

QUARTERLY SUPERINTENDENT'S REPORT

2ND QUARTER FY2013 JANUARY THROUGH MARCH, 2013



Farallones Research Coordinator Wins Bronze Medal for Oil Spill Work

Jan Roletto, GFNMS Research Coordinator, was selected as a recipient of a 2013 Bronze Medal – one of the highest forms of recognition given by the Under Secretary for Oceans and Atmosphere – for her work on the Natural Resource Damage Assessment (NRDA) settlement from the 2007 oil spill *MV Cosco Busan*. Jan received this award as part of the team that “provided exceptional coordination and scientific innovation” and “achieved a swift, cooperative and unprecedented National Resource Damage Assessment settlement for the *MV Cosco Busan* oil spill.” Jan, along with Beach Watch coastal monitoring program volunteers and staff, provided significant data on mortality to birds and lost recreational uses caused from the oil spill. These data helped achieve one of the largest NRDA settlements since the enactment of the Oil Pollution Act.



Photo: California Dept. of Fish and Wildlife



MANAGEMENT

Bruce Bowser Nominated for National Marine Sanctuary Foundation Honor

The Farallones sanctuary has named Advisory Council member Bruce Bowser as its Volunteer of the Year for 2012, and nominated him for the National Marine Sanctuary Foundation's Volunteer of the Year award. He volunteers in four Farallones marine sanctuary programs, dedicating over 100 hours annually. As Advisory Council (SAC) member he has surpassed all others in the 2012 SAC Challenge to increase communication and outreach. Through the Marine Debris Program Bruce conducts monthly surveys, collecting data on the type, abundance and location of marine debris to track deposition patterns and potential tsunami debris.

He works in the sanctuary's Rocky Intertidal Monitoring Project and as docent for the GFNMS-California Academy of Sciences Rocky Shore Partnership for Duxbury Reef, collecting data and educating the public on the importance of protecting the reef. Bruce was a guide at Duxbury and Bolinas Lagoon for the International Marine Protected Area Summit. Through the Kent Island Plant Removal Program, attendance at public meetings, and contributed articles in local publications, Bruce's tireless work inspires the public on ocean matters and educates them about the importance and role of the sanctuary.

Expanding Sanctuary Boundaries

Farallones, Cordell Bank Hold Scoping Meetings on Potential Expansion North

In January and February staff from the two sanctuaries and regional office held public scoping meetings at Bodega Bay, Point Arena and Gualala to familiarize residents and business people about the marine sanctuaries, their programs, missions and authorities. Between 52 and 72 people turned out for each of the three meetings respectively, and brought up a broad range of hopes and ambitions, as well as questions and concerns about what sanctuary designation would do regarding fishing, habitat protection, tourism and recreation, and petroleum exploration and development. Most voiced support for the expansion, although a recreational fishing group expressed concern that the sanctuaries would become involved in fisheries management.

The expansion would add around 2,770 square miles of ocean off the Sonoma and Mendocino counties in northern California. Just-retired congresswoman Lynn Woolsey, who with Senator Barbara Boxer spearheaded the proposal in every congress since 2004, expressed hope the expansion would proceed smoothly. The expansion could be completed by July 2014. State Senator Noreen Evans' Environmental Policy Aide Tom Roth, and Sonoma County Supervisor Efren Carrillo spoke in support of the proposal, citing sanctuary prohibition of oil exploration and drilling as a primary benefit. Comments from breakout sessions were supportive of the initiative. Comments were accepted through March 1.

Farallones, Cordell Bank Advisory Councils Meet

On Thursday morning, January 24th the Farallones sanctuary advisory council met and heard reports from adjacent sanctuary leadership, council members, the quarterly regional report, NOAA Habitat Blueprint, and an update of the possible incorporation of the Exclusion Zone at

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the Golden Gate Bridge as part of the Monterey sanctuary. In the afternoon, the Cordell Bank council joined them to discuss that evening's meeting on the proposed northern expansion, including a special section presented by SeaWeb, to lay the groundwork for planning a future SeaWeb workshop on the proposed expansion. Advisory councils bring representatives of various constituencies together to discuss matter of interest among themselves and with sanctuary management. They provide valuable outreach to the community, as well as advice to resource managers.

RESEARCH

Scientists Discover Startling Results from 2012 Deep Sea Corals Cruise

Following the October 2012 Farallones Deep Sea Corals cruise, in partnership with the National Centers for Coastal and Ocean Science (NCCOS), U.S. Geological Survey, California Academy of Sciences (CAS), and Cordell Bank sanctuary, science staff from Cordell Bank completed post processing fish observations from 1,800 digital still images collected during the 2012 deep-sea coral and sponge exploration cruise in Gulf of the Farallones sanctuary. The images were collected during remotely operated vehicle (ROV) transects at three study sites: Rittenburg Bank, Cochrane Bank, and Farallon Escarpment. Preliminary data show that rockfish (*Sebastes* spp.) are the most abundant fish group at all sites. Rittenburg Bank had the greatest diversity of fish species and the highest abundance of rockfish species that are declared overfished by the National Marine Fisheries Service (118 individuals). Characterization and monitoring of the benthic habitats of the sanctuary is essential to protection of sanctuary resources. Potential threats to sensitive benthic habitats of the sanctuary include human-induced disturbances such as oil spills, fishing activities, and climate change including ocean acidification.

Also, science staff from NCCOS, CAS, and the Farallones sanctuary confirmed identification of a +100 year old black coral found at Cochrane Bank last fall during the cruise as *Antipathes dendrochristos*, or Christmas tree coral. This find is significant as this coral was only previously known from specimens found in the Southern California Bight first discovered only a few years ago. The coral colony was first noted during the sanctuary's deep-coral cruise in October 2012. The species was confirmed through DNA by the American Museum of Natural History. This is a significant range extension for this species previously thought to be endemic to Southern California. Funding for this cruise was provided through the Deep-sea Coral Research and Technology Program.

Farallones sanctuary and NCCOS staff continue to work with the California Academy of Sciences on the taxonomy of sponges and corals collected during the deep-sea coral and sponge research cruise. New taxonomic findings continue to be revealed. Most recently the red branching gorgonian coral previously thought to be part of the *Euplexaura* generic designation has been renamed to a new genus, *Chromoplexaura*. The species commonly thought to be *Euplexaura marki* is now renamed as *Chromoplexaura marki*, based on specimens from the October research cruise. A review of the taxonomy appears in *Zoo Keys*, volume 283, pages 15-43, along with photos and specimens collected during the cruise.

Monitoring To Understand Long-Term Trends

Sanctuary Ecosystem Assessment Surveys (SEA, ACCESS Surveys)

Utilizing Ship Time for Conservation Science

Conservation Science staff submitted requests for NOAA ship time in 2013-2015. Ship time was requested for two different projects, for both Gulf of the Farallones and Cordell Bank sanctuaries: 1) Applied California Current Ecosystem Surveys (ACCESS) and 2) Benthic Surveys for Corals, Sponges and other habitat forming species. Staff from the Protected Areas and Resources Branch of National Centers for Coastal Ocean Science were also included as co-Principal Investigators on the benthic surveys requests.

SEAS—Beach Watch

Farallones Beach Watch Provides Valuable Data on Salmon Habitat Creek

Conservation Science staff provided Beach Watch data to the Golden Gate National Recreation Area (GGNRA) on the status of the Redwood Creek opening. These data are used to aid GGNRA in developing a post-restoration monitoring program for the creek. The Beach Watch (BW) data will be used to aid management in determining the timing of beach barrier management activities and significant geophysical events including wave overwash, lagoon closure or natural and artificial breaching events. These data will also aid in determining the effectiveness on salmonid restoration. The BW data are the only existing data on the status of the mouth of the creek, prior to 2008. Data collected through the GFNMS monitoring programs are often used in unexpected ways. The Beach Watch data set has been proven to aid natural resource managers in determining the effectiveness and length of restoration activities within NOAA and Department of Interior.

SEAS—Pelagic

Farallones Develops New Web Page on Marine Debris Monitoring

Conservation Science staff developed a new page on the sanctuary web site, summarizing the pilot program for marine debris monitoring along our coast. GFNMS is part of a network of government, academic, and non-profit partners joining the Marine Debris Monitoring and Assessment Project Pilot Program, spearheaded by NOAA Marine Debris Program through the Office of Response and Restoration. The sanctuary will conduct monitoring at four beaches, as part of a larger West Coast effort. Marine debris is a global problem that impacts not just marine life, but damages marine habitats, impedes navigation, impacts our economy. Monitoring these impacts provides better understanding of the scope of the problem along the West Coast. Data from these surveys will help determine the most efficient use of limited funding for prevention and mitigation efforts, which are critical for the development of sound national policy recommendations. See link to web page: <http://farallones.noaa.gov/science/marinedebris.html>

CONSERVATION

Vessel Grounding Response

Farallones Sanctuary Responds to Vessel Grounding

On March 13 the 50 ft. recreational sailing vessel *Serenade II* grounded on Francis State Beach in Half Moon Bay in the northern part of Monterey Bay National Marine Sanctuary administered by the Farallones sanctuary. Due to the failure of the uninsured responsible party to remove the vessel, which began breaking up within 24 hours of grounding, GFNMS acted immediately to minimize the damage to sensitive environments. The beach is an active nesting area for snowy plovers which were observed on-site during the time of the incident. GFNMS successfully coordinated efforts between sanctuary headquarters and the NOAA contracts office to expedite clean-up efforts. The vessel was removed and disposed of by Parker Diving Services. Additionally, GFNMS coordinated with State Parks to conduct beach clean-up of smaller debris before the salvage occurred and over the weekend. The S/V *Serenade II* was comprised of chemical-laden wood, a concrete-lined hull, and plastic and the removal of the vessel prevented it from further breaking up and producing marine debris and damage to sanctuary resources.

Reducing Wildlife Disturbance

Sanctuary Monitors Maverick's Surf Contest

Farallones Marine Sanctuary (GFNMS) staff attended the annual Mavericks Invitational Surfing Contest, held January 20th at the Mavericks surf break near Pillar Point, in Half Moon Bay to ensure it did not disturb marinelife, and that only authorized motorized personal watercraft were on the water. Coordination among federal, state, and local agencies was effective, with the Coast Guard, California Department of Fish and Wildlife, Pillar Point Harbor Patrol, and San Mateo County Sheriff's Department overseeing the event. GFNMS staff did not observe any wildlife disturbances on contest day. NOAA Law Enforcement officers observed one unauthorized MPWC rider and cited him for the violation.

"Mavericks" competitions attract thousands of visitors and intensive media coverage. Communications staff issued a Superintendent's Statement reminding media that they are subject to the same overflight ceilings and approach distance restrictions to sensitive wildlife and habitats. Raising awareness for the public that this event takes place in a wildlife-rich ecosystem within the area of the Monterey Bay sanctuary that Farallones manages, and ensuring that this event does not impact resources, are key goals of the GFNMS.

Protecting Breeding Seabird Colonies

Seabird Protection Network Set to Expand North

Seabird Protection Network staff presented information during an orientation and training for a citizen science monitoring program along the Sonoma coast. Staff provided an overview of the

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Seabird Protection Network and gave a brief program update. Training included visits to potential monitoring sites and an afternoon presentation session. Staff presented a PowerPoint on Seabirds and People: Past & Present. The presentation included information about local marine sanctuaries, seabird population history and current status and regulations protecting marine wildlife. Staff also discussed a reporting form to be used and submitted by volunteer observers in the event of a human disturbance to seabirds or marine mammals. The developing Chapter will be organized by the Stewards of the Coast and Redwoods. The Chapter is planned to extend from Bodega Bay, Sonoma County to the Mendocino County line.

Seabird Protection Network Staff Participate in San Mateo Collaborative Process

Now that the Marine Protection Area (MPA) planning process is complete, a collaborative process to implement the MPAs is needed. A liaison and facilitator has been brought on to help develop a collaborative partnership for San Mateo County. Meeting participants included: San Mateo County representatives (public works, parks and recreation and the harbor district), Friends of Fitzgerald, San Mateo County Parks Commissioner, California Department of Fish and Wildlife wardens, NOAA representatives, and Save our Shores. The goal is to develop a state-wide collaborative structure organized around counties. San Mateo County is the first of several collaborative processes that will be developed throughout the state of California. Additional meetings will help flush out the structure, goals and objectives for the collaborative. Following the organization of the collaborative, the group will determine a project, and then work cooperatively to complete the task.

Pilots Learn To Share The Air With The Original Aviators

Seabird Protection Network (SPN) staff spoke to 34 pilots of the Gness Field Community Association on February 9th in Novato, CA. In addition, SPN staff spoke to 35 cadets and senior pilots of the Civil Air Patrol Composite Squadron 157 on March 4th in Santa Rosa, CA. Staff told pilots about the local sanctuaries, seabirds and history of seabird breeding populations. Pilots often fly over Sanctuary waters and welcomed knowledge of overflight prohibition zones and shared information about avoiding bird strike. The Seabird Protection Network is a program of Gulf of the Farallones National Marine Sanctuary that works to reduce human disturbance to sensitive seabird breeding colonies along the central California coast through outreach and education. Presentations both inform pilots and open a dialogue with sanctuary staff, often resulting in partnerships or future collaborations with the Seabird Protection Network.

Scuba Divers Learn Potential to Help Protect Seabirds

On February 20 Seabird Protection Network staff presented information on the potential impact divers accessing the coast with boats or vehicles can have on sensitive seabird breeding colonies. The Marin Scuba Club monthly meeting, attended by 30 members and guests, was held in Sausalito. This active Dive Club, which hosts speakers on all aspects of the underwater and near shore environment, welcomed the seabird awareness and protection presentation and the resource materials. The Marin Dive Club organizes numerous West Coast weekend dive and camping trips, as well as international ship supported and "kick-out" diving excursions. The Seabird Protection Network informed the group on the impact of disturbance to seabird colonies along the coast. Members and guests received San Francisco tide books with seabird protection tips and *Seabird Aware* brochures. With increased awareness, these divers will incorporate seabird awareness and exercise greater stewardship, in the sanctuaries.

Developing Solutions to Respond to Climate Change

Biennial Climate Change Summit Connects Coastal Professionals of Bay Area

One hundred forty-nine managers, planners, scientists, and educators involved in climate change and ocean acidification efforts in the greater Gulf of the Farallones Sanctuary region attended the "Third Biennial Ocean Climate Summit: Strength Through Collaboration," on February 20th in San Francisco. The summit goal was to connect information, resources, and people across disciplines to collaboratively sustain North-central coast and ocean ecosystem health through fostering awareness, promoting action, and advocating climate smart conservation. The Our Coast–Our Future decision support tool was launched, North-central coast climate change indicators were announced, a panel on Engaging the Community in Climate Change was convened, presentations on the San Francisco Bay Area NOAA Sentinel Site Cooperative and Climate Smart Conservation were given, and a poster session highlighting local collaborative projects and programs focused on coastal climate change and ocean acidification was held. This was the largest Ocean Climate Summit to date, and the network of coastal professionals collaboratively addressing climate change in the San Francisco Bay Area coast and ocean will continue to grow. For more information visit <http://www.sfbaynerr.org/ctp/ocean2013>.

Farallones Sanctuary Releases First Region-specific Climate Change Indicators in ONMS

Farallones sanctuary staff announced climate change indicators for the North-central California coast and ocean to an audience of over 140 research scientists, resource managers, and educators at the [Third Biennial Ocean Climate Summit](#) in San Francisco, CA. These indicators provide important information about the impacts of climate change on the coast and ocean from Bodega Head to Año Nuevo, including the Pacific coastline of the San Francisco Bay Area. The indicators are the result of a collaborative postdoctoral research project based at the sanctuary, and represent the consensus of 51 leading regional research scientists and decision-makers. They are the first region-specific climate change indicators in the National Marine Sanctuary system. Next, the indicators will be incorporated into a monitoring inventory and plan and described in an outreach report to ensure that they are easily accessible to decision-makers.

The ocean climate change indicators will help to ensure that resource managers have the best-available scientific information as they work to mitigate and adapt to the impacts of climate change in the North-central California coastal region.

Farallones Fellow Recruited for National Climate Change Indicators Team

The US Global Change Research Program has invited the Farallones climate change Fellow to serve as an expert on its National Climate Assessment (NCA) Ocean and Coasts Indicators Team. The team will help to create a conceptual framework for ocean and coastal indicators, identify and evaluate potential indicators, and develop indicator documentation, with the ultimate goal of developing a prototype indicator system for the NCA. Project involvement will extend into 2014. Participation on the NCA Ocean and Coasts Indicators Team will allow sanctuary staff to collaborate with researchers around the nation and to contribute to the NCA.

EDUCATION

Increasing Awareness of the Sanctuary

Farallones Sanctuary Celebrates Tenth Annual SF Ocean Film Festival

Gulf of the Farallones National Marine Sanctuary, which co-founded the San Francisco Ocean Film Festival ten years ago, celebrated the festival's Tenth Anniversary March 7th through 10th at the Aquarium of the Bay's Theater 39. Thousands attended the event, which has become an international phenomenon, featuring films from around the world, and has "traveled" to Hong Kong, Russia, Australia and elsewhere in the United States. It included three days of a free Student Film Festival for over 750 students from over twelve Bay Area middle and high schools. Entries highlighted ocean sports, exploration, conservation, and the aesthetics of our blue planet. Farallones sanctuary staff participated as festival directors and screening committee members, took part in Q&A and panel discussions, and made promising new contacts among the other festival attendees, including Russia's new Primorsky Aquarium in Vladivostok, and other ocean-related organizations.

Film as a medium for outreach on behalf of the ocean is an effective approach for improving ocean literacy, and fostering stewardship among a broad spectrum of ocean enthusiasts.

40 New Volunteers Trained To Deliver Farallones Sanctuary Messages

New rocky shore docents from the California Academy of Sciences and Fitzgerald Marine Reserve participated in two, two hour hands-on rocky shore interpretation workshops. Sanctuary messages, interpretive techniques and tools were part of the hands-on classes. Both sanctuary partner organizations deliver interpretation programs to school groups and the public along the shores of the Sanctuaries to over 100,000 people a year. In addition, the California Academy of Sciences docents deliver programs on the exhibit floor to over one million visitors each year.

Strong sanctuary education partnerships exponentially increase the reach of sanctuary stewardship messages through the collaborative development of innovative interpretation programs.

Farallones Staff Gives "Wild" Presentation at San Francisco Zoo Lecture Series

Gulf of the Farallones National Marine Sanctuary was the feature for Science Saturday part of the "Wild Places, Wild Things!" Conservation Lecture Series at the San Francisco Zoo. Our Changing California Coast was the main topic. Participants discovered through video, photos and graphics how oceanic processes, and changing seasons of the sea, as well as wildlife ranging from majestic to minuscule, combine to create a food web of global significance that is being impacted by climate change and ocean acidification. Sixty-five people attended the lecture, 45 of which were Zoo staff and docents who will now include the sanctuary messages in their programs, thus exponentially increasing outreach efforts to protect Gulf of the Farallones National Marine Sanctuary.

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Sanctuary Partners with University of San Francisco on Mercury Study

In March sanctuary educators hosted 20 Environmental Science students taught by Dr. Allison Luengen, Assistant Professor of Environmental Science at the University of San Francisco (USF). Dr. Luengen's research at USF focuses on the cycling and bioavailability of trace metals. She frequently works in the San Francisco Bay and Delta, an estuary where there are elevated concentrations of many metals, including mercury. Mercury, in the form of methylmercury, biomagnifies up food chains, reaching concentrations in fish that can be a million times higher than in the water. Dr. Luengen is interested in how methylmercury first enters the food chain, when it is taken up by phytoplankton. The focus of the fieldtrip to the Gulf of the Farallones National Marine Sanctuary was to collect samples and explore local populations of phytoplankton and zooplankton using the pier classroom. Sanctuary educators support local university teaching efforts as well as increase student understanding of the links between human activities and the health of the ocean.

Squid Art Printing at "Octopalooza" with Aquarium of the Bay

Sanctuary educators were invited to lead squid-themed art block printing at the Aquarium of the Bay's "Octopalooza" event on February 23rd. Program participants were able to make their own art prints including a stylized squid, a pelagic squid brooding an egg mass, as well as a Humboldt squid mid-dissection. The three printing blocks were initially created for the Sanctuary Squid Soiree and are used regularly by sanctuary educators in school and public programs. Following the printing, the researchers from Squid4Kids led a Humboldt squid dissection. Supporting the event through sanctuary participation strengthened existing partnerships with Aquarium of the Bay and Squids4Kids, continuing these effective partnerships. Also, the event allowed sanctuary educators to access and inspire new audiences.

Public Programs

Abalone Soirée - A Sophisticated, Sold-Out Success!

Art and science literally merged in good taste as gastronome met gastropod in an innovative, integrated evening of abalone hors d'oeuvres, art, science and history to celebrate and cherish the abalone. Part of the Sanctuary Soirée Series organized by the Gulf of the Farallones National Marine Sanctuary education team it drew over 100 people who heard Tim Thomas, a fisheries historian who has researched and lectured extensively on local fishing communities, tell the story of this delectable sea snail's rise to culinary fame. The evening invited hands-on participation in multiple art forms such as gyotaku and "Abba only" dancing. A large abalone sculpture and live abalone tank provided beauty, information and inspiration through learning about their fascinating physiology and tenacity to survive. Understanding our past relationship with seafood, and modeling new ways to purchase and preserve seafood, such as buying locally, sustainably farmed abalone and setting aside marine protected areas will ensure the long-term survival of this and other marine species.

Sanctuary Explorations Program Features Elephant Seal Colony

On February 23rd, a sanctuary educator coordinated a Sanctuary Explorations tour of the elephant seal haul-out at Point Reyes National Seashore to increase sanctuary awareness and educate the public about the breeding population of seals of upwards of 1500 adult females,

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males, juveniles and pups. Park Ranger Anela Ramos who runs the docent programs out of the Kenneth C. Patrick Visitor Center led a discussion of the life history of the northern elephant seal. Participants were able to get excellent views of these charismatic animals and came away with a greater understanding of the life cycle, history, habitat and pressures on the Point Reyes colony of northern elephant seals. The Sanctuary Explorations series provides the public with a deep experiential visit to the natural and maritime treasures within the Gulf of the Farallones National Marine Sanctuary. These expert-led programs increase sanctuary awareness and increase ocean literacy while cultivating a broader constituency for the sanctuary program.

GFNMS Visitor Center

Visitor Center: The Farallones sanctuary Visitor Center educates diverse audiences of the general public along an environmental literacy continuum including developing awareness, building a knowledge base, changing behavior, and building a stewardship ethic. Drop-in visitors come from the Bay Area and all over the world. School programs include plankton netting for view under the microscope, searching for shore crabs and activities in the Visitor Center to learn about animal adaptations. Students take part in indoor as well as outdoor activities on Crissy Field Beach in the Golden Gate National Recreation Area. This past quarter the visitor center served 4,163 individuals for all its programs, both scheduled and drop-in visitors. This quarter, six hundred sixty students participated in the sanctuary Visitor Center field trip programs. The program promotes ocean literacy and provides standards-based interactive programs inside the center and in the field for kindergarten through high school. Some examples for the past quarter:

Blue-“Greening” The NextGen: Over 275 Students Increase Ocean Literacy

From February 10th to 28th forty-four second graders from Lafayette Elementary School of San Francisco and 44 second graders from Springhill Elementary School of Lafayette participated in the "Growing Up Underwater" program learning about marine life cycles through hands-on games and activities and presentations within the Visitor Center. Eighty first graders from French American International School of San Francisco participated in the "Intertidal Table Manners" program, an exploration of what marine organisms need to survive. Sixty-four fourth grade students from Jefferson Elementary School of San Francisco sampled and identified plankton and learned about marine food chains in the "Pass the Plankton" program. Forty-six third graders from M. H. Tobias School of Daly City learned about adaptations of algae and marine animals in the "Suitcase for Survival" program.

Farallones Visitor Center Programs on Watershed/Ocean Interface

On the 3rd March GFNMS welcomed 30 people for two scheduled family programs on Salmon and Watersheds. Adults and children were treated to a salmon dissection, an art activity - gyotaku - the ancient art of Japanese fish printing, and got to play a giant dice game similar to Chutes and Ladders, but based on the salmon life cycle and the importance of healthy watersheds to the sanctuary. In addition, 20 environmental science students from University of San Francisco took a plankton class at GFNMS, learning the importance of plankton to our west coast sanctuaries and the different species of zooplankton and phytoplankton that abound in our waters.

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Oceans After School: One hundred thirty-six students received an average of 11 hours of programming at Bryant, Bret Harte, Ortega, Sunnyside, and Seven Tepees after school programs in San Francisco. Using the endless appeal of our local marine wildlife and habitats, the Sanctuary Education Team offers 16 hours of fun, hands-on, lively marine science programs for after-school programs on topics such as sharks, salmon, seabirds, whales, squid, and plankton. These enrichment programs are dynamic, interactive, and integrated into state standards. Our marine science educators deliver the programs during an 8-12 week window and primarily serve low-income under-served students.

At-Your-School (AYS) Programs

At Your School: The At Your School (AYS) programs served schools throughout the San Francisco Bay area, primarily during the school term. The AYS program has reached tens of thousands of Bay Area students with programs such as the Crab Cab, Seabird Shuttle and Sharkmobile. AYS is an outreach program of the Gulf of the Farallones National Marine Sanctuary designed to promote environmental literacy and increase students' awareness and knowledge of coastal and marine life. It includes standards-based interactive classroom programs for kindergarten through twelfth grades. During the quarter, students and their teachers from several Bay Area schools participated in At Your School Programs. AYS staff travel throughout the area to bring ocean education to schools in Alameda, Contra Costa, San Mateo, Marin, Santa Clara and San Francisco counties. Programs include the Sharkmobile, Crab Cab, Seabird Shuttle, and Ocean Acidification. In total, the programs served 1,289 students and 54 teachers.

Farallones "At Your School" Programs Explain Ocean Acidification Dynamics

On February 28th and March 1st, a total of seventy-six sixth grade students from Marin Country Day School in Corte Madera, California participated in the "Ocean Acidification: A Sea of Change" program. Students learned about the process behind ocean acidification and how it can affect marine organisms through activities such as: chemistry experiments to study carbon dioxide and how acidity affects calcium carbonate shells; an interactive presentation discussing potential impacts of ocean acidification; observation of a live plankton sample; and discussion of how increased acidity can affect larval stages of shelled organisms.

This sanctuary At Your School program provides an informative and interactive way for 6th-8th grade students to learn about an increasingly relevant marine science topic in their classroom while promoting ocean and climate literacy.

Sanctuary AmeriCorps Members Bring Science to Life in Urban School

Watershed Stewards Project (WSP) AmeriCorps members placed with the Gulf of the Farallones Visitor Center continue to deliver salmonid and watershed based curriculum to two second-grade bilingual classes at Cesar Chavez Elementary School. Cesar Chavez Elementary School, a school with a high percentage of poor children, primarily serves Hispanic K-5th grade youth in the Mission District of San Francisco. WSP members will provide a total of six hours of instruction to a total of 44 students. Through hands-on and engaging programs utilizing models, games, and dissections, students explore watersheds, the water cycle, the salmonid lifecycle, habitat requirements, salmonid physiology and stream health.

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Through engaging, hands-on programming, sanctuary educators bring ocean literacy to inner city youth supporting the sanctuary's goal of reaching all audiences within the community. By forging partnerships with bilingual programs in local schools, the sanctuary reaches new audiences. These partnerships can be further developed through the At Your School, Visitor Center, and Oceans After School programs in future years.

Fisherman in the Classroom: Gulf of the Farallones National Marine Sanctuary education staff teamed up with local fishermen to deliver programs to 188 students. The teaching team brought fishing gear, video, stories, recipes and activities to highlight the rich maritime fishing culture of the Central California Coast. Connecting our youth with their local commercial fishing community and sanctuary staff provided a unique firsthand experience for the students to hear multiple perspectives on marine protected areas, sustainable fisheries and the importance of buying and eating fresh locally caught seafood.

Fisherman in The Classroom Program Visits the East Bay

On February 21, fisherman Mike Hudson and Fisherman in The Classroom (FIC) sanctuary staff delivered the first FIC program in Oakland. Sixteen 11th and 12th grade students from The Oakland Emiliano Zapata Street Academy got to learn about the life of a Central California Fisherman. The Street Academy is a charter school for low income students with a high percent of native American children. On March 14th fisherman Mike Hudson and sanctuary education staff delivered two Fisherman in The Classroom programs to 40 5th and 6th graders at Town School for Boys in San Francisco. Students got to learn about the life of a Central California fisherman through hands-on activities, slides, videos, and by examining real fishing gear like salmon lures and industrial crab pots. Town School for Boys students are already raising steelhead trout in their classroom and are working on a community action project to help improve salmon habitat, so the FIC visit did a great job at broadening their knowledge of the subject. FIC students do hands-on activities, sides, video and examining real fishing gear like salmon lures and industrial crab pots.

On the 27th of February, 45 students from O'Connell High School in San Francisco had a visit from GFNMS Fisherman in The Classroom Program. Working on a BWET grant with the WAVES project in partnership with 7 Teepees Youth Group, the students received a "deluxe" version of the Fisherman in The Classroom Program. As well as the usual hands on activities, slides, video and examining real fishing gear like salmon lures and industrial crab pots, students also got to observe and assist in the dissection of an adult salmon from a hatchery.

Teacher Professional Development Workshops

University Scientists Trained to Deliver Marine Mammal Pathogen Program

A sanctuary educator trained six veterinarians, scientists and graduate students with University of California, Davis on the delivery of a new program titled "Germs in Our Waters, Infecting Our Otters." On February 25th, thirty-three sixth grade students from Korematsu Elementary in Davis, California, learned about pathogens that can infect various marine mammals. The program included a sea otter life history presentation, an examination of real specimens, an exciting watershed restoration activity and a life-size hand-painted "Chutes and Ladders" board

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game. Sanctuary science colleagues observed the program in order to learn teaching techniques in preparation for leading their own school programs. The program was developed in partnership with UC Davis, Bodega Marine Lab, UC Santa Cruz and The Marine Mammal Center, with National Science Foundation funding. Farallones sanctuary educators serve as co-leads on the outreach and education portion of the project.

This program provides an in-classroom engaging experience to enhance ocean literacy for students in 5th-7th grade. It also has fostered a lasting partnership between the sanctuary and several scientific and educational institutions.

Teachers Learn about Salmon Ecology, Watershed at Farallones Sanctuary Workshop

On Saturday 9th February 15 Bay Area Educators met at the GFNMS Building for a teacher workshop on Salmon and Ecology. Central California Fisherman Mike Hudson gave a lecture on salmon fishing in our marine sanctuaries. Participants also learned about the anatomy of salmonids through a salmon dissection lead by GFNMS educators, and the ancient art of Gyotaku (Japanese fish printing). The program ended with a demonstration of GFNMS teaching aids about watersheds and salmon ecology including watershed models and giant dice games. Participants came from a diverse background including San Francisco High School Teachers, educators from CalAcademy, organic farmers from Green Gulch Farm (which is in a coho salmon watershed), Beach Watch and GFNMS Visitor Center volunteers and an aquarist from The Marine Science Institute in Redwood City.

LiMPETS –

Long-term Monitoring Program & Experiential Training for Students

The Long-term Monitoring Program and Experiential Training for Students – LiMPETS – is a statewide national marine sanctuary program that trains teachers and students to get involved in real scientific investigations and become ocean stewards. Teacher workshops expand teacher knowledge and ultimately increase the number of student citizen scientists doing science along our shores. We also introduce new teachers from a diversity of communities to the national marine sanctuary program.

Building Support And Enthusiasm For LiMPETS Along Our Coast

A State of the California Central Coast symposium was held last week in Monterey to reflect on the first five years of MPA monitoring and management in California's Central Coast region. The Farallones Marine Sanctuary Association staff participated in the event and highlighted the Sanctuary's LiMPETS (Long-term Monitoring Program and Experiential Training for Students) programs for both the data it can provide and for its ability to engage a diverse segment of youth populations in MPA (Marine Protected Area) monitoring activities. Dr. John Pearse presented an overview of our long-term dataset and Amy Dean participated in a panel, "Engaging Communities in Support of Effective MPA Management."

The Sanctuary's Beach Watch and LiMPETS programs are providing the state with an analysis of our long-term datasets and recommendations for the value and effectiveness of citizen science along the North Central Coast region.

Media Outreach Highlights & News Clips –

Quarterly Media/News Report will be posted to the website at a later date.

Operations

Farallones sanctuary staff received the U.S. Department of Commerce Energy and Environmental Stewardship Award for “Restoring and repurposing the sanctuary’s historic Residence building to incorporate sustainable and green principles that can be emulated for future NOAA projects, all while preserving the integrity of the interior and exterior facades.”

Farallones Sanctuary Future Events 2013 Calendar

August

8/21 GF Sanctuary Advisory Council meeting, Half Moon Bay

May –

September Kent Island/Bolinas Lagoon Restoration volunteer opportunities, first Fridays and third Saturdays from through September.*

June

6/15 Great Egret Walk, Audubon Canyon Ranch, Martin Griffin Preserve**

October

10/5 SharktoberFest at GFNMS

November

11/20 GF Sanctuary Advisory Council meeting, Point Reyes

* Visit the Farallones Marine Sanctuary website for details and registration: www.farallones.org.

** contact ewarren@farallones.org or 415/ 561-6622 x232

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## GULF OF THE FARALLONES NATIONAL MARINE SANCTUARY STAFF

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## Superintendent's 2<sup>nd</sup> Quarter FY2013 Report

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### **GET INVOLVED – AND STAY INFORMED!**

Sign up for the GFNMS listserv to receive email notices about upcoming sanctuary events and public meetings.

To learn how to get involved in the sanctuary visit: <http://farallones.noaa.gov>; or to subscribe to Upwelling, the Farallones Marine Sanctuary Association newsletter: visit <http://www.farallones.org>.

To learn more about the Sanctuary Advisory Council visit: [http://farallones.noaa.gov/manage/SanctuaryAdvisory Council.html](http://farallones.noaa.gov/manage/SanctuaryAdvisoryCouncil.html)

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