

Update On

**Coastal Zone Management
Act Performance
Measurement System**

January 2006



Purpose of Report

Since passage of the Coastal Zone Management Act (CZMA) in 1972, the National Oceanic and Atmospheric Administration (NOAA) has worked with the states to support the development and implementation of coastal management programs in 34 of 35 eligible coastal and Great Lakes states and territories, as well as the establishment of 26 reserves in 21 coastal states and territories within the National Estuarine Research Reserve System (NERRS). Regular evaluations of each coastal management program and reserve as well as independent studies have provided evidence that the partnership between the states and NOAA has been successful in progressing toward the goals of the CZMA. Yet, given the flexibility provided to the states by the CZMA to tailor programs to their unique resources and issues, it has been difficult to quantitatively demonstrate the national impact of these programs. NOAA has sought to quantify program performance at the national scale through the development and implementation of the CZMA Performance Measurement System.

The primary goal of the CZMA Performance Measurement System is to track indicators of effectiveness of the coastal management programs and reserves at the national level. The system consists of a suite of performance indicators to assess how well states are achieving CZMA objectives, and contextual indicators to provide information on environmental and socioeconomic factors influencing program actions. This quantification of management outcomes over time will not only respond to Congressional requests for improved accountability but will also facilitate adaptive management, enhance communication, and inform planning and resource allocation decisions by federal and state coastal managers. Because each coastal management program and reserve is dealing with different priorities and resources, program-specific indicators may need to supplement the national indicators to provide more applicable information for state and local management decisions.

This report highlights the purpose and challenges of the CZMA Performance Measurement System and outlines future implementation plans and needs. It provides an overview of the strategic goals and objectives for the National Coastal Management Program (NCMP) and the National Estuarine Research Reserve System (NERRS), as well as performance measures that assess progress toward those national program goals. These performance measures, along with the listed contextual indicators, allow the CZMA Performance Measurement System to serve as a tool for assessing program results.

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U.S. Department of Commerce
National Oceanic and Atmospheric Administration
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THE COASTAL ZONE MANAGEMENT ACT

Through passage of the Coastal Zone Management Act (CZMA) in 1972, Congress declared as national policy to “preserve, protect, develop, and where possible, to restore or enhance the resources of the Nation’s coastal zone for this and future generations.” The CZMA established a framework for a federal and state coastal management partnership to balance economic growth with coastal protection. The National Coastal Management Program (NCMP) and the National Estuarine Research Reserve System (NERRS) work together to achieve the goals of the CZMA.

The NCMP is a state-federal partnership which focuses on planning and management of resources in the coastal zone. Since 1972, the National Oceanic and Atmospheric Administration (NOAA) has worked with the states to support the development and implementation of coastal management programs in 34 of 35 eligible coastal and Great Lakes states and territories (hereinafter “states”) covering 99 percent of the nation’s coast. The 35th eligible state, Illinois, is currently taking steps to join this national program. The NERRS is a system of protected estuarine areas designated for research, education, and stewardship. Currently, the NERRS consist of 26 reserves in 21 coastal states and territories, with a new reserve in Texas planned for the near future.

The term *CZMA programs* will be used throughout this report to refer to both national programs – the NCMP and the NERRS - that are implemented under the CZMA and administered by NOAA. The term *coastal management programs* is used to refer to state partners that have approved coastal management programs under the CZMA, and the term *reserves* is used to refer to federally designated estuarine areas established under the CZMA.

NATIONAL COASTAL MANAGEMENT PROGRAM

The NCMP is a voluntary partnership between coastal states and the federal government. NOAA works with eligible states to develop comprehensive coastal management programs tailored to the unique resources, conditions, and needs of each state, while advancing the broad national goals of the CZMA. Although the nature and structure of coastal management programs vary from state to state, they are guided by the following national goals from CZMA §303:

- Protect and restore significant coastal resources;
- Prevent, reduce, or remediate polluted runoff to coastal waters;
- Improve public access to the coast;
- Minimize the loss of life and property in coastal hazard areas;
- Promote sustainable growth in coastal communities;
- Provide for priority water-dependent uses; and
- Improve government coordination and decision-making.

The CZMA calls for the 34 participating states to implement coastal planning and management programs and for the federal government to provide program oversight, policy guidance, technical assistance, and financial resources to assist state programs (Fig. 1). Federal funding to the states for the NCMP is distributed according to a formula considering coastal population and length of coastline. States leverage federal funding by matching federal dollars with an equal amount of state and local funds.

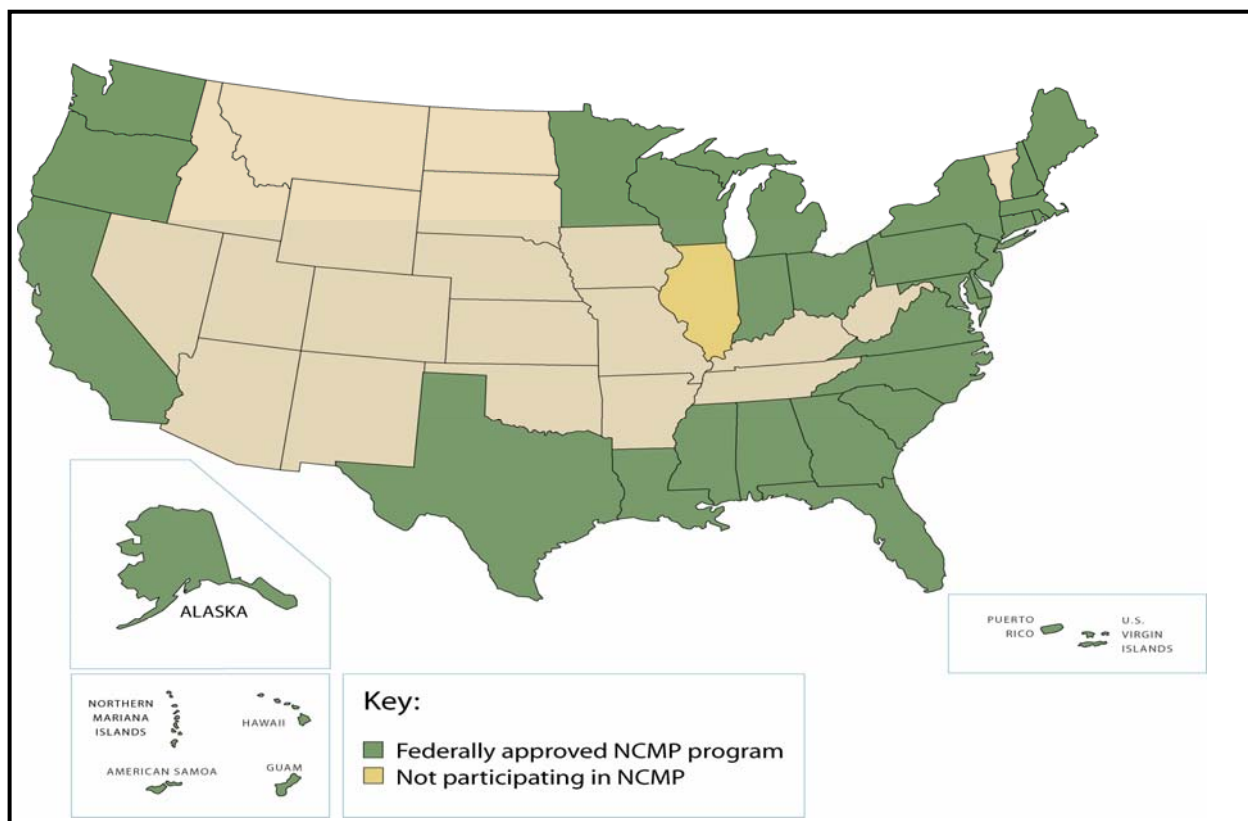


Figure 1: Map of States with Approved Coastal Management Programs

NATIONAL ESTUARINE RESEARCH RESERVES

The NERRS is a network of 26 estuarine areas protected for long-term research, water-quality monitoring, education, and coastal stewardship. Established by the CZMA, the reserve system is a partnership program between the National Oceanic and Atmospheric Administration and the coastal states. NOAA provides funding, national guidance and technical assistance. State partners provide 30% matching funds for NOAA monies dedicated to operating reserves and facilities construction, and 50% match for land acquisition. Each reserve is managed on a daily basis by a lead state agency or university, with input from local partners.

Reserve staff work with local communities and regional groups to address natural resource management issues. Reserves provide adult audiences with training on estuarine issues of concern in their local communities. They 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 both scientists and graduate students to conduct research in a “living laboratory.”

The reserve system is designed to represent different biogeographic regions of the United States. A biogeographic region is a geographic area with similar dominate plants, animals and prevailing climate. There are 11 major biogeographic regions around the coast, with 29 sub regions. The reserve system currently represents 18 of those sub regions (Fig. 2).

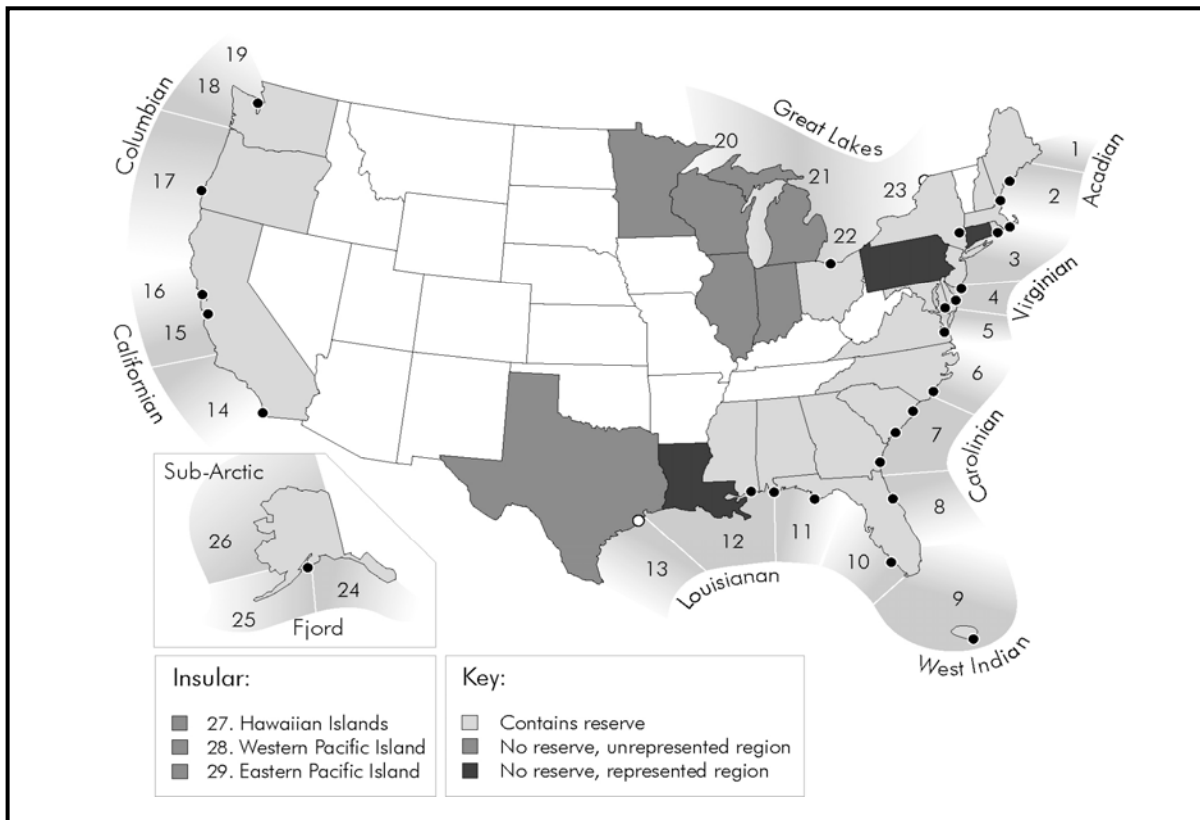


Figure 2: Map of National Estuarine Research Reserves and associated biogeographic region

CZMA PERFORMANCE MEASUREMENT SYSTEM

PURPOSE

The U.S. Ocean Action Plan calls for federal agencies to “periodically assess the state of the Nation’s oceans and coasts to measure the achievement of national ocean goals” and to “recommend assessments and analyses of Federal ocean resource management initiatives.” NOAA works to meet these directives by measuring and communicating the national impacts of the CZMA through the CZMA Performance Measurement System. The quantification of management outcomes over time will not only respond to Congressional requests for improved accountability, but will also facilitate adaptive management, enhance communication, and inform planning and resource allocation decisions by federal and state coastal managers.

The goal of the CZMA Performance Measurement System is to track national indicators of the effectiveness of coastal management programs and estuarine research reserves in achieving CZMA and strategic objectives. The performance indicators reflect common program activities that are employed to manage coastal resources and the programmatic outputs and environmental outcomes that result from these management actions. Contextual indicators track environmental and socioeconomic factors which influence the direction and success of program actions. Most of the indicators will be collected by all programs and thereby allow aggregation across programs to provide a national or regional picture. Because each coastal management program and reserve is dealing with different priorities and resources, program-specific indicators may need to supplement the national indicators to provide more applicable information for state and local management decisions.

AUDIENCE

The primary audiences for the CZMA Performance Measurement System are Congress, interested stakeholders, and the federal and state CZMA partners. Due to the varying management structures and priorities across individual programs, the national performance measures and contextual indicators are intentionally broad with the goal to inform Congress and the public of trends in national coastal resources and in the effectiveness of common management strategies employed by CZMA programs. Performance measurement system information also will assist NOAA and coastal managers in better understanding the condition of coastal ecosystems and the impact of program actions, in turn informing adaptive management strategies. This knowledge will support the state-federal partnership in informing decision-makers of management successes, needs, and emerging issues.

CHALLENGES

NOAA faced several challenges in developing the CZMA performance measurement system, and worked with the coastal states to determine appropriate performance measures and contextual indicators to meet these challenges:

- ***Diverse coastal management structures and priorities*** - The flexibility afforded to coastal states by the CZMA in shaping the structure of coastal management and reserve programs has been essential to the success of the Act. The resulting mix of program structures translates into varying forms of direct or indirect control, and shared or diffused authority in influencing environmental outcomes. To address this challenge, the performance measurement system

captures results of all partners with specific authorities identified in each state's approved coastal management program or each reserve's management plan.

- ***Differing coastal management priorities*** - The CZMA articulates broad objectives with the intention to give coastal management programs and reserves flexibility in defining objectives based on needs and priorities specific to their coastal zone. While the CZMA Performance Measurement System recognizes the individual priorities of each coastal management program and reserve, performance measures based on management activities common to all programs, or at least a majority of the programs, provide a foundation for assessing the national progress.
- ***Connecting management actions to environmental changes*** - Establishing a clear connection between management actions of CZMA programs and changes in the condition of coastal resources or uses is often difficult. Understanding the diverse environmental, political, and economic circumstances affecting management actions is necessary. Thus, under the performance measurement system, NOAA will track environmental and socioeconomic information to provide context for management actions and their outcomes.
- ***Delineating responsibility for coastal impacts*** - The CZMA programs work alongside many federal and state programs that manage coastal resources. Because coastal management programs and reserves are not the only programs affecting coastal areas, it is difficult to assign sole responsibility to these programs for the overall condition of the coasts. The purpose of the performance measurement system is not to compare the contributions of the CZMA programs to those of other programs, but instead to assess the contributions made by the coastal management programs and reserves towards the goals of the CZMA. Thus, the performance measures align with responsibilities specific to coastal management programs and reserves.
- ***Understanding the full impacts of coastal management*** - One of the hallmarks of the CZMA has been the development of plans and standards to support compatible, coastal dependent development while protecting coastal resources and restricting inappropriate development. It is very challenging to assess and quantify the outcomes of programs premised on prevention, because it is difficult to quantify harm or impacts to coastal resources that have not occurred. Thus, to effectively report on impacts not easily quantifiable, the performance measurement system may need to be supplemented with qualitative information such as case studies.

CONTEXTUAL INDICATORS: ASSESSING ENVIRONMENTAL AND SOCIOECONOMIC PRESSURES

The performance measurement system identifies contextual indicators to track environmental and socioeconomic factors that influence program actions. Indicators of pressures on the coastal zone, such as population growth, and indicators of coastal condition, such as water quality, provide a picture of the social, economic, and ecological environments in which CZMA programs are working. Understanding this context is vital to assessing program direction, progress, and impacts.

CONTEXTUAL INDICATORS

The following contextual indicators were chosen by NOAA and its partner coastal management programs and reserves to complement and inform the program performance measures. These indicators are collected by NOAA from existing national data sets, with the exception of indicators denoted with (S), which are collected by coastal management programs. Data exploration and collection are in the initial phases, so the contextual indicators may change slightly in the future.

Socioeconomic

- Percent change in population growth of coastal counties
- Number of people per square mile in coastal counties, in comparison to inland counties
- Percent change in tourism dollars spent in coastal counties
- Percent of national employment in or attributable to coastal counties
- Percent of the national economy attributable to coastal counties/states

Coastal development

- Percent land use change
- Percent change in impervious surfaces
- Percent of coastal communities with waterfront areas that has identified priority port and/or waterfront areas in need of redevelopment (S)

Water quality/quantity

- Total federal or state dollars spent on water quality
- Percent of waterbodies impaired
- Percent of impaired waterbodies where nonpoint pollution is the primary source of contamination in coastal waters
- Water quality index
- Sediment quality index
- Benthic index

Public access

- Percent of acres in coastal zone open for public use (S)
- Percent of total miles of beach in coastal zone open for public use (S)
- Total number of coastal sites open for public use

Coastal hazards

- Proportion of Federal Disaster Declarations occurring in coastal states and territories
- Proportion of coastal Federal Disaster Declarations directly related to coastal hazards
- Cost of coastal Federal Disaster Declarations directly related to coastal hazards

- Population in all FEMA-designated V-Zones
- Land area in all FEMA-designated V-Zones
- Number of states that have mapped inventories of coastal areas affected by natural hazards based on best available data, by category: (a) flooding; (b) storm surge; (c) geological hazards (including earthquakes, tsunamis); (d) shoreline erosion (including bluff and dune erosion); (e) sea level rise; (f) Great lake level fluctuation; (e) land subsidence (S)
- Loss of coastal land area due to climate change

Coastal habitats

- Coastal habitat index
- Number of invasive species identified within coastal watersheds
- Number of acres of key coastal habitat, by category: (a) tidal wetlands, mangroves; (b) non-tidal wetlands; (c) beach, shoreline, and dune; (d) riparian areas; (e) coral reefs; (f) submerged habitats/lands and submerged aquatic vegetation (S)
- Number of states that have mapped inventories of key coastal habitats, by category (S)

General

- Number of acres in the coastal zone
- Number of acres within the coastal nonpoint program boundary
- Number of acres within coastal watersheds
- Overall national coastal condition

NATIONAL COASTAL MANAGEMENT PROGRAM: STRATEGIC GOALS & PERFORMANCE MEASURES

The NCMP focuses on resource management issues of the coast by taking a comprehensive approach to problem solving, balancing the often conflicting demands of coastal resource use, economic development, and conservation, and by fostering an effective partnership among federal, state, and local governments that strengthens the capabilities of each partner. The NCMP partnership incorporates the national goals of the CZMA and is tailored to the unique resources and needs of each state.

NCMP STRATEGIC GOALS, OBJECTIVES, & PERFORMANCE MEASURES

The NCMP Strategic Plan for FY2006, currently in draft form, identifies priorities for the federal-state coastal management partnership. Based on CZMA goals, this strategic plan will guide state implementation and federal support activities. Because of differing issues and requirements across the nation and within states, the intention of this plan is not to establish state-level priorities but rather program direction at the national level. The strategic plan focuses on six main goal areas: coastal habitats, coastal hazards, coastal water quality, coastal dependent uses and community development, public access, and government coordination and decision-making.

Goal 1 – Coastal Habitats: Protect, restore and enhance coastal land and water habitats, including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs and fish and wildlife and their habitats.

Objective 1: Key coastal habitats are protected through acquisition and conservation easements.

Performance Measure:

- Number of acres protected nationally through the Coastal and Estuarine Land Conservation Program
- Number of acres of coastal habitats of particular significance/priority protected through acquisition or easement

Objective 2: Key coastal habitats are restored or created through a mitigation program or non-mitigation activities.

Performance Measures:

- Percent change in acres of coastal habitats of particular significance/priority created, restored, or protected through a mitigation program
- Number of acres of coastal habitats of particular significance/priority restored or created through non-mitigation activities
- Number of acres of coastal habitats of particular significance/priority protected through acquisition or easement

Objective 3: Fewer key coastal habitats are directly disturbed by permitted activities.

Performance Measures:

- Number of permits issued that directly disturb coastal habitats of particular significance/priority
- Percent change in acres of coastal habitats of particular significance/priority directly disturbed by permit activities

Goal 2 – Coastal Hazards: Manage coastal development to minimize the loss of life and property caused by improper development in areas vulnerable to floods, storm-surge, erosion, sea level rise, land subsidence and saltwater intrusion; maintain natural protective features such as wetlands, beaches, dunes and barrier islands.

Objective 1: Areas vulnerable to coastal hazards are protected through setbacks, buffers, or public ownership.

Performance Measures:

- Number of coastal management programs with setbacks, buffers, and other location requirements to address coastal hazards at the state level
- Number of acres that are protected by setbacks, buffers, or public ownership to direct development away from areas vulnerable to coastal hazards
- Percent of communities in hazardous coastal areas that have undertaken activities to reduce future damage from hazards

Objective 2: People are aware of potential coastal hazards and understand how to minimize impact to lives and property.

Performance Measure:

- Number of educational programs or campaigns to raise public awareness of coastal hazards

Goal 3 – Coastal Water Quality: Manage coastal development to improve, safeguard and restore the quality of coastal waters.

Objective 1: Nonpoint source pollution to coastal waters is reduced through management of land-based activities.

Performance Measures:

- Number of coastal management programs with approved coastal nonpoint pollution control plans
- Number of management measures to address nonpoint pollution approved for implementation through a state's Coastal Nonpoint Program

Objective 2: State and local capacity to improve, safeguard, and restore the quality of coastal waters is increased.

Performance Measures:

- Number of coastal management programs conducting capacity building activities in coastal watersheds
- Number of capacity building activities in coastal watersheds to improve, safeguard, and restore the quality of coastal waters, by category: training; demonstration best management practices; education initiatives; clean marina programs; monitoring programs; and permits reviewed for Coastal Nonpoint Program
- Percent of coastal watersheds enhanced through capacity-building activities funded by coastal management programs

Goal 4 – Coastal Dependent Uses & Community Development: Give priority consideration to coastal dependent uses and orderly processes for siting major facilities related to national defense,

energy, fishery development, recreation, ports and transportation, and where practicable, to compatible new commercial and industrial developments.

Objective 1: State and local governments and coastal communities are supported in managing growth and development.

Performance Measures:

- Number of coastal management programs that provide financial and/or technical assistance to coastal communities for port and/or waterfront redevelopment
- Number of coastal management programs that assist coastal communities to promote growth management
- Percent of coastal communities that are supported by coastal management programs in developing and implementing local plans that promote growth management
- Number of coastal communities that have been recognized for growth management efforts through national or state award programs

Objective 2: Coastal dependent uses are a priority in planning and permitting decisions.

Performance Measure:

- Number of coastal management programs with enforceable policies that place priority on coastal dependent uses in their permitting and planning programs
- Percent of coastal communities with waterfront areas that have undertaken port and/or waterfront redevelopment projects

Goal 5 – Public Access: Provide and enhance public access to the coast for recreational purposes.

Objective 1: Public access to the coast is improved through creation of new sites or enhancement of existing sites.

Performance Measures:

- Number new sites that provide public access to the coast
- Number of existing public access sites that have been enhanced
- Percent change in coastal sites open for public access

Objective 2: Public access sites are protected or maintained through permitting activities.

Performance Measure:

- Number of sites where public access is protected or maintained through coastal management program permitting activities

Goal 6 – Government Coordination & Decision-Making: Expedite governmental decision-making through coordination and simplification of procedures; assist with comprehensive planning, conservation, and management of coastal resources; support participation of the public and local, state, and Federal agencies in coastal decision-making; coordinate delivery of research, information, and technical assistance to improve coastal decision-making.

Objective 1: Federal and state actions in the coastal zone are consistent with state coastal policies.

Performance Measure:

- a) Percent of federal consistency projects submitted that were consistent with state standards

Objective 2: Permitting and other management procedures are simplified.

Performance Measures:

- Number of coastal management programs that have adopted streamlined permitting processes
- Number of coastal management programs that have up-to-date program management plans
- Number of coastal management programs that have program guides to improve public understanding of the program

Objective 3: Local coastal management and decision-making is supported through technical and financial assistance.

Performance Measure:

- Number of coastal management programs that support local governments through technical assistance programs and financial assistance
- Percent of coastal management program funds used to support local governments through technical assistance programs and financial assistance

Objective 4: Coastal decision-makers are informed through educational and training opportunities.

Performance Measures:

- Number of educational activities and training opportunities offered by the coastal management program
- Number of participants in educational activities and training opportunities offered by the coastal management program

IMPLEMENTATION OF PERFORMANCE MEASURES

Performance measures will be collected annually at both the national and state level. Due to the complexity involved in establishing data collection methods and standards for 34 coastal management programs, performance measures will be reported in three phases beginning in FY 2005. Coastal management programs will report data for performance measures in two new goal areas each year so that by the end of the third year, all six goal areas will have at least one year of reported data and each state will be prepared to report for each goal area annually. The NCMP will continue to focus on providing guidance materials, workshops, and individual assistance to coastal management programs during this phased implementation. The following summarizes the phased implementation plan:

FY 2005 – Public access; Government coordination & decision-making

FY 2006 – Coastal habitats; Coastal water quality

FY 2007 – Coastal hazards; Coastal dependent uses & community development

EVIDENCE OF PROGRESS: IMPROVE PUBLIC ACCESS TO THE COAST

Coastal management programs address the goal of providing public access to the coast through several mechanisms, including land acquisition and enhancement projects. Public access acquisition is achieved through either fee-simple purchase or conservation easement and is often in partnership with other state and local government agencies. Coastal management programs enhance existing access sites to improve opportunities for recreation and to minimize impacts to coastal habitats. Public access in deteriorating or underutilized urban waterfronts is also enhanced in partnership with local communities by adding or rehabilitating public piers, boardwalks, and other types of recreational facilities.

Goal: Provide and enhance public access to the coast for recreational purposes.

Performance Measure Status 2004: Number of new sites providing access to the coast

Total number of sites acquired by CZM programs: 11

Number of sites acquired for beach and shoreline access: 4

Number of sites acquired for recreation boat access: 3

Number of sites acquired for natural and cultural resource access: 4

Performance Measure Status 2004: Number of public access sites that have been enhanced

Total number of public access sites enhanced by CZM programs: 44

Number of beach and shoreline access sites enhanced: 18

Number of recreation boat access sites enhanced: 5

Number of natural and cultural resource sites enhanced: 21

Example Land Acquisition Project:

The Virginia Coastal Management Program allocates around \$200,000 of its annual CZM grant to protect coastal habitat while providing public access. Since 1997, the program has worked with several partners to focus acquisition efforts on the Eastern Shore, an area of importance for songbirds and raptors. Each year, CZM funds are used to protect a portion of priority habitat referred to as the Seaside Tract. A management plan will protect and restore songbird habitat and provide for passive recreational uses such as bird watching. This project provides recreational opportunities while also contributing to community-based ecotourism through a birding festival hosted each fall by Virginia's Eastern Shore.

Example Enhancement Projects:

The Michigan Coastal Management Program and the Village of Elberta improved public access while protecting fragile sand dunes on a 4-acre Lake Michigan beach property. The site design includes an expanded parking lot, a new picnic area, and a walkway to the water's edge, where it will connect to the existing breakwater pier structure. The new walkway will provide access to the pier and redirect visitors away from sand dunes

The Florida Coastal Management Program and Wakulla County partnered to address recreation needs for Panacea, a designated *Waterfronts Florida Community* focusing on revitalization. This project repaired the only county-owned public boat ramp and dock, which were becoming safety hazards and limiting public access to Dickerson Bay.

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM: STRATEGIC GOALS & PERFORMANCE MEASURES

The National Estuarine Research Reserve System is a network of protected areas established by the Coastal Zone Management Act for long term research, education, and stewardship. This partnership program between NOAA and the coastal states protects more than one million acres of estuarine land and water, which provide essential habitat for wildlife; offer educational opportunities for students, teachers and the public; serve as living laboratories for scientists; and transfer relevant information to coastal managers.

For the next five years, the focus of core reserve programs will be on four key coastal management topics: impacts of land use and population growth, habitat loss and alteration, water quality degradation, and changes in biological communities.

PRIORITY COASTAL MANAGEMENT ISSUES

Land use and Population Growth

The United States' exploding coastal population results in competing demands for clean water, beaches, recreational and commercial space, infrastructure and housing. To make wise coastal resource management decisions, an understanding of the relationships among estuarine ecosystems and changing populations, landscapes, and attitudes is vital. National Estuarine Research Reserves encourage the development and use of science based knowledge and tools in local land use planning, community development, and stewardship of private property.

Habitat Loss and Alteration

Estuarine environments have been and continue to be altered and eliminated by dredging, dams, recreational uses, flood and hazard mitigation, residential and infrastructure development, commercial port activities, and agriculture. Coastal managers want to know more about how their choices influence coastal habitat to ensure that appropriate alternatives are considered for permitting, and to plan and implement successful restoration and mitigation efforts³. Reserve research and monitoring programs expand the understanding of fundamental estuarine dynamics and add new information about the causes and consequences of changes in habitat quantity and quality. Research and stewardship programs in the NERRS also develop, implement, and evaluate new techniques to restore and protect estuarine resources. Training programs and advisory services make this information available to professionals, while reserve education programs teach students and citizens why these habitats are important and what they can do to keep them healthy.

Water Quality Degradation

Maintaining the condition of coastal water quality is a goal of the CZMA and an ongoing struggle for all regulatory agencies on the coast. The NERRS has been collecting water quality data for ten years to detect short term variability and long term changes in estuarine waters. Through monitoring and studying changes in water quality, the reserves investigate how human activity, weather patterns, and estuarine characteristics contribute to changes in water quality that affect environmental, ecological and human health. Reserves apply the knowledge generated through research and monitoring to work towards improving water quality through habitat protection, restoration, and training and outreach programs.

Changes in Biological Communities

Biological communities are changing as a result of invasive species, excessive extraction, climate changes, pollution, and habitat destruction. Reserve research, stewardship, education, and training programs focus on learning more about the impacts these threats to biological communities have on how estuaries function, how these impacts might be minimized and mitigated, and how the public can more compatibly exist in these increasingly susceptible habitats.

NERRS STRATEGIC GOALS, OBJECTIVES, & PERFORMANCE MEASURES

The goals, objectives and strategies outlined in the NERRS 2005-2010 strategic plan will guide and support the NERRS in its nationwide efforts to improve coastal management, advance estuarine research, and educate current and future generations of coastal stewards.

Goal 1: Strengthen the protection and management of representative estuarine ecosystems to advance estuarine conservation, research, and education.

Objectives:

1. Biogeographically and typologically representative estuarine ecosystems are protected through the designation of new reserves
2. Biological, chemical, physical, and community conditions of reserves are characterized and monitored to describe reference conditions and to quantify change
3. Reserve ecosystems are conserved through land acquisition, natural resource management and restoration

Performance Measures:

- Percent of biogeographic regions represented within the NERRS
- Percent of reserves submitting quality controlled and quality assured water quality and weather data on time
- Number and percent of reserves with complete site profiles
- Number of acres acquired or designated for protection

Goal 2: Increase the use of reserve science and sites to address priority coastal management issues.

Objectives:

1. Scientists conduct estuarine research at reserves that is relevant to coastal management needs
2. Scientists have access to NERRS datasets, science products and results
3. The scientific community uses data, tools and techniques generated at the NERRS

Performance Measures:

- Number of Graduate Research Fellow applicants per opening
- Number of Graduate Research Fellow applicants starting in the program
- Number of Graduate Research Fellow applicants finishing the program
- Number of external research projects being carried out within the reserves
- Number of papers published using science and monitoring by reserve staff, or resulting from research at reserve

- Number of hits/downloads of System Wide Monitoring Program data

Goal 3: Enhance people's ability and willingness to make informed decisions and take responsible actions that affect coastal communities and ecosystems.

Objectives:

1. People are aware of the ecological, economic, historical, and cultural importance of estuarine resources
2. People understand how human choices and natural disturbances impact social, economic, and estuarine ecological systems
3. People apply science based information when making decisions that could impact coastal and estuarine resources

Performance Measures:

General Education Performance Measures:

- Number of students reached through NERRS education programs
- Number of teachers trained through NERRS teacher training programs
- % of reserves offering public education programs

Estuary Live Performance Measures:

- Number of hits on www.estuaries.gov Web Site
- Percentage of teachers reporting the intent to incorporate lessons and activities on estuarine ecology taken from the www.estuaries.gov Web site
- Percentage of teachers who plan to participate in Estuary Live again in the future
- Percentage of teachers who registered for more than one field trip
- Percentage of students who will be able to locate an estuary on a map
- Percentage of students who will be able to describe two important functions of estuaries

Coastal Training Program (CTP) Performance Measures:

- Number of Coastal Training Program contact hours delivered
- Total number of participants in the Coastal Training Program
- Total number of Coastal Training Program activities
- Total number and type of organizations, entities represented by participants
- Number and percent of CTP participants reporting an increase in science based knowledge or skills
- Number and percent of CTP participants reporting increased access to resources relevant to their work as a result of CTP
- Number and percent of CTP participants reporting increased skills relevant to NERRS priority issues
- Number and percent of CTP participants reporting the intent to apply science-based knowledge and skills in their work on NERRS priority issues as a result of the CTP activity
- Number and percent of respondents reporting that they intend to make new contacts about NERRS priority issues as a result of the training activity
- Number and percent of CTP respondents reporting that they are more aware of opportunities for collaboration regarding NERRS priority issues as a result of the training activity
- Percent of CTP respondents that were more than satisfied with the content of the training activity
- Percent of CTP respondents that were more than satisfied with the format of the training

- Percent of CTP participants that were more than satisfied with the networking opportunities provided by the training activity

IMPLEMENTATION OF PERFORMANCE MEASURES

The performance measures above are the set of indicators that reserves will begin collecting in FY2006 to track progress toward NERRS objectives. Many of these initial measures document the activities and products that result from reserve programs. Increased knowledge, improved management, and advanced science are the ultimate results that the program is working toward. Over the next few years, the reserve system will be working hard to define clear targets, establish baseline information, and determine appropriate results-oriented performance measures that are attributable to NERRS efforts.

EVIDENCE OF PROGRESS: NERRS COASTAL TRAINING PROGRAM

Decisions made by coastal communities can have profound, long-term consequences for estuarine and coastal environments; however, key decision makers often do not have adequate access to relevant science-based information, training, or available technology to make informed decisions affecting the coast. The NERRS Coastal Training Program (CTP) provides an effective vehicle to ensure that science-based knowledge and skills are transferred to those individuals who are making decisions about the coasts in a professional, elected, or volunteer capacity.

Goal: Enhance people's ability and willingness to make informed decisions and take responsible actions that affect coastal communities and ecosystems.

Performance Measures Status 2004:

- Total number of CTP participants: **5727**
- Percent of CTP respondents that report increased scientific understanding of a reserve priority issue as a result of a CTP training activity. **88%**
- Percent of CTP respondents that report increased access to resources relevant to their work as a result of a CTP activity. **73%**
- Percent of CTP participants more than satisfied with the content of the training program: **76%**
- Percent of CTP participants reporting the intent to apply science-based knowledge and skills in their work on NERRS priority issues as a result of the CTP activity: **88%**

Examples of CTP activities:

Nitrogen Monitoring and Management at Elkhorn Slough NERR

In 2003 and 2004, Elkhorn Slough NERR in central California hosted two workshops on nitrogen monitoring for managers and researchers engaged in nutrient management in the region. Nutrient cycling experts from the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), a NERRS partner organization based at the University of New Hampshire, shared the latest GIS-linked biogeochemical model used to guide nutrient management decisions in the Elkhorn Slough watershed. The model provides simulations of biogeochemical processes that control nutrient cycling and subsequent trace gas and nutrient releases to air and water. The Santa Clara Water District subsequently adopted the CICEET-sponsored model as a way to allot tax incentives for management of nutrient run-off.

Disaster Recovery, Post-Katrina at Weeks Bay NERR, Alabama

Days after Hurricane Katrina ravaged the Gulf Coast in September 2005, the Weeks Bay NERR in Alabama hosted a national Web-based teleconference on Disaster Recovery. The Web conference gave local and regional government officials, researchers, and NGOs a chance to discuss disaster recovery and loss mitigation. Experts and experienced practitioners addressed best practices for disaster recovery in the context of planning. The program was free for participants in Florida, Alabama, Mississippi, Louisiana, and Texas. The disaster recovery conference is an example of NERRS partnering with others to deliver science-based information to coastal decision-makers in response to an urgent need.

FUTURE OF THE CZMA PERFORMANCE MEASUREMENT SYSTEM

IMPLEMENTATION PLAN

NOAA, in coordination with coastal states, has designed a performance measurement system that will provide information to determine the effectiveness of coastal management programs and reserves in achieving on-the-ground outcomes without imposing a cumbersome data collection and reporting requirement. To ensure successful implementation and to promote efficient use of state and NOAA resources, a phased approach is being used to gather data for categories of indicators over time for the CZMA Performance Measurement System. After baseline information is established during the phased implementation, the national program will work to develop measurable objectives with specific targets to assess progress. This will make indicator information even more useful in evaluating progress on the national scale and in communicating more clearly the role and intended direction of the national program.

NOAA will work with coastal management programs and reserves to establish guidance for data collection, to host workshops and forums through which programs can share information and lessons, and to promote consistency in performance measurement interpretation and data collection, when possible. NOAA will also develop a data management system for collecting and storing performance measurement data over time. Currently a challenge due to funding constraints, a user-friendly data management system is vital to support the collection, storage, and reporting of both performance measurement and contextual indicators on the national level. Requirements of this data management system include: a web-interface to allow data input and viewing from users at the partner programs around the country; data storage capability for both numeral and text values to capture quantitative and qualitative information; and, a search function to sort and query data according to user needs.

To fully implement the collection and analysis of the contextual and performance indicators in the long term, NOAA and its partner coastal management programs, reserves will need to invest resources for staff, training, equipment, and data management. NOAA will work to be flexible in its current funding guidance to support implementation and will seek additional resources as available and appropriate. NOAA will also move forward, as funding is available, with building and maintaining a suitable data management system to ensure the long-term success and utility of the CZMA performance measurement system.

COMMUNICATION PLAN

To communicate information collected through the CZMA Performance Measurement System, NOAA will produce a series of reports. All reports will be available on the NOAA Office of Ocean and Coastal Resource Management website, found at www.coastalmanagement.noaa.gov.

Funding information: NOAA currently produces an annual CZMA Funding Summary to report the distribution of annual CMZA grant funds according to the categories of the performance measurement system.

Performance trends: To communicate the status and trends of performance measures under the CZMA Performance Measurement System, NOAA will provide comprehensive reports every three years. Performance measure trends will be aggregated regionally and/or nationally, and

complemented with contextual indicator trends to provide a more complete picture of coastal management in the nation. Annual updates on a subset of performance measures may be available depending on data availability and communication needs.

Coastal trends: To report on the contextual indicators, NOAA will periodically produce a separate synopsis of trends in the environmental and socioeconomic factors that influence coastal management. NOAA will work with other federal agencies to incorporate contextual indicators into status and trend reporting of core coastal and estuarine indicators to provide a more comprehensive analysis of the state of natural, economic, and cultural coastal resources.

CONCLUSION

Coastal and estuarine areas provide people with food, safe harbor, transportation access, flood control, and a place to play and relax. The pressures on the nation's coast are enormous and the effects on economies and ecosystems are becoming increasingly evident. As one of the most comprehensive laws governing the management of the Nation's coastal zone, the impacts of the CZMA need to be understood and communicated. The CZMA Performance Measurement System is being implemented to quantify the progress of coastal management programs and reserves in achieving CZMA goals and strategic program objectives.

The performance measurement system is based on long-term monitoring, observations, and data collection so that trends in coastal resource use and management can be identified. This knowledge will help guide national program direction and promote adaptive management. With appropriate support, the CZMA Performance Measurement System will become a powerful tool for management of the nation's coastal zone and for demonstrating the success of the CZMA in preserving, protecting, and restoring coastal resources and sustaining coastal communities throughout the United States for this and future generations.