



ALOOLKOY

News from the Channel Islands National Marine Sanctuary



NATIONAL MARINE
SANCTUARIES™
CHANNEL ISLANDS



THE R/V *SHEARWATER* IN ACTION

Winter 2005
Volume 17
Number 1

"Alolkoy" is a Chumash word meaning dolphin. This newsletter is published semi-annually by the Channel Islands National Marine Sanctuary. Guest opinions expressed in *Alolkoy* do not necessarily reflect the official position of the sanctuary.

The Channel Islands National Marine Sanctuary is a part of the National Marine Sanctuary System, established under Title III of the Marine Protection, Research, and Sanctuaries Act, as amended. For more information, contact: National Marine Sanctuary System, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 1305 East-West Highway, SSMC4, 11th Floor, Silver Spring, MD 20910.

Support for producing *Alolkoy* comes from the Channel Islands National Marine Sanctuary and the National Marine Sanctuary Foundation.

Direct correspondence, submissions, and address changes to: *Alolkoy*, CINMS, 113 Harbor Way, Suite 150, Santa Barbara, CA 93109, 805/966-7107.

Editor: Cynthia Anderson
Designer: Margy Brown

Front cover photo:
R/V *Shearwater* at Cuyler Harbor, San Miguel Island during the Shipwreck Reconnaissance Program's annual expedition.
Photo by Robert Schwemmer

Back cover photos:
Top: Channel Islands aerial view.
© Wm. B. Dewey

Bottom: Sanctuary and Channel Islands images © James Forte



NATIONAL MARINE
SANCTUARIES™
CHANNEL ISLANDS

From the Bridge

The R/V *Shearwater*: A Vessel Whose Time Has Come

By Chris Mobley, Sanctuary Manager

On May 12, 2003, Channel Islands National Marine Sanctuary (CINMS) and the National Oceanic and Atmospheric Administration (NOAA) christened the R/V *Shearwater*, a 62', high-speed Teknicraft aluminum-hull catamaran. While we knew that this vessel would enhance our management, research, and education efforts, the vessel has more than fulfilled its promise.

The vessel design provides the stability and speed needed to navigate the sanctuary's 1,252.5 square nautical miles—an area larger than the state of Rhode Island. Its state-of-the-art capabilities for on-board science and data collection have benefited both the sanctuary research team and nearly two dozen national, state, and local partners that use the vessel.

While a dedicated team effort helped make the R/V *Shearwater* possible, special credit goes to CINMS Research Coordinator Sarah Fangman, who coordinated the boat's design and production over a period of three years. Sarah also helped coordinate this issue of the *Alolkoy*, which highlights the R/V *Shearwater*'s accomplishments as well as some of the research and education programs supported by the vessel.

Other sanctuaries have been quick to recognize the value of the R/V *Shearwater*'s design. At this time, three vessels are being constructed for the National Marine Sanctuary Program by the same builder, All American Marine in Bellingham, Washington. Sarah is part of the design/construction oversight team for these three vessels: a 65' sister ship to the R/V *Shearwater* that will be used by the three northern California sanctuaries (Monterey



Robert Schwemmer

The R/V *Shearwater* has helped set a new standard for state-of-the-art research, education, and management in national marine sanctuaries.

Bay, Gulf of the Farallones, and Cordell Bank); a 53' law enforcement vessel for the Florida Keys National Marine Sanctuary; and a 48' research vessel for the Stellwagen Bank National Marine Sanctuary.

When Representative Lois Capps christened the R/V *Shearwater*, she remarked, "This vessel shows NOAA's commitment to the Santa Barbara area, and I believe that the R/V *Shearwater* will prove to be a critical investment in the agency's ongoing work to protect the Channel Islands National Marine Sanctuary." CINMS has indeed been privileged to lead the way in initiating a new era on the water for sanctuaries nationwide.

TABLE OF CONTENTS

A Platform for Partnerships	3	Up Close with the R/V <i>Shearwater</i>	12
Meet the CINMS Vessel Operations Team	4	Sanctuary Updates 2004	
Bight '03 Update	5	Management and Research	14
Xantus's Murrelet Surveys Expand in 2004.....	6	Education and Outreach	16
ROV Surveys Get to the Bottom of MPAs	8	Channel Islands Naturalist Corps (CINC)....	19
PISCO Partners in MPA Monitoring	9	Maritime Heritage Program	20
Valuing MPAs: A Monitoring Protocol	10	Sanctuary New Hires.....	22
Go Fish!	11	Calendar of Events	23

A Platform for Partnerships

The R/V *Shearwater* spent 193 days at sea in 2004. The vessel is generally made available to national, state, and local partners in support of their work. Research and education projects that meet CINMS management needs receive vessel time at no cost, in exchange for the information gathered and the community outreach provided—both of which help better protect the sanctuary.

Because of the R/V *Shearwater*'s research capabilities, it is uniquely qualified to support a wide variety of work. The R/V *Shearwater*'s special equipment includes:

- Scientific winch with 2,000-meter conducting cable that sends signals from the lab to equipment at the end of the cable;
- A-frame for launching and recovering sampling equipment (trawls, grabs, sidescan sonar, remotely operated vehicles, etc.)
- Dive compressor that supports multi-day scuba trips
- Articulated crane for deploying equipment, including an inflatable boat used for surveys and passenger transport
- Separate wet and dry labs, each with clean power
- Wet lab with fresh and salt water sinks
- Refrigerator and freezer for scientific samples
- Water maker that supports multi-day cruises
- Observer deck with four stations and computer/network connections (for seabird and marine mammal observations)
- Cameras on the top deck, aft deck, and engine rooms with a monitor in the bridge so that the captain can observe operations when the A-frame or crane is being deployed
- Speaker system throughout the vessel that allows the captain to communicate with the crew while at the helm
- Plankton video microscope and water sampling equipment

Because the sanctuary's mandate includes promoting, coordinating, and supporting the efforts of outside research groups, inquiries about the use of the R/V *Shearwater* and its sister vessel, the R/V *Xantu*, are welcome. In 2004, our vessels supported research projects on seabirds, marine mammals, kelp forests, oceanography, intertidal life, geology, and more.

To request vessel time, scientists and others must complete a "Request for Vessel Support" form, found on the CINMS website at <http://channelislands.noaa.gov/res/prores.html>. The sanctuary develops the vessels' schedules in November for the following year, selecting projects that best meet the sanctuary's mission. Additional requests may be made throughout the year and will be accommodated as time and resources permit.

Through ongoing partnerships, we look forward to identifying and filling the gaps of knowledge that exist about sanctuary resources.



Steve Dryer

Members of the Remotely Operated Vehicle (ROV) Survey Team gather on the stern of the R/V *Shearwater*. Left to right: Christine Pattison, California Department of Fish and Game (CDFG) biologist; Steve Wertz, CDFG biologist; Konstantin Karpov, CDFG senior biologist; Dirk Rosen, president, Marine Applied Research and Exploration (MARE); Andrew Lauermann, CDFG biologist and ROV specialist; Mike Prall, CDFG biologist and ROV specialist; and Terrence Shinn, R/V *Shearwater* captain. (See article page 8)

CINMS PARTNERS WHO USE THE R/V *SHEARWATER*

American Trader Trustee Council
American Zoo and Aquarium Association
Cabrillo High School Aquarium
California Department of Fish and Game
California Institute of Environmental Studies
California State Lands Commission
Centers for Ocean Sciences Education Excellence
Channel Islands National Park
Channel Islands Naturalist Corps
Channel Islands Sanctuary Advisory Council
Coastal Maritime Archaeology Resources
Humboldt State University
Marine Applied Research and Exploration
National Geographic Society
Ocean Explorers
REEF Environmental Education Foundation
Santa Barbara City College Adult Education Program
Santa Barbara Maritime Museum
Southern California Coastal Water Research Project
UC Santa Barbara (Marine Science Institute, Partnership for Interdisciplinary Studies of Coastal Oceans, Institute for Computational Earth System Science)
U.S. Fish and Wildlife Service
U.S. Geological Survey
Woods Hole Oceanographic Institute

Xantus's Murrelet Surveys Expand in 2004

By Darrell Whitworth



For more than a decade, the sanctuary has supported research on marine birds in the Southern California Bight—including annual surveys of Xantus's Murrelets. Partners in these studies have included Channel Islands National Park, California Dept. of Fish & Game, the *American Trader* Trustee Council, the California Institute of Environmental Studies, and Humboldt State University.

With the launch of the R/V *Shearwater*, CINMS has been able to provide opportunities for more ambitious seabird studies. Between March and May 2004, nine research cruises on Xantus's Murrelets surveyed over 265 kilometers at six islands—including the entire coastlines of Santa Cruz, Anacapa, Santa Barbara, and Santa Catalina islands, as well as large portions of San Miguel and Santa Rosa islands. In some of these locations, the current status of Xantus's Murrelets populations had been virtually unknown.

One of the most rare and intriguing of the region's many unique species, Xantus's Murrelets were listed as threatened by the State of California in 2004. Few people ever see these small, inconspicuous black and white seabirds. Subtropical relatives of the more familiar puffins and murrelets (family *Alcidae*), Xantus's Murrelets nest only on 12 islands off the Southern California and Baja California coasts. The islands within Channel Islands National Park and CINMS harbor perhaps half of the total world population, estimated at 10,000-15,000 birds.

The murrelets' small size (similar to a robin) renders them particularly vulnerable to predators, so they spend much of their time far out to sea and return to their island colonies between February and June to nest. Even during the breeding season, murrelets visit the colonies only at night, concealing their nests in sea caves, under bushes, or in small crevices on steep, rocky cliffs and slopes.

To further reduce the time spent on land, the tiny flightless chicks, following the calls of their parents from the ocean below, leave the nest just a few days after

hatching, tumble to the water's edge (sometimes several hundred feet down a cliff!), and swim through the surf to join their parents who accompany them out to sea.

Their secretive habits and remote breeding colonies have made studies of Xantus's Murrelets quite a challenge, and many basic aspects of their lives are still a mystery. In 2004, research by biologists from the California Institute of Environmental Studies and Humboldt State University focused on better determining where and how many murrelets inhabit each island.

During three- to four-day research cruises aboard the R/V *Shearwater* at the murrelets' breeding islands, researchers conducted conventional daytime nest searches and monitoring wherever possible. However, these techniques could not determine the overall number of birds because murrelets nest in cliffs and other inaccessible habitats. So we relied on the birds' penchant for returning to the islands at night and gathering on the water below the colony, where they are quite vocal.

While the physical and mental demands of a nearly round-the-clock schedule were exhausting, the unique beauty of the islands and the inevitable adventures that awaited us each day (and night) helped buoy the spirits of the team. We passed the nighttime hours counting or catching murrelets from an inflatable Zodiac boat, aided by high-intensity spotlights and GPS units. After working until dawn if weather permitted, followed by a morning nap and late breakfast, we spent the remaining daytime hours jumping from the Zodiac onto wave-washed rocks and scrambling into sea caves or along cliff sides in search of elusive murrelet nests.

Xantus's Murrelet spotlight surveys and nest monitoring began in 2000 as key elements of the Anacapa Island Restoration Program (AIRP), a project sponsored by the *American Trader* Trustee Council with support from CINMS and Channel Islands National Park. Ongoing nest monitoring provided data demonstrating the benefits of removing predatory black rats from



All photos © R. Aaron Raymond, The Essential Image Source Foundation

Opposite page: A researcher searches steep island cliffs for Xantus's Murrelet nests. Inset: Xantus's Murrelet. This page, above: Darrell Whitworth holds two murrelet chicks. Inset: murrelet egg.

Anacapa Island. Between 2000-02, 42 percent of all murrelet nests were destroyed by black rats. By 2004, a successful rat eradication program had eliminated rat predation as a cause of murrelet nest failure.

This year's nocturnal spotlight surveys revealed that the murrelet colony appears to be slowly expanding into areas on Anacapa Island previously occupied by rats. However, it may take several years to detect increases in the overall population, since murrelets, like all *Alcidae*, are long-lived but have low reproductive rates.

Data from the 2004 surveys is still being evaluated, but we discovered more murrelets than expected at Santa Catalina and Santa Cruz islands and fewer than expected at Anacapa, Santa Barbara, and San Miguel islands. No murrelets were observed at Santa Rosa Island. Surveys have yet to be conducted at San Clemente and San Nicolas islands, not to mention several islands off Baja California where the murrelets' status is undocumented.

CINC Research Log

By Clare Fritzsche

From March 29-31, 2004, fellow volunteer Barbara LaCorte and I had a glorious three-day trip out at the islands, looking for and learning about Xantus's Murrelets as volunteers with the Channel Islands Naturalist Corps (CINC). I wanted to pass along some of what we experienced and learned.

We worked morning, noon, and night, catching naps on the floor as we traveled from one island to another, or as we waited for night to fall and the murrelets to come in close to shore. Last night we motored around Gull Island in a Zodiac with a floodlight to count birds and note their behavior. Afterwards Barbara and I went back to the R/V *Shearwater* to assist the wildlife veterinarian with taking blood and feather samples of captured birds.

Xantus's Murrelets are elegant and gentle. Aesthetically, they are truly beautiful, streamlined to both swim and fly. Today we went looking for nests in sea caves at Anacapa, and Barbara and I saw one of the eggs, which seemed huge compared to the sleek little birds we held last night. It takes so much energy for the female to lay one egg that she leaves it at the nest and goes back out to sea to refuel, returning in several days to lay another. It's the gap of no parent at the nest that makes the eggs particularly susceptible to predation.

Clare Fritzsche has been a member of CINC since January 2001.



Although there is still much to discover, the 2004 surveys have provided important baseline information for many murrelet colonies within the park and sanctuary, an essential step toward understanding and minimizing human-related threats that confront this species. The removal of rats from Anacapa Island, while certainly an encouraging sign for that important murrelet colony,

will not by itself guarantee the survival of a species affected by oil pollution, introduced predators, commercial fisheries, global warming, and other potential threats. Clearly, much still needs to be done to ensure the survival of this unique and vulnerable species.

Darrell Whitworth is a Wildlife Biologist at the California Institute of Environmental Studies.

From the R/V *Shearwater*, scientists launch a Zodiac inflatable boat that they will use to reach the cliffside habitats of Xantus's Murrelets.



ROV Surveys Get to the Bottom of MPAs

By Mary Patyten

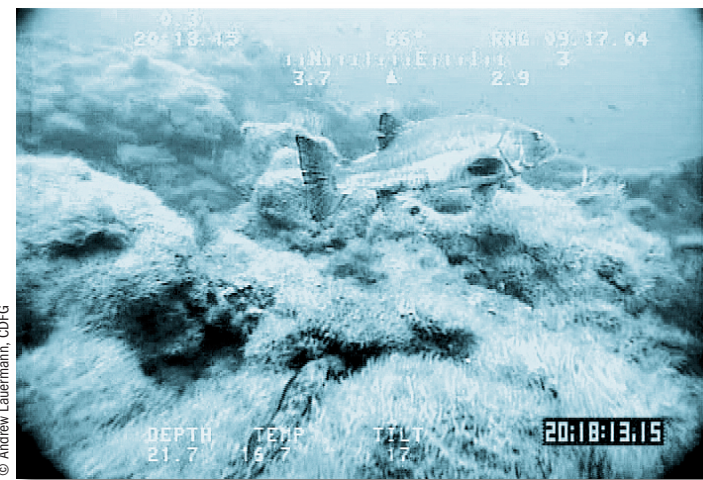
The Channel Islands Marine Protected Areas (MPAs) represent the largest network of fully protected areas on the West Coast. This network of 12 MPAs was established in state waters by the California Fish and Game Commission in April 2003 with extensive agency and community input. Since then, scientists have established protocols to measure the recovery of fish and invertebrate species within MPA borders.

The sanctuary, the California Department of Fish and Game (CDFG), Marine Applied Research and Exploration (MARE), and other scientists have gathered the resources needed to quantify the fish, invertebrates, and habitats within the MPAs. Using remotely-operated vehicles, or ROVs, plus the survey capabilities of the R/V *Shearwater*, the team led by CDFG Senior Biologist Konstantin Karpov is developing new and improved methods for measuring ecosystem change.

A growing number of scientists are investigating the potential benefits of MPAs, which include preserving habitats, species, cultural resources, and water quality; enhancing recreational opportunities; contributing to local economies through increased tourism; and maintaining healthy fisheries. Evidence from previous studies suggests that some MPAs allow heavily fished resident species to recover within their borders. Determining how fish populations are affected by the Channel Islands MPAs is the goal of the ROV team.

The team is hurrying to gather baseline data while the MPAs are still new. Researchers began preliminary surveys in November 2003, using the R/V *Shearwater* as a platform to launch CDFG's ROV. Additional survey cruises followed in May and September 2004. To date, the team has used the ROV's cameras to survey over 90 linear kilometers (almost 56 miles) of seafloor both inside and outside of the MPAs.

CDFG's ROV can operate at depths of up to 500 meters (1,500 feet), deeper than scuba divers can safely go. An ROV pilot uses joysticks, much like the joysticks for computer games,



The ROV captures a close-up of a giant sea bass, viewed here on a computer monitor aboard the R/V *Shearwater*. The giant sea bass is one of many species that may benefit from marine protected areas.



Steve Wertz, a biologist with the California Dept. of Fish and Game, unties the Phantom ROV during a survey cruise aboard the R/V *Shearwater*.

to guide the craft through each survey run. A navigator tracks the ROV through an acoustic tracking system, while the ship's captain holds the research vessel in position directly above the ROV. As the ROV explores the seafloor, biologists scan live videotape on a monitor aboard the R/V *Shearwater*, identifying species in real time. Videotapes from the cruises are archived and used at a later date to study size, density, and other aspects of fish and invertebrate species within the MPAs.

A scientific picture of the new MPAs, complete with the data needed by biologists and policymakers, is slowly taking shape as 60-plus hours of videotape is processed. For example, the team selected survey sites based on acoustic maps that showed rocky areas along the sea floor. However, ROV investigation found that these sites were actually covered with 50 to 75 percent sand. This information is vital to designing future surveys, and to quantifying the species inhabiting the MPAs.

The team also tested its new fish survey methods. Biologists counted fish from the live videotape and calculated fish densities from the data. The results underscore the ROV's utility as a survey tool within MPAs and elsewhere. These surveys will be repeated in the future to help CINMS and CDFG evaluate changes within and outside MPAs.

Together with diver surveys of shallower areas and other fishery-independent investigations such as mark-and-recapture studies, the ROV surveys provide much-needed scientific data for minimal risk and expenditure. Team leader Konstantin Karpov observes, "All of the studies being undertaken in the MPAs work in conjunction with one another and are necessary to assess whether MPAs are effective."

The ROV team will continue using the R/V *Shearwater* to conduct this important work in the Channel Islands MPAs during 2005.

Mary Patyten is Research Writer for the California Department of Fish & Game.

PISCO Partners in MPA Monitoring

By Satie Airamé

The California Fish and Game Commission established the Channel Islands MPAs for two express purposes: to protect biodiversity and to contribute to sustainable fisheries. The MPA network consists of 10 no-take marine reserves and two marine conservation areas that allow limited take of lobster and pelagic fish species.

Many important research questions surround the MPAs. For example, do fish targeted by commercial and recreational fisheries get bigger and more abundant inside marine reserves? Do fish inside marine reserves produce more young than fish in surrounding waters? Do fish swim out of marine reserves into adjacent areas where they can be caught—and vice versa? The answers to these and other questions require systematic and long-term monitoring of the MPAs—an effort undertaken by the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO).



A PISCO diver collects data in the kelp forest as part of the long-term MPA monitoring program.

Funded by The David and Lucille Packard Foundation, PISCO is a consortium of research scientists that has established a large-scale, long-term program for monitoring coastal and ocean ecosystems off the West Coast (see www.piscoweb.org). Although the scope of PISCO

is quite large—spanning over 2,000 kilometers—some of its projects, such as monitoring the Channel Islands MPAs, have a local focus.

PISCO and local research partners—including CINMS, Channel Islands National Park, California Department of Fish and Game, and Dr. Milton Love's marine research laboratory at UCSB—have developed and implemented a monitoring program in and around the Channel Islands MPAs. This includes a protocol for scuba surveys in shallow subtidal habitats, areas of particular interest to fishers and divers. The protocol features benthic (sea floor) surveys to count invertebrates and algae and describe the substrate, as well as fish surveys to count species and estimate their sizes. PISCO and its partners provide data from these surveys to the Department of Fish and Game with the long-term goal of answering research questions about MPAs.

CINMS supports PISCO's monitoring efforts by providing time on the R/V *Shearwater* to conduct subtidal surveys. Monitoring takes place at 26 sites throughout the sanctuary and park, located both inside and outside the MPAs. Some monitoring sites were included because they have been studied for many years and provide historical data. Other sites were identified with input from scientists, fishers, and the public. Eight sites are located in marine reserves, two in marine conservation areas, and 16 in waters open to various types of fishing.

As part of the monitoring program, PISCO provides an annual week-long training session where research divers learn the survey protocol as well as how to identify algae, invertebrates, and fish in the field. This training prepares them to collect precise and unbiased data.

The monitoring to date confirms and documents earlier observations of a striking difference in community structure between the eastern (warmer) and western (colder) parts of the Channel Islands. Recent data has shown strong spatial and temporal patterns in the settlement of fishes. For example, kelp bass, a fish

SOME FOCAL SPECIES FOR CHANNEL ISLANDS MPA MONITORING

- California sheephead (*Semicossyphus pulcher*)
- Kelp bass (*Paralabrax clathratus*)
- Cabezon (*Scorpaenichthys marmoratus*)
- Lingcod (*Ophiodon elongatus*)
- Kelp rockfish (*Sebastes atrovirens*)
- Gopher rockfish (*Sebastes carnatus*)
- Garibaldi (*Hypsypops rubicundus*)
- Rock wrasse (*Halichoeres semicinctus*)
- Black surfperch (*Embiotica jacksoni*)
- California spiny lobster (*Panulirus interruptus*)
- Red sea urchin (*Strongylocentrotus franciscanus*)
- Purple sea urchin (*Strongylocentrotus purpuratus*)
- Red abalone (*Haliotis rufescens*)
- Black abalone (*Haliotis cracherodii*)
- Warty sea cucumber (*Parastichopus parvimensis*)
- Bat star (*Asterina miniata*)
- Giant-spined star (*Pisaster giganteus*)
- Ochre star (*Pisaster ochraceus*)
- Sunflower star (*Pycnopodia helianthoides*)
- Giant kelp (*Macrocystis pyrifera*)

from a primarily tropical family, settles most abundantly in years when rockfishes (primarily a cold temperate family) settle in low numbers. There are also certain sites that appear to be "hotspots" for fish settlement, consistently receiving more new settlers than other sites. PISCO researchers are analyzing data on currents, sea temperatures, and winds in order to explain some of these patterns.

Due to their location, the Channel Islands form a transition zone between temperate and tropical marine ecosystems. As a result, the MPAs at the western and eastern ends of the island chain protect different types of marine communities—making it vitally important to maintain marine reserves throughout the chain.

In the coming years, PISCO and its partners will continue to gather information about the Channel Islands MPAs. Over time, scientists anticipate detecting recovery responses in depleted species. By sharing information from annual benthic and fish surveys, PISCO and its partners will aid in effective management of the Channel Islands MPAs.

Satie Airamé is Marine Policy Coordinator with PISCO at UC Santa Barbara.

Valuing MPAs: A Monitoring Protocol

By *Hélène Scalliet, Kristine Herrington, Robert Ellis, and Katrina Jessoe*

The designation of 12 Marine Protected Areas (MPAs) in the state waters of CINMS will likely have varying short and long-term economic impacts on different user groups. Monitoring these impacts is essential to understanding marine reserves as a marine management strategy.

As four graduate students at UCSB's Donald Bren School of Environmental Science and Management, we completed a research study in partnership with the sanctuary titled *Valuing Marine Protected Areas: A Monitoring Protocol for Recreational Non-Consumptive Use Applied to the Channel Islands National Marine Sanctuary*.

The study's goal was to develop a monitoring protocol to quantify the value of recreational non-consumptive activities conducted from charter boats, specifically in the MPAs and generally in the sanctuary. While fishing is restricted in the MPAs, non-consumptive activities that are allowed include scuba diving, kayaking, sailing, and wildlife viewing. A number of ongoing studies already address consumptive activities such as commercial and recreational fishing, but there are very few studies that look at non-consumptive activities around the islands.

Methods

To quantify recreational non-consumptive value, we applied the Travel Cost Method—a technique that translates the non-market benefits of recreation into a market price or value. This method uses the costs incurred by visitors (i.e. travel expenses such as hotel, food, gasoline, film, rental equipment) to estimate the value of non-consumptive recreation in the sanctuary and in the new MPAs.

We surveyed both charter vessel operators and their passengers. Six charter vessel operators—including some of the largest operators servicing the Channel Islands—answered a questionnaire regarding seasonal variations in the number of trips, number of passengers, and types of recreational activities. Additionally, we surveyed 125 passengers in person at Ventura, Santa Barbara, and Channel Islands harbors before they boarded the charter vessels.

Results

Based on our preliminary travel cost analysis, total annual consumer surplus for recreational non-consumptive charter vessel activities in the sanctuary is approximately \$253,000, and approximately \$14,000 in the MPAs.

Of the passengers surveyed, 40 percent were aware of the new MPAs and understood that no fishing was allowed in them. Approximately 58 percent of visitors incorrectly thought that sanctuary status restricted fishing or harvesting, and only nine percent of visitors correctly understood sanctuary regulations.

Future Steps

The actual value of recreational non-consumptive activities in the sanctuary and the MPAs is likely an underestimate because we only sampled during the fall and there is high seasonal variation in visitors to the sanctuary.

In order to detect a change in economic value over time, the protocol needs to be implemented regularly. Additionally, we recommend increasing education and outreach efforts to heighten awareness and understanding of the sanctuary and the new MPAs.

The Channel Islands MPAs are the first significant network of MPAs in the western United States, and they can be considered a test case for the future use of MPA networks as a marine management strategy. We hope that ongoing monitoring of both the consumptive and non-consumptive economic impacts of the Channel Islands MPAs will contribute to a national understanding of MPAs and their benefits and costs.

Hélène Scalliet, Kristine Herrington, Robert Ellis, and Katrina Jessoe are recent graduates from the Master's program at the Donald Bren School of Environmental Science and Management. They partnered with CINMS on this research from 2002-2004.

Go Fish!

By *Catherine French*

The waters of the Santa Barbara Channel are a great resource for sport and recreational fishing. Over the years, enthusiasts have enjoyed bountiful catches from their favored fishing spots.

However, numerous news reports about the new Marine Protected Areas (MPAs) have left some people with the impression that the local ocean is now off limits to fishing and diving for lobster. Not true! There is plenty of fishing to be had because fishermen were at the reserves negotiating table, protecting their favorite fishing spots from closure.

Commercial and recreational fishermen are also participating in a ongoing collaborative research partnership called the Collaborative Marine Research Program. This program brings together fishermen, marine researchers, and regional resource management agencies to investigate resource management questions of mutual interest.

About the MPAs

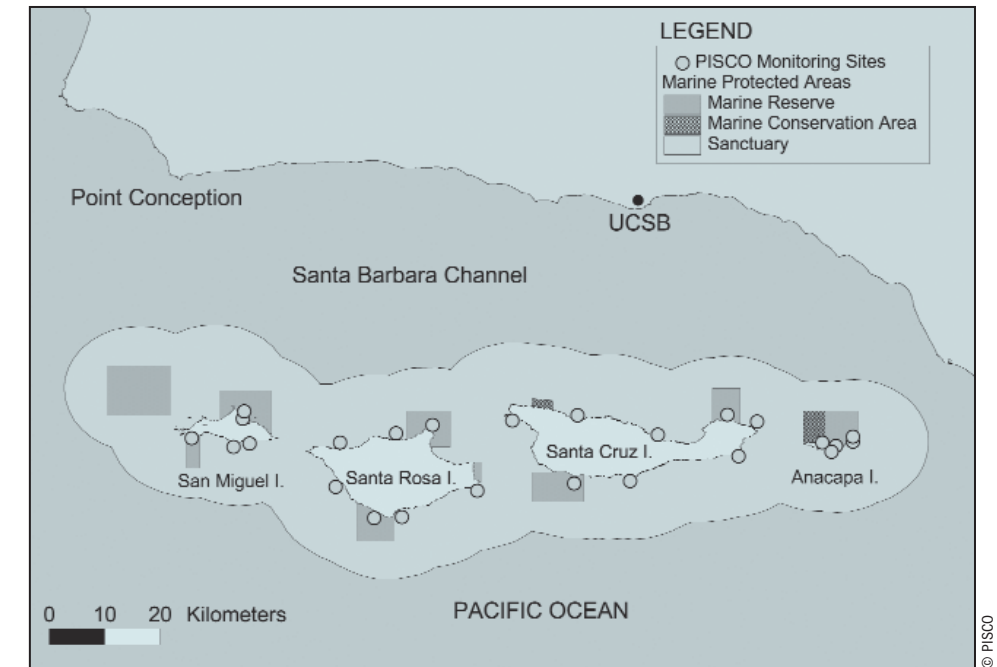
The MPAs have been set aside for the protection and restoration of marine habitats and ecosystems. Simply put, there are 12 MPAs in the sanctuary that cover 100 square nautical miles—only about 10 percent of total sanctuary waters. The waters in the Santa Barbara Channel, outside the sanctuary, are not included in these restrictions.

Ten of the twelve MPAs are no-take zones, meaning no fishing allowed. Two other MPAs allow recreational fishing for pelagic fish and lobster. Bottom line: there are still over 1,100 square nautical miles for fishing around the Channel Islands!

Why Are MPAs Necessary?

The idea is simple: protect certain areas now, and this may help ensure that we have recreational and commercial fishing opportunities for generations to come.

Here is what John Ugoretz from the California Department of Fish and Game has to say: "By protecting habitat and ecosystems, MPAs help conserve



Shaded areas just off the islands indicate the 12 marine protected areas established in state waters of the sanctuary. Outside of these areas, fishing is permitted in over 1,100 square nautical miles of ocean around the Channel Islands.

biological diversity, provide areas with more natural fish and invertebrate populations, provide a reference point against which scientists can measure changes in the marine environment, and may help rebuild depleted fisheries."

Fishing Ps and Qs

Of course, the basic rules for fishing off the coast still apply. Anyone 16 years and older must have a valid fishing license to take any kind of fish, mollusk, invertebrate, or crustacean in California. You can pick up a copy of the regulations wherever fishing licenses are sold, or contact the California Department of Fish and Game at (831) 649-2870.

Better yet, go online to www.dfg.ca.gov/mrd/channel_islands.html. Click on the Maps and Descriptions button to get maps, background information, regulations, and a question & answer page. Here's a small sampling:

Q. Last year I could fish for rockfish and lingcod from shore during the closed season. Can I still do so?

A. No. Rockfish, lingcod, cabezon, and greenlings are closed in waters south of Point Conception during January and

February at all depths, to all methods of take (including angling and spear fishing from shore).

Q. I caught a weird saltwater fish, who can help me identify it?

A. Contact any Department of Fish and Game Marine Region office. They will either help you with the identification or find someone close by who can identify it. You can also send your question, with a digital picture of your fish, to AskMarine@dfg.ca.gov.

Sanctuary Brochures

For additional information, the sanctuary has two new brochures, "Protecting Your Channel Islands" and "Boating and Safety," available at most marine supply stores, tackle shops, yacht clubs, and the sanctuary and park offices.

So grab your gear (don't forget your fishing licenses), load your boat or hop on a charter, head out to the beautiful blue waters off the Channel Islands, and *Go Fish!*

Catherine French is a Founding Sponsor of the Santa Barbara Maritime Museum, an avid sailboat racer and cruiser, and a naturalist volunteer for CINMS and CINP.

An aerial view of Anacapa Island, where two marine protected areas (MPAs) are located in the surrounding waters.

Robert Schwemmer

Up Close with the R/V Shearwater

“What’s it like being out on the R/V Shearwater, and how does the vessel’s equipment aid your projects?” We posed these questions to CINMS research partners as well as CINMS staff members. Here are some of their responses.

DIRK ROSEN, President Marine Applied Research and Exploration (MARE)

Over the past 13 months we have used the R/V Shearwater five times for Remotely Operated Vehicle (ROV) expeditions ranging from one to two weeks. These projects include baseline exploration and quantitative finfish surveys of the Channel Islands Marine Protected Areas and the search for the endangered white abalone.

We use the ROV to video the habitat and biota from depths of 20 to 100 meters, stay down for hours at a time, and cover up to 11 km of transect per day. So far we have surveyed over 100 km of habitat. In December 2004 we collected two white abalone to breed in a registered marine aquaculture facility.

The stability and spaciousness of the R/V Shearwater, combined with its handling equipment, make it ideal for our ROV crew of five biologists and an engineer. We launch the ROV from the Shearwater’s A-frame while controlling it and archival-ly recording the data inside the lab. The boat’s speed, maneuverability, and talented captains allow us to accurately follow our precision transect lines despite wind, waves, and currents.

In our home away from home, we cook for each other and sleep dorm-style. During our cruises we have seen an amazing variety of marine life, including the protected giant black seabass, the rare California electric ray, and the odd Mantis shrimp. We have also encountered considerable human debris on the ocean floor, including a squid net covering a reef in the conservation area off Anacapa Island.

JEAN DE MARIAGNAC Scientist, Sanctuary Integrated Monitoring Network (SIMoN) Monterey Bay National Marine Sanctuary

My experience with the R/V Shearwater has been a great one. We had a very productive 19-day cruise in fall 2004, with the Shearwater providing a state-of-the-art research plat-

form for five scientific projects that took place primarily in Monterey Bay National Marine Sanctuary:

- Horizontal and vertical distribution of jellyfish relative to oceanographic variables
- Ground truthing sidescan sonar data and benthic habitat survey
- Assessment of essential fish habitat for newly settled rockfishes
- Scuba survey in Southern Monterey Bay and the Big Sur coastline
- West Coast observation thermometer deployment in the Gulf of the Farallones National Marine Sanctuary

In addition, the West Coast national marine sanctuaries staff organized outreach events in Half Moon Bay, San Francisco, and Monterey.

Participating institutions included Monterey Bay, Channel Islands, Cordell Bank, and Gulf of the Farallones national marine sanctuaries, California Dept. of Fish and Game, Deep Ocean Engineering, Monterey Bay Aquarium, Moss Landing Marine Laboratories, NOAA Fisheries Santa Cruz Laboratory, NOAA Southwest Fisheries Science Center, PISCO, and U.S. Geological Survey.

NOAA is supporting construction of a new 65-foot research vessel—the R/V Fulmar—that will be modeled after the Shearwater and possess similar capabilities. The new vessel will serve Monterey Bay, Gulf of the Farallones, and Cordell Bank national marine sanctuaries. The two vessels are sister ships in name as well, since the shearwater and fulmar belong to the same family of seabirds (Procellariidae). They are ideally suited to life on the open ocean, as are the R/V Shearwater and Fulmar.

NATHALIE GUILLOCHEAU Research Specialist, Institute for Computational Earth System Science, UC Santa Barbara

Plumes and Blooms, an ongoing research project funded by

NASA and led by the Institute for Computational Earth System Science (ICESS) at UC Santa Barbara, characterizes the bio-optical properties of the Santa Barbara Channel, develops ocean color models, and calibrates and validates satellite data.

The R/V Shearwater provides a comfortable, roomy, and stable platform for our field program, which consists of one-day cruises every three weeks year round. We collect data along a seven-station transect from Santa Rosa Island to Goleta Point using a radiometer, bio-optical instruments, and water sampling equipment.

While our radiometer is an easy to deploy “free-fall” instrument, the rest of our bio-optical instruments and water sampling bottles are mounted on a carousel that weighs around 450 pounds. The launch, deployment, and recovery of this heavy instrument package are the most hazardous parts of our field work. These operations are safely accomplished thanks to the hydraulic A-frame and winch of the R/V Shearwater. The winch also has a conductive cable that sends commands to the instruments and sampling bottles and receives real-time data.

We use the R/V Shearwater’s dry lab as a computer room to operate the underwater instruments. We filter water samples in the wet lab, then store them either in the lab fridge, freezer, or a liquid nitrogen container. The wet lab’s large dimensions allow several scientists to work efficiently at the same time.

ROBERT SCHWEMMER CINMS Cultural Resources Coordinator

The R/V Shearwater serves as an exceptional research platform to conduct archaeological investigations for the Shipwreck Reconnaissance Program. During these week-long expeditions, the speed of the vessel allows access to multiple island shipwreck locations. Weather and sea conditions sometimes prevent access to certain shipwreck sites. When conditions improve, the vessel’s speed allows for short transit time to complete our work.

Some of the shipwreck sites are located inshore and are surrounded by submerged rocky reefs, preventing access by a larger research vessel. The R/V Shearwater’s inflatable can be easily launched, providing suitable transportation for divers to access these shallow water sites.

Searching for and locating submerged shipwrecks and aircraft in deeper water is aided by the vessel’s onboard DGPS (Differential Global Positioning System), with computer charts

augmented by the fathometer system. The wet and dry labs easily transform into a work and staging area for the specialized dive equipment required to record archaeological sites.

In the future, the R/V Shearwater’s A-frame and winch system will be utilized for sidescan sonar and magnetometer surveys to locate previously undiscovered maritime heritage resources within the sanctuary and park.

LAURA FRANCIS CINMS Education Coordinator, Santa Barbara Office

CINMS’ education and outreach programs rely on the R/V Shearwater to give visitors a first-hand experience of the sanctuary’s natural wonders. Some of these programs include adult education classes, teacher workshops, National Geographic field studies, REEF fish surveys, film projects, and the Channel Islands Argonaut Program.

Having a stable, fast platform that is well-equipped for both research and education has been incredibly helpful. Some of the equipment used regularly on education excursions includes the Zodiac inflatable, plankton nets, video microscope, water quality testing equipment, and scuba tanks.

Education programs take place on the R/V Shearwater at least once a month, sometimes for day trips and sometimes for multi-day trips. While it is a small space, the boat is very comfortable for overnight stays. It’s enjoyable to be out with a small group, cooking meals together and getting to know each other.

I have been on the R/V Shearwater in the company of 16 blue whales near the boat. The water was perfectly flat like a lake, and there was no wind. It was an unforgettable moment for the sanctuary staff and visiting educators onboard.

In addition to public education programs, the R/V Shearwater serves as a training platform for Channel Islands Naturalist Corps (CINC) volunteers. The volunteers gain field experience and familiarity with the vessel for interpretation to the public.

Visit the R/V Shearwater

Free public tours of the R/V Shearwater are offered twice a year. For tour dates, visit <http://channelislands.noaa.gov/res/calendar/2005.html>



Scientists relax at day’s end during Monterey Bay National Marine Sanctuary’s 19-day research cruise aboard the R/V Shearwater in fall 2004.



MARE President Dirk Rosen (foreground) pilots while CDFG biologist and ROV specialist Andrew Lauermann navigates during ROV surveys in the Channel Islands Marine Protected Areas (MPAs).



Scientists from the Plumes and Blooms project collect water samples from their 450-pound instrument package, which is deployed using the R/V Shearwater’s hydraulic A-frame and winch.



The Shipwreck Reconnaissance Program dive team—Robert Schwemmer (CINMS), Ian Williams (CINP), Carol Lintean (CMAR), and Mark Norder (CMAR)—monitors underwater archeological sites.



Teachers in the year-long Centers for Ocean Sciences Education Excellence (COSEE) program take part in a floating laboratory cruise to Santa Cruz Island aboard the R/V Shearwater.

Management and Research 2004

MANAGEMENT

Management Plan Review

National Marine Sanctuary Program (NMS) headquarters staff is completing reviews of the CINMS Draft Management Plan (DMP) and Draft Environmental Impact Statement (DEIS). Management Plan Coordinator Mike Murray and Management Plan Specialist Sarah MacWilliams have revised these documents, and sanctuary and NMS staff will soon seek the next level of agency clearance from NOAA's National Ocean Service. The DMP/DEIS will be released for public comment in 2005.

More information on the management plan review process is available at <http://channelislands.noaa.gov/manplan/overview.html>. The public can send requests to be on the email list to mp.request@noaa.gov.

Biogeography Study

NOAA's National Centers for Coastal Ocean Science (NCCOS) are nearing completion of a regional study of CINMS marine biogeography. The study's objective is to analyze data that will help evaluate boundary expansion options for future consideration by the sanctuary.

NCCOS and CINMS scientists are compiling data on 11 macro-invertebrate species, 12 marine fishes, 10 marine birds, and 14 marine mammals, as well as diversity parameters for each group. The study also features an analysis of the region's static and dynamic habitats. The end result will identify areas of high biological value in the regional seascape. More information is available at http://biogeo.nos.noaa.gov/projects/assess/ca_nms/cinms/.

Sanctuary Advisory Council Highlights

In 2004, members of the Sanctuary Advisory Council volunteered thousands of hours to provide community-based advice on sanctuary management issues. The year's achievements include adopting recommendations that call for CINMS to address potential sanctuary marine life impacts from anthropogenic noise



The Sanctuary Advisory Council in public session, November 2004, Ventura, California.

sources, such as large vessel traffic.

These recommendations call for investigation into the sources and impacts of noise, consideration of initial steps to investigate policy options, and the development of sanctuary partnerships with agencies and the shipping industry. A comprehensive report was produced by the Conservation Working Group, led by research fellow Shiva Polefka (<http://channelislands.noaa.gov/sac/pdf/7-12-04.pdf>).

Other council achievements in 2004:

- A new *Chumash Community seat* was filled by Ricardo Melendez and Paulette Cabugos as member and alternate. Plans are under way for a *Chumash Community working group*.
- A new *Recreational Fishing seat* was filled by Merit McCrea and Steve Roberson as member and alternate, and a new *Recreational Fishing Working Group met several times*.
- A new *Research Activities Panel (RAP)* was formed to provide science-based advice to the sanctuary, chaired by Dr. Robert Warner.

To learn more about the council, contact Mike Murray at michael.murray@noaa.gov or visit <http://channelislands.noaa.gov/sac/main.html>.

Enforcement

CINMS, the California Sanctuary Foundation, and California Department of Fish and Game have nearly finalized

a cooperative enforcement agreement whereby the sanctuary will fund CDFG state wardens to actively enforce sanctuary regulations. Cross-deputization and a formalized training are anticipated in 2005, as are active patrols by CDFG wardens.

CINMS and NOAA General Counsel reached a successful settlement with the owner of the F/V *Reliance*, a gill net vessel that sunk in the South Point State Marine Reserve off Santa Rosa Island in 2003. Settlement funds will be used to augment resource protection and enforcement in the sanctuary.

Channel Islands Marine Protected Areas

Sanctuary Environmental Review Process

The Sanctuary Advisory Council, the ad-hoc Marine Reserves Committee, and the Pacific Fishery Management Council helped shape a forthcoming Draft Environmental Impact Statement (DEIS) on federal marine reserves and conservation areas within CINMS. These new federal marine protected areas would complement the Channel Islands Marine Protected Areas (MPAs) established in state waters in 2003.

Council members and several working groups reached a consensus in September on many important suggestions. In 2005, a draft DEIS will be released to the public. The preliminary document is available at http://channelislands.noaa.gov/marineres/enviro_review.html.



Scientists from Woods Hole Oceanographic Institute conducted two weeks of squid studies aboard the R/V *Shearwater*.

Collaborative Monitoring

CINMS is sponsoring a team of graduate students from UC Santa Barbara's Bren School that is working on a thesis titled "Collaborative Monitoring of the Spiny Lobster in the Channel Islands Marine Protected Areas." The project's primary focus is to understand how marine protected areas affect the long-term sustainability of the spiny lobster fishery. More information is available at <http://bren.ucsb.edu/~lobster>.

RESEARCH

In 2004, CINMS supported a wide variety of research activities through funding, staff support, and use of the R/V *Xantu*, R/V *Shearwater* and the Lake Renegade Sea Wolf aircraft. Several of these projects are highlighted on pages 5-9 and 12-13, and a few others are mentioned below. The Research section of the CINMS web site hosts a new navigational structure with details on current research activities at http://channelislands.noaa.gov/res/cinms_res.html

MPA Monitoring

In 2004, the bulk of sanctuary research activities focused on Marine Protected Areas (MPAs). CINMS funded UC Santa Barbara's Love Lab to conduct a five-day cruise using the Delta submersible to look at deep-water portions of the MPAs. Other MPA-related research also took place aboard the R/V *Shearwater*. Five weeks of scuba surveys, three weeks of ROV surveys (see page 8), and two weeks of sidescan sonar surveys were part of the state monitoring plan.

The two-week sidescan sonar cruise involved mapping and towed video camera operations. Approximately 84 square kilometers of habitat were mapped at San

Miguel, Anacapa, and Santa Cruz islands. Bottom video was collected at selected locations to ground truth sidescan maps and gather biological data. This project is a partnership with Dr. Guy Cochrane, USGS geophysicist.

Squid Studies

Drs. Roger Hanlon and Ken Foote of Woods Hole Oceanographic Institute used the R/V *Shearwater* to develop a remote-sensing methodology for quantifying egg beds of market squid (*Loligo opalescens*), ultimately for determining recruitment. Regions of squid egg beds were identified and mapped on the basis of fisheries data or by direct observation from a remotely operated vehicle (ROV). Collaborators included the California Department of Fish and Game (CDFG) and the Santa Barbara City College Marine Diving and Technology Department. The squid fishery is the number one fishery in the state.

REEF Surveys

CINMS and REEF cosponsored Channel Islands fish survey trips in May, September, and December. In an effort to provide consistent data from a set of sites within the sanctuary, REEF staff developed a long-term monitoring plan that includes 33 sites off San Miguel, Santa Rosa, Santa Cruz and Santa Barbara islands. These sites were selected in consultation with CINMS and CDFG staff, and include sites both inside and outside of the marine protected areas. In 2004, REEF dive teams visited 26 sites and conducted 152 surveys (www.reef.org).

Plumes and Blooms

Since 1996, the Plumes and Blooms (PnB) project, based out of UC Santa Barbara, has conducted a field program in collaboration with CINMS to evaluate water characteristics in the Santa Barbara Channel. This program correlates satellite ocean color data with data on quantities of suspended sediments,

A REEF diver encounters a pile perch while conducting a fish survey at Santa Cruz Island.

© Carl Winn

phytoplankton pigments, and dissolved organic matter in the water column. In 2004, eight PnB cruises took place aboard the R/V *Shearwater*.

During large, intense rains, the entire channel can be covered by sediment-laden water with high nutrient concentrations that affect regional ecosystem dynamics. In 2004, the PnB project published five peer-reviewed manuscripts by two graduate students, Jon Warrick and Mark Otero, that used PnB field data and satellite data to evaluate the impact of sediment runoff on water quality.

Other current research is evaluating the response of phytoplankton to weather changes. Graduate student Clarissa Anderson is using PnB data to examine the role of harmful algal blooms in the Santa Barbara Channel. Tihomir Kostadinov, another PnB graduate student, is developing new mathematical models of ocean color that account for changes in optical properties due to intense phytoplankton blooms or sediment runoff. For more information, visit www.icess.ucsb.edu/PnB/PnB.html.

Sanctuary Aerial Monitoring and Spatial Analysis Program (SAMSAP)

SAMSAP allows near real-time collection and viewing of data vital to sanctuary management and resource protection. Using the amphibious fixed wing Lake Renegade Sea Wolf aircraft as a platform, SAMSAP aids in three research efforts: vessel traffic monitoring, marine mammal sighting, and kelp canopy monitoring. Eight SAMSAP flights took place in 2004.



Education and Outreach 2004

Workshops

Marine Wildlife Viewing Workshop

More than 45 participants attended the CINMS Marine Wildlife Viewing Workshop held in Santa Barbara in February. Whale watch operators, divers, kayakers, naturalists, and local government representatives provided input on disturbance concerns, suggested outreach products for responsibly viewing marine wildlife, and evaluated the draft handbook "Responsibly Viewing Marine Wildlife in California."

LiMPETS Rocky Intertidal Monitoring Project Teacher Workshop

CINMS offered a free one-day professional development workshop in March for middle and high school teachers on the Long-Term Monitoring Program and Experiential Training for Students (LiMPETS) Rocky Intertidal Monitoring Project. Teachers learned about the ecology of the rocky intertidal habitat and classroom activities to prepare their students for field monitoring. For more information about LiMPETS visit www.limpets.noaa.gov.



Teachers and informal educators identify and count intertidal organisms in a free LiMPETS workshop sponsored by the sanctuary.

Exploring Data Using GIS to Experience Sanctuaries (EDGES) Workshop

CINMS education staff and the Center for Image Processing in Education (CIPE) planned and hosted an EDGES workshop for middle and high school teachers in conjunction with World GIS Day in November. EDGES utilizes scientific data to help teachers and students to explore the national marine sanctuaries. EDGES workshops are funded by a 2003 Grosvenor Geography Education Grant from the National Geographic Society Education Foundation.

WEB SITE (<http://channelislands.noaa.gov/>)

Visit the following updated sections of the CINMS web site:

Marine Mammal Sightings Database:

<http://www.cisanctuary.org/mammals>

Channel Islands Marine Sanctuary Foundation:

<http://www.cisanctuary.org>

CINMS Underwater Slide Show:

<http://channelislands.noaa.gov/slides/main.html>

Outdoor Santa Barbara Visitor Center:

<http://outdoorsb.noaa.gov>

R/V Shearwater Schedule:

<http://channelislands.noaa.gov/res/calendar/2005.html>

From Shore to Sea JASON Curriculum:

<http://channelislands.noaa.gov/edu/shoretosea.html>

Weather Kiosk:

<http://channelislands.noaa.gov/focus/kiosk.html>

Other Educational Programs

From Shore To Sea Lecture Series

CINMS and Channel Islands National Park hosted the 2004 "From Shore To Sea" Lecture Series for the public to learn about ongoing research projects in the sanctuary and park. The free talks, given by leading authorities on the Channel Islands, took place monthly at the park's Robert J. Lagomarsino Visitor Center at 1901 Spinnaker Drive in Ventura.

Adult Education Course

In 2004, CINMS, Santa Barbara City College Continuing Education, and the Santa Barbara Maritime Museum cosponsored a course titled "Discovering the Channel Islands National Marine Sanctuary." Students learned about the kelp forests, rocky reefs, and island ecosystems of the sanctuary and park during three evening sessions held at the Santa Barbara Maritime Museum, plus a field trip to Anacapa Island.

Products

South Coast Watershed Resource Center Signage

CINMS partnered with the South Coast Watershed Resource Center on a new educational panel outside the center at Arroyo Burro Beach. The panel has information about the sanctuary and Channel Islands, including interactive blocks with images of marine life on one side and the depth where they are found on the other.

Boater Brochure

CINMS coordinated with CINP, the Ventura Power Squadron, and the County of Ventura to design and print a boating and safety brochure that highlights safety issues and responsible wildlife viewing techniques. Approximately 27,750 brochures were sent to registered boat owners in Ventura County, thanks to support from the California Department of Boating and Waterways. The remaining 2,700 brochures were distributed at Santa Barbara Harbor by the Santa Barbara Waterfront Department.



CINMS Education Coordinator Laura Francis and Manager Chris Mobley lead an interpretive dive for staff and visitors to the Blue Cavern tank at Long Beach Aquarium of the Pacific.

Special Events

American Zoo and Aquarium Association

On March 18, CINMS Manager Chris Mobley and Education Coordinator Laura Francis hosted an American Zoo and Aquarium Association (AZA) Board of Directors trip on board the R/V *Shearwater*. Other participants included National Marine Sanctuary Program (NMSP) Deputy Director Michael Weiss, NMSP staff Matt Stout and Catherine Marzin, Gulf of the Farallones Sanctuary Manager Maria Brown, and Gray's Reef Sanctuary Manager Reed Bohne. Attendees discussed areas for potential collaboration between sanctuaries, zoos, and aquaria.

CINMS Channel Islands Harbor Office Open House

On June 6, sanctuary staff and volunteers hosted a public open house to formally announce the opening of the new office at Marine Emporium Landing. The larger office provides additional space for visitor information and is equipped with several volunteer and intern workstations.

Santa Barbara Ocean Film Festival

The Ocean Channel and Santa Barbara Channel Keeper presented the first Santa Barbara Ocean Film Festival in May at UC Santa Barbara. Co-sponsors included CINMS, UCSB's Marine Science Institute, PADI Project Aware, Island Packers, and La Cusinga EcoLodge in Costa Rica. Three films featured the sanctuary: a vignette by John Brooks on cultural connections, a 60-second CINMS public service announcement, and a three-minute "teaser" introducing the "Jewels of the Pacific" film project.

Aquarium of the Pacific

In October, CINMS and NMSP staff met with Long Beach Aquarium of the Pacific staff to discuss potential joint projects and long-term partnerships. This relationship has the potential for exciting collaborations, including exhibits and education programs

such as lectures, activities, and field trips. To learn more about the aquarium, visit www.aquariumofpacific.org.

Community Outreach

Oxnard Convention and Visitors Bureau

CINMS Education Coordinator Julie Bursek was voted onto the Oxnard Convention and Visitors Bureau to represent CINMS in promoting tourism in Oxnard and in Channel Islands Harbor.

Channel Islands Harbor Foundation

Channel Islands Harbor is defining itself as the "educational harbor" for Ventura County. To achieve that goal, the Channel Islands Harbor Foundation is fundraising for two projects: the new Boating Instruction and Safety Center and the tall ship *Tole Mour*. CINMS Education Coordinator Julie Bursek is vice president of the board.

CINMS Assists Winning ROV Team

The Cabrillo High School "A" Team won the regional ROV competition in Monterey, qualifying them to compete in the national competition at UC Santa Barbara in June. CINMS provided training in building ROVs in partnership with Marine Advanced Technology Education (MATE), UC Santa Barbara's Marine Science Institute, and Santa Barbara City College.

Multicultural Education for Resource Issues Threatening Oceans (MERITO)

In October, MERITO Program Community Liaison Rocío Lozano-Knowlton completed demographic research for the MERITO program needs assessment. Her research identifies areas of Hispanic concentration within Santa Barbara and Ventura counties, as well as education levels and ages to target in developing CINMS outreach efforts.

In addition, Lozano-Knowlton interviewed the leaders of 35 organizations in Ventura and Santa Barbara counties to obtain data on gaps in marine education and outreach.

Students from Generation Communications learn to kayak at Santa Cruz Island thanks to the MERITO program (Multicultural Education for Resource Issues Threatening Oceans).



Laura Francis

Education Programs on the R/V *Shearwater*

Education and outreach about sanctuary resources are key elements of the sanctuary mission – and many of those education programs depend on the R/V *Shearwater*. Education programs with components on the R/V *Shearwater* include volunteer training, adult education classes, teacher workshops, field studies, fish surveys, film projects, and student programs. A few of these programs are described below.

Ocean Explorers GIS Project Workshops

Sanctuary education staff worked with the Center for Image Processing and Education (CIPE) to host a series of teacher workshops in 2004 as part of the National Science Foundation-funded Ocean Explorers project.

The purpose of Ocean Explorers is to help middle and high school educators design inquiry-based Geographic Information Systems (GIS) learning activities derived from the California State standards for science, mathematics, technology, environmental, and social studies education.

The workshops provide educators with an overview of GIS, an introduction to image processing, and curriculum design training using the Mapping an Ocean Sanctuary GIS lessons. Over 60 teachers from San Diego, Los Angeles, Ventura, and Santa Barbara counties are participating.

As part of their training, many of the teachers visit Santa Cruz Island via the R/V *Shearwater*, where they participate in hands-on activities both on the island and in the sanctuary. For more information about Ocean Explorers, visit <http://www.exploreoceans.org>.

Centers for Ocean Sciences Education Excellence (COSEE) – West Coast Floating Lab

In May, CINMS hosted a cruise to Anacapa Island for over 50 teachers from the Los Angeles Unified School District on the R/V *Shearwater* and M/V *Conception*.

Activities included a Reef Environmental Education Foundation (REEF) fish count, observations of plankton using video microscopes, water profiling, and an onboard touch tank. Participants saw whales, dolphins, and pinnipeds, and explored kelp forest communities and the flora and fauna of Santa Cruz Island.

This cruise was the culminating activity for teachers who participated in the year-long COSEE West teacher workshop series, providing them with an opportunity to apply their skills directly to the field environment.

National Geographic Society (NGS) Field Study

CINMS Education Coordinator Laura Francis and NGS Ocean Literacy Program Manager Francesca Cava coordinated the National Geographic Field Study from August 9-12 at Santa Cruz Island Reserve, part of the UC Natural Reserve System owned and managed by The Nature Conservancy. Twelve teacher/student pairs participated in the field study, coming from urban, underserved areas across the U.S.



© Susanna Frohman

As part of the National Geographic Field Study on Santa Cruz Island, students took over 1,700 digital photographs with cameras donated by Nikon.

After an exciting ride on the R/V *Shearwater* to the island, students spent four days researching and photographing its geology, flora, and fauna. Activities included sandy beach monitoring using Long-term Monitoring Program and Experiential Training for Students (LiMPETS) protocols, global positioning system (GPS) geo-caching, kayaking, and hiking. Students also explored the island's nineteenth-century adobe ranch houses and chapel. Reserve Manager Lyndall Laughrin told stories of what island life was once like for nearly 2,000 Native Americans.

Evening presentations featured experts like Greg Marshall, NGS inventor, scientist, and filmmaker, who demonstrated how photography is used in scientific inquiry. Students used this knowledge to shoot over 1,700 digital photos that illustrated scientific and conservation concepts. The trip concluded with a presentation of the students' photo journal. Nearly 100 photographs were chosen for a slide show titled "An Island in the Sea: A Visual Journey."

Partners included the University of Southern California Sea Grant, Channel Islands National Park, the Center for Image Processing in Education, the Ocean Futures Society, and Nikon.

**WINTER/SPRING 2005
EDUCATION TRIPS ON THE R/V SHEARWATER**

January 22: Cabrillo High School ROV Trip
 January 26: California Regional Environmental Education Community (CREEC) Coordinator Trip
 February 18-21: Reef Environmental Education Foundation (REEF)
 March 5: LiMPETS Field Trip to Anacapa Island
 March 12: Southern California Artists Painting for the Environment (SCAPE)
 April 23: Channel Islands Argonauts
 April 30-May 1: Ocean Explorers Trip
 May 4: Outdoor Santa Barbara Visitor Center Training Trip

Channel Islands Naturalist Corps (CINC)

In 2004, the CINC program grew to over 100 volunteers that represent the sanctuary and park as interpreters on whale watch trips, island hikes, adult education programs, and R/V *Shearwater* special programs. CINC volunteers also assist with outreach events, presentations, office administrative support, and research and monitoring.

CINC volunteers contributed over 10,000 hours of service this year—the equivalent of five full-time staff positions. On September 21, they were honored by the sanctuary and park at the annual CINC Recognition Dinner. Barbara LaCorte was named CINC Volunteer of the Year for her outstanding service; she is a CINC whale watch and island hike naturalist, elementary school principal, education alternate on the Sanctuary Advisory Council, and committee member on the Sanctuary Education Team.

The major accomplishments of the CINC in 2004 include:

Whale Watch Trips

Between January and September, CINC volunteers accompanied 719 whale watch trips and 106 island hikes. Seven marine excursion vessel operators participated in the program and have agreed to take part for three additional years: Condor Express, Captain Don's Whale Watch, Santa Barbara Sailing Center, Truth Aquatics, Island Packers, Channel Islands Marine Floating Lab, and Channel Islands Sport Fishing Center.

Outreach Events and Presentations

CINC volunteers represented the sanctuary and park at over 30 outreach events and presentations, including: JASON Project, Pt. Mugu Whale Festival, EF International, El Camino Science Fair, Channel Islands Harbor Whale Festival, Marine Wildlife Viewing Workshop, Ventura County Science Fair, Santa Barbara Whale Festival, Earth Day, adult education courses, Refugio Junior Lifeguards, Olympic Coast National Marine Sanctuary 10th Anniversary Event, Camarillo Fishing Club, US Power Squadron, Ventura County Boat Show, R/V *Shearwater* VIP Cruises, Coastal Clean-Up Day, Channel Islands Harbor Seafood Festival, Santa Barbara City College Career Fair, and Santa Barbara Harbor Seafood Festival.

Adopt-a-Business Brochure Distribution

CINC volunteers provided regular stocking of CINMS brochures at 70 marine-related businesses and organizations in Santa Barbara and Ventura.



CINMS

This CINC training class graduated in January 2004, bringing the total number of volunteers to over 100.

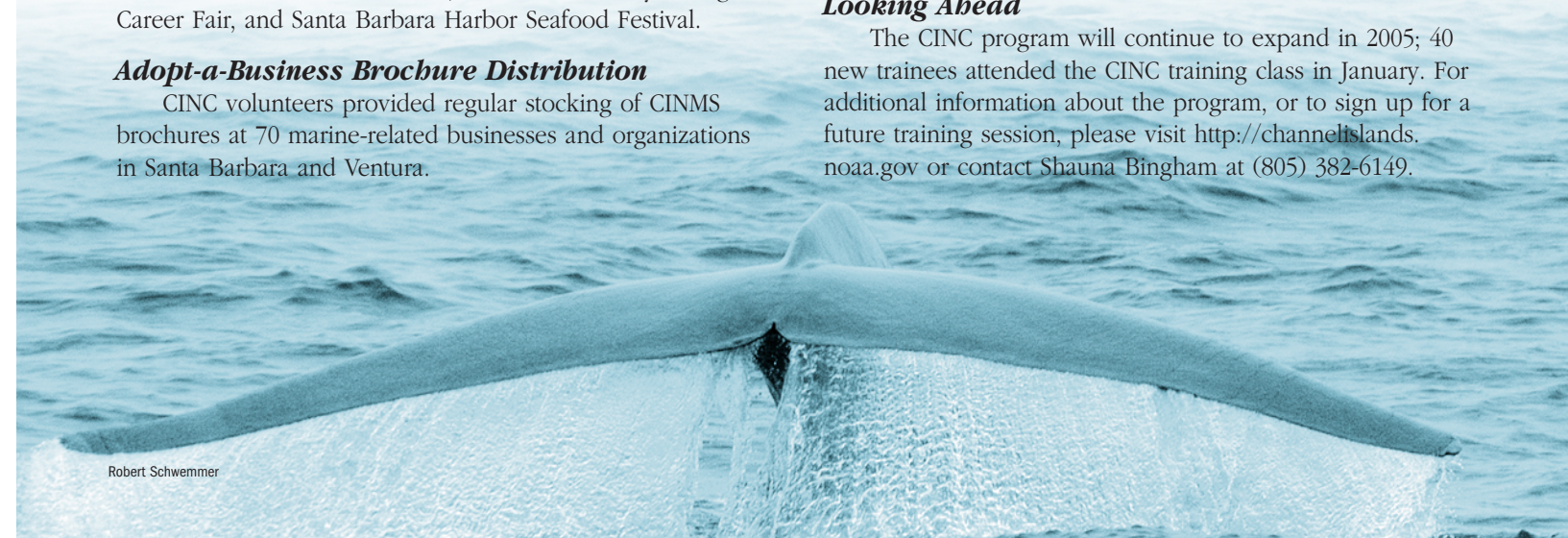
Research and Monitoring

CINC volunteers participated in Plumes and Blooms cruises, blue whale cruises, and seabird monitoring trips, and assisted with processing remotely operated vehicle (ROV) video data. Volunteers also collected over 1,000 whale photos between May and September and entered 17 species of marine mammals into the Marine Mammal Sightings Database (see <http://www.cisanctuary.org/mammals/>). The following is a list of species and numbers sighted:

SPECIES	# sighted	SPECIES	# sighted
Gray Whale	969	Dall's Porpoise	406
Humpback Whale	324	Pacific White Sided Dolphin	4472
Blue Whale	569	Common Dolphin (Short-beaked)	12,860
Minke Whale	47	Common Dolphin (Long-beaked)	25,659
Fin Whale	4	Northern Right Whale Dolphin	206
Sperm Whale	1	Harbor Porpoise	20
Orca	20	Sea Otter	39
Bottlenose Dolphin	1,998	Elephant Seal	3
Risso's Dolphin	1,095		

Looking Ahead

The CINC program will continue to expand in 2005; 40 new trainees attended the CINC training class in January. For additional information about the program, or to sign up for a future training session, please visit <http://channelislands.noaa.gov> or contact Shauna Bingham at (805) 382-6149.



Robert Schwemmer

Maritime Heritage Program Dec. 2003-Dec. 2004

Outreach

Before dawn on September 11, 2004, the Chumash Maritime Association's tomol *Elye'wun* (pronounced "El-E-ah-woon") departed Channel Islands Harbor for Scorpion Anchorage, Santa Cruz Island (*Limuu*). This was the tomol's second crossing from the mainland with a completed landing on the island in over 125 years; the first occurred in September 2001. Historically, the islands were the home of the Island Chumash. The present-day Chumash community has embraced the past with the building of the tomol and returning to the islands.

The sanctuary's R/V *Xantu* served as a support vessel and camera platform to document the crossing. Sanctuary Manager Chris Mobley and Maritime Heritage Program Coordinator Robert Schwemmer were on board, representing the sanctuary's long-term partnership with the Chumash Maritime Association. Channel Islands National Park and the Santa Barbara Maritime Museum also participated.

Schwemmer's still photography from the crossing will appear in a new book titled *The Chumash and Their History*, to be published by Compass Point Books in spring 2005.

Education

In 2004, public lectures on Channel Islands' maritime heritage program were presented for Friends of the Arcadia Public Library, Channel Islands Dive Club, Santa Barbara Maritime Museum docent training, the National Maritime Historical Society, and the CINMS adult education course "Discovering the Channel Islands National Marine Sanctuary."

In December 2003, Robert Schwemmer presented a paper titled "Cuba, Another California Island" at the California Islands Symposium in Ventura. The *Cuba* wreck site is located within the boundaries of the sanctuary and park, providing archaeologists and visitors with an opportunity to examine the vessel's steam propulsion system and associated cargo-handling equipment. The site is monitored by archaeologists from the sanctuary, park, and Coastal Maritime Archaeology Resources (CMAR).

Also in December 2003, Schwemmer presented a public lecture at the Santa Barbara Maritime Museum to commemorate the 150-year anniversary of the *Winfield Scott's* stranding on Anacapa Island. The lecture revealed intriguing first-person accounts of passengers on earlier voyages as well as the shipwreck survivors, who were forced to live on "the rock" for eight days. Still and video imagery took the public on a tour of the shipwreck as it appears today.

A successful tomol crossing to Santa Cruz Island took place on September 11, 2004.

Robert Schwemmer



Research

In February 2004, the sanctuary and park completed beach surveys at San Miguel Island to identify shipwreck remains during minus-tide conditions. The first survey examined the bow section of the *Comet*, a three-masted schooner that struck Wilson Rock, then grounded at Simonton Cove in 1911. While this shipwreck was extensively exposed by 1999's winter storms, in 2004 the site was found encapsulated in sand with only the top of the anchor stock visible. See <http://channelislands.noaa.gov/shipwreck/dbase/cinms/comet.html>. The second survey at Active Point recorded the remains of the stern section of the ex-USS *Tortuga*, which went aground in 1987 (<http://members.tripod.com/turn2/>).

This spring Robert Schwemmer secured a rare antique engraving of *Winfield Scott* survivor Charles C. P. Holden. Holden's account of being a castaway on Anacapa Island was reported in the *Chicago Times* 30 years after the stranding. His story will be included in the new *Winfield Scott* exhibit at the Santa Barbara Maritime Museum. This engraving is one of only two known historic images of survivors of the side-wheel passenger steamer that stranded with over 500 passengers and crew on Anacapa Island in 1853. See <http://channelislands.noaa.gov/shipwreck/dbase/cinms/winfieldscott.html>

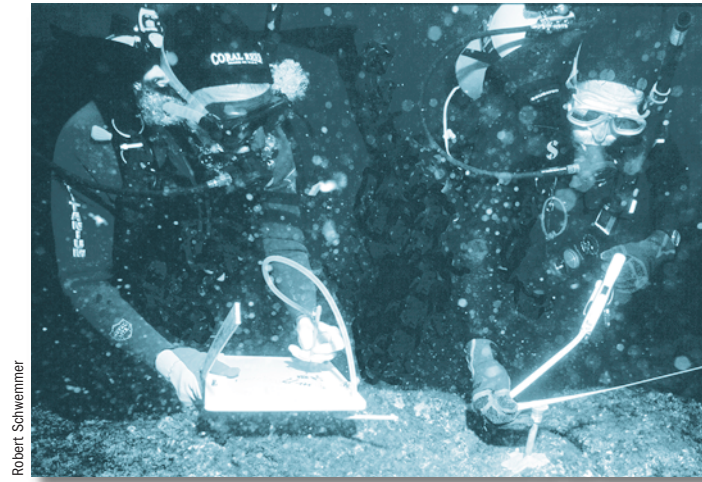
In October, Schwemmer attended the Seventh Maritime Heritage Conference in Norfolk, Virginia (<http://www.hnsa.org/conf2004/>) and conducted research at The Mariners' Museum Library on West Coast sanctuary shipwrecks, with an emphasis on nineteenth-century, British-owned sailing vessels. Schwemmer presented this research at the Society for Historical Archaeology conference in York, England in January 2005.

Bruce Terrell, Senior Archaeologist for the NMSP, and Robert Schwemmer completed research design and fieldwork methodology for the upcoming USS *Macon* expedition in 2005. The *Macon*, a 785-foot Navy dirigible, conducted maneuvers over the Channel Islands in 1935 just prior to departing for Moffet Airfield and going down in a storm off Point Sur in Monterey Bay National Marine Sanctuary.



Charles C. P. Holden

This rare engraving shows Charles C. P. Holden, a survivor of the *Winfield Scott* shipwreck in 1853.



Robert Schwemmer

Divers install a datum as part of a new program to monitor shipwreck sites in the sanctuary.

Fathoming Our Past, a publication of the National Marine Sanctuary Program's Maritime Heritage Program, will include updated chapters researched by Robert Schwemmer. These updates focus on the Channel Islands, Monterey Bay, Gulf of the Farallones, and Cordell Bank national marine sanctuaries.

Resource Protection

In June, divers from CINMS, NMSP, CINP, and CMAR surveyed the shipwreck *Spirit of America* at Little Scorpion Harbor, Santa Cruz Island. This survey was part of the Shipwreck Reconnaissance Program and was conducted using the R/V *Shearwater* as a dive platform.

In July, Robert Schwemmer and Sanctuary Manager Chris Mobley conducted an underwater video assessment of the F/V *Reliance* on the one-year anniversary of its sinking off South Point, Santa Rosa Island.

The sanctuary's annual Shipwreck Reconnaissance Expedition in October took place on the Park vessel *Pacific Ranger* and included the first phase of the Channel Islands Datum Installation Project. Three datums were installed at the *Winfield Scott* shipwreck site and five at the *Aggi* shipwreck site.



Winfield Scott, Image Courtesy Deborah Marx

The datum stations are part of a program developed by CMAR in collaboration with CINMS, CINP, and the California State Lands Commission for long-term, non-intrusive evaluation of human and environmental impacts to maritime heritage resources.

Each datum serves as a reference point for establishing Differential Global Position System (DGPS) positions. Using a series of datum locations, accurate measurements can be established for recording the current positions of submerged artifacts. The datums will also be utilized for permanent camera positions for video and still photography documentation. Datums will be installed at the *Cuba* and *Goldenborn* shipwreck sites in 2005. For more information on the datum project, visit <http://channelislands.noaa.gov/cr/pdf/106.pdf>

National Maritime Heritage Program

In January, at the Society for Historical Archaeology conference in St. Louis, Missouri, Robert Schwemmer presented a paper on California's four national marine sanctuaries and participated in a workshop on the process of nominating historic properties to the National Register.

The Society for California Archaeology annual conference was held in Riverside in March. Schwemmer represented the sanctuary and met with representatives of California's Parks and Recreation Department and Indiana University's Underwater Archaeology programs. The meeting included a discussion about collaborating on the development of a Channel Islands shipwreck trail.

In August, the NMSP Maritime Heritage Program held its national meeting at Thunder Bay National Marine Sanctuary and Underwater Preserve. Schwemmer represented the West Coast sanctuaries along with Julie Barrow of the Gulf of the Farallones National Marine Sanctuary. The group focused on strategies for upcoming expeditions in 2005.

In November, Schwemmer attended the National Maritime Heritage Program meeting in Portland, Maine plus a symposium on the shipwreck *Portland*, discovered at the Stellwagen Bank National Marine Sanctuary in 2002.

Web Site Additions

New web pages developed in 2004 feature the shipwrecks *Winfield Scott* and *Cuba*. These two passenger steamers were both engaged in service between Panama and San Francisco, known as the Panama Route; the *Winfield Scott* was lost in 1853 off Anacapa Island and the *Cuba* in 1923 off San Miguel Island. The web pages include expanded vessel histories, new images, information on survivor Asa Cyrus Call, and a link to JASON XV PLUS: *Rainforests at the Crossroads* that focuses on Panama's history:

PANAMA ROUTE: <http://channelislands.noaa.gov/cr/panama.html>

WINFIELD SCOTT: <http://channelislands.noaa.gov/shipwreck/dbase/cinms/winfieldscott1.html>

CUBA: <http://channelislands.noaa.gov/shipwreck/dbase/cinms/cuba1.html>

ASA CYRUS CALL: <http://channelislands.noaa.gov/cr/journal.html>

THE JASON PROJECT: http://www.jasonproject.org/jason_project/jason_project.htm

In addition, two new web pages feature the shipwreck *Montebello*, located in 880 feet of water off Cambria, California, just south of Monterey Bay National Marine Sanctuary: http://channelislands.noaa.gov/shipwreck/dbase/montebello_2.html and http://channelislands.noaa.gov/cr/field_research.html



U.S. Department of Commerce
 National Oceanic and
 Atmospheric Administration
 Channel Islands National Marine Sanctuary
 113 Harbor Way, Suite 150
 Santa Barbara, CA 93109

ADDRESS CORRECTION REQUESTED

CHANNEL ISLANDS NATIONAL MARINE SANCTUARY

<http://channelislands.noaa.gov>
 Email: channelislands@noaa.gov

Santa Barbara Harbor Office
 113 Harbor Way, Suite 150
 Santa Barbara, CA 93109
 (805) 966-7107

Channel Islands Harbor Office
 3600 South Harbor Blvd.,
 Suite 217
 Oxnard, CA 93035
 (805) 382-6149

OUTDOORS SANTA BARBARA VISITOR CENTER

113 Harbor Way, 4th Floor
 Santa Barbara, CA 93109
 (805) 884-1475

CHANNEL ISLANDS NATIONAL PARK VISITOR CENTER

1901 Spinnaker Drive
 Ventura, CA 93001
 (805) 658-5700

CHANNEL ISLANDS MARINE SANCTUARY FOUNDATION

Anna Chouteau
 735 State St. Ste. 617
 Santa Barbara, CA 93101
 (805) 963-3238 ext. 13



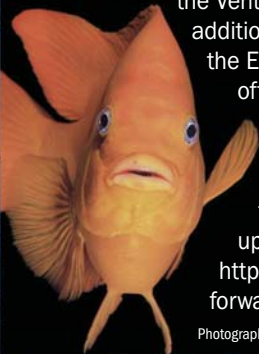
CINMS and CINP Celebrate 25 Years
“Discover the Past, Chart the Future”

In 1980, the Federal government gave special protected status to the Channel Islands by designating the Channel Islands National Marine Sanctuary (CINMS) and Channel Islands National Park (CINP). March 5 is the park’s designation date and September 22 is the sanctuary’s designation date. In 2005, the sanctuary and park will celebrate their 25th anniversaries by joining together to create a number of exciting special events.

Many of the events are for everyone, and even people who have never been to the sanctuary and park will be able to appreciate their beauty and unique resources. A silver anniversary lecture series is planned for both Santa Barbara and Ventura (please see <http://channelislands.noaa.gov/focus/calendar.html>), plus a Sea Festival outreach event in Ventura on June 26.

The sanctuary and park are coordinating a 25th anniversary photo contest and will create a Channel Islands exhibit at the Ventura County Museum of Art and History. In addition, Southern California Artists Painting for the Environment (SCAPE) is planning a paint-off on one of the islands, followed by an exhibit in Santa Barbara.

Many other events are on the drawing board, with the celebration extending from March throughout the year. For updates on the 25th anniversary, visit <http://channelislands.noaa.gov>. We look forward to seeing you there!



Photography by James Forte

