

GULF OF THE FARALLONES  
NATIONAL MARINE SANCTUARY

SUPERINTENDENT'S REPORT

2nd Quarter FY2015  
January through March, 2015



**Sanctuaries' Expansion Becomes Final**

NOAA's Final Rule for expansion of Gulf of the Farallones and Cordell Bank national marine sanctuaries (GFNMS and CBNMS) was published in the *Federal Register* on March 12, 2015. With this rule, NOAA expanded the GFNMS and CBNMS boundaries north and west, to waters off Sonoma and southern Mendocino counties. The expanded GFNMS boundary will include approximately 3,295 square miles, and the expanded CBNMS boundary will include approximately 1,286 square miles. Within the expansion area are nationally-significant resources and habitats, including the nutrient-rich ocean upwelling zone originating off Point Arena, one of the most intense and productive upwelling systems in North America, important habitats and subsea features; and numerous submerged historical resources. As part of this action, NOAA revised the GFNMS and CBNMS terms of designation, management plans, and regulations, to take effect after a review period of forty-five days of continuous session of Congress, estimated to be June 8, 2015. To view relevant documents, please visit

[http://farallones.noaa.gov/manage/expansion\\_cbgf.html](http://farallones.noaa.gov/manage/expansion_cbgf.html)



Bowling Ball Beach, Sonoma County



## MANAGEMENT

### **Celebration to Mark Farallones and Cordell Bank Expansion**

On Sunday, June 28<sup>th</sup> from 11 a.m. to 3 p.m. at the Gualala Arts Center, the expansion of the Cordell Bank and Farallones national marine sanctuaries will be marked with a public event to acquaint area residents with the scientific, educational, and stewardship programs of the marine sanctuaries, and to celebrate the new protections afforded the Mendonoma waters by inclusion in the marine sanctuaries. Local and national leaders will speak about the importance of keeping this ocean ecosystem healthy and productive. Science staff will exhibit instruments used in their scientific investigations and discuss recent research findings. Education and conservation staff, and a shipwreck expert will talk about the biology and maritime heritage of the area. An “early bird” coastal bird walk will precede the official event commencement, which offers sea life printing, seabird games, live music and hands-on activities. For information: [Farallones.noaa.gov](http://Farallones.noaa.gov); [Facebook.com/GFNMS](https://www.facebook.com/GFNMS).

## CONSERVATION SCIENCE/RESEARCH

### **Farallones Scientist Judges Student Science Competition to Foster Innovation**

To help promote careers in ocean science, Conservation Science staff judged middle and high school students' science projects at the 62<sup>nd</sup> Intel San Francisco Bay Area Science Fair. The science fair allows 7<sup>th</sup> through 12<sup>th</sup> grade students from eight Bay Area counties, to present their science projects. This regional fair is the third and final step towards the Intel International Science Fair. The Grand Prize winners in biology, physics and engineering represent the San Francisco Bay Area at the Intel International Science Fair, to be held in Pittsburgh, Pennsylvania in May.

### *Monitoring To Understand Long-Term Trends*

#### **New Research Published On Farallon Island Rocky Intertidal Life**

Conservation Science staff co-authored a paper on the status and trends of the rocky intertidal community on the South Farallon Islands. The paper appears in the Monographs of the Western North American Naturalist as a series of research articles on California Islands. It looks at the long-term decrease in the density and percent cover of upright algae and some invertebrates. The paper also includes an updated species inventory, the first in several decades. See detailed information at <https://ojs.lib.byu.edu/spc/index.php/wnanmonos/article/view/34504>

#### **Researchers Conduct Black Abalone Assessment at Farallon Islands: None Found**

Conservation Science and Education staff, with staff from Tenera Environmental, Inc., completed an island-wide assessment of the endangered black abalone (*Haliotis cracherodii*) on the South Farallon Islands. The Farallon Islands are part of the northern portion of the Critical Habitat for black abalone. This was the first in-depth and coordinated assessment of all intertidal areas for black abalone on the Farallon Islands. The survey team searched approximately 50% of the shoreline and nearly 100% of the accessible intertidal areas of the two islands. Both black and red abalones (*Haliotis rufescens*) have always been thought to be uncommon, but were known to exist in low numbers in the 1990's and in densities allowing for

reproduction. This assessment revealed only one red abalone and no black abalone. The survey team identified areas that have fair to excellent potential habitat for black abalone, in the event an abalone restoration project is developed for the South Farallon Islands. A detailed report including maps will be developed for NOAA Fisheries this spring.

### **Conservation Science Staff Participate in Rocky Intertidal Workshop**

The MARINE (Multi-Agency Rocky Intertidal Network) partnership, two-day workshop drew over 70 participants from 38 state and federal agencies and nonprofits along the West Coast, including the NOAA Office of Response and Restoration, PISCO (Partnership for Intertidal Studies of Coastal Oceans), Cal Ocean Science Trust, and Farallones Marine Sanctuary Association. The meeting was organized around the theme of sample design, assessment of protocols, database design and enhancements, an update of the status of the sea star wasting syndrome, and the value of intertidal data to management agencies. These annual meetings are used to calibrate species identifications, adjust methodologies to provide improved consistency, and link fine scale and large scale intertidal monitoring efforts.

### *Sanctuary Ecosystem Assessment Surveys (SEAS, ACCESS Surveys)*

#### **Farallones Sanctuary Fish Data Informs Overfished Species Database**

Conservation Science staff provided fish data from Rittenburg Bank, Cochrane Bank and the Farallon Escarpment that will be incorporated into The Nature Conservancy's (TNC) database on overfished species. This database acts as a long-term repository for fish observations since 2000, and includes data from other NOAA agencies, academic institutions, and nonprofits. TNC plan to use the data to develop aggregated maps of overfished species, which will help inform fishery management agencies. The database will be maintained by The Nature Conservancy. It is not currently available to the public, but researchers and managers can acquire the data by complying with confidentiality agreements that may be attached to a specific data set.

The Farallones national marine sanctuary is a sentinel site for research and monitoring marine resources along the west coast. As such, the sanctuary recognizes the importance of data sharing to improve information flow and interpret science findings for management agencies.

#### **Scientists Outline Plans for Vessel Based Deep Sea and Other Research for FY2016**

Conservation Science staff submitted NOAA ship time request for FY 2016, in collaboration with Cordell Bank NMS and the National Center for Coastal Observations (NCCOS). One project is for mapping and ROV monitoring of the sanctuaries' benthic invertebrates such as corals, sponges and other essential fish habitats. A second project was proposed to expand the current Applied California Current Ecosystem Surveys to include the northern portion of Monterey Bay sanctuary and all of the proposed expansion areas for both Farallones and Cordell sanctuaries. NOAA ships allow for intense and in-depth monitoring by providing assessment of changes in the water column resources over a 24-hour period.

Deep-sea corals and sponges are vital for fish and provide a diverse and healthy ocean. Providing this data, reports, and video engages the researchers and the public, which helps raise awareness of the sanctuaries, illuminates potential threats, and provides scientific information for sanctuary management. Data from

ACCESS are used not only to assess the health of the marine ecosystem but also provides information for education and outreach purposes for future generations.

## RESOURCE PROTECTION

### Reducing Wildlife Disturbance

#### *Whales and Other Marine Mammals*

##### **Commerce Department Gold Medal Recognizes NOAA Teamwork to Protect Whales**

On Dec. 18, 2014, NOAA Administrator Dr. Kathy Sullivan announced the award of a Department of Commerce Gold Medal recognizing NOAA staff, including that of Gulf of the Farallones National Marine Sanctuary, whose teamwork was instrumental in the International Maritime Organization changing the placement of shipping lanes within and around four California national marine sanctuaries to improve protection to endangered whales while supporting maritime trade and commerce. The Gold Medal is the highest honor bestowed by the Secretary of Commerce. This landmark achievement involved years of teamwork and coordination by staff from Channel Islands, Gulf of the Farallones, Cordell Bank and Monterey Bay national marine sanctuaries, the Office of National Marine Sanctuaries West Coast Region, and numerous other partners including several NOAA line and staff offices, the U.S. Coast Guard, and external scientists and collaborators who have contributed to whale conservation in and around California's marine sanctuaries.

##### **NOAA Plans for Summer Whale Season in the San Francisco Bay Area**

NOAA scientists and managers met to discuss possible management actions for the 2015 summer whale season to protect whales from ship strikes in Cordell Bank and Gulf of the Farallones National Marine Sanctuaries (CBNMS & GFNMS). Following the CB and GF Sanctuary Advisory Councils' 2012 recommendations to reduce the risk of shipstrikes to whales in the sanctuaries, over the past several years NOAA has been implementing Local Notice to Mariners (LNMs), with various general cautions or voluntary slow down requests. NOAA representatives from CBNMS, GFNMS, Channel Islands NMS, NMFS Protected Resources Division, and Southwest Fisheries Science Center, discussed analysis for compliance of past efforts, language for LNMs in 2015, spatial and temporal extent of LNMs, and procedures for implementation. Although humpback whales are present in the region in low numbers year round, generally an increase in humpbacks and blue whales is seen from April through November.

##### **Sanctuary Warns Public, "Don't Pup-nap Baby Harbor Seals; Watch Out for Whales"**

Farallones communications staff issued its annual press release to advise San Francisco Bay Area beachgoers against accidentally "pup-napping" newborn harbor seals left on shore whose mothers might simply be on a foraging trip. The alert, which received strong media interest, provided contact information for authorized rescue groups to respond to suspected orphaned or injured marine mammals. Each spring incidents occur where visitors or their pets venture too close to these shy creatures. In the past, human disturbance has been the cause of major declines on Farallones harbor seal rookeries. A similar notice went out to recreational boaters to avoid approaching whales too close. On a regular basis the sanctuary

broadcasts messages to create an aware and informed public, better equipped to minimize their impact while enjoying the outdoors.

## *Protecting Breeding Seabird Colonies*

### **Farallones Sanctuary Staff Conduct Presentation at Pacific Seabird Conference**

Conservation Science and Resource Protection staff presented one oral and two poster presentations at the annual Pacific Seabird Group (PSG) conference, in San Jose CA. PSG is a professional organization of seabird biologists and hosts this annual conference, which focuses on seabird populations, behavior, health, management, and restoration. The papers included Seabird Protection Network and community engagement for reduction of disturbance, and the Cassin's Auklet mortality event, as detected through Beach Watch and Applied California Current Ecosystem Studies. Over 200 biologists from various Pacific Rim nations, including Japan, Korea, Mexico, Russia, Canada and USA, attended this conference.

Farallones National Marine Sanctuary is a sentinel site for seabirds and marine mammals along the west coast. As a sentinel site, sanctuary staff, continue to increase their understanding and knowledge of our marine resources and to share their expertise with other marine professionals. Understanding pressures on seabird populations and successful restoration and mitigation efforts is critical to future wildlife conservation and proper placement of effective management zones and regulations.

### **Farallones Seabird Protection Staff Train Volunteers in Expansion Area**

Seabird Protection Network staff delivered a training on reporting wildlife disturbance incidents to 15 incoming and current volunteers of the Gualala Point to Bodega Head chapter of the network, conducted by the Stewards of the Coast and Redwoods on March 4th. The volunteer seabird monitors provide important data on the health and breeding success of seabirds in the Sonoma area, and training these volunteers on the process and importance of reporting wildlife disturbance helps advance the goals of the network and provides opportunities to receive anecdotal reports of disturbance hot spots and sources.

The Seabird Protection Network is a program of the Gulf of the Farallones National Marine Sanctuary that works to reduce human disturbance to sensitive seabird breeding colonies along the central California coast.

### **Sanctuary Staff Participate in the San Francisco Boat Show**

Staff from the Seabird Protection Network (SPN), a program of Gulf of the Farallones National Marine Sanctuary that works to reduce human disturbance to sensitive seabird breeding colonies, participated in the second annual San Francisco Boat Show. Seabird Protection Network staff reached out to local boaters and established partnerships with local organizations and state agencies to spread the word about wildlife disturbance, special closures, and safe boating techniques. Staff also distributed Network materials with tips for avoiding and detecting seabird disturbances and, maps and regulations related to marine protection areas along the North Central Coast.

Reducing disturbance to wildlife is a primary management goal for GFNMS and Monterey Bay National Marine Sanctuaries. The network is identified as one of the primary resource protection projects in the GFNMS Wildlife Disturbance Action Plan that can comprehensively address negative human-seabird interactions.

### **Seabird Protection Network Secures Restoration Funding**

The Seabird Protection Network, spearheaded by GFNMS, successfully secured restoration funding provided by the Luckenbach Council for fiscal year 2016. The Luckenbach funding will enable current network staff to continue addressing human disturbance to breeding seabird colonies from Pt. Sur, south of Monterey, to Bodega Head. The project will continue to assist with enforcement of current wildlife disturbance laws as well as conduct outreach to pilots, boaters and coastal users at a multitude of venues, including giving presentations, hosting meetings, and distributing information at the places where the target audience can be reached.

### **Seabird Protection Network Post Goes Viral**

Staff created a social media post for the Seabird Protection Network Facebook page, including a penguin graphic by Peppermint Narwhale Creative, for Penguin Awareness Day, which went viral and garnered a reach of more than 62,400 people. Social media is one platform the Seabird Protection Network uses to reach target audiences and raise awareness of seabirds and wildlife disturbance, this viral post has had the most impact on increasing audience for this outreach outlet in efforts so far.

### **Kayakers Learn About Seabird Protection**

Seabird Protection Network staff presented to 46 Bay Area Sea Kayaker (BASK) members in San Francisco, on February 25th. Paddlers learned about the history of local breeding seabird populations, the restoration work to bring back an extirpated local colony, and current threats to marine wildlife. Attendees received waterproof guides to local species and marine protected areas and tidebooks with tips to avoid wildlife disturbance.

## *Minimizing Risk from Oil Spills and Vessels*

### **Sanctuary Staff Learn New Spill Response Techniques**

Farallones and Cordell Bank national marine sanctuary staff attended the Sixth Technology Workshop for Oil Spill Response in California hosted by Chevron and the California Department of Fish and Wildlife office of Oil Spill Prevention and Response. The three-day course included a range of presentations focused on Applied Response Technologies (ARTs), response technology research and coordination, and remote sensing and GIS.

Learning about new spill response technologies and improving communication and coordination with academia, other federal, state, and local responder agencies, and the petroleum industry is critical for Sanctuary staff to maintain effective preparedness for oil spills and other emergency response incidents.

## *Developing Solutions to Respond to Climate Change*

### **Sanctuaries, Gulf of the Farallones Highlighted Internationally For Climate Efforts**

By request from the United States negotiators to the United Nations Framework Convention on Climate Change at the Department of State Office of Global Programs, ONMS submitted a case study showcasing the climate-smart conservation efforts at the Gulf of the Farallones NMS. The US delegation is interested

in highlighting US programs that enhance climate change resilience, and in sharing the lessons learned and good practices with other countries who are confronting similar challenges. The Gulf of the Farallones NMS has undertaken an extensive multi-year effort involving local and regional partners to address climate change impacts in the North-central California coast and ocean region. The program recognizes ONMS and GFNMS leadership in implementing climate smart conservation in into the management of marine ecosystems, and provides a platform to showcase our effort at the epicenter of international climate change negotiations.

### **Farallones Climate-Smart Adaptation Webinar Attracts 132 Attendees**

On March 12, Gulf of the Farallones National Marine Sanctuary staff presented an update on the Climate-Smart Adaptation Project for the North-central California Coast and Ocean as part of an international MPA webinar series, co-sponsored by the NOAA National Marine Protected Areas Center, EBM Tools Network, and OpenChannels. One hundred thirty-two national and international attendees tuned in to the webinar to hear an update on the project, including final results from the vulnerability assessment of 44 species, habitats and ecosystem services, and next steps for developing adaptive management strategies to address climate change vulnerability in the region through a working group of the Sanctuary Advisory Council.

The NOAA Marine Protected Areas Center webinar series provides a national and international platform for outreach, and enhances collaborative partnerships and information sharing.

For more information: <http://www.openchannels.org/webinars/2015/climate-smart-adaptation-vulnerability-assessment-results-and-next-steps-north-central>

## **EDUCATION**

### *Exhibits*

#### **Construction Begins On Sanctuary Ocean Center At Point Reyes Lighthouse**

In partnership with the Point Reyes National Seashore, Cordell Bank and Gulf of the Farallones National Marine Sanctuaries are working together to utilize optimal space at the highly visited Point Reyes Lighthouse to reach visitors. The old building was torn down so that stabilization work and construction can begin. The site of new interpretive center at Point Reyes National Seashore, the existing building, is the Point Reyes Lighthouse Visitor Center, the new ocean center (name TBD) is being added onto that building.

### *Teacher Professional Development*

#### **Marine Debris in Our Oceans - Stepping Up to the Challenge**

Twenty teachers participated in a Saturday workshop that included current research from University of California at Davis on what attracts seabirds to plastic and on public attitudes towards plastic pollution in the ocean. Using Next Generation Science Standards (NGSS), Farallones sanctuary educators designed a set of activities for teachers to do with their students to measure and analyze the processes involved in

marine debris accumulation. A Drift Experiment, Albatross Bolus Dissection, Plastic Nurdle investigation and how to engage students in effective solutions to curb our marine debris problem were the highlights. This was the second of three professional development workshops delivered as part of the Farallones WAVES program.

Marine debris in our ocean is a challenge being met by both scientists and educators to find a way forward in reducing human waste in the seas. Through strategic partnerships sanctuary educators are exponentially increasing ocean literacy and stewardship through teachers.

### **Blue Ocean on the Silver Screen**

In its biggest public outreach program each year, Gulf of the Farallones National Marine Sanctuary again co-sponsored the 12th Annual San Francisco International Ocean Film Festival this spring at the Cowell Theater. Farallones staffers serve on the Content Committee, ensuring that conservation-directed messages are included in the programs. Ocean films are a powerful tool for educating and inspiring people to protect and care for oceans and highlight the mission of National Marine Sanctuaries. In all, approximately 2,600 people attended, to learn via a variety of genres - from animated shorts, to in-depth documentaries - about the ocean, its power and beauty, issues and solutions to those issues. Highlights included a Student Film Competition sponsored by the Cordell Bank sanctuary, and panel discussions on sharks and tourism, and extreme diving. Film has the power to reach audiences in ways they might not otherwise experience, and film festivals bring together a dynamic mixture of ocean enthusiasts to view its various aspects, and to invite discussions of ocean matters, which can lead to productive dialogue, collaborations and involvement in ocean stewardship. Visit <http://oceanfilmfest.org/film-program-2015/> for more information.

## *Events - Public Programs*

### *Family Workshop Series*

#### **Farallones Cephalopooza! A Squid Spectacular Workshop**

Families observed a Humboldt Squid dissection and learned about its ecology and the research scientists are undertaking to understand this amazing creature and its impact on the Central CA marine ecosystem. Stunning video on how squid reproduce, a dissection of market squid, one of the largest target species for California fishermen, revealed their anatomy and special adaptations. The workshop closed with the Japanese art of *Gyotaku* and everyone left with their own squid art print.

The Sanctuary Family Workshop Series provides opportunities for the public to learn through an integrated program of engaging art and science activities. Inspiring ocean literacy and conservation ethics through hands-on learning are the goals of the family workshop series.

### *Sanctuary Soirée Series*

#### **Sea Slug Soirée - A Sold Out Success!**

Gulf of the Farallones National Marine Sanctuary and Randall Museum education teams joined forces to deliver an innovative, integrated evening of science and art to celebrate the elegant slugs of the sea. Nudibranch expert, Dr. Rebecca Johnson of the California Academy of Sciences shared current research and the astounding biology of sea slugs. About 170 people learned how these sneaky slugs steal the defenses of their prey. The evening invited hands-on participation in multiple art forms such as printing, sculpting, viewing film and an art and photography sea slug exhibit. The exhibit included photography by Susan Middleton, author of *Spineless*, and artwork of Isabella Kirkland who has exhibited her work internationally.

### *Sanctuary Explorations Series*

The Sanctuary Exploration Series provides monthly opportunities for the public to connect with and experience, our national marine sanctuaries. Building a strong public sanctuary constituency as well as inspiring ocean literacy, conservation ethics and wildlife etiquette through experiential learning are the goals for this series.

#### **Witnessing the Great Gray Whale Migration through Sanctuary Waters**

Farallones national marine sanctuary education staff partnered with the Oceanic Society to provide an opportunity to experience the gray whale migration. Forty-six participants from the Sanctuary Exploration program and the WAVES teacher program encountered several gray whales. Seabirds, including Common Murres and cormorants, were seen, along with some sea lions sunning themselves on the harbor buoys. Participants not only learned about the natural history of gray whales and the conservation efforts to protect this amazing species, but they also learned about good whale watching practices and etiquette.

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#### **Tidepool Adventure & Etiquette at Pillar Point**

Gulf of the Farallones National Marine Sanctuary education staff provided an afternoon tidepool adventure for Sanctuary Exploration participants. Seventeen participants explored the amazing intertidal habitat at the edge of the sea while learning how the animals and algae survive under ever-changing conditions. Participants found chitons, anemones, eels, fish, and sea stars. They also learned proper tidepool etiquette to explore and view marine life in a respectful, safe manner.

#### **Exploring One of the Largest Elephant Seal Rookeries in the World**

Gulf of the Farallones National Marine Sanctuary education staff partnered with State Parks to guide a walk through the Natural Preserve at Año Nuevo State Park to observe one of the largest mainland breeding colonies of northern elephant seals in the world! Every year up to 10,000 elephant seals visit to breed, give birth, and molt in this park. Sanctuary Exploration participants watched males battle for prime beach real estate and the right to mate, while females were birthing and suckling their newborn pups. Participants learned about the fascinating natural history, behavior and ecology of northern elephant seals while observing them first hand during this hike.

## *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. Visitor Center field trips served 640 students this quarter.

Farallones sanctuary Visitor Center field trip programs promote ocean literacy and provide standards-based interactive programs inside the center and in the field for kindergarten through high school. Total Visitor Center attendance for this quarter numbered 4,861.

**Oceans After School:** 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 delivered the programs during an 8-week window and primarily serve low-income under-served students. One hundred forty-nine students completed the program.

## *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 to bring ocean education to schools throughout the Bay Area. Programs include the Sharkmobile, Crab Cab, Seabird Shuttle, and Ocean Acidification. In total for this quarter, the programs served 2,287 students and 62 teachers in 92 programs.

## **Under-served Youth Involved in a Semester of Watershed Study**

Education staff from Farallones Marine Sanctuary, Crissy Field Center and 7 Teepees joined forces to produce a semester-long marine science program for underserved youth in San Francisco's Mission District. Plankton assessments, water sampling and analysis of several watersheds are part of the curriculum that takes place weekly after-school. The program is part of the Watershed Advocacy Via Environmental Sciences (WAVES) program.

**Fisherman in the Classroom:** Give a Man a Fish ... Teach a Man to Fish ... Maimonides' quote about learning to fish for life-long sustenance doesn't fully describe the satisfactions, frustrations, benefits, drawbacks, vagaries, and opportunities experienced by those who fish for a living.

### **Fishermen & Sanctuary Educators Teach High School and University Students**

Gulf of the Farallones National Marine Sanctuary education staff teamed up with local fishermen to deliver Fishermen In The Classroom programs to students at the high school and undergraduate levels. The teaching team brought a salmon specimen, an industrial crab trap, fishing lures, hooks and hands-on activities. The students learned about the challenges, economics and rewards of fishing for salmon and Dungeness Crab in sanctuary waters, as well as the relationship between the fisherman and sanctuary conservation policies.

Engaging students 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 and sustainable fisheries. It also provides a deeper understanding and connection to their watershed and national marine sanctuaries.

The students came from San Francisco State University, Westmoor High School in Daly City, Drew and Galileo High Schools in San Francisco, and Bentley High School in Lafayette, California.

### **Young Inmates Learn About Fishing Livelihoods, Fishing Cultures**

Thirty-two 13- to 18-year old inmates at the San Francisco Juvenile Detention Facility learned about the fishing profession through Fishermen In the Classroom programs this quarter. The teaching team brought a salmon specimen, an industrial crab trap, fishing lures, hooks and hands-on activities. The inmates learned about the challenges, economics and rewards of fishing for salmon and Dungeness crab in sanctuary waters, as well as the relationship between the fisherman and sanctuary conservation policies.

### ***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. It also introduces new teachers from a diversity of communities to the national marine sanctuary program. In all this quarter, 826 students, plus their teachers in Bay Area schools, took part in LiMPETS programs.

### **LiMPETS Presents at International Conference on Citizen Science**

Approximately 600 people from 25 countries convened for "Citizen Science 2015," the inaugural conference of the Citizen Science Association. LiMPETS (Long-term Monitoring Program and Experiential Training for Students) staff and students participated in a variety of talks and panel sessions. LiMPETS presentations addressed engagement, research and evaluation of the student experience. ABC News highlighted the joint LiMPETS panel session, 'Diverse Perspectives on Youth-Based Citizen Science'. A student states "It was incredible to have scientists coming up to us, asking questions about our

research. They were all blown away by how we're only in high school, and we have the opportunity to present at a prestigious conference."

Presenting at Citizen Science 2015 empowers students, increases awareness of Sanctuary monitoring programs and, grows an International network of citizen science practitioners.

## MEDIA & COMMUNICATIONS

Media coverage of the expedition to visit the wreck of the *USS Independence* resulted in over 13,400 news stories worldwide, with an estimated number of impressions at over 900 million. Also, media support was strong in response to the publication of the Final Rule for marine sanctuary expansion to the north along the Sonoma coast once again was favorably reported by north coast media. Many small regional publications demonstrated support for the expansion, welcoming coverage of locally significant stories.

## MARITIME HERITAGE

### WWII Shipwreck *USS Independence* Expedition

In March 2015 NOAA's Office of National Marine Sanctuaries (ONMS) and NOAA's Office of Exploration and Research (OE&R), with private industry partners, The Boeing Company and Coda Octopus, confirmed the location and condition of the *USS Independence*. Resting in 2,600 feet of water off California's Farallon Islands, the aircraft carrier was used for Bikini Atoll atomic bomb tests in 1946. The blast-damage carrier was scuttled off the Golden Gate in 1951. The team used Boeing's Autonomous Underwater Vehicle (AUV) *Echo Ranger*, with Coda Octopus' Echoscope 3-D sonar. Scientists and technicians on board NOAA's R/V *Fulmar* followed the AUV as it glided 150 feet above the wreck and surveyed the carrier's nearly intact hull.

ONMS interest in *USS Independence* is part of an ongoing two-year mission to locate, map and study historic shipwrecks in Gulf of the Farallones National Marine Sanctuary and nearby waters. The carrier is one of an estimated 300 wrecks in the waters off San Francisco, and the deepest known shipwreck in the sanctuary.

Links

<http://sanctuaries.noaa.gov/shipwrecks/independence/>

<http://sanctuaries.noaa.gov/news/press/2015/independence-survey.html>

## Farallones Sanctuary Future Events ~ 2015 Calendar

### MAY

- May 3            Whale Watching from Pillar Point Harbor  
Reserve: [sara.heintzelman@noaa.gov](mailto:sara.heintzelman@noaa.gov); (415) 561-6622 x232
- May 20           Sanctuary Advisory Council meeting, Bodega Bay Fire Department

## JUNE

- June 8, 15      Weeklong Sanctuary Explorers Summer Camps
- June 13      Beach Cleanup Family Workshop; GFNMS Visitor Center at Crissy Field, Presidio  
Register: [Peter.winch@noaa.gov](mailto:Peter.winch@noaa.gov)
- June 20      Alcatraz Island Birding Exploration  
Reserve: [sara.heintzelman@noaa.gov](mailto:sara.heintzelman@noaa.gov); (415) 561-6622 x232
- June 28      Sanctuary Expansion Celebration, Gualala Art Center, Gualala  
Information: [Farallones.noaa.gov](http://Farallones.noaa.gov), [Facebook.com/GFNMS](https://www.facebook.com/GFNMS)
- June thru  
August 2      Get Into Your Sanctuaries Day(s) – check out various special programs throughout the  
summer by visiting [Farallones.noaa.gov](http://Farallones.noaa.gov), [Facebook.com/GFNMS](https://www.facebook.com/GFNMS), and [#visitsanctuaries](https://twitter.com/visitsanctuaries)

## JULY

- July 11      Family Workshop, Sharks! GFNMS Visitor Center at Crissy Field, Presidio  
Register: [Peter.winch@noaa.gov](mailto:Peter.winch@noaa.gov)
- July 13, 20      Sanctuary Explorers Camp all-week camps; register: [Peter.winch@noaa.gov](mailto:Peter.winch@noaa.gov)

## AUGUST

- August 8      Plankton Family Workshop, GFNMS Visitor Center at Crissy Field, Presidio  
Register: [Peter.winch@noaa.gov](mailto:Peter.winch@noaa.gov)
- August 19      Sanctuary Advisory Council meeting, San Francisco

## ONGOING:

### APRIL – OCTOBER

Kent Island Volunteer Plant Removal Program: Volunteer dates are the 1<sup>st</sup> Friday and 3<sup>rd</sup> Saturday of every month April through October, 10:00 a.m. to 2:00 p.m. NOTE: Due to the 4<sup>th</sup> of July weekend we will hold our first volunteer date in July on Friday the 10<sup>th</sup>. Registration required: Contact [Kate.bimrose@noaa.gov](mailto:Kate.bimrose@noaa.gov).

*Visit the [Farallones Marine Sanctuary website](http://www.farallones.org) for updates, details and registration: [www.farallones.org](http://www.farallones.org), as well as [FMSA's Facebook page](#). The [GFNMS Facebook](#) is also now up and running at [Facebook.com/GFNMS](https://www.facebook.com/GFNMS).*

## **NOAA/ GULF OF THE FARALLONES NATIONAL MARINE SANCTUARY STAFF**

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

Sign up for the Farallones sanctuary list serve 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)