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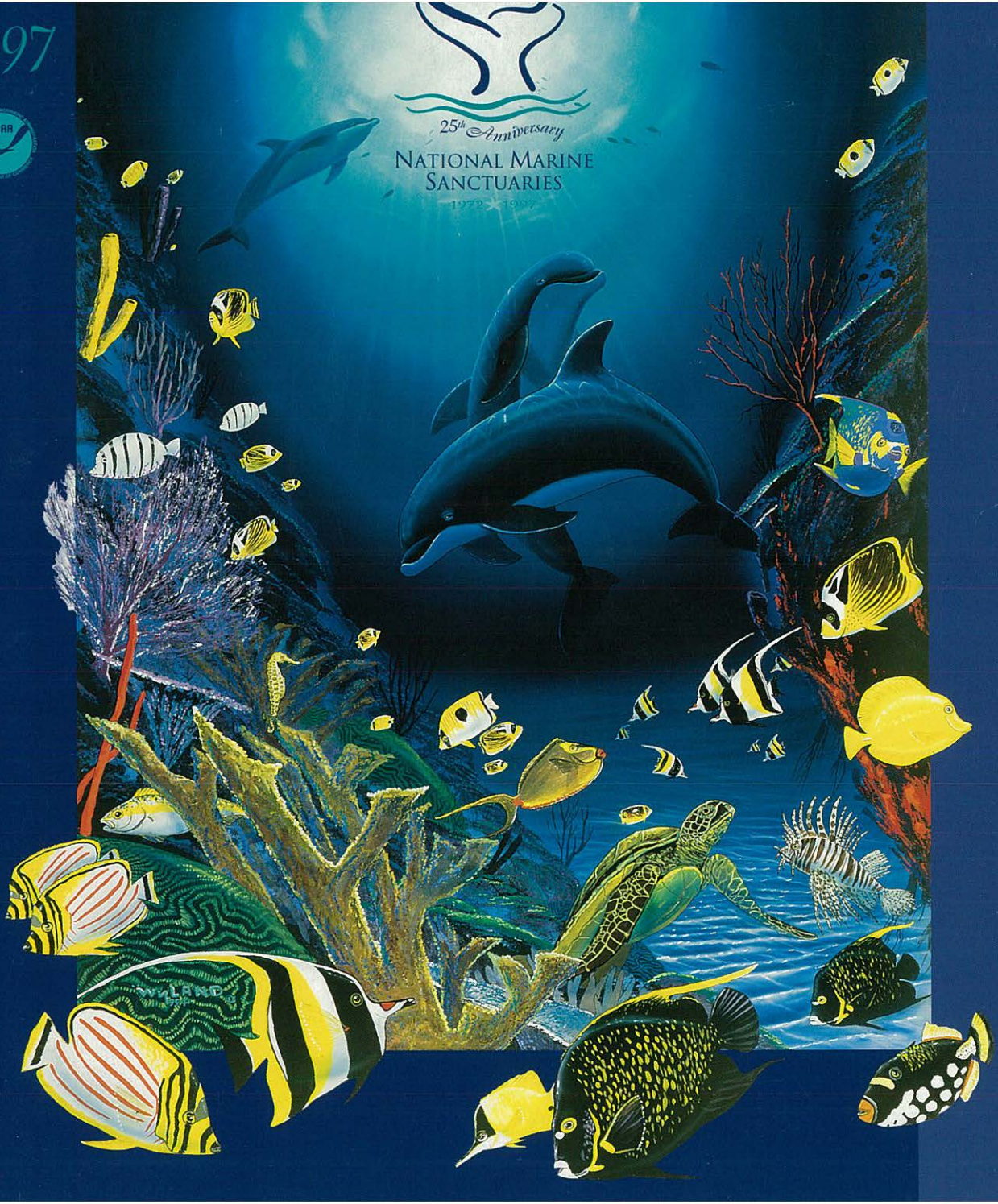
NOAA



Accomplishments Report

DUPLICATE
WITHDRAWN

25th Anniversary

NATIONAL MARINE SANCTUARIES

1972 ★ 1997

Illustrations courtesy of Wyland

WILLAND

Dear Friend of the Sanctuaries,

As the daughter of a commercial diver, I spent many of my early years living on the sea. I guess this explains why my personal and professional life draws me toward things marine.

In the fall of 1996, I became the director of the National Marine Sanctuary Program and the National Estuarine Research Reserve System. I am fortunate to arrive at this opportunity as the sanctuaries and reserves celebrate their 25th anniversary. Such a milestone lets us reflect on the accomplishments and the lessons learned, as presented in this report.

The anniversary also provides the needed inspiration and confidence to find new and better ways to fulfill our mission of protecting and restoring the marine and coastal environment.

As we prepare for our next 25 years, and search for new and better ideas to enrich the practice of marine and coastal resource protection, we are grounded in four core values—

- leadership—not just talking about resource protection, but getting it done and motivating others to help
- innovation—looking for new concepts and theories to find better ways to get the job done
- diversity—both in the skills of our staff and in the resources they work to protect
- humility—always listening to others, especially those who live near or work on the water.

These core values illuminate the common thread that binds us in protecting and preserving our oceans, no matter how divergent our views.

On behalf of every one at the 12 marine sanctuaries and 21 estuarine research reserves, the proposed sites, our national office, and the thousands of volunteers, friends, and supporters, I invite you to celebrate our 25th anniversary with us. I urge you to join with us as we embark on another 25 years of healthy and vibrant coasts and oceans.

Sincerely,

Stephanie Thornton

Stephanie Thornton

25th Anniversary

NATIONAL MARINE SANCTUARIES

1972 ★ 1997

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January 28, 1969

Eyewitnesses to that morning's California oil rig explosion described the site as "massive and inflamed...a reddish brown bubble of oil and natural gas" erupting into the blue, blue waters of the Santa Barbara Channel. For almost 11 days thousands of gallons of oil gushed, devastating nearby marine life.

Cormorants and grebes dived for fish beneath the black waves, only to drown as their oil-soaked feathers prevented flight. Elephant seals, California sea lions and sea otters were awash in black muck.

In the days after the oil spill, hundreds of people struggled to clean the befouled marine animals or scatter straw and talc on oil-blackened beaches. Newspaper accounts at the time could not even approximate the number of marine animals killed, but the number of birds treated at rescue centers reached 1,575.

By the end of the Santa Barbara marine disaster some 3.3 million gallons of oil had swept through the channel waters leaving an 800-square mile oil slick on the Pacific Ocean.

October 28, 1996

Once again, an oil spill threatens the California coastline, this time off San Francisco. Strong winds and tidal currents pull 8,000 gallons of a toxic blend of heavy, tar-like fuel oil and a lighter oil into San Francisco Bay. Waterfronts closest to the spill are heavily oiled; tar balls float farther down the shoreline.

This time the waters abutting the oil spill are protected ones—the Gulf of the Farallones, Cordell Bank, and Monterey Bay National Marine Sanctuaries.

This time a coordinated effort is launched and detailed resource characterizations help direct the oil spill response.

Before the sun rises over Golden Gate Bridge, sanctuary staff and volunteers are on scene to provide critical information about oiled wildlife and marine mammals. Though the size of the spill never reaches the volume of the Santa Barbara spill, the oil is just as lethal to marine animals. Initial reports list 900 oiled birds and at least 122 birds dead.

It took a devastating oil spill to propel protection of our marine resources to the top of the nation's environmental agenda. In the weeks after the 1969 Santa Barbara oil spill, legislators in Washington were flooded with demands to protect our oceans and coasts.

Congress responded with a series of new environmental laws including the National Marine Sanctuaries Act. The ability of sanctuary staff and volunteers to respond to the San Francisco spill of 1996 proves that Americans were right to demand better protection of the oceans.

The National Marine Sanctuary Program brought a new approach to natural resource management: balance recreational and commercial uses of our oceans with long-term protection of their natural and cultural bounty. The result: healthy coasts and oceans for this and future generations. A national network of marine sanctuaries would achieve this by working with local citizens and their government to manage sanctuary waters and inhabitants.

Over the past three decades, the National Marine Sanctuary Program has expanded the parameters of ocean protection from the one-square mile Monitor National Marine Sanctuary to include over 18,000 square miles of ocean and coastal waters, from the North Atlantic to the South Pacific.

Today National Marine Sanctuaries serve as the foremost advocates for conserving our natural and cultural heritage. Sanctuaries aid the successful recovery of endangered marine mammals such as the gray whale and lessen the threat of oil spills and ship groundings. They increase our knowledge of the ocean through research, inspire our children through education, and benefit coastal economies dependent on healthy oceans. National marine sanctuaries focus the talents of local government and business leaders, tribal authorities, teachers, schoolchildren, and concerned citizens on meeting the challenges facing our oceans.

Throughout the years, marine sanctuaries have attracted an ever-widening community of marine advocates, who once drawn to a sanctuary to scuba dive, swim, kayak, fish, sail, bird or whale watch, or simply enjoy the ocean, leave with a greater appreciation for its preservation and protection. This growing body of constituents discover that to know a marine sanctuary is to care for it. And in turn, they show their care by staying involved.

This year America celebrates the 25th anniversary of the National Marine Sanctuary Program and its companion program, the National Estuarine Research Reserve System. We do so with pride knowing that we have broadened the seascape of marine resource management and protection worldwide.

This milestone gives us an opportunity to reflect on the contributions made by marine sanctuaries. In the following pages, we highlight just a few of our accomplishments over the years. Whether it's giving local citizens ways to participate, reducing the likelihood of oil spills, improving understanding of the ocean, or restoring habitats, marine sanctuaries make a difference every day.

25th Anniversary
NATIONAL MARINE SANCTUARIES
1972 ★ 1997

History of Marine Conservation

The marine conservation movement in the United States remains relatively young. In contrast, America's land conservation history dates back to 1872, with the establishment of the National Park System, followed by the National Forest System in 1891, and the National Wildlife Refuge System in 1920. Many decades would pass before America saw the need to protect its coastlines and ocean waters.

Historically, we viewed the sea as a field of plenty that could be ever plowed, without replenishment. We hunted whales and sea otters to near extinction, pulled fish and shellfish from the sea without interruption. We plundered seabirds for their feathers and seals for their skins. That someday the wealth of marine resources could end seemed impossible.

Even if the ocean fields were showing signs of depletion, who would know in the vast and secret expanse of water. True conservation of our oceans was possible only through greater knowledge of the mysterious sea and its inhabitants.

When the U.S. Congress first turned its attention to things oceanographic, it was due more to the fear of Soviet marine supremacy than concern for the marine ecosystem. After the Soviet Sputnik conquered space, legislators wondered, would the world's oceans be next?

On August 9, 1956, the National Academy of Sciences appointed a scientific committee to provide guidance on how the federal government might support the field of oceanography. The resulting report recommended that the federal government take responsibility for "accelerating a national program of research, surveys, education, and construction of facilities."

For many years, Congress considered possible federal roles in marine resource protection. Then came the disastrous Santa Barbara oil spill of 1969—an environmental call to action.

WYLAND

In 1970, President Nixon established the National Oceanic and Atmospheric Administration. Two years later would prove to be a watershed year for marine protection legislation with the passage of the National Marine Sanctuaries Act, the Coastal Zone Management Act, and the Marine Mammal Protection Act. The Clean Water Act, Fishery Conservation and Management Act, Deepwater Port Act, and others soon followed. These laws brought protection to our ocean and coastal waters that had long been afforded our parks, forests and wildlife refuges.

The National Marine Sanctuaries Act gave the newly-created National Oceanic and Atmospheric Administration in the Department of Commerce the mandate to designate marine sanctuaries for "the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or esthetic values."

The National Marine Sanctuary Program received its charge to create sanctuaries and restore threatened or damaged marine areas that the nation holds valuable. Truly ahead of its time, the sanctuary program brought a first-ever ecosystem approach to marine environment protection. From the start, sanctuary staff saw the need to work with the local communities, long before today's trend toward smaller federal government and more local control.

Over the past 25 years, this nation's respect for the marine environment has matured along with national marine sanctuaries. We have learned the importance of a healthy coast to our way of life and quality of life. And we appreciate the benefits a sanctuary adds to local efforts to preserve our nation's significant marine habitats.

From Sea to Shining Sea

Whereas the natural resources often receive the sea lion's share of attention, marine sanctuaries also protect our nation's historical and cultural resources.

Once underwater archaeologists discovered the remains of the Civil War ironclad USS Monitor, 16 miles off Cape Hatteras, North Carolina, they searched for ways to protect this important chapter of American history. They would soon find ready support from a newly-created and as yet untested program.

Over 100 years after leading its nation in battle, the USS Monitor found itself in the unlikely position of leading its nation in marine protection when it was designated the first marine sanctuary in 1975.

Later that same year, the Key Largo Sanctuary was created when a change in state-federal offshore boundaries left portions of Florida's John Pennekamp State Park unprotected. The 100-square mile Key Largo Sanctuary provided an early test of a state-federal partnership in sanctuary management. Today, this partnership is one cornerstone of the program's success.

In 1980, the scene of the Santa Barbara oil spill became the third marine sanctuary. The 1,658-square mile Channel Islands National Marine Sanctuary set a new standard for management of marine protected areas. President Carter would conclude his Administration in 1981 by designating Gray's Reef Sanctuary off Georgia, Gulf of the Farallones Sanctuary off San Francisco, and Looe Key Sanctuary in the Florida Keys. These designations brought a successful end to a decade of dramatic change in marine and coastal protection.

The mid-1980s brought two more designations: Fagatele Bay Sanctuary off American Samoa in 1986 and Cordell Bank Sanctuary adjacent to the Gulf of the Farallones Sanctuary in 1989. However, it wasn't until 1990 that national marine sanctuaries would see substantial growth in designations and budget.

During the 1990s, the nation increasingly turned to marine sanctuary designation as an insurance policy for long-term protection of the ocean. Grassroots efforts in Texas, the Florida Keys, Central California, Washington's Olympic Peninsula, Massachusetts, and Hawaii would lead to six new marine sanctuaries totaling over 14,500 square miles. Two proposed sanctuaries remain under consideration in Michigan (Thunder Bay, Lake Huron) and Washington (Northwest Straits, Puget Sound).

WYLAND

WILAND
1974

In six short years, the National Marine Sanctuary Program tripled the amount of protected marine habitat. The program budget grew from less than $4 million in 1991 to almost $12 million in 1997. The Clinton Administration is seeking an additional $1.5 million increase for 1998 to help implement new sanctuaries in the Florida Keys and Hawaii and to expand current efforts.

The recent designations and related funding growth speak to the success of marine sanctuaries in helping local communities bring balanced management to their ocean waters. New sanctuaries drew on the experience and knowledge of the "elder" sanctuaries to meet growing expectations of the community. For example, in 1981 John Halas, resource manager for the Florida Keys sanctuary, designed a mooring buoy system to lessen anchor damage to coral reefs and other sensitive marine habitats in the Key Largo Sanctuary. This simple management tool is now used in many of the new marine sanctuaries and around the world to prevent anchor damage.

But a sanctuary's work just begins with designation. The program's strength lies in its ability to bring people together to find creative solutions to the challenges we face in protecting our marine environment. As the sanctuary program has matured, it has shown itself to be resourceful and innovative in its practices and dedicated to healthy marine environments.

America's coral reefs and kelp forests; submerged banks, islands, and canyons; and the whales, turtles, fish, seabirds, and countless creatures that call these places home, now benefit from special protection.

The United States possesses a proud legacy of protecting its special terrestrial environments. With National Marine Sanctuaries, we are building a similarly proud legacy of protection of our marine environment.

As we look back at this legacy, we begin with the first sanctuary, the remains of the USS Monitor.

Cultural Resources

Sanctuary Voice

The USS Monitor *is a national icon, much like the Washington Monument. By designating a site with such high visibility in American naval and maritime history, we've made the* Monitor *available to a wide range of people for generations to come.*

The archaeological remains of our human past, from inundated prehistoric sites, to shipwrecks and their cargoes tell us how our ancestors existed, how we came to be who are today, and who we may become tomorrow.

—Bruce Terrell
Marine Archaeologist
National Marine Sanctuary Program

Cultural Resources

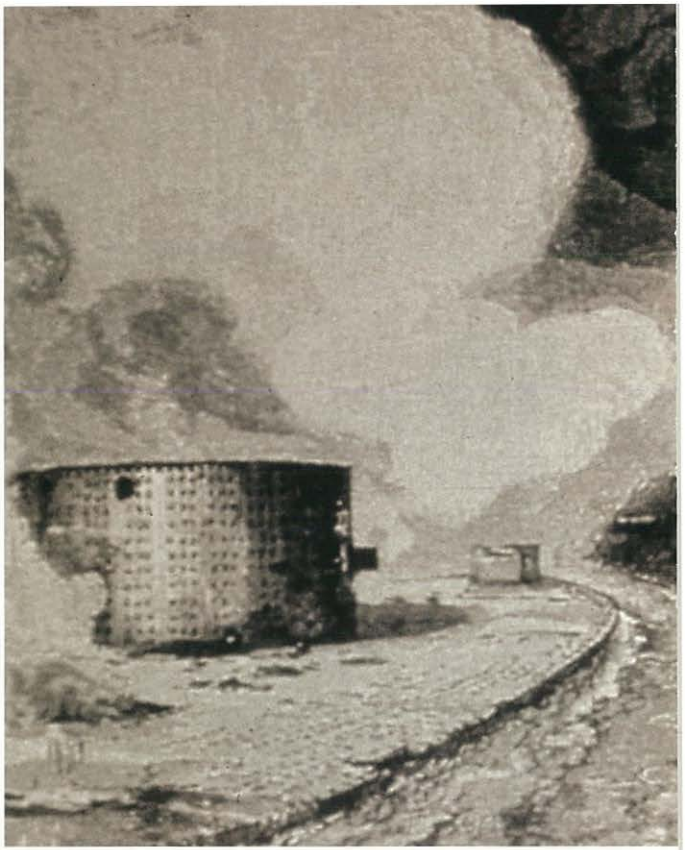
Photo: NOAA

People usually associate marine sanctuaries with natural resources. But sanctuaries also protect cultural and historical resources.

A year after passage of the National Marine Sanctuaries Act of 1972, a team of scientists discovered the Civil War ironclad USS *Monitor* some 16 miles off Cape Hatteras, 230 feet below the surface. The *Monitor* sank during a gale off Cape Hatteras on December 31, 1862, and for over 100 years eluded those trying to locate it.

The turreted warship experienced an illustrious but brief career in the Civil War, battling the Confederate *Virginia*, (formerly the *Merrimack*). The battle, though indecisive, revolutionized naval warfare, sparking the change from wood and sail vessels to iron and steam.

The *Monitor* became the first marine sanctuary in 1975, and since that time this exhilarating chapter of American history has resurfaced for all to enjoy. Through innovative educational and outreach efforts, sanctuary staff have raised public appreciation for maritime and naval history, and marine archaeology.



Researchers and archaeologists have recovered more than 100 artifacts from the *Monitor*—the 1,450-pound anchor, brass signal lamp, condiment bottles, a wine bottle, an ironstone dinner plate, and part of a leather book binding. These and other artifacts bring the *Monitor* to life through an exhibit at The

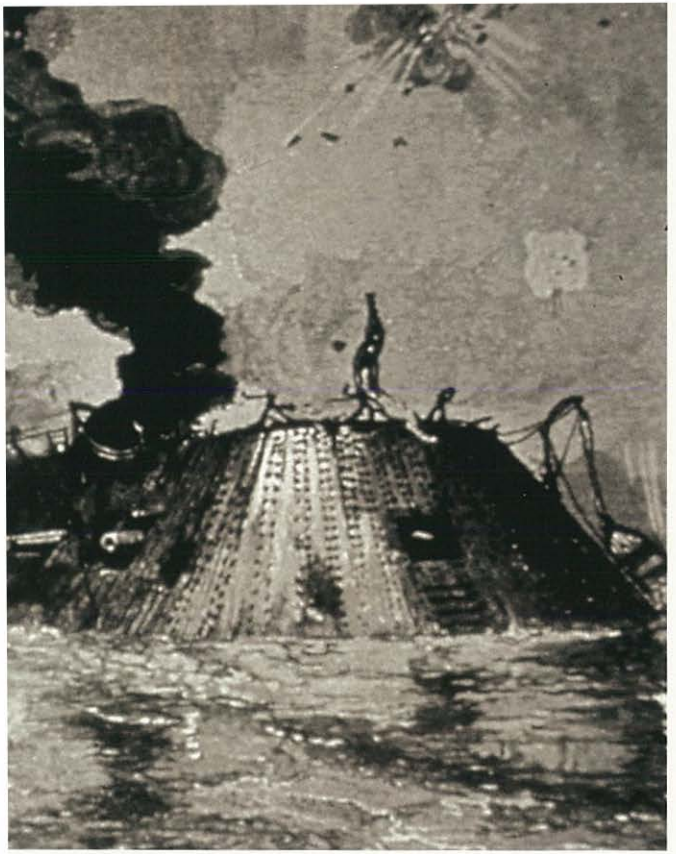


Photo: Century Illustrated Monthly *Magazine*

Mariners' Museum in Newport News, Virginia, one of the largest maritime museums in the world.

Sanctuary and museum staff work together to recreate the drama of the famous battle using period paintings and lithographs. A sanctuary video takes viewers on an underwater tour of the historic ship as it appears today.

The *Monitor* never left the pages of American history books, and public interest has never waned. Sanctuary research, outreach, and education efforts continue to bring the *Monitor*'s story to life.

For the last 20 years, NOAA and several private research teams have conducted archaeological research and recovery expeditions to the sanctuary in an effort to stay ahead of the deterioration. But since 1990, Sanctuary Manager John Broadwater has noted deterioration of the vessel's hull increasing at an alarming rate.

In response to the *Monitor*'s crisis, NOAA is rushing to complete a comprehensive, long-range plan for the sanctuary. The plan explores a wide range of possible options for preventing the eventual destruction of the vessel's hull, such as burial of the hull, mechanical supports, electrochemical stabilization, and recovery of major hull components and artifacts. NOAA is seeking assistance in this project from ocean and salvage engineers, naval architects, nautical archaeologists, conservators, curators, and exhibit designers.

The *Monitor*'s importance in maritime history is indisputable. Through sanctuary management, exploration, and education, this important piece of history has resurfaced for Americans to rediscover.

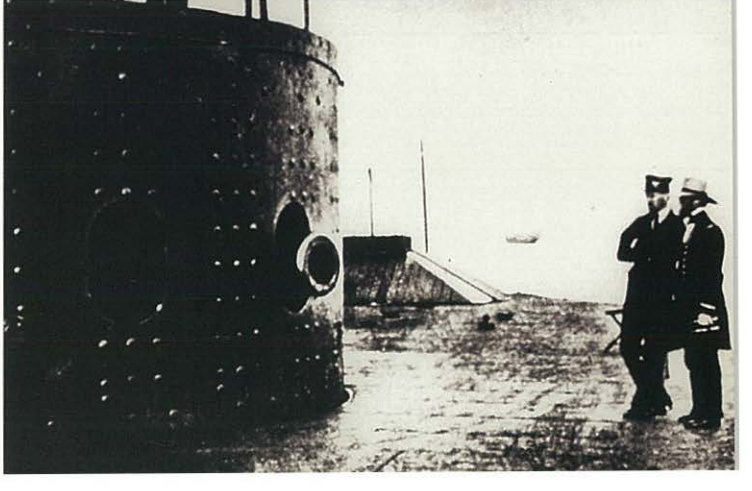


Photo: NOAA

Stars of the Sea

Look to the core of every sanctuary's success, and you will find people. It starts with a dedicated staff of managers, marine biologists, educators, historians, boat mechanics, administration, and others. But this is just the beginning. Volunteers, state partners, business people, academia, nonprofit organizations, and countless others come together to make a sanctuary's promise a reality.

The Hawaiian Islands Humpback Whale Sanctuary embodies this community spirit. Since its designation in 1992, over 150 citizens have logged over 2,300 volunteer hours helping the sanctuary in community events, monitoring water quality, administration, and office renovation. Volunteering translates into greater local stewardship of the marine environment, harnesses local skills and support, and provides staff with an ear to the community.

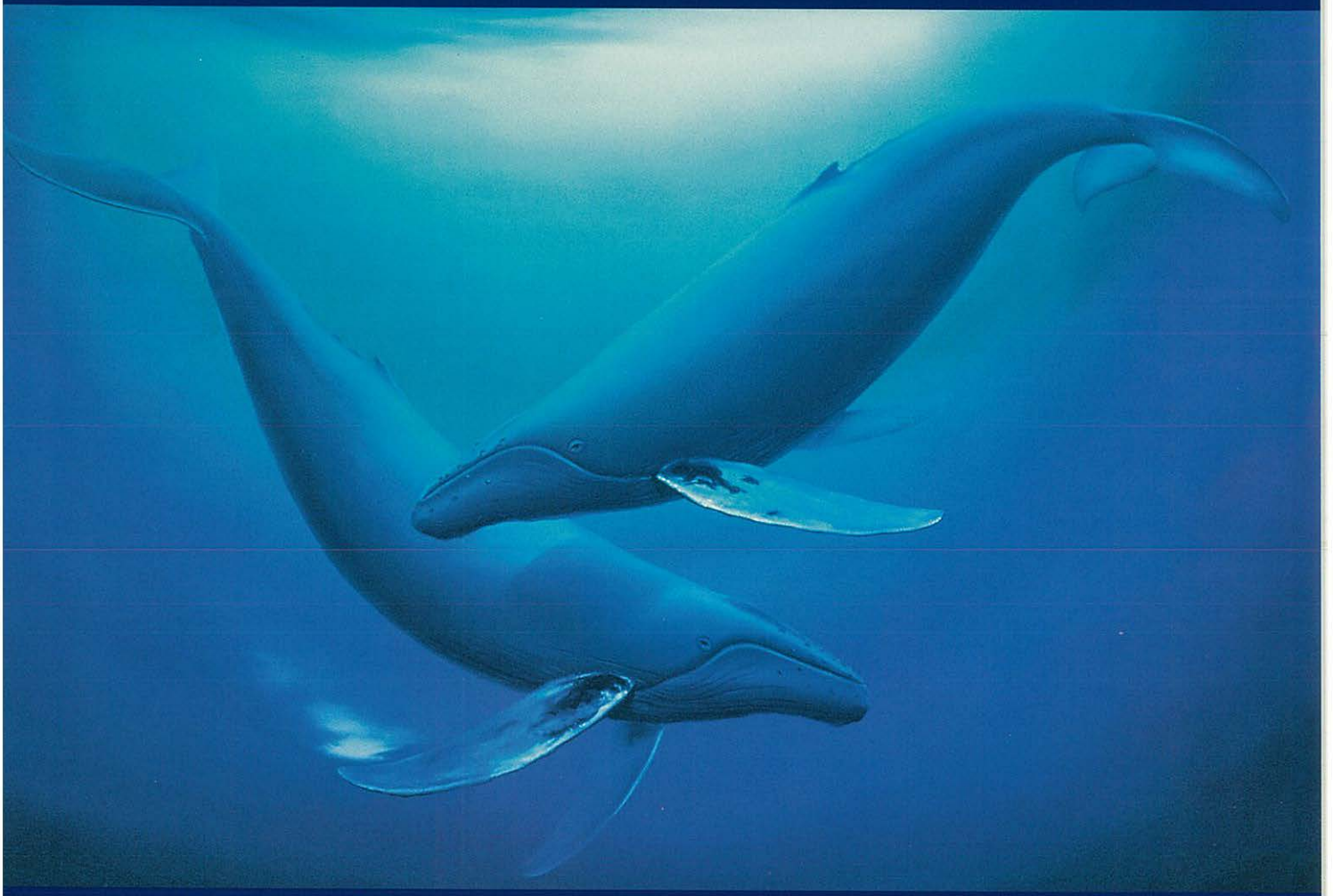
Carol Carey and her husband George retired to Maui from southern California, where she worked for 15 years as a budget analyst. After a recruitment meeting resulted in 30 new volunteers, she decided to use her professional skills and become a volunteer coordinator.

"We provide training sessions about national marine sanctuaries, humpback whales, and general office procedures," Carol says." We also ask the volunteers exactly what it is they want to do. Some want to work at public events, some would rather do office work, and others want to renovate the building."

"The humpback whales are a big part of living on Maui, and we have the responsibility to care for them. I want them to be there for my grandchildren," says volunteer Jeanne Kenlon.

If you are a volunteer for the Florida Keys Sanctuary, you may find yourself taking water quality samples, maintaining mooring buoys, conducting reef fish surveys, surveying shipwrecks, or tutoring school children. Begun in 1992, the volunteer program now boasts over 400 volunteers contributing over 22,000 hours in 1996.

Volunteers are integral parts of management in the Fagatele Bay, Monterey Bay, and Flower Garden Banks sanctuaries as well. Nonprofit partners such as The Nature Conservancy, Save Our Shores, the Center for Marine Conservation, and the Gulf Reef Environmental Action Team help coordinate volunteer programs for research, outreach, education, and enforcement.



Volunteers

Sanctuary Voice

We have much better resource protection thanks to the help of our dedicated volunteers. When something appears ashore like a buoy or a boat or a rare stranded animal, we're called right away. With a staff of three and 240 kilometers of coastline to manage, the volunteers provide an eye on the marine life we can't provide. We know that every week year round some part of the sanctuary is being assessed and protected.

—Jan Roletto
Research Coordinator
Gulf of the Farallones Sanctuary

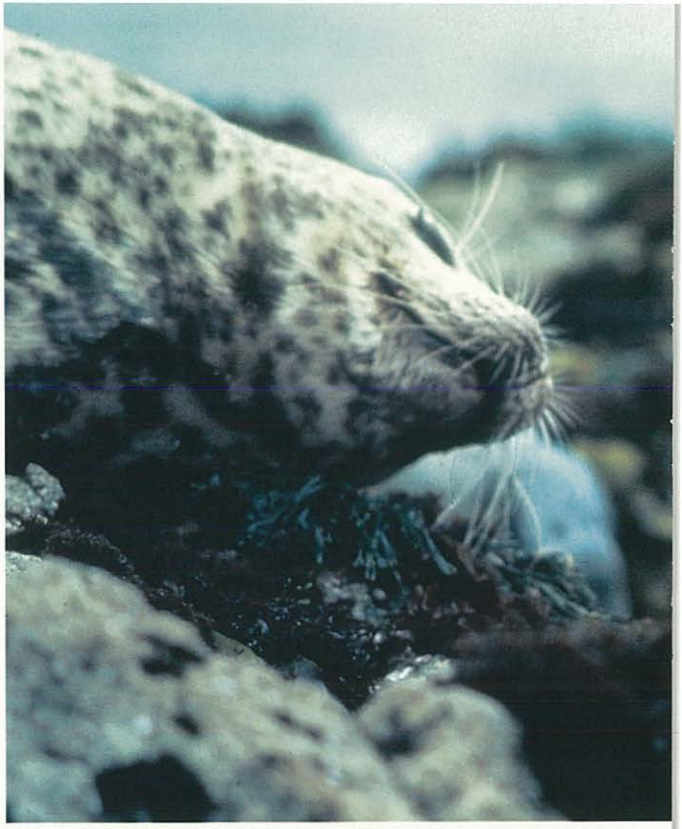
Photo: Leslie Grella

Volunteers

The Gulf of the Farallones Sanctuary staff has a daunting job monitoring and protecting 125 miles of central California coastline. The answer for the staff of three was to create Beach Watch, the nation's first scientific marine volunteer monitoring program in the nation.

Beach Watch is a long-term beach monitoring and baseline data collection program for beaches from Año Nuevo to Bodega Head.

Volunteers receive about 80 hours of training of live and dead bird and marine mammal identification, beach survey procedures and beach profile evaluation among other subjects. Upon graduation, volunteers are assigned a discrete segment of beach to monitor. Currently over 115 volunteers participate in the program. In 1996 they logged in well over 13,000 hours and spanned 125 miles of coastline.



Beach Watchers count, identify, and photo-document marine life and human activity on their beaches and immediately off shore. This information contributes to baseline data on the biological and marine resources found within the sanctuary, and long-term data for each particular beach.

The importance of Beach Watch volunteers became apparent during a recent oil spill in San Francisco Bay.

"We got the call about the spill, and our staff called the volunteers. We had 40 people on the beaches the next

Photo: Jeff Foott

Photo: W.E. Townsend Jr.

morning," said Roletto.

Each day before sunrise, Beach Watchers photo-documented the scene. They collected oiled and dead birds and reported distressed live birds to wildlife operations. At the end of each day, the written assessments were entered into a database and faxed to the Incident Command Center, which used the updates to track the oil spill.

"The Captain of the Coast Guard found the surveyors to be the most professional group he'd ever worked with," says Sanctuary Manager Ed Ueber. "The state described the response of the Beach Watchers as extraordinary. No other organization in the world can do what these surveyors did during the oil spill. Because of their learning and experience, they were able to collect scientifically irrefutable data."

In the overall response, Beach Watch volunteers in observing the beaches and wildlife, provided information critical to the response efforts and allowed sanctuary staff to focus on threatened resources within the sanctuary boundaries.

In San Francisco and elsewhere, sanctuary volunteers serve as watchdogs in the early detection of natural and human-caused events. This growing network of local experts document changes a specific beach undergoes over several years. Volunteers also educate the larger community about the coastal environment, and encourage their friends and neighbors to get involved.

Volunteers in San Francisco and elsewhere help sanctuary staff meet their goals bringing new vitality and an ever growing list of accomplishments.

Previous Page: Drakes Beach in Point Reyes National Seashore
Bottom Left: Tufted puffin (Fratercula cirrhata) at Southeast Farallon Island
Center: Harbor seals (Phoca vitulina) at Duxbury Reef
Bottom Right: Leslie Grella, Volunteer Coordinator surveys Drakes Beach

Photo: Rich Stallcup

WYLAND
1995

Getting Involved

When NOAA undertook development of the Florida Keys Sanctuary's management plan, it drew upon the knowledge of local citizens—fishers, boaters, teachers, planners, researchers—to help craft a plan to protect America's largest coral reef. Over the course of five years, a citizens advisory council put in thousands of hours at hundreds of meetings. The result is a sanctuary that balances the needs of the community with management of the marine environment. This unprecedented effort now serves as the model for other protected area programs on how to involve local citizens in management.

Advisory councils currently assist management at Stellwagen Bank, Florida Keys, Monterey Bay, Olympic Coast, and Hawaiian Islands sanctuaries. These and other sanctuaries use less formal task forces to help guide research, outreach, and education programs.

Since each sanctuary is the result of a local, grassroots effort, it is only fitting that citizens play a key role in the ongoing management of their sanctuary. Advisory councils provide an avenue for creative, energized citizens to contribute. They serve as an inclusive forum for resolving issues and ensure a government responsive to the local community. They allow sanctuary staff to stay in touch with various constituencies—commercial fishing, research, nonprofits, recreational boating, scuba diving—through their respective representatives.

At a time when citizens feel increasingly disconnected from their government, marine sanctuaries keep that connection strong, and that benefits everyone, including, most importantly, the marine environment.

Advisory Councils

Sanctuary Voice

Marine protection is a big, complicated job. It's an expensive job and the government can't do it all. Advisory councils ensure public participation in the process and channel public enthusiasm in a positive way.

I see it as the most productive program in terms of the marine environment and the economy of the central California coastline. The immense potential of Sanctuary Advisory Councils is still untapped.

—Karin Strasser Kauffman
Advisory Council Chair
Monterey Bay Sanctuary

Photo: Sea Studios, Inc.

Advisory Councils

Folks in central California get pretty possessive when they talk about "their" Monterey Bay Sanctuary. And they have every right to.

Local citizens fought for over 17 years for a sanctuary to protect this pristine marine area, home to sea otters, brown pelicans, and gray whales. The 1992 dedication ceremony for the Monterey Bay Sanctuary celebrated the hard work of the past and the hopes for the future. Fortunately, this grassroots activism didn't subside once the hard fight was won.

The new sanctuary tapped into the enormous energy and talent of local citizens through the creation of a sanctuary advisory council. Modeled after the Florida Keys Sanctuary advisory council—established to guide development of the sanctuary management plan—the Monterey Bay advisory council became the first to assist in ongoing management of a sanctuary.

The council's 20 members represent local government, business, agriculture, tourism and recreation, research, and education. It promotes public stewardship of the sanctuary and acts as community mediator and advisor.

Early on the advisory council and the sanctuary agreed that preserving water quality within the 5,000-square mile sanctuary was one of the highest priorities. The resulting Water Quality Protection Program unites 27 local, state, and federal government agencies with public and private groups to bring an ecosystem-based solution to sustaining water quality and the region's

Photo: Sea Studios, Inc.

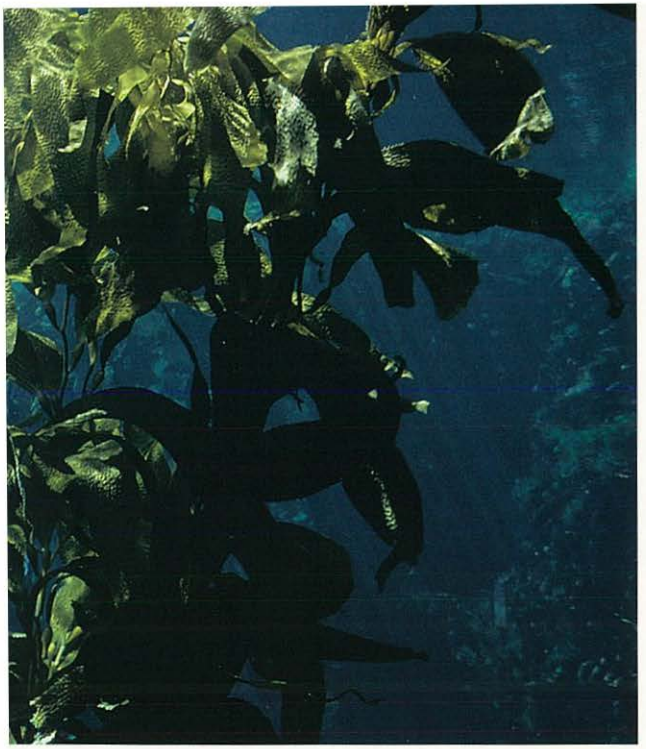


Photo: Sea Studios, Inc.

economic viability.

Various members of the advisory council played an important role in designing the water quality plan, and continues to do so during implementation. Initially, council members and other local organizations provided direct technical expertise, peer review, and a vehicle for speaking with and listening to the community.

Council members from the education, research, and conservation subcommittees take active roles in implementing the plan's various elements, such as outreach programs with agricultural communities, harbor and boatyard training, and volunteer monitoring.

"Members of the council have been instrumental in building general awareness for all aspects of the Water Quality Protection Program," says Holly Price, water quality protection director..

Advisory Council Chair Karin Strasser Kauffman is convinced that advisory councils will remain an integral part of marine resource protection in the next 50 years.

"We need many kinds of expertise—the private sector, academia, state officials. But most important, we need the support of the public in an action-oriented way," says Kauffman.

Advisory councils also contribute to management at Olympic Coast, Florida Keys, Stellwagen Bank, and Hawaiian Islands Humpback Whale sanctuaries. Less formal advisory groups exist at these and other sanctuaries to guide research, education, and business development initiatives.

Already these councils share experiences and expertise, adding to their contributions locally and nationally.

Previous Page: Bat star with surf grass
Bottom Left: Tide pool with anemones
Center: Schooling fish in kelp forest
Bottom Right: California sea lion

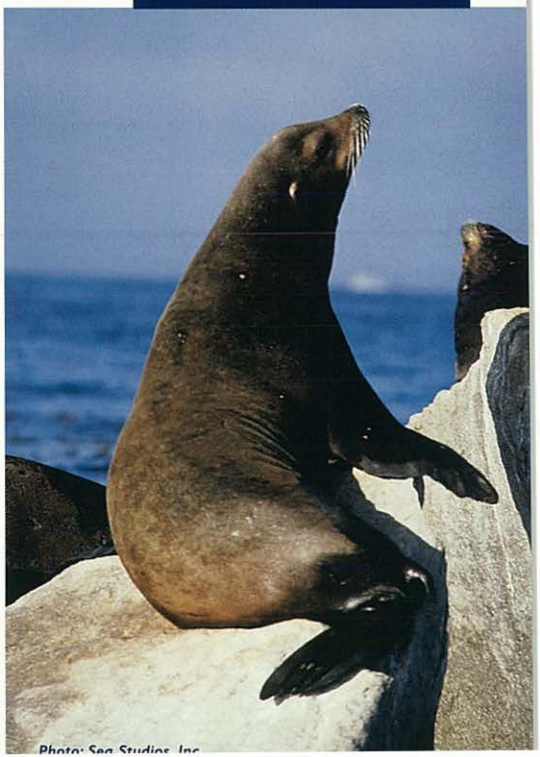


Photo: Sea Studios, Inc.

Sound Decisions through Sound Science

Central to our ability to manage marine sanctuaries is our understanding of how and why things happen. Research and monitoring provide the answers managers and communities need to make sound decisions about increasingly complex environmental challenges.

Historically, sanctuaries have lacked the funding necessary for research and monitoring. This predicament has only made us more resourceful. Today we work with other divisions of the National Oceanic and Atmospheric Administration, other government agencies, academic institutions, nonprofit groups, and industry to get the job done.

The Channel Islands Sanctuary recently acquired a new research vessel. The 56-foot vessel Ballena, a Spanish word for whale, allows Manager Ed Cassano and staff to facilitate and participate in research and long-term monitoring programs to better understand the complex ecosystem dynamics in the Santa Barbara region. Already this new platform has attracted researchers from the University of California, NOAA's Marine Fisheries Service, and elsewhere. Similarly, Gray's Reef Sanctuary acquired the research vessel Benthos from the Navy to study reef systems off Georgia. Through a creative partnership with minority students at Savannah State University, Gray's Reef staff use the Benthos to provide students with research dive training to support marine research and education.

Research on ship grounding sites and coral transplantation techniques in the Florida Keys Sanctuary in the early 80s and 90s has led to effective technology now being used to restore damaged coral reefs.

At the Flower Garden Banks Sanctuary in the Gulf of Mexico, Mobil Oil allows researchers free access to its gas production platform—located within the sanctuary—and provides researchers with food, lodging, and logistical support.

Monitoring

Sanctuary Voice

We'd like to think that the monitoring at the sanctuary is the standard by which others can measure healthy coral reefs. For over 20 years we've studied the coral, its resistance to disease, and its mortality. Now we have the technology to enhance the recovery rate of damaged reefs by collecting coral as they spawn, taking them back to the laboratory to raise, and then returning them to the reef to settle. We now can share this with scientists worldwide.

—Steve Gittings
Sanctuary Manager
Flower Garden Banks Sanctuary

Photo: Frank & Joyce Burek

Monitoring

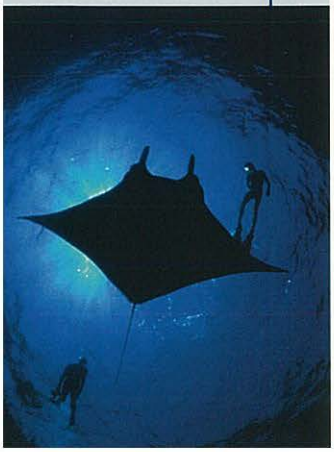
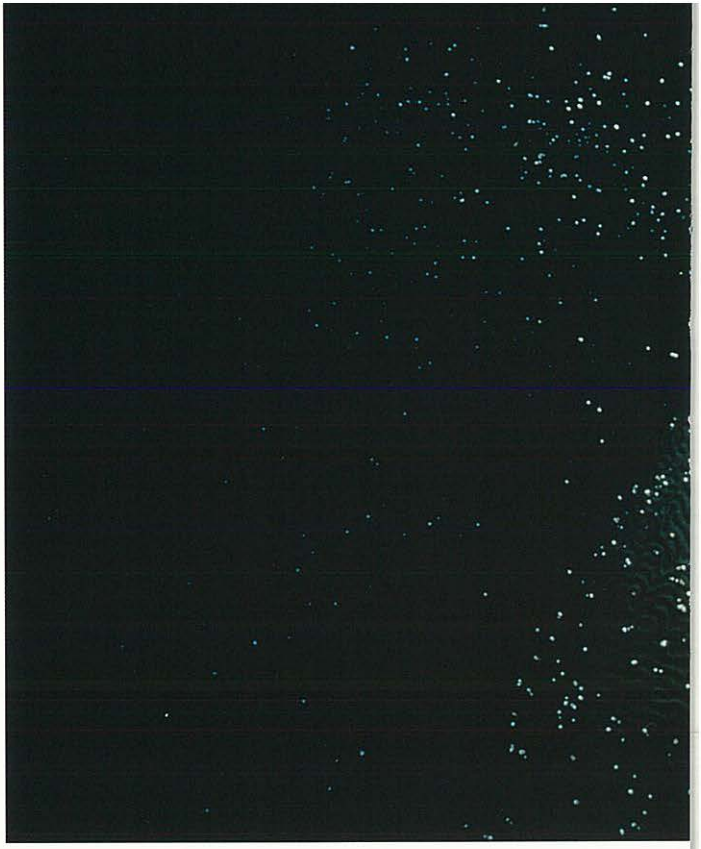


Photo: Jesse Cancelmo

The first step in managing a sanctuary is understanding how an individual marine ecosystem works. This requires long-term monitoring. For example, understanding how a healthy coral reef acts helps us protect those that are damaged or stressed. Monitoring at the remote Flower Garden Banks Sanctuary allows scientists to do just that.



The Flower Garden Banks sanctuary, a coral oasis in the Gulf of Mexico, sits 100 miles off Texas and Louisiana. Composed of three separate submerged salt domes, the sanctuary protects about 350 acres of northernmost tropical reefs with 21 species of coral. In turn, the reefs provide habitat for over 250 other invertebrate species as well as threatened loggerhead sea turtles, manta rays, whale sharks, and spotted dolphins.

Fortunately, the sanctuary has benefited from some 20 years of monitoring data. In conducting research co-funded by NOAA and the Minerals Management Service, Sanctuary Manager Steve Gittings uses time-tested methods to track the health of the coral colonies, and recent technological developments to monitor water quality and reef fish populations.

Each year, scientists from Texas and Louisiana universities monitor the sanctuary's precious ecosystem. Carrying a camera mounted on a T-frame, a compass and a level bubble, divers establish sites that allow them to return year after year to see how coral

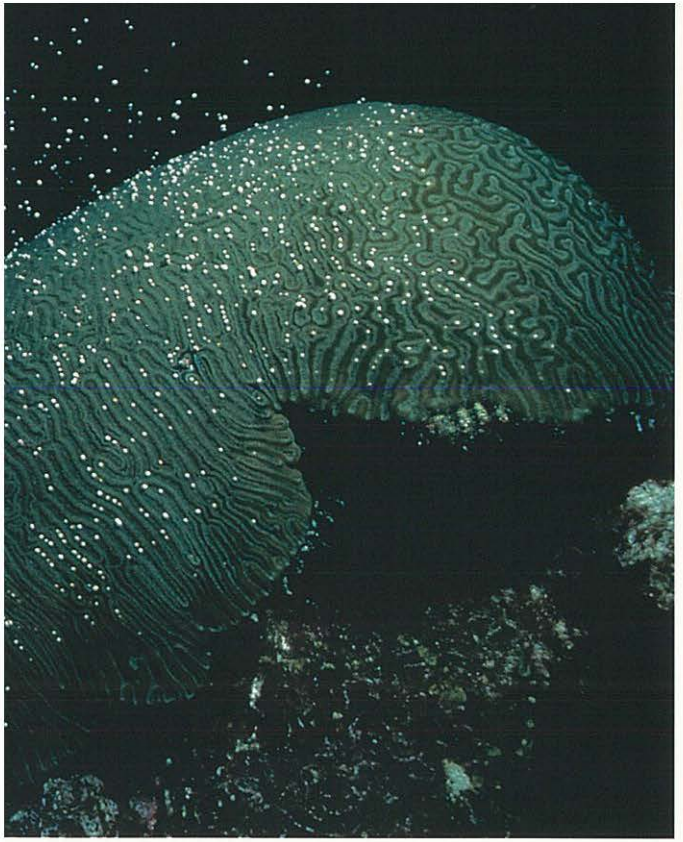


Photo: Jesse Cancelmo

colonies are faring.

This history is important locally, nationally, and internationally for managers of coral reef ecosystems. Gittings sees this information as useful worldwide in reef protection, research, and education.

Already Gray's Reef and the Florida Keys sanctuaries have adopted portions of the monitoring program, as well as several countries. In addition, a number of ancillary studies have led to new knowledge of reef restoration, water quality, climate change, and reef fish population dynamics.

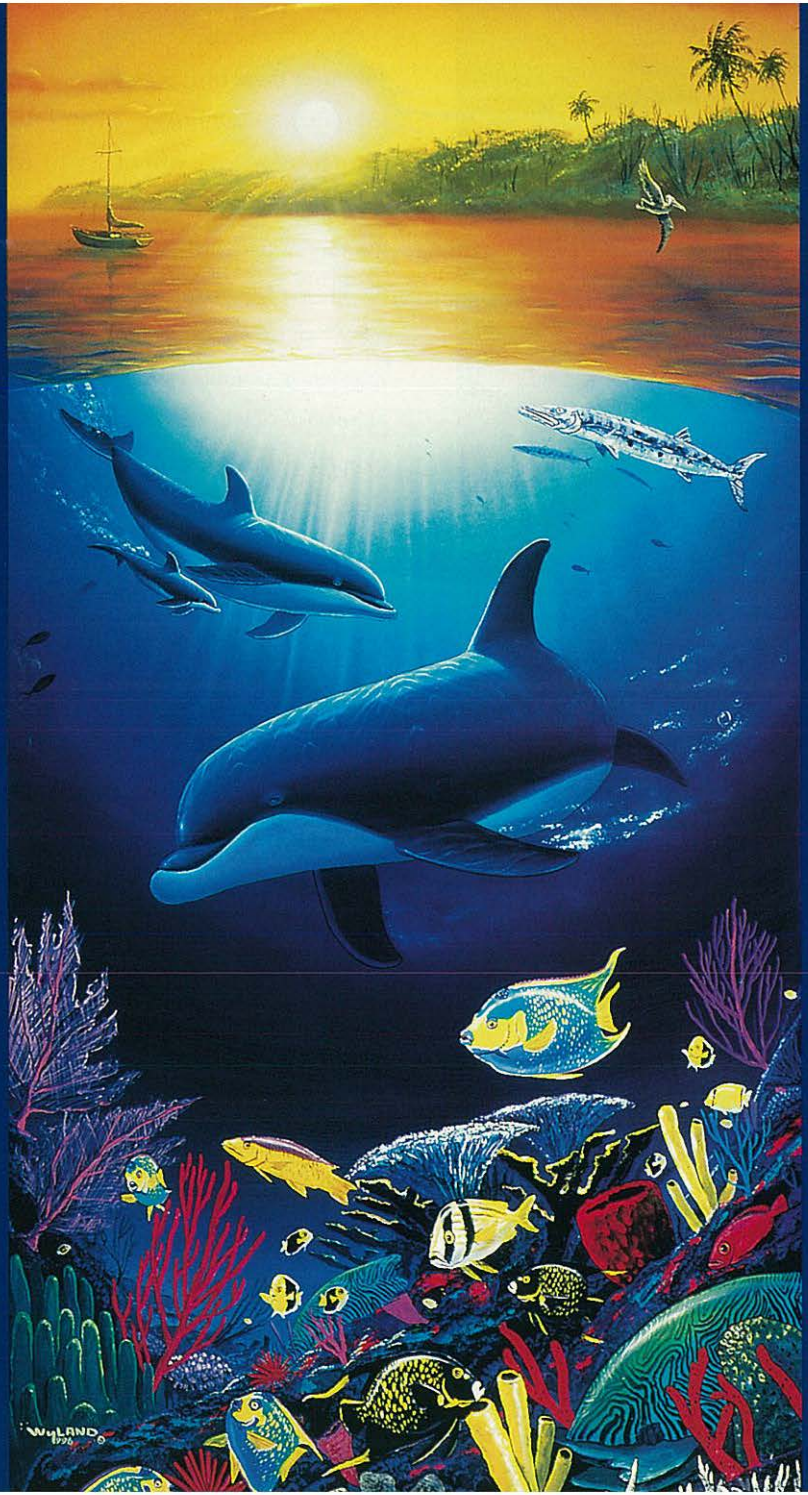
One surprise discovery by a volunteer diver in 1990 has led to new possibilities in coral reproduction. Each year on the 8th day after the August full moon, parent corals at the Flower Garden Banks release an upside down snowstorm of infant corals or "gametes." Scientists collect samples of the gametes and study the possibility of transplanting laboratory-raised corals to damaged reefs. If successful, this could accelerate reef recovery.

Flower Garden Banks Sanctuary staff of two have come to rely on partnerships to achieve their management goals. For example, the Gulf of Mexico Foundation funds research projects, private industry contributes to educational Teacher Cruises, and volunteers conduct monitoring studies.

Thanks to the Flower Garden Banks Sanctuary, we have a better standard by which to measure the health of coral reefs. The knowledge gained through the two-fold strategy, research and monitoring, holds promise for the global protection of these important habitats.

Previous Page: Queen angel fish
Bottom Right: Manta ray
Center: Brain coral spawning
Bottom Right: Recreational diver

Photo: Jesse Cancelmo


WyLAND

Reclaiming Nature

To lessen the occurrence of ship groundings or oil spills, marine sanctuaries educate recreational boaters, install boat ramp signs at marinas, and host training programs for commercial vessel captains. In environmentally sensitive waters off California, Washington, Florida Keys, and Massachusetts, we are seeing success.

However, when ship groundings or oil spills occur—and unfortunately they do—the National Marine Sanctuaries Act gives us a tool to repair the resulting environmental and cultural resource damage. The Act provides for the collection of monetary damages from the responsible parties to repair the injured coral reef, oiled sea lion rookery, or despoiled historical shipwreck.

The sanctuary program's damage assessment and restoration efforts meant that sanctuary staff in the Florida Keys could work with NOAA's damage assessment center to rebuild two sections of coral reef previously leveled by ship groundings. The funding for the restoration came not from taxpayers, but from the responsible party.

In the Gulf of the Farallones the return of a colony of Common murres, a black and white ocean bird, to a small rock island along the coast is being aided by biologists from the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the Gulf of the Farallones Sanctuary.

The murre colony once populated Devil's Slide Rock but was decimated after an 1986 oil spill. The project, paid for by the oil tankers' owners, is working to attract a new generation of birds back through solar-powered recordings of other breeding colonies, mirrors, and decoys.

Sanctuary restoration work begins with an understanding of the current health of a habitat. The monitoring programs in the Flower Garden Banks, Fagatele Bay, Florida Keys, Monterey Bay, and elsewhere contribute to this understanding.

The ability to both reduce injuries to sanctuary resources and respond quickly when accidents do occur are two of a sanctuary's greatest accomplishments.

Habitat Restoration

Sanctuary Voice

At sea, a few moments of careless navigation can obliterate a millenia of coral reef growth, killing countless animals and instantaneously reducing the complex biogenic reef architecture to sterile rubble.

Sanctuary designation may not always prevent major groundings, but it does give NOAA the legal authority to recover funds from the responsible party to restore the injured habitats.

I'm proud of the NOAA restoration team for its years of intense commitment. I look forward to applying the lessons learned from restoration of larger reef habitats that have been degraded from natural as well as manmade pressures.

—Dr. Charlie Wahle
Technical Projects Branch Chief
National Marine Sanctuaries

Habitat Restoration

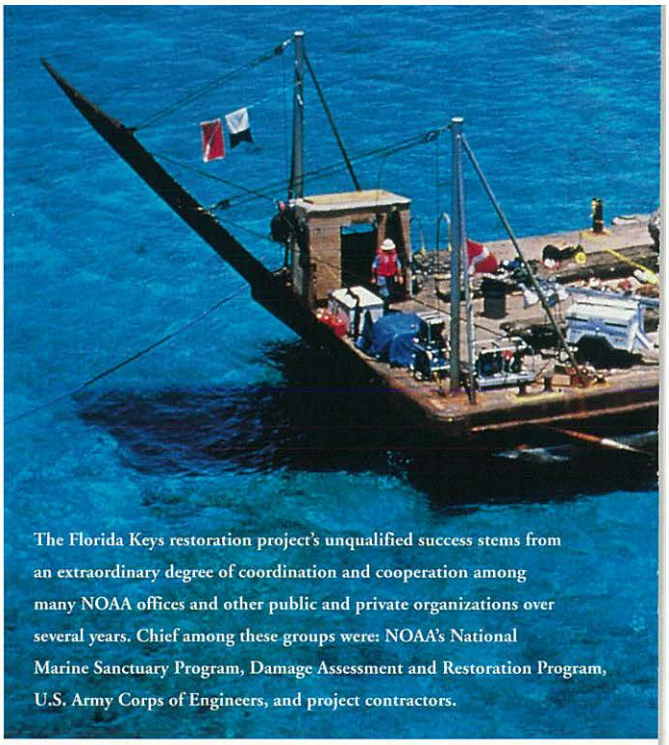
Photo: W.E. Townsend, Jr.

Assessing and restoring damaged coral reefs is one accomplishment sanctuary staff could do without. But as long as ships and boats navigate the complex coastlines of the Florida Keys, potential for groundings and habitat destruction remains.

On October 25, 1989, the *Alec Owen Maitland*, a 155-foot oil field supply vessel, grounded south of Carysfort Reef in Key Largo Sanctuary. Seventeen days later the 470-foot cargo freighter *Elpis* ran aground nearby.

Once rescuers removed the ships from the reef, sanctuary biologists could see that only a few of the reef-dwelling animals had survived. Lush coral gardens were transformed into sterile moonscapes. Large brain coral heads were cleaved into sections like an orange. Others were simply ground into dust. The groundings dislodged countless corals, sponges, and sea fans.

Of equal concern was the profound physical destruction done to underlying reef framework, no longer strong enough to support coral recruitment and growth.



The Florida Keys restoration project's unqualified success stems from an extraordinary degree of coordination and cooperation among many NOAA offices and other public and private organizations over several years. Chief among these groups were: NOAA's National Marine Sanctuary Program, Damage Assessment and Restoration Program, U.S. Army Corps of Engineers, and project contractors.

The National Marine Sanctuaries Act gives NOAA the legal authority to seek damages from parties responsible for injuring sanctuary resources and habitats. NOAA then uses these funds to recoup past costs for emergency response and damage assessment and to fund future efforts to restore and monitor the injured resources.

Following the settlement of the *Elpis* and *Maitland* cases, NOAA formed a restoration team comprised of the sanctuary program, the damage assessment center, fisheries service restoration center, and the office of general counsel.

No one has ever attempted a structural restoration effort on this scale before. The team faced an enormous technical and logistical challenge—how to design and build a new coral reef that recreates a complex biogenic habitat and encourages the recovery of its plants and animals. The extremely

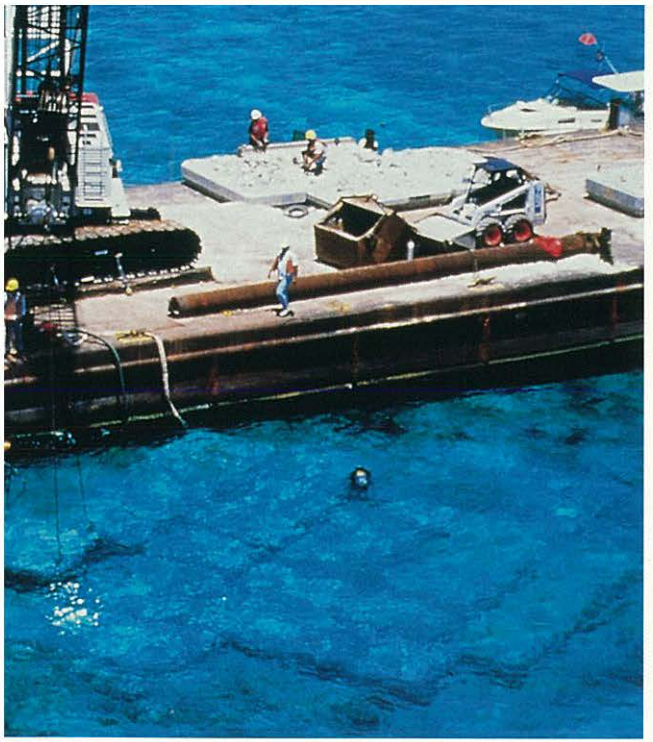


Photo: CSA

challenging location in wave swept waters as shallow at six feet deep only made things more difficult.

The restoration plan consisted of two phases. The first phase called for the recreation of the physical stability and habitat complexity of the original coral reef sites, using plans and concepts developed initially by Sanctuary "Reef Doctor" Harold Hudson. The second phase involved transplanting corals, sponges, and sea fans onto the newly-restored reef using the designs and transplantation techniques developed over the years by Hudson.

In the summer of 1995, engineers, construction contractors, biologists, and U.S. Army Corps of Engineers experts arrived at Key Largo. Their equipment looked more to bridge-building than coral reef management: an ocean-going tug and barge, a 90-foot tall crane, many cubic meters of concrete and sand, forty 10-ton reef replicating units, boulders, and a team of highly-trained underwater divers.

If the *Elpis* site posed significant challenges, the shallow, exposed *Maitland* site was a design and logistical nightmare. Exposed to the full brunt of Atlantic storm waves, the holes in the reef structure continued to crumble and expand. Scientists worked quickly to recreate the reef's surface topography using novel "reef replicating modules."

Each module consisted of a large block of reinforced, nonspecialized marine concrete, embedded with fossil limestone quarried nearby. The protruding "reef rock," combined with the distressed surface of the surrounding concrete, created new habitat for the settlement and growth of corals and other species important in the coral reef ecosystem. The net result: a new reef indistinguishable from the surrounding area.

The second phase has begun, and transplanted corals and plants are happily settling into their new home.

The reef restoration team worked around the clock during one of the worst hurricane storm seasons in modern history. In recognition of this historic effort, on November 29, 1997, the U.S. Department of Commerce awarded its Bronze Medal to the NOAA-led team of scientists, engineers, and marine construction experts for the successful completion of an unprecedented effort in reef habitat restoration.

Photo: FKNMS

Previous Page: Healthy coral reef ecosystem
Bottom Left: Common murre
Center: Reef restoration in action
Bottom Right: Reef restoration continues

Education & Outreach

Education is an integral part of a sanctuary's overall resource protection strategy, and its applications are as varied as the creatures found in the 12 sanctuaries. Curricula, resource user workshops, adult lectures, Internet activities, field trips, and a variety of printed materials are more than just pedagogical exercises. Each project illuminates management issues that directly relate to human interaction with the environment.

Many sanctuary education programs foster a marine ethic that promotes sustainable use of the sanctuary ecosystems. The smallest and most remote of all the sanctuaries—Fagatele Bay in American Samoa—offers one such example.

The Samoan culture has long depended on traditional subsistence activities such as fishing and gleaning (gathering shellfish and algae from the reefs). However, an infestation of coral-eating Crown-of-thorns starfish in the late 70s destroyed almost 90% of the coral. As a result, many fish and invertebrates also disappeared from the bay.

In studying the Crown-of-thorns attack, sanctuary staff worked to restore the coral reef and preserve a part of Samoan culture. They use a wonderful blend of traditional and modern understanding of Fagatele Bay to accomplish this.

Fagatele Summer Camp program attracts several hundred children each year. Sanctuary Manager Nancy Daschbach and Education Coordinator Puni Lagai, local teachers, and AmeriCorps volunteers teach children about the whole ocean ecosystem, from the ocean to the streams to the uplands.

"Ultimately, we hope to develop a new generation of wise stewards of the reefs. Before this program, many of them saw coral as rocks instead of the living creatures they are. They've learned about the impact of dynamite fishing, how sensitive coral is, how easily disturbed it is, and what a long time it takes to recover," says Daschbach.

In the Flower Garden Banks Sanctuary, Education Coordinator Shelly DuPuy knew that she could not reach every student in the state of Texas. But one teacher can reach 40 students. Thanks to a grant from the Shell Oil Foundation, high school teachers dive at the sanctuary where they learn about environmental chemistry, sharks and rays, sea turtles, and sanctuary efforts for resource protection. The teachers in turn take their first–hand experiences back into their classrooms.

Teachers have enjoyed similar experiences at Olympic Coast and Monterey Bay sanctuaries.

Gray's Reef National Marine Sanctuary education uses a mix of traditional methods and new communications technologies. Using Georgia's long distance learning network, sanctuary staff broadcast interactive marine science programs to schools throughout the state.

The strength of many sanctuary education programs depends on getting teachers and students out on the water for hands–on learning. In the Florida Keys, the Coral Reef Classroom introduces students to the wonders of coral reefs habitats. CRC couples scientific methodology with field observations in order to instill stewardship for marine resources. This program has a three pronged approach. First students learn about resources that exist and are encouraged to think about factors that influence them. Second, they apply new tools and techniques to answer questions raised about coral reefs. Finally, they are given marine stewardship tools to use in their everyday lives.

Education comes in many forms for many audiences, but the result is constant: improving protection of our marine environment.

Education

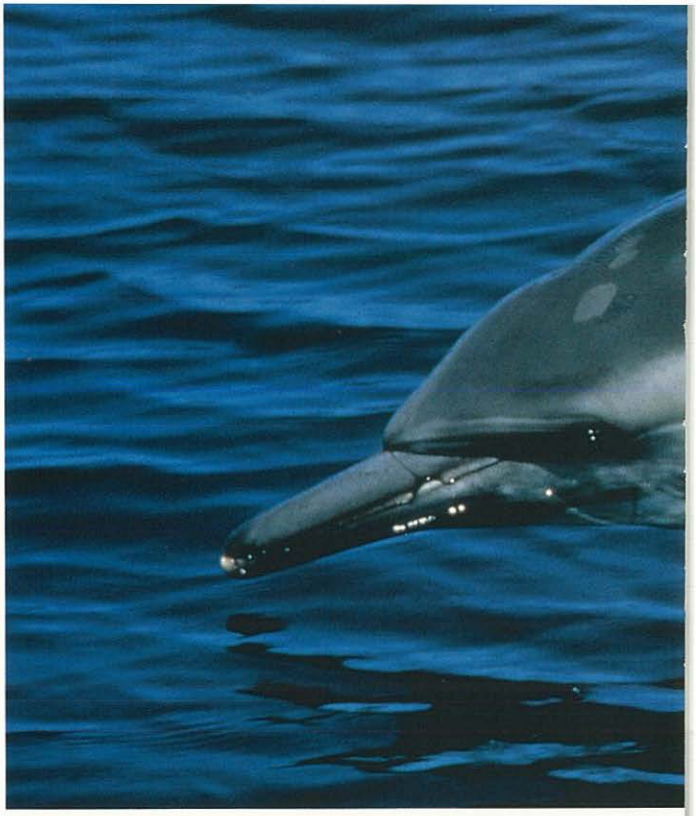
Sanctuary Voice

Thank you so much for giving us a chance to experience what it's really like to love and know the ocean. You have given us a chance to see one of the most beautiful things in the world. If everyone got to experience what we have... everyone would understand what animals and sea life really are. They would remember that, and be more careful of what they do to the ocean and its creatures...Los Marineros was a great program that was fun and changed my view of the ocean. I learned that the ocean and every other thing around us is important. I learned that you should respect it and treat it with care. Los Marineros has given me a chance to believe that.

— Jeffrey Given
Grade 5, Cleveland School
Graduate of the Los Marineros program

Photo: Glenn Allen

Education



The Channel Islands Sanctuary's award-winning Los Marineros marine education program takes children from the classroom to the ocean. Through exciting experiments, and an impressive itinerary of field trips to local marine-related sites, Santa Barbara fifth-graders have the opportunity to experience first-hand the wonders of the sanctuary. As a result of their year-long adventure, these students develop an appreciation for the abundance and diversity of sea life and a commitment to its preservation.

The ethic of marine conservation created by Los Marineros reaches far beyond the walls of 30 Santa Barbara classrooms. Since the program was launched in 1987, more than 4,000 children have participated in Los Marineros. As child tells parent, who tells friend, who tells neighbor, who tells store owner, and so on, the ripples created by this dynamic education program become part of an ever-widening environmental ethic shared across the nation.

"Los Marineros is one of the first programs to take marine environmental issues into the public schools as part of the regular curriculum," says Sanctuary Manager Ed Cassano.

Since sanctuary staff and a group of local educators and community leaders first conceived the program, it has grown from one pilot class to every fifth grade classroom in the Santa Barbara school district–850 students at 10 elementary schools. Teachers participating in the program receive curriculum and resource materials and attend

Photo: Mark Conlin

Photo: Peter Howorth

monthly training sessions to help them develop the knowledge and confidence to teach marine science more effectively.

Currently in its 10th year, Los Marineros has expanded to include parents as well with the pilot program PALS, or Parents Assist in Learning Science. With the goal of involving parents, as instructors or assistants, in both classroom and field activities, the fun-filled meetings provide opportunities for parent representatives from each class to learn about and try experiments and demonstrations related to topics in the Los Marineros curriculum.

Administered by the Channel Islands Sanctuary and the Santa Barbara Museum of Natural History, Los Marineros has been honored by the Department of the Interior and has received Certificates of Environmental Achievement from Renew America on four different occasions.

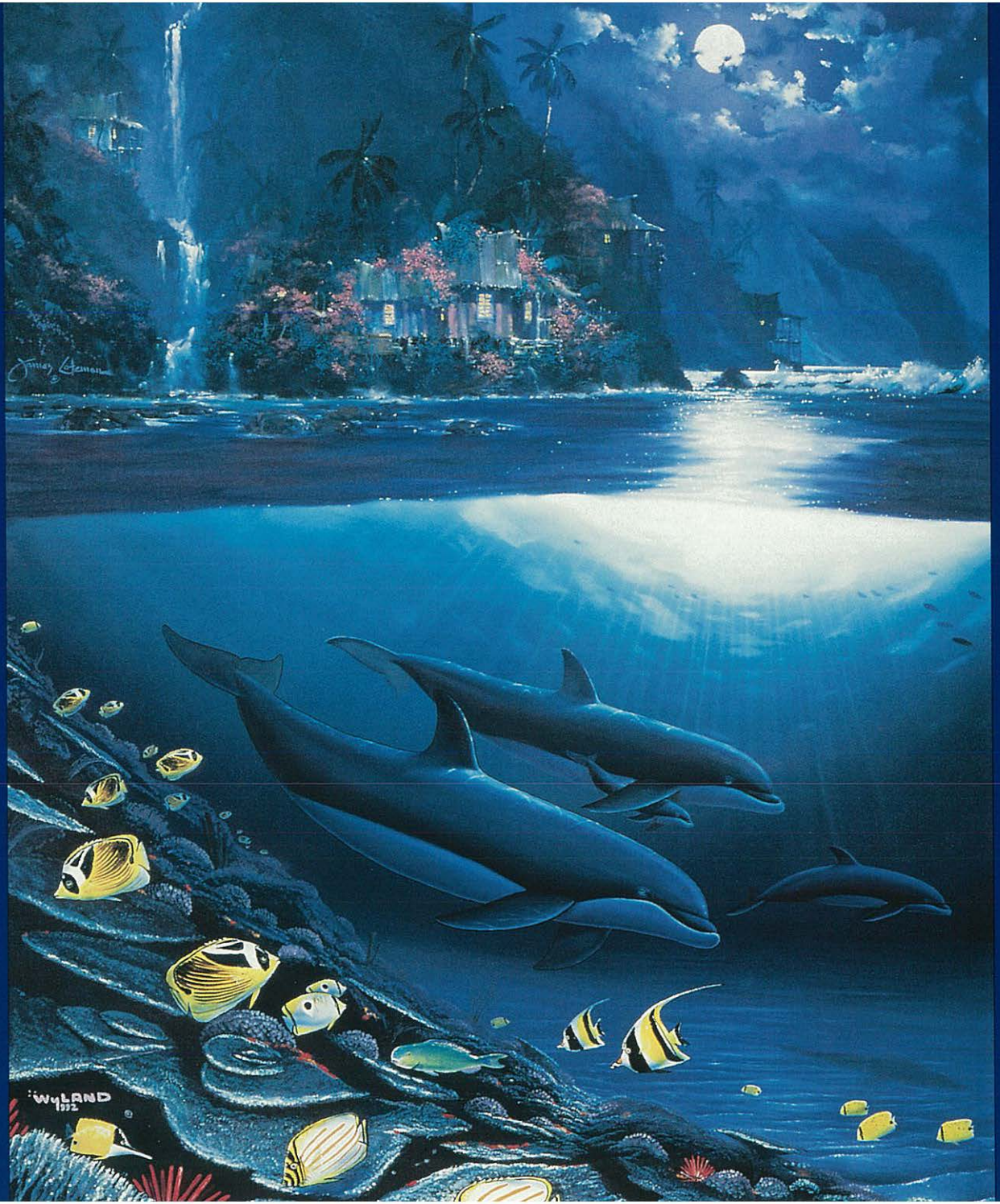
It was also highlighted on "The Big Help," a 1995 Nickelodeon television program featuring five exemplary programs for children across the nation.

Los Marineros has received many awards, but the most important accolades come from the children who say they will never forget the ocean world introduced to them through Los Marineros. Fifth-grader Katherine Kleveland, in her 1995 graduation speech, told a gathering of classmates, parents, staff, and teachers: "I learned many things about the ocean, the animals in the ocean, and how to keep the ocean environment as healthy as it is today, so people in the future can enjoy the ocean as much as I have."

Well-informed and concerned citizens like Miss Kleveland ensure the future health of our oceans. The National Marine Sanctuary Program brings the important concept of marine protection and preservation to classrooms around the country every day.

Previous Page: Los Marineros students
Bottom Left: Diver in kelp forest
Center: Common dolphin
Bottom Right: Los Marineros students

Photo: Glenn Allen


WYLAND

Protection through Education

For many citizens, a new sanctuary designation brings with it high expectations—better environmental education, coordinated research, volunteer opportunities, a healthier economy thriving with a healthy environment.

For others a marine sanctuary conjures images of burdensome regulations and red tape. Fishermen fear further restrictions. Boaters are wary of unknown violations. Individuals dependent on the ocean for their livelihood are especially concerned.

Regulations prohibiting destruction of habitats, oil drilling, taking of marine animals, and discharging pollutants into sanctuary waters are an important component of protection. However, the marine sanctuary program employs a different approach to enforcing its regulations, believing that education is the key to compliance.

Our experience over time has shown that the fishing guide, recreational boater, whale-watch operator, scuba diver, and nature lover care deeply about protecting the marine environment. People come to marine sanctuaries with every intention of complying with applicable regulations. But first they need to know what the regulations are, and why they exist. That is the aim of sanctuary enforcement.

Marine sanctuaries depend on partnerships with NOAA's Marine Fisheries Service, the U.S. Coast Guard, state marine patrols, and other agencies to patrol our waters. In Monterey Bay and Florida Keys, nonprofit organizations assist in the effort by training volunteers to serve as "deputies," educating others about regulations.

This emphasis on interpretive enforcement results in a better educated public, better compliance with regulations, and ultimately healthier sanctuary resources.

Interpretive Enforcement

Sanctuary Voice

We see protection of the natural resources not as public enforcement, but as education. We want to deter future, unintentional violations through meeting the public, talking to them, explaining the diversity of the habitat. Enforcement can be as simple as educating the public why it's important not to stand on coral, or making sure they use a chart when they go out on the water so they don't run aground.

—Mac Fuss
Florida Keys National Marine Sanctuary
Enforcement Officer

Photo: Mike White

Interpretive Enforcement

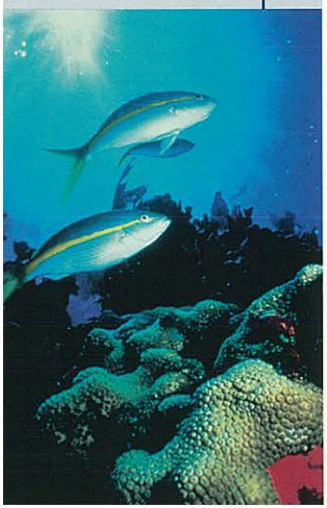


Photo: Chris Huss

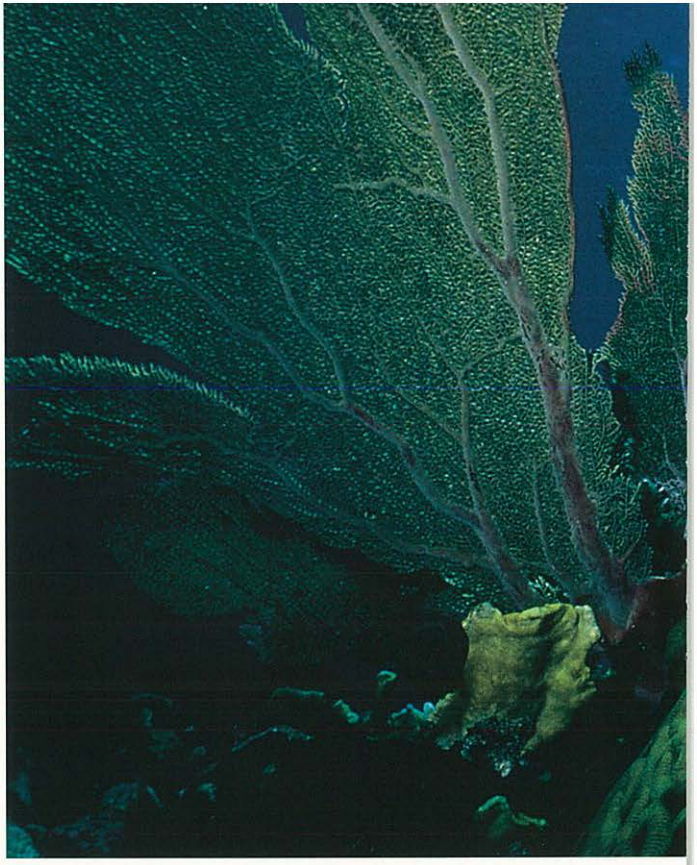
Believing that the best enforcement is self-enforcement, national marine sanctuaries use a novel approach in protecting sanctuary marine resources. Interpretive enforcement, a technique now used by many law enforcement agencies, emphasizes education over citations, believing that an informed public is less likely to break the rules.

With limited resources and a large area to manage, Florida Keys Sanctuary staff seeks voluntary compliance primarily through education. The sanctuary's efforts in interpretive enforcement, which emphasizes informing the public through educational messages about responsible behavior before damage is done to resources, are now recognized internationally. Representatives from Australia's Great Barrier Reef, Africa, and nearby Caribbean nations study the sanctuary's interpretive enforcement methods.

Sanctuary Manager Billy Causey defines interpretive enforcement as a preventative and proactive method to prevent harmful resource impacts before they occur.

"I think of interpretive enforcement as a form of resource protection that recognizes that most people want to protect the environment if they know how," says Causey.

Mac Fuss, a native Floridian and the first full-time National Marine Fisheries Service agent assigned to a Sanctuary, coordinates enforcement in the 2,800-square nautical mile sanctuary. For Fuss, coordinating enforcement in an area this size means working with the Coast Guard, the U.S. Fish and Wildlife Service, the U.S. Park Service and any number of state agencies. The sanctuary's patrol or "Sanctuary Squad" was formed through the cooperative efforts of NOAA and the state of Florida Department of Environmental Protection and the



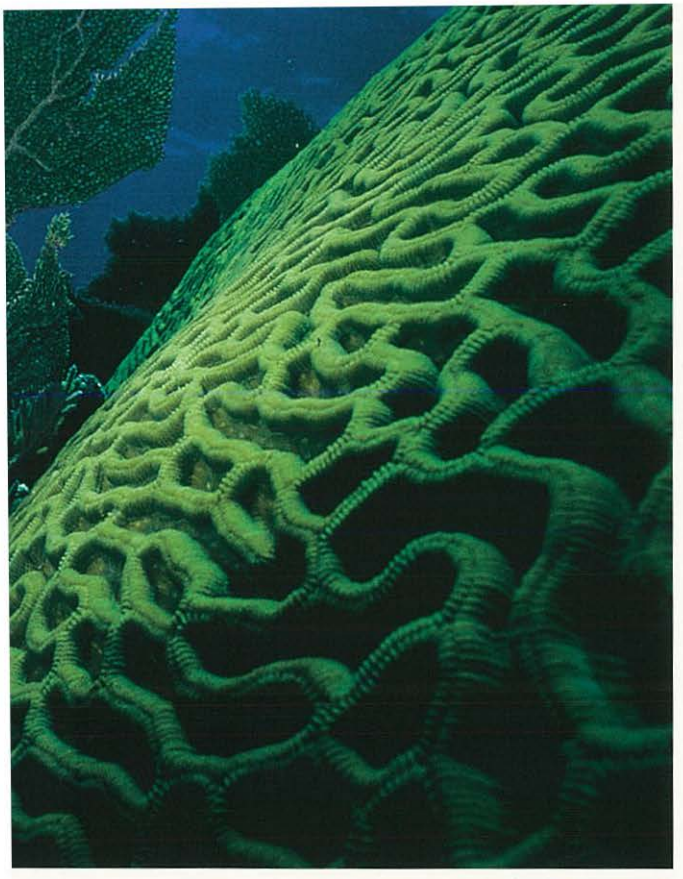


Photo: FKNMS

Florida Marine Patrol.

The polo-shirted squad educate as they patrol, more often handing out colorful brochures over tickets.

"They're on the front lines in protecting the Keys' marine resources," says Fuss. "After the science and management, it comes down to enforcement. They're making a difference right on the scene, making sure that management goals of resource protection are enforced."

Whereas a boat grounding of a 600-foot ship in sanctuary waters grabs the national spotlight, less dramatic violations occur every day. They might involve spearfishing in a closed area, damage to coral, catching undersized lobsters or fish, or driving a boat unsafely.

Many violations, Fuss believes, are unintentional.

"Most people don't realize the years of damage they do in touching coral or in breaking off a piece. In many cases, it's the uninformed boater who doesn't mean to violate any law, but does," said Fuss.

For the last three years, Fuss has conducted an informal survey of the range of enforcement actions taken in the sanctuary. The vast majority of enforcement actions, Fuss finds, result in either a verbal or written warning for violations such as driving a boat too fast near a diver-down flag. The third level of violation results in a citation with a fine. An example of this would be when boaters are found spearfishing in a restricted area. The final and most serious violation, such as boat groundings, in the sanctuary may result in a fine that is used in restoration efforts.

Through the emphasis on interpretive enforcement, the sanctuary program can achieve better compliance of sanctuary regulations at less cost to the taxpayer with the assurance of better health of natural marine resources.

Previous Page: Reef scene
Bottom Left: Reef scene
Center: Reef scene
Bottom Right: Interpretive enforcement

Photo: Paige Gill

Putting it all Together

Marine sanctuary management benefits from an assortment of tools. Research and monitoring, education, interpretive enforcement, citizens participation, volunteers, restoration, and public-private partnerships all contribute to a sanctuary's success.

Often sanctuary staff employ a mix of these tools to improve management. At a minimum, the mere presence of a sanctuary brings people together to find answers to tough management problems.

Sanctuaries offer a public forum for citizens to discuss and resolve tough issues such as personal water craft, vessel traffic, oil spill response, and land-based sources of pollution. They also help focus efforts within the research and academic communities, getting better results from scarce funds.

Marine sanctuaries attract entrepreneurial energies as well. The Sea Center—a collaboration of the Channel Islands Sanctuary and the Santa Barbara Museum of Natural History—draws over 75,000 visitors each year to Stearns Wharf. Nonprofit organizations now exist in many communities to support sanctuary research and education programs. Businesses and individuals around the sanctuary map are becoming official sponsors, bringing much needed resources into the program, raising awareness of marine sanctuaries, and benefiting their bottom line.

The two newest sanctuaries, Olympic Coast, Washington and Stellwagen Bank, Massachusetts, made immediate contributions in their regions. In Washington, sanctuary designation offered a new opportunity to bring the shipping industry, environmentalists, residents, and governments together to improve marine traffic safety. In Massachusetts and Georgia, Stellwagen Bank and Gray's Reef sanctuaries team up to promote the recovery of the endangered right whale using several different approaches.

Endangered Species

Sanctuary Voice

We don't manage resources. We manage people.
It's not about pointing to how many fish we save.
Sanctuaries are a catalyst, a facilitator,
a participant and a supporter in others' work
to protect sanctuary resources.

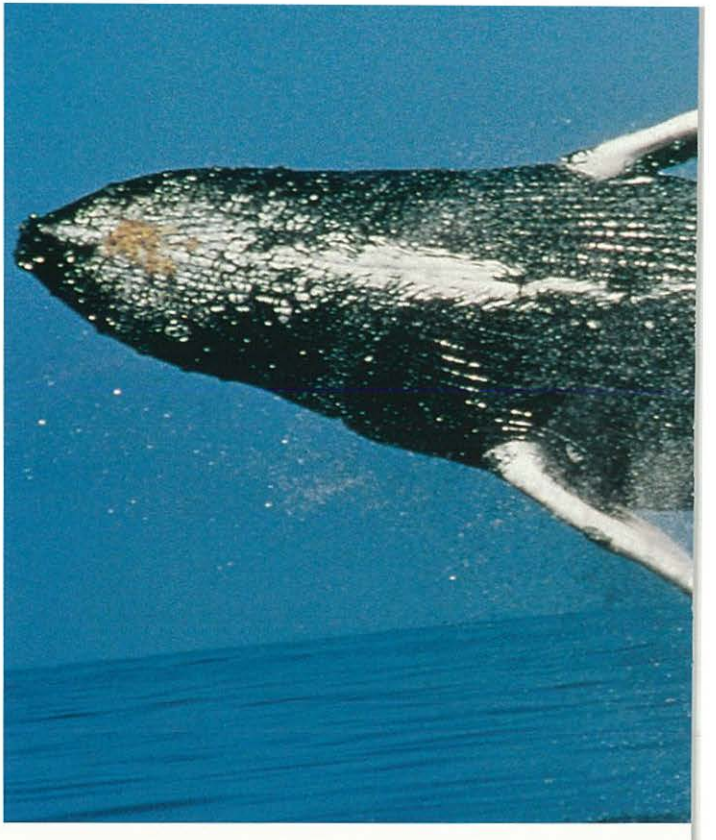
The part we do best is partnership,
being the spark plug that drives the engine.
Because sometimes the engine doesn't start.

—Brad Barr
Sanctuary Manager
Stellwagen Banks Sanctuary

Photo: Stan Butler

Endangered Species

Photo: Center for Coastal Studies



Every year the gentle lumbering right whales make their way down the eastern coast of North America feeding, breeding and calving. Only about 300 of these great whales remain. Their interactions with humans are rare, and often tragic.

Ship strikes now account for the greatest cause of mortality for right whales en route from feeding grounds in Gerry E. Studds Stellwagen Bank Sanctuary off Massachusetts to calving grounds near Gray's Reef Sanctuary off Georgia. In a hopeful venture, these two sanctuaries have joined forces with other agencies to improve the future of the right whale. The sanctuaries employ a range of creative tools—traditional education, the Internet, interpretive enforcement, and modern technology.

Most importantly, they have created partnerships with the Navy, the fishing industry, the National Marine Fisheries Service, the Coast Guard, vessel traffic industry, whale watch operators, researchers, and the New England Aquarium to balance protection with marine uses. This is important along the southeast coast where the calving females are especially vulnerable to ship collisions, and in the northern Stellwagen Bank Sanctuary, an area described as "ground zero for whale watching."

On the education front, one joint initiative is a 36-page curriculum, *The Northern Right Whale: From Whaling to Watching*, written by Education Coordinators Sarah Mitchell

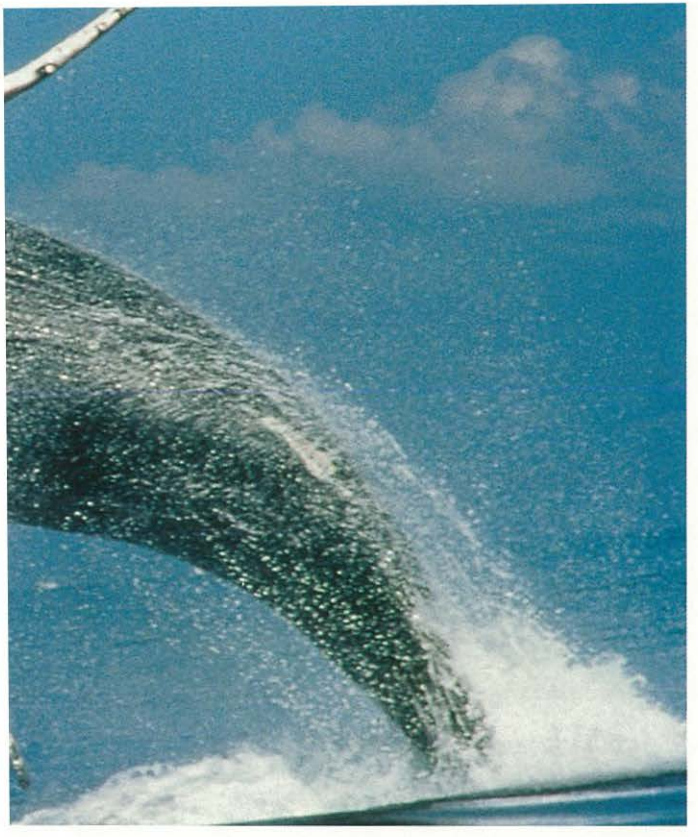


Photo: Dan Salden

and Anne Smrcina and made possible by a grant from the Coca-Cola Foundation. They are also collaborating on a video about whales in their sanctuary habitats.

Smrcina heads up the right whale component of the Internet-based education program "Journey North," which charts the northward migration of the whales and other species. Watchers from the Dominican Republic to Newfoundland send in whale sighting information, which she compiles and forwards to some 2,000 schools across the country.

Mitchell and the Gray's Reef Sanctuary staff are active in the Marine Mammal Stranding Network, an organization established by NOAA providing rapid and expert response to mortalities and live strandings of whales.

Sometimes the best that the sanctuaries can do to help right whales, says Stellwagen Bank Sanctuary Manager Brad Barr, is to study the habits and behaviors of marine creatures and minimize human impact on them through education.

One strategy set up a 500-yard protection zone around right whales, restricting all vessels, watercraft, swimmers, and aircraft from approaching except in emergency situations. Another plan being studied on the East Coast creates an early warning system at the two ends of the migration route to let ships know of the location of whales pods.

The benefits of whale protection are not as easily charted or analyzed as many other sanctuary activities. Much of what the sanctuaries can and will do depends on future research of the life cycle of right whales. In this, as in other important ways, marine sanctuaries remain at the forefront of marine protection and preservation using innovative methods to save endangered species.

Previous Page: Humpback whale
Bottom Left: Northern right whale
Center: Humpback whale
Bottom Right: Northern right whale

Photo: Center for Coastal Studies

Partnerships

Sanctuary Voice

I am amazed at the amount of work that five people do in the office of the Olympic National Marine Sanctuary. So much has been done in research and education, and in a short time, the sanctuary brought together people from the state, local, and tribal governments, and private industry to better understand the sanctuary.

Many citizens see the sanctuary in terms of what you can't do. Todd Jacobs and his staff have emphasized what you can do in a sanctuary. As Coast Guard Group Commander in Port Angeles and as one of the members of the Sanctuary Advisory Council, I have a good handle on what the sanctuary does, and it absolutely amazes me.

—Group Commander Philip C. Volk
Coast Guard Group
Port Angeles, Washington

Photo: Olympic Coast NMS

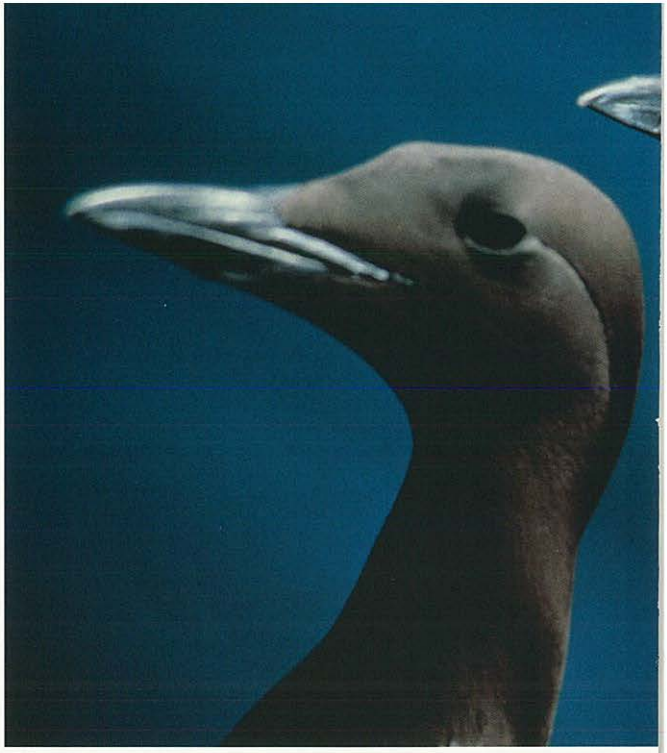
Partnerships

Photo: Olympic Coast NMS

Off Washington State, the Olympic Coast Sanctuary's efforts to combine safe marine traffic and protect resources spotlights the challenges and rewards in finding such a balance. This balancing act between commerce and marine protection shows how industry and government can work together; how a healthy environment and a healthy economy can go hand-in-hand.

The youngest and second-largest marine sanctuary sits at the entrance lanes to the Strait of Juan de Fuca, a major thoroughfare linking the important North American ports of Seattle, Tacoma, and Vancouver with trading partners all around the Pacific Rim.

Each day, hundreds of vessels, ranging from super tankers to pleasure sailboats, pass through sanctuary waters. Merchant ships ply the sanctuary carrying grain from the Prairie Provinces and crude oil from Alaska. Important Asian imports such as electronics and automobiles are part of the daily traffic through the Olympic Coast's fragile ecosystem.



History has shown that ships and the Olympic Coast are not always compatible. Records document over 150 shipwrecks for the area included within the sanctuary and, in the last decade, two major oil spills have blackened the shores. Balanced here is a wilderness coastline that supports a myriad of life forms and one of the busiest maritime entryways on the west coast.

Just as marine transportation forms a vital interconnecting link economically, the sanctuary forms a vital link among resource management agencies, enforcement organizations, and the maritime transportation industry. In 1995, the newly formed sanctuary served as the impetus for the International Maritime Organization to designate an Area To Be Avoided on the Olympic Coast. The ATBA advised operators of tank vessels carrying petroleum and hazardous materials to maintain

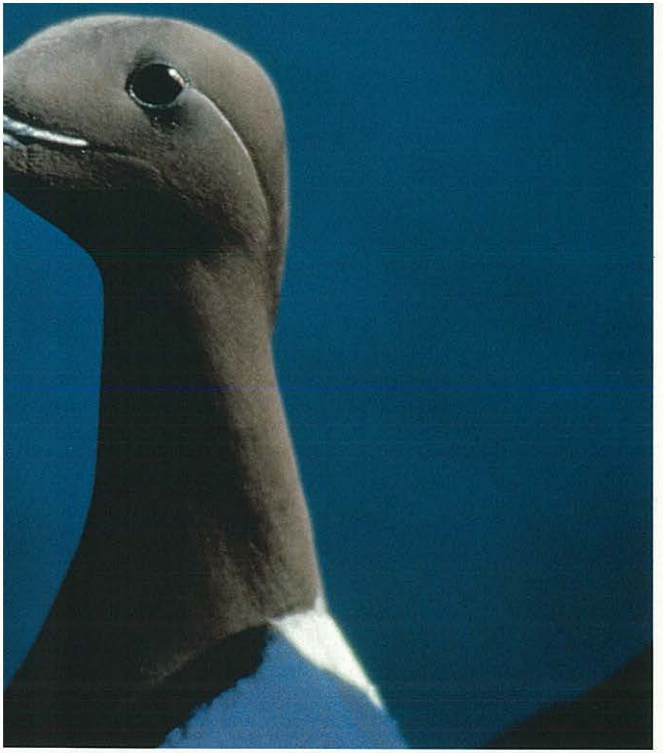


Photo: Fred Sharpe

a 25-mile buffer from the coast.

As a follow-up, a sanctuary education campaign reflects the coordinated efforts of the International Maritime Organization, maritime industry organizations such as the Marine Exchange of Seattle, U.S. and Canadian Coast Guards, U.S. and British Columbia Oil Spill Task Forces, and the Washington State Office of Marine Safety.

A detailed map and description of sanctuary resources will soon be available to ships' masters on their bridges as they approach sanctuary waters. The sanctuary's advisory council provides a forum for discussion of vessel traffic initiatives, including the industry-proposed International Tug of Opportunity System. ITOS is designed to improve the level of safety in marine transportation by tracking capable tugs for rapid deployment in cases of emergency.

In order to guide policy makers, sanctuary staff have designed a vessel traffic study that will track ships, identify them by type, and provide quantitative data on shipping use in the sanctuary.

"Vessel traffic management is a technically complex and politically charged arena," says Sanctuary Manager Todd Jacobs. "Over time, the sanctuary has made a positive impact in developing common ground among those with a stake in the issues."

Indian tribes maintain strong cultural and economic ties to marine resources. Industry aims to make marine transportation efficient and profitable. Environmentalists remain adamant in protection of the coast's priceless natural legacy. Whatever their differences, all have come to accept the sanctuary as a trustworthy and capable partner.

Equipped with solid data, Sanctuary Manager Todd Jacobs and his staff play a crucial role in assisting a host of interests to make the decisions that will assure that the Northwest's maritime transportation economy and the sanctuary's irreplaceable ecological system can serve this and future generations.

Previous Page: Point of Arches
Bottom Left: Ship, aerial
Center: Common murres
Bottom Right: Steller sea lions

Photo: Olympic Coast NMS

Our Future is Bright

Highlighting every accomplishment of the past 25 years would require several volumes. However, this report demonstrates the range of accomplishments sanctuaries achieve every day, in ways large and small. They point to one of the sanctuary program's greatest strengths—diversity. Diversity in the skills of staff and volunteers. Diversity in the range of protected habitats, species, and resources. And diversity in the ways marine sanctuaries help communities find common-sense solutions to protect their marine environment.

Twenty-five years ago, this country lacked a program to manage its marine environment. Spurred by an environmental disaster, it undertook to create an environmental success. Today, over 18,000 square miles of diverse marine habitats benefit from special designation as national marine sanctuaries.

Whereas there is reason to be proud of the accomplishments made to date, sanctuaries are beginning to hit their stride. The National Marine Sanctuaries take the modest investment made for designation and management, combine it with innovation and community support, and the result is a healthier marine environment.

Please join us as we work together for another 25 years of successful marine and coastal protection.

	Habitats	Key Species	Protected Area / Designation
Channel Islands NMS — **california**	Kelp Forests, Rocky Shores, Sandy Beaches, Seagrass Meadows, Pelagic, Open Ocean, Deep Rocky Reefs	California Sea Lion, Elephant & Harbor Seals, Blue & Gray Whales, Dolphins, Blue Shark, Brown Pelican, Western Gull	1,658-square miles September 1980
Cordell Bank NMS — **california**	Rocky Subtidal, Pelagic, Open Ocean, Soft Sediment Continental Shelf and Slope, Seamount	Krill, Pacific Salmon, Blue Whale, Humpback Whale, Dall's Porpoise, Shearwater, Albatross, Rockfish	526-square miles May 1989
Fagatele Bay NMS — **american samoa**	Tropical Coral Reef	Crown-of-Thorns Starfish, Blacktip Reef Shark, Surgeon Fish, Hawksbill Turtle Parrotfish, Giant Clam	0.25-square miles April 1986
Florida Keys NMS — **florida**	Coral Reefs, Patch & Bank Reefs, Mangrove-Fringed Shorelines, & Islands, Sand Flats, Seagrass Meadows	Brain & Star Coral, Sea Fan, Loggerhead Sponge, Turtle Grass, Angelfish, Spiny Lobster, Stone Crab, Grouper, Tarpon	3,674-square miles November 1990
Flower Garden Banks NMS — **texas/louisiana**	Coral Reefs, Artificial Reef, Algal-Sponge Communities, Brine Seep, Pelagic, Open Ocean	Brain & Star Coral, Manta Ray, Loggerhead Turtle, Hammerhead Shark	56-square miles January 1992
Gray's Reef NMS — **georgia**	Calcareous Sandstone, Sand Bottom Communities, Tropical/Temperate Reef	Northern Right Whale, Loggerhead Sea Turtle, Barrel Sponge, Angelfish, Ivory Bush Coral, Grouper, Black Sea Bass	23-square miles January 1981

	Habitats	Key Species	Protected Area / Designation
Gulf of the Farallones NMS **california**	Coastal Beaches, Rocky Shores, Mud & Tidal Flats, Salt Marsh, Esteros, Deep Benthos, Continental Shelf and Slope	Dungeness Crab, Gray Whale, Stellar Sea Lion, Common Murre, Ashy Storm-Petrel	1,255-square miles January 1981
Hawaiian Islands Humpback Whale NMS **hawaii**	Humpback Whale Breeding, Calving, & Nursing Grounds, Coral Reefs, Sandy Beaches	Humpback Whale, Pilot Whale, Hawaiian Monk Seal, Spinner Dolphin, Green Sea Turtle, Trigger Fish, Limu, Cauliflower Coral	1,300-square miles November 1992
Monitor NMS **north carolina**	Pelagic, Open Ocean, Artificial Reef	Amberjack, Black Sea Bass, Red Barbier, Scad, Corals, Sea Anemones, Dolphin, Sand Tiger Shark, Sea Urchins	1-square mile January 1975
Monterey Bay NMS **california**	Pelagic, Open Ocean, Sandy Beaches, Rocky Shores, Kelp Forests, Wetlands, Submarine Canon	Sea Otter, Gray Whale, Market Squid, Brown Pelican, Rockfish, Giant Kelp	5,328-square miles September 1992
Olympic Coast NMS **washington**	Pelagic, Open Ocean, Sandy & Rocky Shores, Kelp Forests, Seastacks & Islands	Tufted Puffin, Bald Eagle, Northern Sea Otter, Gray Whale, Humpback Whale, Pacific Salmon, Dolphin	3,310-square miles July 1994
Gerry E. Studds Stellwagen Bank NMS **massachusetts**	Sand & Gravel Bank, Muddy Basins, Boulder Fields, Rocky Ledges	Northern Right Whale, Humpback Whale, Storm Petrel, White-Sided Dolphin, Bluefin Tuna, Sea Scallop, Northern Lobster	842-square miles November 1992

Sanctuary Sites

Keeping in Touch

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1305 East-West Highway
Silver Spring, MD 20910
(301) 713-3125

Channel Islands NMS
113 Harbor Way
Santa Barbara, CA 93109
(805) 966-7107

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Fagatele Bay NMS
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011-684-633-7354

Florida Keys NMS
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(305) 743-2437

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(Lower Region)
216 Ann Street
Key West, FL 33040
(305) 292-0311

Florida Keys NMS
(Upper Region)
P.O. Box 1083
Key Largo, FL 33037
(305) 451-1644

Flower Garden Banks NMS
216 W. 26th Street
Suite 104
Bryan, TX 77803
(409) 779-2705

Gray's Reef NMS
10 Ocean Science Circle
Savannah, GA 31411
(912) 598-2345

Gulf of the Farallones NMS
Fort Mason, Building #201
San Francisco, CA 94123
(415) 561-6622

Hawaiian Islands Humpback Whale NMS
726 South Kihei Road
Kihei, HI 96753
(808) 879-2818

Monitor NMS
c/o The Mariners' Museum
100 Museum Drive
Newport News, VA
23606-3759
(757) 599-3122

Monterey Bay NMS
299 Foam Street, Suite D
Monterey, CA 93940
(408) 647-4201

Olympic Coast NMS
138 W. First Street
Port Angeles, WA 98362
(360) 457-6622

Stellwagen Bank NMS
14 Union Street
Plymouth, MA 02360
(508) 747-1691

Proposed Sanctuaries

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Seattle, WA 98115
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