

GULF OF THE FARALLONES  
NATIONAL MARINE SANCTUARY

# SUPERINTENDENT'S REPORT

1<sup>st</sup> Quarter FY2014  
October through December, 2013



## Unprecedented Sea Star Die-off Along Pacific Coast

A wasting disease has been spreading, causing mass mortality of sea stars along the west coast since Summer 2013. Primarily affecting sunflower and ochre stars, which ecologists consider to be keystone species due to a disproportionately large influence on the distribution and abundance of many other species, the disease is now affecting areas from San Diego to Alaska. The affliction causes white lesions to develop on the sea star's skin and an unnatural twisting of the arms. Scientists don't know how many of the tens of millions of sea stars along the coast have the disease, but Pete Raimondi, Ph. D., a professor of ecology and evolutionary biology at the University of California, Santa Cruz, estimates it may be in the tens of thousands to the low millions. A mortality event of this magnitude, with such broad geographic reach, has never before been documented. Scientists anticipate that such a large mortality event in a keystone species could change entire intertidal and subtidal seascapes.

In October 2013, LiMPETS (Long-term Monitoring Program & Experiential Training for Students) students documented the near disappearance of ochre sea stars at monitoring sites near San Francisco. By December and January, the disease wiped out most ochre stars within the LiMPETS study areas around the Monterey Bay region. Now, the disease is affecting sites in Santa Barbara to varying degrees. Coal Oil Point has been hit hard with 80% of the sea stars currently affected. The cause of this wasting event is still unknown. For more information contact <http://blog.limpetsmonitoring.org/news/> The Rocky Shores Partnership between the Farallones sanctuary and California Academy of Sciences is also documenting the disease, and is reporting their findings to the university researchers. (Photo courtesy U.C. Sta. Cruz)



## RESEARCH

### Monitoring To Understand Long-Term Trends

#### *Coastal Monitoring – Beach Watch*

##### **Farallones Beach Watch Enters Second Decade of Coastal Monitoring**

In October Beach Watch entered its 20th year of collecting bird, mammal, human activity, and oil pollution data along the shoreline of the Farallones sanctuary and the northern portion of the Monterey sanctuary. Beach Watch – the flagship volunteer program of the ONMS - boasts a volunteer retention rate of 85-90% annually. In 20 years Beach Watch data have resulted in over \$52 million in damage assessment and restoration dollars going towards additional protection of sanctuary wildlife and recreational uses. Beach Watch volunteers are crucial to the sanctuary, providing data on wildlife and potential violations. Beach Watch is a cost-effective citizen science project and is a public-private partnership with the Farallones Marine Sanctuary Association. Beach Watch data are integral to resource protection planning, identifying and scaling damages, and outreach to increase awareness and stewardship of sanctuary resources.

##### **Beach Watch Annual Report Now Available Online**

Science staff produced an annual report on Beach Watch findings and presented it to the Pacific Seabird Group, regional highlights. Included was a summary of 2013 highlights and trends, a review of survey effort, and reference to an in-progress report to the Monitoring Enterprise and Sea Grant, developing baseline levels of live and dead birds and mammal and human uses in the North Central Coast Marine Protected Areas (NCCs). The NCCs were designated through the state's Marine Life Protection Act. In 2013, 130 Beach Watch volunteers surveyed 7,098 km of outer coast beaches. October 1 marks the beginning of 20-years of data gathering through Beach Watch; ironically the volunteers, who are professionally trained, non-compensated federal employees in the Beach Watch program - were furloughed along with paid staff, resulting in a disruption of data collected. Long term, continuous data is needed to provide accurate and current information on the status and trends of sanctuary resources, and aid conservation. See [http://www.Farallones.org/volunteer/beach\\_watch\\_4.php](http://www.Farallones.org/volunteer/beach_watch_4.php) for the Beach Watch mapping tool and data available online.

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

##### **ACCESS Research Partnership, Transition Whale Season**

The Applied California Current Ecosystem Studies (ACCESS) Partnership completed their September surveys, during the transition from upwelling to oceanographic conditions, from the R/V Fulmar. Krill foraging animals, e.g. blue whales and Cassin's Auklets, were observed near the shelf break but blue whales also occurred nearshore over the shelf and in the north bound shipping lanes. We submitted a recommendation to resource protection staff to leave in place the advisory to shipping to slow down and use caution because whales are in the area in the Local Notice to Mariners. For highlights see [www.ACCESSoceans.org](http://www.ACCESSoceans.org) or Facebook "ACCESS Partnership." ACCESS is a collaborative ecosystem monitoring partnership formed by Point Blue Conservation Science, CBNMS and the Farallones sanctuary, synthesizing data for health oceans and involving citizen scientists. Integrated data collection assesses the health of the marine ecosystem and provides information to resource managers, such as the abundance and distribution of baleen whales in relation to shipping lanes to reduce potential vessel strikes to whales.

## RESOURCE PROTECTION

### *Reducing Wildlife Disturbance*

#### **Whales and Other Marine Mammals**

##### **Sanctuary Sponsors Workshop, Gives Presentation on Whale Shipstrike at International Conference**

In December 2013, sanctuary staff attended the Biennial Conference of the Society for Marine Mammalogy in Dunedin, NZ. Resource protection staff facilitated a day-long workshop on Citizen Science and the use of mobile "apps" to improve whale sightings at the entrance to SF Bay. Additionally, staff gave an oral presentation at the conference on the effort in Central California sanctuaries to reduce the risk of ship strikes on whales. Participation in international conferences allows staff to network, collaborate and share the accomplishments of sanctuaries with researchers and managers all over the world.

#### **Protecting Breeding Seabird Colonies**

Water Recreationists Learn About Coastal Seabird Colonies, Conservation On September 18th in Sunnyvale, California, Seabird Protection Network staff spoke to 24 divers of the Dive Club of Silicon Valley. They showed the short film "Returning Home" about a seabird restoration project in Pacifica, CA, and then gave a brief talk about impact on seabirds and areas to avoid (Marine Protected Areas - Special Closures). This was a second "testing" of the combined movie and powerpoint presentation and the presentation was very well received. The dive club members included kayakers, boat owners and pilots. 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 inform the public about wildlife disturbance and unintentional effects of flying, paddling and boating along the California coast.

### *Minimizing Risk from Oil Spills and Vessels*

##### **Tabletop Oil Drill Sets Stage, Hones Skills, for Future Response**

In November Conservation Science staff prepared for winter emergency response actions, by performing an in-house tabletop oil spill drill. The drill scenario included a regional mystery tarball event and oiled wildlife. Staff reviewed the emergency response procedures, information aids, resources at risk, reviewed rapid damage assessment documentation, updated contact information for natural resource damage assessment trustee agency representatives, and updated our HazWOPER certification and air safety training.

### *Developing Solutions to Respond to Climate Change*

##### **Climate Change Indicators Report Released**

In December a report was issued on a newly-developed set of 12 ocean climate change indicators for the North-central California coast and ocean as part of the collaborative working group report, "[Ocean Climate Indicators: A Monitoring Inventory and Plan for Tracking Climate Change in the North-Central California Coast and Ocean Region](#)." Indicators encompass biological (e.g., seabirds and mussel beds) and physical (e.g., sea-surface temperature and sea level) aspects of the ecosystem. Changes in these indicators could signal that climate change is having an impact on our region.

These indicators represent the consensus from more than 50 regional research scientists and managers from state and federal agencies, academic institutions, and non-profit science organizations, and including a working group of the GFNMS Advisory Council. It includes information about the indicators, including monitoring recommendations and priority levels, case studies for managers, and an inventory of available indicator

monitoring. The indicators were developed to ensure that they meet the information and decision-making needs of managers. This is the first set of ocean climate change indicators specifically developed for the region. This is also the first set of ocean climate change indicators developed for use by a national marine sanctuary. With a better understanding of the impacts, agencies can be proactive in addressing potential threats to sensitive wildlife, commercially valuable fisheries, and valuable coastal habitats.

## **EDUCATION**

### *Increasing Awareness of the Sanctuary*

#### **NOAA B-WET Grant Funds Ocean Acidification High School Programs**

On December 4th, two classes of twenty 10th grade students from John O'Connell High School, San Francisco received a marine science program on ocean acidification from sanctuary staff. Students examined live plankton samples to familiarize themselves with species that might be sensitive to changing levels of pH in the ocean and undertook hands-on chemistry experiments to demonstrate ocean acidification processes. The program concluded with a lecture on ocean acidification chemistry, how it relates to the sanctuary and what students can do to address the challenges presented by ocean acidification. The program is a collaboration with 7 Tepees Youth Program of San Francisco and is funded by the NOAA B-WET program. Through partnerships, sanctuary educators are promoting ocean and climate literacy through hands-on innovative marine science programming.

#### **Mini-BioBlitz Held at Crissy Field**

In December sanctuary education staff assisted California Academy of Sciences staff with a one-hour biodiversity survey ("BioBlitz") of Crissy Field beach adjacent to the Farallones sanctuary campus. All plants, seaweeds and animals encountered were photographed and uploaded to iNaturalist.org. iNaturalist is a social network to share pictures of living things with a global community of naturalists, both amateur and professional, who can help contributors learn about the organisms they observe. iNaturalist and the Academy have joined forces to build a network of citizen-scientists, researchers, and land stewards working together to tackle the most pressing global science and conservation challenges. The Academy currently monitors intertidal habitats in partnership with the Farallones sanctuary.

This mini-BioBlitz added to our recorded knowledge of the diversity of this beach and introduced staff of both organizations to the tools and methods that will be employed in the Golden Gate National Parks/National Geographic BioBlitz in March, 2014. iNaturalist.org-driven BioBlitzes are an important tool in connecting people to nature, conducting species inventories and organizing information for conservation and scientific research. Training in these tools and methods will allow for more Sanctuary and Academy participation in the upcoming BioBlitz. Visit <http://www.nationalgeographic.com/explorers/projects/bioblitz/golden-gate-california-2014/>

#### **San Francisco Naturalist Society Explores Sanctuary Tidepools**

In November Gulf of the Farallones National Marine Sanctuary education staff led eighteen professionals from the San Francisco Naturalist Society on a field excursion to Mavericks Reef. Natural history, current science information and tidepool etiquette were imparted. Of particular interest and concern to the members was the withering sea star disease and the effects of ocean acidification on intertidal life. By working with organizations that have a similar mission, public experiences in national marine sanctuaries as well as sanctuary messaging is exponentially increased.

### *Events - Public Programs*

## *Sanctuary Soirée Series*

### **Elephant Seal Soirée – A Rip-Snorting Success!**

In November the 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 captivating, inspiring, and endearingly feisty and bellow-some elephant seal. The event, part of the Sanctuary Soirée Series, drew over 150 people who heard renowned elephant seal scientist Burney Le Boeuf, Ph.D. talk about the latest research, conservation efforts and best practices for viewing elephant seals. The evening invited hands-on participation in multiple art forms such as printing seal images, video and audio experiences, and a pinniped bone room. At their best, wildlife viewing spectacles are a showcase for sound conservation management and provide an inspirational experience that, for many, is akin to visiting the most sacred cultural places of humankind. These spectacles often inspire people to get involved or amplify their involvement in preserving the diversity and complexity of our natural world, especially elephant seals.

## *Sanctuary Explorations Series*

This program 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 3,863 individuals for all programs, both scheduled and drop-in.

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.

This quarter 247 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.

### **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 deliver the programs during an 8-week window and primarily serve low-income under-served students. One hundred eight students completed the program.

### **City of San Francisco Increases Commitment to Oceans After School**

In December, in collaboration with the Farallones Marine Sanctuary Association, the City of San Francisco awarded the Oceans After School program an additional \$20,000 to align the program curriculum to the Next Generation Science Standards, to provide hands-on plankton workshops at the sanctuary visitor center to families of Oceans After School participants; and to extend the program from 12 to 14 after-school sites. Oceans After School brings 16 hours of dynamic, hands-on, marine science programming to low-income under-served 3rd-5th grade students of San Francisco on topics such as sharks, salmon, seabirds, marine mammals,

squid, and plankton. The additional funding was announced after sanctuary educators completed the fall series at several schools in San Francisco. One hundred twenty-six students completed this in-depth marine science program in schools throughout San Francisco during the fall.

The program and additional funding support multiple objectives of the Office of National Marine Sanctuaries' Education Strategic Plan. As part of the sanctuary's multicultural programming, Oceans After School increases ocean literacy for a population of low-income youth that reflect local community demographics. Also, by fostering strong governmental partnerships with the City of San Francisco, the sanctuary and supporting foundation were invited to apply for additional funds beyond their current grant.

### *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 390 students and 17 teachers in 18 programs.

**Fisherman in the Classroom:** Gulf of the Farallones National Marine Sanctuary education staff teamed up with local fishermen to deliver programs to 25 11<sup>th</sup> graders at Lick Wilmerding High School in San Francisco. 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.

### *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.

See information on sea star wasting disease mortality event on Page 1 of this report.

## ***MEDIA & COMMUNICATIONS***

### **Presidential Directive Mandates Travel, Tourism Increase**

In response to President Obama's National Strategy to Increase Travel and Tourism in the United States, Farallones sanctuary communications staff was tapped to assist in the development of a local strategy to draw visitors to the Farallones marine sanctuary, and facilitate their responsible enjoyment of sanctuary wildlife and habitats. The National Strategy is a blueprint for expanding travel to and within the U.S., laying out concrete steps to be taken in order to attract 100 million international visitors annually by the end of 2021. These

international visitors would spend an estimated \$250 billion per year, creating jobs and spurring economic growth in communities across the country. For details see the [National Tourism and Travel Strategy](#) .

### **Sanctuary Staff Now Planning Next Biennial Marine Mammal Conference**

Sanctuary staff have been participating on the planning committee for the 2015 Biennial Conference to be held in San Francisco, for which the Farallones sanctuary is a co-host. Staff is proposing a special Science Communications Workshop for the 2015 conference, to better enable biologists to recognize media opportunities, and to speak in vernacular terms to reach and engage the public in the excitement and challenges of scientific research. Effective communication in science and conservation topics provides a vehicle for garnering broader-based public support of the sanctuary's programs, and an appreciation of the challenges facing its resources and the marine environment worldwide. Conferences are productive venues for sharing information on marine life including trends and emerging issues, on new research technologies, forming collaborations to optimize resources and staff; and helping develop better scientific, conservation-oriented efforts.

## **Farallones Sanctuary Future Events 2013-14 Calendar**

### **2014 Upcoming Events**

#### **February**

16 Sanctuary Explorations: Ano Nuevo Elephant Seal Tour \*\*

#### **March**

29 Sanctuary Soiree: Mola Mole Soiree \*\*\*

#### **May**

1 Sanctuary Advisory Council, Bodega Bay

TBD Sanctuary Exploration Series: Behind the Scenes at The Marine Mammal Center, Sausalito \*\*

#### **June**

16 Sanctuary Explorations: Seabirds on Alcatraz \*\*

\* Visit the Farallones Marine Sanctuary website for details and registration: [www.farallones.org](http://www.farallones.org).

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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/SanctuaryAdvisory_Council.html)

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