
NOAA's National Ocean Service

ROUNDTABLES

# INTERNATIONAL ISSUES

A significant proportion of world economic activity and a wide range of services, amenities and social benefits depend on sustainable use of the resources of the sea. For many countries, marine resources and services provide 3-5% of their Gross National Product. For a few countries, the proportion is much higher. The vast majority of all international trade is carried by sea, with 3.5 billion tons of cargo transported in ships worldwide. By the year 2020, it is possible that 75% of the world's population will live within 60 km of seacoasts and estuaries. Offshore oil production accounts for about 30 percent of the total world oil production, and offshore gas production for about half of the world production of natural gas. The world fish catch is 80-90 million tons/year, amounting to some 20% of the total human consumption of animal protein and worth approximately $70 billion. Over the past 50 years, however, overfishing in some areas has resulted in serious declines in productivity, depleted diversity of marine and coastal ecosystems, and the loss of jobs and income. Destructive fishing practices, pollution and the degradation and conversion of coastal habitat have also contributed to the depletion of valuable fish stocks. Wetlands, sea grasses, coral reefs and other coastal habitats are extremely important breeding and spawning areas for many species of fish and other organisms, and yet, globally, over 50% of such areas have already undergone severe environmental degradation. Expected growth in coastal population with the attendant pressure on natural resources suggests that the economic significance of the oceans is more likely to increase than to decline, as will the need for more effective management of its sustainable use.

Global engagement with international partners is an essential element of the mission of NOAA's National Ocean Service (NOS) to enhance integrated management of the oceans in the U.S. and around the world. Together with a variety of partners, NOS conducts a wide range of international activities that include responding to oil spills, conducting cooperative research on marine pollution, promoting safe and environmentally sound marine transportation, and helping nations to modernize their geodetic infrastructure and hydrographic capabilities. Partners include international organizations and donors, nongovernmental organizations (NGOs), universities and others with which NOS shapes international marine policy, develops new tools and information for management, and provides technical assistance to implement coastal management programs. NOS's bilateral programs include China, Vietnam, Korea, Japan, Australia, South Africa, Mexico, Canada, and the Caribbean. NOS also provides leadership to the international marine and coastal community through its work with the Intergovernmental Oceanographic Commission, the International Hydrographic Organization, the United Nations Environment Program, and the World Conservation Union's World Commission on Protected Areas, among others.

This Roundtable will focus on opportunities for improving and increasing NOS's international activities, particularly those related to ocean and coastal management, marine protected area (MPA) management, and ocean and coastal observing systems—all priority international issues identified by the U.S. Commission on Ocean Policy, and related to commitments made at the World Summit on Sustainable Development (WSSD). The WSSD commitments include: (1) encouraging the application by 2010 of the ecosystem approach; (2) promoting integrated ocean and coastal management; (3) establishing representative MPA networks by 2012; and (4) strengthening regional cooperation and inter-regional coordination.

## Integrated Coastal and Ocean Management

Through its administration of the National Coastal Management Program, the National Estuarine Research Reserve Program, and the National Marine Sanctuary Program, NOS conducts a wide range of activities related to integrated ocean and coastal management. The implementation of these programs over the past 30 years has provided models for many other countries that are now dealing with similar issues. Today, over 100 countries are planning and implementing their own coastal management programs. Countries as diverse as Australia, China, Korea, Canada, Portugal, the United Kingdom, and Malaysia are developing new, integrated ocean governance regimes for their exclusive economic zones. Both Germany and Belgium have begun to zone their marine sectors of the North Sea to minimize use conflicts, and China is zoning its 12-mile territorial sea under new national legislation.

This confluence of 30 years' experimentation and experience with coastal management in the U.S. and the new interest of many countries to initiate coastal and ocean management programs have created an opportunity for NOAA to be a global leader in building public-private partnerships to address these rising challenges. It is the best of times to share experiences and expertise, draw lessons, and develop "best practices" for coastal and ocean management.

For the past 10 years, NOS has worked with its counterparts in China, Korea, and Vietnam to provide advice to those countries as they establish their own coastal and ocean management programs. As an example, NOS, in partnership with the World Conservation Union's (IUCN) Vietnam office, ReefCheck, and SeaGrassNet, has worked with the Vietnamese national government and the Province of Quang Nihn to build capacity for integrated coastal management at the provincial level. The geographic focus of the project has been on Ha Long Bay, a World Heritage site that is under increasing pressures from regional economic development.

Even more recently, NOS has worked with countries of the Caribbean region and the Caribbean Community (CARICOM) to integrate adaptation to climate change in national development planning and private investment decisions. This involves working with key sectors (e.g., water supply, agriculture, land use) to incorporate climate-change monitoring and risk assessment into ongoing programs and long-term planning. This will be accomplished through the provision of technical support to build the capacity of participating countries to respond to the effects of climate change on coastal and marine resources.

NOS is also involved in a new NOAA partnership with the United Nations Environment Program's (UNEP) Coordination Office for the Global Program of Action for the Protection of the Marine Environment from Land-based Activities. NOS will assist selected countries in the Caribbean in developing their National Program of Action (NPA) to address land-based activities that affect the marine environment. The main goal is to use these countries as models to help other nations in the wider Caribbean develop their NPAs by establishing a common methodology and process. This new partnership was one of the most important outcomes of the "Whitewater to Bluewater Conference" organized by the U.S. Government and held in Miami in March 2004.

NOS is also working with the Intergovernmental Oceanographic Commission and the Department of Fisheries and Oceans Canada to develop international guidelines for measuring the effectiveness of coastal management programs. The project, scheduled for completion in 2005, will identify and evaluate indicators of natural environmental, socioeconomic and governance outcomes of coastal management. The indicators and methodology will be tested in pilot coastal areas before publication of the final guidelines

**Discussion Questions:**

- *How can NOS more effectively address the emerging coastal and ocean management issues facing the world?*
- *How can NOS invest/contribute toward these global coastal and ocean management issues?*
- *How can NOS partner or participate with your institution in global actions related to building capacity for more effective coastal and ocean management?*

## Marine Protected Area Management

A new political commitment was launched when the 2002 World Summit on Sustainable Development called for the establishment of representative marine protected area (MPA) networks by 2012. This outcome of the WSSD transformed a general consensus of scientific opinion about the value of ecological networks into a new political imperative. NOS partnered with The World Commission on Protected Areas and other NGOs to lead a global team in developing new tools for practitioners to achieve this 2012 target as part of the two-year global preparations for the World Parks Congress, held in September 2003 in Durban, South Africa.

The challenge of creating a globally representative system of MPAs is daunting. While oceans cover 71% of the Earth's surface, marine waters are the least protected parts of the planet. UNEP's World Conservation Monitoring Center reports that about 102,000 protected areas exist worldwide, however, only about 4,100 of these are marine protected areas. While terrestrial protected areas cover about 12% of the land area on Earth, less than 0.5% of the surface of the ocean is covered by MPAs. Most MPAs are very small and located in waters close to the shore. Many are not managed effectively.

As recently as February 2004, the 7th Meeting of the Conference of the Parties (COP 7) to the Convention on Biological Diversity (CBD) endorsed the WSSD 2012 target and called for establishing and maintaining "comprehensive, effectively managed, and ecologically representative national and regional systems" of marine protected areas by 2012. Clearly, new thinking about MPAs is needed to address:

- *the design of MPA "networks" and "corridors" to maintain ecosystem function and conserve marine biodiversity;*
- *the introduction of "resiliency" as a network design criterion to respond to climate change, particularly for coral ecosystems;*
- *incorporation of "program evaluation" as an integral part of the MPA management process and the development of new "indicators" for measuring program effectiveness;*
- *sound coastal and ocean governance to address the effects of human activities outside the boundaries of MPAs on the resources within; and*
- *new approaches to managing the "high seas," since about half of the Earth's surface lies beyond national jurisdiction.*

Working primarily through its leadership of IUCN's World Commission on Protected Areas (WCPA) and NGO members of IUCN, NOS has undertaken a wide range of international activities related to MPA management. For example, over the past three years, it has worked with the World Wide Fund for Nature (WWF) and leading scientists and site managers throughout the world to publish a new IUCN "Guidebook of Natural and Social Indicators for Evaluating MPA Management Effectiveness." The recently published guidebook was field tested over a six-month period at 18 MPAs around the world to enhance its utility for practitioners.

In another partnership with WCPA-Marine and the University of Delaware, NOS is developing, through a series of expert workshops, "Principles and Guidelines to Incorporate Marine Protected Areas into Integrated Coastal and Ocean Management." The principles and guidelines are intended to promote better understanding and recognition of the linkages between MPAs and the wider coastal and marine area, and the need to establish adequate institutional arrangements to manage MPAs in the broader context of integrated coastal management frameworks. A series of case studies will illustrate their application in different countries. The guidelines will also suggest ways to enhance implementation of existing management tools to improve the incorporation of MPAs into the planning and management of coastal and marine areas.

Recognizing the need to incorporate human considerations into marine protected area management, NOS has developed a Global Socioeconomic Monitoring Initiative (SocMon) through WCPA-Marine and the Global Coral Reef Monitoring Network. Its purpose is to increase the capacity of coastal managers to incorporate socioeconomic information into their planning and decision-making. A "Socioeconomic Manual for Coral Reef Management" was published in 2000, and more standardized, region-specific guidelines were released in 2003 for Southeast Asia and the Caribbean. These "SocMon" manuals were accompanied by training and small grants for site monitoring in both regions. This initiative increases capacity for understanding the value of marine resources, evaluating management effectiveness, tailoring management to local needs, and facilitating stakeholder participation at the site level.

Palau will be among the first countries in the world to build a national system incorporating resilience to climate change, founded on its Protected Areas Network Act enacted in November 2003. Moreover, IUCN, The Nature Conservancy, the Great Barrier Reef Marine Park Authority, the Wildlife Conservation Society, NOS, and the U.S. Coral Reef Task Force are developing new tools and a capacity-building program to help practitioners begin to build resilience into their coral reef conservation programs. This will help ensure that these valuable natural systems can survive the effects of anticipated global change and provide for escalating human needs, and that such programs can respond effectively during bleaching and other coral-depleting events.

For the past five years, NOS has partnered with UNESCO's World Heritage Center to promote the nomination of marine World Heritage sites. Of the 754 sites inscribed on the World Heritage List, only some 20 sites have significant marine components, and only half of them have been inscribed purely for their marine value. This partnership was initiated through a collaborative project funded by the United Nations Foundation to conduct a workshop to assess the marine biodiversity of the tropical realm and identify opportunities to expand World Heritage coverage. Following the workshop, NOS has continued to collaborate with the World Heritage Center and participated in developing a marine strategy that promotes activities for a marine World Heritage portfolio. These include piloting transboundary and serial nominations of marine sites and capacity building at existing sites.

Over the past 10 years, NOS has established new integrated coastal management relationships that have resulted in strategic MPA partnerships as well. Among them are a "sister sanctuary" relationship between the Florida Keys National Marine Sanctuary and the Sanya National Coral Reef Reserve on Hainan Island in China; a similar relationship between the Rookery Bay National Estuarine Research Reserve and the Shankou National Mangrove Reserve in China; an exchange program in integrated ocean management with Korea that includes technical assistance in designation of an MPA on Jeju Island; assistance in writing MPA management plans for sites in South Africa; and others. The National Marine Sanctuary Program has initiated a program to exchange personnel

with the Great Barrier Reef Marine Park Authority in Australia. Shared experiences through international partnerships have brought important benefits to both U.S. and international MPA professionals.

NOAA is also working through the International Hydrographic Organization (IHO) to ensure that the role and importance of adequate hydrographic data and services extend well beyond their significance for maritime commerce, navigation, and tourism. Hydrographic information can be used as a primary data layer for marine and coastal geographic information systems, in oceanographic modeling, and in the identification of essential fish habitat, among other uses. Through the IHO's Meso-American Caribbean Hydrographic Commission, efforts are under way in the Caribbean to demonstrate the relevance of hydrographic data and capacity building to a proposed regional project that seeks to prevent marine pollution from land- and ship-based sources in the Gulf of Honduras.

Finally, the past decade of coral reef conservation and awareness initiated through the International Coral Reef Initiative has done much to promote ecosystem-based management, strengthen Regional Seas programs, and provide for site-based MPA capacity building. NOAA's commitment to site-based coral reef conservation initiatives is implemented through two small grant programs, the Coral Reef Conservation Grant Program and the Coral Reef Conservation Fund, a partnership between NOAA and the National Fish and Wildlife Foundation (NFWF). Since 2001, the two programs have provided nearly $2 million and have leveraged an additional $2.4 million in matching funds to a range of activities that address global threats to coral. Grants have been awarded to 66 coral projects in more than two dozen countries, primarily in the Pacific and wider Caribbean. Nearly $620,000 has been awarded to MPA-related activities (15 projects).

The two coral small grants partnerships promote integrated watershed and marine-based ecosystem management in support of sustainable development. In addition to promoting site-based conservation efforts, these grants have advanced the development of tools for addressing threats to coral reefs around the world.

**Discussion Questions:**

- *How can NOS more effectively address the emerging marine protected area issues facing the world?*
- *How can NOS invest/contribute toward these global MPA issues?*
- *How can NOS partner or participate with your institution in global actions related to marine protected areas?*

## Global Observations

Achieving a predictive understanding of coastal ecosystems depends on the development of regional to global networks that link observation and analysis in more effective and timely ways. To translate that understanding to coastal and ocean management action requires new thinking. The International Oceanographic Commission (IOC) created the Global Ocean Observing System (GOOS) in 1991 in response to the desire of many nations to improve the management of seas and oceans, and to improve climate forecasts. The WSSD specifically calls for GOOS to be developed to meet the needs of coastal states for sustainable development of the seas and oceans.

Since the inception of GOOS in 1991, NOAA and NOS have supported the planning and implementation of this operational observational capability. Today, GOOS is being implemented domestically as the Integrated Ocean Observing System (IOOS) by Ocean.US. Ocean.US was created by the National Oceanographic Partner-

ship Program to coordinate the development of an operational and integrated and sustained ocean observing system. Information from this system will serve national needs to:

- *detect and forecast oceanic components of climate variability;*
- *facilitate safe and efficient marine operations;*
- *ensure national security;*
- *manage resources for sustainable use;*
- *preserve and restore healthy marine ecosystems;*
- *mitigate natural hazards; and*
- *ensure public health.*

GOOS promotes the integration of coastal environmental research and enables user groups to get the information they need to make informed decisions in a timely fashion. GOOS also promotes a broad-scale view of coastal ecosystems that takes into account the large-scale forcing of the coastal system and leads to reliable mechanisms for predicting environmental changes and their ecological consequences. The ultimate goal of the coastal element of GOOS is to support the development and application of nowcasting, forecasting and predictive capabilities as a means of preserving healthy coastal environments, promoting sustainable uses of coastal resources, mitigating coastal hazards, and ensuring safe and efficient marine operations.

GOOS is being implemented through five overlapping phases: (1) planning, including design and technical definition—now essentially complete; (2) operational demonstrations and pilot experiments, such as EuroGOOS and NEAR-GOOS (Northeast Asian Seas); (3) incorporation of existing observing efforts and related activities that can be implemented now to constitute the GOOS Initial Observing System (this began with the inclusion of preexisting systems, such as the Global Sea Level Observing System and the Coral Reef Monitoring Network, both supported by NOS); (4) gradual operational implementation of the "permanent" or ongoing Global Ocean Observing System, to be completed over the next 10-15 years; and (5) continued assessment and improvement in individual aspects and in the entire system. Other existing observing systems being considered include the Harmful Algal Bloom (HAB) program of the IOC and the International Mussel Watch program, both of which have been long supported by NOS.

As the lead U.S. Representative to the IOC, NOS will continue to support the development of GOOS through active participation in planning and coordination activities, the creation, maintenance, and promotion of internationally accepted standard operational practices and procedures, and facilitation of training and capacity building.

**Discussion Questions:**

- *How can NOS more effectively address ocean observation issues facing the world?*
- *How do you currently use observations in your international activities?*
- *What kind of requirements for global observations do you have in your international activities?*
- *What additional observations would be useful in your international coastal and ocean management activities?*
- *How can NOS invest/contribute toward meeting those global observation requirements?*
- *How can NOS partner or participate with your institution in global actions related to global observations?*