

2004 ACCOMPLISHMENTS



NOAA's National Ocean Service



MESSAGE FROM THE ADMINISTRATOR

In last year's message, I stated that the diverse activities of the National Ocean Service (NOS) coupled with the findings of the two ocean commissions would shape new directions for NOS. I also said that I would be looking closely at how NOS would respond to these new challenges. I am pleased to report that NOS is responding with a clear vision and understanding of how these challenges will be met. In 2004, we moved closer to our goal of becoming a *Global Leader in the Integrated Management of the Ocean*. We will achieve this goal by applying our diverse capabilities to develop and deliver the world-class research, observations, operations, and management approaches needed to ensure that our nation's coasts, marine ecosystems, and economy remain healthy, productive, and sustainable.

The 2004 NOS Accomplishments Report arrives on the brink of an exciting new era for the nation's ocean and coasts as NOS contributes to the Administration's response to *The Final Report of the U.S. Commission on Ocean Policy* (USCOP). Building on the NOS and NOAA strategic plans, NOS, in conjunction with its stakeholders and partners, is prepared to implement the USCOP recommendations. In 2005 and beyond, NOS will bring to bear its science, data, operational capabilities, and management expertise to better manage the oceans.

In helping NOAA become a *Global Leader in the Integrated Management of the Ocean*, we will focus on the following areas:

Observations

Leading the development and implementation of an Integrated Ocean Observing System (IOOS) to provide valuable information, products, and services for safer and more efficient marine operations, improved hazard mitigation, enhanced homeland security, better assessment of climate change, improved ecosystem health, better understanding of the role of the environment in affecting human health, and improved resource management.

Modeling

Applying effective models (physical, biological, and ecological) to forecast conditions in the ocean and coasts for coastal managers and recreational and commercial maritime users.

Technology

Employing technologies to enhance our ability to understand ocean and coastal ecosystems, leading to more effective management.

Coastal Communities

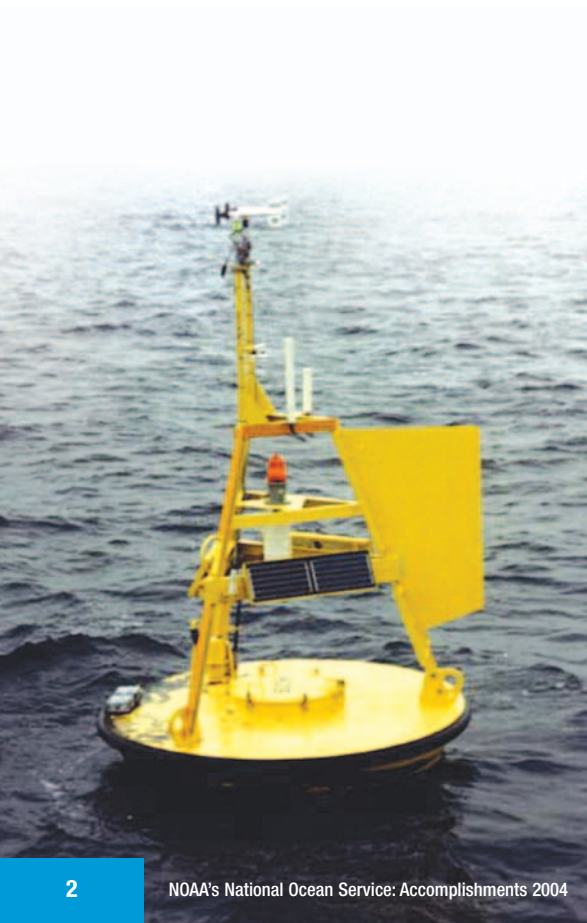
Helping coastal communities promote a watershed- and ecosystems-based approach to managing ocean and coastal resources.

Partnerships

Forging new partnerships and strengthening existing partnerships across the ocean community to maximize individual ventures and ensure integrated resource management.

Expert Workforce

Providing leadership through our most valued resource — our people — and encouraging career development and ocean leadership at all levels. This is the nucleus of each of the above ideas.





The value of the oceans
and coasts to the nation
is immense and their full
potential remains unrealized.

- U.S. Commission on Ocean Policy, 2004



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Donald L. Evans

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In fiscal year 2004, NOS invested \$602 million in navigational and coastal management activities. Our FY 2004 funding level was \$116 million (24 percent) above our FY 2003 level of \$486 million. This money provided funds for our major budget activities, including:

Navigation Services

NOS spent \$144 million on a suite of navigation products and services, including hydrographic surveying; nautical charting (electronic, paper, and raster); real-time and predicted oceanographic data on water levels and currents; accurate positioning of heights; and the National Spatial Reference System. With the growth of the shipping industry, and increased concerns about homeland security, these NOS products and services contribute to the efficiency and safety of our nation's ports and waterways.

Ocean Resources Conservation and Assessment

NOS spent \$200 million to protect and restore coastal resources, including cleaning up marine events (e.g., chemical spills) and creating a new Coastal Response Research Center. NOS also developed an operational forecast system for harmful algal blooms, promoted awareness of coral reefs, and funded research projects dedicated to healthy ocean and coastal ecosystems. NOS research, monitoring, and assessments play a major role in our nation's knowledge of stress factors on coastal ecosystems.

Ocean and Coastal Management

NOS spent \$159 million to support coastal states and territories in implementing federal partnership programs that promote sustainable use of our nation's coastal zone (e.g., Coastal Zone Management Act programs). This activity also funds our national marine sanctuaries, including the operations, education, research, and management of these valuable resources. In addition, NOS dedicated funds to complete an operational plan for managing the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. As part of NOS's efforts to promote environmental stewardship and education, \$16 million was also spent on the National Estuarine Research Reserve System, a network of 26 estuarine areas established across the nation dedicated to long-term research, education, and coastal stewardship activities.

Procurement, Acquisition, and Construction Projects

NOS dedicated \$101 million to construction and acquisition projects. This year \$51 million of the total supported the Coastal and Estuarine Land Conservation Program (CELCP). CELCP authorizes the acquisition of land in coastal areas to protect wildlife habitat and/or open space. Additional construction funds were spent on estuarine areas across the U.S., especially within the National Estuarine Research Reserve System. Finally, NOS spent funds on various National Marine Sanctuary Program construction projects in NOS, including interactive exhibits, design plans, etc.

2004 was a banner year for NOS. This compilation of accomplishments is mainly a sample of the outstanding activities of each member of the NOS team. The reader will see we are well positioned to move forward just as successfully in the years to come. Let's set sail for that horizon of opportunities.

Richard W. Spinrad, Ph.D.

Assistant Administrator for Ocean Services and Coastal Zone Management



NAVIGATION AND COMMERCE

New Galveston Bay Forecasting System Online

In June, NOS launched the Galveston Bay Operational Forecast System, which provides mariners, port managers, and emergency response teams with present and future conditions of water levels, currents, temperature, and salinity. The system will help port managers and shippers make decisions regarding maximum tonnage (based



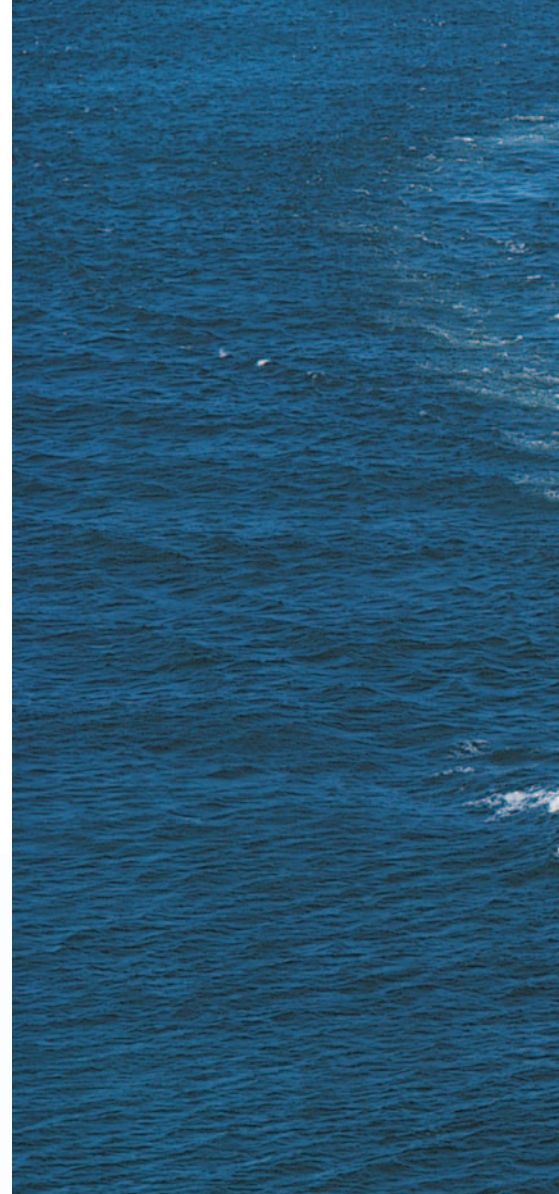
on bottom clearances) and limiting passage times, without compromising safety. The “nowcast” component of the system provides hourly updates and is driven primarily by real-time water levels and winds from the Galveston Bay Physical Oceanographic Real-Time System. The forecast component performs 30-hour forecasts four times a day. View it online at <http://co-ops.nos.noaa.gov/GBOFS>.

NowCOAST Web Site Improved

NOS released a new version of a Web mapping portal, called nowCOAST (<http://nowcoast.noaa.gov>), which provides spatially referenced links to real-time information from meteorological, oceanographic, and river observing networks. In addition, it provides links to NOAA’s model forecast guidance and weather and marine forecasts for major estuaries and seaports, the Great Lakes, and coastal regions. The improved Web site includes new links to observations from additional land and marine networks, and links to an additional 1,000 U.S. Geological Survey observing stations.

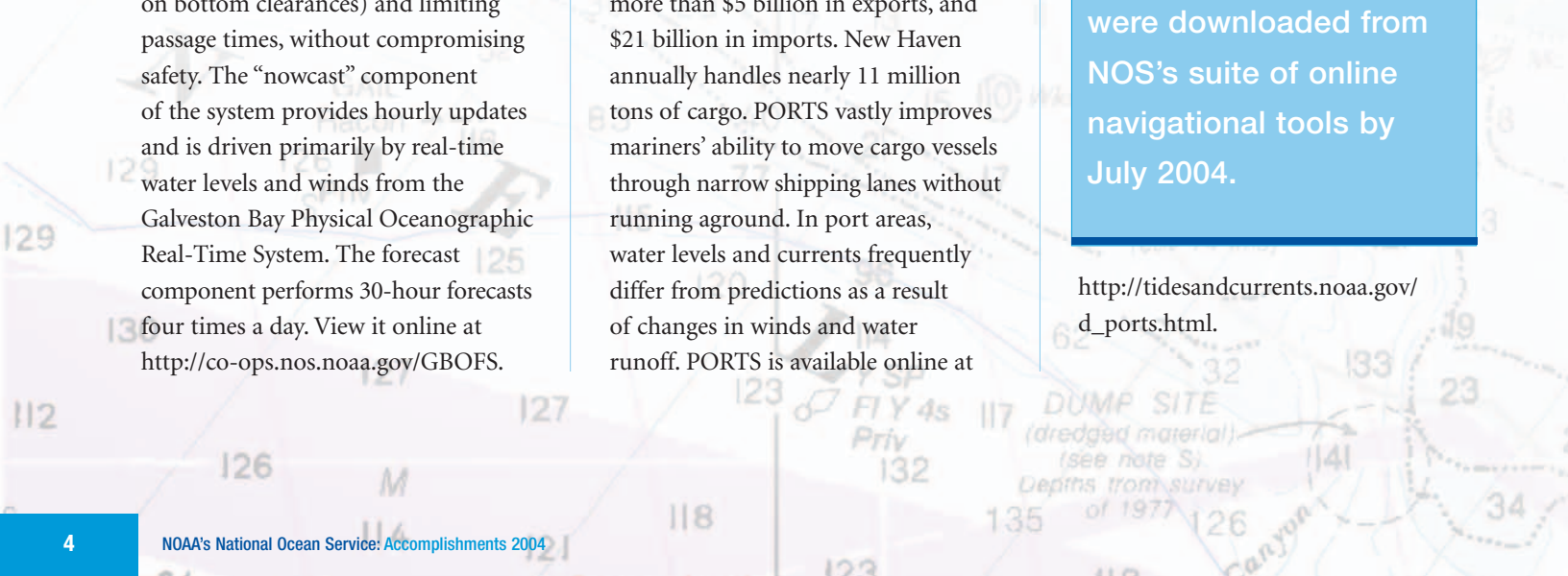
Two New Physical Oceanographic Real Time System (PORTS®) Stations

New Physical Oceanographic Real-Time System (PORTS) stations were installed in Tacoma, Washington, and New Haven, Connecticut. PORTS, which now has 12 installations nationwide, provides accurate, real-time oceanographic and meteorological data to support safe, cost-efficient marine transportation. Tacoma is the fifth-largest container port in North America, handling more than 22 million tons of cargo annually, more than \$5 billion in exports, and \$21 billion in imports. New Haven annually handles nearly 11 million tons of cargo. PORTS vastly improves mariners’ ability to move cargo vessels through narrow shipping lanes without running aground. In port areas, water levels and currents frequently differ from predictions as a result of changes in winds and water runoff. PORTS is available online at



3 million electronic navigational charts (ENCs) were downloaded from NOS’s suite of online navigational tools by July 2004.

http://tidesandcurrents.noaa.gov/d_ports.html.





Tide Information: 'Phoning It In'

This year, tide information became available for the first time via cell phone. Working with ekkosoft.us, a wireless application development firm, NOS made vital information conveniently available to mariners, recreational boaters, fishermen, and beachgoers. Users access the information via a program developed by ekkosoft.us, called Salt Water Tides. It generates tide prediction graphics for thousands of locations around the U.S. coast.

New Product Helps Hurricane-prone Areas

NOS launched the Storm Surge Quick Look, a new product that integrates storm-tracking information with water-level storm surge and meteorological data from stations experiencing hurricane conditions. The information recorded, including wind speed, direction, gusts, barometric pressure, and temperature, will help hurricane-battered areas predict effects and determine courses of action. Much of the information used

by the Storm Surge Quick Look originates from the NOS National Water Level Observation Network and from local observing systems. Storm Surge Quick Look is available online at <http://tidesandcurrents.noaa.gov>.

New Navigation Tool Measures 'Air Gap'

NOS debuted a new navigation tool that measures the clearance between the water surface and bridges, a unit known as the "air gap." The first sensors to measure air gap were placed on the center spans of two bridges



NAVIGATION AND COMMERCE Cont'd

over the Chesapeake Bay and Delaware Canal. The sensors take readings every six minutes to account for changes in water level, traffic volume across the bridges, and air temperature, all of which cause bridge clearance to fluctuate. As ships become taller, some are passing under bridges with just inches to spare. This new capability, which is available through the Physical Oceanographic Real-Time System (PORTS), provides quality-controlled oceanographic and weather data at U.S. seaports to aid navigation. View it online at http://tidesandcurrents.noaa.gov/d_ports.html.

New Data-conversion Tools for Great Lakes and Puget Sound

This year, NOS released a new Web-based tool for datum conversion. It allows data to be shared between the North American Vertical Datum 1988 (NAVD 88) and the International Great Lakes Datum 1985 (IGLD 85).

The project involved a number of partners, including NOS and members of the International Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data. NOS also completed a VDatum model for Puget Sound, Washington. VDatum enables users to convert global positioning system-based data into local tidal references, allows disparate data to “mingle” in geographic information systems, and supports more efficient collection of shoreline and hydrographic data. VDatum is available online at <http://nauticalcharts.noaa.gov/csdl/vdatum.htm>.

Sesquicentennial Tide Station Commemorated

On June 30, San Francisco celebrated the anniversary of a tide gauge installation that has collected an unbroken tide series for 150 years.

The tide station, part of the National Water Level Observation Network, has transcended the maritime history of San Francisco and has been instrumental in developing the area’s nautical charts and delineating its shoreline. The tide station has collected one of the longest continuous records of sea level in the world and has been used by scientists to estimate global sea-level rise. The tide station’s data also provide key information for the Bay region’s restoration efforts. A commemorative ceremony took place at the San Francisco Maritime National Historical Park Visitor Center, a park that welcomed more than 4 million visitors in 2003.





Airborne LIDAR Used in Airport Surveys

Data derived from Light Detection and Ranging (LIDAR) airborne surveys are now being used by the Federal Aviation Administration to develop and publish an aircraft approach procedure. NOS provides data on airport obstructions to the FAA, and they are used to design runway approaches, which help pilots land in bad weather. NOS conducted LIDAR surveys at two airports to ensure its accuracy. NOS scientists are now developing guidelines to be used in LIDAR surveys.

National Tidal Datum Epoch Incorporates National Sea Level Changes

This year, NOS updated the National Tidal Datum Epoch (NTDE)—a 20- to 25-year record of relative sea-level changes attributed to global sea-level changes and long-term local land-mass adjustments resulting from subsidence or glacial rebound. The new Epoch, known as 1983-2011

NTDE, includes updated tidal datum and benchmark elevation information essential to coastal zone activities. This more accurate tidal information is useful for hydrographic surveys, mapping activities, navigation operations, wetland restoration activities, marine boundary delineation, coastal engineering, storm warnings and modeling, hazard mitigation, and emergency management.

Millions of Electronic Navigational Charts Served

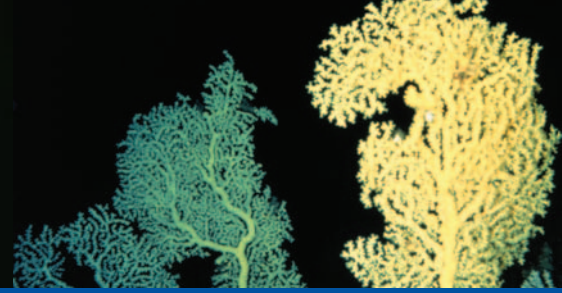
By July 2004, 3 million electronic navigational charts (ENCs) had been downloaded from NOS's suite of online navigation tools—a significant milestone. Built to international standards, ENCs are considered “smart charts” that provide users with more accessible and customizable nautical charts. They can be incorporated into global positioning system satellite data and other sensor information (e.g., water levels, winds, weather) to warn

mariners of navigation hazards and situations in which a vessel's current direction will lead it into a dangerous area. ENCs are available online at <http://nauticalcharts.noaa.gov/mcd/enc/index.htm>.

New Research Vessel Commissioned, Studies Coral Reefs

In September, the newest NOAA research vessel, the *HIPALAKAI*, was commissioned and began its inaugural mission in the Northwest Hawaiian Islands Coral Reef Ecosystem Reserve to monitor and assess the coral reefs. Together with the U.S. Geological Survey, the National Park Service, and the U.S. Virgin Islands (USVI) Division of Fish and Wildlife, NOS used the vessel to also conduct a sea-floor characterization and biological resource inventory of the USVI National Coral Reef Monument and Buck Island Reef National Monument. This research was part of the Coral Reef Ecosystem Integrated Observing System.

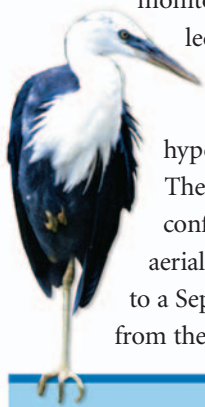




ECOSYSTEMS

Accurate Prediction for Gulf of Mexico 'Dead Zone'

Hypoxia (low oxygen conditions) in the Gulf of Mexico occurs every summer in an area known as the "Dead Zone." The problem results from the inflow of fresh water and excess nutrients from the Mississippi River watershed. This year, NOAA's 20 years of direct and funded research, monitoring, and modeling



led to the first accurate prediction of the size of the hypoxic zone in July. The estimate was confirmed by ship-based aerial mapping. According to a September 2004 report from the Mississippi

NOAA released the National Estuaries Restoration Inventory, an online database of coastal habitat restoration projects from all over the country.

River/Gulf of Mexico Nutrient Task Force, this is the largest ecosystem-management effort in the nation, and its success depends on continued research, modeling, and monitoring.

Special Scientific Journal Issue on Coastal Restoration

NOS collaborated with NOAA Fisheries and the U.S. Environmental Protection Agency's Corvallis, Oregon, laboratory to develop a special issue for the *Journal of Coastal Research*.

Titled, *Coastal Restoration: Where Have We Been, Where Are We Now, and Where Should We Be Going?* the issue discusses the current status of the nation's ability to address restoration goals; restore fish and wildlife habitat; increase the understanding of coastal habitats and the role of restoration in maintaining these habitats; and the use of adaptive "management approaches in coastal restoration. Articles document progress made in the restoration of coastal habitats over the last 15 years, demonstrating the value of science to natural-resource management and confirming the potential of restoration to repair damaged ecosystems.

Deep-water Corals in the Olympic Coast National Marine Sanctuary

In a June 2004 survey, NOAA scientists used a remotely operated vehicle to document the presence of deep-water coral assemblages in offshore waters of NOS's Olympic Coast National Marine Sanctuary. Scientists observed a dense field of the stony coral *Lophelia pertusa* on a rock ledge at 271 meters' depth. Additional studies are required to document the spatial extent of these assemblages, but preliminary results suggest that these areas are important reservoirs of marine biodiversity and are valuable fish habitat. In light of this discovery, the sanctuary has included potential fishing/harvest effects and the possible need for more protective zoning in such critical habitats as high-priority management issues.



Biogeographic Assessment of North-Central California National Marine Sanctuaries

NOS completed a biogeographic assessment of the three national marine sanctuaries off the coast of north-central California—Cordell Bank, the Gulf of the Farallones, and Monterey Bay. This assessment will help improve the understanding of



the ecosystems off north-central California and provide NOS with additional tools and information for management, research, and education activities. A report on the project provides an overview of the region's physical and biological characteristics, identifies key ecosystems and species occurring in both estuarine and marine

waters, and describes biogeographic patterns and processes. The report, which was coauthored by partners at the University of California-Santa

Barbara, is available online at: http://bio-geo.nos.noaa.gov/products/canms_cd/htm/ecolink.htm.



Inventory of Estuary Restoration Projects Released

In 2004, the NOAA Restoration Program released the National Estuaries Restoration Inventory (<https://neri.noaa.gov>), an online database of coastal habitat restoration projects from all over the country. The database includes information on restoration techniques and monitoring results. Users can search for projects via an interactive mapping tool, download project reports, and enter their own project information. The NOAA Restoration Program is a collaborative effort among NOS, NOAA Fisheries, and NOAA Research.

Pribilof Islands Restoration Project Nearly Complete

At the end of FY 2004, NOS had completed 90 percent of its planned cleanup activities in Alaska's Pribilof Islands. The islands, which are hundreds of miles off the Alaskan mainland in the Bering Sea, were contaminated by petroleum and heavy metals. NOS removed and



ECOSYSTEMS Cont'd

treated or disposed of more than 50,000 cubic yards of contaminated soils and sediments. Approximately 100 groundwater-monitoring wells were installed as well. Cleanup activities began in 1999, and all activities have been documented.

Operating Plan Completed for Coral Reef Ecosystem Reserve

In 2004, NOS completed an operations plan for the 130,000-square-mile Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. The plan, which was three years in the making, prioritizes issues to be addressed, including marine debris, cultural resources, and research and monitoring efforts. It incorporated guidance from many parties, including 27,000 public comments. In addition, NOS is moving forward with efforts to ensure that the reserve is designated an official sanctuary. NOS staff held dozens of public meetings, facilitated discussions among partners and advisors, and created management guidelines.

California Harbor Seals Rebound with Help from Sanctuary Volunteers

With the assistance of many dedicated volunteers, NOS helped stem the decline of harbor seals in the Gulf of the Farallones National Marine Sanctuary off the north-central California coast. Since 1998, volunteers from the Sanctuary Education, Awareness and Longterm Stewardship (SEALS) program have helped NOS staff create buffers around harbor seal rookeries to minimize disturbances and educate visitors about the seals. Their efforts have resulted in an astounding drop in seal pup deaths. Pup counts increased from about 20 in 1998 to more than 80 last year.

Transplanted Corals Find New Home in Florida Keys

In 2004, the Florida Keys National Marine Sanctuary led an unprecedented effort to remove and save more than 3,500 colonies of coral in Key

West Harbor before the U.S. Navy conducted a maintenance dredging project in the area. The saved corals are available to scientists all over the United States for research, aquaria, aquaculture demonstration projects, and transplantation for restoring sites where boats have grounded.

A New Integrated Coral Reef Observation System

NOS, in its involvement with the NOAA Coral Reef Conservation Program, launched a Coral Reef Ecosystem Integrated Observing System (CREIOS) in 2004 to integrate NOS and other NOAA capabilities in coral reef observation. The system will help NOAA meet the needs of reef managers for information on trends in coral reef health by integrating observations—including in-situ monitoring, mapping, and global satellite data image processing—from local to global scales.





Quantifying the Value of Coral Reefs

In an effort to understand the social and economic value of coral reefs, NOS worked with local and federal partners to complete a coral reef survey instrument to quantify the value of Hawaiian coral reefs. The survey tools were developed using input from focus groups and survey research experts and can be used to quantify the value of coral reefs in other U.S. states and territories. The tools will be used next year to help Hawaii's coastal managers develop effective coral reef management strategies and help educators address citizen concerns.

Restoring Coral Reefs and Sea Grass Beds

The NOS Restoration and Assessment of Coral Ecosystems (RACE) Program worked with Florida to assess and restore natural resources injured by small vessel groundings within the Florida Keys National Marine Sanctuary. The RACE process includes injury assessment, restoration planning, settlement of each case, restoration of the damaged site, and monitoring of the restoration process. In 2004, RACE completed more than 26 sea-grass injury assessments, for a program total of 196 in four years. A total of 25 restoration plans were created and another five drafted, with associated claims totaling \$1.8 million in damages.

Predicting, Responding to and Preventing Disease Outbreaks in Coral Reefs

NOS, in partnership with NOAA Fisheries, leads the multi-partner Coral Disease and Health Consortium (CDHC) to study diseases in coral reef ecosystems. In 2004, the CDHC created tools that can warn of and help identify the cause of disease outbreaks and identified potential solutions to prevent and mitigate future outbreaks. The CDHC also sequenced more than 3,000 DNA clones from several coral species, which will help scientists understand the genes that regulate normal coral functions, as well as those genes that help corals respond to disease and environmental disturbances.





COASTAL HAZARDS

Hollings Marine Laboratory Named Center of Excellence

NOS's Hollings Marine Laboratory (HML), located in Charleston, South Carolina, was named a NOAA "Center of Excellence for Oceans and Human Health." As a Center of Excellence, the lab received an initial award of \$2.5 million to conduct research on the quality and safety of seafood and coastal waters. The laboratory, named for recently retired U.S. Senator Ernest F. Hollings, will employ state-of-the-art technology to research unusually toxic substances and organisms. Research will include the development of genetic techniques to evaluate the response of oysters and shrimp to multiple stressors, the susceptibility and conditions under which marine organisms become vectors for human pathogens, the nutritional value of cultured versus wild seafood, and the development of better techniques to

NOS provided 2,000 high-resolution digital images of the Florida and Alabama coastlines for emergency response and damage assessments after Hurricane Ivan.

track sources of pathogenic microorganisms that pose a risk to human health.

CAMEO® Software Updated

In 2004, NOS released an improved version of its Computer Aided Management of Emergency

Operations (CAMEO®) System, a software application for chemical emergency planners and responders. CAMEO® contains a database of more than 6,000 hazardous chemicals and 80,000 synonyms and product trade names. Users can access, store, and evaluate information used to develop emergency response plans. CAMEO® was jointly developed by NOAA and the U.S. Environmental Protection Agency.

New Coastal Response Research Center Created

In 2004, NOS and the University of New Hampshire (UNH) created the Coastal Response Research Center at UNH to study spill response science and technology. The Center will focus on national response and restoration issues and coordinate research activities. It will serve as a principal resource for research in spill preparedness, response, and assessment.

An Operational Forecast System for Harmful Algal Blooms

This year, the Gulf of Mexico Harmful Algal Bloom (HAB) Forecast System became operational as the result of a major collaboration within NOS. The new ecological forecast system provides twice-weekly bulletins that can be used to determine the current and future locations and intensity of HABs and their likely impacts. HABs (best known as the "red tides" caused by the toxic alga *Karenia brevis*) can lead to shellfish closures, fish kills, dolphin and manatee deaths, and breathing problems in people. They occur yearly along the coasts of



all five Gulf Coast states. State and local managers can use the bulletins to guide their monitoring and response efforts. The new forecast system is a collaboration among NOAA, the Florida Fish and Wildlife Research Institute, the Florida Department of Agriculture, and the Mote Marine Lab. View it online at <http://www.csc.noaa.gov/crs/habf/habf.html>.



Rapid Response During Record Hurricane Season

NOS played an active role in supporting those affected during this year's record hurricane season. At the request of the U.S. Coast Guard and state agencies, NOS provided 2,000 high-resolution digital images of the altered Florida and Alabama coastlines after Hurricane Ivan made landfall. NOS

provided additional digital images of the Florida coastline following Hurricane Jeanne. NOS posted these images of the damaged areas on the Internet at www.geodesy.noaa.gov/ivan and www.geodesy.noaa.gov/jeanne within two days of each hurricane's landfall. These and other digital images support the nation's damage assessment and emergency response activities. In

addition, the images will be used in ongoing research to develop standards and specifications for digital imagery acquisition.



COASTAL COMMUNITIES

Advancing Grassroots Coral Reef Conservation

NOS advanced coral reef conservation by helping Florida, Hawaii, Guam, the U.S. Virgin Islands, American Samoa, Puerto Rico, and the Commonwealth of the Northern Mariana Islands to develop Local Action Strategies for addressing key threats to coral reefs. These strategies were developed with assistance from hundreds of stakeholders, including local and international nongovernmental organizations, academia, industry, and concerned citizens. The strategies will help NOS and NOAA clearly identify local needs, connect local priorities to national goals, and coordinate agency actions to better support each local jurisdiction's management of its unique coral resources.



Scientific Breakthrough Protects Public Health

In summer 2004, a scientific breakthrough supported by NOAA's Monitoring and Event Response for Harmful Algal Blooms (MERHAB) Program advanced harmful algal bloom (HAB) observation and forecasting efforts in the Gulf of Maine. Researchers used observations from



Approximately \$51 million was awarded to state and local governments for coastal and estuarine projects around the contiguous United States.

shipboard sensors, satellites, and buoys in the region to predict where and when a harmful bloom would wash ashore. Researchers gave Maine officials an early warning of the approaching bloom. High toxin levels in shellfish recorded by the state's monitoring program helped confirm the prediction. Affected shellfish beds in Casco Bay were closed to public harvest to ensure that tainted seafood did not become a public-health threat. Partner institutions included Woods Hole Oceanographic Institution, the Monterey Bay Aquarium Research Institute, Dartmouth College, and the NOAA Northeast Fisheries Science Center.

NOS Partnership Project Studies San Francisco Bay

In an effort to better manage and restore subtidal habitats, NOS and NOAA Fisheries developed a multidisciplinary collaborative project to support critical activities for San Francisco Bay. The recently updated San Francisco Bay Watershed Database and Mapping Project gives NOAA and its partners a geospatial framework in which to collect, explore, and analyze data on sediment and tissue chemistry, conduct bioeffects studies, and assess the quantity and quality of the bay's existing subtidal habitats.

NOS Leads Effort to Revitalize Port Communities

Through the NOS-led Portfields initiative, federal, state, and local partners are working together and leveraging resources to assist three pilot ports (Tampa, Florida; Bellingham, Washington; New Bedford, Massachusetts) in revitalizing waterfront areas, improving marine transportation, and restoring coastal habitat. Portfields is helping the City of New Bedford streamline regulatory processes to expedite navigational dredging of New Bedford Harbor, which will enhance the local economy, improve the harbor environment, and increase public access to the waterfront. In Bellingham, Portfields leveraged resources to assist salmon restoration and waterfront revitalization and is streamlining the permitting process. Portfields assisted the Tampa Port Authority in planning and designing stormwater improvements to improve water quality in Tampa Bay and serve as a national model for innovative stormwater management.



NOS Publishes Restoration Guidance Document for Coastal Managers

A new guidance document, titled “Addressing Elevation and Inundation Issues in Habitat Restoration Planning and Implementation” will help coastal restoration professionals in government, industry, academia, and nongovernmental organizations use water-level information, geodetic positioning tools, and other technologies to support restoration project planning and implementation. It illustrates, through three case

studies, how NOS’s navigation-based tools and methods can be applied to restoration projects. The report is available online at <http://response.restoration.noaa.gov/cpr/library/library.html>.

Coastal and Estuarine Land Conservation Program Progresses

NOS implemented the FY 2004 portion of the Coastal and Estuarine Land Conservation Program, which awarded approximately \$51 million to state and local governments for 35

projects around the contiguous United States. The projects will help preserve coastal and estuarine lands with significant conservation, ecological, recreation, historic, and aesthetic values. Once acquired, the lands will be protected in perpetuity as wildlife habitat and/or open space. Where appropriate, the sites will provide public access for passive recreation activities such as walking, bird watching, and canoe and kayak launching.



ORGANIZATION AND OUTREACH

Special Publication on Marine Protected Areas

The NOS Marine Protected Areas (MPA) Center collaborated with the National Marine Educators Association to produce a special edition of *Current: The Journal of Marine Education* devoted to the topic of MPAs. The MPA Center worked with more than 50 authors, reviewers, editors, and illustrators from NOAA, the U.S. Department of the Interior, states, native Hawaiian organizations, and universities to publish the edition. Among them was cartoonist Jim Toomey, creator of Sherman's Lagoon®. The articles cover a wide range of MPA-related topics, including the



conservation of migrating birds and whales, dunes and marshes in national parks, shipwrecks in the Great Lakes, and traditional Hawaiian fisheries management. Available in both English and Spanish versions, the special edition will be the foundation for MPA Center education activities in 2005.

Maritime Heritage Program

NOS launched a comprehensive Maritime Heritage Program to enhance NOAA's stewardship of submerged historic and cultural

resources within the 14-site National Marine Sanctuary System, and to meet the goals of the President's Preserve America Executive Order. The program worked with federal, state, local, and private organizations to locate, document, inventory, and/or protect more than a dozen historically significant U.S. shipwrecks, from the famed Civil War ironclad, *USS Monitor*, to the 19th-century New England steamer, *Portland*. Also in 2004, a new Maritime Archaeology Center, located in Newport News, Virginia, neared completion.

Olympic Coast Discovery Center Opens

NOS dedicated its new Olympic Coast Discovery Center at the Olympic Coast National Marine Sanctuary. The facility includes exhibits ranging from interactive kiosks to models of marine ecosystems, including a deep-water theater that gives visitors a glimpse of sanctuary research missions. Partners in the Discovery Center include the National Park Service, Washington State Parks, and the Makah Tribe, as well as local citizen, tourism, and business groups. The center is expected to receive 42,000 visitors annually and will provide unprecedented educational and outreach opportunities to increase public awareness of sanctuary resources.

Science Channel Airs Broadcast on Portland Steamship

In March 2004, the Science Channel, part of the Discovery Network, broadcast an underwater documentary on the sinking of the 19th-century steamship, *Portland*. The wreck of the *Portland* resides within the Stellwagen Bank National Marine



Sanctuary off Massachusetts and is protected by sanctuary regulations. The documentary was the culmination of a multi-year archaeological project with partners, including NOAA's Office of Ocean Exploration, NOAA's National Undersea Research Program, the University of Connecticut, University of Maine, and Woods Hole Oceanographic Institution.

Cooperative Natural Resource Damage Assessments (NRDA)

In 2004, NOS brought together federal, state, and tribal natural resource trustee agencies; private industry; regional and national environmental groups; and consultants and attorneys in a cooperative damage assessment workshop. The 170 participants represented 20 companies and 28 states. The workshop was designed to develop cooperative natural

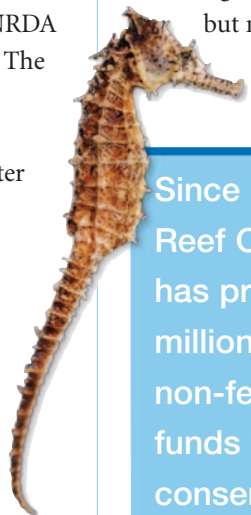


resource damage assessments (NRDAs) within multi-stakeholder settings. As an example of the process, NOS and its co-trustees in Port Arthur, Texas, used the cooperative assessment approach to resolve NRDA liability at the Old Gulf Refinery. The settlement will create 85 acres of wetlands, 30 acres of coastal wet prairie, and improvements in water management structures to an additional 1,500 acres.

Bringing Height Modernization to the Nation

NOS conducted 28 height modernization forums and meetings in 17 states. Some of these states had existing height modernization programs. Many, however, were formally introduced for the first time to the enormous benefits of height modernization. Height modernization provides accurate height information by

integrating global positioning system (GPS) technology with existing survey techniques. For years, GPS has been used to determine accurate latitude and longitude (horizontal) positions, but now, GPS can efficiently establish accurate elevation (vertical) data for all types



Since 2000, the Coral Reef Conservation Fund has provided nearly \$10 million in federal and non-federal matching funds for 116 coral conservation projects.

of positioning and navigational needs. An independent report projected, in some cases, a 90 percent cost savings over conventional surveying methods.

A 'How-To' Manual for Restoration

Working with scientists and managers from federal and state agencies, universities, private industry, and nongovernmental organizations, NOS compiled a comprehensive manual on how to plan and conduct the monitoring of coastal habitat restoration projects. The NOAA team included NOS, the Great Lakes Environmental Research Laboratory, and the NOAA Restoration Center. *Science-Based Restoration Monitoring of Coastal Habitats, Volume 1: A Framework for Monitoring Plans Under the Estuaries and Clean Water Act of 2000* offers guidance on topics such as early warnings that a restoration project is not “on track,” gauging how well a restoration site is functioning, evaluating ecological status both before and after a project’s completion, and coordinating efforts for successful restoration. This guidance is required under the Estuary Habitat Restoration Partnership Act. It is available online at <http://coastalscience.noaa.gov/publications/welcome.html>. Volume II will be available in the coming year.

U.S. Coast Guard Honors NOS HAZMAT

In March 2004, NOS’s Hazardous Materials Response (HAZMAT) Division received a U.S. Coast Guard (USCG) Certificate of Merit in recognition of its 20-plus years of support to the USCG during emergencies. NOAA HAZMAT first lent support to the USCG in 1976 during a spill from the tanker, *Argo Merchant*. Since then, incidents have included oil and chemical spills, search-and-rescue operations, natural disasters, and other emergencies.



ORGANIZATION AND OUTREACH Cont'd

HAZMAT's technical support ranges from weather forecasts to spill trajectories and oceanographic and biological data, which come both from HAZMAT headquarters in Seattle and field personnel permanently stationed in each USCG district. Lead Office: Office of Response and Restoration

Thunder Bay Sanctuary Receives Great Lakes Research Collection

The extensive Labadie/Perry Great Lakes Research Collection was donated to NOS's Thunder Bay National Marine Sanctuary and Underwater Preserve in 2004. The collection is among the nation's richest resources of research materials for 19th-century Great Lakes maritime history. It has a special emphasis on wooden shipbuilding technology and includes thousands of books, manuscripts, maps and charts, shipbuilding plans, photographs, negatives, slides, vertical and card files, microfilm, and videos.

Partnership with Smithsonian Institution Increases Ocean Literacy

NOS coordinated NOAA-wide efforts in the sponsorship and participation of the 2004 Smithsonian Folklife Festival on the National Mall in Washington, D.C. NOAA provided numerous exhibits and activities, and more than 200 NOAA volunteers, for the theme area called "WaterWays: Mid-Atlantic Maritime Communities." Volunteers educated visitors about navigation, weather, and ecological issues along the mid-Atlantic. By participating in such a large event, NOS and NOAA increased ocean literacy among the nearly 1 million visitors to the two-week summer festival.

Coral Reef Rangers Improve Protection and Enforcement

NOS, in its involvement with the NOAA Coral Reef Conservation Program (CRCP), worked with the Puerto Rico Department of Natural and Environmental Resources to create the Coral Reef Ranger Team to

improve enforcement of regulations that protect coral reefs in Puerto Rico. Eight Rangers from six different regions were selected to become the first members of the Ranger Team. The Ranger Team has been recognized as a model for enforcement of coral reef and fisheries regulations.

Public-Private Partnerships Conserve Coral Reefs

NOS, through its involvement with the NOAA Coral Reef Conservation Program, supported 26 projects in 2004 through the Coral Reef Conservation Fund. The Fund is a four-year-old partnership between NOAA and the National Fish and Wildlife Foundation (NFWF) to provide matching grants to build public-private partnerships for coral reef conservation. The awards were granted to groups in six states and territories, as well as 15 countries throughout the Caribbean, Latin





America, and the Pacific Islands. Their projects aimed to restore coral reefs and mangroves; reduce land-based pollution; conduct outreach and education; increase monitoring, research, and training; and improve the effectiveness of coral reef protected areas. Since 2000, the Fund has provided nearly \$10 million in federal and non-federal matching funds for 116 coral conservation projects in 20 countries, five U.S. trusts or territories, and four U.S. states.

NOS Launches Educational 'Discovery Kits'

In April, NOS launched a new Discovery Kit on geodesy and global positioning for educators and students. It contains a tutorial on the history, essential elements, and methods of geodesy/global positioning; a road map to related NOS and NOAA information; and three formal lesson plans. It was the focus of a feature article in *Point of Beginning Magazine*, a national publication for surveyors and

engineering professionals. It also received high marks in an independent review by the National Science Teachers Association. A Discovery Kit on corals and one on tides and water levels are also available. All are online at <http://oceanservice.noaa.gov/education>. Discovery Kits on estuaries, marine archaeology, and nonpoint source water pollution are planned for 2005.

NOS Connects with Constituents

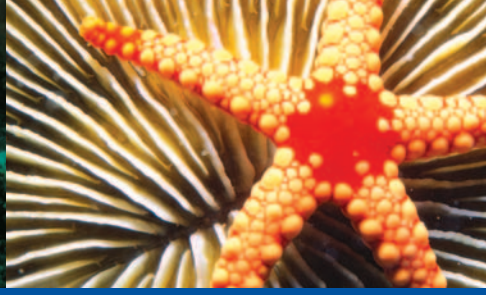
NOS engaged key constituents by hosting seven formal "Ocean Future" Roundtables and three Town Hall meetings. At the roundtables, NOS Assistant Administrator Dr. Richard Spinrad hosted a total of 119 representatives from academia, private industry, trade associations, research institutions, environmental groups, and marine conservation organizations. They discussed NOS program activities and priorities, the recommendations posed by the U.S. Commission on Ocean Policy in its preliminary report, and NOS's

vision to be a global leader in integrated management of the ocean. At the Town Hall meetings, Dr. Spinrad interacted with more than 350 people at several national conferences. A summary of the Roundtables is available at <http://oceanservice.noaa.gov/roundtables>.

Ocean Explorer Web Site Increases in Popularity

This year, the NOAA Ocean Explorer Web site, created and maintained by NOS, was featured in many major media outlets, including *National Geographic Magazine*, *Pacific Business News*, *Voice of America*, *U.S. News and World Report*, and *Science Magazine*. The popular four-year-old Web site continues to chronicle NOAA's ocean explorations through daily logs that are written by researchers and educators at sea, informative essays, educational materials, and multimedia products. The Web site is at <http://oceanexplorer.noaa.gov>.





NATIONAL OCEAN SERVICE AT A GLANCE

We value your interest, questions, and comments. Please feel free to contact us.

National Oceanic and Atmospheric Administration

National Ocean Service

1305 East West Highway
Silver Spring, Maryland 20910
(301) 713-3074
www.oceanservice.noaa.gov
Public Affairs (301) 713-3066
External Affairs (301) 713-3060

NOAA Coastal Services Center

(843) 740-1200
www.csc.noaa.gov
State coastal resource management programs don't always have the information, tools, technical capacity, or expertise needed to fulfill their mandates. Answering this need is the role of the NOAA Coastal Services Center. Remote sensing, geographic information systems (GIS), information integration and sharing, hazards mitigation, habitat characterization, training, and coastal observing systems represent the Center's primary areas of expertise. The Center's efforts in these areas have produced hundreds of projects, including a helpful inventory of state dock and pier policies, satellite data sets used to document and predict coastal growth trends, and information that helps communities protect themselves from coastal storms. This assistance gives coastal managers the tools they need to effectively manage and protect the nation's coastal communities.

Center for Operational Oceanographic Products and Services

(301) 713-2981
www.tidesandcurrents.noaa.gov
The Center for Operational Oceanographic Products and Services provides water-level and current information for our coastal regions and the Great Lakes. It offers one-stop shopping for near real-time water-level and tide data at 175 different sites across the United States, and distributes historical data for water levels, coastal currents, and other information. In addition, its Physical Oceanographic Real-Time System (PORTS) supports safe and cost-efficient navigation by providing accurate, real-time environmental information required to avoid grounding and collisions and providing coastal managers with wetlands restoration information, tsunami and storm surge measurements, and other data.

National Centers for Coastal Ocean Science

(301) 713-3020
www.coastalscience.noaa.gov
Coastal stewardship means solving the problems of today, while planning better for the future. Scientists at the National Centers for Coastal Ocean Science study, monitor, and assess both natural and human impacts on coastal ecosystems—giving our nation the information and, ultimately, the understanding needed to be better coastal stewards. In addition to the Centers based in Silver Spring, Maryland, there are facilities in Charleston, South Carolina; Beaufort,



North Carolina; Oxford, Maryland; and Kasitsna Bay, Alabama.

Office of Coast Survey

(301) 713-2770
www.nauticalcharts.noaa.gov
Navigating ships and boats safely in and out of ports and along our coasts requires accurate nautical charts. The Office of Coast Survey (OCS) manages the NOAA nautical



charting program to help protect life and property, support economic growth and development, and protect the environment in support of the overall mission for safe and efficient navigation. OCS is responsible for surveying and charting U.S. and territorial waters to the limits of the Exclusive Economic Zone, an area of about 3.4 million square nautical miles.

National Geodetic Survey

(301) 713-3242

www.geodesy.noaa.gov

The National Geodetic Survey (NGS) defines and manages the National Spatial Reference System—the nationwide framework latitude, longitude, and elevation. NGS surveys promote safe navigation and enhanced economics by delineating the national shoreline and locating features needed to

construct nautical charts. NGS also identifies obstructions and aids to air navigation at the nation's airports, supporting security and preparedness.

Office of Ocean and Coastal Resource Management

(301) 713-3155

www.costalmanagement.noaa.gov

Managing our nation's 95,000 miles coastline is a daunting task. The Office of Ocean and Coastal Resource



NATIONAL OCEAN SERVICE AT A GLANCE Cont'd

Management provides the national policy leadership and conflict resolution necessary to maintain our nation's valuable coastal resources. Additionally, it is responsible for administering the Coastal Zone Management Act and assisting individual states in managing the system of national estuarine research reserves. In cooperation with the Department of Interior, NOAA established the National Marine Protected Areas Center to provide science, technology, training, and information for the planning, management, and evaluation of the nation's system of marine protected areas.

Office of Response and Restoration (301) 713-2989

www.response.restoration.noaa.gov

The Office of Response and Restoration is the focal point for NOS spill preparedness and response, hazardous waste site investigation, and environmental damage assessment. OR&R tackles environmental threats from catastrophic emergencies, such as oil and chemical spills, chronic toxic releases from Superfund waste sites, and vessel grounding in marine sanctuaries. We help emergency planners create software and other tools to help people respond to hazardous materials accidents and resolve contamination problems; find remedies for environmental damage; assess injury to coastal resources from releases of oil and hazardous material; and pursue restoration from those responsible for the harm.

Coral Reef Conservation Program (301) 713-2989

www.coralreef.noaa.gov

NOAA's Coral Reef Conservation Program (CRCP) supports effective management and sound science to preserve, sustain, and restore valuable coral reef ecosystems. From mapping and monitoring to managing reef resources and removing harmful debris, the CRCP addresses the priorities laid out in both the National Action Plan to Conserve Coral Reefs and the National Coral Reef Action Strategy, and helps fulfill NOAA's requirements under a number of mandates, including the Coral Reef Conservation Act of 2000. The CRCP is a partnership among the NOAA Line Offices working on coral reef issues, including NOAA Oceans and Coasts, NOAA Fisheries, NOAA Research, and NOAA Satellites and Information, and is headquartered in the NOAA Ocean Service Office of Response and Restoration. The CRCP facilitates and supports partnerships with scientific, private, government, and nongovernmental groups at local, state, federal, and international levels.

Staff Office for International Programs (301) 713-3078

www.international.nos.noaa.gov

Recognizing that the challenges to our nation's coastal environment are global problems, too, the Staff Office for International Programs works to build partnerships with other countries to share information and lessons learned in coastal management.

National Marine Sanctuary Program (301) 713-3125

www.sanctuaries.noaa.gov

Marine sanctuaries, or underwater parks, form a network of protected areas that are both environmentally and culturally important to our nation. They provide habitat for creatures and plants of the sea and serve as living laboratories for the study of coastal and ocean environments. There are currently 13 marine sanctuaries and one coral reef ecosystem reserve in the national system.

Management and Budget Office (301) 713-3056

www.oceanservice.noaa.gov/programs/mb

The Management and Budget Office provides leadership in procurement, budget, strategic planning, policy development, communications, human resources, information technology, safety and security, and other administrative and management areas. This office also provides guidance and development expertise for highly technical and scientific special projects.