

SANCTUARY WATCH

Inside... Sanctuary Discoveries

**Billy Causey:
Star of the Sea**

Shearwater

Follow That Fish!

**Sanctuary
Stewardship Award**

**JASON XIV:
From Shore to Sea**



NATIONAL MARINE
SANCTUARIES™



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Letter from the Director

Welcome to a new era for America's national marine sanctuaries and a new, dynamic look for the National Marine Sanctuary Program's *Sanctuary Watch*. As the program has matured over the past few years, so have the needs of our constituents—people like you! Our goal is to connect you to *your* 13 national marine sanctuaries and the many research projects, public events, explorations and other activities that take place within the sanctuary system throughout the year.

Sanctuary Watch will be published quarterly instead of six times per year. This will allow us to bring you articles that are more in-depth and personal. As you can see, the newsletter is now published in full color to better reflect the vibrant diversity of marine life found in our sanctuaries—from the tropical reefs of Fagatele Bay to the colorful sea stars of the Olympic Coast.

Of course, we will continue to focus on the many things that make national marine sanctuaries the special places that they truly are—the animals, the plants, the cultural resources and, of course, the people who live and work in our sanctuary communities. Their stories are as inspirational as the most beautiful coral reef, tropical fish or soaring seabird. Indeed, without people, the wonders found within our sanctuaries would forever remain a mystery under the blue horizon. Each issue of *Sanctuary Watch* will therefore include a profile of an individual who is dedicated to ensuring that everyone, from schoolchildren in Iowa to whale-watchers in New England, has the opportunity to learn about and enjoy America's ocean and Great Lakes treasures.

Please join me as we continue the adventure and explore and learn more about our wondrous national marine sanctuaries.

Sincerely,


Daniel J. Basta, Director
National Marine Sanctuary Program



vision People value marine sanctuaries as treasured places protected for future generations.

mission To serve as the trustee for the nation's system of marine protected areas to conserve, protect, and enhance their biodiversity, ecological integrity, and cultural legacy.

Sanctuary Discoveries

Expeditions Capture America's Imagination

Since the creation of the National Marine Sanctuary Program (NMSA) in 1972, the protection of historic shipwrecks and other submerged archaeological sites has been an integral part of the program's mission. In fact, America's first national marine sanctuary was designated to protect a shipwreck of immense historical and cultural value to the nation—the famous Civil War ironclad USS *Monitor*.

Recently, the sanctuary program's focus on submerged cultural resources has yielded landmark discoveries that have captured the attention and sparked the imagination of the American public. Indeed, NMSA research expeditions have shed new light on the nation's evolving relationship with the oceans by revealing how brave men and women once sailed on the water and met the challenges offered by the sea.

"Never before has the National Marine Sanctuary Program's exploration and documentation of submerged cultural resources been so dynamic," said NMSA Director Daniel J. Basta. "And never before have the results been so significant and far-reaching."

To assist the national marine sanctuaries in their efforts to locate, record, manage and protect submerged cultural resources within their boundaries, the National Marine Sanctuary Program has established the Maritime Archaeology Program (MAP). The program will also provide assistance and consultation to other federal and state agencies on issues concerning submerged cultural resources, and seek to develop new methods, tools and partnerships for achieving program objectives. The MAP will be headquartered at a new facility to be constructed in 2003 on the grounds of The Mariners' Museum in Newport News, Virginia.

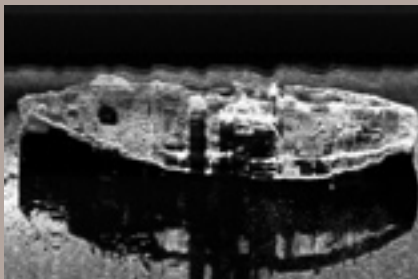
Here's a look at a few of the research and recovery expeditions recently undertaken by the National Marine Sanctuary Program in partnership with NOAA's Office of Ocean Exploration, public and private institutions, and other federal agencies.

Pacbaroness, Channel Islands National Marine Sanctuary

In September 1987, the 562-foot commercial vessel *Pacbaroness* collided with the auto carrier *Atlantic Wing* and foundered with a combined volume of 378,943 gallons of fuel and lubricating oils and 21,000 metric tons of finely powdered copper

concentrate on board. Although the shipwreck lies outside the sanctuary boundary, there has been a concern that the toxic cargo and fuel oils could pose a threat to sanctuary marine resources. In cooperation with the U.S. Navy, researchers from NOAA and the University of California Santa Barbara used a remotely operated vehicle in July 2002 to conduct the first surveys of

the wreck since 1987 and 1988. During the mission, scientists observed abundant marine life on and around the 1,400-foot-deep wreck. Working around the clock, researchers documented, photographed and collected sediment samples for chemical and biological analysis. Assessing this and other sanctuary shipwreck sites will help determine further steps necessary to ensure that the marine ecosystems are protected.



Side-scan sonar image of the *Portland*. Photo: NOAA

Portland, Stellwagen Bank National Marine Sanctuary

On August 29, 2002, NOAA confirmed that New England's most sought-after and mysterious wreck, the steamship *Portland*, lies within the boundaries of the Stellwagen Bank National Marine Sanctuary (SBNMS).

The confirmation of the *Portland*'s final resting place was the successful culmination of a joint research mission conducted by SBNMS and the National Undersea Research Center at the University of Connecticut. Dubbed "New England's *Titanic*," the *Portland* went down with all 192 passengers and crew during a storm in 1898. Discovery of the wreck was first reported in 1989 by a private group, but further study was needed to confirm the wreck's location and identity. Using the latest technology and research methods, the *Portland* expedition team was able to determine conclusively that the wreck is indeed that of the ill-fated steamship. Due to its location within SBNMS, the wreck of the *Portland* receives federal protection and may not be moved, removed or otherwise disturbed.

Thunder Bay Exploration 2002, Thunder Bay National Marine Sanctuary and Underwater Preserve

During the summer of 2002, scientists from NOAA, the Michigan Department of History, Arts and Libraries and the Institute for Exploration (IFE) conducted a two-week expedition at the Thunder Bay National Marine Sanctuary



E.B. *Allen* bow. Photo: John Brooks

and Underwater Preserve off the coast of Alpena, Michigan. Exploring targets identified in 2001, the expedition team discovered two previously uncharted shipwrecks, including a 19th-century wooden schooner. The team also collected video and photographs of 15 known shipwrecks. All of the images will be used to further study the shipwrecks and for future public interpretation, including a new shipwreck exhibit planned for the Thunder Bay sanctuary headquarters. The team also documented several offshore limestone sinkholes. The sinkholes were on land during low lake levels 8,000 to 10,000 years ago when Paleo-Indians inhabited the upper Great Lakes. IFE's Dr. Robert Ballard participated in the expedition and delivered a presentation on his efforts to help bring the national marine sanctuaries experience to the public.

(Con'd on pg. 4)



Pacbaroness sinking. Photo: Glenn Allen

Star of the Sea

February 8, 2003 was a special day for Florida Keys National Marine Sanctuary

Superintendent Billy D. Causey. It was the day he went home. Not to his house in the Keys, but to Corpus Christi, Texas—the place where his oceans-oriented career began to take shape. He was there to receive a distinguished alumni award from his alma mater, Texas A&M-Corpus Christi. It was a very proud moment for the longtime aquanaut and civil servant, who has headed up the 2,900 square-nautical-mile sanctuary since 1990. It was also a chance to reflect on how far he had come both personally and professionally.

Billy first discovered his attraction to the sea at the tender age of 8. As a youngster, his family would camp along the beaches of the Texas coast and he would spend hours and days snorkeling along the troughs between the sand bars, exploring the sandy bottom. It was an added treat to get even a glimpse of a fish, sand dollar or shell. He bought his first Aqua Lung in 1957 and used the first two tanks of air in the family bathtub, closely investigating the drain stopper. He used his third tank for an open water dive in Lake Pontchartrain near New Orleans, where he rested on the bottom in about six feet of water with only about one foot of visibility. The highlight of the dive was when a mullet swam past his mask.

Between 1957 and 1959, Billy logged most of his dives in the bayous of Louisiana. Then, in 1960, his family moved to Corpus Christi. By this time, diving had become a passion, and Billy took every opportunity to dive the rock jetties at Port Aransas and the offshore oil platforms along the Texas coast. Billy became interested in marine biology after being influenced by his high school biology teacher. While still in high school, Billy befriended a well-known marine biologist at the University of Corpus Christi (now Texas A&M-Corpus Christi), Dr. Henry Hildebrand, who introduced Billy to coral reefs and became a mentor.

While studying marine biology at the University of Corpus Christi, Billy worked his way through college diving in the oil and gas fields of the bays and coastal waters of Texas and Louisiana. Although commercial diving was an exciting field and a potential career, Billy learned quickly that he wanted to finish college and get into the field of marine biology.

In 1966, while still an undergraduate student and commercial diver, Billy became a ranger at the Padre Island National Seashore. His responsibilities included beach patrols along Padre

Island, interpretation, and enforcement. Billy credits his district ranger, Buddy Martin, with teaching him how to be a good public servant.

Billy began working on a master's degree at Texas A&I (now A&M) at Kingsville in 1967. His interest in marine biology kept him near the Texas coast, where he studied the fish of a rock reef off Padre Island.

In the fall of 1969, Billy moved to Tampa to pursue a doctorate at the University of South Florida (USF). Although he did not complete his degree at USF, he studied under a number of noted marine scientists. During this time, Billy was introduced to the tropical coral reef environment of the Florida Keys.

Billy supplemented his income while a student at USF through commercial diving. Working for a Tampa-area firm, he spent a considerable amount of time under the hulls of ships and raising sunken vessels. This exposure to underwater construction convinced Billy he wanted to work in clear, tropical waters.

As a student at USF, Billy met his wife of 30 years, Laura Goddard. Their mutual love of the marine environment led them into the field of marine aquaria. In 1971, they opened the first exclusively saltwater retail aquarium store in the world. They later moved their wholesale business to Big Pine Key, Florida, where they opened Aplysia Aquarium Collecting and Research Center. They also served as marine life consultants in several countries.

In 1983, Billy's career path changed enormously when he joined NOAA and became the manager of the Looe Key National Marine Sanctuary off Big Pine Key. At last, he was able to apply every skill and bit of knowledge he had gained since he was that 8-year-old, snorkeling off the beaches of Texas. By the late 1980s, Billy had logged over 18,000 hours underwater.

Today, as the superintendent of the Florida Keys National Marine Sanctuary, which now encompasses Looe Key, Billy is enjoying the challenges that come with the job. He is certainly proud of the sanctuary, his dedicated team and the community that has been so involved in its management and stewardship.

"What's being discovered—or rediscovered—is that we have these fabulous places off our coast that are state, national and international treasures," said Billy, talking about the nation's marine sanctuaries. "People are also discovering that we can keep these special areas healthy even as the public continues to use and enjoy them. My job is to help maintain that balance here in the Florida Keys."

Billy's friend and fellow Texas A&I alumnus Dr. John Wesley Tunnell, Jr., who serves as director of the Center for Coastal Studies at Texas A&M-Corpus Christi, was pleased to see Causey receive the university's distinguished alumni award.

"Billy is a great example of what young scientists can accomplish if they put their hearts and minds into their work," said Tunnell. "People can also see that he's not pushing his own agenda. He's working to protect the Florida Keys [marine ecosystem] for the next generation. That's his motive."



Billy Causey, Photo: Florida Keys NMS





The *Shearwater* makes its debut.
Photo: Sarah Fangman/CINMS

New Vessel Helps Scientists, Students Study the Sea

This spring, a new National Marine Sanctuary Program vessel will be seen plying the waters off the West Coast in the quest to learn more about our nation's marine resources.

The *Shearwater*, a 62-foot high-speed Tecnicraft catamaran research vessel, will be housed at the Channel Islands National Marine Sanctuary (CINMS).

"The *Shearwater* will usher in a new level of research capability for CINMS and the California sanctuaries," said CINMS Manager Chris Mobley.

The *Shearwater* was designed specifically as a research platform to conduct oceanographic research in the waters off California. The vessel will also serve as a host for educational field trips and emergency response in and around the Channel Islands National Marine Sanctuary. In addition, the *Shearwater* will be available to the Monterey Bay, Gulf of the Farallones and Cordell Bank national marine sanctuaries.



(Con'd from pg. 2)

Monitor Expedition 2002, Monitor National Marine Sanctuary

In March 1862, a warship unlike any other entered service in the U.S. Navy. It was the *USS Monitor*, an ironclad ship that featured the world's first armored revolving gun turret. Built in a mere 110 days, the *Monitor* is credited with saving

the Union from the advances of another ironclad, the Confederate CSS *Virginia*. But while the *Monitor* survived an epic, four-hour battle with the *Virginia*, it foundered and sank during a December 1862 gale off Cape Hatteras, North Carolina. The *Monitor* remained lost until a team of researchers located the wreck in 1973. Two years later, the wreck site became the nation's first national marine sanctuary. During the summer of 2002, NOAA and the U.S. Navy teamed up to recover the *Monitor*'s famous turret and its two 11-inch smoothbore Dahlgren cannons. After working around the clock for 41 days, NOAA and the Navy succeeded in raising the turret and cannons, which together weighed 236 tons. The effort marked the end of a multi-year effort by NOAA, the Navy and The Mariners' Museum to preserve key components of the revolutionary ship before seawater corrodes the vessel beyond recognition.

Ocean Explorer

Chronicles of NMSP missions can be found on NOAA's Ocean Explorer Web site, oceanexplorer.noaa.gov. Ocean Explorer provides public access to current information on a series of NOAA scientific and educational explorations and activities in the marine environment.



Maritime Archaeology Center Groundbreaking – On March 9, ground was broken in Newport News, Virginia, for NOAA's new Maritime Archaeology Center. Co-located with The Mariners' Museum and the *Monitor* National Marine Sanctuary, the new center will be a national focal point for preserving America's rich maritime history.

Santa Barbara Whale Festival and Street Fair - The Channel Islands National Marine Sanctuary is a co-sponsor of this annual event on March 29-30 to celebrate the abundant whale life found in sanctuary waters. Blue, humpback and gray whales can all be seen within the sanctuary during various times of the year.

Guided Tidepool Walk at Duxbury Reef – Join your Gulf of Farallones National Marine Sanctuary intertidal guide on June 7 as you explore the unique marine life exposed at low tide. You will learn about the amazing adaptations creatures have made to survive in this harsh environment.

Savannah Ocean Festival – The Gray's Reef National Marine Sanctuary will sponsor this event in downtown Savannah on World Oceans Day, June 8. The festival brings together a variety of exhibits highlighting our colorful ocean world from children's art and poetry to hands-on touch tanks of sea creatures.

Capitol Hill Oceans Week – The National Marine Sanctuary Foundation is hosting this annual event June 10-12 to raise awareness about the importance of protecting the oceans and national marine sanctuaries. A series of symposia, exhibits and receptions will bring together congressional representatives and staff, industry, academic and public advocacy organizations; and government agencies to discuss current and emerging issues affecting our marine environment. To learn more about how your organization can sponsor and participate in this event, please visit the Foundation Web site at www.nmsfocean.org.

2003 Budget Approved; President Requests Increase for 2004 – On February 14, Congress approved an omnibus spending bill that provides \$44.7 million for the National Marine Sanctuary Program (NMSP) for operations and construction for fiscal year 2003 (FY03). The bill funds \$33 million for sanctuary operations, \$1 million for unobligated funds, and \$750,000 for the Northwest Straits Citizen Advisory Commission. In addition, Congress passed a \$10 million construction budget, of which \$5 million has been earmarked to fund the final federal costs for completing The Mariners' Museum *Monitor* Center in Newport News, VA. In fiscal year 2004, the president requested \$35.8 million for sanctuary operations and \$10 million for construction and exhibits. The \$45.8 million budget will allow NMSP to initiate projects originally proposed for FY03.

Follow That Fish! Tagging Program Helps Researchers Get to the Bottom of a Fishy Mystery

Most people know that fish move around in the ocean. Some fish, like tuna and swordfish, are highly migratory and travel great distances during their lifetimes. Others have a more limited geographic range and stay in the same general area of the sea. But what is not well known or understood is how different features of the sea floor, such as coral and rocky reefs, influence the movement of fish. How they move in and around marine protected areas—places in the ocean that have been set aside to promote the conservation of marine life and their habitats—is also largely unknown.

In an attempt to solve these mysteries, Stellwagen Bank National Marine Sanctuary (SBNMS) Science Coordinator Dr. James Lindholm, is using a high-tech sensor network in the Stellwagen Bank and Florida Keys national marine sanctuaries to study how fish move over seafloor habitats. Working with colleagues from the University of Connecticut, the University of North Carolina, Boston University and the New England Aquarium, Lindholm hopes to provide information that can be used in the successful design and implementation of measures intended to protect fish within our national marine sanctuaries and beyond.

To unlock the secrets of fish movement, Lindholm and his team are using a process known as “fish tagging.” While the technology is sophisticated, the idea is simple: Equip fish with small acoustic devices that transmit a unique code to an underwater network of strategically placed receivers, then monitor where they go, when they go there, and for how long.

“Every time we place a tag on a fish, we learn new things,” said Lindholm. “Our hope is that these data will help both the National Marine Sanctuary Program and the larger scientific community better understand how fish move over the landscape.”

The acoustic tags are about an inch long, and are each coded with an identifying signature that is transmitted or “pinged” every 60 to 180 seconds. Results thus far suggest that a tag, or “pinger,” can provide data for as many as seven-and-a-half months.

The pingers can either be attached to the musculature at the base of a fish’s dorsal fin or implanted. Fish that receive external pingers are collected via hook and line and are tagged on a boat. After the fish are tagged, they are returned to the sea floor in a special fish “elevator.” When researchers determine that implanting a pinger is preferable, they can perform the procedure on a boat or under water. Working under water, divers catch the fish in baited traps on the sea floor. The divers then anesthetize selected fish and carefully insert the pinger through a small incision. Following tagging, divers revive the fish by swimming them along the seafloor, flushing their gills with fresh seawater.

To gather data being transmitted by the pingers, the research team deploys multiple acoustic receivers, for months at a time,

along the sea floor in different ocean bottom habitats. In New England, the receivers are anchored to the sea floor by a 750 lb railroad wheel. In the Florida Keys, the receivers are deployed by SCUBA divers and are mounted on bars that have been drilled into the seafloor. Each single-channel receiver records the presence of tagged fish up to 1,300 feet in any direction from the device.

At SBNMS, in the southern Gulf of Maine, the scientists have thus far focused their attention on Atlantic cod, a species of considerable ecological, economic and cultural significance to New England. During the summers of 2001 and 2002, a total of 77 cod were tagged and released over two landscape types: low-relief gravel and piled boulder reefs. For Lindholm and his colleagues, the results thus far have been very interesting. While individual cod can move hundreds of miles in a single month, the research team recorded a significant number of cod around the piled boulder reefs for nearly the entire study period. Other, more transient cod were found to visit multiple reefs during the study period, spending relatively little time at each.

At the Florida Keys National Marine Sanctuary (FKNMS), work began in November 2001 with the tagging of yellowtail snapper and black grouper. Fish of both species were recorded at two coral reef sites inside the “no take” Sanctuary Preservation Areas (SPAs) at Conch Reef and Davis Reef. Data collected over seven-and-a-half months found that yellowtail snapper has a much stronger attachment to individual reef features than had been expected. In August 2002, researchers tagged a total of 80 fish from more than 10 different species, such as parrotfish, hogfish, yellowtail and mangrove snapper, and red and black grouper. The acoustic receiver array was also expanded to include 27 receivers within seven of the SPAs, and data are still being collected on most of the 80 tagged fish.

Though both of these tagging programs are ongoing, the results thus far from SBNMS and FKNMS are highly instructive. The data suggest that both the sanctuaries themselves, as well as smaller subsets like the SPAs, can provide vital protection to certain fish species. Clearly more data are required from other fish species and other times of the year, to more fully understand the role that the National Marine Sanctuary Program can play in fish conservation.





Senator Breaux (back row, holding award) with NMSF Executive Director Lori Arguelles (front row, fourth from left), NMSF board member John Wright (front row, center) and the staff of the Flower Garden Banks NMS. Photo: Greg Bunch

U.S. Senator Breaux Honored for Work with Flower Garden Banks Sanctuary

Surrounded by spectacular underwater images from the Flower Garden Banks National Marine Sanctuary he helped create, Louisiana Senator John B. Breaux was presented with the first National Marine Sanctuary Foundation Stewardship Award at a gala dinner at the Audubon Aquarium of the Americas on January 24. The award was given for his role in the expansion of the National Marine Sanctuary System, and specifically for his role in establishing the Flower Garden Banks National Marine Sanctuary, located off the Louisiana-Texas coast.

“Senator Breaux has a long and distinguished record of supporting legislative initiatives designed to enhance the nation’s coastal and ocean resources,” said Lori Arguelles, executive director of the National Marine Sanctuary Foundation. “Without his involvement, the Flower Garden Banks Marine Sanctuary might not exist today.”

The event included a retrospective on the sanctuary, as well as a look ahead to its future. Louisiana Congressmen William J. Jefferson and David Vitter were among the honored guests. It also featured some of the nation’s finest chefs, including Paul Prudhomme of K-Paul’s Louisiana Kitchen, Alan Ehrich of the Audubon Nature Institute, Todd Gray of Equinox, Keith Keogh of Red Lobster and Jeffrey Mora of Creative Culinary Design. Dennis Wolterling from WWL-TV served as master of ceremonies.

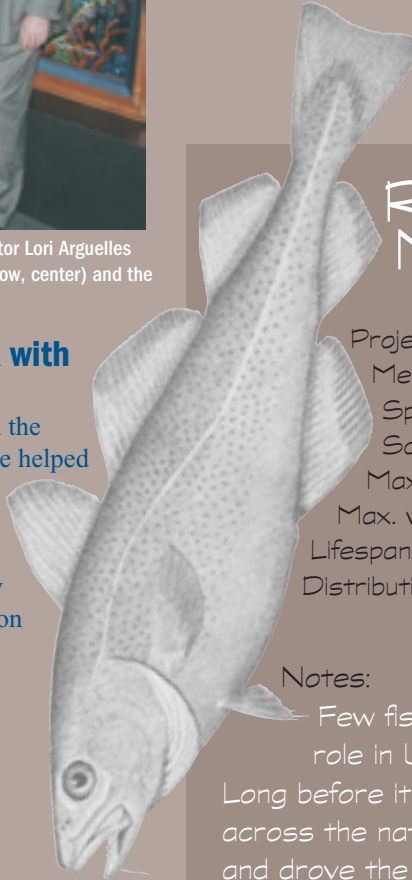
Co-existing with nearby oil and gas platforms, the Flower Garden Banks National Marine Sanctuary is located 110 miles off the coasts of Texas and Louisiana and harbors 56 square miles of coral reef and associated marine communities. Like an oasis

in the desert, the sanctuary’s salt domes provide shelter for reefs, sponges and fish of such beauty that the Flower Garden Banks have become a premier diving destination in the United States.

The National Marine Sanctuary Foundation, the host of the event, is the private, non-profit partner to the National Marine Sanctuary System. The foundation supports the outreach and education activities of the nationwide network of marine sanctuaries.



Researcher's Notebook



Project: Fish movement study
 Method: Tagging; acoustic telemetry
 Species: Atlantic cod
 Scientific name: *Gadus morhua*
 Max. length: 78.7 inches (adult)
 Max. weight: 211 lbs
 Lifespan: 20-30 years
 Distribution: North Atlantic

Notes:

Few fish have played a more important role in U.S. history than the codfish. Long before it became a staple in cafeterias across the nation, cod sustained the Pilgrims and drove the New England economy. In fact, the cod fishery was once the region’s largest. The fish were once so plentiful that mariners in the 15th century reported that they could catch them simply by dipping baskets into the water and scooping them out. Cod continue to be a valuable resource to the nation. Understanding how cod move along the sea floor, and with respect to sanctuary boundaries, is key to keeping cod populations healthy.

Sources: FishBase; *Cod* by Mark Kurlansky (Walker and Company. New York: 1997)



A diver prepares to release a tagged seaup grouper. Photo: Florida Keys NMS



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Channel Islands Sanctuary, Explorer Ballard Take Students from 'Shore to Sea'

Channel Islands National Marine Sanctuary (CINMS), Channel Islands National Park and the Santa Barbara Maritime Museum teamed up with world-renowned oceanographer Dr. Robert Ballard and the JASON Project in January and February to enable thousands of Santa Barbara, California students to explore the Channel Islands without ever leaving their seats. Millions more joined the two-week JASON XIV: *From Shore to Sea* expedition via satellite and the Internet as it broadcast live from the Santa Barbara Maritime Museum and Anacapa Island.

A select group of researchers and students and teacher "Argonauts" worked alongside Ballard to host the interactive, multi-media expedition, which examined earth, ocean, atmospheric and space science while highlighting the ecology and maritime history of the Channel Islands. *From Shore to Sea* capped a year-long JASON Project curriculum that engaged students around the globe in learning through scientific research and discovery.

CINMS staff were actively involved in the expedition and live broadcasts, offering an up-close look at the many facets of the Channel Islands marine ecosystem and facilitating the interaction between students at the maritime museum and scientists in the field.

"JASON XIV marks the first time the project has operated from both a National Marine Sanctuary and National Park," said Claire Johnson, West Coast education liaison for the National Marine Sanctuary Program. "Channel Islands National Marine Sanctuary and Channel Islands National Park served as the perfect laboratories for studying nature's dynamic systems."

The JASON Project is a cooperative effort between federal, institutional and private corporate partners. Federal partners involved in JASON XIV: *From Shore to Sea* include NOAA's National Marine Sanctuary Program, the National Aeronautics and Space Administration and the U.S. Department of Education.

"NOAA and the National Marine Sanctuary Program are proud to have supported and contributed to JASON for many years," said National Marine Sanctuary Program Director

Daniel J. Basta. "Today's JASON Argonauts may be tomorrow's NOAA scientists and researchers."

CINMS worked with host partners Channel Islands National Park and the Santa Barbara Maritime Museum to involve the local community and area students. They also worked with the Santa

Barbara and Ventura County Offices of Education to create a local Channel Islands Argonauts program with 20 local area school children. The students visited Anacapa during the broadcasts and participated in JASON activities before and during the live broadcasts. To expand the impact of the expedition, curriculum and online JASON activities will be continued through the school year and in future years.

In addition to reaching millions of students and teachers, JASON XIV attracted worldwide media attention. MSNBC.com followed the expedition online, and National Geographic Television broadcast over a week of hour-long JASON programs in February.



Julie Bursek of the Channel Islands National Marine Sanctuary works with Sallie Smith of NASA and Yvonne Menard of the Channel Islands National Park to put together an uninhabited aerial vehicle to conduct surveys as part of JASON XIV. Photo: © 2003 Daniel J. Splaine courtesy of JFE

