger ecosystem (through shorebirds), its use by man, and finally human attempts to manage this resource given limited science and multiple stakeholders. Activities are multi-disciplinary, designed for flexible use in a variety of formal and non-formal educational settings, targeting middle school level and up. All lessons are keyed to national curriculum standards for science, math, social studies, and language. "Green Eggs and Sand: The Horseshoe Crab/Shorebird Education Project" was initiated in early 2000, in response to widespread interest in developing educational modules around the mid-Atlantic horseshoe crab/shorebird phenomenon, and the complex and challenging management issues it presents.

During 2002, grant monies received through the Federal Aid in Sport Fish Restoration Program of the U.S. Fish and Wildlife Service and NERRS provided funding needed to take the project to the next level. This included the addition of several lessons to the curriculum, revision of existing lessons based on feedback from pilot educators, the filming/editing of several more video pieces in support of specific lessons and to update new developments in the ongoing management story, and the re-formatting of the entire curriculum (lessons, videos, etc.) to a user-friendly CD/DVD product. Two workshops were also offered during the spring spawning season in both 2002 and 2003, with more than 150 new educators from 12 states participating.

New workshops were planned for the spring of 2004 and beyond to continue delivery of Green Eggs and Sand materials and experience. A Green Eggs and Sand poster/brochure was

developed and printed. Requests for workshops and the curriculum came in from the east coast. In 2004 in addition to the three-day, intense Delaware workshop, one-day mini-workshops were held in New Jersey, Massachusetts, and Virginia, all of which deal with controversy regarding horseshoe crabs and shorebirds. In 2005, Georgia was added to the one-day roster. All of these state venues have allowed the Green Eggs and Sand project to train teachers about the controversial issues surrounding horseshoe crabs in the Delaware Bay and along the eastern coast of the United States, giving them the tools necessary to pass along the information to their students. In 2005, the Green Eggs and Sand project team received the "Conservation Communicator of the Year Award" from the Northeast Association of Fish and Wildlife Agencies.

Training for Teachers in the Chesapeake Bay

The Chesapeake Bay Virginia Reserve's education coordinator wrote a curriculum for teacher training that uses water quality data from the Reserve's System Wide Monitoring Program. Using the data visualization tools created by the Reserve's Central Data Management Office, the curriculum shows teachers how to use the Office's website to obtain water quality and weather data for any given day. The curriculum also walks through computer-based lessons for middle school and high school students that use pre-selected data to demonstrate the impact of heavy rains on water quality parameters. The lessons increase students' abilities to use technology, understand data, graph and identify data trends, and use the data to come to conclusions about which parameters are impacted by seasonal differences in temperature and rainfall. The curriculum also includes lessons about how monitoring data can be applied to decisions like determining the location of an aquaculture site or where to focus restoration efforts.

Volunteer Monitoring at the Maryland Reserve

Coordinated salamander, larval fish, toad, and frog surveys were conducted at the Chesapeake Bay Maryland Reserve in 2004 and 2005. Volunteers are trained to identify animals and coordinate monitoring efforts conducted by scientists in the area. Larval fish field training for volunteers was designed to help determine the availability of suitable spawning habitat for anadromous fish in the Bush River. Volunteers were trained to collect and identify ichthyoplanktonic samples (eggs of fish drifting in the water column), and were trained to collect water quality parameters.

■ Informing Coastal Decision Makers

Coastal Training Program

The research reserve system's Coastal Training Program has provided up-to-date scientific information and skill-building opportunities to more than 17,800 individuals who are responsible for making decisions that affect coastal resources. The program helps to ensure that coastal decision-makers have the knowledge and tools to address crucial resource management issues. In the 2004-2005 biennium, the Coastal Training Program offered more than 130 training events to almost 5,000 decision-makers.

Coastal Training Programs focus on coastal habitat conservation and restoration, biodiversity, water quality, and sustainable resource management. Programs target a range of audiences, including land use planners, elected officials, regulators, land developers, community groups, environmental nonprofits, and coastal businesses. These training programs provide opportunities for professionals to network and develop new collaborative relationships to solve complex environmental problems.

The Coastal Training Program takes a strategic approach to education. For a reserve's Coastal Training Program to become fully operational, it must conduct a series of needs assessments and a marketing analysis to target the community's needs, the audiences, and the appropriate approaches. Since 2002, 23 reserves completed the required strategic planning process to fully implement their Coastal Training Programs.

Over the past two years the Coastal Training Program has developed a suite of performance measures and guidance protocols to ensure that data is being collected consistently across the system. Preliminary data was collected for 12 indicators in 2005. This initial data serves as a baseline for setting minimum requirements and performance targets for the training program. Data collected in 2005 show that 86 percent of participants in the Coastal Training program reported an increase in their own science-based knowledge and reported the intent to apply this new knowledge in their work.

Nitrogen Monitoring and Management at the Elkhorn Slough Reserve

One of the most difficult challenges facing coastal managers includes monitoring and managing nutrient runoff, particularly nitrogen from human land use practices. Excessive nitrogen in estuarine water can lead to explosive, damaging algae growth that can result in fish kills from depleted oxygen levels and interfere with the growth of native submerged aquatic vegetation.

In 2003 and 2004, Elkhorn Slough Reserve, in central California, hosted two workshops on nitrogen monitoring for managers and researchers actively engaged in nutrient management in the region. The workshops were presented by nutrient cycling experts from the Cooperative Institute for Coastal and Estuarine Environmental Technology. They showed participants the latest geographic information system-linked biogeochemical model used to guide nutrient management decisions in the Elkhorn Slough watershed. The model provides spatially explicit simulations of biogeochemical processes that control nutrient cycling and subsequent trace gas and nutrient releases to air and water.

The presenters introduced the decision support tool "Elkhorn Slough–Denitrification-Decomposition," (ES-DNDC) and in the follow-up workshop provided an update on user interface improvements and refinements to the model, as well as detailed training on installing and using ES-DNDC to assess management alternatives.

Participants left the workshops with a copy of ES-DNDC and, by contributing data and aiding in ongoing validation activities, have helped to improve the model. The Santa Clara Water District subsequently adopted the CICEET-sponsored model as a way to allot tax incentives for better management of nutrient run-off.

Post-Katrina Recovery at the Weeks Bay Reserve

Within days after the catastrophic Hurricane Katrina ravaged the Gulf Coast in September 2005, the Weeks Bay Reserve in Alabama hosted a national web-based teleconference in the coastal training auditorium on disaster recovery. The Web conference gave a dozen local and regional government officials, researchers, and non-governmental organizations a chance to participate and get answers to questions about disaster recovery and loss mitigation. The program was free for participants in Florida, Alabama, Mississippi, Louisiana, and Texas.

The conference was organized by the American Planning Association. Experts and experienced practitioners addressed best practices for disaster recovery in the context of planning. The conference focused on emergency permitting, envisioning the next steps, rebuilding local businesses, historic preservation, and long-term recovery planning.

The disaster recovery conference is an example of using the reserves' resources in partnership with others to broadly deliver science-based information to coastal decision-makers in response to an urgent need. Participants at the Weeks Bay event praised the session for the range of the subject matter and for answering questions specific to the Alabama-Mississippi coast while much of the attention was still focused on New Orleans. Participants also suggested additional topics for future training in planning for disaster recovery.

■ Partnerships for Coastal Management

Coos Bay Hydrological Modeling Project

A multi-disciplinary team of technical experts met in 2005 to define a strategy and identify specific requirements to develop a hydrodynamic model of Coos Bay and to establish an integrated coastal ocean observational system for Coos Bay, and near shore waters, that incorporates the existing data infrastructure. The model and observation system will support stakeholder needs for real time and accurate data to make decisions that affect industry and resource management in Coos Bay. Participants at the meeting included members of the technical team from NOAA, the U.S. Army Corps of Engineers, Oregon Graduate Institute, South Slough Reserve, the Oregon Department of Environmental Quality, the Oregon Department of Fish and Wildlife, the Coos Watershed Association, and Southwestern Oregon Community College.

This strategy is a gap analysis that steers data collection towards generating information and tools that will support decision-making in Coos Bay. The recommendations reflect opportunities to use specific data to support a diversity of user needs. The strategy builds on historical data sets, current modeling activities, and observational networks, and identifies the data framework and analysis needed to ensure that highest quality data can be applied to decisions regarding, among others, matters of public health and safety. This strategy will serve as a blueprint for pursuing data acquisition, maintenance, and delivery. The strategy will also provide excellent opportunities for training, outreach, and education that will support more efficient and cost-effective decision making and enhanced educational opportunities for state, regional, and local school systems and universities.

Monitoring Station Installed in Wells, Maine

NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) and the National Estuarine Research Reserve System, collaborated in the summer of 2005 to install a tide and water quality monitoring station at the Wells Reserve in Wells, Maine. This demonstration project is a pilot effort to integrate the CO-OPS' National Water Level Observation Network and the System Wide Monitoring Program, two defined backbones of the Integrated Ocean Observing System. It is the first station of its kind installed at a reserve, and used primarily for non-navigational purposes. The station includes primary and backup water level sensors, a suite of meteorological sensors, and, for the first time, a water quality sensor measuring several parameters is integrated with the station. The station allows Wells Reserve staff to access water level, weather, and water quality data all from the same platform at the same time, and the water quality data generated by this station will be compatible with the rest of the reserve's system wide monitoring water quality data. Products generated from these data will benefit both short-term (such as habitat restoration) and long-term (such as sea level trends) applications. Another outcome of this partnership will be a technology transfer effort enabling the reserve managers to be able to install, operate and maintain these kinds of systems around the country.

Gulf of Mexico Alliance

The five Gulf of Mexico state governors established the Gulf of Mexico Alliance in 2004 to develop regional priorities based on recommendations of the U.S. Commission on Ocean Policy. Support for this regional partnership was a key commitment under the President's Ocean Action Plan. Federal and state officials met in June 2005, to establish a framework for the Gulf Alliance Plan of Action, and to discuss and explore partnership opportunities. About 50 participants reviewed white papers developed on five priority topic areas agreed upon by the Gulf states: reducing nutrient loading; improving Gulf water quality; restoring coastal wetlands; identifying and characterizing Gulf habitats; and environmental education. In 2005, OCRM staff facilitated a meeting of the workgroup developing the nutrient loading white paper, and developed the template for all of the final white papers. The federal participants, including OCRM, provided a response to the white papers, preliminarily identifying existing and potential programs that may help to address the challenges laid out in the white papers. The final Plan of Action will be announced in 2006.

The first of several community workshops took place in June 2005, hosted by Florida's Rookery Bay Reserve. The workshop focused on local and regional needs of the Southwest Florida community with respect to the health of the Gulf of Mexico, and also served to better connect participants to federal and state efforts. Participants included local government and non-governmental organizations, as well as state and federal representatives. The workshop will serve as a model for similar workshops along the Gulf of Mexico designed to forge strong connections with local communities and give them a mechanism to provide input to state and federal efforts to devise an action plan.

National Marine Protected Areas Center

Presidential Executive Order 13158 on marine protected areas, signed in May 2000, called for the establishment of the National Marine Protected Areas Center, a collaboration between NOAA and the Department of the Interior. The Marine Protected Areas Center's main task is to consult with government and non-government agencies and the public to develop a scientifically-based, comprehensive national system of marine protected areas.

To carry out this task, the Marine Protected Areas Center has begun a multi-year process to engage the Nation in developing a framework for the national system of marine protected areas. The framework will serve as the set of guidelines for defining, developing, and implementing the national system. In order to develop the framework, the Marine Protected Areas Center is gathering stakeholder and partner input (from federal agencies, states, territories, commonwealths, the Marine Protected Areas Federal Advisory Committee, regional fishery management councils, tribes, local trustees, coastal communities, resource users, and other stakeholders). The Marine Protected Areas Center is also analyzing natural and social science related to marine resources and their use.

Once implemented, the national system of marine protected areas will represent diverse U.S. marine ecosystems and the Nation's natural and cultural resources. It will enhance existing systems and further integrate the management of existing parks, refuges, sanctuaries, and estuarine reserves in marine and coastal areas.

■ National System of Marine Protected Areas

Workshops and Briefings

The Marine Protected Areas Center is engaged in a collaborative process to inform the Nation about the development of a framework for a national system of marine protected areas. During the 2004-2005 biennium, the Marine Protected Areas Center held a series of briefings, workshops, and participatory dialogues to gather recommendations and input from the Marine Protected Areas Federal Advisory Committee, government and non-government agencies and organizations, authorities, coastal communities, user groups, and other stakeholders. The feedback gathered at these sessions serve as a cornerstone to drafting the framework for the national system of marine protected areas.

In addition to briefings with NOAA and Department of the Interior staff, the Marine Protected Areas Center held a series of workshops for federal agencies, states, and other stakeholders to provide feedback on the goals of the national system and the development of the framework. Participants provided information on:

- the process to develop a national system;
- input on the goals and objectives of a national system;
- feedback on their vision for a national system;

- specific considerations for working with their agency or stakeholder group and how a national system could serve various stakeholder interests;
- which natural and cultural resources should be conserved; and
- how NOAA and the Department of the Interior can work with stakeholders and agencies around the country to develop a national system.

Workshops for public and private stakeholders were held in various regions around the Nation, including in the Northeast, mid-Atlantic, Gulf of Mexico, Great Lakes, and West Coast. Based on the comments and feedback received from these groups, the Marine Protected Areas Center is drafting a framework that will be released for public comment in spring 2006.

■ Natural and Social Science

Benthic-Pelagic Linkages

The Marine Protected Areas Center gathered over 40 scientists, research managers, and recreational fishermen to discuss the effects of recreational pelagic fishing on benthic communities, and to determine if such fishing is compatible with marine protected areas. Vertical zoning was explored as an option for protecting benthic communities without eliminating recreational pelagic fishing. Participants developed general principles and guidelines that describe those cases where vertical zoning is appropriate for marine protected areas. Several products are expected to result from this workshop, including a general summary of guidance, future research, and a scientific peer reviewed publication as it applies to specific species.

Social Science

The Marine Protected Areas Center continued to take its national social science research strategy for marine protected areas to regional partners. The national strategy, which the Center created with experts from agency and academic affiliates, aims to inform and evaluate marine protected area processes by identifying six priority social science research themes: governance, institutions, and processes; use patterns; attitudes, perception and beliefs; economics of marine protected areas; communities; and submerged cultural resources. Regional workshops have been carried out in St. Croix, U.S. Virgin Islands (for southern Florida and the Caribbean region), Savannah, Georgia (for the south Atlantic region), Hawaii (for the Pacific Islands region), and for the Pacific Coast (for Alaska Washington, Oregon, and California). Participants review the national strategy, and then develop regional social science research plans to address local and regional marine protected area-related research priorities and information needs.

Cultural and Historical Resources

To promote collaboration and information exchange among individuals and agencies involved with the preservation and management of cultural and historic resources, the Marine Protected Areas Center launched a monthly newsletter highlighting marine cultural and historic news and updates from around the world. The publication, *Cultural and Historic Resources Newsletter*, features short summaries, links to news sites or relevant agency websites, and provides contact information when available. The newsletter serves as a primary resource for government and

non-governmental partners engaged in marine protected area cultural resources work, as well as those interested in the subject of maritime heritage. It is distributed to more than 200 primary subscribers worldwide, and is redistributed to another 100 people through the Maritime Archaeology and Historical Society.

■ International Coordination

North American Marine Protected Area Network

North American Marine Protected Area Network

The Marine Protected Areas Center continued to develop the North American Marine Protected Area Network, alongside Parks Canada, Mexico's National Commission on Protected Areas, and the Commission for Environmental Cooperation. In early 2005, the country leads for North American Marine Protected Area Network organized a workshop held in Loreto, Mexico. The focus of the conference was to develop a pilot project based on the migration route of gray whales along the Pacific Coast. Three sessions—"Measuring the Effectiveness of Marine Protected Areas," "Socioeconomic and Ecological Benefits of Marine Protected Areas," and "Creative Financing of Marine Protected Areas"—showcased 30 presentations made by scientists, government officials, and non-governmental representatives from across North America.

Canada/Mexico/U.S. Trilateral Committee for Wildlife and Ecosystem Conservation and Management

In 2005, the Marine Protected Areas Center, in collaboration with NOAA Fisheries, initiated participation in the Canada/Mexico/U.S. Trilateral Committee for Wildlife and Ecosystem Conservation and Management. After 10 years of focusing its efforts on terrestrial environments, the Trilateral Committee adopted marine issues into its component tables at its 10th annual meeting in May 2005. The Trilateral Committee is composed of six working tables: the executive table, the Convention on International Trade in Endangered Species of Wild Flora and Fauna, law enforcement, migratory birds and wetlands, species of common concern, and ecosystem conservation. The Marine Protected Areas Center participates at the ecosystem conservation table.

International Marine Protected Areas Congress

The Marine Protected Areas Center partnered with NOAA's International Program Office and National Marine Sanctuary Program to coordinate NOAA participation in the first International Marine Protected Areas Congress, held in October 2005 in Geelong, Australia. The Marine Protected Areas Center directed the development and organization for the NOAA exhibit, resulting in participation from six offices: Office of Response and Restoration Corals Program, National Marine Sanctuary Program, National Centers for Coastal Ocean Science, Marine Protected Areas Center, National Ocean Service Public Affairs, and NOAA Fisheries' Office of Constituent Affairs. The Marine Protected Areas Center participated in a panel discussion focused on national marine protected area efforts, and presented a poster that highlighted North American partnerships. More than 800 policy makers, government officials, non-governmental

representatives, and others from around the world attended International Marine Protected Areas Congress.

Gulf of Maine

The Marine Protected Areas Center's northeast regional coordinator continued to support the Gulf of Maine Council as a member of its working group and the habitat conservation subcommittee. In 2005, the Gulf of Maine Council distributed the *Gulf of Maine Marine Habitat Primer*, which provides an overview of marine habitats in the Gulf of Maine. The Marine Protected Areas Center's New England regional coordinator was expected to become the U.S. co-chair of the Gulf of Maine Council's habitat conservation subcommittee in 2006.

■ Inventories of Marine Managed Areas and De Facto Marine Protected Areas

Marine Managed Areas Inventory

The marine managed areas inventory is a multi-agency effort to gather information about the wide range of place-based marine management efforts in the United States. Examples of marine managed areas include national parks, national wildlife refuges, national marine sanctuaries, national estuarine research reserves, fisheries management areas, state beaches, and state parks. The data collected in the inventory contains a general description and site characteristics, such as location, purpose, and type of site, as well as detailed information on natural and cultural resources, legal authorities, site management, and regulations and restrictions.

The marine managed areas inventory:

- Helps regional, local, state and federal managers, scientists, non-governmental organizations, and others to better analyze and understand what sites exist and the management capabilities of those sites;
- Allows users to analyze and assess issues such as threats and effectiveness in protecting natural and cultural resources; and
- Provides a comprehensive information base to assist in the development of a national system of marine protected areas.

The majority of federal sites are complete, and information from 32 of 35 coastal states and territories was expected to be posted to the database in 2006. The Marine Protected Areas Center estimates that there are at least 2,000 marine managed areas in the United States.

De Facto Marine Protected Areas Inventory

Some marine areas are closed for non-conservation purposes, such as security zones, safety areas, and navigation lanes, but indirectly provide a level of protection to the marine resources due to their closed status. To understand this critical part of the ocean governance picture, the Marine Protected Areas Center has created an inventory and associated geographic information system database of these de facto marine protected areas throughout the United States. The completed inventory provides a comprehensive and objective assessment of the nature and extent of these sites. It will be evaluated to determine the impacts of de facto marine protected areas on

human users, their potential contribution to conservation and management of the Nation's marine ecosystems, the extent to which these restricted areas may contribute to the ocean conservation and management goals of NOAA and its island partners, and the extent to which the sites can be included in the national system of marine protected areas. The de facto inventory includes more than 1,200 classified sites throughout U.S. and territorial waters, with digital boundaries for all but 25 of the sites.

■ Outreach and Education

Current: the Journal of Marine Education

The Marine Protected Areas Center sponsored the July/August 2004 edition of, *Current: the Journal of Marine Education*, dedicated to marine protected area issues. The journal is published by the National Marine Educators Association. The Marine Protected Areas Center worked with more than 50 authors, reviewers, editors, illustrators, and others to publish the edition. The articles covered a wide range of related topics, including migrating birds and whales, dunes and marshes in national parks, shipwrecks in the Great Lakes, and traditional Hawaiian fisheries management. The edition also featured illustrations by Jim Toomey, the creator of "Sherman's Lagoon" cartoons. A Spanish language edition was also made available.

"Understanding Marine Protected Areas" Workshop

The Marine Protected Areas Center partnered with Coastal America to bring the full-day workshop, "Understanding Marine Protected Areas," to a number of aquariums designated as Coastal Ecosystem Learning Centers. These workshops provided training to stakeholders, including the general public, on the basic principles and issues surrounding marine protected areas. Workshop topics included marine protected area types and uses, history, the role of science, and information on how to get involved. Based on the success of the day-long workshop, the Marine Protected Areas Center has also created a condensed, one-hour presentation on marine protected areas in the United States.

Navigating the Nation's Marine Managed Areas

The Marine Protected Areas Center is collaborating with the NOAA Office of Coast Survey to provide data from the marine managed areas inventory to mariners, and other users, about the location, purpose, and allowable activities in existing sites through the U.S. Coast Pilot® and other navigation products. A final project description was released to the public in August 2005. The project is now in production phase. Priority regions for data synthesis and publication in fiscal year 2006 include the West Coast of the United States and the Florida Keys.

■ Marine Protected Areas Federal Advisory Committee

The Marine Protected Areas Federal Advisory Committee provides expert advice to the Departments of Commerce and the Interior on the implementation of Executive Order 13158. The 30 committee members are appointed by the Secretary of Commerce and, with their diverse backgrounds and experience, represent parties interested in the use and impact of marine

protected areas as a management tool. The members represent a broad stakeholder community, including scientists, commercial and recreational fishermen, state and tribal resource managers, environmentalists, and other resource users. In addition, nine federal agencies are represented by non-voting members of the Committee. The Marine Protected Areas Center supports the Committee.

During the 2004-2005 biennium, the Committee met in various regions around the Nation, where they heard presentations from fishery management councils, site managers, scientists, and tribal resource managers, in addition to other stakeholders. The Committee also formed three subcommittees to focus on: developing a national system of marine protected areas; stewardship and effectiveness of marine protected areas; and national and regional coordination of marine protected area efforts.

The Marine Protected Areas Federal Advisory Committee finalized its first set of recommendations in 2005, and members voted unanimously to approve them. The recommendations were delivered to the Departments of Commerce and the Interior in June 2005. Dr. Daniel Bromley, the chairman, met with the Under Secretary of Commerce for Oceans and Atmosphere Conrad C. Lautenbacher, and Department of the Interior Assistant Secretary for Lands and Minerals Management Rebecca Watson, in August 2005, to brief them on the Committee's recommendations. In addition, the report was distributed to members of Congress, researchers, federal and state agencies, and other interested parties, and made available on the MPA.gov website.

Conclusion

As a result of the Coastal Zone Management Act—and the success of its programs—our Nation's coastal communities are better assured of continued environmental quality and economic vitality. NOAA, in partnership with coastal states and territories, will continue to pursue the objectives of the Coastal Zone Management Act. OCRM is well positioned to build on the success of 2004 and 2005 in its role as a partner with states and local communities and a steward of our Nation's coastal resources.

Appendix A
ITEMIZATION OF ALLOCATION OF FUNDS
(in thousands of dollars)

	Section 306		309		6217		315		315			
State	Program Administration		Program Enhancement		Nonpoint Program		NERRS Operations, Education & Graduate Research Fellowships		NERRS Acquisition and Construction		Totals	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Alabama	1,606	1,347	105	105	89	45	575	575	-	-	2,375	2,072
Alaska	2,020	1,960	540	540	305	112	555	575	-	197	3,420	3,384
American Samoa	888	818	76	76	240	92	-	-	-	-	1,204	986
California	2,020	1,960	540	540	580	197	1,211	1,725	-	2,557	4,351	6,979
Connecticut	2,020	1,960	179	179	283	105	-	-	-	-	2,482	2,244
Delaware	1,509	1,276	101	101	257	97	505	505	2,474	50	4,846	2,029
Florida	2,020	1,960	540	540	305	112	1,852	1,863	3,463	1,593	8,180	6,068
Georgia	2,020	1,960	273	273	172	71	625	628	-	-	3,090	2,932
Guam	922	844	77	77	72	40	-	-	-	-	1,071	961
Hawaii	2,020	1,921	175	175	110	52	-	-	-	-	2,305	2,148
Illinois	-	-	-	-	-	-	-	-	-	-	-	-
Indiana	1,158	1,016	-	-	-	28	-	-	-	-	1,158	1,044
Louisiana	2,020	1,960	540	540	305	112	-	-	-	-	2,865	2,612
Maine	2,020	1,960	413	413	535	183	590	632	410	825	3,968	4,013
Maryland	2,020	1,960	526	526	580	197	575	485	-	85	3,701	3,253
Massachusetts	2,020	1,960	418	418	539	184	648	595	-	-	3,625	3,157
Michigan	2,020	1,960	540	540	305	112		-	-	-	2,865	2,612
Minnesota	1,041	932	82	82	75	41		-	-	-	1,198	1,055
Mississippi	1,273	1,102	92	92	80	43	620	625	-	630	2,065	2,492
New Hampshire	1,062	946	83	83	246	94	595	595	*1	*1	1,986	1,718
New Jersey	2,020	1,960	540	540	305	112	632	575	2,968	884	6,465	4,071
New York	2,020	1,960	540	540	305	112	555	555	-	296	3,420	3,463
North Carolina	2,020	1,960	396	396	524	180	595	595	-	-	3,535	3,131
Northern Marianas	972	880	80	80	244	93		-	-	-	1,296	1,053
Ohio	2,020	1,960	182	182	114	53	635	595	396	-	3,347	2,790
Oregon	2,020	1,960	219	219	137	60	665	615	-	-	3,041	2,854
Pennsylvania	2,020	1,915	174	174	280	104		-	-	-	2,474	2,193
Puerto Rico	2,020	1,960	219	219	307	113	575	485	-	-	3,121	2,777
Rhode Island	1,646	1,915	107	107	260	98	635	662	-	585	2,648	3,367
South Carolina	2,020	1,960	352	352	221	86	1,541	1,495	4,453	350	8,587	4,243
Texas	2,020	1,960	540	540	305	112	65	40	-	-	2,930	2,652
U.S. Virgin Islands	963	872	79	79	244	93		-	-	-	1,286	1,044
Virginia	2,020	1,960	540	540	580	197	645	615	-	89	3,785	3,401
Washington	2,020	1,960	539	539	305	112	675	589	-	585	3,539	3,785
Wisconsin	2,020	1,960	193	193	291	108	-	-	-	-	2,504	2,261
Total	59,500	56,944	10,000	10,000	9,500	3,550	15,569	15,624	14,164	8,726	108,733	94,844

Notes: *1 Funding was earmarked for Great Bay NERR and awarded under the Fish and Wildlife Conservation Act in FY 2004 ($5,936,865) and FY 2005 ($7,811,920)

Appendix B
National Coastal Management Program Accomplishments for FY 2004 – 2005

State	Policy Changes to Coastal Programs	Coastal Enhancement Grant Assessment and Strategy (§309)	Funded Coastal Estuarine Land Conservation Program	Funded Coastal Public Access Program (§306A)	Approved Coastal Nonpoint Pollution Programs (§6717)
Arkansas		X	X		
Alaska		X	X	X	
California	X	X	X		
Northern Mariana Islands		X		X	
Connecticut	X	X	X	X	X
Delaware	X	X			
Florida	X	X		X	
Georgia		X		X	
Guam	X	X			
Hawaii	X	X	X	X	
Indiana		X		X	
Louisiana		X	X		
Massachusetts		X	X		
Maryland	X	X	X	X	
Maine	X	X	X		
Michigan		X	X	X	
Minnesota		X	X	X	
Mississippi		X	X		
North Carolina	X	X			
New Hampshire	X	X			
New Jersey	X	X	X		
New York	X	X	X		
Ohio		X	X	X	
Oregon		X		X	
Pennsylvania		X		X	
Puerto Rico	X	X			
Rhode Island		X	X		
South Carolina		X			
Texas		X	X	X	
Virginia		X	X	X	
Virgin Islands		X			
Washington	X	X	X		
Wisconsin		X	X	X	

Data provided only reflects changes and/or expenditures of programs by state for 2004 and 2005 biennium. For further information regarding CZMA initiatives and project status by state, please refer to chapter *Progress in Addressing Major Goals of the Coastal Zone Management Act.*

Appendix C
Program Accomplishments for National Estuarine Research Reserves
FY 2004 – 2005

Reserve	System-Wide Monitoring Program	Participation in the Graduate Research Fellowship Program	Education Programs	Coastal Training Program	Stewardship Program
ACE Basin Reserve, South Carolina	X	X	X	X	X
Apalachicola Reserve, Florida	X	X	X	X	X
Chesapeake Bay Reserve, Maryland	X	X	X		X
Chesapeake Bay Reserve, Virginia	X	X	X	X	X
Delaware Reserve	X	X	X		X
Elkhorn Slough Reserve, California	X	X	X	X	X
Grand Bay Reserve, Mississippi	X	X	X	X	X
Great Bay Reserve, New Hampshire	X	X	X	X	X
Guana Tolomato Matanzas Reserve, Florida	X	X	X	X	X
Hudson River Reserve, New York	X	X	X	X	X
Jacques Cousteau Reserve, New Jersey	X	X	X	X	X
Jobos Bay Reserve, Puerto Rico	X	X	X	X	X
Kachemak Bay Reserve, Alaska	X	X	X	X	X
Narragansett Bay Reserve, Rhode Island	X	X	X	X	X
North Carolina Reserve	X	X	X	X	X
North Inlet-Winyah Bay Reserve, South Carolina	X	X	X	X	X
Old Woman Creek, Ohio	X	X	X	X	X
Padilla Bay Reserve, Washington	X	X	X	X	X
Rookery Bay Reserve, Florida	X	X	X	X	X
San Francisco Bay Reserve, California	X	X	X		X
Sapelo Island, Georgia	X	X	X	X	X
South Slough Reserve, Oregon	X	X	X	X	X
Tijuana River Reserve, California	X	X	X	X	X
Waquoit Bay Reserve, Massachusetts	X	X	X	X	X
Weeks Bay Reserve, Alabama	X	X	X	X	X
Wells Reserve, Maine	X	X	X	X	X

All research, monitoring, education and stewardship programs within the National Estuarine Research Reserve System (NERRS) are well established and have been successfully ongoing for years. A summary of program accomplishments recorded for fiscal year 2004-2005 follows below.

The System-Wide Monitoring Program (SWMP) has continued to collect and report weather and water quality data from at least one weather and four water quality data loggers for fiscal year 2004-2005. The data has been transmitted to the Centralized Data Management Office for quality control and quality assurance and for distribution on the web. In 2004, the Reserve System initiated biological monitoring demonstration projects at some of the reserves. The projects monitor submerged aquatic vegetation and marsh habitats.

The Graduate Research Fellowship Program hosts at up to two research graduate fellows at any given time to conduct research activities within a reserve under a $20,000 per year NOAA grant. Fellowships can last 1-3 years. In fiscal year 2004-2005, NOAA funded 44 returning fellows and 56 new fellows.

The Education Programs conduct a wide range of education and outreach activities across the reserves, including K-12, teacher training, and community education programs. Estuary Live, an interactive virtual Internet field trip to reserves for students, is conducted once a year. During fiscal year 2004-2005, 750 teachers and 35,000 students participated in the EstuaryLive.

The Coastal Training Program is implemented in all but three reserves (see table for detail). CTP conducts science-based training workshops for coastal decision-makers, including elected and appointed officials, real-estate developers, city planners, non-profit organization and others. The CTP conducted an average of 310 workshops system-wide for 11,500 participants in fiscal year 2004-2005.

The Stewardship Program conducts land-use and habitat mapping across the NERRS. All reserves participate in some form of stewardship activity which includes maintaining inventories of reserve natural resources, ecological restoration, land acquisition and invasive species control.

References

[1] *Ocean Blueprint for the 21st Century*, U.S. Commission on Ocean Policy, 2004.
[2] *Valuing Coastal Zone Management*, National Coastal Resources Research and Development Institute, March, 1990.
[3] Ibid.
[4] *2003 Desktop Data Files*, Woods and Poole Economics, Inc. (W&PE). 2002.
5 *Ocean Blueprint for the 21st Century*, U.S. Commission on Ocean Policy, 2004.
[6] Ibid
[7] Ibid
[8] Ibid
[9] Ibid
[10] Ibid
[11] Ibid
[12] http://www.csc.noaa.gov/socialscience (accessed December 14, 2005)
[13] http://www.csc.noaa.gov/training/ (accessed December 14, 2005)
[14] http://www.csc.noaa.gov/crs (accessed December 14, 2005)
[15] *National Energy Policy – Report of the National Energy Policy Development Group*, May 2001.
[16] 568 Federal Register 34851-34874, June 11, 2003.
[17] http://www.ocrm.nos.noaa.gov/czm/proposed_rule_June_11_2003.html (accessed December 14, 2005)
[18] http:// www.coastalmangement.noaa.gov/czm/federal_consistency.html
[19] Fiscal Year 2002 Appropriations Act for the Departments of Commerce, Justice and State (Public Law 107-77) and codified at 16 USC 1456d.
[20] http://www.csc.noaa.gov/scoysters/ (accessed December 14, 2005)
[21] *Dennis, Katrina, Rita, Stan and Wilma "Retired" From List of Storm Names,* National Hurricane Center News and Information Archive.
[22] *Population Trends Along the Coastal United States: 1980-2008*, NOAA/NOS, Special Projects Office (SPO), 2004.
[23] *Population Trends Along the Coastal United States: 1980-2008,* NOAA/NOS, Special Projects Office (SPO), 2004.
[24] http://www.estuaries.gov. (accessed December 14, 2005)