

Testimony
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Before

The Subcommittee on Fisheries, Wildlife, and Oceans
Committee on Natural Resources
U.S. House of Representatives

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Madam Chairman and Members of the Fisheries, Wildlife, and Oceans Subcommittee, we are pleased to appear before you today in our capacities as the Co-Chairs of the Joint Ocean Commission Initiative, a collaborative effort of members of the U.S. Commission on Ocean Policy and the Pew Oceans Commission. The purpose of the Joint Initiative is to advance the pace of change for meaningful ocean policy reform, and we are delighted to have the opportunity to join a discussion about how to improve ocean policy and governance and to share some of our thoughts about priorities for legislative action.

In addition to the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission, your letter of invitation made specific reference to the Joint Initiative's report, *From Sea to Shining Sea*, transmitted to the Senate last June at the request of a bipartisan group of ten of its Members. That report outlined our priorities for action by the 109th Congress, actions that were needed to address the many pressing issues we are facing with regard to our oceans. Most of the actions identified in this report remain relevant today. Thus we request that a copy of our report be submitted as part of the public record for this hearing. We welcomed the opportunity to provide that input to the Senate, just as we welcome the opportunity to share some of our findings and recommendations with this House subcommittee this morning..

Background on the Two Commissions

The precedent for a national commission to examine ocean policy was set back in the mid-1960's when Congress established the Commission on Marine Sciences, Engineering, and Resources, commonly referred to as the Stratton Commission after its chairman, Dr. Julius Stratton, the chairman of the board of the Ford Foundation and retired president of the Massachusetts Institute of Technology. The Commission's report, *Our Nation and the Sea*, was

released in 1969 and, at that time, was the most comprehensive look at our oceans and the needs and opportunities inherent in better management of the seas. A number of ocean laws were enacted in the years following the report, but the most immediate action was the establishment by a presidential reorganization order in 1970 of the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce.

In the 30 years that followed the Stratton Commission report and the creation of NOAA, many individual ocean and coastal statutes were enacted. However, there was a growing sense in and outside of Congress that this nation needed a more coordinated and comprehensive ocean and Great Lakes policy than the individual and fragmented laws and regulations that had evolved. In the late 1990's, stimulated by an obvious deterioration in the health of our oceans and strong concerns about our ability to govern them, a public dialogue began to emerge that supported the idea of a new "Stratton II Commission." Legislation to establish a new oceans commission or interagency ocean council was considered in the 98th, 99th, 100th and 105th Congresses, but it failed to pass.

In 2000, in part because of the failure of Congress to enact this legislation and the growing concern about our oceans, the Pew Charitable Trusts established the privately funded 18-member Pew Ocean Commission to focus primarily on the conservation of living marine resources. Shortly thereafter, the 106th Congress enacted the Oceans Act of 2000 (P.L. 106-256), which created the 16-member publicly-funded U.S. Commission on Ocean Policy. The commissioners were appointed by President Bush in 2001, four directly by the President and twelve from lists of nominees submitted by the majority and minority leaders in the Congress. The U.S. Commission was given a broader mandate by Congress, and its members addressed economic activities as well as a wide array of ocean science and funding needs.

On June 4, 2003, the Pew Ocean Commission released its report, *America's Living Oceans: Charting a Course for Sea Change*. On September 20, 2004, the U.S. Commission on Ocean Policy, under its statutory mandate in the Oceans Act, delivered *An Ocean Blueprint for the 21st Century* to the President and Congress in ceremonies at the White House and Capitol Hill. The net result was the release of two remarkably similar reports and over 240 recommendations specific to moving toward an ecosystem-based approach to managing our marine resources; modernizing our antiquated system of ocean governance; and encouraging a much stronger national commitment to enhance our marine science, research, and educational efforts.

As is made clear in the reports of the Pew Oceans Commission, U.S. Commission on Ocean Policy, and now the Joint Ocean Commission Initiative, our nation must move toward ecosystem-based management, balancing the long-term health and sustainability of the ecosystem while also supporting economic prosperity. Doing so will require our nation's leaders to take action to reform ocean governance, enhance the role of science in making management decisions, increase our commitment to education and outreach, and adequately fund ocean and coastal programs. The following is a summary of the key recommendations reflecting the shared conviction of the two Commissions that our nation can change its course and achieve a new ocean blueprint for the 21st century.

- Governance, guided by the principles of ecosystem-based management:
 - Adopt a comprehensive and coordinated national ocean policy
 - Establish by law a National Ocean Council in the Executive Office of the President, chaired by an Assistant to the President
 - Create a President’s Council of Advisors on Ocean Policy
 - Strengthen NOAA and improve the structure and coordination of all federal ocean agencies
 - Develop a flexible process for creating regional ocean councils, facilitated and supported by the National Ocean Council
 - Create a coordinated management regime for federal waters

- Restoring America’s Fisheries:
 - Reform fisheries management by enhancing the role of science in the decision-making process and strengthening scientific cooperation and enforcement.
 - Support the establishment of guidelines to facilitate the use of dedicated access privileges
 - Develop a regime that can support sustainable aquaculture practices

- Preserving Our Coasts and Cleaning Our Coastal Waters:
 - Strengthen the link between coastal and watershed management with an emphasis on increasing incentives, technical assistance, and other management tools and policies that address nonpoint source pollution and support sustainable coastal development.
 - Increase protection for critical coastal habitat and preserve marine biodiversity
 - Enhance laws to address the growing influx of invasive species, including those associated with ship ballast water

- Science and Education
 - Develop a comprehensive national ocean science strategy
 - Implement a national water quality monitoring network, which would contribute significantly to the broader Integrated Ocean Observing System
 - Increase attention to ocean education through coordinated and effective formal and informal programs

- Beyond our Borders:
 - Manifest international leadership in global marine policies
 - Accede to the U.N. Convention on the Law of the Sea

- Increase funding for a new and comprehensive ocean policy:
 - Double the nation’s investment in ocean research
 - Increase base funding for core ocean and coastal programs and associated infrastructure at both the state and federal levels.
 - Establish an Ocean Policy Trust Fund based on revenue from activities in federal waters, including new and emerging offshore uses to support state and federal implementation of the two Commissions’ recommendations.

A more detailed history of the two Commissions, including summaries of their recommendations and responses and implementation efforts by the Administration, can be found in the excellent and recently updated report by the Congressional Research Service¹

The State of our Oceans

In asking us to focus on the reports of the two Commissions and the Joint Initiative that has followed, it is clear that this subcommittee essentially wants to know “What is the state of our oceans?” Unfortunately, we have to report to you that the state is not good, and it is getting worse. There continue to be many problems besetting our oceans and coasts, including:

- Enormous human, environmental, and economic impacts associated with hurricanes and other increasingly intense coastal storms that account for over 70 percent of recent U.S. disaster losses.
- Massive dead zones in the Gulf of Mexico and the Chesapeake Bay and, most recently, off the coast of Oregon in each of the last five years (which had never happened before in the Pacific Northwest as far as we know).
- Continued loss of coastal wetlands despite conservation commitments.
- Increasing frequency and size of harmful algal blooms in many of our coastal areas, including the Northeast, Hawaii, and Florida.
- The continuation of polluted runoff contaminating coastal waters, resulting in over 20,000 beach closings and swimming advisories annually and reducing the ecological and economic productivity of coastal resources.
- Mounting economic and ecological problems due to introduction of invasive species.
- Continuing loss of coral reefs and other ecologically important underwater habitat.
- Overexploitation of fish stock, although the recent reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act will help strengthen measures aimed at addressing this perpetual problem.
- Acidification of the global oceans due to the uptake of carbon dioxide, resulting in a change in ocean chemistry and its negative impact on species with carbonate-based skeletons susceptible to deterioration.

Moreover, these ocean and coastal problems are confronted by a dysfunctional, out-of-date, and inadequate system of governance guiding the activities of the ocean community. For example:

- Fragmented laws, confusing and overlapping jurisdictions, and the absence of a coherent national ocean policy that hinder our management efforts.
- A lack of federal support for emerging regional ocean governance efforts that hamper the ability of such initiatives to help solve important ocean and coastal problems.
- The absence of a coherent and coordinated management regime to guide existing and emerging activities in federal offshore waters, such as aquaculture, renewable energy generation, and bioprospecting.

¹ Harold F. Upton, John R. Justus, and Eugene H. Buck, Resources, Science, and Industry Division, Congressional Research Service, “Ocean Commissions: Ocean Policy Review and Outlook”, updated February 1, 2007

- U.S. failure to accede to the U.N. Convention on the Law of the Sea, compromising the nation's leadership in international ocean and coastal forums and threatening our national economic and security interests.
- Dwindling U.S. investment in ocean and coastal research, science, and education limiting our ability to tackle such problems as global warming, resource depletion, harmful algal blooms, invasive species, and nonpoint source water pollution, to name just a few.

The Ocean and Coastal Economy

The two reports bring into sharp focus the importance of our oceans and coasts to our nation's natural heritage, security, and economy. With an offshore ocean jurisdiction larger than the total land mass of the United States, U.S. waters support rich and diverse systems of ocean life, provide a protective buffer, and support important commerce, trade, energy, and mineral resources. The economic contributions the oceans make are staggering:

- More than \$1 trillion, or one-tenth, of the nation's annual gross domestic product (GDP) is generated within nearshore areas, the relatively narrow strip of land immediately adjacent to the coast.
- When considering all coastal watershed counties, the contribution swells to over \$6.1 trillion, more than half of the nation's GDP.
- In 2003, ocean-related economic activity contributed more than \$119 billion to American prosperity and supported well over 2.2 million jobs.
- More than 13 million jobs are related to trade transported by the network of inland waterways and ports that support U.S. waterborne commerce.
- Annually, the nation's ports handle more than \$700 billion in goods, and the cruise industry and its passengers account for \$11 billion in spending.
- The commercial fishing industry's total value exceeds \$28 billion annually, with the recreational saltwater fishing industry valued at around \$20 billion, and the annual U.S. retail trade in ornamental fish worth another \$3 billion.
- Nationwide retail expenditures on recreational boating exceeded \$30 billion in 2002.

Of course, these figures capture only a small part of our oceans' worth and potential. Consider, for example, that born of the sea are clouds that bring life-sustaining water to our fields and aquifers and drifting microscopic plants that generate much of the oxygen we breathe. The oceans host great biological diversity with vast medical potential and are a frontier for exciting exploration and effective education. Other ocean assets, such as functioning coastal habitats, contribute to the health of our environment and the sustainability of commercial and recreational resources. Still others assist in what our nation's founders referred to as the "pursuit of happiness." Clearly, a new approach to governing our oceans, coasts, and Great Lakes is needed to protect and enhance the multitude of benefit they provide to the nation.

Recent Progress

Upon the release of the reports by the two Commissions, the President and Congress publicly embraced the major recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission. The President issued the U.S. Ocean Action Plan and established the

Committee on Ocean Policy. Congress held hearings on select issues and introduced ocean-related legislation. At the state level, several Governors demonstrated strong leadership by initiating strategies for coordinating ocean and coastal science and policy in regions that include the Great Lakes, Northeast, Gulf of Mexico, West Coast, and individual states that include California, Washington, Massachusetts, New York, Florida, New Jersey, Alaska, and Hawaii. We have just returned from a regional ocean governance conference in Monterey, California, and were heartened, to say the least, at the diligence, efforts, and enthusiasm of the representative of so many organizations and coastal state governors in addressing the recommendations for regional partnerships advocated by the two Commissions and the Joint Initiative.

However, while the expectations for significant progress toward ocean policy reform have been high, results, particularly at the federal level, have been slow in coming. There was some dedicated attention to ocean and coastal issues by the 109th Congress, and a number of bills made significant progress through the legislative process (see list below). However, with the exceptions of the reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act and the enactment of the Marine Debris Research, Prevention, and Reduction Act (P.L.109-449), which gave NOAA and the Coast Guard authority to identify and reduce debris in the marine environment, no other ocean bills were enacted. The ocean-related bills that made some substantial progress in the last Congress but did not reach final passage included:

- Ballast Water Management Act of 2005
- Coastal Estuarine Land Protection Act
- Coastal Zone Enhancement Reauthorization Act
- Coral Reef Conservation Amendments Act
- Flood Insurance Reform and Modernization Act of 2006
- National Ocean Exploration Program Act
- National Oceanic and Atmospheric Administration Act
- Ocean and Coastal Mapping Integration Act
- Ocean and Coastal Observing System Act of 2005
- Tsunami Preparedness Act

As the Joint Initiative asserted during the last Congress, these bills, had they been enacted, would have addressed important issues and demonstrated that Congress was serious about restoring the vitality of our oceans. Their passage would also have provided some needed near term successes while the community continued the essential work of achieving the broader comprehensive reforms necessary to reverse the decline of our oceans. We remain hopeful that the 110th Congress can capitalize on the hard work that has already gone into these bills, and we are pleased to see that this Subcommittee has reported out the Coral Reef Conservation Amendments Act of 2007 and has plans to move aggressively on other ocean-related legislation.

Next Steps

Looking forward, we are here to report to you that we are in a time of unprecedented opportunity. Today, as never before, we recognize the links among the land, air, oceans, and human activities. We have access to advanced technology and timely information on a wide variety of scales. We recognize the detrimental impacts wrought by human influences. We can

and should act now to ensure that the ocean, coasts, and Great Lakes are healthy and productive and that our use of their resources is both profitable and sustainable. The next critical step will be for Congress to work together to advance comprehensive ocean policy reform and funding.

The opportunities before the 110th Congress are enormous and daunting. However, the action by this Subcommittee in holding this hearing today and the conversations that we have had with the Chairman and Ranking Minority Member of the full Natural Resources Committee, along with discussions with members of the House Science Committee and the key Senate Committees, give us reason to hope that the work of our two commissions—and their legacy of ocean policy reform that is now being carried out by the Joint Initiative—will be more fully addressed and implemented by this Congress. And the Joint Initiative has crafted an agenda that we hope can help guide this effort.

From Sea to Shining Sea

Almost one year ago, in mid-March of 2006, a bipartisan group of ten Senators asked for a report from the Joint Initiative on the ten steps Congress should take to address the most pressing challenges and funding priorities to establish a more effective and integrated ocean policy. Approximately three months later, we issued recommendations for immediate attention by Congress. As noted, a copy of *From Sea to Shining Sea: Priorities for Ocean Policy Reform*, is included in its entirety with this statement for the record.

Outlined below are additional legislative proposals, many drawn from our report, that we believe provide a solid framework for action by Congress. Many of these actions can and should be acted upon in this Congress, as soon as possible. Such action will clearly signal progress and pave the way for further progress on some of the more challenging and long-term measures that will be needed to achieve meaningful ocean policy reform.

Governance Reform

Congress should adopt a statement of national ocean policy, acknowledging in legislation the importance of oceans to the nation's economic and ecological health and adopting a national policy to protect, maintain, and restore marine ecosystems so that they remain healthy, resilient, and able to deliver the services people want and need. A statement of national ocean policy should include recognition that it is the policy of the United States to establish and maintain for the benefit of the nation a coordinated, comprehensive, and long-range national program of ocean and atmospheric research, conservation, management, education, monitoring, and assessment. A new declaration of national ocean policy should incorporate provisions relating, but not limited to, the following concepts:

- Acknowledge the linkages among ocean, land, and atmospheric systems
- Protect, maintain, and restore the long-term health, productivity, and diversity of the ocean environment
- Ensure responsible management and sustainable use of fishery resources and other ocean and coastal resources held in the public trust, using ecosystem-based management and a balanced precautionary and adaptive approach

- Assure sustainable coastal development based on responsible state and community management and planning, including protection of life and property against natural and manmade hazards
- Develop improved scientific information and use of the best scientific information available to make decisions concerning natural, social, and economic processes affecting ocean and atmospheric environments
- Facilitate a collaborative approach that encourages the participation of diverse stakeholders and the public in ocean and atmospheric science and policy

Congress should establish the National Oceanic and Atmospheric Administration (NOAA) in law and work with the Administration to identify and act upon opportunities to improve federal agency coordination on ocean and coastal issues. Congress should pass a strong organic act establishing NOAA as the lead civilian ocean agency and restructuring the agency to enhance its ability to fulfill its core mission to further our understanding of oceans and coasts and apply that knowledge to effectively manage our marine resources on an ecosystem basis. Specifically, a NOAA organic act should:

- Establish NOAA as the lead civilian ocean agency by statute
- Set forth core missions of: assessment, prediction, and operations; ecosystem-based management of ocean and coastal areas and resources; and science, research, and education
- Call for reorganization of the agency along functional lines to better equip it to carry out its core mission and remain science-based, but with its management programs better connected to make use of that science in decision making
- Establish leadership roles and accountability mechanisms for implementation of major elements of the agency's mission

NOAA was established in 1970 by a presidential reorganization order and has operated under that authority since that time. Over the years, several bills have been introduced that could provide the basis for an act that would codify NOAA. Before his retirement from Congress, Senator Hollings of South Carolina introduced a number of bills. His most recent was S. 2647 in the 108th Congress, that would, among other provisions, codify NOAA. The Bush Administration has put forward simple organic act language, and Congressman Vernon Ehlers of Michigan recently reintroduced his National Oceanic and Atmospheric Administration Act, H.R. 250, which is identical to the bill that was passed in the House last year (H.R. 5450) but was not taken up by the Senate. The Ocean Conservation, Conservation, and National Strategy for the 21st Century Act (OCEANS 21), introduced by Representative Sam Farr of California in this Congress, is a multi-title bill that addresses a range of governance issues, including the codification of NOAA, borrowing language from from Mr. Ehler's H.R. 250. No matter which vehicle Congress chooses, it can and should codify and strengthen NOAA and thereby enhance its mission, improve its structure, and better enable it to carry out existing and new responsibilities in a manner that is consistent with ecosystem-based management.

Although NOAA plays a very important role and should be strengthened to carry out its mission, there are a number of other federal agencies with ocean and coastal responsibilities and important ocean science and research programs, including the National Science Foundation

(NSF) and the National Aeronautics and Space Administration (NASA). Congress should take action to enhance federal agency coordination and leadership by conducting oversight of the Administration's implementation of the U.S. Ocean Action Plan. On January 26 of this year, the Administration's Committee on Ocean Policy released its *U.S. Action Plan Implementation Update* covering what it asserted was progress in six general areas, from ocean leadership and coordination to coasts and watersheds and international ocean policy. We urge this Subcommittee and others in the House and Senate to conduct an oversight hearing on the *Update* and the Administration's implementation of its Ocean Action Plan to identify opportunities to strengthen the interagency processes for coordinating ocean and coastal issues. Based on the results of the oversight hearing, the Joint Initiative recommends that Congress pass legislation that would:

- Codify a permanent federal coordinating committee with staff support provided by an Office of Ocean Policy in the Executive Office of the President to oversee the federal government's implementation of a national ocean policy, resolve interagency disputes, and coordinate ocean budgets (or manage the integrated oceans budget)
- Call upon the President to appoint an Assistant to the President to provide leadership and support for implementation of the national ocean policy
- Establish a nonfederal Council of Advisors to provide advice on ocean and coastal issues

Congress should foster ecosystem-based regional governance. Congress should pass legislation to create a national framework to support regional approaches and collaboration and enable coordinated, integrated ecosystem-based management that builds on existing regional and ecosystem-based efforts. This framework should guide the development and implementation of processes that involve federal, state, tribal, and local governments, as well as the private sector, nongovernmental organizations, and academic institutions, working together toward regional actions that advance national ocean and coastal interests. Regional governance mechanisms will vary to meet needs of different regions, but should be encouraged to possess the following characteristics:

- Regional governance entities that are manageable in size (approximately 20-25 representatives) with a mix of federal agency and state representatives
- Regional entities that are advised and supported by a citizens' advisory committee
- Development of regional ocean strategic plans that:
 - Identify short and long term goals
 - Assess the region's social, economic, and ecological characteristics to guide progress toward those goals
 - Determine priority issues and solutions to address them
 - Identify indicators of management efforts
 - Analyze gaps in authority
 - Identify and prioritize research, data, and information needs
 - Commit to dedicated public education and outreach efforts
 - Implement solutions or policies to address priority problems

In addition, Congress should improve federal coordination of regional activities by calling upon the President to direct federal agencies to identify opportunities to further coordinate existing programs and activities in order to assist and support more effective implementation of regional

approaches. Improving coordination among federal agency activities at the regional level would be an important complement to state, local, and tribal efforts to address ocean and coastal resource management issues on a regional basis. Enhanced coordination would enable federal agencies to better address state and local needs while also furthering national goals and priorities.

Congress can further enable the transition toward an ecosystem-based approach by expressly acknowledging that management of marine resources should be carried out with an ecosystem-based approach and by calling upon federal agencies to develop guidelines that enable improved coordination and analysis to assist in the transition toward an integrated management approach that considers the entire ecosystem. Such an express acknowledgment can and should be part of individual ocean, coastal, and related laws currently up for reauthorization. These include the Coastal Zone Management Act (CZMA), the National Marine Sanctuaries Act, the Clean Water Act, and other statutory regimes governing the use and management of ocean and coastal resources.

Through reauthorization or other amendments to specific statutes, Congress can, in a sense, collectively provide that management goals are set to ensure that ocean and coastal ecosystems remain productive with respect to most if not all resources. For example, through reauthorization of the CZMA, Congress can require that state coastal programs work with federal, state, and local agencies to provide for periodic assessments of the state's natural, cultural, and economic resources, and, based on those assessments, set specific, measurable goals that reflect the growing understanding of ocean and coastal environments and the need to manage growth in regions under pressure from coastal development. Congress can also direct that states redefine the landward reach of their coastal zones to include coastal watersheds, thus better enabling coastal programs to look across political boundaries and incorporate a coastal watershed focus and the basic tenets of ecosystem-based management.

Statutory acknowledgement of the need to incorporate ecosystem-based management into marine resource management regimes is intended to be a first step toward ecosystem-based management by enabling improved coordination and analysis among agencies managing marine resources and providing for a transition toward an integrated management approach that considers the entire ecosystem.

The United States should accede to the United Nations Convention on the Law of the Sea.

Although this is a matter that is not pending before the House, the Joint Initiative wanted to highlight one of the most serious international ocean policy issues that remain unresolved for our nation. The United States Senate should provide its advice and consent to U.S. accession to the Convention so that we can once again assume a leadership position in international forums deciding such vital ocean matters as jurisdictional claims over the continental margin and its vast energy resources, deep seabed mining, scientific research, environmental protection, and fisheries and habitat conservation.

The Joint Initiative agrees with the President that accession supports vital U.S. national security, economic, and international leadership interests and that rapid Senate approval is needed. As a party, the United States would be in the best position to lead future applications of this framework for regional and international cooperation in protecting and preserving the marine

environment. U.S. accession to the Convention would send a clear message in support of our efforts to foster international approaches while significantly furthering our own national interests. As the lone industrialized nation not part of the Convention, we jeopardize our role as a world leader by failing to join.

The Convention has been thoroughly reviewed in Senate hearings and public forums, and U.S. accession is supported by a broad coalition of ocean interests. The Navy and Coast Guard have testified that joining the convention will strengthen our ability to defend freedoms of navigation and overflight essential to military mobility and our homeland security efforts. All major U.S. industries, including offshore energy, maritime transportation and commerce, underwater cable communications, and shipbuilding support U.S. accession to the Convention because its provisions help protect vital U.S. economic interests and provide the certainty and stability crucial for investment in global maritime enterprises. Environmental organizations strongly support the Convention as well.

Ocean Science and Education

Growing awareness of the important economic, environmental, and aesthetic benefits that our oceans, coasts, and Great Lakes provide to our nation has spurred a greater appreciation for the need to improve our understanding and conservation of the health and productivity of these resources. We now recognize that the processes that drive these ecosystems and their interactions with the atmosphere and land are complex and interrelated. Given this knowledge, multidisciplinary science and education are frontiers that offer great potential for significantly advancing our understanding of oceans and coastal processes and provide increased opportunities to address cumulative impacts that are compromising the economic, ecologic, and social benefits they provide. As discussed earlier, major changes are needed in the existing ocean governance regime to realize the full potential that a more robust ocean research and education programs can offer. The Joint Initiative recommends that Congress focus on the following action to reform the ocean science and education enterprise.

Congress should acknowledge the two-way links between Climate Change and Oceans.

Through their capacity to absorb and transport heat and carbon dioxide, oceans are a key driver of climate change processes. In addition, they are also undergoing significant short- and long-term change over both large and small areas as evidenced by the increasing acidification of the oceans, climatic shifts associated with El Niño, dramatic changes in the amount of sea ice in the Arctic Ocean, rising sea level rise, and concern about possible abrupt climatic and ecological changes, particularly associated with shifts in ocean circulation.

Unfortunately, chronic underfunding of ocean-related science has prevented us from capitalizing on new technology and innovative ideas that would help address huge information gaps and significantly advance our understanding of ocean processes. Improved understanding of these processes will greatly enhance our ability to predict, mitigate, and adapt to the economic and ecological ramifications associated with climate change. This information will be essential as Congress balances competing demands in the development of new national policies to minimize and adapt to climate changes in the coming years and decades.

Developing coherent strategies for adapting to a changing environment will be as important as efforts to address future carbon emissions. We strongly suggest that that legislation being developed in Congress include provisions that recognize and enhance ocean science, management, and education as important elements of a comprehensive approach to understanding and addressing climate change.

The Innovation and Competitiveness Initiative should be expanded to incorporate ocean science and education. The innovation and competitiveness initiative being driven by the National Academies report *Rising Above the Gathering Storm* has highlighted the importance of maintaining strong research and education programs. The ocean community can clearly make significant contributions towards these goals. Thus, this initiative should be expanded beyond its current focus on the physical sciences to incorporate ocean-related sciences and education. Our oceans are rich in energy resources, marine biotechnology is a rapidly growing industry that is capitalizing on the vast biological and genetic diversity of marine life, and advanced underwater vehicles are opening up an era of ocean exploration that has captured the imagination of a new generation of school-aged children. Cutting-edge research using massive oceanic and atmospheric data sets and a new focus on promoting multi-disciplinary studies in support of ocean science are laying the groundwork for technological advances and a sophisticated workforce that will allow our nation to be a leader in the global shift toward a service sector that will demand environmentally sensitive technologies and policies. The oceans offer a new frontier of economic opportunity and are capable of generating interest of young scientist from all scientific disciplines. We must capitalize on the attractions of the oceans and use it to harness the potential of the next generation.

Congress should use the Administration's Ocean Research Priorities Plan to guide its implementation of an expanded ocean science enterprise. In January, the Administration released its *Ocean Research Priorities Plan and Implementation Strategy*, as called for in the President's U.S. Ocean Action Plan. This strategy, developed with input from the ocean community and subject to a comprehensive review by a special National Academies review committee, identifies ocean-related research and education priorities government-wide and nation-wide. The plan, still subject to a final review by the National Academies, represents the first ever community-wide identification of ocean science priorities. It provides a clear assessment of the challenges facing the community as it struggles to integrate across scientific disciplines and across the land, sea, and air interface. It identifies opportunities and approaches to help us understand and respond to the growing ecological and economic implications associated with a changing environment.

The plan also highlights the need to make progress towards ecosystem-based management, including the adoption of scientific approaches and policy strategies that more clearly address short- and long-term harm associated with cumulative impacts. While there has been general recognition and agreement that the global environment is changing, our lack of understanding of the underlying processes, particularly in the oceans, and their interrelationships is limiting our capacity to model this change and forecast how the system will change in coming years and decades. Thus, support is needed across the spectrum of ocean science—basic and applied research, monitoring and analysis, and modeling/forecasting—to understand how the system operates and how it will change over time, as well as to be able to more accurately evaluate the

effectiveness of policies intended to modify human impact on the system. There are difficult policy choices to be made in the coming years, and they must be grounded in good science if they are to be accepted by the public and targeted at the problems that offer the greatest potential for success.

Legislation should be enacted to implement the Integrated Ocean Observing System and Ocean Observatories Initiative. The ocean and coastal community has rallied behind the implementation of an Integrated Ocean Observing System (IOOS) and Ocean Observatories Initiative (OOI). Together, this combination of research and monitoring systems offer scientists and managers a more complete view of atmospheric, terrestrial, and oceanic interactions occurring at the global, national, and regional scales. IOOS is the ocean-focused domestic element of the broader Global Earth Observing System of Systems and provides the infrastructure and tools needed to acquire data and translate science into products and services needed by decision makers. IOOS supports the hardware, software, data management, synthesis, and modeling activities that integrate the data and information generated by the research community. IOOS also helps ensure that applied research efforts are directed toward issues and questions that are limiting the capacity of decision makers to make informed policy and regulatory decisions. For example, IOOS supports activities such as the enhanced water quality monitoring system called for in the President's Ocean Action Plan, ecosystem modeling that supports multi-species management of our ocean fisheries, and forecasting and tracking harmful algal blooms. IOOS is also where disparate data sets are integrated to detect short- and long-term shifts in the health and productivity of key ecosystems and where socioeconomic trends are analyzed. This information is then synthesized and translated into products that are understandable to decision makers, who then use it to guide their decisions. The successful implementation of IOOS requires Congress to pass authorizing legislation that will guide the activities of federal agencies and the numerous regional, state, and private sector partners who are also deeply vested in the system.

OOI, which can be considered a research arm of IOOS, is an NSF initiative that will construct networks of ocean observatories. These observatories will be linked to the internet via seafloor cables or satellites, allowing scientists to develop knowledge of topical issues such as earthquake and tsunami dynamics, fisheries and coastal resource management, and natural and human influences on the ocean and climate systems. The initiative will fund three major components, including a regional observatory, several deep-sea moored buoys, and an expanded network of coastal observatories. As these efforts mature, the research-focused observatories enabled by the OOI will be networked, becoming an integral part of the proposed Integrated and Sustained Ocean Observing System. Again, a balanced system of research, monitoring and assessment, and modeling and forecasting represents the continuum of ocean science that is at the foundation of a new national ocean policy.

Congress should support an enhanced National Ocean Exploration Program. A robust exploration program that coordinates, enhances, and strengthens activities across federal agencies is a missing link in a national strategy to better understand the Earth's environment. Exploration focuses on curiosity-driven research of ocean-related processes, properties, and places that are poorly known or understood. Put into context, more than 1,500 people have climbed to the summit of Mount Everest, more than 300 have journeyed into space, and 12 have

walked on the moon, but only 2 people have descended and returned in a single dive to the deepest part of the ocean, spending less than 30 minutes on the ocean bottom, 95 percent of which remains unexplored.

The opportunity is ripe to develop a multi-agency exploration initiative given the placement of NOAA, NSF, and NASA in the same Congressional appropriations subcommittee, augmented by the support and guidance provided by the Navy. Such an initiative should work across the spectrum of the biological, chemical, and geological sciences and be guided by a competitive process coordinated by NOAA and NSF with strong guidance from the research community. It should ensure that resulting technological and scientific advances, like other basic research programs, will generate returns far in excess of their costs.

The discovery of new ecosystems and species has the potential for accelerating our understanding of the origin of life and evolutionary processes on Earth and possibly on other planets as well. An expanded national ocean exploration initiative will allow Congress and the Administration to create a legacy that will be recognized by future generations as a turning point in the development of a national ocean policy.

Congress should establish an Ecosystem Research Initiative. Such an initiative is needed to foster scientific cooperation and integration by rewarding interagency and multidisciplinary research that addresses ecosystem questions. Decision makers need information that will help them manage human activities and natural resources in a manner that provides the greatest benefit to the nation. While there is broad agreement among scientists and natural resource managers that the United States must transition toward ecosystem-based management, there is considerable confusion about what this process entails. Will specific ecosystem concerns, such as the fate or habitat needs of an endangered species, or a regime-wide phenomenon, such as climate change, take precedent over human priorities? Are we headed toward dramatic ecological regime shifts induced by human activities, or are these changes being driven by natural processes?

These are legitimate questions that require the government to develop a more coherent and broad-based research program. Such a program must be based on multidisciplinary approaches and the cooperation of scientists from differing disciplines within and outside the government. An Ecosystem Research Initiative should integrate ongoing basic and applied ecosystem research across the spectrum of federal agencies currently engaged in such research. The consolidation of ecosystem-related research activities under a broad interagency cross-cutting initiative—perhaps modeled on the Climate Change Research Program—is key to delivering usable information to managers and policy makers. For the initiative to be successful, it must be granted an appropriate level of discretionary funding authority to direct existing and new resources toward high priority research areas through a competitive process.

Education

Congress should support a National Ocean Education Strategy. Congress should mandate the development of a national ocean education and outreach strategy that coalesces and integrates the existing array of independently conceived and implemented education and

outreach programs and activities. There are growing numbers of ocean-related education and outreach activities occurring at all levels of government and within the nongovernmental sector.

The lack of a coherent strategy for aligning these activities is compromising their effectiveness and limiting their capacity to generate additional funding support. Congress should work with the President to establish a governing body responsible for developing a national ocean education and outreach strategy. The strategy should enhance educational achievement in the natural and social sciences, increase ocean awareness, include a five-year plan for formal and informal activities, and facilitate links among federal, state, local, and nongovernmental programs. NOAA and NSF should be given the lead for this activity, and Congress should look for opportunities to increase support for successful programs within these and other agencies, such as the NSF Centers for Ocean Science Education Excellence.

Funding

Establish an Ocean Trust Fund in the U.S. Treasury. Both Commissions addressed the need for stable funding for implementing their recommendations, making the case that our oceans, coasts, and Great Lakes are major contributors to the U.S. economy, with half the nation's GDP generated in coastal watersheds. Maintaining the economic and ecological viability of our oceans and coasts requires decision makers at the national and state governmental levels to have access to unbiased, credible, and up-to-date information to make informed decisions. Unfortunately, chronic under-investment has left much of our ocean-related infrastructure in woefully poor condition. In addition, federal and state ocean and coastal agencies need more financial resources to meet the challenges that were so clearly documented in the reports of the two Commissions.

Given this acknowledged under-investment, each Commission was well aware of the budget implications inherent in its set of recommendations. Implementation costs outlined in the two reports arrived at similar projections—it will cost approximately \$3–4 billion in new funds annually to meet the needs of a comprehensive ocean policy, a modest sum given the criticality of our oceans and Great Lakes and their resources. A portion of those funds should be allocated to *all* coastal states to help sustain their renewable coastal resources. The other portion should be used to support the programs and activities of the various federal agencies with ocean and coastal responsibilities. To address these needs and to demonstrate a national commitment to a new national ocean policy, each Commission recommended that an Ocean Trust Fund, composed of *dedicated* resources, be established in the U.S. Treasury.

The 109th Congress missed a number of opportunities to dedicate a portion of federal revenues derived from offshore activities to establish a trust fund. The Joint Initiative has noted that the 110th Congress is considering certain modifications to the offshore oil and gas royalties program that could result in additional revenues being made available to the federal government and provide an opportunity for this new Congress to dedicate a modest portion of those revenues to establish an Ocean Trust Fund. The Joint Initiative stands ready to engage the 110th Congress in an ongoing discussion about the sources and uses of such a fund. In the end, establishing a dedicated Ocean Trust Fund is one of the most important early steps Congress could take to demonstrate its commitment to a new national ocean policy.

Congress should increase base funding for core ocean and coastal programs. The loss of funding for some key ocean and coastal programs in FY 2006 and FY 2007 and the lack of enhanced funding to address high-priority challenges identified in the Commissions' reports must be reversed if we are to preserve the economic benefits derived from ocean-dependent activities and protect the health and productivity of ocean and coastal ecosystems. Congress should increase funding for ocean and coastal activities throughout the federal government in FY 2008 and beyond, with an initial focus on enhancing core base programs and support for a few broad initiatives. To this end, the Joint Initiative would like to convey our deep appreciation for the support provided for ocean-related programs in the Committee on Natural Resources' Views and Estimates letter submitted to the Budget Committee at the beginning of this month. In particular, we are heartened by the Committee's specific support for the funding numbers recommended by the Joint Initiative and for the direct reference to the Joint Initiative and its efforts on behalf of a new, comprehensive, and coordinated ocean policy. In particular, we remain hopeful that the House can overcome the growing difficulties it has experience in recent years regarding funding for the National Oceanic and Atmospheric Administration. Recent funding levels for the agency have been well below the President's request and even further below the annual enacted level of funding appropriated to the agency. While NOAA is one of many federal agencies that support ocean and coastal activities, its role as the nation's lead ocean agency merits greater support for the multitude of science, management, and education programs it carries out.

Further, Congress should direct that the Administration develop an integrated ocean budget. The lack of a coherent listing and analysis of ocean and coastal programs distributed throughout the federal government hampers the ability of Congress and the Administration to evaluate, coordinate, and integrate ocean- and coastal-related science, management, and education programs within agencies across the federal government. To address this problem, either as separate legislation or as part of an appropriations bill, Congress should direct the President to submit an integrated ocean budget, making it easier to track support for and analyze the progress of departmentally isolated but highly interactive ocean and coastal programs, and thus facilitating greater coordination among federal programs. This recommendation was first made in a letter to the head of the Office of Management and Budget by the Chairman and Ranking members of the Senate Appropriations and Budget Committees in 2005, in which they strongly urged the establishment of an ocean funding baseline to monitor progress towards fulfilling financial objectives. To date no such effort has been undertaken to our knowledge.

Conclusion

We close by commending the Committee on Natural Resources and this Subcommittee and its staff for your bipartisan commitment to making meaningful change in the way we manage our oceans and coasts. The time is ripe and the time is now for Congress to act boldly to transform a dysfunctional federal management regime into a truly effective and farsighted system for managing our magnificent oceans and coasts to benefit current and future generations.

If there was any uncertainty about the need to take bold action, we would turn your attention to the *U.S. Ocean Policy Reports Card* that the JOCI issued in early in 2006 and, again, at the beginning of this year. Copies of both report cards are included as attachments to this testimony.

Essentially, for 2005 and 2006, we assessed the nation's progress in implementing the recommendations of the two commissions in six categories:

	<i>2005</i>	<i>2006</i>
National Ocean Governance Reform	D+	C-
Regional and State Ocean Governance Reform	B-	A-
International Leadership	F	D-
Research, Science, and Education	D	D+
Fisheries Management Reform	C+	B+
New Funding for Ocean Policy and Programs	F	F

Although there has been some very modest improvement in most of the categories, the record in moving toward a vigorous implementation of a new comprehensive and coordinated national ocean policy as recommended by the commissions is, at best, uneven and far too slow and cautious given the state of our oceans. As we pointed out above, the most notable progress is being made in our coastal regions and states. Nevertheless, notwithstanding the importance of these local initiatives, they cannot be sustained without the support and assistance of the national government. Further, in the report card that we issued at the end of January 2007, we particularly emphasized the need to dramatically improve our understanding of the relationship between our oceans and climate change, an area of marine science neglected for far too long.

New ecosystem-based management policies; the modernization of ocean governance structures, and a renewed commitment to science, education, and research; are all built on more robust legislation and higher levels of funding. We strongly believe that dedicated levels and sources of ocean and coastal funding are critical to meeting the responsible and balanced goals set by our two Commissions. The members of the Joint Ocean Commission Initiative, in our bipartisan effort to catalyze needed ocean policy reform, stand ready to assist the Congress in every way possible to meet this formidable challenge.

Madam Chairman and Members of the Subcommittee, we appreciate the opportunity to appear before you today, look forward to working with you on addressing the ocean and coastal issues that we have raised in this hearing, and would be happy to answer any questions that you may have.