

# OUR NATIONAL MARINE SANCTUARIES



NATIONAL MARINE  
SANCTUARIES



## STATE OF THE SANCTUARY REPORT

2004

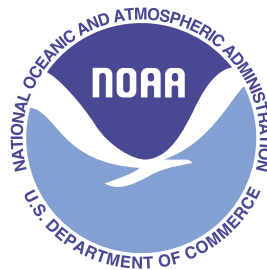


2005





NATIONAL MARINE  
SANCTUARIES



STATE OF THE SANCTUARY REPORT  
2004-2005



*The sanctuary program wants to acknowledge the National Marine Sanctuary Foundation, who assisted in producing this report.*

## The National Marine Sanctuary System

Our national marine sanctuaries embrace part of our collective riches as a nation. Within their protected waters, giant humpback whales breed and calve their young, coral colonies flourish, and shipwrecks tell stories of our maritime history. Sanctuary habitats include beautiful rocky reefs, lush kelp forests, whale migration corridors, spectacular deep-sea canyons, and underwater archaeological sites. Our nation's sanctuaries can provide a safe habitat for species close to extinction or protect historically significant shipwrecks. Ranging in size from less than one square mile to over 5,300 square miles, each sanctuary is a unique place needing special protections. Natural classrooms, cherished recreational spots, and valuable commercial industries—marine sanctuaries represent many things to many people.



The National Marine Sanctuary Program serves as the trustee for a system of 14 marine protected areas, encompassing more than 150,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys, and from Lake Huron to American Samoa. The system includes 13 national marine sanctuaries and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, which is being considered for sanctuary status. The sanctuary program is part of the National Oceanic and Atmospheric Administration (NOAA), which manages sanctuaries by working cooperatively with the public to protect sanctuaries while allowing compatible recreational and commercial activities. The program works to enhance public awareness of our marine resources and marine heritage through scientific research, monitoring, exploration, educational programs and outreach.



## National Oceanic and Atmospheric Administration

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Under Secretary of Commerce for Oceans and Atmosphere and Administrator, National Oceanic and Atmospheric Administration

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California sea otter.  
Photo courtesy Bob Talbot, ©1990 Bob Talbot

Back Cover Photo: Sunset in the Northwestern Hawaiian Islands.  
Photo: © James Watt, www.oceanstock.com

Background Image: Reef fish and corals in French Frigate Shoals.  
Photo: © James Watt, www.oceanstock.com



## Message from the Director

This past year was an important year for national marine sanctuaries and the world's oceans. In our annual *State of the Sanctuary* report, you will learn about some of the National Marine Sanctuary Program's significant education, science, and resource protection activities and accomplishments of the past year.

You will learn how sanctuary scientists and their partners are using the latest technology to help the nation gain value from our increased understanding of how ocean health is affected by human and natural influences. You will learn how we are working with local communities to develop ecosystem-based management plans that address emerging threats to sanctuary marine life and the vitality of coastal economies. You will learn about how thousands of Americans are volunteering their time by teaming up with sanctuary staff to help us meet our mandate to protect these special places. However, all of these activities were a precursor to the most significant milestone for America's oceans this year.

This past December, the Bush Administration released its U.S. Ocean Action Plan. The release of this plan is an important first step for responding to the comprehensive list of recommendations set forth by the U.S. Commission on Ocean Policy. Many items within the U.S. Ocean Action Plan relate to how we study, manage, and protect sanctuaries. The following are a few immediate actions that the Administration is committed to implementing that affect the sanctuary program.

First, the Administration is continuing to take steps to designate the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve as the nation's 14th marine sanctuary. This will be a leap forward in marine conservation that will provide long-term ecosystem-based management for the most remote coral reef ecosystem on Earth. The sanctuary program is working closely with our colleagues from NOAA, the State of Hawaii and our other management partners to ensure that the proposed management plan protects the long-term health of all sanctuary resources.

The Administration is also committed to further integrating the management of existing parks, refuges, sanctuaries, and estuarine reserves, which will complement actions being taken to implement Executive Order 13158, regarding marine protected areas. The sanctuary program is already working closely in some regions with its federal marine management partners, and together we are working on proposals that will enhance our mutual research, public education, and management activities.

Third, the Administration is supporting the protection of America's important historical resources as well. NOAA is providing \$2.5 million to build a Great Lakes Maritime Heritage Center at the Thunder Bay National Marine Sanctuary and Underwater Preserve, and continues to take the lead in implementing the President's "Preserve America" Executive Order, which calls for preserving, protecting, and promoting our nation's rich heritage.

I hope you enjoy reading about the many and important activities that happened within the program in 2004 and how this year is shaping up to be even bigger. From working with the Administration on the reauthorization of our guiding legislation, the National Marine Sanctuaries Act, to releasing a new management plan for Gray's Reef National Marine Sanctuary and draft plans for several other sites, this year will no doubt be another year of notable achievements. Success is only measured in what we accomplish today, so please join us in ensuring sanctuaries remain a vibrant part of our nation's heritage.

Sincerely,  


Daniel J. Basta  
Director, NOAA's National Marine Sanctuary Program

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*“With a clear mandate from the President, and strong, bipartisan support among Members of Congress, we can begin the difficult, but critical process of implementing a comprehensive national ocean policy. However, success in this endeavor will require the cooperation and support of nongovernmental organizations, industry, and public citizens with an interest in the nation’s oceans, coasts and Great Lakes.”*

Admiral James D. Watkins, USN (Ret.)  
Chairman of the U.S. Commission on Ocean Policy

- commenting on President Bush’s creation of the Committee on Ocean Policy, December 2004



Sea anemone.  
Photo: Ryan Anderson

# INTRODUCTION

In a well-known short story entitled *The Star Thrower*, a young man is on the beach, surrounded by thousands of starfish, and he's throwing them back into the ocean, one at a time. A passerby notices the young man and points out that throwing starfish into the ocean one at a time can't possibly make that much difference. Upon hearing this, the young man stoops down, picks up another starfish and flings it back into the sea, explaining that it will certainly make a difference to that one.

If those starfish were on the shores of a national marine sanctuary, scientists would investigate why they were washing up on shore, volunteers would help throw them back into the ocean, and outreach staff would educate all passersby about why one starfish is significant, even when many more need to be rescued. This story captures the spirit of the staff and thousands of individuals who work together every day to ensure the health and welfare of our national marine sanctuaries.

The collective hard work of all these individuals over the past several years has enabled NOAA's National Marine Sanctuary Program to mature from a collection of independent sites to a system of 13 sanctuaries and one coral reef ecosystem reserve. Each year, the sanctuaries are becoming increasingly interdependent, co-hosting education programs, sharing science and technology and staff expertise, and creating joint projects based on common challenges and goals.

For that reason, the 2004-2005 State of the Sanctuary Report is organized differently than in years past. Most of our major accomplishments are organized under five theme sections: Science and Exploration, Community Involvement and Partnerships, Maritime Heritage, Resource Protection and Management, and Education. Additional highlights, site-specific activities and plans for 2005 are outlined in the site reports. This new format better reflects the increasing cooperation among the sanctuaries, their partners, and communities.



Female elephant seals.  
Photo: George Perina, [www.seapix.com](http://www.seapix.com)



## EDUCATION

Albert Einstein once said that imagination is more important than knowledge because knowledge is limited, while imagination encircles the world. The education programs of the National Marine Sanctuary System stimulate imaginations and stir passions as they educate because knowledge only gets us halfway there. Our programs must also instill an ocean ethic and a commitment to act on that knowledge. They must touch hearts, as well as minds, because it will take both to preserve our ocean world for future generations.

### Teachers Dive Into Education

In February, educators from 13 sites combined their talent and enthusiasm to present a marine science teachers conference in Hawaii, entitled "Dive into Education." During this two-day workshop, sanctuary educators held hands-on sessions for 85 teachers from the main Hawaiian Islands and American Samoa, giving them the tools and knowledge necessary to bring marine science into their classrooms. The session topics ranged from satellite oceanography to coral reef surveying and monitoring, and included regional issues of concern, such as humpback whales and coral reef ecosystems.

The workshop was a resounding success! An overwhelming 90 percent of the teachers reported that they are now very likely to integrate marine science into their curriculum; 93 percent rate the event among the best professional development opportunities available. The workshop was so successful that the National Marine Sanctuary Program is hosting another Dive into Education marine science workshop in Tybee Island, Georgia in May 2005. This workshop is expected to attract 250 educators from all over the southeastern United States.

In its role of being a living classroom for ocean education, the sanctuary program works to build pilot programs such as Dive into Education that can be exported to each sanctuary, other NOAA offices, and partners around the country. Dive into Education is a new programmatic thrust for the National Marine Sanctuary Program and part of a larger ocean literacy initiative to infuse marine science into America's classrooms.

### Students Experience Field Studies Adventure

Partnerships have always been a major component of the National Marine Sanctuary Program's successful education and outreach efforts. This is exemplified by the National Geographic Society partnership that introduces ocean literacy and highlights the importance of our oceans and watersheds through the National Marine Sanctuaries Field Studies Program. These field studies introduce underserved student/teacher teams from around the country to our sanctuary habitats, while also teaching them the power of photography so they can later share what they learned with a larger audience.





# EDUCATION

Each field study is unique and uses the sanctuary as a living classroom for exploration and discovery. Some participants conduct their field studies from aboard a NOAA research vessel, while others kayak through kelp forests or go snorkeling on coral reefs. During the summer of 2004, sanctuary and geographic staff hosted two field studies in the Channel Islands and Gray's Reef national marine sanctuaries for approximately 50 students and teachers from across the nation. They performed water quality monitoring activities, investigated dune and beach ecology, conducted sandy beach monitoring, explored marshes and wetlands, piloted remotely operated vehicles, learned GPS geo-caching, and discovered the unique cultures of America's ocean and Great Lakes treasures. The National Marine Sanctuaries Field Studies Program will be introducing a new set of student/teacher teams in 2005 to the Hawaiian Islands Humpback Whale and Thunder Bay national marine sanctuaries.

## LiMPETS – Innovative Science Education

Education initiatives become even more meaningful when combined with a mission of resource protection. LiMPETS, or “Long-term Monitoring Program and Experiential Training for Students” is an excellent example. The program was developed by the five West Coast national marine sanctuaries, which share one of the most diverse and productive coastal environments in the world. It's an integrated, hands-on program that enlists the help of students and teachers to monitor the rocky intertidal, sandy shore and offshore areas of the sanctuaries.

In March, Channel Islands staff conducted a free one-day LiMPETS teacher workshop for 10 educators from Santa Barbara and Los Angeles counties, who learned about the ecology of rocky intertidal communities, monitoring techniques for various target species, and classroom activities to prepare their students for field monitoring. In August, the Monterey Bay education team introduced 60 students to their LiMPETS assignment at Seaside State Beach where they will be monitoring sand crabs, water quality and the beach profile for the school year to determine why the sand crab population along the California coast is declining. Also in August, 18 educators and teachers spent three days using the LiMPETS protocols to monitor sandy beach and rocky intertidal habitats in the Gulf of the Farallones. Channel Islands National Marine Sanctuary will host the first of the 2005 LiMPETS workshops for 30 educators from Alaska, Washington, and California.

## Multicultural Program Expands to Channel Islands

The Multicultural Education for Resource Issues Threatening Oceans (MERITO) program focuses on providing our diverse community with tools to actively contribute to the protection of our special marine resources. With sweeping success during its first two years at Monterey, MERITO expanded programming to the Channel Islands sanctuary in the fall of 2004. During this first phase of expansion, staff is developing partnerships with other Hispanic-serving community groups in the



MERTIO Students.  
Photo: MBNMS



Teachers use ROVs to engage students in the sciences.  
Photo: Claire Johnson/NOAA



Students document their exploration of California's Channel Islands. Photo: Susanna Frohman/NGS



Teachers monitor the rocky intertidal ecosystem as part of the LiMPETS network.  
Photo: Kathy deWet-Oleson

Photo Left: National marine sanctuaries are living classrooms that offer hands-on opportunities to learn about our ocean world. Photo: Claire Johnson/NOAA

Photo Right: Many children grow up dreaming to be astronauts but Channel Islands National Marine Sanctuary is training students to be future argonauts. Students pictured here are learning basic research techniques such as how to collect water samples from local creeks. Photo: Claire Johnson/NOAA

# EDUCATION

Santa Barbara and Ventura counties and developing a MERITO implementation plan that will be implemented in fall of 2005. Further, MERITO staff is exploring national expansion to other sanctuaries.

The “Watershed Academy” has been one of MERITO’s most successful programs. The 2004-2005 academic year brought programmatic and geographic expansion from three to 11 programs throughout the Monterey Bay region. This program provides hands-on, inquiry-based watershed and ocean science to 5th–8th grade students. In response to the growth of the “Watershed Academy,” MERITO developed a Watershed Activity Guide, a comprehensive tool, aligned with state and national standards. MERITO has also tripled the geographic range of outreach among adult students. Working with the English as a Second Language and Citizenship classes, MERITO staff present lessons focused on water quality, fishing, and other sanctuary related issues. Lessons are followed by opportunities to become more involved in community conservation activities.

## **Sanctuary Science Mission Drives ROV Competition**

The sanctuary program teamed up with the Marine Advanced Technology Education (MATE) Center to teach students how to design and build remotely operated vehicles, or ROVs. Indispensable to marine science, ROVs are unmanned, highly maneuverable submersibles equipped with video cameras and other tools that allow the researchers to see, and sometimes recover, submerged objects. The MATE Center held regional and national ROV competitions to introduce students to the world of ocean science and technology to help them develop the skills necessary to support ocean research and exploration. Channel Islands was the first sanctuary to host a teacher workshop in January 2004 where educators learned how to build ROVs and export their new skills into the classroom. This partnership was so effective at educating students that Flower Garden Banks and Stellwagen Bank both followed up in the fall with teacher workshops for the competition in 2005.

## **Surfing the Web**

Several new education websites launched in 2004, including a newly revised National Marine Sanctuary Program education site and From Shore to Sea curriculum. The program’s new education website offers a tour of sanctuary image galleries and a section for teachers curriculum, online activities, professional development opportunities, high tech learning, multicultural programs, and much more. Visitors can also take a virtual dive in a submersible, download puzzles, read online storybooks, and engage in digital labs just for fun. From Shore to Sea is based on the JASON curriculum about California’s Channel Islands and the surrounding sea. From this web page, anyone can investigate several digital labs, including one on marine reserves. Teachers will also find supporting materials, curriculum and professional development opportunities.





# EDUCATION

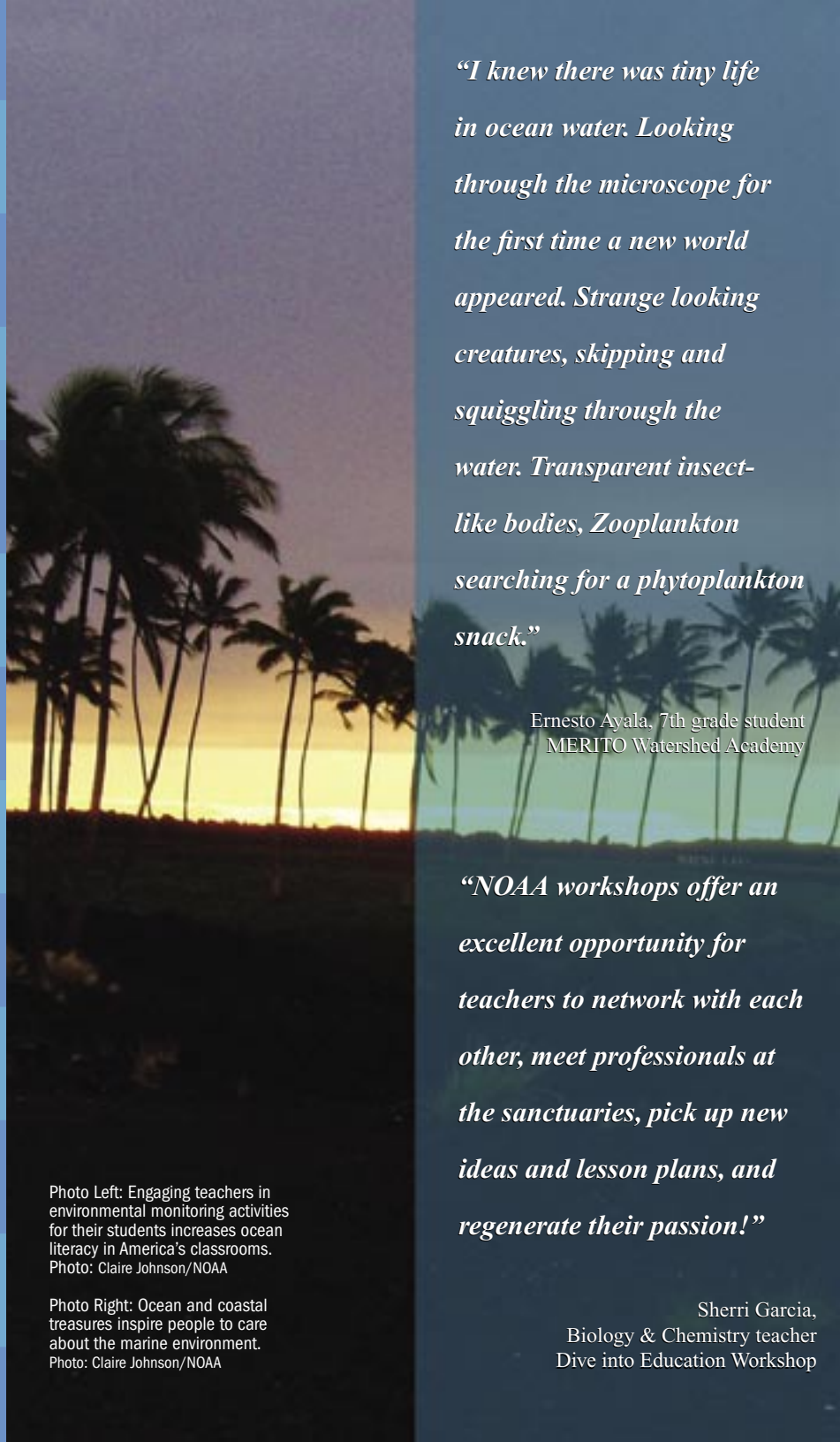
## Telepresence Opens Window to Ocean World

The National Marine Sanctuary Program's Telepresence Project scored several successes in 2004. Telepresence is a cutting edge initiative that allows students and others to see and interact with scientists during research dives. Using this technology, the program can bring real-time interactive underwater exploration into educational and research settings, such as classroom and aquaria. Highlights in 2004 include a new and improved ROV at Monterey Bay and successful demonstrations to audiences around the country. The updated installation in Monterey allows real-time conversations between a diver and a distant audience using the Internet 2 network, a significant step-up in interactive capability. The sanctuary program also began construction on telepresence installations at the Florida Keys and Channel Islands sanctuaries. The Channel Islands deployment is being planned cooperatively with Channel Islands National Park and will serve education and outreach needs of both organizations. Both installations are on track to be operable in late 2005.

## New Learning Centers Will Host Millions

Learning and visitor centers are an effective way for educating local residents and visitors about the amazing world found right in their own neighborhood. The sanctuary program currently has several small-scale visitor centers including the longest running center at Crissy Field, San Francisco, which is adjacent to the Gulf of the Farallones sanctuary office. In 2004, this and a sister center in Pacifica set an attendance record with a combined 48,477 people visiting the two locations. In addition, Olympic Coast, Hawaiian Islands Humpback Whale, Stellwagen Bank, Thunder Bay, and Northwestern Hawaiian Islands currently operate visitor centers. Many sites also work with other facilities to provide information about sanctuaries.

In the coming years, the sanctuary program will unveil the next generation of visitor center. Four national marine sanctuaries broke ground on discovery and learning centers in 2004. These centers, like several others already operating, will reach millions, enhancing public awareness, understanding, and appreciation of the country's ocean and Great Lakes ecosystems and maritime heritage. The Florida Keys Eco-Discovery Center, part of the three-building Dr. Nancy Foster Florida Keys Environmental Complex, will feature 6,000 square feet of interactive exhibits that allow visitors to learn about the Florida Keys. A new 4,625-square-foot community education and learning center is also being built at the Hawaiian Islands Humpback Whale National Marine Sanctuary in Kihei. At the groundbreaking ceremony, Hawaii Senator Daniel K. Inouye was presented with the National Marine Sanctuary Foundation's 2004 Steward of the Sanctuary Award. In October, Thunder Bay sanctuary broke ground on a new Maritime Heritage Center.



*“I knew there was tiny life in ocean water. Looking through the microscope for the first time a new world appeared. Strange looking creatures, skipping and squiggling through the water. Transparent insect-like bodies, Zooplankton searching for a phytoplankton snack.”*

Ernesto Ayala, 7th grade student  
MERITO Watershed Academy

*“NOAA workshops offer an excellent opportunity for teachers to network with each other, meet professionals at the sanctuaries, pick up new ideas and lesson plans, and regenerate their passion!”*

Photo Left: Engaging teachers in environmental monitoring activities for their students increases ocean literacy in America's classrooms.  
Photo: Claire Johnson/NOAA

Photo Right: Ocean and coastal treasures inspire people to care about the marine environment.  
Photo: Claire Johnson/NOAA

Sherri Garcia,  
Biology & Chemistry teacher  
Dive into Education Workshop

## COMMUNITY INVOLVEMENT & PARTNERSHIPS

Each and every day the National Marine Sanctuary Program is reminded of how the involvement of local communities and our other partners is fundamental to the program's success. Perhaps our most important partnership is with our volunteers, who symbolize an idealism that energizes the staff, even when budgets are tight and challenges seem overwhelming. The program's other partners include government agencies, nonprofits, aquaria, and citizens groups who work tirelessly with the sanctuaries to develop community-based education and science programs. The dynamic nature of these relationships spurs the program to be the best it can be.

### Volunteers Play a Vital Role

On Earth Day, the National Marine Sanctuary Program honored seven people and one organization with the 2004 NOAA Environmental Hero Award in recognition of their enthusiastic efforts to preserve and protect our nation's environment. Established in 1995 to commemorate the 25th anniversary of Earth Day, the NOAA Environmental Hero award is presented to individuals and organizations that volunteer their time and energy to help NOAA carry out its mission. Examples of similar ocean citizenship abound and it's impossible to give the full measure of gratitude due the thousands of dedicated volunteers. Here are but a few examples of how volunteers made a difference in 2004.

Gulf of the Farallones sanctuary marked a victory in conserving California's harbor seal population. After seven years of effort, the steady decline in harbor seal pup mortality was reversed at the sanctuary's two largest rookeries. The sanctuary, home to one-fifth of the state's harbor seal population, recruited volunteers for its Sanctuary Education, Awareness and Long-term Stewardship (SEALS) program to help stem the decline due to human disturbance. Volunteers monitored seals and their pups in their rookeries, documenting disturbances by birders, clammers, and other visitors. Bright flags were deployed to create buffers around haul-outs to warn clammers and others of their proximity to seals, and volunteers educated visitors on how to view the seals without disturbing them. The net result of this effort was an astounding drop in pup mortality. Pup counts have rebounded from the 20s in 1998 to more than 80 in 2003.

Approximately 1,500 volunteers gathered data from the shores of Oahu, Kauai and the Big Island during the 9th Annual Hawaiian Islands Humpback Whale National Marine Sanctuary Ocean Count. Volunteers at this event tally sightings and document surface behaviors of the endangered humpback whales, providing the sanctuary with valuable information on whale distribution and abundance.

The Monterey Bay sanctuary relies on volunteers from the Monterey Bay Sanctuary Citizen Watershed Monitoring Network to mobilize during the first storm of the season to measure pollution and toxicity coming from storm drain outfalls. Known as "First Flush," this is the fifth year that volunteers have participated in this monitoring effort. In 2004, volunteers reported high concentrations of bacteria and orthophosphate at the majority of the 23 sites. Excessive amounts of orthophosphate can





# COMMUNITY INVOLVEMENT & PARTNERSHIPS

cause large algal blooms, which can contribute to lower water oxygen levels. In some areas of the country, these low oxygen or “hypoxic” zones have caused large fish kills. Another event, Snapshot Day 2004, relied on 200 volunteers to monitor water quality in a simultaneous one-day testing of California’s rivers and streams. Snapshot day was initiated by Monterey in 1999 and has become a coast-wide event.

## Partnerships Widen Conservation Horizons

The sanctuary program strives to work closely with local communities and all interested parties to accurately assess and manage sanctuary resources. In March, the sanctuary program announced a new partnership with the American Zoo and Aquarium Association, a nonprofit organization dedicated to the advancement of zoos and aquariums in the areas of conservation, education, science, and recreation. The association consists of 213 member institutions that receive 142 million visitors annually. The association is helping the program connect with aquariums across the country to enhance public awareness of the marine environment through NOAA educational programs and exhibits.

An example of this partnership is Flower Garden Banks National Marine Sanctuary’s work with the Tennessee Aquarium in Chattanooga. In 2004, the sanctuary provided funding to develop mobile computer kiosks for a 1/2-million-gallon aquatic exhibit modeled after the sanctuary. The sanctuary also worked extensively with the aquarium staff to educate them about the marine resources of Flower Garden Banks. Approximately one million visitors each year will learn about sanctuaries and the importance of conserving our nation’s marine resources.

Flower Garden Banks also hosted the annual Agency/Industry Meeting, a three-day workshop that helps establish strong working relationships among the oil and gas industry, government, and nonprofit professionals who are responsible for responding to any situation that may threaten Gulf of Mexico habitats and marine life. Other proactive initiatives include a partnership between Florida Keys sanctuary, Ocean Conservancy, and local businesses called Adopt-A-Reef, which is similar to Adopt-a-Highway. Businesses offer discount rates to divers who are willing to help clean up debris and monofilament line during their dive. A record number of 26 businesses, clubs, or agencies participated in the 2004 spring cleanup. The sanctuary program also worked with divers to develop a DVD titled, “Diving into National Marine Sanctuaries,” which describes diving opportunities in sanctuaries and how divers can become active participants in conservation efforts. The DVD is being distributed to the dive industry across the country.

## Public Events Engage Diverse Constituents

In four years, Capitol Hill Oceans Week (CHOW) has grown into a nationally significant ocean conservation event. Coordinated and hosted by the program’s nonprofit partner, the National



Cordell Bank celebrates its 15th anniversary at its offices at Point Reyes National Seashore. Photo: Jack Marshall, Cordell Expeditions



Whale hats were popular with guests at Olympic Coast National Marine Sanctuary’s 10th anniversary CoastFest. Photo: Sarah Marquis



U.S. Commerce Secretary Donald L. Evans gives keynote speech during Capitol Hill Oceans Week. Photo: Juan R. Tricoche



Volunteers count whales from Diamond Head Lookout. Photo: HIHWNMS

Photo Left: A young participant watches tribal canoes come to shore.

Photo: Rachel Saunders, NOAA Monterey Bay NMS

Photo Right: Visitors enjoyed the tall ship *Lady Washington* at Olympic Coast National Marine Sanctuary’s 10th Anniversary OceanFest.

Photo: Claire Johnson



## COMMUNITY INVOLVEMENT & PARTNERSHIPS

Marine Sanctuary Foundation, this event draws ocean conservation leaders and experts from around the world. CHOW 2004, in June, inspired lively panel discussions about marine management, exploration, monitoring, and education. House Oceans Caucus Co-chairs Tom Allen, Sam Farr, Jim Greenwood, and Curt Weldon, and Senator Olympia Snowe also participated and were honored with the National Marine Sanctuary Foundation's Leadership Award. In September, the foundation hosted a similar regional forum in New York City that featured discussions on greater New York's ocean future and featured keynote presentations by foundation trustees Leon Panetta and oceanographer Robert Ballard.

The Florida Keys sanctuary hosted a very successful conference in Key West, "Connectivity: Science, People and Policy in the Florida Keys National Marine Sanctuary." The conference brought together international coral reef experts, scientists involved in research and monitoring in South Florida, and local stakeholders for panel presentations and discussions about the Keys marine environment. They also addressed techniques employed in managing Australia's Great Barrier Reef Marine Park and methods used to identify and protect corals that are resilient to environmental stresses.

Monterey Bay sanctuary co-hosted a conference in May about regional desalination issues titled "Be Smart About Desal." More than 300 people attended this conference, which focused on the use of desalination as an existing technology, case studies, environmental impacts, mitigation measures, regional collaboration, permitting, federal and state perspectives, and local trends and issues. The conference provided local officials and the public with information about desalination, which has been proposed as an option for augmenting the region's water supply.

Scientists are an important partner in improving our knowledge of how marine ecosystems and changing conditions are affecting sanctuary marine life. Several sanctuaries host research symposia each year. For example, Gulf of the Farallones and Monterey Bay sanctuaries hosted research symposia to encourage discussion and collaboration among scientists, resource managers, and educators working in the region. Information shared at these and other science meetings helps sanctuary staff anticipate and prepare for emerging issues that may affect sanctuaries in the future.

### **Celebrating Our Nation's Ocean Treasures**

Olympic Coast National Marine Sanctuary celebrated its 10th anniversary with a weekend of events dubbed CoastFest. A major highlight was the dedication of the Olympic Coast Discovery Center, a high-tech exhibit and visitor center. Among those attending the opening ceremony were U.S. Representative Norm Dicks and former Washington Governor Mike Lowry, who was governor



# COMMUNITY INVOLVEMENT & PARTNERSHIPS

when the sanctuary was designated. Six Olympic Peninsula tribes conducted a canoe welcoming ceremony, landing traditional cedar canoes at Hollywood Beach. In addition, the tall ship *Lady Washington*, featured in the film “The Pirates of the Caribbean,” arrived for public tours.

The Cordell Bank sanctuary celebrated its 15th anniversary with guests from the original Cordell Expeditions Team, whose explorations in the early 80s set the stage for the sanctuary’s designation. The event included a presentation from Congresswoman Lynn Woolsey honoring Ed Ueber, the first sanctuary manager; a painting exhibit featuring all things marine; and the new zooplankton exhibit in the Cordell Bank office.

Gulf of the Farallones hosted an interagency celebration commemorating the 150th anniversary and renovation of the Golden Gate Tide Station. Vessel operators use the station data to determine the best time for transits and bridge clearance to prevent collisions and groundings. An average of 261 deep-draft vessels transit the sanctuary into San Francisco Bay each month. A major spill could threaten the sanctuary’s multi-million-dollar fisheries. The sanctuary also unveiled a new joint NOAA-National Park Service Visitor Center exhibit, “Time and Tides.”

Four more sanctuaries will mark significant anniversaries in 2005: Monitor – 30th, Channel Islands – 25th, Florida Keys – 15th, and Thunder Bay – 5th. In addition, the Northwestern Hawaiian Islands marks its 5th anniversary as a Coral Reef Ecosystem Reserve.

## Sanctuaries Get Two Thumbs Up at Film Festivals

Various sanctuaries have begun cultivating ocean advocacy through films. The Gulf of the Farallones sanctuary co-sponsored the first Annual San Francisco Ocean Film Festival in January, which attracted approximately 1,500 people with inspirational films and lively discussions on oceanography, conservation, saltwater sports, and coastal cultures. Channel Islands co-sponsored the 1st Annual Santa Barbara Ocean Film Festival in May, presented by the Ocean Channel and Santa Barbara Channel Keeper. Approximately 1,000 people attended and the sanctuary was featured in several films including a 3-minute high definition piece by In Camera, introducing the “Jewels of the Pacific: California’s Channel Islands” film project. In September, Gray’s Reef co-hosted the 1st Annual Savannah Ocean Film Festival, the first of its kind on the East Coast. Approximately 1,300 people attended, making it the sanctuary’s main outreach event of the year. National Marine Sanctuary Foundation Trustee Robert Talbot showcased his film “Oceanmen-Extreme Dive” and took questions from the audience.

*“All of a sudden, there it was—a small opening no wider than our kayaks. We glided into the dimly lit world underneath the canopy. I looked down into the crystal clear water to see mangrove snappers darting about and colorful sea stars attached to the maze of roots. I felt like an 8-year-old kid on Disney’s Pirates of the Caribbean ride, entering a whole other world. Except this world was real and every stroke of my paddle illuminated a new discovery.”*

Michael Murphy/NOAA  
- on his experience kayaking in the Florida Keys

Photo Left: The Channel Islands Argonauts participated in Snapshot Day 2004 in partnership with the Santa Barbara ChannelKeeper and Channel Islands National Marine Sanctuary. Students took water samples from local creeks and streams to provide a snapshot of water quality in the State of California. Photo: Claire Johnson

Photo Right: Porkfish clustered below an orange elephant ear sponge.  
Photo: Bill Harrigan

## SCIENCE & EXPLORATION

Science and exploration are fundamental to the National Marine Sanctuary Program's mission to conserve, protect, manage, and maintain some of the most complex ecosystems on earth. Through continued scientific research, monitoring, and characterization, sanctuary staff and partners provide the knowledge necessary to manage these vast resources. Beyond sanctuary borders, the rich collection of information from science expeditions and studies is shared with other communities and countries, strengthening protection and management of marine resources worldwide.

### Busy Year At Sea For Sanctuary Scientists

The new research vessel *Shearwater* spent 193 days at sea in 2004, supporting research projects on seabirds, marine mammals, kelp forests, intertidal life, geology, and more. Based at the Channel Islands National Marine Sanctuary, the *Shearwater* is a new 62-foot aluminum catamaran that serves as a research platform for a variety of projects in the Channel Islands and other California sanctuaries. The program also makes the *Shearwater* available to national, state, and local partners at no cost in exchange for the information gathered. The bulk of sanctuary research activities in 2004 focused on marine protected areas (MPAs) using scuba, remotely operated vehicle (ROV), and side-scan sonar surveys.

At the Olympic Coast sanctuary, scientists documented the first known occurrence of cold-water corals that are more common to the Atlantic Ocean. A 2005 follow-up project will use an ROV to document the occurrence and health of these unique communities within the sanctuary, and footage from the project will be used to create a feature video for the Olympic Coast Discovery Center. The sanctuary also launched a new monitoring project to document the presence of low oxygen conditions and any related mortalities of marine life within the sanctuary, a serious threat facing the area.

The Flower Garden Banks sanctuary science team participated in 15 research cruises during a year of significant new discoveries and activities. Divers made approximately 608 scuba dives, more than 1,100 square kilometers of high-resolution seafloor mapping was conducted, and more than 96 hours of ROV surveys were directed in an ongoing effort to create habitat and marine life distribution maps. Researchers also photographed and collected close to 120 samples of black corals, gorgonians, and sponges - a major contribution to sanctuary science and new species identification catalogues. Exploration outside the sanctuary revealed much greater coral cover than expected, and annual observations within the sanctuary revealed less coral spawning activity, which scientists attribute to an early full moon. In another sanctuary first, researchers initiated an acoustic tagging program. They attached tags to two manta rays and deployed receivers to record the manta's movements. Similar tagging efforts are planned for additional mantas and commercial species of



# SCIENCE & EXPLORATION

grouper and snapper. In a multi-agency effort, NOAA and U.S. Geological Survey scientists used side-scan sonar and video to map nearly 300 miles of seafloor within Monterey Bay, Gulf of the Farallones and Cordell Bank sanctuaries. This rich collection of data shows the diversity of sea life, health of habitat, and characteristics of the seafloor in the sanctuaries, including a first look at many areas.

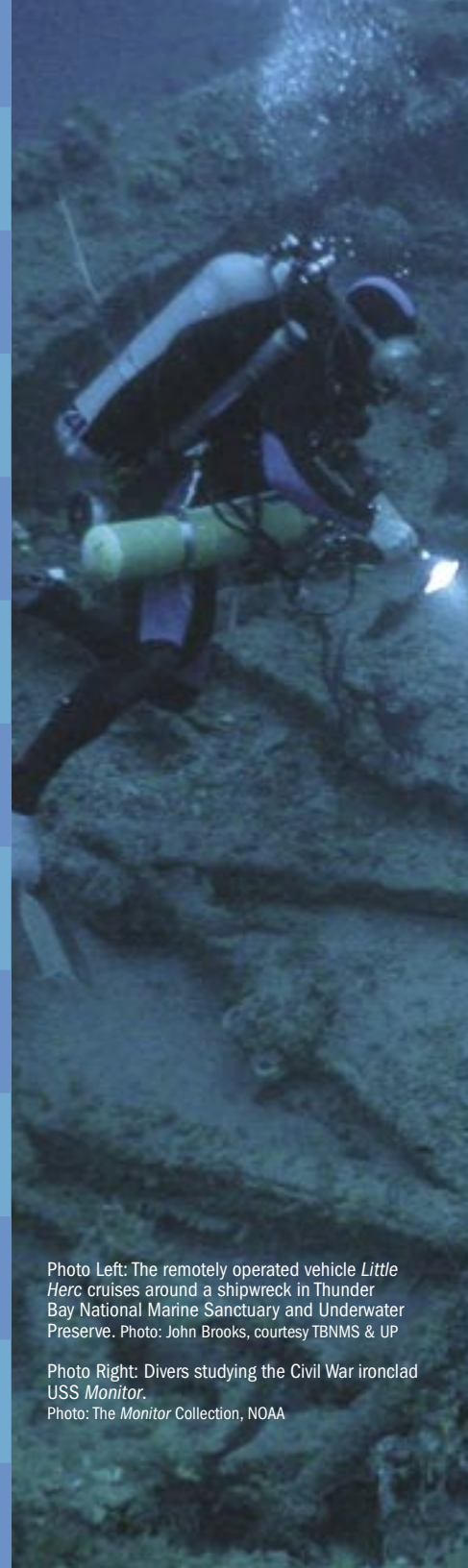
The research vessel *Velero* and two-man submersible *Delta* were used in August to explore both Cordell Bank and Monterey Bay sanctuaries. In Monterey Bay, scientists resurveyed rocky habitats that were characterized by submersible in 1993 to assess changes in fish species and relative abundance and to develop a baseline of information to assess future changes. In Cordell Bank, they explored remote habitats within the sanctuary to document a variety of underwater habitats. High-definition video footage will be used to produce a video about Cordell Bank for exhibits and outreach.

## New Species Discovered at Gray's Reef

Three previously unknown sea creatures were discovered at Gray's Reef by Georgia Southern University scientists and a team of students who've been working for three years to document all invertebrates at the sanctuary. The creatures are types of sea squirts, also known as tunicates, bottom-dwelling animals that are part of the diversity of species found within the sanctuary. Many examples will have to be examined before scientists can confirm they have found a new species, but these creatures are unlike any known tunicates. This discovery was made during an effort that has so far documented 350 species of invertebrates in Gray's Reef for a field guide being developed.

## Studying North Pacific Humpback Whales

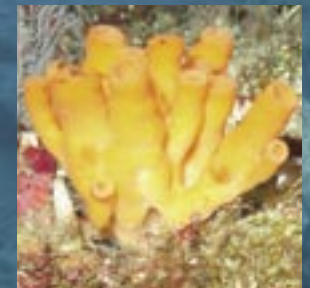
SPLASH, or "Structure of Populations, Level of Abundance, and Status of Humpbacks," is an ambitious \$3.3 million NOAA project that involves monitoring humpbacks in the North Pacific including Hawaiian Islands Humpback Whale and all five West Coast sanctuaries. It is the most comprehensive study ever attempted of the endangered North Pacific humpback whale population and habitats. The three-year study is unprecedented in its international cooperation and geographic scope and involves hundreds of researchers from across the Pacific. It will provide important new information with the long-term goal of turning the species into a viable, self-sustaining population throughout its range. As part of this study, Hawaiian Islands Humpback Whale sanctuary has developed "SPLASHED with Education", a web-based project that shares the study's results with students.



SPLASH - most comprehensive study ever of N. Pacific humpbacks.  
Photo: HIIWNMS, NOAA Fisheries MMPA/ESA Permit #782-1438



The NOAA research vessel *H'i'i'alakai* off Pearl and Hermes Atoll.  
Photo: © Daniel Suthers



Sponge collected by submersible in the Gulf of Mexico.  
Photo: FGBNMS/NURC-UNCW

Photo Left: The remotely operated vehicle *Little Herc* cruises around a shipwreck in Thunder Bay National Marine Sanctuary and Underwater Preserve. Photo: John Brooks, courtesy TBNMS & UP

Photo Right: Divers studying the Civil War ironclad *USS Monitor*.  
Photo: The *Monitor* Collection, NOAA



Research crew launches an ROV to explore the reefs and banks in the Northwestern Gulf of Mexico.  
Photo: FGBNMS/Schmah

# SCIENCE & EXPLORATION

## **Comprehensive Monitoring Program Aids Sanctuary Management**

Launched in 2004, the Sanctuary Integrated Monitoring Network (SIMoN) enables researchers to monitor the sanctuary effectively by integrating existing monitoring programs and identifying gaps in information. During its first year, SIMoN staff added two new interactive mapping services. The first disseminates information about water quality monitoring in and near the Monterey Bay National Marine Sanctuary. This site can be used for generating maps of watersheds, locating monitoring information, linking to data sets at individual stations, downloading GIS layers, and more. The second is connected to a multi-agency seafloor-mapping project that added three-dimensional seafloor imagery to the SIMoN website.

Working with Pt. Lobos State Reserve volunteers, SIMoN staff also designed and launched a program to acquire monthly sea otter sighting and behavior data that's been recorded since 1989. These historical data, accounting for over 9,000 sea otter sightings over 15 years, provides perspective for future management and resource protection decisions. In fall 2004, SIMoN scientific divers teamed with researchers from the Partnership for Interdisciplinary Studies of Coastal Oceans to characterize marine resources along 70 miles of coastline in Big Sur, central California. Divers collected biological, physical, and geological data from sub-tidal habitats that may be affected by landslides.

## **New Research Vessels Enhances Scientific Capabilities**

In September, the 224-foot NOAA research vessel *Hi'ialakai* was commissioned in Honolulu to support coral reef ecosystem mapping and habitat activities in the Hawaiian archipelago and greater Pacific. The vessel is the primary research vessel for exploration of the Northwestern Hawaiian Islands (NWHI). *Hi'ialakai* successfully completed its first five-week research cruise where scientists conducted a comprehensive survey of marine ecosystems in the NWHI. Researchers conducted more than 800 scuba dives; collected and photographed several recently discovered species of algae and previously unidentified species of wrasse; collected data on coral bleaching at some reefs; and documented a greater occurrence of "white syndrome" coral disease. Researchers also assisted in surveying the wreckage of one or two early 19th-century whaling ships discovered at Pearl and Hermes Atoll.

Cordell Bank upgraded its research vessel *C. magister* in 2004 with the installation of sampling





## SCIENCE & EXPLORATION

equipment and electronics in order to initiate a long-term monitoring program. The goal of the monitoring is to better understand the dynamics of the sanctuary's habitats by learning more about seasonal and annual changes. Staff will begin collecting data including constant records of sea surface temperature and salinity; vertical profiles of water temperature, salinity, chlorophyll, and water clarity; relative estimates of zooplankton abundance with an emphasis on estimating krill abundance; population and distribution of seabirds and marine mammals; and documentation of vessels and activity in the sanctuary.

Gray's Reef received a new addition to its fleet in December 2004, *Sam Gray*, a research vessel that will be used for day trips to the sanctuary and other research sites along the Georgia coast. Stellwagen Bank will soon have a new vessel as well. In September, NOAA approved a \$1.5 million contract for construction of a new 48' research vessel that is scheduled for delivery in November 2005.

### New Sounds Being Heard In Sanctuaries

In 2004, Channel Islands, Florida Keys, and Stellwagen Bank national marine sanctuaries began using acoustic tags to monitor fish. Use of acoustic tags is a recently developed method for understanding detailed movements of fish without harming the fish. The small tags are surgically implanted in fish, and sonar listening stations are set up to track their movements. The goal is to figure out how fish move relative to their preferred habitats and areas closed to fishing. The tags will also tell scientists whether adult fish within marine reserves (fully protected areas) move out and supplement populations in unprotected areas. The findings will be key in future decisions about effective reserves are in meeting management objectives and whether boundaries and sizes should be changed.

Stellwagen Bank also attached tags to whales that record motion, sounds, and other environmental data. The tags were attached using long poles and small boats by scientists familiar with the dangers of approaching these huge creatures. The tags pop off the whales after 10-20 hours and are then retrieved. This data will help scientists in their attempts to understand how whales react to vessels and ocean noise. Researchers plan to develop exciting computer simulations showing how whales dive and feed on bottom-dwelling creatures. Scientists must receive a permit from NOAA Fisheries before implanting the tags on the whales.

*“Eighty feet under the surface of the Gulf of Mexico, heavenly bodies light our way across the sandflat... coral polyps wave their dainty tentacles hungrily...a large nurse shark glides past, her body shimmering, leaving in her wake a tiny fireworks show.”*

Emma Hickerson,  
Research Coordinator  
Flower Garden Banks  
National Marine Sanctuary  
- describing a night research dive

Photo Left: Brown noddies lift off from Pearl and Hermes Atoll.  
Photo: © James Watt

Photo Right: Great star coral.  
Photo: Bill Harrigan



## RESOURCE PROTECTION & MANAGEMENT

The management plans of the national marine sanctuaries are the result of years of discussion and input by hundreds of dedicated staff and volunteers, with extensive input from the public. These plans are the foundation for the program's resource protection efforts, which, like the resources they guard, are constantly evolving. Management and resource protection go hand in hand, joining forces to conduct protection, damage assessment, and enforcement activities to restore and preserve our treasured marine habitats.

### Working to Protect Coral Reefs in the Florida Keys

In late 2003, the U.S. Navy and Army Corps of Engineers started construction to establish a Homeland Security battleship training group in Key West. The project included dredging the Key West Main Ship Channel and Harbor and repair of the Truman Mole Pier. Sanctuary staff led an unprecedented effort to remove and save more than 3,500 coral colonies that would have been destroyed by the project. The Navy worked hand in hand with sanctuary staff to save this very diverse assemblage of healthy corals. A beneficial outcome of the dredging project is that the corals are being made available to scientists for research; public aquariums, aquaculture demonstration projects; and for restoration purposes at boat grounding sites. The coral rescue work is complete and the dredging is likely to be complete by November 2005. This is just one of many coral and seagrass restoration projects currently undertaken within the sanctuary.

Natural resource damage assessments are a valuable tool for NOAA managers to ensure that sanctuary marine life is maintained for future generations to benefit from and enjoy. One assessment case settled last year involved the two men charged with placing debris into the waters of Florida Keys National Marine Sanctuary to attract lobsters for commercial harvest. The 65 tons of debris removed by NOAA included cut-up garbage dumpsters, concrete slabs, wood blocks, car hoods, and bathtubs. The debris crushed hard and soft corals, seagrass, sponges, and invertebrates. Such a large amount of unnatural habitat could also disrupt the natural migratory patterns of spiny lobster from the Gulf of Mexico to the reef tract.

The settlement and steps taken by the Florida Fish and Wildlife Conservation Commission have buoyed efforts by the sanctuary to end this type of destruction of our marine environment. The men paid \$5,000 each, and agreed not to manufacture, possess, or place artificial reef materials or debris, or to catch lobster commercially within the sanctuary for five years. During 2004, NOAA also settled three vessel grounding cases involving injury to Florida Keys coral reefs and ten cases involving injury to seagrass. Settlements with the responsible parties totaled \$407,322. The



# RESOURCE PROTECTION & MANAGEMENT

funds will be used to support restoration of coral and seagrass habitats, and to reimburse NOAA costs incurred as part of emergency response and assessment for these incidents.

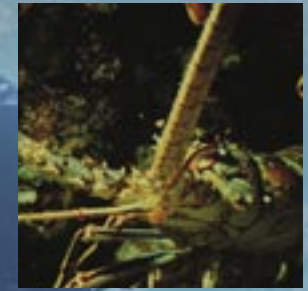
Coral reefs face unprecedented threats due to the combined impacts of local, regional, and global stressors. While coral reef managers cannot directly affect the root cause of large-scale threats, such as hurricanes or coral bleaching, managing to support coral reef resilience is emerging as a response strategy, analogous to efforts that boost the human immune system to prevent disease. In December 2004, NOAA partnered with the world's preeminent coral managers with the goal of improving coral reef resilience in the Florida Keys National Marine Sanctuary and Great Barrier Reef Marine Park. Resilience is the natural ability of corals to survive and recover from stresses in the natural environment. NOAA's sanctuary and coral reef conservation programs signed a Memorandum of Agreement with the State of Florida and Great Barrier Reef Marine Park Authority to promote the long-term sustainability of coral reefs. The partnership will emphasize coordinating scientific research, exchanging information on emerging management strategies, and developing joint projects.

## Anticipating and Solving Resource Threats

NOAA used a new response tool, the Resources and UnderSea Threats (RUST) database, for the first time in early 2004 to assist with identification of a potential oil spill source. The U.S. Coast Guard and the State of New Jersey responded to an unidentified source of heavy oil washed up on the New Jersey shore. The spill spanned a 12-mile stretch of shoreline in the form of "tar balls" and "tar patties," which were light and sporadic, consistent with a low impact spill. NOAA's Office of Response and Restoration and the National Marine Sanctuary Program used the RUST database, a tool within the Sanctuaries Hazardous Incident Emergency Logistic Database System (SHIELDS), to identify and analyze several underwater wrecks as potential sources. Oil samples sent in for analysis will assist in narrowing down the likelihood of one of the offshore wrecks as a source. There are thousands of post World War II vessels within our coastal waters that are aging and corroding, many of them went down with significant amounts of fuel on board. A database, such as RUST, helps emergency response teams identify, monitor, and assess such environmental threats.

## Protecting Marine Life Through Community Involvement

A new ban on squid light fishing in the Gulf of the Farallones National Marine Sanctuary was implemented to prevent wildlife disturbance and injury. The ban stems from several incidents in fall 2003 involving squid hunters and light boats inadvertently attracting seabirds and pinnipeds



Spiny lobsters are a valuable fishery in the Florida Keys.  
Photo: FKNMS



Enforcement officers patrol the 2900 sq.n.m. of the Florida Keys NMS.  
Photo: FKNMS



Beachcast Northern Fulmar documented through Farallones Beach Watch survey.  
Photo: Pat Coffee/Beach Watch Volunteer



Sanctuary biologist reattaches corals at a vessel grounding site.  
Photo: FKNMS

Photo Left: Farallones Beach Watch volunteer secures oiling evidence.  
Photo: GFNMS Library

Photo Right: The nation's first underwater geodetic marker is placed in Florida Keys National Marine Sanctuary.  
Photo: Bob Care

# RESOURCE PROTECTION & MANAGEMENT

away from nests and rookeries. The California Fish and Game Commission enacted the ban to prevent this type of disturbance to marine life. Sanctuary staff networked informally with members of the fishing community and other vessel operators to raise awareness of potential light impacts from all types of vessels. Part of the outreach effort was production of a flyer in association with several partners, “Reduce Night Lights,” which identifies the most at-risk species and biologically sensitive areas of the central and northern California coast.

Volunteers are often indispensable during wildlife emergencies that require the sanctuary to mobilize vast resources rapidly. Gulf of the Farallones and Monterey Bay national marine sanctuaries rallied volunteers to help with surveys when hundreds of dead and live Northern Fulmars seabirds washed up on beaches in the Monterey Bay, Gulf of the Farallones, and Olympic Coast sanctuaries. It was later determined that the majority of Fulmars were starving young birds from Alaska, where persistent storms may have prevented foraging and reduced prey. This unique die-off had not been seen in at least 10 years. Sanctuary researchers suspected that the annual winter Fulmar die-off may have simply started a few weeks early, and the storms pushed carcasses onto area beaches. The good news is the die-off has not significantly harmed the Northern Fulmar population.

## **Planning for the Unexpected**

Staff at all national marine sanctuaries and headquarters participated in mock disasters during the program’s first annual Safety Week in March. Carefully planned, comprehensive training and exercises addressed both natural and manmade disasters, such as boating accidents, fires, hurricanes, earthquakes, and hazardous waste spills. Staff reviewed emergency procedures, supplies and equipment, and participated in disaster drills. These team-building experiences established a program-wide commitment to safety, which promotes well-being for both the human and natural resources of the national marine sanctuaries. The program updates emergency procedures and provides additional safety training to staff year-round.

## **Managing for the Sanctuaries’ Future**

The National Marine Sanctuary Program is required by law to periodically review sanctuary management plans. These operational blueprints outline regulatory goals, describe boundaries, identify staffing and budget needs, and set priorities and performance measures for resource protection, research, and education programs. Currently, many of the sanctuaries are in various stages of revising their management plans.





# RESOURCE PROTECTION & MANAGEMENT

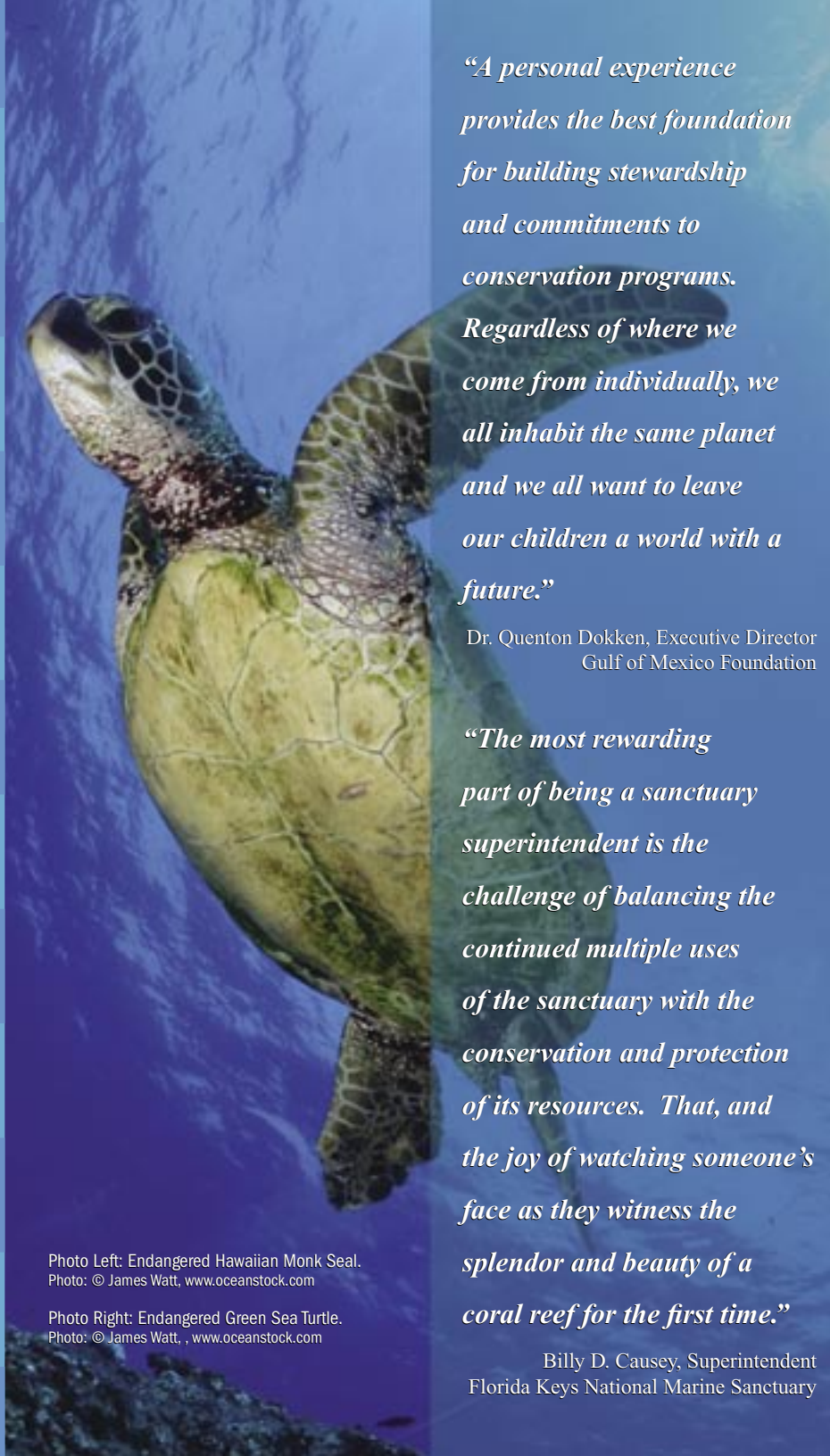
Gray's Reef National Marine Sanctuary begins implementing its revised management plan in 2005, setting a new five-year course based upon public hearings and final revisions in 2004. This is the culmination of four years of study, planning, and extensive public comment. Channel Islands will release its draft five-year management plan and an accompanying federal draft Environmental Impact Statement by mid-2005 for public review and comment.

The management plans for the Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries are being revised together, and are scheduled for public comment in late 2005. Across the three sites, 44 action plans were drafted, with input from many community members and assistance from the sites' respective sanctuary advisory councils. This collection of action plans will provide the framework and strategies for taking the sanctuaries' resource protection, education and research programming into the next decade. Issues addressed include ecosystem protection, water quality, coastal development, wildlife disturbance, partnerships and opportunities, and operations and administration. The Draft Management Plan and Draft Environmental Impact Statement will be released to the public for review in late 2005.

In addition, the NWHI Coral Reef Ecosystem Reserve completed its reserve operations plan, which is also serving as the foundation for the proposed sanctuary's management plan. Florida Keys has just released draft revisions to its management plan and will be reviewing comments and writing the final revisions through 2005. Stellwagen Bank is also poised to make a fresh start with release of its Draft Management Plan. The sanctuary advisory council approved 11 new action plans for Stellwagen Bank in late 2004, a milestone in the process to revise the sanctuary's management plan, which has been in effect since 1993. Olympic Coast is just beginning its management review process, which is expected to take two years to complete.

## Enhancing Performance Capabilities in Hawaii

In October, the NWHI Coral Reef Ecosystem Reserve consolidated offices with the Hawaiian Islands Humpback Whale National Marine Sanctuary and the sanctuary program's Pacific Islands Regional Office. This long anticipated move will facilitate a regional approach to marine protection efforts in the Hawaiian archipelago, while increasing efficiency and reducing costs. The new office space also features a large multi-media conference room for meetings, volunteer training, and public seminars.



*“A personal experience provides the best foundation for building stewardship and commitments to conservation programs. Regardless of where we come from individually, we all inhabit the same planet and we all want to leave our children a world with a future.”*

Dr. Quenton Dokken, Executive Director  
Gulf of Mexico Foundation

*“The most rewarding part of being a sanctuary superintendent is the challenge of balancing the continued multiple uses of the sanctuary with the conservation and protection of its resources. That, and the joy of watching someone's face as they witness the splendor and beauty of a coral reef for the first time.”*

Photo Left: Endangered Hawaiian Monk Seal.  
Photo: © James Watt, [www.oceanstock.com](http://www.oceanstock.com)

Photo Right: Endangered Green Sea Turtle.  
Photo: © James Watt, [www.oceanstock.com](http://www.oceanstock.com)

Billy D. Causey, Superintendent  
Florida Keys National Marine Sanctuary

## MARITIME HERITAGE

The Maritime Heritage Program has come a long way since its launch in 2002 to meet the mandates of the National Marine Sanctuary Act and the goals of President Bush's Preserve America Executive Order. In 2004, the program worked in partnership with government agencies and private groups to locate, document, inventory, and/or protect more than a dozen historically significant shipwrecks, from the famed Civil War ironclad USS *Monitor* to the 19th century steamer *Portland*, known as "New England's *Titanic*." Also, for the first time, the program distributed \$150,000 in mini-grants aimed at discovering, exploring, preserving, and protecting maritime heritage in the sanctuaries. In Newport News, Virginia, NOAA neared completion of the Maritime Archaeology Center, scheduled to open in March 2005. Program staff also assisted in the effort to investigate and document the oldest vessel ever discovered in Alaskan water, the Russian-American Company bark *Kad'yak*, which was discovered in 2003 off Kodiak Island.

### Major Step Forward in *Monitor* Conservation

NOAA and the U.S. Navy returned to *Monitor* National Marine Sanctuary off the North Carolina coast in June to assess its condition and recover artifacts possibly exposed by Hurricane Isabel in 2003. The expedition team explored the *Monitor's* recently discovered pilothouse, from which the ironclad's captain commanded the vessel. NOAA archaeologists and Mariners' Museum conservators also successfully removed the two large Dahlgren cannons from the *Monitor's* famed turret. The guns were placed in individual conservation tanks to undergo several years of preservation treatment.

*Monitor* staff worked with the National Park Service's Historic American Buildings Survey/Historic American Engineering Record to map the turret and steam engine using advanced laser-scanning equipment. This documentation is part of the ongoing treatment process for these and hundreds of other USS *Monitor* artifacts undergoing conservation at The Mariners' Museum. The laser scanning system makes it possible to record millions of points at centimeter accuracy.

### Expeditions From Coast to Coast and Beyond

Maritime heritage activities in the Pacific Islands Region centered on several exciting discoveries. In August, NOAA divers were removing discarded fishing nets from the coral reefs in the Northwestern Hawaiian Islands (NWHI) when they came across an early 19th century wreck site, very possibly the British whaling ships *Pearl* and *Hermes* lost in 1822. The formal survey of this rare site is included as part of the NWHI Coral Reef Ecosystem Reserve's 2005 fieldwork season. NOAA maritime



# MARITIME HERITAGE

archaeologists also documented the deepwater crash site of the *Martin Mars*, one of the five largest operational flying boats ever built. The *Mars* was lost in 1950 due to engine failure and lies in 1,200 feet of water south of Pearl Harbor. The continuing corrosion study and research on a World War II Japanese midget submarine discovered in 2002, as well as the ongoing inventory of other sites, demonstrate the close collaboration between NOAA, the Hawaii Undersea Research Lab, National Park Service, and the U.S. Navy to document these important aspects of America's history.

Florida Keys National Marine Sanctuary continued to fund conservation of an 18th century cannon at the Mel Fisher Maritime Heritage Museum in Key West. A permanent display is planned. From August-October, the team from Florida's Bureau of Archaeological Research was able to visit all 13 of the known 1733 Spanish Plate Fleet wrecks, which have not been formally assessed for more than a decade. The research team produced site plans, conducted cultural and natural inventories, and shot underwater photographs and video, all of which will enhance management, education, and outreach activities. One goal is to nominate these shipwrecks to the National Register of Historic Places. On July 5, The History Channel aired "Deep Sea Detectives: Explosion at Sea," the story of the ship *Queen of Nassau*, which lies in the Florida Keys. The documentary featured staff from the program's Maritime Archaeology Center and received the highest rating of any "Deep Sea Detectives" episode.

Gulf of the Farallones National Marine Sanctuary worked with producers from the Discovery and History channels on documentaries about shipwrecks in the sanctuary, including the disastrous 1984 sinking of the T/V *Puerto Rican* and the 1953 loss of the S.S. *Jacob Luckenbach* shipwreck, which has been the source of mystery oil spills for decades.

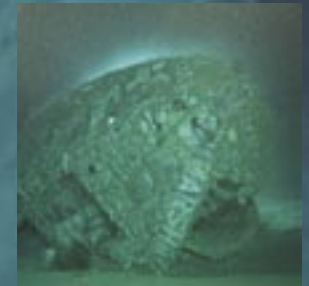
The Science Channel produced and broadcast a high definition underwater documentary in March 2004 on the sinking of the steamship *Portland*. The documentary was an initiative of Stellwagen Bank National Marine Sanctuary, in partnership with the NOAA Office of Ocean Exploration, National Undersea Research Program at the University of Connecticut, and Woods Hole Oceanographic Institution. A return expedition to the *Portland* in September 2004 added considerably to the sanctuary's understanding of the shipwreck. Archaeologists used the imagery captured during the expedition to prepare the *Portland's* successful National Register of Historic Places nomination.



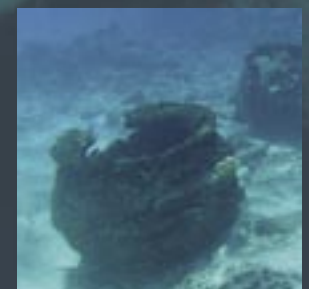
Educational sail aboard the schooner *Denis Sullivan*.  
Photo: TBNMSUP



A ROV is lowered over the side of the R/V *Connecticut* during a survey of the wreck of the steamship *Portland*.  
Photo: Anne Smrcina/SBNMS



*Martin Mars* bow.  
Photo: Hans Van Tilburg,  
courtesy NOAA/HURL



Pearl and Hermes Atoll try pots.  
Photo: Darla White,  
courtesy NOAA Fisheries Service

Photo Left: The freighter *Grecian*.  
Photo: Tane Casserley/NOAA

Photo Right: The freighter *Nordmeer*.  
Photo: Donald Tipton, TBNMSUP



## MARITIME HERITAGE

Stellwagen Bank staff and partners conducted ROV shipwreck investigations aboard the R/V *Connecticut* in July as part of the annual sanctuary-sponsored Aquanaut Program, which brings together students, teachers, and scientists to study various aspects of the sanctuary. The cruise resulted in the first underwater video of the coal schooner *Frank A. Palmer*, including pictures of the captain's cabin and partially intact steering wheel. The summer field season ended with the scuba diving investigation of the 5-masted schooner *Paul Palmer*. Staff from the Maritime Archaeology Center joined sanctuary researchers in collecting baseline imagery to assess changes to the site over time.

The program is looking ahead to several exciting expeditions, including exploration of the wreck of the U.S. Navy dirigible USS *Macon* and its four Sparrowhawk fighter planes, all of which were lost in 1934 in waters that now are within the Monterey Bay National Marine Sanctuary. The sanctuary plans expeditions in 2005 and 2006 to document the site and create a photomosaic of the wreck. The *Macon* expeditions are part of an extensive outreach initiative by the sanctuary and several partners, including Monterey Bay Aquarium Research Institute, the Maritime Museum of Monterey, California State Parks, Stanford University, and the University of New Hampshire.

### **The Hunt for the USS *Alligator***

The National Marine Sanctuary Program joined forces with the Office of Naval Research in August for "The Hunt for the *Alligator*," a nationally acclaimed expedition off Cape Hatteras, North Carolina. The ambitious schedule of scientific and educational activities presented a unique opportunity to inspire learning about marine science, technology, and maritime history. The *Alligator*, the U.S. Navy's first submarine, was lost in the "Graveyard of the Atlantic" during a fierce storm in 1863. The *Alligator* represented a significant leap forward in naval engineering, pioneering the use of an air purification system and an airlock designed to allow a diver to exit the vessel while submerged. Researchers from NOAA, the U.S. Naval Academy, East Carolina University, and the University of Rhode Island used sonar and metal-detecting devices and a remotely operated vehicle (ROV) to survey 50 square nautical miles of the ocean, a larger search area than the initially planned. The research team will continue analyzing the data in 2005.



# MARITIME HERITAGE

## Eventful Year for Thunder Bay

Thunder Bay National Marine Sanctuary and Underwater Preserve continued to expand its maritime heritage efforts with several exciting public events, resource acquisitions, and research expeditions in 2004. The sanctuary is making its maritime heritage resources available to the public through ambitious outreach initiatives, including the October groundbreaking ceremony for its new Great Lakes Maritime Heritage Center and the unveiling of its *Pewabic* shipwreck exhibit. In April, the sanctuary premiered the documentary "Tragedies in the Mist," an engaging half-hour exploration of several Thunder Bay shipwrecks, hosted by underwater explorer Dr. Robert Ballard. On July 4, the annual Thunder Bay Maritime Festival attracted more than 3,000 people, making it one of the most popular events in the region. In mid-August, more than 3,500 people visited the sanctuary to tour the visiting replica tall ship *HMS Bounty* and to see the new *Pewabic* exhibit.

Thunder Bay was exceptionally fortunate to receive the donation of the Labadie /Perry Great Lakes Research schooner *E.B Allen* and an unidentified schooner located by Dr. Robert Ballard's Institute for Exploration expedition in 2002. Using mixed gas diving methods, the team created photomosaics of both sites, which will be used to evaluate human and environmental impacts, and also for interpretive exhibits at the new Great Lakes Maritime Heritage Center. Collection, among the richest 19th-century Great Lakes maritime history research material in the nation! It includes manuscripts, shipbuilding plans, photographs, negatives, microfilm, and videos. In June, with funding from NOAA's Office of Ocean Exploration, archaeologists from the sanctuary, NOAA Maritime Archaeology Center, and East Carolina University documented two historic shipwrecks within sanctuary waters: the 19th century schooner *E.B Allen* and an unidentified schooner located by Dr. Robert Ballard's Institute for Exploration expedition in 2002. Using mixed gas diving methods, the team created photomosaics of both sites, which will be used to evaluate human and environmental impacts, and also for interpretive exhibits at the new Great Lakes Maritime Heritage Center.

*"The Monitor was one of my inspirations; I believed in her firmly when that energetic contractor first showed me Ericsson's plans. Captain Ericsson's plain but rather enthusiastic demonstration made my conversion permanent... sometimes I think she may be the veritable sling with a stone that will yet smite the Merrimac Philistine in the forehead."*

President Abraham Lincoln  
*Lincoln's Yarns and Stories*  
by Colonel Alexander K. McClure

Photo Left: *EB Allen* bow.  
Photo: Tane Casserley/NOAA

Photo Right: Diver at the bow of the Civil War ironclad *USS Monitor*.  
Photo: The *Monitor* Collection, NOAA



## CHANNEL ISLANDS

**Volunteers Making a Difference In Sanctuary Projects** – The sanctuary's 120 volunteers contributed more than 10,000 hours in 2004, participating in marine excursions, outreach events, teacher workshops, presentations, and assisting with resource monitoring and research. For the first time, volunteers began leading naturalist hikes on the islands themselves.

**Incorporating Cultural Heritage** – In July, Channel Islands hosted a group of 30 Chumash people on the R/V *Shearwater* for a special field trip to the sanctuary and national park. The purpose of the trip was to raise awareness about the sanctuary among key individuals in the Chumash community. The experience was followed a few months later with an historic tomol (traditional native canoe) crossing by the Chumash Indian tribe to the sanctuary.

**Educating Boaters** – The sanctuary mailed 27,750 Boating and Safety brochures to all registered boat owners in Ventura County. The brochures, made possible by the California Department of Boating and Waterways, highlight safety issues and techniques for responsible wildlife viewing. The sanctuary coordinated with the Ventura Power Squadron and the county of Ventura to design and print the brochure.

**Inspiring Educators to Use Sanctuary As Living Classroom** – The sanctuary hosted more than 50 Los Angeles teachers for a workshop aboard the research vessel *Shearwater* and dive vessel *Conception*, a floating laboratory experience at Santa Cruz Island and its surrounding waters. During this one-day adventure, participants observed marine mammals, explored kelp forest communities, conducted a fish survey, and explored Santa Cruz Island.

**Fish Surveys Aid Management Efforts** – In May, the sanctuary and Reef Environmental Education Foundation (REEF) conducted 67 visual fish surveys within the sanctuary. This annual monitoring effort supplements the ongoing survey efforts by volunteers who conduct REEF surveys as part of their recreational dives. The field plan was designed to assist in the evaluation of the state marine reserves, with surveys conducted in reserve locations and at comparable reference sites outside the reserves.

**New Mammal Sightings Database** – Channel Islands launched its Marine Mammal Sightings Database on the sanctuary's website in March. With this database, anyone can record mammal sightings, as well as search for information on sightings in the sanctuary on-line. The majority of sightings in this database so far have been collected by the Channel Islands Naturalist Corps Volunteers.

### Plans for 2005

Channel Islands will release its draft five-year management plan and an accompanying federal draft Environmental Impact Statement for public review and comment. The management plan will cover all sanctuary programs, including research, monitoring, education, outreach, resource protection, volunteer programs, and administration.



# CORDELL BANK

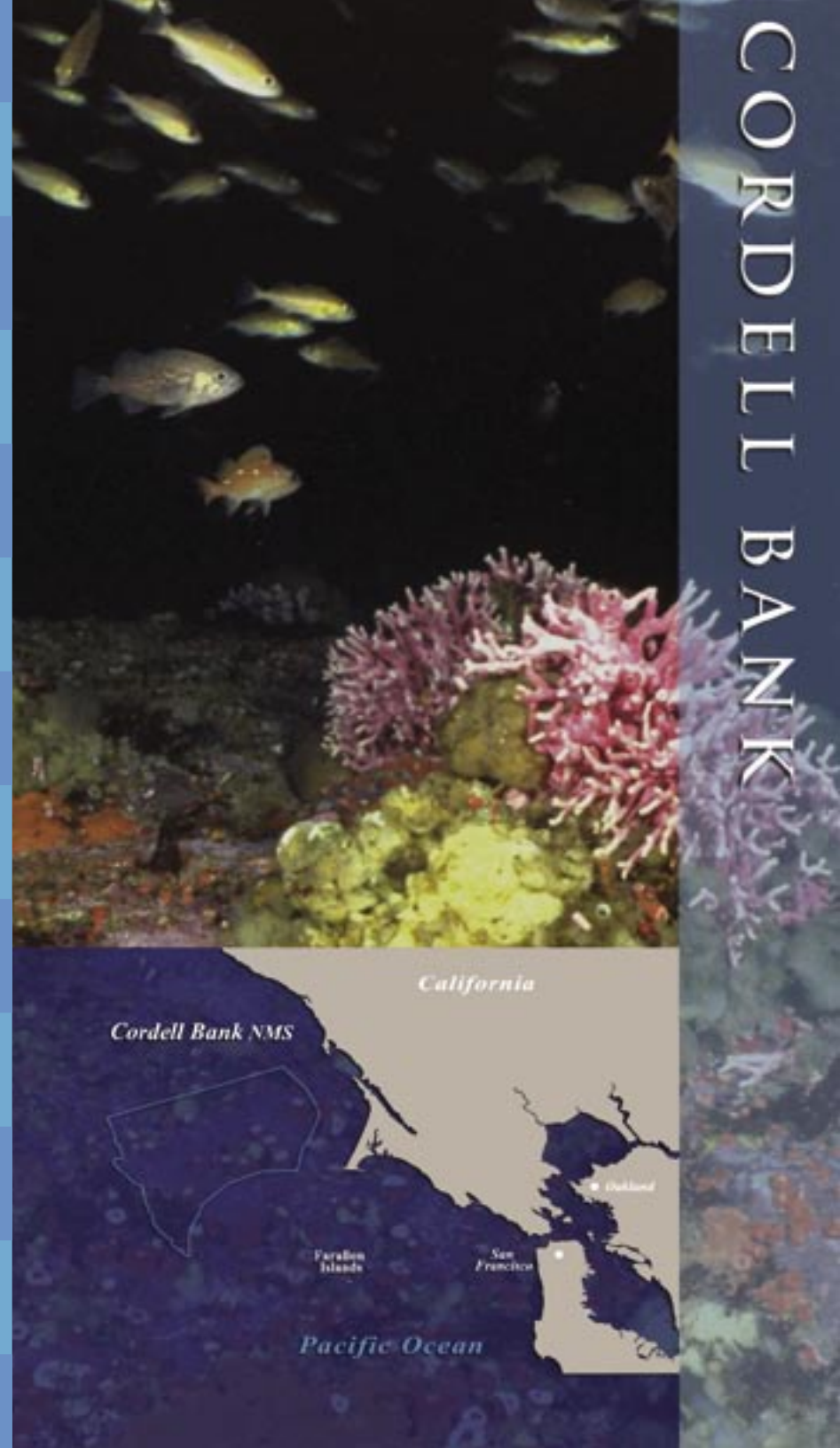
**Mapping New Territory** — The sanctuary completed transects using sonar and cameras to describe soft bottom habitats and biological communities in Cordell Bank. A real-time annotation system was set up on board to record habitat and biological observations during the camera sled operations. This joint effort is the first to characterize the soft bottom areas of the sanctuary. Project partners included Monterey Bay National Marine Sanctuary, U.S. Geological Survey, NOAA Fisheries, and Washington State University.

**Spotlighting the Sanctuary's Amazing Seabirds** — Many seabird species feed in Cordell Bank's bountiful waters year-round. In January 2004, the California sanctuaries hosted a series of public meetings with wildlife watching professionals, educators, and vessel operators to assess needs for education and outreach to minimize disturbances to seabirds and other marine wildlife. This past year also marked the culmination of a three-year effort with the publication of a new 28-page booklet, *The Amazing Seabirds of Cordell Bank National Marine Sanctuary*.

**Busy Year for Outreach** — Throughout 2004, sanctuary staff participated in public events, lectures, and forums. Some outreach opportunities involved key partners, such as the Point Reyes National Seashore Association, which co-sponsored a popular two-day adult-education field seminar trip to Cordell Bank. The sanctuary is developing an exhibit that will be installed in the Point Reyes National Seashore visitor center, which is visited by nearly half a million people each year.

**New Research Tracks Threatened Black-footed Albatross** — The sanctuary provided vessel support in a successful effort to tag nine Black-footed Albatross in Cordell Bank for a multidisciplinary research project to assess the conservation status of the threatened species. "Exploring Albatross Movements" was initiated by Oikonos-Ecosystem Knowledge in collaboration with the National Fish and Wildlife Foundation, Moss Landing Marine Lab, Duke University, and Claremont College. The information obtained with the satellite tags will give researchers a better understanding of the foraging grounds and movements of Black-footed Albatross in West Coast sanctuaries and across the northeast Pacific Ocean.

**Plans for 2005** — Cordell Bank will initiate its long-term offshore monitoring program, involving monthly trips in and around sanctuary waters to measure ocean conditions and biological activity. The sanctuary also plans to release a new 15-minute video about Cordell Bank, which will be available to educators and visitor centers, including the Point Reyes National Seashore Visitor Center. Also, the sanctuary is forging a partnership with the Oakland Museum of California, which is adding new marine exhibits.





*Tutuila Island  
American Samoa*

*Vaitogi*

*Pacific Ocean*

*Fagatele Bay  
NMS*

## FAGATELE BAY

**Coral Survey Shows Reefs Improving Slowly** — Fagatele Bay National Marine Sanctuary completed a three-week biological survey, the sixth iteration of one of the longest-running coral reef surveys in the world (20 years). Preliminary results demonstrated that while the coral reef continues to improve, populations have not recovered to expected levels.

**Students Help to Clean-Up Samoan Beaches** — In October, the sanctuary marked a milestone in the pilot year of merging the Save-A-Beach Program with the Water Quality Monitoring Program. During the previous school year, 320 students at five elementary and two high schools participated in the program, which features monthly beach cleanups. Thousands of pieces of plastic, glass, rubber, clothing, and aluminum were collected and tabulated.

**Scientists Gather Important Data on Humpback Whales** — As part of the ongoing humpback whale survey in American Samoa that began in 2003, a second trip and survey was completed in early October. Thirty-three humpback whales, including calves, were observed during this trip. Scientists were able to get fluke identification photos and DNA samples from 17 whales. They also documented feeding behavior, something never observed before in breeding grounds. This study is expected to continue next season.

**Enhancing Environmental Education Programs** — The sanctuary, in cooperation with Le Tausagi, the American Samoa environmental educators' group, co-hosted a teachers' workshop with 20 teachers and one science education specialist from the local Department of Education. The goals of the workshop were to evaluate current projects that the agencies and Le Tausagi offer to the schools, seek ways to improve those projects, and solicit teachers' input about which programs best fit their curriculum needs. Twelve of the teachers indicated that they would like to continue the dialogue begun at the workshop, and to participate in the advisory group to Le Tausagi. This will enable the sanctuary to refine and refocus its programs directed to the schools.

**Plans for 2005** — Fagatele Bay will launch its sanctuary advisory council in the spring. The council will serve as an important community advisory body to the site, providing recommendations on education, science, and management programming to increase public awareness of the sanctuary and protect marine life. The sanctuary will also initiate its first-ever management plan review and co-host the 2nd Annual Samoa Ocean Fest.



# FLORIDA KEYS

**Fish Diversity Up After Three Years of Reserve Status** — Researchers surveyed reef fish populations and habitats in the Tortugas region of the sanctuary, including the Tortugas North Ecological Reserve (no-take since 2001), the adjacent southern section of the Tortugas Bank that remains open to fishing, and Dry Tortugas National Park (no commercial fishing since 1935). The survey found a greater diversity of fish in pinnacle and reef terrace habitats and, perhaps more importantly, in the protected ecological reserve and national park versus the fished section of Tortugas Bank. The survey also found greater red and black grouper populations.

**Sanctuary Balances Economic and Ecological Concerns** — In October, the sanctuary agreed to allow hook and line fishing for baitfish (hair-hooking) under a pilot program recommended by the Sanctuary Advisory Council's baitfish working group. Hairhooking is now allowed by permit in three Sanctuary Preservation Areas. Sailfish charter captains say this will help when conditions make netting difficult. The sanctuary will monitor the program closely. Cast netting for baitfish continues to be allowed by permit in all 18 Sanctuary Preservation Areas due to the economic importance of these areas for bait fishing.

**Educating Boaters** — The sanctuary installed 46 new boater information signs at boat launches throughout the Florida Keys and at two places on the mainland. Each three-by-six foot sign features information about the sanctuary's buoys, its natural and maritime heritage resources, and ways in which people can protect them. The signs will reach recreational boaters who account for one out of every two households in Monroe County.

**Sanctuary Volunteer Program Enters New Era** — Sanctuary staff assumed management of its volunteer program from The Nature Conservancy, which has been overseeing volunteers since 1992. Under the conservancy's guidance, the program provided over 170,000 volunteer hours, a \$2.8 million dollar value!

**Plans for 2005** — Florida Keys will coordinate a research cruise to assess the habitat and biological characteristics of a deepwater coral formation known as Pulley's Ridge. Scientists and fishermen recognize the area as important habitat for grouper and other commercial and recreational species. The mission will use technical divers, remotely operated vehicles (ROVs) and possibly manned submersibles to gather information about the spectacular coral formations and diverse marine life that make up this reef, 100 miles off Key West. Florida Keys will also be reviewing comments and writing final revisions to its draft management plan.



FLORIDA KEYS



## FLOWER GARDEN BANKS

**Detailed Maps Help in Sanctuary Exploration** — Imagine being deposited in a vast wilderness with only a crude map and a handful of pictures, and told to explore the most significant parts within five days so the information you collect can be used to make major management decisions. Until recently, that was a challenge confronting marine scientists in the northwestern Gulf of Mexico. The sanctuary has met this challenge by partnering with a variety of organizations to use high resolution multi-beam bathymetry to create much more detailed maps of the seafloor. The maps produced in 2004 are so detailed that individual coral colonies can be discerned. These maps are extremely valuable in identifying which parts of the sanctuary need to be further explored.

**Exploring the Depths** — Throughout 2004, the sanctuary focused on expanding knowledge of the sanctuary habitats from the coral cap to the deepest depths. Using Remotely Operated Vehicles (ROVs) and drop cameras, staff captured high quality images of the deeper regions and collected individual specimens of selected animals. Scientists now have high-resolution digital images of many deep-water species in their natural habitat. Previously, only dead preserved specimens were available as keys for identification. Scientists are now compiling visual catalogues of deepwater sponges, antipatharians, and gorgonians so that future expeditions will be able to identify species without actually collecting the animals.

**Future Oceanographers Learn ABCs of ROVs** — Flower Garden Banks sponsored its first workshop to train teachers how to design and build their own ROVs in the classroom. The workshop introduced teachers and students about the vital role ROVs play in exploration. Building a ROV as a class project requires students to work cooperatively to apply theoretical lessons in physics, chemistry, math, engineering, writing, and public speaking. In the process, it introduces students to a variety of career options in marine technology. Teachers in these workshops are encouraged to field a team of students to participate in the annual ROV competition sponsored by the Marine Advanced Technology Education Center.

**Plans for 2005** — The sanctuary is scheduled to begin the process to review and update its management plan. The first step will be to form a sanctuary advisory council. The council's primary purpose will be to serve as a conduit for the flow of information between the sanctuary and various sectors of the public who wish to offer recommendations on how to best protect and manage the sanctuary.



## GRAY'S REEF

**New Water Data Buoy Helpful to Anglers and Divers** — The sanctuary, with the National Data Buoy Center, redeployed its data buoy in April. The installation features new instruments that will display conditions at both the surface and bottom, including temperature, salinity, dissolved oxygen, and water turbidity. This information will help recreational divers plan their dives to the reef and alert anglers to fishing conditions. The turbidity measurements, which determine clarity, will be of great interest to fishermen and divers, and the information is available on the Internet.

**Comprehensive Fish Counts Will Result in Better Management** — In August, the Reef Environmental Education Foundation's (REEF) Advanced Assessment Team (AAT) assisted Gray's Reef staff in conducting fish counts. This year, REEF estimated fish size in addition to abundance, making the data even more valuable in understanding the complexity of fishes managed under the South Atlantic Fisheries Management Council.

**Georgia Teachers Get Firsthand View of Life in Gray's Reef** — The sanctuary held a successful and action-packed teacher workshop, "Ocean and Estuarine Science." It included explorations of the Altamaha River, a day-long visit to Sapelo Island National Estuarine Research Reserve, a night searching for loggerhead sea turtle nests on Wassaw Island National Wildlife Refuge, and a day on sanctuary waters aboard the Skidaway Institute of Oceanography research vessel *Savannah*. Nine teachers from different parts of Georgia participated in this unique training opportunity.

**New Poster Reveals Reef's Tiniest Creatures** — The sanctuary unveiled a new poster and website spotlighting the fascinating, tiny creatures that live under the sand at the Gray's Reef sea floor. Barely visible to the naked eye, when viewed under a microscope these creatures look like the sea monsters of old legends - hence the poster's name, "Sea Monsters in the Sand." The poster and site were created in partnership with the NOAA National Centers for Coastal Ocean Science and Skidaway Institute of Oceanography.

**Plans for 2005** — Gray's Reef will release its final management plan in 2005, the culmination of more than four years of study, planning, and extensive public comment. This plan will direct the sanctuary's management, research, and education programs. Gray's Reef will also host the sanctuary education coordinators meeting in 2005, which will feature a special "Dive into Education" teachers' workshop. Additional education plans include expansion of a teachers' workshop organized with the Georgia Aquarium. On a festive note, the sanctuary will host the 2nd Annual Savannah Ocean Film Festival on September 23-24.





## GULF OF THE FARALLONES

**Love on the Rocks** — Common Murres had an unprecedented breeding season at the Farallon Islands colony, increasing to 169,000 birds from an estimated 53,000 birds in 2000. Researchers attribute this to a large influx of young birds born between 1999-2002 that are returning to the islands to breed. Scientists believe the increase is linked to four years of high ocean productivity and an absence of oil spills. Sanctuary waters sustain a breeding population of more than a quarter-million seabirds at the Farallones, the largest rookery in the contiguous United States.

**Sanctuary Explorers' Camp** — The sanctuary partnered with the San Francisco Parks and Recreation Department to reach out to young people from underserved ethnically and socio-economically diverse backgrounds. Seventy-two children took part in free educational indoor and outdoor adventures, including sea kayaking, seabird banding, and classroom activities. One group, from Project Insight for the hearing impaired, learned about the sanctuary through signing and other nonverbal techniques.

**Shark Mobile** — The sanctuary launched its Shark Mobile outreach program that is geared to students in grades 4-6. The programs cover shark-related myths, evolution, survival and feeding strategies, adaptations, unique senses, reproduction, and conservation. The Farallones sanctuary is home to one of the largest concentrations of white sharks on the planet.

**Documentaries Inform Viewers About Sanctuary** — The sanctuary worked with producers from the Discovery and History channels on documentaries about shipwrecks in the sanctuary, including the disastrous 1984 wreck of the T/V *Puerto Rican* and the the S.S. *Jacob Luckenbach* wreck, which was the source "mystery spills" for decades.

**Plans for 2005** — In late 2004, the Sanctuary initiated its SEA (Sanctuary Ecosystem Assessment) Stations and Surveys program to coordinate with the central and northern California and Integrated Ocean Observing Systems and Sanctuary Integrated Monitoring Network (SiMON). The sanctuary deployed thermistors in the Gulf of the Farallones to record long-term data on currents and sea temperatures. Four more thermistor arrays will be deployed in nearshore habitats to coincide with the sanctuary's long-term rocky intertidal monitoring stations. The data will link with biological observations from ocean and shoreline monitoring to assess trophic relationships among krill, seabirds, marine mammals, wildlife mortality events, and oil pollution, and enhance the effectiveness of the sanctuary's response to spills.



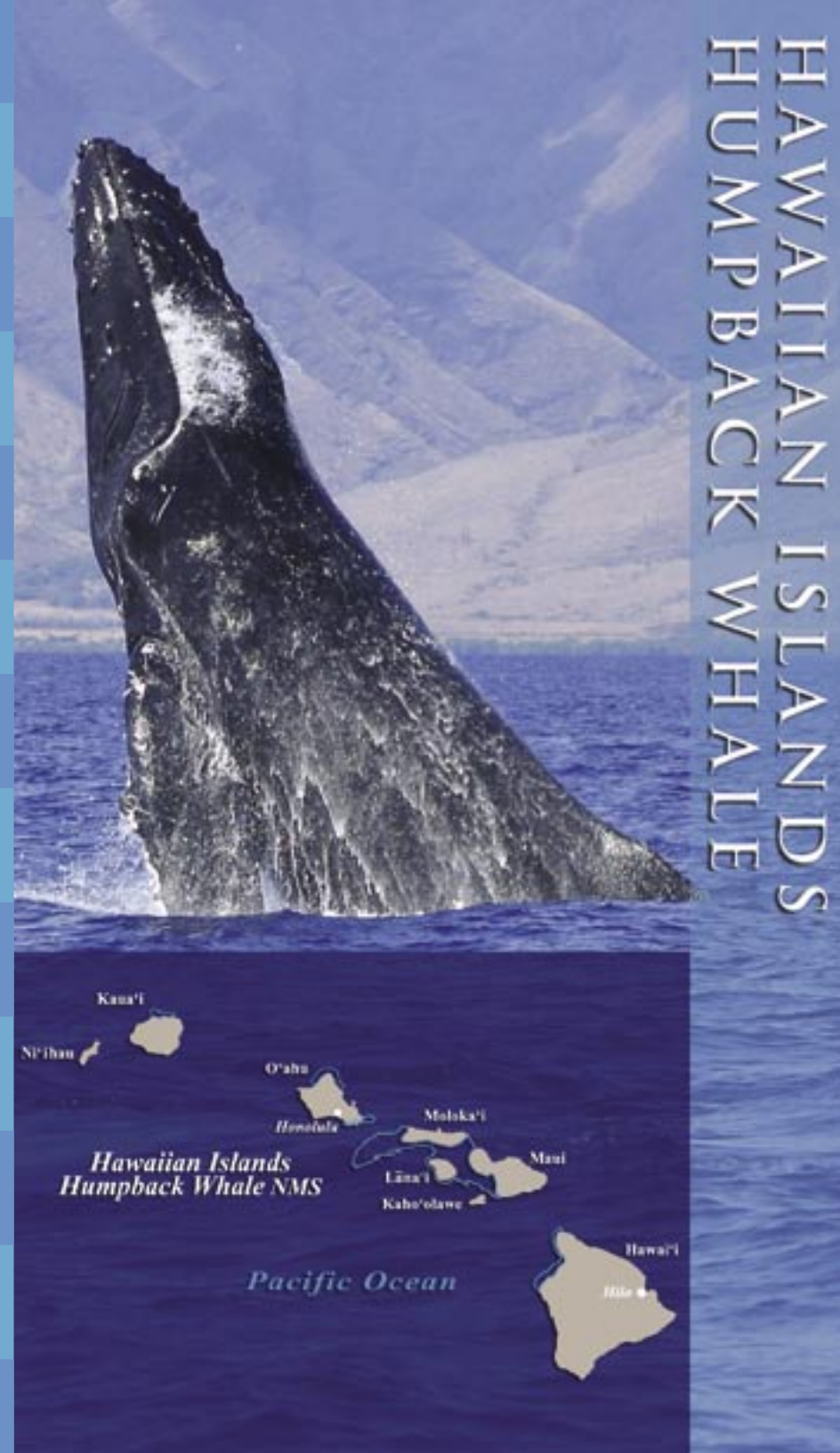
# HAWAIIAN ISLANDS HUMPBAC WHALE

**New Outreach Partnership with Outrigger Hotels** — In February, the sanctuary unveiled a permanent humpback whale kiosk at the Outrigger Reef Hotel in Waikiki. This interactive display offers incredible photos and interesting facts about Hawaii's marine life and ecosystems. The unveiling kicked off a new long-term partnership with the National Marine Sanctuary Foundation and Outrigger Hotels and Resorts that will benefit the sanctuary for many years to come. Outrigger will offer a series of permanent education exhibits, traveling exhibits, expert lectures, ocean activities, and community service projects at various hotel properties on Oahu, Maui, and the Big Island.

**Volunteers Mobilize After Monk Seal Birth** — The sanctuary organized a community-based volunteer effort to provide education and outreach at Kauai's Poipu Beach Park where an endangered Hawaiian Monk Seal gave birth to a pup in August. The effort was focused on the safety of the public as well as the monk seal mom and pup. After the pup was weaned from its mother, it was transported to a remote beach on the island where it can mature without being disturbed. The Hawaiian monk seal is the most endangered pinniped in the United States, second only in the world to the Mediterranean monk seal. Approximately 1,200 of the monk seals call the Northwestern Hawaiian Islands home, while fewer than 100 are found in the main Hawaiian Islands.

**Maui Office Celebrates Ten Years Serving Local Community** — The Maui office in Kihei has undergone several significant changes since it opened its doors in 1994. Today, visitors enjoy a scenic beachfront setting that doubles as a learning center focused on Hawaii's most majestic creature, the humpback whale. In addition, the sanctuary offers a variety of educational programs about Hawaii's environment and culture. A chief attraction of the site is the Sanctuary Education Center. Sanctuary volunteers are credited with getting the education center up and running and assist the sanctuary's education programs. In July, the sanctuary launched a day camp. The two-week summer education program offers lessons in marine science and the arts.

**Plans for 2005** — The sanctuary will continue efforts to minimize vessel interactions with whales in Hawaiian waters. The sanctuary will launch several new initiatives, including the installation of harbor signs that provide safe boating tips for vessel operators. The second field season of SPLASH (Structure of Populations, Level of Abundance, and Status of Humpbacks) will continue throughout the main Hawaiian Islands.



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## MONITOR

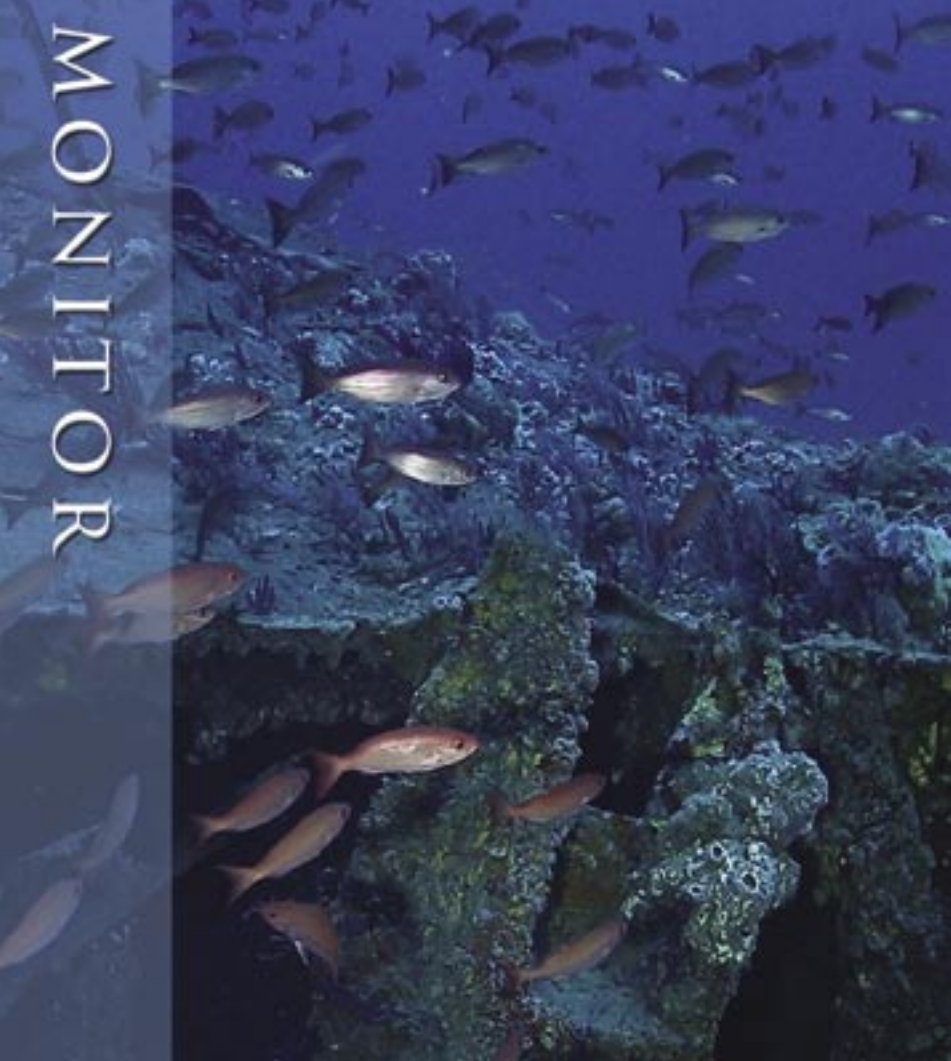
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**Civil War Descendents Join Unveiling of Special Exhibit** — In early March, the sanctuary and The Mariners' Museum held the second annual "Battle of Hampton Roads Weekend." The event, co-sponsored by the Lincoln Forum, featured formal lectures, debates on the Civil War, tours, events for children, and the much anticipated opening of the new *Monitor* exhibition, "Ironclad Evidence: Stories of the USS *Monitor* and CSS *Virginia*." The exhibit displays the *Monitor's* iron propeller and dozens of other artifacts. This exhibit will remain open until the opening of the \$30 million USS *Monitor* Center in 2007.


**Groundbreaking for USS *Monitor* Center** — In October, The Mariners' Museum and NOAA broke ground for the USS *Monitor* Center in Newport News, Virginia. The center will include exhibitions, programs, conservation, and scholarship related to the history and legacy of the Civil War at sea. As one of the nation's premier Civil War attractions, the USS *Monitor* Center will illuminate the individual human stories of those who designed and built the *Monitor* and the CSS *Virginia* and sailed them into battle on March 8 and 9, 1862. The center will also emphasize the courage and determination of NOAA scientists and U.S. Navy divers who conducted five major expeditions to the sanctuary, the recovery of the *Monitor's* most significant components from the ocean floor, and those who are preserving these priceless artifacts for future generations.

***Monitor* in the Media** — On August 12, sanctuary staff participated in an hour-long radio program on the recovery efforts at the *Monitor* and a six-part *Daily Press* (Hampton Roads) series that described those efforts. In addition, *Sea History* magazine published articles by *Monitor* staff about the NOAA divers expeditions to the *Monitor* in 2003 and the current conservation efforts by NOAA and The Mariners' Museum.

**Plans for 2005** — In the spring of 2005, the *Monitor's* gun turret and steam engine are scheduled to be moved to the location of a new conservation facility that will comprise part of the USS *Monitor* Center. An expedition to the *Monitor* will be conducted during 2005, in partnership with the University of Rhode Island, and two additional *Monitor* surveys are possible. Private research expeditions are expected to take place as well. The *Monitor's* story will be featured in 2005 in a *National Geographic Magazine* article on the "Battle of Hampton Roads."



North  
Carolina



Atlantic  
Ocean

Cape  
Hatteras  
Monitor  
NMS



# MONTEREY BAY

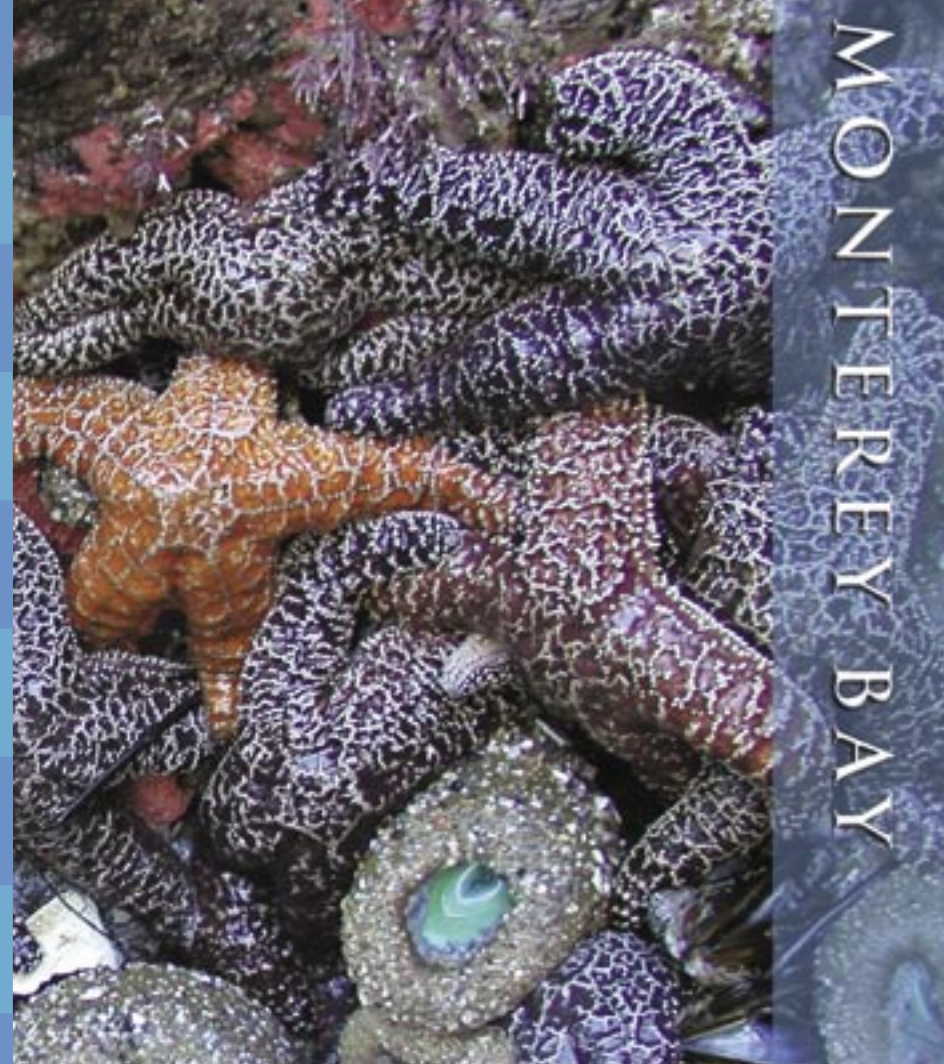
**Study Assesses Impacts of Underwater Cable** — Monterey Bay completed a study of the environmental impacts of the Pioneer Seamount cable, including its effect on the seafloor and bottom-dwelling marine life. This cable extends 95 kilometers through the sanctuary, from Pioneer Seamount to Half Moon Bay. While neither the rocks nor the cable appeared damaged on Pioneer Seamount, there is evidence of cable and rock abrasion in the nearshore rocky region. In addition, several sharp kinks in the cable were documented in an area subjected to intense trawling activity. The National Marine Sanctuary Program was invited to present the results of this study to the International Cable Protection Committee in Cannes, France. The research will also be useful in developing policies on cable laying in sanctuaries.

**Monterey Harbor Becomes a Classroom** — Sanctuary staff and 12 student volunteers from Santa Catalina High School assisted three divers in manually removing the invasive Asian kelp *Undaria pinnatifida* from Monterey Harbor. Students and their marine biology teacher measured and recorded the reproductive status of 1,000 plants removed by divers. Their efforts are part of an on-going project to understand the dynamics of *Undaria* in the harbor, led by staff from the Sanctuary Integrated Monitoring Network (SIMoN) and in collaboration with the City of Monterey and the Harbormaster's office.

**Fishermen's Festival Scores with Community** — Monterey Bay co-sponsored the first Fishermen's Fiesta in June. Approximately 1,000 people attended this new outreach event, which featured fishing boat tours by local fishermen, ocean exhibits, abalone farm tours, presentations about Monterey Bay marine life, and activities for children.

**TeamOCEAN Kayakers Help Protect Marine Life** — Monterey Bay's TeamOCEAN Kayaker Outreach Program is a seasonal volunteer effort that educates kayakers and wildlife watchers on how to view marine life without disturbing them. In 2004, more than 40 TeamOCEAN volunteers logged over 5,000 interactions with kayakers, engaging the public with interesting information and stories about Monterey Bay's natural history, habitats, and marine life. This highly successful outreach program has been in effect since 2000.

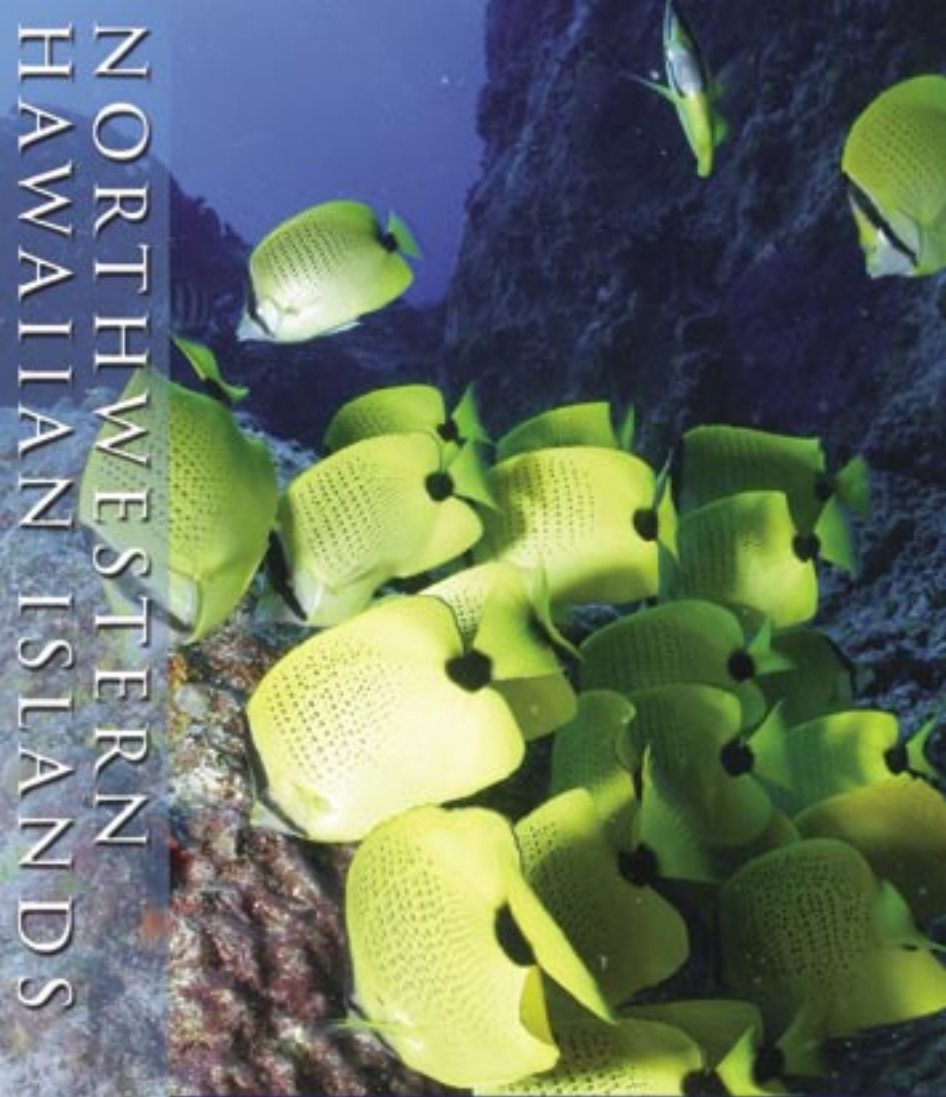
**Plans for 2005** — Monterey Bay sanctuary and the City of Santa Cruz are partnering to design and construct the Monterey Bay National Marine Sanctuary Visitor Center. The center will encourage visitors to explore the marine environment, issues impacting the sanctuary, and its role in protecting one of the nation's most ecologically significant water bodies.



MONTEREY BAY







NORTHWESTERN  
HAWAIIAN ISLANDS

# NORTHWESTERN HAWAIIAN ISLANDS CORAL REEF ECOSYSTEM RESERVE

**Marine Debris Clean-Up Saves Reefs** — The reserve provides significant funding for ongoing marine debris clean-ups to address this critical threat impacting the health of Northwestern Hawaiian Islands coral reef ecosystems. The collaborative, multi-agency project has removed about 442 metric tons of lost or discarded fishing nets and other derelict gear from the islands during annual field trips deployed since 1996. In 2004, divers collected about 112 metric tons of debris, which is then transported back to Honolulu to be incinerated and converted into electricity.

**Visitors Pack New Discovery Center** — The Mokupapapa Discovery Center for Hawaii's Remote Coral Reefs has far exceeded initial expectations for attendance. The 4,000-square-foot facility was constructed to interpret the natural science, culture, and history of the Northwestern Hawaiian Islands and surrounding marine environment. It features interactive displays, engaging three-dimensional models, a 2,500-gallon salt-water aquarium, and immersive theater experiences. The center opened in May 2003, and during its first year attracted more than 50,000 people. As of the end of 2004, a total of 69,801 people had visited the center.

## **Reserve Operations Plan Guides Management, Education and Science Programs**

The Reserve Operations Plan was finalized with guidance from the Reserve Advisory Council and input from approximately 27,000 public comments. The operations plan is the management document for the reserve and forms the foundation of the management plan for the proposed sanctuary. The reserve staff has completed initial drafts of all sections of the draft Sanctuary Management Plan, including performance measures for all action plans.

**New Curriculum Inspires Conservation** — A five-module "Navigating Change" educational video, with corresponding curriculum, is now available. The educational materials are aimed at inspiring youth and families to appreciate and care for Hawaii's marine environments. The curriculum was created in partnership with the Department of Education and designed to meet state education standards. Public school teachers can order the videos and curriculum for free online.

**Plans for 2005** — Entering its fifth year, the reserve will initiate public education and outreach efforts to increase public awareness and participation in the sanctuary designation process. A draft management plan and environmental impact statement will be completed that will be followed by public input to guide final deliberations on the reserve's designation as a national marine sanctuary. The research vessel *Hi'ialakai* will also embark on its first full year of research expeditions to conduct habitat mapping, cultural, education, maritime heritage, and rapid assessment and monitoring activities in the islands.





# OLYMPIC COAST

**Outreach to Pilots Helps Protect Seabirds** — Low-flying planes can increase the risk of predation on young seabirds when their parents are spooked off their nests. In August, sanctuary staff participated as an exhibitor/presenter at the Hoquiam Fly-In to educate pilots about how to avoid disturbing sanctuary marine life. This is part of an ongoing outreach effort to educate pilots and passengers on the sanctuary overflight regulation. Based on several years of concerted outreach, many pilots stated that they are now aware of sanctuary regulations and willingly comply with them, which is a vast improvement over the past.

**Signs Help Protect Animals and Habitats** — In September, sanctuary staff installed new interpretive signs on the Makah Reservation at Cape Flattery and Shi Shi Beach trailheads. The new signs were partially funded by the *Tenyo Maru* Oil Spill trustees and interpret vulnerable habitats and species, as well as highlight oil spill prevention measures.

**Monitoring Seafloor Recovery** — In August, sanctuary staff and other scientists completed a nine-day research cruise aboard the M/V *Alaska Lady* to document recovery of seafloor communities following installation of Pacific Crossing PC-1, a fiber optic cable. The seafloor survey, in its fifth year of a 10-year study, utilized the Canadian Submersible ROPOS ROV (remotely operated vehicle) to assess benthic habitats and communities along and adjacent to the cable, as well as at control sites. Initial reports are that the PC-1 cable has not substantially changed since the last survey in 2001, but some limited areas of unburied cable were noted on the Alaska United cable in a boulder cobble area.

**Science Symposium Helps Enhance Partnerships** — In May, the sanctuary co-sponsored a two-day science symposium on the Western Strait of Juan de Fuca Ecosystem that is leading to enhanced cooperation and new partnerships for research and management of the ecosystem that spans Canadian and U.S. marine waters. The effort builds on established ties between Olympic Coast National Marine Sanctuary and Parks Canada, which administers several marine protected areas adjacent to Vancouver Island.

**Plans for 2005** — In the coming year, Olympic Coast will start its management plan review process, “Navigating The Future.” Together, staff, partners, stakeholders, and the public will review 10 years’ progress and chart a course for the next five years. The process will begin with public open houses and progress through soliciting public comment, issue analysis and the development of a management plan and environmental impact statement.



OLYMPIC COAST



## GERRY E. STUDDS STELLWAGEN BANK

**Non-invasive Tagging Project Allows Scientists to Study Whales** — Sanctuary researchers and partners tagged humpback whales with innovative non-invasive suction cup tags for a cetacean behavior study. Using the NOAA Ship *Nancy Foster* as a base of operations, the team of 16 scientists from eight institutions recorded the pitch, roll, heading, and depth of whales, as well as their sounds. By studying whale tracks and ambient noise, researchers may better understand human induced changes in animal behavior.

**A Big Step Forward in the Sanctuary's Management** — The management plan review process continued with the development of 10 action plans. Sanctuary advisory council working groups met throughout the winter and spring to produce strategies and activities in critical management areas, approved in October. The action plans serve as a basis for the development of the Draft Management Plan, due to be released in 2005.

**Promoting the Sanctuary in Classrooms** — The sanctuary teamed up with the Waquoit Bay National Estuarine Research Reserve to create a multi-part Salt Water Studies series of workshops for middle and upper elementary grade teachers. In addition, a new poster, funded in part by the sanctuary and produced by the National Undersea Research Center at the University of Connecticut, gives a new perspective on an important sanctuary habitat. The full-color poster dramatically shows the rich colors and range of species that call the sanctuary's deep boulder reefs home.

**Stellwagen Expands Exhibit Outreach** — The sanctuary has supported development of exhibits in two gateway cities. The Provincetown Visitor Exhibit relocated to Aquarium Wharf and saw a doubling of attendance in 2004. A sanctuary exhibit also opened at the Maritime Heritage Center in the historic fishing port of Gloucester. This temporary unit will be expanded over the next few years into a permanent exhibit space, featuring a variety of interactive displays and static panels.

**Plans for 2005** — The New England Aquarium is opening a Gulf of Maine-themed exhibit that will highlight the biodiversity and habitats of Stellwagen Bank, including a modern bow-front exhibit for the boulder reef community and an adjacent traditional exhibit of the sandy bank environment. The sanctuary has also nominated the wreck of the *Portland* for listing on the National Register of Historic Places. The ship's archaeological remains will likely yield important historical information about life in 19th century New England.



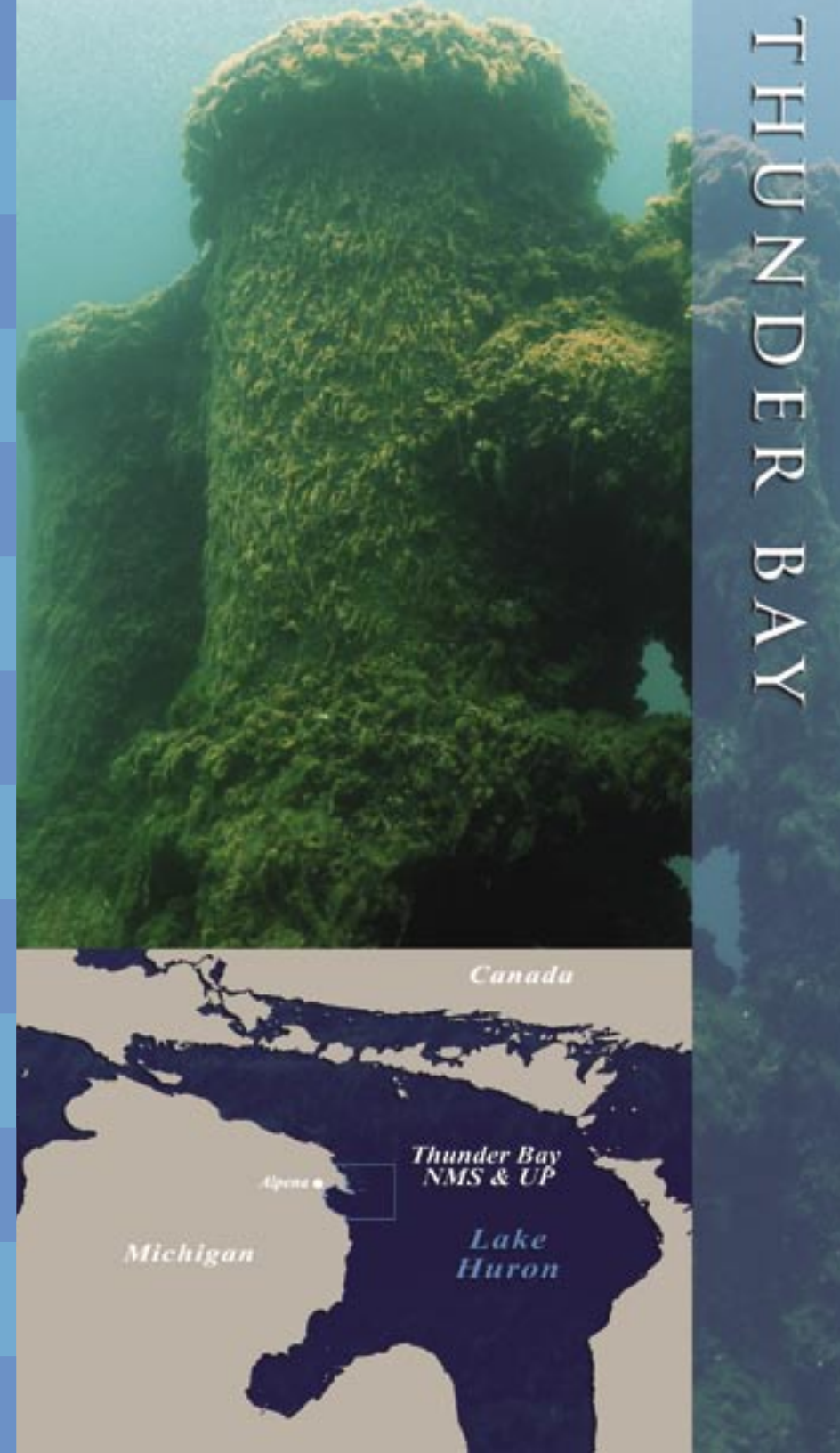
# THUNDER BAY

**First Sanctuary Public Exhibit Draws Big Crowds** — The opening of its first public exhibit on June 7 marked an important milestone for the Thunder Bay National Marine Sanctuary and Underwater Preserve. This exhibition highlights the *Pewabic*, a steamer that collided with its sister ship in 1845. It attracted more than 13,000 visitors in 2004, a significant step forward in the sanctuary's effort to educate the public about Thunder Bay's maritime history. Michigan Governor Jennifer Granholm attended the exhibit's opening, as part of her six-day "Hidden Treasures" tour.

**Groundbreaking for the Maritime Heritage Center** — In October, the sanctuary broke ground on the Great Lakes Maritime Heritage Center, a 20,000 square-foot facility that will feature exhibits and educational programming on the maritime history of Thunder Bay. The center will be a valuable resource for historians, archaeologists, scientists, and schools. It's also expected to become a national tourist destination, drawing 70,000 visitors a year. It will feature an auditorium to view films and live footage from shipwrecks, an archaeological conservation laboratory, education resource room, research facilities, and a dock for research vessels. The sanctuary offices will reside in the new facility by summer 2005.

**Sanctuary Waters Become a Popular Classroom** — Sanctuary staff designed and sponsored education events aboard the Great Lakes schooner *Denis Sullivan*, including a maritime history course for the American History Project, a K-12 professional development program created by the local Educational Service District and Central Michigan University. The *Denis Sullivan* served as the platform for the final leg of the project, July 5-9, giving teachers the experience of a four-day sail from Alpena to Traverse City, via the Straits of Mackinaw. The *Denis Sullivan* returned to Alpena in September for a series of "Lake Watch" sails, which treated more than 500 local students to half-day educational sails on Thunder Bay.

**Plans for 2005** — In 2005, Thunder Bay commemorates its 5th Anniversary with a celebration coinciding with the opening of the sanctuary's new facility, the Great Lakes Maritime Heritage Center. Sanctuary staff will also begin the design and first draft of a new Great Lakes Maritime Curriculum, a core component for new sanctuary education and Heritage Center programming. The sanctuary has established a partnership with the Wisconsin Historical Society to develop a book, teachers' guide, and student activities adhering to state and regional standards and benchmarks for 4th graders.





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