

OUR NATIONAL MARINE SANCTUARIES



NATIONAL MARINE
SANCTUARIES



STATE OF THE SANCTUARIES REPORT

2005



2006

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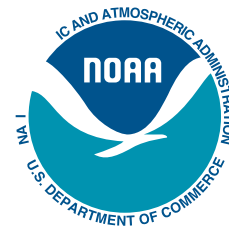
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STATE OF THE SANCTUARIES REPORT 2005-2006



NATIONAL MARINE
SANCTUARIES



Editors Note: The report this year is in two-color instead of full color and the accomplishment theme sections have been cut in half due to the sanctuary program's reduced FY06 budget.

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Cover: Soupfin shark (*Galeorhinus galeus*).
Photo: © Matthew Meier, www.matthewmeierphoto.com


INTRODUCTION

Each year in the *State of the Sanctuaries Report*, we try to improve how we present our accomplishments to our readers. Last year, we began describing some of the National Marine Sanctuary Program's major accomplishments in five theme areas: resource protection and management; science and exploration; education and outreach; maritime heritage; and community involvement and partnerships. The accomplishments described in these theme areas reflect the regional and national scope of the activities undertaken by the sanctuary program and our partners.

There are two changes in this year's report worth noting. First, our sites are now listed in the report by geographic region instead of alphabetically. The purpose of this organizational restructuring is described in more detail in the *Enhancing Regional Capabilities* section on page 2.

The site section starts in the Pacific Island Region with the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. We started this report in the Pacific Islands Region because the Bush Administration is considering whether to designate this world-class gem of reef, atoll and island waters as the nation's 14th marine sanctuary. From the Pacific Islands, you will then travel up the Pacific coast through the five sanctuaries in our West Coast Region. Next, you will visit our three sites in the Southeast, Gulf of Mexico and Caribbean Region. Finally, you will end your journey in our Northeast, Mid-Atlantic and Great Lakes Region. As you read about the activities at each site, we hope this connectivity between sites begins to become apparent.

The other notable change is we are offering an expanded version of the State of the Sanctuaries report on the new sanctuary program Web site. The biggest challenge in producing this report is how to effectively describe the immense amount of work undertaken across the sanctuary system each year. The report does not go into much detail on each accomplishment story. However, as you read through the report, you will see this symbol  that indicates there is additional information on this story in our Web site.

In addition, each theme or site section may also have additional accomplishment stories that are only available online. Look for this symbol  at the end of each section, which indicates additional accomplishment stories online. The entire report will also be available online in full color and include additional pictures, videos and links to partners who assisted in the respective activities.



The report can be accessed at: <http://sanctuaries.noaa.gov/report05/>

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The National Marine Sanctuary Program has for years managed exciting marine education programs, encouraged the use of innovative technologies within sanctuary waters, supported exciting research and exploration and fostered long-standing partnerships that support our work in so many ways. This past year was no different. In this *State of the Sanctuaries Report*, you will learn about some of our significant 2005 accomplishments that all help in some way to connect all 300 million Americans to our nation's natural and cultural maritime heritage.

One way we are connecting people is through visitor centers. Just about every national park has a visitor center, but they are relatively new for the sanctuary system. This past September, the National Oceanic and Atmospheric Administration (NOAA) and the State of Michigan were proud to open the Great Lakes Maritime Heritage Center. Featured on page 26, the center is the anchor of a major redevelopment in Alpena, Mich. We look forward to working with the community, the state and our partners to highlight the invaluable maritime, cultural and natural resources of the Great Lakes and foster economic development through this new facility.

When Jacques-Yves Cousteau first set forth on *Calypso*, he ushered in a new era where science and education shared equal roles in oceanographic expeditions. The sanctuary program also understands the importance of having vessels that can accomplish many things. You can learn about the latest additions to the sanctuary fleet, such as the 36-foot *Sam Gray*, on page 6. The sanctuary program will be building additional small boats that are designed to meet our specific on-the-water science, monitoring, enforcement and education requirements.

A consistent theme throughout this accomplishments report is *partnerships*, but few were as important in 2005 than our growing partnerships with NOAA Fisheries and the regional fishery management councils. How we are working together varies from region to region, but each effort is resulting in implementing improved ecosystem-based management measures to manage and protect sanctuary resources. You can learn about one of these efforts in California on page 12.

But one of the biggest activities happening this past year is that NOAA, the State of Hawai'i and our other management partners are making significant progress to designate the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve as the nation's 14th marine sanctuary. On page 13, you can learn how NOAA is moving forward to establish a sanctuary that encompasses one of the most remote coral reef ecosystems on earth. Learn more about becoming personally involved in the effort to protect a unique and diverse ecosystem unlike any in the world by visiting our Web site, sanctuaries.noaa.gov.

On a more personal note, I want to acknowledge all who have contributed to our accomplishments this past year. Through these difficult times, the sanctuary program continues to be at the forefront of effecting a sea change in how we collectively work together to manage our oceans. Nevertheless, there is much hard work ahead for all of us as the 21st century begins.

I hope you enjoy reading about the exciting activities and accomplishments that went into making 2005 another special year for the National Marine Sanctuary Program and catch a glimpse on what is underway in 2006.

Sincerely,



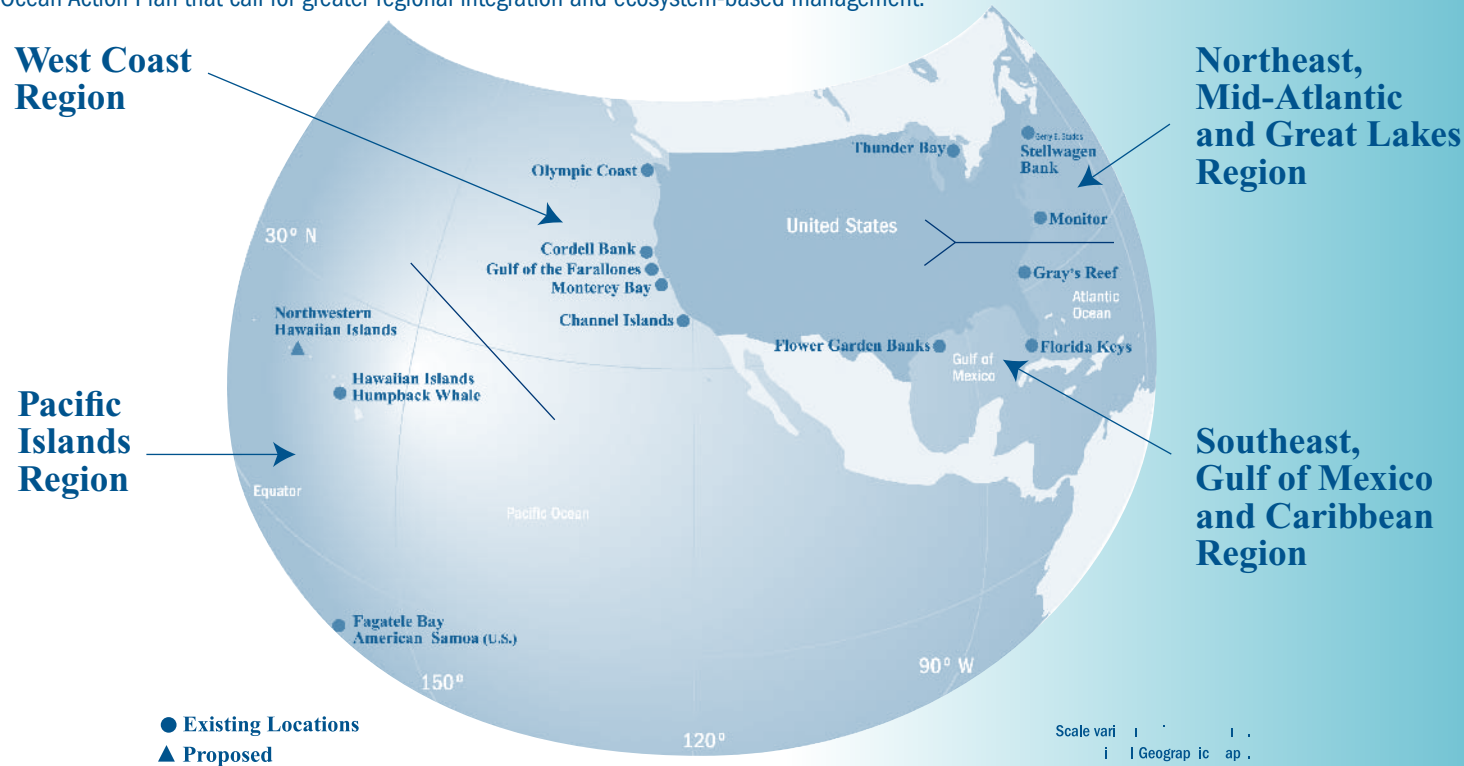
Daniel J. Basta

Director, NOAA's National Marine Sanctuary Program

ENHANCING REGIONAL CAPABILITIES

The National Marine Sanctuary Program has matured over the last decade, from a loose collection of sanctuaries into a system of 13 sanctuaries and one coral reef ecosystem reserve. Along with this growth in the system's size, the program has expanded its community participation and started to address resource management issues on an ecosystem basis. These factors have placed different needs on how the sanctuaries should be managed. In response to these changing needs, the sanctuary program has taken small but calculated steps towards developing and implementing a regional structure for the past several years. In 2005, the sanctuary program formally began implementing a regional structure.

The benefits of a regional management structure are substantial. It will enable the sanctuary program to efficiently integrate assets; coordinate activities with other organizations and partners; maximize the program's intellectual and resource capital; and to act on specific recommendations from NOAA, U.S. Commission on Ocean Policy and the President's U.S. Ocean Action Plan that call for greater regional integration and ecosystem-based management.



Another major benefit will be better coordination with other federal and state resource management agencies (e.g. National Park Service, fishery management councils). All federal agencies operate under some type of regional organization structure and some states have more than one sanctuary off its coast. A regional sanctuary presence will promote more efficient and consistent coordination with these important management partners.

Implementation of the regional management structure will be a phased process based on the availability of funding. Regional staffing levels will remain small for at least the next few years, reflecting a continued priority to fund existing sanctuaries and programs and to better allow each region to slowly develop and evolve their own regional focus and priorities. The public will experience no changes in the current education, science and resource protection programs currently underway throughout the sanctuary program. In fact, our goal is that this new management approach will only enhance our efforts to manage America's ocean and Great Lakes treasures.

RESOURCE PROTECTION & MANAGEMENT

Protecting the countless numbers of whales, seals, fish, seabirds and thousands of other marine species is fundamental to what national marine sanctuaries are all about. By protecting the sanctuary's animals and habitats, we are also protecting America's natural and cultural heritage and our economic well-being.

So how is all this done? We cannot over stress the importance of our partners. The program cannot survive without them. To do this, we work with federal and state agencies, Indian tribes, national and international organizations and numerous public and private interests, all in an ongoing effort to protect and manage our nation's treasured marine life and habitats.

Throughout the sanctuaries, joint efforts are held in things like mock oil spill drills that test the readiness and capabilities in responding to natural or human-caused disasters and accidents in a sanctuary. Turning to wildlife protection, numerous efforts are underway to address issues that might hurt the status of endangered animals like sea otters or providing safe havens for marine life. Substantial work is also done to protect and restore sensitive habitats such as coral reefs, seagrass meadows and rocky reefs that provide homes and food for sanctuary animals.

Following are some highlights of our resource protection efforts. You can also turn to each sanctuary page or visit our expanded accomplishments Web site for additional information.

WEB

No-Take Reserve Contains More and Bigger Lobster

Florida Fish and Wildlife Research Institute scientists document the success of the Western Sambo Ecological Reserve in protecting spiny lobster since the reserve was established in 1997. Spiny lobster are one of the most commercially and recreationally important species in Florida. Scientists have observed a steady increase in the numbers of large males and adult females inside the reserve, increasing the success of lobster reproduction. The number of eggs produced by lobster increases exponentially with size so the larger lobsters are producing significantly more eggs than their counterparts outside the reserve. There are also indications that lobsters are "spilling over" from the Western Sambo reserve into adjacent fished areas. Ongoing mark-recapture and sonic tagging studies will help to determine whether fished areas are also benefiting from the reserve. The monitoring program is part of a comprehensive effort to gauge the effects of the sanctuary network of 24 no-take areas.

Rare Seabird Showing Signs of Recovery

Xantus's murrelets are one of the rarest seabirds in the world and are considered one of the seabirds most vulnerable to imminent extinction. Anacapa Island is one of only 12 islands where Xantus's murrelets are known to breed but the survival of this important colony had been threatened by predatory non-native black rats. Rats were eradicated in 2002 as part of the Anacapa Island Restoration Program and scientists with

RESOURCE PROTECTION & MANAGEMENT

the sanctuary, Channel Islands National Park and California Institute of Environmental Studies are hopeful that the Xantus's murrelets populations will increase.

In 2005, seabird biologists completed the sixth year of Xantus's murrelet nest monitoring on Anacapa. Biologists measured the number of nests and breeding success prior to (2000-02) and after (2003-05) the eradication of rats. The murrelets' difficult nesting habitats made these studies quite challenging (nests are hidden in small crevices in steep, rocky cliffs or sea caves), but the monitoring has clearly demonstrated the benefits of rat removal. Overall, the number of murrelet nests found increased 81% in 2003-05. Most notably, no murrelet nests have been destroyed by rats since 2002. In previous years, more than half of all nests were destroyed by rats. Rat eradication has greatly improved the prospects for survival of this colony but ongoing monitoring is needed to document the continued recovery of Xantus's murrelets at Anacapa Island.

Invasive Asian Kelp Removed from Sanctuary

The introduction of non-native species is a serious threat to marine ecosystems. In Monterey Bay, sanctuary, staff removed an invasive Asian kelp from within a marina in Monterey Bay harbor. Over 100 pounds of kelp were removed. Later in the year, staff completed a reconnaissance in the marina and found only a few kelps remaining. However, they were surprised to see the tremendous growth of an Asian sea anemone species on the pier pilings. Scientists are currently devising a plan to rid the bay of this new invader.

Proposed Shifting of Shipping Lanes to Protect Whales

The Boston shipping lanes cross the southern half of the Stellwagen Bank National Marine Sanctuary in an area where endangered humpback finback and right whales are often observed. NOAA has recommended a 10-degree northward rotation of the shipping lanes, which would dramatically reduce the threat of ship strikes to whales in the sanctuary by an estimated 68 percent. This proposal is supported by local shipping companies.

Sanctuary scientists have analyzed more than 20 years of whale sightings data collected primarily by the Provincetown Center for Coastal Studies and the Whale Center of New England to determine the areas in which the highest concentrations of whales are regularly found. The northward adjustment would place the lanes over a more gravelly sea floor, as opposed to the sandy areas where the whales like to feed. Sand lance, the prey fish of choice for many whales, prefers environments where they can bury themselves in the sand for protection. Humpback whales tend to congregate where these fish find shelter. Right whales also feed in these productive waters. This simple step will hopefully provide one more safeguard for these endangered species that thrill thousands of whale watchers each year.



Photo Left: Spiny lobsters find shelter at the coral reef. Photo: FKNMS

Photo Right: The Xantus's murrelet, a rare seabird that breeds in the Channel Islands National Marine Sanctuary. Photo: Darrell Whitworth

SCIENCE & EXPLORATION

Science and exploration are fundamental to the sanctuary program's mission to protect and manage some of the world's most complex ecosystems. These two words go hand-in-hand when talking about protecting and sustaining ecosystems. Without the science, you cannot make the necessary ecosystem-based management decisions that help maintain these precious marine habitats that all of us enjoy and depend upon for food, jobs and our national identity.

Throughout the year, sanctuary staff and our partners mounted numerous scientific expeditions and explored regions of the deep sea for the first time. An important aspect of all sanctuary science is the dissemination of information collected in these scientific endeavors. It is important to share the knowledge gained with other organizations and our sanctuary communities to strengthen protection of marine resources nationwide. Following are a few exciting examples of the types of science conducted in sanctuaries.

WEB

Research Makes a SPLASH

The largest international humpback whale study ever attempted heads into its third and final year. Known as the Structure of Populations, Levels of Abundance and Status of Humpbacks study, or more commonly called SPLASH, sanctuary staff coordinated several research teams in Hawai'i and along the U.S. west coast. A few whale scientists also joined offshore cruises in Alaska and in the Commander Islands Marine Sanctuary in Russia, which are important humpback summer feeding grounds.

Scientists are also conducting biopsies and fluke identifications in sanctuary waters in Hawai'i and along the U.S. west coast. A total of 4,412 fluke photographs and 1,097 biopsy samples have been taken by researchers around the North Pacific in the winter breeding and calving areas for humpback whales. Analysis of this information helps researchers understand more about this endangered migratory species.

WEB

Mapping for Science

There are still unexplored regions in the ocean and species yet to be identified. Much like biologists create color-coded maps of the earth's different habitats, sanctuary staff are doing the same thing with the undersea world. These maps give sanctuary managers information on seafloor characteristics and the different types of animals that live there. Habitat characterization maps, as they are also called, are an important tool to help us understand potential impacts from natural or human influences. For example, in the Flower Garden Banks sanctuary, mapping expeditions have revealed that some reefs may be connected to other banks in the northern Gulf of Mexico through low reef ridges previously unknown. These "habitat highways" likely provide protection and foraging grounds for animals traveling between the various banks.

Monitoring System Installed To Detect Biotoxins

Olympic Coast sanctuary staff deployed a network of buoys at five sites in the sanctuary. The buoys were



SCIENCE & EXPLORATION

outfitted with instruments that provide data on various ocean conditions. When these conditions are right, the system can detect harmful algal blooms as they move toward shore. Once these algal blooms reach the coast, the biotoxins within the algae contaminate shellfish consumed by people and marine wildlife, such as seals and sea otters. Data from the summer season will be combined with information from four other west coast sanctuaries to better forecast toxic blooms quickly to protect human health.

Marine Mammal and Seabird Survey in West Coast Sanctuaries

NOAA researchers in Washington and California completed the first leg of a comprehensive marine mammal and seabird project. Scientists estimated the abundance of more than 30 marine mammals and seabirds found off the U.S. west coast. Documenting the abundance of these environmentally sensitive animals is an effective way to track overall ocean health. The project kicked off with a 10-day survey in Olympic Coast and continued in all four sanctuaries. Within the Olympic Coast sanctuary, researchers documented abundance and locations of orcas, humpbacks whales, several species of porpoises and a first ever sighting of a sperm whale and common dolphin within the sanctuary.

WEB

Technology Makes Ocean Transparent for Humpback Studies

In the past, scientists were able to study whale behavior at the surface but lost contact when the whale submerged. By applying a new technique that uses a special recording device in a suction-cup tag, scientists are now able to watch the whale virtually, making the water column essentially transparent. Researchers from Stellwagen Bank placed recording devices, known as D-Tags, on the backs of several humpback whales. After retrieving the tags, the researchers analyzed the whale movement, sound and depth data with an innovative software program developed at the University of New Hampshire. The analysis produced a pseudo-track of the whales' movements and revealed that humpbacks, when feeding, dive to the bottom, turn onto their sides and forage along the seafloor. These actions increase their susceptibility to entanglement in gillnets and lobster gear. Scientists hope to learn more about how whale behavior changes when vessels are present; types of seafloor habitats that the whales may be foraging over; and whale communication.

New Research Vessels Improve Science in Sanctuaries

Two new NOAA research vessels are now plying the waters of Thunder Bay and Gray's Reef national marine sanctuaries. In Thunder Bay, the 41-foot *Huron Explorer*, a refurbished U.S. Coast Guard utility boat, uses 100% soy biodiesel for engine fuel and all natural vegetable oil-based lubricants. The *Huron Explorer*, operated by NOAA's Great Lakes Environmental Research Laboratory, is one of the first NOAA vessels to operate without any petroleum-based products. The 36-foot *Sam Gray* is a new vessel designed to quickly travel offshore to Gray's Reef. The two vessels are both designed to meet specific science, enforcement and education needs in their respective sanctuaries. The program plans to christen three additional vessels in 2006.



Photo Left: Staff from the Thunder Bay sanctuary and NOAA's Great Lakes Environmental Research Lab deploy a weather monitoring buoy. Photo: TBNMS

Photo Right: A humpback whale slaps its tail in Hawaiian waters. Photo: HIHWNMS, NOAA Fisheries Permit #782-1438

EDUCATION AND OUTREACH

National marine sanctuaries are living classrooms where people can see, touch and learn about the nation's spectacular marine life and storied maritime history. Whether offering professional development for educators, hands-on field studies or hosting film festivals, we strive to bring oceans into America's homes and classrooms. Our education and outreach programs instill an ocean ethic and a commitment to knowledge that will touch hearts as well as minds. Below are a few examples of our commitment in 2005 to bring the sanctuary story to all 300 million Americans.

WEB

Education Opportunities for At-Risk Youth

Encouraging children to see beyond a world of hopelessness, particularly those in gangs or depressed neighborhoods, is part of a national effort to help all young people reach their full potential. Through our thriving partnership with the National Geographic Society, we continue to introduce under-represented students and teachers from around the country to our sanctuaries through the National Marine Sanctuaries Field Studies Program. This program emphasizes a sense of place, interconnectedness of the oceans, as well as conservation and stewardship through hands-on field activities. Participants also worked with National Geographic photographers on documentation of their experiences that were later shared with their local communities.

WEB

Bringing Oceans into Classrooms

Approximately 3,500 students in our five national marine sanctuaries along the west coast are involved with the collection of rocky intertidal and sandy beach environmental observation data as part of the Long-term Monitoring Program and Experiential Training for Students (LiMPETS) network. Students participating in LiMPETS learn to appreciate the marine environment, as well as understand the importance of science and the need for monitoring the environment. Teachers and students input the information collected into the online database. The information is used by managers to track the health of rocky and sandy intertidal habitats.

WEB

We have also been reaching out to Spanish-speaking residents and visitors in California through MERITO, a multicultural program offered by Monterey Bay staff to involve the entire community in ocean conservation. Through the continued success of the program and its recent expansion to the Channel Islands region, large numbers of Hispanic community members and partners have been touched by programs like the Watershed Academy, adult education classes, and experiencing field work first-hand.

The program has worked with the National Geographic Society, National Marine Educators Association and other partners to develop the essential concepts of ocean literacy. A guide is available that enables teachers to weave in ocean content into their every day curriculum to meet National Science Education Standards. Over the last year, the sanctuary program worked with its numerous partners to lead the development of ocean-related, standards-based lesson plans to help fill the gaps in existing classroom materials.

EDUCATION AND OUTREACH

This year's Dive into Education Program held on Tybee Island, Georgia, offered 85 educators an opportunity for an intensive learning experience on a variety of topics including marine technology, coral reefs, and oceanography. These hands-on sessions being held at a different sanctuary site each year provide educators in the region new tools and knowledge necessary to bring marine science into their classrooms.

WEB

An exciting offering released this year is an online field guide that provides photos, streaming video and important biological information for more than 100 marine species from each sanctuary. The Encyclopedia of the Sanctuaries is part of a continuing NOAA effort to enhance public awareness, understanding and appreciation of the marine environment. Explore this compelling, online field guide on our Web site.

High Tech Learning Emphasized

Science and technology education has also been a big emphasis for the sanctuary program. Our national partnership with the Marine Advanced Technology and Education Center and Tufts University has advanced our Remotely Operated Vehicle program at numerous sanctuary sites around the country. This partnership introduces students to the world of ocean science and technology to help them develop the necessary skills to support ocean research and exploration.

Technology and integrated ocean observing systems has continued to be a focus for sanctuary education over the past year. Telepresence technology brings real-time, interactive underwater exploration to life. As telepresence technology continues to advance, opportunities for high tech educational programming will be made available in future years through various partners. An innovative OceansLive! Web site is under development to connect 300 million Americans with America's underwater treasures, as well as provide real-time ocean observing data that can be used in classrooms and beyond.

WEB

Connecting With The Public Through Film

Documentary film festivals are an effective way to educate people in an entertaining fashion. A few sanctuary sites are now working with local communities to host ocean film festivals. Gray's Reef staff co-hosted their second film festival in September. Drawing more than 2,000 people, the festival gives the site a way to reach a community who may not have an opportunity to access the sanctuary through either boating or diving. Gulf of Farallones staff also co-sponsored the second annual San Francisco Ocean Film Festival that showcased films of marine-related themes, including a film on vampire squids.

More than three million Americans will learn about sanctuaries for the first time in 2006 when Jean-Michel Cousteau debuts his new six-part high definition television Ocean Adventures series on PBS. Throughout 2005, Jean-Michel and his team have been visiting and filming in sanctuaries for a two-hour *America's Underwater Treasures* film.



Photo Left: Middle school students learn about marine ecosystems and its inhabitants through a touch tank aboard a sanctuary vessel. Photo: Claire Johnson/NOAA

Photo Right: Teachers and students participating in the LiMPETS network collect environmental observation data from sandy beach and rocky intertidal habitats. Photo: Claire Johnson/NOAA

MARITIME HERITAGE

Our nation's history is all around us but many important pieces are vanishing. NOAA's Maritime Heritage Program was started in 2002 to help preserve the many stories of America's history hidden under the sea. Sanctuary and NOAA staff are working with numerous partners to locate, document and preserve dozens of historically significant shipwrecks and artifacts from America's past. Highlights from the past year include continuing conservation efforts by The Mariner's Museum on artifacts from the USS *Monitor*, the U.S. Navy's famous Civil War ironclad. In Michigan, the opening of the Great Lakes Maritime Heritage Center has created a new window to the region's history, and provides archaeologists and educators with state of the art facilities to do their work. In addition, more detective work continues in the hunt for the Navy's first submarine, the Civil War era USS *Alligator*. Following are a few examples of the exciting work done to unlock more secrets that have slipped through history's cracks.

Exploring Thunder Bay's Shipwrecks

In August, Thunder Bay sanctuary staff mounted an expedition to document deepwater shipwrecks within the sanctuary. The two-week project focused primarily on two sites: an unidentified two-masted schooner located by Robert Ballard's Institute for Exploration in 2001 and the wooden passenger steamer *Pewabic*, which sank in 1865. Both wrecks rest in 160 feet of water.

Site staff have very little archaeological data on shipwrecks in greater than 100 feet of water. Field projects like the 2005 expedition better enables staff to manage shipwrecks that are becoming increasingly popular sites for "technical divers" who venture beyond the recreational depth limit of 130 feet. The dramatic visual products from the project are also being used for exhibits in NOAA's new Great Lakes Maritime Heritage Center where thousands of divers can view these remarkable historic sites. Funding for the project was provided by NOAA's Office of Ocean Exploration.

WEB

Expedition to the USS *Macon*

Dirigibles, or rigid airships, were an important development in the history of aviation, and held their own as transports of large volumes of cargo and as military aircraft. They were also fuel efficient. Unfortunately there are no known examples of these craft that can be studied on land. However, underwater in the Monterey Bay National Marine Sanctuary, lie the remains of the USS *Macon*, the last Navy built airship. The *Macon* crashed in 1935 off the Big Sur coast when a severe crosswind severed the ship's upper fins, sending shards of metal into her rear gas cells. It was first discovered in 1990.

At 785 feet in length, the *Macon* was considered the largest of its design. The airship was constructed with built-in aircraft hangers and trapeze launch and recovery systems to facilitate the *Curtiss Sparrowhawk*



MARITIME HERITAGE

aircraft intended to protect the craft in war and to extend the ship's scouting abilities. The *Macon* conducted many successful launchings of its aircraft including an infamous mission to clandestinely locate President Franklin D. Roosevelt at sea in the Pacific aboard the cruiser USS *Houston*.

To begin investigating this giant relic, sanctuary staff completed Phase I of a scientific expedition to the *Macon*. A side-scan sonar survey of the wreck site identified its remains and also identified a new, uncharted debris field. In Phase II, scheduled for September 2006, archaeologists will conduct a systematic visual survey of these sites and record high definition video and still images of the wreck's features. Information from these expeditions will be used as a management tool to document changes since its discovery and for educational projects.

WEB Oldest Shipwrecks in Hawai'i Found at Pearl and Hermes Atoll

Evidence suggests that two wrecks discovered last year in the Northwestern Hawaiian Islands are the lost British whaling ships *Pearl* and *Hermes* (for which the atoll has been named). These are the oldest shipwrecks yet discovered in the Hawaiian Islands. Both were sailing together from Honolulu to the newly discovered Japan Grounds in 1822, a route that, as the crew unfortunately found out, led them through treacherous and uncharted island waters. Little is known of the construction of the vessels themselves, and only a few tantalizing clues exist about the tragic events at the distant atoll. The artifacts are protected as historic resources within state waters, and are also a part of the U.S. Fish and Wildlife Service's Hawaiian Islands National Wildlife Refuge.

WEB Maritime Archaeology Center Opens

In February 2005, the National Marine Sanctuary Program opened its new Maritime Archaeology Center in Newport News, Va. The 4,400-square-foot facility is located adjacent to The Mariners' Museum, which is partnering with NOAA to preserve and display artifacts recovered from the wreck of the USS *Monitor*. The Maritime Archaeology Center will serve as a research facility for scholars and historians and will also feature a small public exhibition area that describes the mission and activities for the larger sanctuary system.

WEB Preserving America's Maritime Heritage in Coastal Communities

The program's maritime heritage efforts support President Bush's *Preserve America* Executive Order, which calls on federal agencies to step up efforts to inventory, preserve, protect and showcase federally-managed historic resources and foster heritage tourism. In 2005, the sanctuary program supported efforts by several coastal communities, including Alpena, Mich., Gloucester, Mass., Hatteras, N.C., and Galveston, Texas, to receive "Preserve America Community" designation and highlight their own maritime heritage.



Photo Left: Maritime archaeologists document a 19th century whaling shipwreck site at Pearl and Hermes Atoll, NWHI. Photo Credit: Robert Schwemmer, NOAA

Photo Right: Deployment of the Klien 3000 Side-Scan Sonar Fish. Photo Credit: Robert Schwemmer, NOAA

COMMUNITY INVOLVEMENT & PARTNERSHIPS

Each and every day we are reminded of the important role local communities and our partners play in the sanctuary system's success. Throughout the National Marine Sanctuary Program, the efforts of aquaria, local businesses, university researchers, government agencies, boaters, citizen activists, educators, volunteers and countless others make our national marine sanctuaries a jewel in the crown of conservation, education, science and management.

Volunteering and *partnership* are two words that describe how the program achieves just about every accomplishment in this report. Unfortunately, space is limited here so we are not able to list most who have assisted us in our endeavors. However, you can learn about some of the individuals and organizations by visiting our expanded accomplishments Web site. Thank you to all who have helped us in 2005. Below are several examples how citizens and our partners help us in our day-to-day activities.

Volunteers Lead The Way In Ocean Stewardship

Volunteers play a vital role in stewardship of our sanctuaries. They embody an idealistic spirit that energizes our staff. Often their wanderlust inspires others to make the sanctuaries their own. Across the sanctuary system, volunteers contribute more than 100,000 hours of their time each year. Here are a few of their stories.

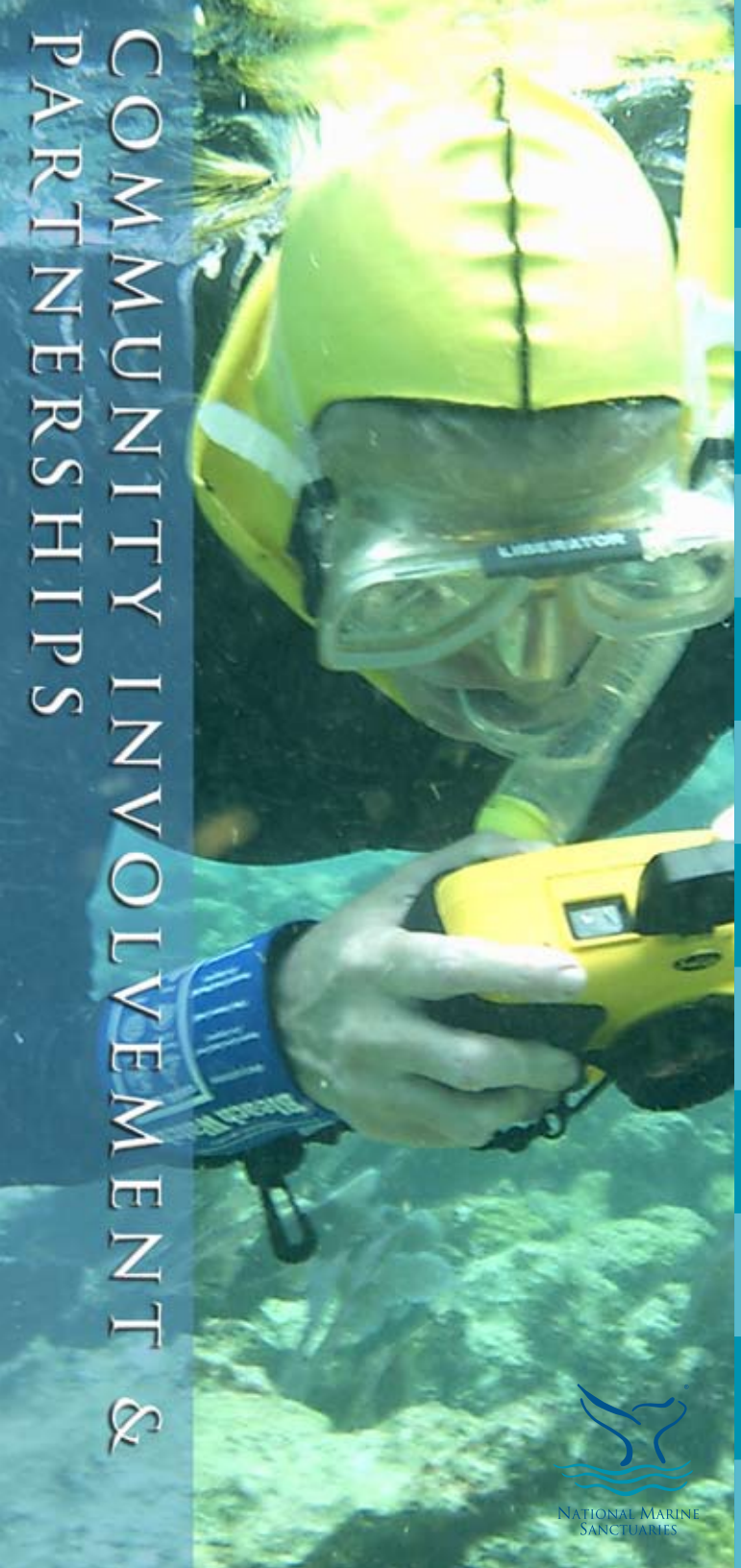
WEB In the Florida Keys, volunteer divers played a key role in the newly launched Bleach Watch, an innovative effort to provide early warning and quick response to mass coral bleaching. Partnering with Mote Marine Laboratory, sanctuary staff integrated scientific and public input, while the divers contributed to the effort by gauging reef susceptibility to bleaching.

WEB For the fourth year in a row, the Stellwagen Bank National Marine Sanctuary's Annual Celebration attracted the largest single-day fish count in the nation. One hundred scuba divers submitted 137 fish identification forms to the Reef Environmental Education Foundation. The divers spotted some 44 different species at dive sites around Cape Ann, an area just north of the sanctuary.

Members of the Channel Islands Naturalist Corps assisted Cascadia Research Collective in doing photo-identification of blue and humpback whales in the Santa Barbara Channel. As volunteers for both the Channel Islands National Marine Sanctuary and Channel Islands National Park, these naturalists took digital images of the underside of humpback flukes and the dorsal fin of blue whales while aboard a whale watch vessel. Last summer, these specially trained volunteers were able to shoot 886 images that added to the catalog of individual whales.

Three Sanctuary Advisory Councils Established

Establishing advisory councils is another way the sanctuary program reaches into the community to broaden its active constituent base. A sanctuary advisory council is a community-based advisory body consisting of representatives from various conservation, fishing and tourism organizations, local businesses, government



COMMUNITY INVOLVEMENT & PARTNERSHIPS

agencies, scientists, educators and the public-at-large. Council members provide advice to the sanctuary manager on a sanctuary's science, education, management or other activities that are important to the site and local communities. This year saw the formation of three new councils at Fagatele Bay, Flower Garden Banks and the *Monitor* sanctuaries. Now, all 14 sites in the sanctuary system have an established advisory council. These nearly 400 sanctuary ambassadors will ensure all sites have community input into the operation of their local sanctuary.

Fishermen Provide Expert Knowledge On Sanctuary Issues

Community involvement however, doesn't begin and end with volunteer efforts. Sanctuary-wide, partnerships with numerous constituent groups and organizations are key to the survival of each and every sanctuary. From the United States Navy to tiny Alpena, Mich., we see many examples of how partners help manage sanctuary resources.

The fishing community is an important constituent group for the sanctuary program. They spend a lot of time at sea and are an excellent source of first-hand knowledge of the marine environment. Sanctuary staff are working closely with fishermen at several sites to support science needs and education programs. These efforts range from working with regional fishery management councils to implementing ecosystem-based management measures to education programs that bring the exciting lives and history of commercial and recreational fishermen into local communities and the classroom.

For example, staff with our sanctuaries in California are working with the Pacific Fishery Management Council to prohibit the harvesting of krill, which is an important food source for many marine mammals and seabirds, as well as fish caught by commercial and recreational fishermen. Staff are also working with the fishery council to prohibit fishing in waters below 3,000 feet over Davidson Seamount, an area being considered for inclusion in the Monterey Bay sanctuary. In addition, sanctuary staff are coordinating with the State of California in their development of marine protected areas within state waters. Our site in Monterey Bay also supports fishermen to travel to local schools to educate students in the role fishing plays in Monterey Bay's cultural history.

WEB

Sanctuary Foundation Key Partner In Increasing Public Awareness

The National Marine Sanctuary Foundation is the non-profit partner that helps to connect the public and decision-makers to the importance of sanctuaries through its marine conservation education, conservation, legislative, public awareness and outreach initiatives. The foundation also leverages private contributions for the National Marine Sanctuary Program. A signature event of the foundation is the annual Capitol Hill Oceans Week, which is held in Washington, D.C. each June. The symposium brings together various ocean constituents to inform our nation's leaders about significant ocean and coastal issues. The foundation also supported major public education events as part of the anniversary celebrations at Channel Islands, Thunder Bay, *Monitor* and Florida Keys sanctuaries. To learn about the foundation's work and how you can help, please visit: <http://nmsfocean.org>.



Photo Left: A Bleach Watch volunteer photographs a bleached coral in the Florida Keys. Photo: Nick Tagliareni

Photo Right: The Honorable Sherwood L. Boehlert, Chair of the House of Representatives Science Committee, speaking about the future of research at NOAA. Photo: Juan R. Ticoche

NORTHWESTERN HAWAIIAN ISLANDS CORAL REEF ECOSYSTEM RESERVE

WEB

Sanctuary Designation Moving Forward – NOAA is in the process of designating the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve as our nation’s 14th national marine sanctuary. Sanctuary designation is a high priority for the Administration and protection of the region is highlighted in the Administration’s U.S. Ocean Action Plan. The living coral reef colonies are the foundation of an ecosystem that hosts more than 7,000 marine species, fish, sea turtles and birds, with many found no where else in the world.

As part of the designation process, NOAA is consulting with the State of Hawai’i, Western Pacific Fishery Management Council and U.S. Fish and Wildlife Service to develop management options that would be consistent with the proposed sanctuary’s goals and objectives. NOAA is in the final stages of developing draft regulations for the proposed sanctuary and a Draft Environmental Impact Statement (DEIS) and Draft Management Plan. Developing a DEIS and draft management plan are required by Congress when a federal agency is proposing any significant action that could impact the environment.

WEB

Educators Bring Experience Back To Hawai’i Classrooms – In August 2005, the reserve office mounted its first education expedition to increase further understanding of the archipelago and to develop educational materials about the area for Hawai’i classrooms. Several Hawai’i educators were chosen to participate. Cruise activities included fish and invertebrate identification, seabird banding, archaeological studies, studies of island and atoll geology, and maritime archaeology. Based on their experience, the educators are developing lesson plans that meet Hawai’i Department of Education standards. Placing teachers aboard a NOAA research vessel enhances their ability to educate Hawai’i students and other educators about this important part of Hawai’i’s natural and cultural legacy.

WEB

Research Answering Questions About Archipelago – Reserve scientists undertook their first full year of research aboard the new NOAA Ship *Hi’ialakai* in the waters surrounding the Northwestern Hawaiian Islands where little is known about the plants and animals that live there. Studies included mapping deep-water areas and conducting an annual assessment of the health and composition of shallow water marine ecosystems. The reserve also entered into a partnership with the Hawai’i Institute of Marine Biology, part of the University of Hawai’i, to develop research programs that address management questions on ecological connectivity, ecosystem condition and coral health. The research and monitoring of coral reef animals and plants will enable scientists and managers to better understand how populations change naturally over time and how similar organisms that live in different areas may be related to one another. All this information will help create a baseline of information that will be used to decide which areas need the highest level of protection and design effective management strategies for this special place.

Plans for 2006 – Reserve staff will continue implementing the next steps in the sanctuary designation process. The draft environmental impact statement and draft management plan for the proposed sanctuary will be released for public comment in June 2006 and public hearings will be held statewide. Public education and outreach programs will include a statewide tour of the Susan Middleton and David Littschwager “Archipelago” photographic exhibition and teacher workshops using the newly released Navigating Change curriculum. Scientists will embark on several science cruises.

Yellowfin goatfish school in great numbers at Midway Atoll.
Photo: © James Watt, www.oceanstock.com

<http://sanctuaries.noaa.gov/report05/>



Pacific Ocean

Hawai'i

Northwestern Hawaiian Islands
Coral Reef Ecosystem Reserve

HAWAIIAN ISLANDS HUMPBACK WHALE

NOAA Ship Serves As Classroom For Hawai'i Students – The NOAA ship, *Hi'ialakai* took on a new mission in 2005 by providing a platform for students to learn about their island state from an ocean view. In May, the ship set sail on a cruise in the main Hawaiian Islands dedicated to education. The goals of these education cruises are to inspire increased awareness and the possibilities of further studies or even careers in the marine sciences. Over a span of four days, 140 high school students and teachers from Maui, Moloka'i, Lana'i and Kona, on the island of Hawai'i participated in hands-on marine biology and oceanographic activities including water quality monitoring, plankton tows, bottom sampling, navigation and mapping.

WEB

Whale Rescued from Marine Debris – More than 50 pounds of rope and netting were removed from a humpback whale that was entangled in marine debris off of Maui. Responding to a call from concerned researchers, the sanctuary's rescue team worked with the U.S. Coast Guard to remove the potentially deadly debris that was wrapped around the animal. Using control lines and special tools designed for this purpose, the rescue team was able to carefully cut off the marine debris and watch the one-year old whale swim away.

Ancient Fishpond Rising From Sea – A major reconstruction effort taking place at the sanctuary's Maui site is the restoration of the ancient Hawaiian fishpond by the local group, *ʻAo`ao O Na Loko I`a O Maui*. Stone by stone, the fishpond association workers and volunteers are rebuilding the wall by hand. The fishpond association works closely with the sanctuary to provide education about the fishpond, the coastal environment and traditional Hawaiian culture.

Whale Month Kicked-off – This year marked the inauguration of Whale Month, a month-long calendar of special events including lectures, video presentations and lunchtime whale watches. Whale Month was successful at raising awareness of humpback whales and environmental concerns in Hawai'i's communities. Whale Month also included *Whales After School*, a new program designed for students to have the opportunity to participate in a hands-on learning program about humpback whales and the marine environment.

WEB

Plans for 2006 – In October 2005, construction on the sanctuary's learning center began in Kihei, Maui. The new facility will complement the existing landmark blue office building and mural-painted education center, and will provide programs on the marine environment, venue for community meetings and facilities for research and education. This new multipurpose building is planned to be completed at the end of 2006.

Ocean literacy programs will be expanded to include a strong science-based marine curriculum that will be developed and implemented for the Hawai'i Department of Education. Curriculum will be delivered as classroom materials, curriculum modules, resource materials and web based activities. Another important aspect of this initiative is to provide "in-the-field" opportunities. This involves developing monitoring projects, providing field equipment and establishing study areas. The curriculum will be developed with input from a teacher advisory group and Department of Education curriculum developers.

HAWAIIAN ISLANDS
HUMPBACK WHALE





Tutuila Island
American Samoa

Vaitogi ●

Pacific Ocean

Fagatele Bay

FAGATELE BAY

Antarctic Humpbacks Bask in Samoan Waters – Not much is known about the marine mammals that ply the waters of the Samoan archipelago. In an effort to expand our knowledge of these elusive animals, scientists from the sanctuary program and the Center for Coastal Studies conducted a survey of cetaceans in the near waters of Tutuila, the main island in American Samoa, for the past three years. This year, 57 whales were identified. Scientists compare fluke photos and DNA taken from these whales with the Southern Ocean database on cetaceans. Humpbacks visiting the islands below the equator spend the summer months feeding in the Antarctic Ocean, and visit the islands in the South Pacific to mate and calve during the austral winter. In addition to humpbacks, scientists encountered spinner and rough-toothed dolphins during the eight days they were on the water. Surveys will continue to capitalize on the growing database and we hope to expand the efforts to neighboring islands in the future.

Submarine Gets Up Close and Personal with Sanctuary – A group of local and visiting scientists got a fish-eye's view of the sanctuary aboard the University of Hawai'i's *Pisces* submarine to survey the deep waters in and around Fagatele Bay. Diving to depths of 1,500 feet, the first-ever submersible dives in American Samoa, the group observed a number of new species for the territory, and some possible new species of fish and invertebrates that they were unable to identify.

WEB

Students Learn Ocean Conservation Ethics – A focus of the site is engaging young students at various ages to instill ocean conservation values through their elementary and high school experiences. Three programs use a diversified approach to teach these values. Fourth grade classrooms experience ReefWeeks, a month-long program that focuses on hands-on activities, competitions, discussion and field trips to learn about coral reefs, their importance, and the threats facing them worldwide. For older students, the Save-A-Beach program engages upper elementary and high school students in monthly beach cleanups, classroom and field activities, and competitions. Sanctuary staff also host annual EnviroDiscoveries camps, which targets eight to 12-year-olds. Camp Tifitifi, as it is known by the students, features lessons and activities that teach the youngsters about the importance of our natural world and how they can become better stewards and caretakers of our environment. The camp is a collaborative effort among Le Tausagi, the American Samoan environmental educators group. More than 250 students participated in these programs.

Plans for 2006 – A series of events will commemorate 20 years of achievement in science, education and resource protection for the Fagatele Bay National Marine Sanctuary. NOAA and their co-management partner, the American Samoa Government will host events throughout the year including a forum exploring conservation and development issues in local waters, a community and film festival called "Ocean Fest," the dedication of a geodetic marker and a gala anniversary dinner.

CHANNEL ISLANDS

Sanctuary Turns Twenty-Five – The site hosted events throughout the year to educate the public about its ocean conservation, research and education accomplishments from the last 25 years and plans for the sanctuary's future. These accomplishments include a prohibition on oil and gas drilling in sanctuary waters, an increase in the blue whale population, discovery and documentation of shipwrecks, educating thousands of children, the acquisition of a state-of-the-art research vessel, more than 100,000 hours of service by community volunteers, and the establishment of the largest network of fully protected marine reserves on the west coast.

WEB **Scientists Study Effects of Marine Protected Areas Network** – Scientists completed remotely operated vehicle surveys in October 2005 that explored several Channel Islands marine protected areas and quantified fish abundance inside and outside the protected areas. In 2003, 12 areas were set aside to protect and enhance Channel Islands marine life. Scientists surveyed 10 sites and completed 120 kilometers of transects. Results from the cruise will be available on the Channel Islands sanctuary Web site in 2006.

WEB **White Abalone Restoration Project Continues** – Sanctuary staff are supporting the California Department of Fish and Game in its efforts to enhance white abalone populations in the Channel Islands. Working aboard the sanctuary program's research vessel *Shearwater*, scientists collected abalone to increase the number of breeding size adults in captivity. Eventually, scientists plan to introduce captive-bred animals to areas identified in the cruise as suitable habitat to restore this icon to the Channel Islands kelp forests.

Scientists Document Gas Amounts Escaping From Seep Fields – Scientists observed a significant increase in the oil and gas seepage from the Coal Oil Point seep field located in the northern Santa Barbara Channel. The seep field is one of the largest in the world and by far the dominant oil source in the channel. It is likely that the extensive oiling of birds observed this winter was a result of the increased seepage. The results of the study conducted by scientists at the University of California at Santa Barbara will help managers to monitor effects of the seepage or other natural or human-caused activities on wildlife over time.

New Sea Center Focuses on Marine Conservation – Visitors and local residents can now visit a world-class education and research facility at Stearns Wharf in Santa Barbara. The Ty Warner Sea Center, which is owned and managed by the Santa Barbara Museum of Natural History, focuses on marine conservation within the Channel Islands region. While the facility welcomes all ages, its exhibits and programs are primarily focused on elementary school students. The sanctuary funded a major exhibit and interactive kiosk in the Sea Center, which highlights NOAA weather and sanctuary information. The center received 70,000 visitors in its first eight months.

Plans for 2006 – NOAA will release the Channel Islands Draft Management Plan, which will serve as the future blueprint for resource protection, science and education activities. The public is encouraged to provide feedback to NOAA once the plan is released. Scientists will continue to study the effects of the Channel Islands marine protected areas network on sanctuary marine life.



CHANNEL ISLANDS





MONTEREY BAY

Water Quality Program Wins Award – The Agriculture Water Quality Program was awarded the State of California's *Governor's Environmental and Economic Leadership Award* in the category of Ecosystem and Watershed Stewardship. This award recognized the efforts of the program's cooperative work with numerous agencies and individuals to prevent 450 thousand tons of sediment runoff to the sanctuary annually.

WEB

Kayak Outreach Program Reaches Thousands – The sanctuary's Team OCEAN Kayaker Outreach Program (Team OCEAN) completed another successful summer on the water. Volunteers logged 1,716 hours on the water and reached 5,957 kayakers. Team OCEAN provides face-to-face interpretation of sanctuary natural history and guidelines on how to enjoy marine wildlife without disturbing it. In the past six years, more than 23,000 people have encountered Team OCEAN volunteers and staff on the water. In these past six years, 65 volunteers have dedicated 2,948 hours to training and educating the public.

Emergency Response Key To Protecting Marine Life – A flurry of groundings and sinkings occurred along the central California coast, ranging from parted mooring lines to catastrophic events. More than a dozen incidents required extensive sanctuary staff oversight. Early coordinated response and salvage prevented potentially serious fuel leakage in the majority of incidents. During the past six months, increased reports of oiled cormorants in northern Monterey Bay resulted in the discovery that a large historic cement barge was leaking oil. The 200-foot barge (formerly the *Palo Alto*) is positioned approximately 400 yards offshore and in a state of accelerated deterioration. California Office of Spill Prevention and Response is coordinating a response to this threat, which may include potential demolition and removing the remaining oil in the barge.

WEB

Coastal Erosion in Southern Monterey Bay – A graduate student working for the site completed a technical report, *The Impacts of Coastal Protection Structures in California's Monterey National Marine Sanctuary*, in response to information needs identified in the draft Coastal Armoring Action Plan. It provides background information on the geomorphic history of the area, summarizes the results of regional erosion studies, documents coastal developments potentially threatened by erosion and lays the groundwork for an investigation of alternatives to coastal armoring. The report also outlined the potential impacts of coastal protection structures on sanctuary marine life and habitats. A link to the report is available on the accomplishment report Web page.

WEB

Volunteers Turn Out to Monitor Water Quality – More than 150 volunteers monitored the water quality of 167 sites on streams and creeks flowing into the sanctuary during the 6th Annual Snapshot Day event. The data collected provide a baseline for sanctuary efforts and identifies potential problem areas to study over the next year. Links to Snapshot Day reports are available on the accomplishment report Web page.

Plans for 2006 – Sanctuary staff completed planning and has initiated development of a joint interpretive facility located in San Simeon at Hearst State Beach with the California Department of Parks and Recreation. The *Coastal Discovery Center* will open in summer 2006 and expects to educate more than 50,000 visitors annually. The building also serves as the sanctuary's San Simeon office, which is already open.

Young male northern elephant seal.
Photo: Robert V. Schwemmer/NOAA

GULF OF THE FARALLONES

WEB

Public Warned Not to “Rescue” Seal Pups – Early this spring, sanctuary staff conducted an outreach campaign advising the public not to interfere with presumed-orphaned harbor seal pups on Bay Area beaches. Seal mothers routinely leave pups on the beach while foraging, and a well-intentioned rescue could prevent a pup from being reunited with its mother, sometimes with fatal results.

Sanctuary Scientists Investigate Seabird Deaths – This spring, Beach Watch monitors discovered abnormally high numbers of common murre carcasses. Seabird die-offs are usually seen in late summer rather than in spring. Birds were moderately to severely emaciated, indicating a lack of food. At several major seabird colonies, many birds established then abandoned their nests. Analysis showed that unusual springtime conditions, including warmer sea temperatures and sustained strong winds, suppressed the customary upwelling that stimulates productivity throughout the ocean food web. It resulted in a population shift of krill, an important food, away from seabird breeding habitats. Most birds died or failed to breed due to starvation.

Sharkmobile Bites Hundreds with Shark Natural History – Sharks were the focus for hundreds of students from San Francisco Bay Area schools with the Sharkmobile, an education and outreach program of the Farallones marine sanctuary. Most students were surprised to learn that sharks play a vital role in the health of the marine ecosystem, eat a variety of food, and are not really “man-eaters” as often portrayed in the media. The Sharkmobile is a classroom program designed for fourth through sixth grade students on the biology, natural history and conservation of sharks.

California Ocean Forum A Hit With Bay Area Residents – Nearly 500 people attended the Forum on California’s Ocean Future in San Francisco. Keynote speaker Leon Panetta and panelists participated in a far-ranging discussion of current efforts to manage and protect California ocean resources, and examined what is needed to ensure their long-term health. The event forged a partnership between the sanctuary and the State of California to become leaders in California ocean protection.

Plans for 2006 – The sanctuary’s 25th anniversary will be celebrated with special events and programs, including the release of its draft management plan for public comment. The site will also unveil its facilities master plan, launch a California Ocean Stewardship Campaign to bring ocean discovery to all California schools, and install a major exhibit at San Francisco’s world-famous Aquarium of the Bay. Staff will also implement a seabird colony protection program, a first-of-its-kind comprehensive effort to protect seabirds at major rookeries along the northern and central California coast. It will also integrate its data into the sanctuary’s integrated monitoring network to allow users to access actual data and build downloadable maps of monitoring results.



GULF OF THE FARALLONES



CORDELL BANK



Exploring Albatross Movements Through West Coast Sanctuaries – Cordell Bank scientists supported a collaboration of several university and non-profit researchers who worked on a study on the North Pacific black-footed albatross. The study focused on the birds' migratory patterns during the post-breeding season and revealed the importance of west coast national marine sanctuaries as foraging habitat during this phase of the albatross' life history. Tracking albatross during the post-breeding season provides critical management information on the foraging grounds and migration corridors of this endangered species across the North Pacific Ocean. New curricular activities for teachers titled *Fishing for a Living* were developed as a part of this study. More than 500 educators in the San Francisco Bay area and the National Marine Educators Association learned about the sanctuary through this program. Getting teachers and students involved in research and conservation is key to improving awareness of ocean issues and the need to protect these fragile ecosystems.



Tracking Changes in Marine Life Over Time – Sanctuary staff completed the second year of monthly ocean monitoring of Cordell Bank's offshore waters. Surveys characterize ocean health by measuring oceanographic conditions and measuring the distribution and relative abundance of phytoplankton, zooplankton, seabirds and marine mammals. The site is starting to develop a better understanding of the relationship between oceanographic conditions and biological diversity. Upwelling started nearly three months late in 2005 resulting in a reproductive failure for local seabirds and some species of rockfish. This information will help the sanctuary understand fluctuations in natural populations and how to best manage this complex ecosystem. Results from monitoring have been presented at several scientific meetings and Sanctuary Currents, a symposium hosted by Monterey Bay sanctuary staff.

Invertebrates Documented on Cordell Bank – A Washington State University masters candidate documented the importance of large invertebrate sponges like seastars, anemones, and hydrocorals that provide habitat for fish on Cordell Bank. Her theses work involved analyzing video tapes recorded during the Delta submersible work on Cordell Bank. The study demonstrates the ecological importance of benthic invertebrate reef communities as habitat for fishes on Cordell Bank, and concluded that removal or alteration of these habitats would negatively impact the long-term health of the reef fish community. These communities include species of groundfish that are currently listed as overfished, and historically supported important commercial and recreational fisheries.

Plans for 2006 – The site will be generating the first detailed bathymetric map of Cordell Bank, installing new interpretive wayside signs at significant overlooks of all California sanctuaries, releasing a 12-minute video highlighting the hidden gems of Cordell Bank and developing a long-term monitoring plan for Cordell Bank.

OLYMPIC COAST

Makah Tribe Key Partner in Sanctuary Management – The site and Makah Tribe completed the fourth year of a cooperative interpretive program centered on the Makah Reservation. The site funds several staff positions that are filled by Makah tribal members. This year, more than 15,000 visitors were hosted by the Makah interpreters and learned about coastal issues, Makah culture, and natural history within the area.

Sanctuary staff supported the creation of the Makah Office of Marine Safety, the first of its type in the nation. The office provides technical assistance in developing planning and prevention strategies in concert with other federal and state agencies. The office will represent the tribe's interest in guarding treaty-protected resources from oil spills and give the tribe a strong voice in policy and technical forums and in the creation of spill prevention and response plans.

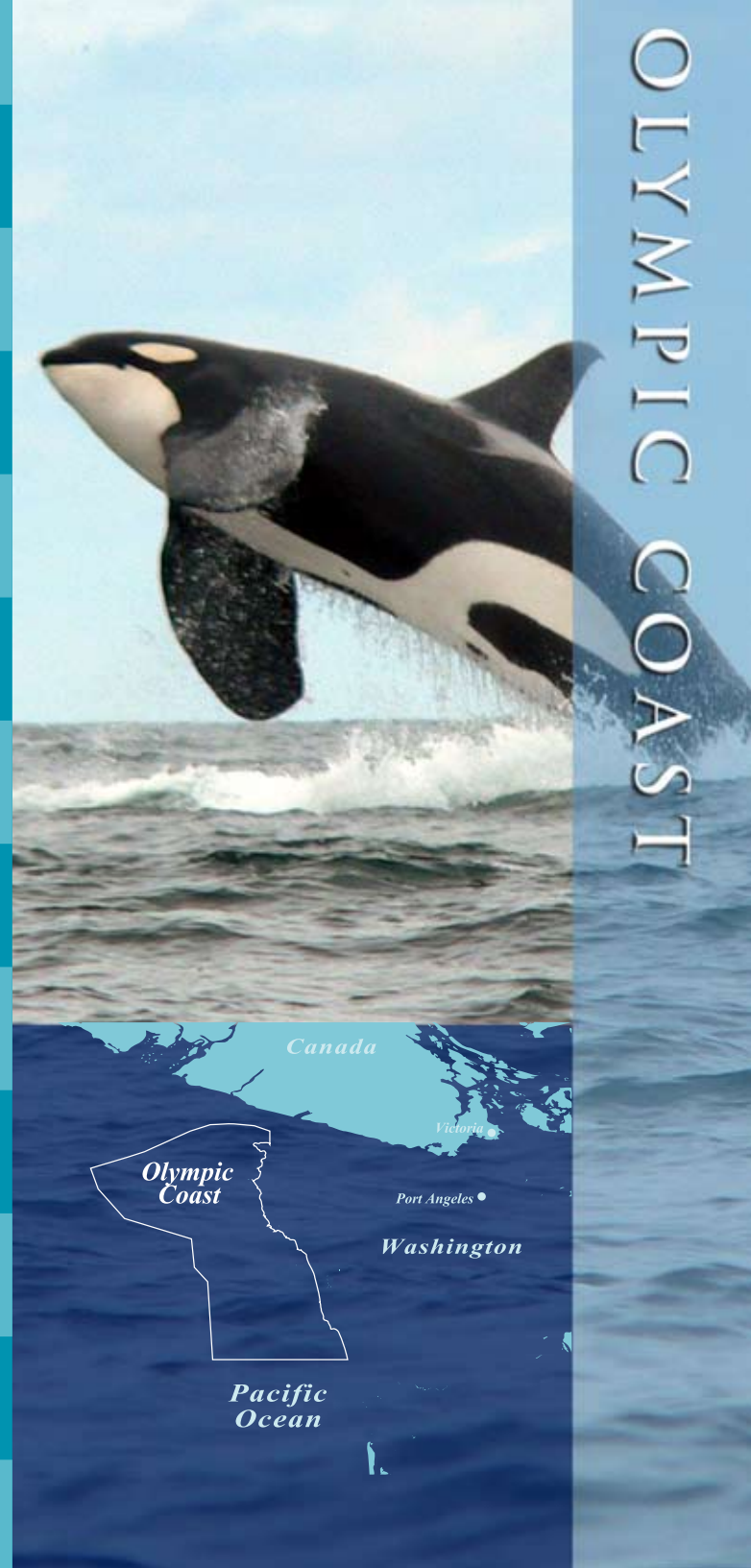
WEB

Removing Derelict Fishing Gear – The sanctuary conducted a pilot project to remove crab pots and derelict fishing nets that trap and kill marine wildlife. The project, based on removal methods developed by the Northwest Straits Commission for protected waters, evaluated those techniques for use in open ocean conditions. Initial cleanup efforts were to remove abandoned nets and crab pots in Neah Bay.

Archaeologists Study 3000-Year-Old Site – Working with the Makah Museum at Neah Bay, program staff completed a successful archaeology field school and excavation of an ancient shoreline site. The site is thought to be a 3,000 year-old village located on a forested terrace above the Waatch River, approximately two miles from the modern coastline. The site may have been occupied at a time when sea level was 10-15 meters higher than present. Excavated shell and fishbone from the site indicate a nearby estuary or sheltered passage, which is a completely different habitat from today's rocky coast. The effort supports sanctuary goals to educate the public on maritime heritage.

Rare Deep Sea Coral Confirmed – Experts confirmed the identification of the deep-sea coral specimen collected during a June 2004 research cruise in the sanctuary. The hard coral is rare in the North Pacific, and is more commonly known from the North Atlantic. Results from the survey were used by the Pacific Fishery Management Council to identify the area for special protection through designation as a Habitat Area of Particular Concern through the provisions of the Sustainable Fishery Act.

Plans for 2006 – The site plans to continue many of the exciting projects underway in 2005. Scientists will embark on additional research cruises offshore to improve our knowledge on the extent and conditions of deep sea corals. On the coast, archaeologists will complete the full analysis of samples taken from the ancient village site and provide a report on their results. Removal of derelict fishing gear will continue with additional surveys and removal operations.





FLOWER GARDEN BANKS

WEB

Tennessee Aquarium Brings Sanctuary to Heartland – A view of the Flower Garden Banks National Marine Sanctuary is recreated in a 600,000-gallon exhibit in a new wing of the Tennessee Aquarium that opened in April 2005. The replica represents a realistic look at the sanctuary's coral reef cap and its inhabitants like sand tiger sharks and numerous colorful reef fish. Video and multimedia stations are also available for people to learn more about the sanctuary. The aquarium receives an average of one million visitors each year and reflects the sanctuary program's efforts to partner with aquaria around the country to enhance public awareness of national marine sanctuaries.

Coral Cores May Hold Key to Protecting Reefs – Scientists are using cores obtained from large living coral heads to determine the age of the coral reef and to conduct research on historical weather patterns over the last several hundred years. The longest of the cores, collected could potentially yield an exciting 400-500 years of data. As coral colonies grow, new layers of skeleton are deposited. By analyzing differences in the characteristics of each layer and correlating that with known environmental conditions in the region at those times, scientists can evaluate cores that go back farther than recorded weather data, allowing them to “read” weather history. Understanding how climate change has affected the Gulf of Mexico over a period of decades or centuries may help us recognize and anticipate future changes in climate so that we can adaptively manage our marine resources.

New Species Discovered in Sanctuary – Scientists were pleased to formally announce that they have identified six algae species that are new to science and 25 species of crustaceans previously unknown in the sanctuary. The recent discoveries are all described in the summer issue of *Gulf of Mexico Science*, an issue dedicated to recent scientific discoveries and research in and around the sanctuary. There is also a review of recent high-resolution bathymetry data of a number of reefs and banks in the vicinity of the sanctuary. This new information is important in planning future management options and identifying locations for additional studies.

WEB

Exploration Yields Habitat Characterization Maps – Managers must understand how sanctuary habitats fit into the larger mosaic of the Gulf of Mexico to successfully manage impacts to the sanctuary. To begin developing this understanding, mapping and exploration efforts were extended to a number of other reefs and banks in the vicinity of the sanctuary. These explorations have revealed that the Flower Garden Banks may be connected to other regional banks through low relief ridges that form “habitat highways,” providing protection and foraging grounds for animals traveling between the various banks.

Plans for 2006 – The site will begin revising its management plan. This effort will involve working with key stakeholders and the public to reexamine the blueprint to how the sanctuary's science, education and resource protection programs are held. Many public scoping meetings and information workshops will be held in 2006 and beyond. These will offer the public an opportunity to provide input on current and emerging issues as well as their views on how the sanctuary can most effectively meet its mandates. Information about the review process and how to get involved will be available on the Web site.

FLORIDA KEYS

WEB

Protecting Coral Reefs – NOAA scientists have long led the world in developing techniques for restoring coral reefs damaged by vessel groundings. Now, a comprehensive effort to monitor the recovery of damaged reefs documented the structural stability and replenishment of marine life of these projects. Structures are made of concrete and used to repair damaged reefs. The structures withstood winter storms and the effects of four hurricanes in 2005. Most encouraging, juvenile hard and gorgonian corals began settling on restored sites. If they survive, coral populations on restored reefs could begin to match those of natural reefs over time. Surveys of fish, lobster and other invertebrates demonstrate that restoration projects provide ample habitat for an array of species to thrive. Funds from legal settlements against boaters who have run aground pay for the monitoring program.

WEB

Detective Work Continues on Mystery Wreck – NOAA and State of Florida staff investigated an unknown wooden shipwreck disguised by coral in the shallow waters near Marathon. Archaeologists suspect that the wreck is from the 1600s. Few shipwrecks have been documented from this period. A novel technique, coral sclerochronology, helped date the wreck by determining the age of coral growing atop its ballast stones.

Investigation Leads to Discovery of Illegal Lobster Habitats – In an effort to stop the illegal take of spiny lobsters in the Florida Keys, state and federal law enforcement officials mounted a five-week investigation to enforce a state law prohibiting the taking of lobsters from illegally placed artificial structures. The illegal structures range from car hoods to 55-gallon drums, and have the potential to damage seagrass and corals during placement or when they are tossed by storms. They also expose spiny lobster populations to increased fishing pressure. The investigation resulted in several citations and warnings, destruction of 33 illegally placed sites and documentation of coordinates for another 135 possible sites. Though long practiced on a small scale, the recent proliferation of illegal, artificial structures is suspected by sanctuary managers to be altering the normal spawning and migration patterns of the spiny lobster. Investigating officers submitted several recommendations for improving enforcement methods.

Plans for 2006 – NOAA published the Florida Keys sanctuary draft revised management plan with the final plan expected in early 2006. In addition, the Dr. Nancy Foster Environmental Complex will open and include offices, vessel facilities and the Florida Keys Eco-Discovery Center. A new 53-foot high-speed, Tecnicraft catamaran will join the sanctuary fleet, which will enhance law enforcement patrols in the sanctuary's remote Tortugas region. The boat will be dedicated as the *Peter Gladding* in honor of a longtime Key West commercial fisherman who helped establish the reserve. The site is also working with partners to unveil a maritime heritage exhibit featuring an 18th century cannon at the Key Largo Chamber of Commerce visitor center. Sanctuary volunteer Denis Trelewicz advocated for the cannon's recovery and paid for its conservation by the Mel Fisher Maritime Heritage Museum.





GRAY'S REEF

WEB

Right Whale Swims Free – In December 2004, sanctuary staff responded to a call for support by NOAA Fisheries scientists to disentangle an endangered juvenile right whale. The whale had first been sighted entangled and trailing a marker buoy three weeks earlier. The sanctuary provided two vessels to serve as the platforms from which the disentanglement efforts took place. The animal was successfully freed about two weeks later. North Atlantic right whales are the most endangered great whale in the world, and a major reason for injury or death is entanglement in abandoned fishing gear or other marine debris. These whales migrate 2,000 miles each fall from their feeding grounds off the coasts of the northeastern U.S. and Canada to birth their calves in the warm shallow waters off the southeast U.S. coast. Due to their tendency to swim at the surface in coastal waters, right whales are at a higher risk due to entanglement or vessel strikes. Sanctuary staff works with NOAA and other partners along the entire east coast to respond to whale emergencies and to educate fishermen, boaters and the maritime shipping industry on how to avoid harming this magnificent animal.

Sanctuary Begins Getting Routine Health Check-Ups – A monitoring program was established at Gray's Reef that will provide some of the first long-term water quality observations available in sanctuary waters. Every 4-to-6 weeks since February 2005, water samples at various depths are taken in the sanctuary to measure a variety of ocean health indicators. Initial analyses of nutrients, dissolved oxygen and chlorophyll-a concentrations suggest the sanctuary waters are not being impacted by human activities unlike many near shore areas along the Georgia coast. This is good news for the fish, turtles and other marine life that call Gray's Reef home. Scientists will closely monitor water quality for any changes so we can respond quickly to any threats to the sanctuary.

Distance Learning: Bringing Gray's Reef to the Midwest – A teacher in central Nebraska can now bring her students to the ocean as a result of distance learning technology being used by sanctuary educators. Through the magic of specialized television hook-ups, Gray's Reef staff can talk to students anywhere satellite broadcasts can be received. The site held 14 "distance learning" broadcasts in 2005. The sanctuary program is planning to use this technology at other sanctuaries in our efforts to enhance public awareness and appreciation of the marine environment for all Americans.

Plans for 2006 – The site will hold its third Ocean Film Festival in September 2006. This festival brings the message of ocean stewardship to community members who may not have the opportunity to explore the sanctuary first hand. The sanctuary will continue to deploy its autonomous underwater listening system to capture the underwater sounds of the sanctuary. Scientists will use the data to study different inhabitants of the reef in the same way songs of birds are used to track their abundance and movement. The sounds captured by the listening system will eventually be made available to the public.

MONITOR

Sanctuary Celebrates 30 Years – As the first national marine sanctuary, the *Monitor* paved the way for other sanctuary designations and promoted public understanding and appreciation of our nation's maritime heritage. With the recovery of significant artifacts from the wreck site between 1998 and 2002, the *Monitor* National Marine Sanctuary moved into a new chapter of its story – one that will ultimately reach millions of Americans through the preservation and exhibition of its artifacts. As part of celebrating 30 years of achievement, the National Marine Sanctuary Foundation hosted a special gala honoring two of the sanctuary's largest supporters, Senator John Warner and the late Congressman Herb Bateman.

WEB

Conservation Efforts Continue on Artifacts – The *Monitor's* cannons and carriages have received a lot of attention since they were removed from the gun turret in 2004. Both of the cannon bores have now been cleared of silt, sediment, coal, and marine growth that gave us the answer to one of the most often asked questions about the *Monitor*; did one of her crew put a cat inside one of the cannon barrels as the gunboat was sinking. No one will ever know if a cat was on board but both barrels were empty. Construction on the conservation center is also progressing nicely. The building is expected to be completed in spring 2006.

Learning the Role of the *Monitor* in U.S. History – Sanctuary staff continued their support of regional outreach and education activities in 2005. Staff reached approximately 20,000 people through community events and educational programs including Norfolk Harborfest, Delaware Coast Day, Hampton Bay Days, The Northeast Coastal Zone Management Workshop, Urbanna Oyster Festival, Battle of Hampton Roads Weekend, Nautical Research Guild Symposium and The North Carolina Center for the Advancement of Teaching Seminar. These events help to enhance public awareness of this important part of American history.

Plans for 2006 – Sanctuary staff will continue to work closely with The Mariners' Museum to complete the final design and fabrication of the new USS *Monitor* Center scheduled to open in March 2007. *Monitor* staff will continue to oversee the important task of conserving the thousands of priceless artifacts recovered from the wreck site for display inside this exciting new facility. Also in 2006, the site will formally convene its new sanctuary advisory council for the first time to help staff reach out to its various user and interest groups. The site will continue to participate in dozens of public events, school programs and provide education support to a number of museums, aquaria, and science centers in the mid-Atlantic region.





GERRY E. STUDDS STELLWAGEN BANK

WEB

Tagging Project Offers New Insights on Right Whales – In August, scientists from the sanctuary and Woods Hole Oceanographic Institution tagged an adult female right whale. This was the first successful tagging of a right whale in the sanctuary. The tag was attached with suction cups and remained on the whale for 70 minutes, allowing the scientists to collect information for several feeding dives. Typically, a dive involved a rapid descent to 60-90 feet, six to eight minutes at depth, and then rapid ascent back to the surface. The studies showed that these whales are spending most of their time in the danger zone where they may be struck by ships. By better understanding whale behavior, more effective conservation strategies may be developed. Northern right whales are one of the most endangered whale species. Less than 300 are thought to remain in the North Atlantic Ocean.

WEB

Portland Added to National Register of Historic Places – The coastal steamship *Portland*, often referred to as New England's *Titanic*, was listed on the National Register of Historic Places. The registry is the nation's official list of cultural resources worthy of preservation. Sunk in 1898 in a fierce northeaster, the wreck qualified for listing because the sinking was a significant event in New England's history, and the steamship's remains are one of the best preserved of any New England "night boat" (passenger vessels with overnight schedules) found to date. Its archaeological remains will also yield important historical information about the lives of New Englanders. The Science Channel aired a one-hour special on the *Portland* and archaeologists are continuing their research to unlock the shipwreck's mysteries.

Exhibit at New England Aquarium Opens – A significant Stellwagen Bank National Marine Sanctuary component of a Gulf of Maine exhibit is on display at The New England Aquarium's cold water gallery. In two large tanks, sanctuary species attract the attention of curious aquarium-goers. The large, modern bow-fronted tank offers a glimpse of a boulder reef filled with shy Acadian redbfish, graceful northern red anemones, impressive lobsters, and colorful sea stars. A second, more traditional tank shows the top of a sandy bank with cod, spiny dogfish, haddock and other groundfish species. The site helped fund the exhibit, in part, with the National Marine Sanctuary Foundation.

Plans for 2006 – The site will release its draft management plan. Twelve action plans, developed by working groups of the Sanctuary Advisory Council, form the core of this new plan. Also this year, staff expect delivery of a new 48-foot catamaran research vessel. Sanctuary maritime archaeologists will nominate the Frank A. Palmer and *Louise B. Crary* shipwreck site to the National Register of Historic Places. These two coal schooners collided and sank while hurrying into Boston during a December 1902 energy crisis. The public can expect a newly redesigned Web site, with special sections highlighting research projects, educational opportunities and management activities.

THUNDER BAY

WEB

NOAA Opens New Maritime Heritage Center – NOAA opened the Great Lakes Maritime Heritage Center in Alpena, Mich. The center will be a popular destination for visitors and residents, a major resource for educators and researchers throughout the region, and serve as the new sanctuary headquarters. The 20,000-square-foot facility features a 90-seat theater, 9,000-square-foot exhibit area, distance learning equipment, artifact conservation lab, viewable artifact storage, education and research facilities and dockage for research vessels and visiting tall ships. The center is also on track to become a certified sustainable building.

Artifacts Moved to Heritage Center – In 2005, the process of moving the State of Michigan's collection of 800 shipwreck artifacts to the Great Lakes Maritime Heritage Center began in earnest. Additionally, private owners donated over two dozen recovered shipwreck artifacts and family heirlooms back to the sanctuary now that they are assured the items will remain in the community. Artifacts will be used in exhibits at the Great Lakes Maritime Heritage Center, displayed in visible storage areas, or loaned to other museums throughout the region.

The sanctuary program and the Alpena County Library received a \$260,000 grant from the Michigan Department of History, Arts, and Libraries to digitize a large archival collection donated by Patrick Labadie and June Perry in 2003. Among other media, the collection boasts an impressive 60,000 ship photographs. Eventually, the collection will be made available to the public via the Internet.

WEB

Students, Teachers Train on Tall Ships – The site sponsored teacher training aboard the tall ship *SV Denis Sullivan* and assisted teachers with designing and assembling remotely operated vehicles during an annual workshop. Additionally, over 500 students participated in educational sails. Real-time, interactive broadcasts from the deck of the Sullivan reached an additional 600 students in a single day. Public sails on various Michigan-based tall ships and the sanctuary's Fifth Annual Thunder Bay Maritime Festival introduced several thousand northeastern Michigan residents to the shipwrecks and maritime history of Thunder Bay.

Plans for 2006 – The installation of permanent mooring buoys near popular recreational dive sites greatly reduces the likelihood of anchoring damage to submerged maritime heritage resources and natural features. Permanent mooring buoys also improve diver safety. The site received 35 additional permits to install shipwreck mooring buoys in 2006. Staff continue to develop programming with the *U.S. Naval Sea Cadet Corps*, a national program aimed at helping American youth realize personal achievement through maritime training. The site and Sea Cadet program will undertake a pilot initiative to look at the potential for an annual Alpena-based summer program.



THUNDER BAY

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.

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