



**Revised Recommendations
from the
Coastal States Organization
to the
U.S. Commission on Ocean Policy**

October 25, 2002

*Since 1970, the Coastal States Organization (CSO) has represented the
Governors of the Coastal States, Territories and Commonwealths
on matters related to Coastal, Ocean and Great Lakes Management*

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I. Introduction

A. Methodology and Organization

After reviewing the current state of coastal and ocean management, the Coastal States Organization (CSO) prepared draft recommendations for consideration of the U.S. Commission on Ocean Policy (Commission.) CSO established working groups based generally on the work groups established by the Commission. Each group held numerous conference calls between March and June 2002 to discuss relevant issues and then submitted draft recommendations to a CSO Steering Committee. The Steering Committee and CSO staff subsequently revised the draft and convened a full-day meeting on June 19 with representatives from the National Estuarine Research Reserve Association, Association of National Estuary Programs and the Sea Grant Association to solicit their input and review the drafts. Informal input from numerous other state representatives, federal agency representatives and experts was also solicited throughout the process.

CSO convened a *Coastal and Ocean Policy Forum* to solicit further input on the draft recommendations in Girdwood, Alaska on August 20, 2002. The *Forum* included state representatives, Leon Panetta, Chair of the Pew Ocean Commission, and numerous other experts from the private sector, government, and non-governmental agencies. The draft recommendations have been revised to address discussions and questions raised during the *Forum*. Continuing outreach to other state representatives and groups is planned in the coming months, and any additions will be submitted to the Commission.

Although many of the recommendations are interrelated, they generally track the themes of the Commission work groups:

- governance;
- stewardship;
- observing, monitoring, research and education; and
- value and economic benefit of coastal and ocean resources.

Each section of the document includes a brief introductory statement followed by *Findings*, a statement of *Goals and Objectives*, and *RECOMMENDATIONS*. Note: All references to coastal and ocean, or ocean resources, include the resources within estuaries and coastal communities and out to 200 nautical miles in the ocean, as well as the coasts and waters of the Great Lakes.

B. Key Priorities

This paper provides numerous general and specific recommendations that, if implemented, will significantly enhance federal, state and local efforts to improve the effectiveness in conservation, management and sustainable use of the nation's coastal and ocean resources. We recommend that the Commission focus particularly on the following three priorities:

Reauthorize the Coastal Zone Management Act (CZMA) to provide enhanced national ocean and coastal governance based on federal partnership with the states including:

- establishing national goals for making measurable progress in improving coastal and ocean stewardship and management;
- providing opportunities for states to develop plans, identify priorities and implement strategies that will result in measurable progress in reaching the national goals, including specifically supporting individual state efforts, and across regions, to develop ocean management plans;
- the identification of the following resource management issues as priorities: (i) integrated planning and management for the conservation, sustainability and productivity of living marine resources; (ii) habitat restoration and protection of critical areas; and (iii) quality of life in coastal communities;
- increasing the federal role in partnership with states to enhance capacity at the local level to assure long term management and stewardship of coastal and ocean resources, and adaptability to address changing circumstances; and
- increasing support for coastal and marine special area management, including regional initiatives that protect critical national and state coastal and ocean resources.

1. Enhance governance, in partnership with states and territories, to address ecosystem management at the regional, state and watershed level including:

- facilitating management of coastal and marine ecosystems that cross political boundaries by increasing support for cross-sectoral and multi-use management plans;
- balancing national and state interests in the use and management of the Exclusive Economic Zone (EEZ) in a manner reflective of federal and state public trust responsibilities; and
- standardizing and institutionalizing the collection, synthesis and availability of quality data and information on coastal and ocean ecosystems through (i) observing, monitoring, research and education efforts conducted at relevant geographic scales; (ii) assuring that such research and information supports user and manager needs, and (iii) making such information readily available in a form that planners, policy makers and other coastal and ocean decision-makers can use, as well as for use in long-term scientific research and exploration.

2. Support sustained and dedicated funding, investment, and other incentives for state and local governments efforts to address priority coastal and ocean ecosystem management problems. This funding mechanism should:

- reflect the full value of coastal and ocean resources to this and future generations;
- provide for reinvestment of revenues generated from the use of ocean resources and exploitation of nonrenewable resources into the conservation, restoration and enhancement of coastal and ocean resources; and
- through the use of incentives (and removal of disincentives) encourage efficiency and maximize cooperation among coastal and ocean resource management agencies and councils at the federal, regional, state and local level.

[Note: The *Conservation and Reinvestment Act* provides a potential model.]

C. The Need for a National Ocean Policy

There has been considerable progress regarding the rights of nations relative to ocean resources since 1983 when President Reagan extended the U.S. EEZ to 200 miles. The first action of the U.S. Commission on Ocean Policy was to urge the Administration and Congress to endorse the U.N. Convention on Law of the Sea (UNCLOS). Yet, there is no comprehensive national strategy to address comprehensive planning, conservation, management and use of U.S. territorial waters, the Outer Continental Shelf, and the EEZ, nor is there a policy for implementing the public trust responsibilities of the states, territories and federal government. Comprehensive, integrated ocean governance requires appropriate management of the 4.1 million square miles of publicly owned ocean area, as well as the land-based sources of pollution emanating from the nation's coastal watersheds. Additionally, air deposition that affects the health and productivity of our coastal and estuarine waters and oceans must be addressed as part of comprehensive ocean governance.

The impacts of development on—along with the demands for use of—coastal, Great Lakes and ocean resources are increasing. Continuing advances in technology further increase the ability to expand the exploitation of ocean resources. At the same time, many environmental and resource management problems (*e.g.* harmful algal blooms, hypoxia, invasive species, habitat fragmentation, and species decline and collapse) are more complex than the pollution problems the first generation of resource-specific statutes adopted in the 1970s were designed to address.

Solutions to the current and next generation of ocean resource challenges require improved understanding and broad consideration of trans-boundary, multi-resource and ecosystem-based management. It will be difficult, if not impossible, to successfully address these challenges without a renewed national commitment and a change in U.S. legal and ocean governance frameworks. Programs, such as the CZMA, Interstate River Basin Commissions, State Fisheries Commissions, National Estuary Programs, the Chesapeake Bay Program, Gulf of Maine Program, and Great Lakes Commission, all include elements that could serve as models of multi-sector, multi-purpose ecosystem management. However, there is no consistency among these approaches and they all share a common problem of being chronically underfunded.

The current fragmented legislative and budget process for managing ocean and coastal resources precludes development of a comprehensive picture of U.S. investment in managing these resources and prevents a comparison between the investments made with the short- and long-term benefits. Coastal states and communities directly affected still do not have sufficient information regarding all the economic consequences and opportunity costs resulting from the loss or diminishment of coastal and ocean resources. The total value of these resources to the U.S. includes, but far exceeds, the direct value of the sales at boardwalk concessions, recreation sales and rentals, and coastal-dependent large industries and small businesses.

D. Coastal and Ocean Stewardship Challenges

Coastal and ocean stewardship problems are increasingly complex and difficult to manage successfully given the current framework of resource-specific environmental and resource management laws. Some of the primary challenges that will require improved management frameworks include:

Planning and Management of Growth Impacts, Shorelines and Coastal Hazards

- Cumulative and secondary impacts of growth and development are increasing disproportionately in coastal areas and pose a threat to near-shore marine and ocean ecosystem health, economic potential and quality of life in coastal communities; while development and demographic changes threaten traditional waterfront communities, open space and agricultural lands, coastal dependent businesses and public access.
- Advances in science and technology, coupled with an increased demand for energy, food and other resources increase the potential for use and exploitation of ocean resources in the EEZ.
- Maritime activity to support both commercial shipping and recreational use is projected to increase substantially in the coming decades, placing increased demands on coastal and ocean resources.
- Coastal erosion and natural hazards, climate change and the threat of man-made hazards pose an increased risk to public health, life and property along the nation's coastline; while beaches, dunes, wetlands and other natural protective features face increased pressure both natural and induced.

Coastal and Marine Restoration and Conservation

- A proactive coastal and ocean conservation strategy is needed to protect against the fragmentation and loss of critical habitats and other natural resource areas before they are lost forever or end up as the focus of counterproductive litigation.
- In coastal areas, there are extensive unmet restoration needs for old, contaminated commercial sites, salt marshes, coastal and freshwater wetlands, fish passageways, grasslands, seabird nesting islands, and coastal and marine forests. These run the gamut from major regional restoration (*e.g.* Everglades, Cal-Fed in San Francisco Bay, Chesapeake Bay, Louisiana wetlands) to individual estuary, watershed and marine projects.
- Funding commitments to programs in the face of expanding development and rising land values fall far short of addressing the unmet conservation priorities in coastal, estuarine and marine areas.

- Coastal and marine managed area offers significant potential to address multiple purposes including: biodiversity protection, stock enhancement, recovery of disturbed systems, preservation of unique habitats and cultural resources, and increased opportunities for eco-tourism, but insufficient information exists to support a consensus and resolve potential conflicts among competing users.

Polluted Runoff, Invasive Species and Marine Discharges

- Polluted runoff from diffuse sources continues to be the major source of coastal pollution. Hypoxia, harmful algal blooms, nitrogen loading and “dead zones” are harbingers of coastal marine ecosystem change resulting from often complex, cumulative and secondary sources that are difficult to manage under current programs.
- The International Maritime Organization has identified invasive species as one of the four greatest threats to ocean health. There is neither sufficient understanding nor a management framework in place to address this significant and growing problem
- Marine-based sources of pollution, principally vessels, continue to significantly impact coastal ecosystems. Ballast water management, including control of exotic and invasive species, as well as development of reliable ways to manage the increased volumes of waste generated by vessels, are important to maintaining and improving the health of coastal and marine ecosystems.

Fisheries Management and Community Impact

- The crisis in global fisheries is a symptom of a drastic imbalance in marine ecosystem health. Better understanding and more comprehensive management that takes into account the interaction among fish and other marine species within a broader context of habitat protection poses a difficult challenge.
- At the same time, economic impacts of fisheries management that directly affect the culture, fabric and stability of coastal communities must be considered and addressed.

II. Executive Summary

Coastal and Ocean Governance

RECOMMENDATIONS

1. Adopt a set of “*Governing Principles for a National Ocean Policy*” to provide a framework for integration and implementation of federal coastal and ocean laws and programs.
2. Designate a lead federal agency, or agencies, with clear responsibilities for coastal and ocean resources and, where feasible, consolidate federal coastal and ocean programs.
3. Establish an interagency *National Coastal and Ocean Council* with responsibility to assure coordination and support for the National Ocean Policy.
4. Support ecosystem planning and regional coastal and ocean management that crosses political and program specific boundaries and is effective at the regional, state, and watershed scales.
5. Establish a sustained, dedicated Coastal, Estuarine and Marine Conservation Trust Fund.
6. Provide full funding for the current existing network of placed-based regional, state and local laws and programs, and encourage state and regional ecosystem management.

Coastal and Ocean Stewardship

RECOMMENDATIONS

A. Planning and Management of Growth, Shorelines and Coastal Hazards

1. Reauthorize and amend the CZMA, creating a coastal communities program to assist states to work directly with local governments.
2. Develop and implement federal interagency guidelines that require consideration of state land use and growth management plans, urban revitalization plans, rural conservation plans, etc., in federal funding decisions, including the application of the coordination and consistency provisions of the CZMA.
3. Direct the National Academy of Sciences to evaluate and make recommendations regarding the extent to which federal grants, loans and subsidies, and policies for infrastructure influence coastal land development patterns, et al.
4. Direct the interagency National Coastal and Ocean Council, in consultation with the states, territories and other interested groups to develop, fund and implement a national program to map and monitor the state of and changes in the nation’s near shore, coastal and estuarine watersheds, and marine and coastal ocean resources.

5. Direct the U.S. Army Corps of Engineers (USACOE) to work with NOAA, FEMA, USGS and other appropriate agencies to expand and improve current initiatives to support regional sediment management planning, to identify, compile, integrate and make data and information available to the states, and to amend federal budgetary policies so that the beneficial use of dredged material is a preferred option.
6. Request that Congress appropriate additional funds authorized in section 215(c) of WRDA 99 for the National Shoreline Study.
7. Delineate erosion risks on flood insurance rate maps and incorporate erosion risk into the rate structure of the National Flood Insurance Program.

B. Coastal and Ocean Restoration and Conservation

1. Congress should establish a multi-year investment program in restoration monitoring and research including NOAA, NOS and NMFS, USGS, USFW and USACOE.
2. Federal agencies should, in consultation with the states, develop the national habitat restoration strategy called for under the Estuarine Habitat Restoration Act of 1998, and Congress should fully fund restoration projects under the Act.
3. Any program to identify marine managed areas should include stakeholder participation, clarification of jurisdiction and authorities, consistent terminology, and identify unmet needs requiring additional funding.
4. Amend the CZMA to authorize a coastal and estuarine land protection program to address the protection of conservation corridors and critical coastal areas that are threatened, and provide funding.

C. Marine and Estuarine Pollution

1. Federal agency programs related to nonpoint source pollution should be directed to develop a plan to coordinate and integrate their efforts, with a particular focus on how to build additional support for state and locally based watershed initiatives. Significantly increased support will be needed to address abatement of diffuse nonpoint source of pollution.
2. The federal-state partners need to expand efforts to address nutrient pollution, as well as pathogens and toxics, and sedimentation.
3. EPA, USFS, and NOAA need a coordinated program for identifying and reducing impacts from atmospheric deposition.

D. Fisheries Management and Community Impacts

1. The federal government should develop an overarching national strategy to reduce fishing pressure and overcapitalization, collaboratively with states and stakeholders.

2. Augment information base through targeted funding and incentives, including cooperative federal state fisheries data programs like SEAMAP, MARFIN and MARMAP.
3. Link land use management and aquatic resource management by providing incentives to states to integrate fisheries management objectives with land planning, including models for integrating essential fish habitat planning.
4. Reduce conflicts between federal statutes and improve coordination with state managers, including amending Magnuson-Stevens to empower states and regional fisheries agencies to independently plan and implement programs consistent with national objectives. Augment funding for coordinated approaches (e.g. Atlantic Coastal Act) that enable cooperative research and enforcement, and other enhanced management processes.
5. Clarify the structure of federal involvement in ocean fisheries resource policy and seek to minimize politicization of resource issues.

Coastal and Ocean Observing, Monitoring, Research and Education

RECOMMENDATIONS

1. Implement a national coastal and ocean observing system governed by a core set of principles, which should be used in the design and implementation of this federal-state system, including demonstrated relevance to coastal and ocean management.
2. Establish a National Ocean and Coastal Resource Monitoring Center; integrate federal monitoring programs; support regional monitoring; and, create indicators of coastal and ocean resource health.
3. Support regional marine research recognizing that the boundaries of coastal ecosystems do not conform to political boundaries.
4. Focus national research priorities on pressing coastal and ocean resource management issues and corresponding research needs identified by states and other users such as nutrients, habitats, toxics and pathogens.
5. Build state capacity to use research to maximize the value of enhanced research programs; and enhance federal partnership with the states to ensure users have the capacity to apply the information.
6. Support science translation into information for decision-makers to compliment and be integrated into the nation's current investment in research/science programs.
7. Strengthen training programs at national and regional scales to deliver science-based information and training for the coastal management community.
8. Develop and implement national coastal and ocean science education standards that result in a scientifically literate populace and the augmentation of existing programs.

Value and Economic Benefit of Coastal and Ocean Resources

RECOMMENDATIONS

1. The federal government should support an ongoing national coastal and ocean economic assessment system capable of providing data that is consistent with, and can be compared to, economic assessments of other sectors of the economy.
2. The US Commission on Ocean Policy, in assessing the investment needs and costs of its recommendations, should work with coastal states to obtain the most up-to-date information about the potential economic benefits generated by those recommendations.
3. The federal government should establish a national ocean and coastal resource budget process that reflects multi-agency commitments for cross-cutting programs to address the nation's coastal and ocean resources.
4. The federal government should broaden its very limited assessment of non-market values of ocean and coastal resources and make this information as broadly available as possible.

III. Coastal and Ocean Governance

Changes in the focus and structure of coastal, ocean and Great Lakes governance provides an opportunity to enhance support, encourage innovation and sustain the effective management of the nation's coastal and ocean resources. Enhancing federal governance must be undertaken in partnership with states, taking into account the national and state interest and public trust responsibilities. To be effective, the governance framework must be able to cross political boundaries and provide for consideration of the interests of the public and private sectors. Its success should be measured based on a clear set of national goals, including measurable milestones, its ability to support performance-based state plans, and its effectiveness in addressing the coastal and ocean stewardship problems. (See IV. *Coastal and Ocean Stewardship*.)

Findings

The current federal coastal and ocean governance framework:

1. Is fragmented among the competing interests of numerous federal agencies, federal budget accounts and Congressional committee jurisdictions, and includes overlapping programs within several agencies with little or no coordination among agencies;
2. Continues to be dominated by stovepipe, single-resource management programs and inconsistent objectives that discourages adaptability and flexibility of states to address broad ecosystem goals;
3. Does not sufficiently incorporate states' interests in the stewardship of ocean resources and activities outside state waters that affect states' interests and public trust responsibilities;
4. Discourages comprehensive planning, multi-agency partnerships and implementation of coordinated actions that enhance ecosystem health; and
5. Is disconnected from land and watershed management programs and activities that affect marine and ocean resources.
6. These characteristics hinder:
 - well-informed policy decisions;
 - strategic planning and efficient investment to meet current and developing challenges;
 - fully effective partnerships and integrated management; and
 - management based on the best science and adaptive to changing information and priorities.

Goal and Objectives

Create an integrated, comprehensive coastal and ocean governance framework based upon a federal, state and territorial partnership charged with the responsibility to protect, restore and enhance the ecological, economic, social and geophysical resources of U.S. coasts, oceans and the Great Lakes from the watershed to the limits of the EEZ.

1. By December 2004, adopt a National Ocean Policy including national policy goals and outcome-based objectives to guide the implementation of programs governing the use and management of resources in U.S. territorial waters and the EEZ, including coastal watersheds.
2. Enhance coordination of and, where possible, consolidate federal agency efforts relating to coastal, ocean and Great Lakes resource governance.
3. Expand state partnerships with federal agencies in both the formulation and implementation of management policies for coastal and ocean ecosystems, including coastal watersheds, U.S. territorial waters and the EEZ.
4. Identify and provide incentives to states to plan and implement innovative ecosystem approaches to address regional coastal, marine and ocean ecosystem management challenges on a variety of scales, including large marine ecosystems, major watersheds and estuaries, as well as sub-watersheds, river basins and critical marine areas.

RECOMMENDATIONS

By Executive Order, legislation or other appropriate means:

1. **Adopt a set of “*Governing Principles for a National Ocean Policy*” to provide a framework for integration and implementation of federal coastal and ocean laws and programs.** The *Governing Principles* should include the following.
 - Govern the nation’s coastal and ocean ecosystems through a partnership of the federal government with states, territories and commonwealths that reflects their public trust responsibilities for coastal and ocean resources.
 - Promote uses of coastal and ocean resources that are sustainable ecologically and economically, protect the long-term health, productivity and diversity of these systems, and prioritize renewable over nonrenewable resources.
 - Provide for a dedicated source of funding and investment for the conservation and management of coastal and oceans resources that reflects of the full value of these resources to current and future generations.

- Facilitate a collaborative federal-state governance structure for coasts and oceans that is effective, efficient, provides for accountability, reflects the importance and value of these resources to the nation, and promotes participation and consideration of the concerns of all stakeholders.
- Provide for science-based management of coastal and ocean marine ecosystems that incorporates a precautionary approach, and is adaptive to ongoing research, assessment and education.

2. Designate a lead federal agency, or agencies, with clear authority and responsibilities for coastal and ocean resources and, where feasible, consolidate federal coastal and ocean programs.

- a. Provide a Secretarial level coastal and ocean mandate and identify a lead agency (or agencies) with the authority to take responsibility for ocean and coastal issues, to assure implementation of the National Ocean Policy, and to be responsible for leading interagency efforts regarding the planning, use and management of the EEZ.
- b. The agency or agencies should be required to work in partnership with the states. National goals should be set at the federal level, with responsibility for planning, management and implementation at the regional, state, territory and local levels. The federal agencies should also take the lead in assuring - through partnerships with states, the academic and private sector – that information, science and research is adequate to inform decision-making.
- c. Direct the lead agency to identify ways the National Ocean Policy can be implemented to enhance and support the capacity of state, territorial and local governments, including state ocean resource planning and implementation of state responsibilities under the Coastal Zone Management Act (See e.g. *CZMA* section 310), state and regional programs to manage sustainable fisheries and to protect essential fish habitat, and other applicable laws.
- d. In planning and implementing federal agency actions and activities affecting state resources or interests, provide incentives and other mechanisms to encourage early cooperation, coordination and integration across current federal and state programs, and incorporate a requirement as currently provided in the *CZMA* that federal permitted actions and activities that may affect state coastal resources be consistent with enforceable state-level coastal and ocean policies.
- e. Consolidate coastal and ocean programs, where possible, in order to establish clear lines of authority, efficient administration and improved accountability. Consolidation will support more effective strategic planning and more efficient investment in coastal and ocean stewardship at the federal and state level.
- f. Such consolidation shall be based on a program review, conducted in consultation with states and other stakeholders, and be designed to support effective

implementation of the *National Ocean Policy*, and coastal ocean stewardship priorities including, but not limited to:

- planning, regulation and management of proposed uses of the EEZ, including submerged lands leasing rights and coastal geology;
 - coastal and ocean habitat restoration;
 - coastal and ocean monitoring and research;
 - conservation and protection of critical coastal and marine habitats, and other placed-based, special area management;
 - mapping, characterization and assessment of coastal and ocean ecosystems;
 - shoreline and sediment management and the mitigation of threats from coastal hazards; and
 - coordination among regional councils, states and federal agencies with regard to fisheries management.
- g. Request the General Accounting Office and Congressional Leadership to review jurisdiction over coastal and ocean programs and funding to identify opportunities to consolidate legislative, appropriations and Office of Management and Budget reviews over coastal and ocean programs.
3. **Establish an interagency *National Coastal and Ocean Council* with responsibility to assure coordination and support for the National Ocean Policy.**

The Council shall have the following characteristics:

- be backed by authority from the highest executive level possible and have clear responsibility and authority to resolve interagency disputes, recommend actions and review budget priorities of federal agencies to assure support for the National Ocean Policy;
- include the Secretaries of Commerce, Interior, Transportation, Defense and State, the Administrators of the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA), the chair of National Science Foundation and state representatives;
- a process for stakeholder involvement and accountability;
- oversight of funding and other incentives to states/territories, tribes and municipalities to enhance coastal and ocean stewardship;
- identification of priorities and funding needs for science, monitoring, research and education that supports user needs and improved management of coastal and ocean resources; and
- ocean observing, assessment, monitoring and research activities that support resource management objectives at the state, regional and national levels. [*e.g.* see National Ocean Research Leadership Council/National Ocean Partnership Program.]

4. **Support coastal and ocean ecosystem planning and management that crosses political and program specific boundaries and is effective at the regional, state, and watershed scales.**
 - a. Expand support for state and territory coastal and ocean governance and ecosystem management by:
 - providing additional incentives, resources, research, training and technology supporting states, territories and local communities;
 - assigning states and territories a central role in identifying needs and directing research efforts that are relevant to coastal and ocean governance and management needs;
 - providing support to states and territories to develop ocean resource management plans and region-based ecosystem management plans under *CZMA*, and to participate as principals in regional ecosystem management initiatives; and
 - identifying ways in which existing ecosystem and regionally based initiatives provide models for action that should be encouraged and or strengthened to achieve system goals and objectives.
 - b. Ecosystem planning and management should incorporate the following characteristics:
 - multi-state, international and multi-sector authority to support comprehensive planning, information management and, where appropriate, assure implementation of priority activities affecting the region;
 - an institutional structure (e.g., advisory board, council members, etc.) that incorporates state, local, tribal, nonprofit, stewardship and private sector representation (specifically including businesses dependent on coastal and ocean resources);
 - flexible jurisdictions and membership based on the nature of the problem, geophysical and ecological characteristics, which may include the watershed(s) and federal and state coastal waters of a region of a state or territory, the state or territory itself, a group of states and/or territories, or portions of the watersheds and territorial waters of other nations;
 - a clear mandate to consider and identify performance-based ecosystem protection, restoration and enhancement objectives consistent with the National Ocean Policy and other appropriate national goals; and
 - coordination and conformity with coastal land use plans and coastal watershed management to the extent they may impact coastal marine and ocean resources, and coordination and consistency with state plans under the *CZMA*.

5. **Establish a sustained, dedicated Coastal, Estuarine and Marine Conservation Trust Fund including the following:**
 - Investment should be set at least at the \$900 million level provided for terrestrial conservation programs under the Land and Water Conservation Fund.
 - Funding sources could include offshore continental shelf lease revenues (OCS revenues), customs receipts, or other fees currently generated from the uses of coastal resources.
 - The fund's design should allow coastal states to work in partnership with local governments and nongovernmental partners such as land trusts.
 - To assure equitable distribution, funding should be distributed to the states based on a formula considering factors such as shoreline mileage and coastal population, tourism and ecosystem needs. In addition, the allocation formula should take into consideration the impacts on, and proximity to OCS activities.
 - Allocation of additional federal funds should be provided to support state and regional ecosystem efforts that protect or restore critical open space and agricultural areas, include key habitat features, encompass assemblages of connected or related parcels that conserve ecological integrity and improve water quality, or are vital to national interests or national security.

6. **Provide full funding for the current existing network of placed-based regional, state and local laws, and programs and encourage state and regional ecosystem management**, including Coastal Zone Management Act, National Estuarine Research Reserves, Sea Grant, National Estuary Programs, National Marine Sanctuaries, State and Regional Fisheries Commissions, and Essential Fish Habitat. Raise the standing of these programs within the administrative hierarchy of NOAA, EPA and the Department of Interior (DOI). The coordination of these laws and need for revisions to more effectively support the National Ocean Policy should be considered over time.

IV. Coastal and Ocean Stewardship

The success of the revised coastal and ocean governance framework described above should be measured based on its effectiveness in facilitating, identifying and implementing solutions to intractable coastal and ocean stewardship problems. A description of the key challenges identified by CSO that would benefit from the suggested governance changes are described below. It is important, however, to recognize that these stewardship efforts must be supported by complementary science, research and education to inform decision-makers and the public about the state of coastal and ocean resources; to assess management alternatives; and, to track the effectiveness of measures taken to address the problems. (See V. *Coastal and Ocean Observing, Monitoring, Research and Education.*)

A. Planning and Management of Growth Impacts, Shorelines and Coastal Hazards

Findings

Planning and Management of Growth

1. The coastal area of the U.S. is home to more than 53 percent of the nation's population. Over the next 15 years, 27 million additional people—more than half of the nation's total population increase—will settle in the narrow corridor along the edge of the ocean.
2. By most measures, human impacts to coastal ecosystems have grown faster than the rate of population growth. State and federal subsidies for growth-related infrastructure can help to fuel an inefficient pattern of land development.
3. Federal programs like CZM, the National Estuary Programs and locally-based basin and watershed approaches provide a framework for comprehensive, integrated growth management to reduce the impacts on marine and coastal areas and also support local economies. However, funding to states for these multi-sector efforts and has not kept pace with the increasing complexity of coastal problems.
4. Current federal investment in coastal and ocean resources continues to be focused primarily on single-sector media and traditional regulatory programs and falls short of the identified need for addressing persistent coastal problems like stormwater runoff and combined sewer overflows, which continue to pollute coastal and marine waters.

Shorelines and Coastal Hazards

5. Across a broad array of federal programs and policies concerning shoreline management, there is an absence of a coherent and consistent framework for managing the shore. This void in policy is being filled by budgetary and political expediencies and has eroded public confidence in the capability of government to address problems associated with shoreline change.
6. The current situation is characterized by:
 - a failure to recognize the economic and habitat value of beaches and a lack of consensus regarding the use of federal financial assistance for beach restoration, nourishment and protection;
 - inappropriate and counter productive agency and Congressional focus on individual project development, rather than a scientifically-based focus on the impacts of projects on larger littoral system;
 - budgetary policy that favors removal of dredged material from the littoral system, and inexpensive in-water disposal over beneficial use;
 - continued availability of federal subsidies to protect and encourage development in areas with severe erosion risks; and
 - lack of accurate mapping of flood plans, erosion zones and shorelines and accessible information to enable states and communities to make well-reasoned, cost-effective, long-term decisions.

Goal and Objectives

Comprehensive planning and management of growth in coastal communities that supports compatible development, adaptability to climate change, healthy coastal economies, and conservation and sustainable use of coastal and ocean resources for the benefit of future generations.

1. Strategies include, but are not limited to, efficient investment in infrastructure and public services, conservation of natural resources, protection of shorelines and public's right to use and enjoy public trust resources, and protection of public health and property from the impact of coastal hazards.
2. Complete mapping of the nation's coastal areas, including near-shore topography and coastal watersheds, at a scale and in a form that is readily available and usable by the states and territories with an initial focus on critical areas under threat to the public or critical coastal or ocean resources.

3. Develop and implement through better information, training and technical assistance a systematic and strategic plan to enhance the capacity of state and coastal communities to implement and use geographically based and other decision-making tools to improve planning for growth.
4. Ensure through the application of consistency, conformity or other appropriate authority that federal spending for transportation and other infrastructure supports state and regional management and land-use plans.
5. Create a consistent national policy for the management of the nation's shoreline and protection of coastal communities from hazards that, at a minimum:
 - establishes a standardized national definition of the shoreline;
 - establishes guidelines for making measurable improvements in protection of public safety and infrastructure, minimization of private damages from storms and erosion, and preservation of natural shoreline features; and
 - supports the enhancement of the recreational, economic and storm protective benefits of beaches and other natural features.

RECOMMENDATIONS

Planning and Management of Growth

1. **Reauthorize and amend the CZMA, creating a coastal communities program** to assist states to work directly with local governments to improve planning and management so that they balance growth and economic needs, protect critical resources, and revitalize waterfront areas, including:
 - resources for assessment and planning in cooperation with local governments of growth, infrastructure, and open space needs;
 - expanded support for management-oriented research, development of decision-making tools, and technical assistance to states solve local problems (see section 310);
 - piloting of new approaches through demonstration project that address regional, ecosystem and multi-issues (see section 308) ; and
 - allocation of funding for the preparation, adoption and implementation of local plans and strategies.

Funding for this program should begin at a minimum of \$30 million a year.

2. **Develop and implement federal interagency guidelines that require consideration of state land use and growth management plans, urban revitalization plans, rural conservation plans, etc., in federal funding decisions,** including the application of the coordination and consistency provisions of the CZMA and conformity with other environmental laws to ensure compatible federal and state approaches.
3. **Direct the National Academy of Sciences to evaluate and make recommendations regarding:**
 - the extent to which federal grants, loans and subsidies and policies for infrastructure influence coastal land development patterns;
 - the extent of the negative impact of these policies on the long-term health of coastal and ocean ecosystems; and
 - the extent to which these policies support or conflict with comprehensive planning and management of growth in coastal communities and current state, regional and local land use planning efforts.

The review should include, but not be limited to, an examination of highway funds, rural sewerage and waterline funds, school construction funds, federal facility funding and hazard mitigation funds.

4. **Direct the Interagency Council, in consultation with the states, territories and other interested groups to develop, fund and implement a national program to map and monitor the state of and changes in the nation's near shore, coastal and estuarine watershed, and marine and coastal ocean resources.** Individual agencies should be directed to assess and, as soon as possible, increase their current efforts to address priority areas. This information should be developed at a scale and in a form that supports user's needs and state and local coastal management. This information will also significantly contribute to support for other recommendations made in the report. (See also IV. *Coastal Ocean Observing, Monitoring, Research and Education.*)

Shorelines and Coastal Hazards

1. **Direct the U.S. Army Corps of Engineers to work with NOAA, FEMA, USGS and other appropriate agencies to:**
 - expand and improve current initiatives to support regional sediment management planning. The initiatives should include reviewing the extent to which current project policy and implementation adequately take into consideration littoral processes and the impact on regional sediment needs, including beneficial use and support of natural processes.
 - identify, compile, integrate and make available to the states data and information on shoreline change and processes, and work in conjunction with states and other local

project sponsors to identify further information and data collection processes needed to fill the gaps in undertaking a comprehensive approach to littoral system management.

- amend the cost-benefit analysis federal budgetary policies such as the “federal standard” so that beneficial use of dredged material including use for beach replenishment and habit restoration is a preferred option, and so that the value of sand as a limited natural resource and whereby dredged sediment is managed within the system in the most beneficial way.
2. **Request that Congress appropriate additional funds authorized in section 215(c) of WRDA 99 for the National Shoreline Study.** The study should be led by a team composed of federal interagency and state representatives and include regional assessments of sediment management needs. The study team should consult extensively with states to identify ways in which the study outcomes can assist coastal decision making relative to coastal erosion, adaptation to climate change, hazard mitigation and the protection of coastal resources, including habitat, public recreation and access, and environmental quality.
 3. **Delineate erosion risks on flood insurance rate maps and incorporate erosion risk into the rate structure of the National Flood Insurance Program.** FEMA should undertake an independent study to document the impacts and effects of erosion coverage offered through the National Flood Insurance Program.

B. Coastal and Marine Restoration and Conservation

Findings

1. Land protection and habitat restoration efforts are critical to achieving the environmental quality goals established in federal and state statutes and programs. Successful projects preserve and reestablish ecosystem integrity and fish and wildlife populations, but also yield multiple direct and indirect benefits such as improved water and air quality, improved public health, reduced costs for stormwater treatment, and increased flood retention capacity.
2. Coastal land conservation and habitat restoration efforts are a priority concern to all coastal states. Coordinated efforts between land trusts and federal, state and local governments have proven to be very effective in protecting important lands. One third of the funds provided to coastal states and local governments through the Coastal Impact Assistance Program were used for habitat conservation and restoration. The creation of a new funding source for coastal conservation efforts, including revenue sharing of offshore continental shelf lease revenues with the states, enjoyed the

widespread support in the states and in Congress in several attempts to pass the Conservation and Reinvestment Act in 1999-2001.

3. Current federal restoration efforts are spread across numerous federal agencies and usually focus on a particular species or habitat of concern. These efforts rarely prioritize projects based on broader ecosystem concerns, or work collaboratively to implement multi-objective projects. Restoration efforts are further hindered by constraints associated with different funding sources that fail to fund the full range of necessary project components, including planning, watershed analysis, engineering and design, baseline monitoring, construction, and long-term monitoring. Monitoring of restoration efforts for a one-to-three year period does not provide sufficient data to properly evaluate projects.

Goal and Objectives

Assure long-term protection, conservation and restoration of coastal and estuarine lands, and marine areas to support critical coastal and ocean habitats, healthy and abundant populations of fish and wildlife, use and enjoyment by the public, and economic-dependent business, as well as to enhance the quality of life in coastal communities.

1. Expand state and federal coastal, estuarine and marine habitat conservation and restoration programs through both private land-owner incentives and public programs that effectively and efficiently invest resources to achieve better results in order to:
 - create a measurable improvement in coastal ecosystem health through long-term protection of critical natural resource areas, habitat and conservation corridors;
 - affect a measurable improvement in coastal and estuarine water quality;
 - expand opportunities for coastal ecotourism and recreation;
 - keep pace with the shoreline access needs of a growing population and protection of public trust resources; and
 - restore a minimum of one million acres of degraded coastal habitat by 2010. (See *Estuarine Habitat Restoration Act*.)
2. Support identification marine managed areas that address multiple purposes, including: biodiversity protection, stock enhancement, recovery of disturbed systems, preservation of unique habitats and cultural resources, and increased opportunities for eco-tourism.

RECOMMENDATIONS

1. **Congress should establish a multi-year investment program in restoration monitoring and research including USGS (BRD), USFWS and NMFS/NOAA.** A national system for monitoring and evaluating mitigation and restoration should include the development of metadata, protocols and performance indicators. Federal funding for restoration projects should allow for at least five years of follow-up monitoring. USFWS, NMFS/NOAA and other agencies involved in restoration should be directed to review their grant programs to make the programs more responsive to states' needs for one-stop funding assistance for activities inclusive of project planning through implementation and long-term monitoring.
2. **Federal agencies should, in consultation with the states, develop the national habitat restoration strategy called for under the Estuarine Habitat Restoration Act of 1998, and Congress should fully fund restoration projects under the Act.** Federal agencies should be directed to coordinate implementation of other federal habitat restoration programs and support implementation and support for the national strategy.
3. **Any program to identify Marine Managed Area should include the following:**
 - *Stakeholder Participation:* Direct NOAA and the DOI to immediately establish the Marine Protected Area Advisory Committee called for in *Executive Order 13158*, include significant state, territorial and tribal representation on the committee, and convene initial meetings of the group by fall 2002. The stakeholder group should model "best practices" during its deliberations.
 - *Clarification of Jurisdiction and Authorities:* Request that legal counsel for NOAA and the Department of Interior immediately clarify federal authority or authorities to create/designate marine protected areas, aside from the National Marine Sanctuaries Act and the National Parks Act, and identify what authorities may be needed.
 - *Consistent Terminology:* The current use of the term "marine protected area" or "marine managed area" connotes a one-size-fits-all approach. Accepted definitions of different categories of managed areas should be considered and adopted.
 - *Unmet Needs Requiring Additional Funding:* Develop a funding proposal to collect the information necessary to support the designation of MPA's and include funding estimates for management and enforcement responsibilities, education outreach needs and research and evaluation needs. Funding proposals for the creation of an MPA network should include funding for states and affected stakeholders.
4. **Amend the CZMA, to authorize a coastal and estuarine land protection report** to address the need for protection of conservation corridors and preservation critical coastal areas that are threatened. Funding for this program should begin at a minimum of \$60 million a year. (See e.g., S. 2608, *Coastal and Estuarine Land Protection*.)

C. Marine and Estuarine Pollution

Findings

1. Nonpoint source pollution, or polluted runoff, is the leading cause of water quality impairment along the nation's coasts. Implementation of effective coastal nonpoint source pollution control programs has been severely limited by inadequate funding and a lack of commitment from and cooperation between federal, state and local agencies. Addressing the administrative and funding issues associated with coastal nonpoint pollution will allow states to increase the acreage of shellfish beds open for harvesting and eliminate or reduce swimming beach closures.
2. Excessive nutrient levels are the most extensive and measurable effect of pollution on living marine resources and biodiversity, affecting more than two-thirds of the surface area of estuaries and bays in U.S. coastal waters. These increases are causing severe oxygen depletion, habitat loss (e.g., sea grasses and coral reefs), fish kills and algal blooms. Notable examples include the "dead zone" in the Gulf of Mexico, and the loss of eelgrass due to excessive planktonic alga in the Chesapeake Bay. Atmospheric deposition contributes over thirty percent of the nutrient load in the Chesapeake Bay and other areas, and is a significant source of other pollutants including mercury in the Great Lakes.
3. Stormwater runoff and combined sewer overflows continue to be a persistent and significant source of pollution in coastal and estuarine areas and along our nation's bathing beaches. Current funding programs are not adequate to assist states and local communities to address this pressing need.

Goals and Objectives

Demonstrate consistent and measurable water quality and habitat improvement over the next ten years in coastal and estuarine waters and throughout coastal watersheds, as well as providing adequate ongoing water quality protection.

1. Establish effective coastal nonpoint source pollution control programs in all coastal states and territories, including necessary funding and improved integration of programs administered by NOAA and EPA, and provide flexibility for states to prioritize actions and target areas, and phase implementation based on available resources and competing priorities.

2. Measurably reduce the closures of beaches and shellfish beds, and increase recreational and commercial fisheries opportunities along the nation's coasts.
3. Increase technical assistance and other incentives for local communities and the private sector in understanding and implementing management practices that seek to reduce polluted runoff, including impacts of land use patterns, impervious surfaces and diffused cumulative and secondary sources on coastal and estuarine water quality.

RECOMMENDATIONS

1. **Federal agency programs related to nonpoint source pollution should be directed to develop a plan to coordinate and integrate these efforts, with a particular focus on how to build additional support for state and locally based basin and watershed initiatives.** Increased funding and support for the CZM, National Estuary Program, Sea Grant and the National Estuarine Research Reserves to accomplish the above efforts is highly encouraged.
2. **The federal-state partners need to expand efforts to address nutrient pollution, including:**
 - a. Assess the extent of compliance with existing laws and regulations and formulate an improved enforcement strategy.
 - b. Develop a comprehensive public education program for the proper application of fertilizers and pesticides and the introduction of practices to reduce stormwater runoff and soil erosion throughout the U.S.
 - c. Develop and apply a classification and indicator system for embayments in order to determine their susceptibility to eutrophication and to provide an "early warning system."
 - d. Establish an eutrophication monitoring network to monitor trends over time and in deep basins now for oxygen deficits.
 - e. Expand government reports to include nutrient information at an ecological level (e.g., water body, watershed or airshed).
3. **EPA, USFS, and NOAA need a coordinated program for identifying and reducing impacts from atmospheric deposition.** Coordination needs to include equivalent agencies in Canada. A possible model for this would be the Puget Sound/Georgia Basin International Task Force, a British Columbia/Washington State Environmental Initiative and part of the Environmental Cooperation Council (ECC) that commits the state and the province to work together on transboundary environmental problems.

D. Fisheries Management and Community Impacts

Findings

1. It is vital to our coastal states' economic interests to effectively manage marine resources and coastal habitats. The coastal states recognize the importance of living marine resources. Commercial and recreational fisheries are important contributors to our coastal economies. Commercial landings are valued at over \$3 billion nationally and there are now over 17 million recreational anglers in the U.S. Americans are spending nearly \$50 billion a year for seafood and are eating nearly 15 pounds of seafood per person annually.
2. The biological status of our fisheries varies widely across regions, but overall the condition of 65 percent of U.S. fish stocks is unknown. Of the stocks for which the status is known, 30 percent are overfished with the hotspot in New England, where nearly half of the 25 managed fish stocks are overfished. Across coastal states, the socioeconomic status is the same. With more boats trying to catch fewer fish, there have been inevitable conflicts over allocations. This has contributed to the decline of traditional fishing communities and maritime heritage.
3. The primary threat to essential fish habitat is the incremental land use change in coastal watersheds. The rapid development of coastlines puts the nation's most ecologically sensitive resources at risk. Pollution and other human activities compromise significant coastal and marine habitats. Population growth and associated sprawl contribute to the nutrient and toxic loadings in the upper reaches of coastal watersheds, as well as in coastal areas of most intense growth. Development is radically changing the landscape and runoff patterns on a continual basis. State fisheries managers can address the direct fishing impacts on habitats, but lack the authority to influence these daily coastal land use decisions, which cumulatively have the most deleterious effect upon critical fisheries habitats.
4. The states have long realized the importance of coordination of fisheries policies with regional and federal authorities, but have struggled with the fragmentation of governance mechanisms and the contradictions among laws and regulations. The Magnuson-Stevens Act seeks to manage fisheries for both conservation and economic purposes; the Endangered Species and Marine Mammal Protection Acts are designed to protect living marine resources. Conflicts and contradictions arise when applying these laws collectively, and litigation results. Thus, delays at the federal level are impeding conservation in the case of joint plans and the judiciary is playing an increasingly active role in fisheries policy. NMFS has a burdensome number of lawsuits pending, which keeps the agency and the regional fisheries councils in a reactive mode. A Southeast region review in 1998 revealed that it takes an average of 390 days to get an action implemented under the Magnuson-Stevens Act. Meanwhile, overfishing continues and

managers are unable to work proactively in the development of tools needed for long-term ecosystem management.

5. Coastal states have strong, inherent interests in protecting the integrity of the marine environment, including both living marine resources and cultural resources. Marine protected areas (MPAs) can be an important tool that can enhance the conservation of the nation's natural and cultural marine resources and enhance current efforts to sustain the ecology and economic use of our nation's marine resources. The current policy debate about the use and implementation of MPAs is hindered by:
 - a singular focus on implementation of one tool (MPAs) rather than consideration of a broad range of habitat conservation approaches;
 - lack of clarity surrounding the authority and the scope, intent and future implementation of Executive Order #13158;
 - insufficient attention to the details of funding, designation, enforcement, monitoring, and conducting research and the expectations for state and local government participation;
 - lack of data concerning the effectiveness of existing restrictions and harvesting closures, habitat characteristics and utilization patterns, the benefits and costs associated with MPAs, and the cumulative impact of non-consumptive activities within protected areas;
 - the lack of an effective forum for input by stakeholders; and
 - habitat restoration of offshore areas through natural reef building programs (e.g. Shellfish Restoration) and the use of artificial reef programs is highly encouraged. These offshore reefs and structures proved critical habitat for marine species and organisms and should be supported with additional federal funding.

Goal and Objectives

Sustain and enhance healthy fisheries resources and habitats, and maintain sustainable fishing industries as measured by stock assessments, economic data and other performance management indicators.

1. Create a measurable improvement in the health of marine and near-shore ecosystems as documented by the abundance, distribution and condition of living marine resources.
2. Reduce overfishing and overcapitalization.
3. Improve the level of knowledge about the status of U.S. fisheries for improved decision-making.

4. Preserve, protect and restore essential habitat through linkages between land use and aquatic resource management.
5. Integrate and increase cooperation among regional and federal authorities managing marine resources and clarify conflicting marine resources policies established by Congress.

RECOMMENDATIONS

Fisheries Management and Community Impacts

1. **Reduce fishing pressure and overcapitalization:** There are numerous examples of fishery resources responding positively to conservation measures, including the striped bass success in the Chesapeake Bay and the Tortugas 2000 MPA. These collaborative efforts serve to involve a variety of stakeholders and non-traditional partners such as nongovernmental organizations, academia and the seafood industry. The federal government should take the lead in developing an overarching national strategy to reduce fishing pressure and capacity. The plan should be flexible and should be developed with the states' full participation and with the goal of incorporating states' management interests in the federal process. Policy considerations should include limited entry to commercial and recreational fisheries, gear buyout and retraining, subsidy reduction and tradable fishing rights. Offering incentives for rewarding responsible fishing practices, such as additional fishing days, higher trip limits and reduced bureaucracy, should also be explored.
2. **Augment information base through targeted funding and incentives:** Without credible science, ecosystem management will not be possible. Many fisheries decisions are made without the benefit of real time data collection, so there is little chance to adequately assess the effectiveness of management measures and make timely corrections. Budgets have been declining or flat over the past several years due to earmarking, inflation and other factors despite expanded missions and increasing costs. The implementation of user fees could dramatically improve data collection need and should be investigated. Funding is needed to facilitate expanded research coordination and cooperation on a national and regional level.

Support needs to be continued and augmented for cooperative fishery data programs, such as SEAMAP, MARFIN, and MARPMAP, which are designed to increase efficiency, reliability and cost effectiveness of collecting data while reducing the burden on individual fishers. Support is also needed for tagging programs and for additional state staff trained in stock assessment. Creative approaches are needed to leverage funds in partnering with academia and private research institutions to improve science for decision-making. In the absence of scientific data, a risk averse, precautionary stance

should be promoted and strategies to gain judicial and legal acceptance of this standard should be developed and pursued.

3. **Link land use management and aquatic resource management:** The CZMA provides the framework for states to work across broad policy objectives in linking coastal land use to the management of ocean resources. The nature of coastal zone management is to integrate multiple authorities and disciplines to balance development with conservation. Coastal managers around the country are already working to prevent and mitigate cumulative and secondary impacts of coastal land use decisions. This work positively impacts conservation, restoration and protection of essential habitat. Funding should be stabilized and increased for the Coastal Nonpoint Source Pollution Control Program. Funding for habitat restoration and acquisition should be boosted. States should develop priority lists for critical land acquisition, intended specifically to protect essential fish habitat. Incentives should be provided for states to further integrate fisheries management objectives with land planning, including developing functional models for integrating essential fish habitat into planning and permitting decisions. Creative tools for habitat protection such as transfer and purchase of development rights should be examined. Other land-based, pollution-reduction programs, such as EPA's programs for pollution prevention and total maximum daily loads, should be supported to improve overall water quality. Water zoning should be explored and the feasibility of implementation reviewed.
4. **Reduce conflicts between federal statutes and agencies; clarify roles and improve coordination between federal, regional and state managers:** Fragmented governance mechanisms and conflicting mandates result in piecemeal management of fisheries nationwide. These conflicts need to be eliminated, and authorities, standards, policies and guidelines coordinated. The marine fisheries governance system must place greater emphasis on the use of integrated management approaches to address the economic, social and environmental demands placed upon finite fishery resources. The Magnuson-Stevens Act needs to be strengthened to empower the states and the regional fisheries agencies to independently plan and implement programs that meet national policy objectives and to move the joint management process in cases where NMFS is unable to do so. NOAA general counsel needs additional attorneys to provide for a more timely response to changing conditions. Funding should be augmented for coordinated approaches, like those achieved under the Atlantic Coastal Act, which have enabled great strides toward cooperative research and statistics, law enforcement, improved planning and management processes and enhanced public participation.
5. **There needs to be a clear structure of federal involvement in ocean resource policy.** This structure should seek to minimize politicization of resource issues. Congressional involvement has often had the effect of hindering cooperation and increasing the response time to management problems. The states have a rich experience built on partnership approaches to conservation and should take a leading role in crafting strategies for enhanced fisheries management into the future.

V. Coastal and Ocean Observing, Monitoring, Research and Education

A. Coastal and Ocean Observing

Findings

Substantial effort at the local, state, regional and national levels has focused on the design and implementation of a nation-wide network of linked and coordinated regional ocean observing systems that measure a common set of parameters using uniform methods and protocols that can be regionally and locally enhanced. The purpose of the network is to facilitate safe and efficient marine operations, ensure national security, manage living resources and marine ecosystems, ensure a sustainable food supply, mitigate natural hazards and ensure public health.

Such a system should provide continuous, long-term and real-time observations and predictions of ocean events and phenomena on a timely, integrated and sustained basis.

Through its design, the system should make effective use of existing resources and new technologies to address the needs of society for timely detection and prediction of coastal environmental conditions, such as changes in weather and sea state to changes in habitat and living marine resources.

Finally, the system should provide a source of data and information that contributes to public awareness of the condition and importance of the nation's coasts, oceans and Great Lakes.

Goal and Objective

To create an integrated and sustained national coastal and ocean observing system, including long-term continuous monitoring sites in near-shore and estuarine environments as well as offshore.

By 2010, establish a fully functional national coastal and ocean observing system coordinated by the federal government and implemented at the regional level by a federation of regional coastal ocean observing systems supported by the states with users receiving value-added products. (See also *Environmental Monitoring* below.)

RECOMMENDATIONS

1. **Implement a national coastal and ocean observing system governed by the following core set of principles, which should be used in the design and implementation of this federal-state system.**
 - a. *Demonstrated relevance to coastal and ocean management.* States are interested in the synthesis of data into products that managers can use to understand and manage the marine environment and ensure that the uses of the environment are not jeopardizing its sustainability. Therefore, states must be involved in the design and implementation of observing systems to ensure that data collected addresses pressing management issues.

Action: National legislation that establishes an ocean observing system should contain criteria requiring that the national oversight board and subsequent regional boards provide for substantive and significant representation of the user community.
 - b. *Make local, state and regional investments in coastal and ocean observing.* The rationale for a national coastal and ocean observing system that addresses national needs is well documented and as a result the expenditure of federal funds makes sense. Given the variability of the nation's coastal zone and the need for data specific to a region, it is appropriate to create mechanisms to collect local, state and regional investments that augment the federal expenditures. These investments would be additive and build on a sustained federal system.

Action: Federal funding should be used to leverage and provide incentives for investment of state resources in a national ocean observing system.
 - c. *Synthesize data into useful products:* Ocean observing and prediction systems should be tasked with generating data and products for the primary purpose of making data products. Coastal managers need synthesized products to make informed decisions. The specific products will vary by region and should be developed in close consultation with the end users.

A few examples of these products include:

- a three-to-seven-day forecast for harmful algal blooms;
- improved emergency management flood models showing wave run-up and storm surge predictions;

- coastal maps identifying sites most physically suited for net-pen aquaculture; and
- larvae and egg-transport maps for priority marine species.

Action: National legislation that establishes an ocean observing system should authorize annual funding levels that provide significant resources, in a separate line item, for data synthesis and product development. Further, this effort should be coupled with other ocean data management programs to maximize the nation's investment.

- d. *Build state capacity:* The federal-state partnership required to make a national ocean observing system functional and useful will require an ongoing shared investment in building and maintaining local and state user capacity. Tools to achieve this include workshops, training courses, development of software or printed materials, data processing models and hardware, technology transfer and state-level consultations.

Action: National legislation that establishes an ocean observing system should contain statutory and authorization language that leverages and supports state efforts to use the intended data and products.

B. Environmental Monitoring

Findings

1. Environmental monitoring is crucial to documenting status and assessing trends, evaluating the cause-effect relationships between stressors and impacts, and assessing the effectiveness of management actions. In this context, research is an important part of monitoring in that it:
 - improves the ability to interpret monitoring data and assessment capability;
 - assists in predicting impacts as a result of emerging trends; and
 - allows forecasts and assessments of the impacts and benefits of management actions.
2. An integrated monitoring program is needed that provides national, regional and local capabilities to measure, understand, analyze, and forecast ecological change (natural and anthropogenic) that can affect coastal economies, public safety and the integrity and sustainability of the nation's coastal ecosystems. Key attributes include:
 - integrated federal and state monitoring;

- co-funding by federal and state governments;
- be done at a scale that is useful to state's making decisions, as well as include sufficient density to assess large-scale impacts;
- flexible, nested designs to allow state-specific issues to be addressed in a national context; and
- a uniform reporting protocol to facilitate data and information exchange.

Goal and Objective

To make long-term, thoughtful coastal and ocean management decisions informed by robust environmental monitoring data.

By 2010, 50 percent of the nation's state, interstate and federal coastal managers (e.g., CZM, NERRs, marine sanctuaries, etc.) are using integrated environmental monitoring information products to make decisions.

RECOMMENDATIONS

The Commission should recommend that the Administration and Congress support federal legislation to:

1. **Establish a National Ocean and Coastal Resource Monitoring Center.** An interagency national center is needed to integrate federal, regional and state monitoring efforts. It should facilitate coordination, data management and archiving, ensure quality control, scientific methods development, information dissemination, and regional and national scale assessments. A panel of representatives from ongoing monitoring and assessment programs should provide advice and guidance.

Action: National legislation is needed to create a national center that has specific linkages to other federal data collection efforts (e.g., Ocean.US, etc.) and provides for state and regional participation.

2. **Integrate federal monitoring programs.** Elements of the nation's existing federal coastal and ocean monitoring programs, including EPA, NOAA and USGS, need to be integrated to maximize outputs (e.g., expand data collection, integrate analysis, educate decision-makers, etc.), minimize duplication, and invest funds efficiently. Substantial materials exist on how this might be accomplished and are documented in the 2000 *Clean Water Action Plan* and the *Coastal Monitoring and Research Plan* developed under that Plan. In addition, this integration should extend to include relevant state and regional monitoring programs.

Action: Amend national legislation affecting the federal resource agencies that operate monitoring programs to require development and implementation of an integrated approach. Effectiveness measures of this effort might address reduced costs and greater efficiency, wider use of the data and information products, a greater understanding of the status of the marine environment, amendments to federal legislation and more thoughtful management decisions, etc.

3. **Support regional monitoring.** Regional monitoring programs designed by the states and use core parameters within a national framework (e.g., consistent protocols, standards for data exchange, etc.) are needed. These will augment and add value to current local, state and federal monitoring programs. Additional sampling sites, times and measurements may be required to address issues of significance to regional resource managers.

Action: Regions should receive support to develop and implement regional monitoring plans provided matching funds are available.

4. **Create indicators of coastal and ocean health and amend the CZMA to provide the states with funding to support and flexibility to implement a performance indicators.** National and regional monitoring programs should support the development and implementation of indicators of ecosystem health (e.g., natural and anthropogenic) and their dissemination to the public, but be flexible enough to allow states and regions to track the most significant stewardship issues.

Action: NOAA, EPA, USGS and DOI should be directed to work cooperatively in the development and implementation of ecosystem health indicators.

C. Coastal and Ocean Research

Findings

Ongoing research is needed to support thoughtful management of coastal ecosystems, protect public safety and ensure U.S. coasts and oceans provide sustainable economic benefits. Broadly stated, research is needed to:

- analyze the environmental, economic and sociological impacts of ocean and coastal resource policy;
- analyze coastal physical and ecological processes; and
- improve or enhance monitoring and assessment tools.

A 1999 CSO nation-wide review of coastal management issues requiring research follow in priority order:

1. Habitat degradation/loss
2. Coastal development pressures and impacts
3. Water quality degradation
4. Wetland impairment or conversion to other uses
5. Coastal hazards/catastrophic events
6. Coastal erosion
7. Fisheries decline
8. Shellfish stock health
9. Seafood/drinking water contamination
10. Groundwater degradation
11. Rare and protected species
12. Resource management & restoration

Goal and Objective

Coastal and ocean resource managers, users and the public have the information they need to manage coastal and ocean resources.

By 2010, 50 percent of state, interstate and federal coastal and ocean resource managers indicate they have the information products needed to make decisions.

RECOMMENDATIONS

1. **Support regional marine research.** The manner in which research is conducted must recognize that the boundaries of coastal ecosystems do not conform to political subdivisions at any scale. Understanding and managing regional features of ecosystems such as coastal ocean currents, estuarine habitats and drainage basins often require a regional approach. The overriding importance of regional-scale research programs is well documented.¹

Action: Establish regional marine research programs that:

- address regional or large-scale impacts;
 - contribute to solving more than one issue of regional concern;
 - address priority research questions; and
 - ensure the research builds upon and does not duplicate existing efforts.
2. **Focus national priorities.** Among the many pressing coastal and ocean resource management issues and corresponding research needs the states have identified, CSO has chosen to focus on:

Priority Science Issues	Specific subtasks
1. Nutrient enrichment	Factors that trigger harmful algal blooms Bio-indicators of nutrient enrichment
2. Habitat degradation/loss & restoration	Development of biological indicators for coastal habitats to indicate stressors
3. Pathogens & toxic contamination	Cost effective testing of sediment contamination

Action: Research funded by NOAA, EPA, NSF and other agencies on these issues needs to be documented and made available to the coastal management community. Further, ongoing research in these areas needs to be responsive to user needs.

4. **Build state capacity to use research** to maximize the value of enhanced research programs the federal government should partner with the states to ensure potential users have the capacity to use it. Examples of how to implement this recommendation include a matching grant program within an amended CZMA and the NERRS Coastal Training Program or through National Estuary Programs and expanded Sea Grant extension services. In addition, an enhanced interagency effort to make the results of current research programs more accessible (e.g., powerful and maintained search engines, etc.) is required.

D. Coastal and Ocean Education

Findings

1. It is a challenge to translate research into findings meaningful to the public and environmental managers, and to engage, educate and develop an informed citizenry that understands the nature of scientific inquiry.

A recent public opinion survey found that many Americans have misleading ideas about the ocean and coastal environment. For example, four out of five Americans do not identify pollution running off the land as a problem for the oceans, although it is the leading source of marine pollution (NOAA, 1999.)

2. Over the past decade, the reform of science education has called for the development of innovative pedagogy and the integration of science and education research. Although members of the ocean science community have made local or regional contributions, there has not been a concerted effort to promote ocean science education nationally. There is a tremendous need for scientists and educators to work together to improve public knowledge and understanding of how the ocean affects their daily lives. Coastal Ocean observing systems present an opportunity to meet this challenge.

Goal and Objective

To improve public knowledge and understanding of how the coasts and oceans affect our daily lives.

By 2010, state education programs will produce a populace that is scientifically literate in coastal and ocean sciences.

RECOMMENDATIONS

Both informal educational opportunities and classroom coastal and ocean science education must be improved:

1. **Support science translation into information for decision-makers.** An interagency effort co-led by NOAA, EPA, DOI and the Department of Agriculture (USDA) is required to significantly expand the movement of research findings into the hands of coastal and ocean managers. This commitment to using science in decision-making needs to compliment and be integrated into the nation's current investment in research/science programs.

Action: Federal agencies responsible for existing coastal and marine research programs need to be directed to review and amend their program guidelines to ensure adequate emphasis is placed on conveying the results of these research programs to managers. Successful models exist (e.g., USDA and Sea Grant extension agents, expert directories, web sites, training programs, science advisory boards, etc.) that need to be bolstered.

2. **Strengthen training programs at national and regional scales.** There is great need for scientists to work with coastal managers to strengthen and enrich coastal decision-making capabilities. To meet this need, strong partnerships should be developed between the National Estuarine Research Reserve System (NERRS), state Coastal Zone Management (CZM) Programs, Consortium on Oceanographic Research and Education, National Marine Sanctuary Program, National Estuary Programs the emerging Centers for Ocean Science Education Excellence (COSEE) and Sea Grant to deliver science-based information and training for the coastal management community.

Use of technology-based delivery systems such as distance learning and the Web can be particularly useful for integrating data products and services developed from coastal observing systems. Metrics to evaluate the success of these efforts in a scientific and meaningful way also need to be established:

Action: Amend the CZMA to 1) create an intra-agency training and education program to coordinate efforts among NOAA (NERRS, state CZM programs, National Marine Sanctuary Program, Coastal Services Center, Sea Grant) and external partners (COSEE, CORE, NSTA, NMEA) and 2) authorize and appropriate funds for an integrated training program at regional and local scales.

3. **Develop and implement national coastal and ocean sciences education standards that result in a scientifically literate populace and augment existing programs.** There are a series of actions required to ensure citizens of all ages have a scientifically grounded understanding and appreciation of the oceans and their relevance to everyday life. These include:

- a. The Governing Board of the National Research Council, charged with the development of the National Science Education Standards (NSES), should be directed to formally include coastal and ocean sciences in the NSES. Although the ocean is an integral element for economic development, national security and quality of life, the ocean and coastal sciences are not adequately represented in NSES example lesson and assessment materials. Efforts should be directed toward assessing the availability of ocean marine environment research-based curricular materials, identifying exemplary materials aligned with the NSES and supporting professional development for educators in the delivery and development of NSES-based ocean and coastal science materials.
- b. The Office of Science and Technology Policy should request the National Ocean Partnership Program (NOPP) and the National Academy of Sciences to develop a NSES companion oceans document that provides greater detail on ocean concepts and assessment techniques that states might address in their applicable standards-based learning efforts.
- c. Congress should authorize and appropriate funding directly to the NOPP for a sustained education initiative that implements the companion oceans document.
- d. State ocean science education programs should be enabled, through technical assistance and funding, to integrate these ocean concepts into ongoing state educational reforms and standards. Possible avenues to channel this support include the NSF/Center for Ocean Science Education Excellence, the Coastal Zone Management Act, and the National Sea Grant Program.

Action: The Governing Board of the National Research Council, charged with the development of the National Science Education Standards (NSES), should be directed to formally include coastal and ocean sciences in the NSES.

VI. Value and Economic Benefits of Coastal and Ocean Resources

It is very important that the U.S., including impacted communities and other stakeholders, be able to assess ocean resource stewardship options with an understanding of the full economic and social value of those resources. Federal, state and local coastal management decision making can be significantly improved with the creation of a national system to gather, store, analyze and distribute data on the economic contribution of the nation's ocean and coastal resources. The data should include consideration of the sustainability of the benefits.

Findings

1. No one, including the federal government, coastal states and territories, and local governments, has sufficient information regarding the economic contribution of the coastal and ocean resources to the nation's economy.
2. A uniform system with consistent standards and dedicated resources to gather this information is needed because no such system is currently in place.
3. Budgets and investments drive innovation, coordination and action.
4. Currently, it is difficult to identify, comprehensively track, or systematically influence the national investment in ocean and coastal resource stewardship, management, education and research.
5. Many coastal and ocean resources provide important economic benefits that are only partly measured by such things as jobs and wages, while the immediate benefits of activities are more highly valued than the long-term benefits. Environmental degradation is not fully accounted for in the decision-making process because it is seen as occurring outside of the economic system.
6. There is a need to expand efforts to better understand and measure "non-market" values such as the economic value of beach use, fishing and swimming, or the contributions of critical habitats that the marine environment supports and to make this information broadly available.

Goal and Objectives

Public and private investments in ocean and coastal resources should reflect a clear assessment and understanding of the long-term environmental and economic costs and benefits of the use and management of the resources.

1. By 2005, states have the ability to access sufficient information about the economic contribution of ocean and coastal resources, including important individual economic sectors and industries, to individual states, their subdivisions and the nation.
2. By 2006, federal and state governments have the ability to align national and state investments to support ocean and coastal economic sectors as is done for other sectors of the U.S. economy.
3. By 2006, all affected stakeholders have the ability to help ensure that national and state investment decisions about ocean and coastal resources are being made with full consideration of the economic benefits at the national, regional, state and local levels.
4. By 2006, federal and state agencies have access to an integrated system of data gathering, storage, retrieval and analysis of ocean and coastal economic information.*

RECOMMENDATIONS

1. **The federal government should support an ongoing national coastal and ocean economic assessment system capable of providing data that is consistent with, and can be compared to, economic assessments of other sectors of the economy.**
 - a. Coastal and ocean-dependent industries, including small businesses, should be evaluated on a routine basis around the country using consistent reporting standards and methods of analysis to determine their economic contribution to national, regional, state and local economies. This evaluation should also allow for comparisons of the contribution of different sectors of these economies, (e.g., ports versus recreation or tourism). This information is critical to inform decision-makers about the possible economic effects that certain industries, governmental policies and investments, or coastal management decisions have on the economy and quality of life in coastal communities.

* An applied example of this type of analysis is the work being done by the National Oceanic and Atmospheric Administration to measure the economic value of resources protected or affected by the National Marine Sanctuary Program. This analysis has been particularly helpful in questions regarding the impact of Marine Protected Areas in the Channel Islands and Santa Barbara Canal.

- b. The most important data are: employment, wages, and output for coastal and ocean industries, recreational use data and employment in the fisheries harvesting sector. Other important data includes fishing harvesting sector, population and housing data.

 - c. Such a system should include:
 - an emphasis on public outreach to ensure that the results are understandable, readily available and widely distributed;
 - a hands-on training program, including access to data, for those needing to conduct more detailed inquiries for research or other purposes; and
 - the ability to display this information on geographic information systems as an economic data layer to be compared with other data and information available for coastal and ocean resources.
2. **Ocean Commission, in assessing the investment needs and costs of its recommendations, should work with coastal states to obtain the most up-to-date information about the potential economic benefits generated by those recommendations.**

The available information may or may not be comparable among states, but will provide at least some examples of potential benefits for consideration. Coastal states have produced relevant information that can be used to help demonstrate the benefits of investment. For example:

- *Ohio* produced information regarding tourism on the Ohio Lake Erie coast indicating that \$7.4 billion was generated annually in direct travelers expenditures and \$1.2 billion in state and local taxes from tourism in the region.
 - *New York and New Jersey* identified 229,000 jobs, \$9.9 billion in income, and \$4.8 billion in combined federal, state, and local tax revenues from the ports of New Jersey/New York in 2000.
 - *Hawaii* identified \$59.3 million in revenues from commercial fisheries in 2000.
3. **The federal government should establish a national ocean and coastal resource budget process that reflects multi-agency commitments for cross-cutting programs to address the nation's coastal and ocean resources.**
- a. As part of the president's annual budget submittal, a report should be provided to Congress describing the total U.S. investment for the management of the nation's

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