Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

GREATER FARALLONES NATIONAL MARINE SANCTUARY

Superintendent's Quarterly Report

January through March, 2018

Beach Watch Marks Silver Anniversary - 25 Years of Sterling Service

A quarter-century ago in 1993, following a series of disastrous oil spills, Greater Farallones National Marine Sanctuary recognized the need for a baseline record of wildlife and conditions along the Northern California coast: a profile of the norms that existed seasonally and interannually at the interface of land and sea. Much that occurs offshore is reflected in this zone. This baseline would be the standard against which impacts from oil spills and other events could be measured to determine their severity and extent, and ultimately their short- and long-term effects. The National Marine Sanctuary Program had requested that Farallones develop a volunteer program; this was a logical fit. The sanctuary adopted concepts developed by seabird biologist Harry Carter, using highly trained volunteers to perform tasks at professional skill levels, collecting data gleaned from regular coastal surveys. Thus was born Beach Watch: a formal, long-term shoreline monitoring program for which volunteer citizen scientists are recruited, trained, and managed by scientists from NOAA's Greater Farallones National Marine Sanctuary. In 1996, the Farallones Marine Sanctuary Association – now the Greater Farallones Association – came on board to manage the data and coordinate the volunteer force.

Decades of Beach Watch have now established that baseline. It documents how wildlife use coastal and nearshore habitats, and how people work and recreate here. In effect, it has painted a complex portrait of the wildlife, ocean conditions, and the human population that inhabit and impact this region.

To date, Beach Watch data has documented many changes, from the initial and residual effects of oil spills like the 2007 *Cosco Busan* spill in San Francisco Bay, to severe ocean warming events such as those in 2014-15 that caused massive seabird and fur seal die-offs. Through it, our sanctuary has gained a clearer understanding of how changes in ocean conditions and other influences, including human activities, impact the many and varied forms of ocean life. The sanctuary not only uses and shares this data to help foster resilience throughout the marine ecosystem; this data was also used to determine the source of oil spills, securing over $52 million in settlements to mitigate for the widespread mortality and ecosystem damage that resulted. Greater Farallones' Beach Watch has provided a way for many individuals to become effective protectors of our ocean and coasts. Our team is a force for conservation, working for our ocean planet's welfare. As testament to their success, it has become a model for ocean stewardship internationally that can help us move with more confidence into an ever-changing future.

Our sanctuary and many others owe a great debt of gratitude to the people of Beach Watch, who have contributed so much to this work. *We sincerely thank you!*

MANAGEMENT

Advisory Council focuses efforts on climate, kelp, coastal management

On January 10, 2018, the Greater Farallones National Marine Sanctuary Advisory Council held its quarterly meeting at the Bodega Bay Firehouse. The council received updates on the Climate Action Plan and its link with the Sonoma-Marin Regional Sediment Management Report, and held a related web-based meeting on February 5. The council also discussed the U.S. Coast Guard Proposed Rule, the Outer Continental Shelf Leasing Announcement, received a presentation from Caltrans on the Highway 1 Realignment Project, and passed resolutions pertaining to these three issues. A working group was formed to identify management, restoration, and research needed to facilitate recovery and improve resilience of bull kelp habitat along the Sonoma and Mendocino coastlines.

The Advisory Council acts as an advising body to the sanctuary superintendent, and working groups relating to sanctuary issues provide recommendations to the full council to relay proposed management strategies.

Sanctuary, association honor 330 volunteers for marine conservation efforts

On February 8, in San Francisco, Greater Farallones National Marine Sanctuary and non-profit Greater Farallones Association honored their 330-person volunteer force. In 2017 volunteers contributed 13,825 hours of stewardship in various areas of endeavor. Volunteers perform services at professional levels, and help inform sanctuary management and promote its goals. They become community ambassadors, promoting sanctuary missions and messages through their work.

Special awards went to Beach Watch volunteers providing 25, 20, and 15 years of coastal monitoring in that flagship citizen science program. Additional awards went to members of the Greater Farallones Sanctuary Advisory Council and the association board; as education and science partners, and for excellence in media reporting. Top sanctuary honors, and nominee for the National Marine Sanctuary Foundation award, went to Janai Southworth, visitor center naturalist, who developed a program using a projecting microscope to display plankton live-feeds, and for her artistic contributions to sanctuary education and outreach products.

CONSERVATION SCIENCE / RESEARCH

Monitoring To Understand Long-Term Trends

Greater Farallones, OR&R establish monitoring sites at Southeast Farallon Island

Greater Farallones science staff, with NOAA Restoration Center and Office of Response and Restoration scientists established new long-term monitoring stations at Southeast Farallon Island. They will document the abundance and health of marine algae, seagrasses, and intertidal animals. Surveys are coordinated with ongoing West Coast monitoring, in collaboration with Bureau of Ocean Energy Management, and Partnership for Interdisciplinary Studies of Coastal Oceans. The new protocols and sampling plots will enable scientists to identify and catalog shoreline resources for: establishing a current baseline of conditions at the Farallon Islands should an oil spill impact the islands; and determine impacts from sea level rise, trampling from pinnipeds, and ocean acidification.

When oil pollution hits shorelines, responders must make many decisions on appropriate actions to take to prevent or reduce impacts, to determine natural resource damages, and requirements for restoring the environment. Baseline data help to determine the extent of damage and the time needed to fully restore the sites' heath.

SS *Puerto Rican* spill, 1984 spilled 1.25 million gallons of fuel into GFNMS (NOAA Coast Survey).

Monitoring at SE Farallon Island (GFNMS photo)

Sanctuary Ecosystem Assessment Surveys (SEAS, ACCESS Surveys)

Scoping at-sea science objectives for 2018 field season

Planning for the 15th field season of the Applied California Current Ecosystem Studies (ACCESS) project and other research cruises brought together the principal investigators from Point Blue Conservation Science, with those of the Cordell Bank and Greater Farallones sanctuaries. They identified special projects including ocean acidification and graduate student work, media outreach, education, data analysis, and products for management. Three ACCESS cruises, in May, July, and September, will monitor the nearshore and pelagic ocean ecosystem in the Cordell and Farallones sanctuaries, and northern Monterey Bay National Marine Sanctuary. The July cruise will utilize the NOAA ship *Bell M. Shimada* that permits an extended survey area, additional personnel, and continuous work in higher sea states than on the R/V *Fulmar* allows.

Long term monitoring directly addresses status and trends, and information needs by working to understand ocean conditions and prey-predator distribution and abundance as indicators of ocean health. ACCESS provides ecosystem information for management about resources at risk from ship strikes, ocean acidification, marine debris, and ecosystem health. As a sentinel site, the sanctuary recognizes the importance of sharing data to improve information flow and interpret science findings for management agencies.

ACCESS seabird data used to identify ecologically sensitive areas

This winter the Applied California Current Ecosystem Studies (ACCESS) project provided seabird abundance and distribution data from GFNMS, CBNMS, and MBNMS to the Bureau of Ocean Energy Management (BOEM). BOEM is investigating at-sea distribution and habitat use of seabirds throughout the Pacific Outer Continental Shelf of the US West Coast to facilitate consultations in siting BOEM activities. This data will be part of a 50-year review of seabird abundance, distribution and forging areas, including mapping and modeling of at-sea seabird data to identify ecologically sensitive areas.

Ocean acidification research from Farallones, Cordell presented at science conference

Ocean acidification (OA) research results from Greater Farallones and Cordell Bank National Marine Sanctuaries were presented at the Ocean Sciences Meeting in Portland OR in February 2018. Carina Fish from UC Davis, Bodega Marine Lab provided an overview of part of her PhD work done in collaboration with the sanctuaries. Carina has been working with data collected through the Applied California Current Ecosystem Studies (ACCESS) project, using water samples collected at the surface and at depth. This investigation also includes data collected by Cordell Bank sanctuary on deep sea corals and effects of OA on corals at depth. This work aims to understand and investigate the correlation between inter-annual oceanographic variability in carbonate chemistry, oxygenation, and zooplankton abundance with changes in coral communities, including growth rates and skeletal geochemistry.

Fish data provided to update Pacific Fishery Management Council records, maps

Conservation Science staff provided fish data collected in 2012 and recently analyzed. It will update information and maps used by the Pacific Fishery Management Council in deciding where to place various management zones to best protect groundfish. The fish data were collected during the 2012 benthic characterization of Rittenburg and Cochrane Banks, and the shallow portion of the

Farallon Escarpment. The data will show the importance of designating these areas as Groundfish Essential Fish Habitat Conservation Areas, which could prohibit bottom trawling. This action will protect locations where there are concentrations of fishes associated with a variety of benthic habitats, including biogenic species such as deep sea corals and sponges. These are vital for fish, and provide a diverse and healthy ocean. The Nancy Foster Scholarship program has provided funding to support this valuable research for management of the sanctuary.

RESOURCE PROTECTION

Protecting Breeding Seabird Colonies

Seabird Protection Network helps sea kayakers avoid and prevent wildlife disturbance

This winter the Seabird Protection Network shared materials with sea kayaking professionals and enthusiasts at Paddle Golden Gate, a three-day festival on San Francisco Bay where paddlers hone advanced skills. Staff distributed maps, tide books, and pamphlets encouraging wildlife and seabird viewing from a safe distance, and highlighting the location of sensitive wildlife areas to be avoided.

Experienced sea kayakers attending Paddle Golden Gate are more likely to venture into remote coastal areas with sensitive wildlife. Partnering with event organizers gives paddlers the information they need to avoid disturbing wildlife, and deepens the Sanctuary's engagement with a key constituency.

Seabird Protection Network teams with FAA Safety Team to educate pilots

This quarter, Farallones Seabird Protection Network staff presented to 40 small plane and helicopter pilots on flying "seabird safe" at a seminar in Santa Rosa, California hosted by the Federal Aviation Administration (FAA) Safety Team. Topics included tips on flying high to avoid bird strikes and disturbing wildlife, as well as locations of NOAA Regulated Overflight Zones. Pilots in attendance were highly receptive to the presentation; one pilot described the logistics of a helicopter lift for a 6,000 lb. generator to the field station on Southeast Farallon Island.

Building the sanctuary's partnership with the trusted voice of the FAA Safety Team will lead to more effective, widespread outreach to California pilots and dialogue with leaders in the pilot community. This increases the likelihood that pilots will avoid disturbing wildlife and respect NOAA Regulated Overflight Zones – key goals of the sanctuary.

Sanctuary seabird staff, partners, co-present to Sonoma County docents

On March 17, Seabird Protection Network staff presented to a group of 40 docents engaged in volunteer citizen science and interpretive work along the Sonoma coast, which lies within the Greater Farallones NMS' recent expansion area. Staff conducted a training on reporting wildlife disturbances and stranded animals, and an overview of the NMS network and the recent expansion of the Greater Farallones National Marine Sanctuary. Additionally, staff left materials including brochures and tide books that docents can distribute to coastal visitors.

Co-presenters included local nonprofit and federal agency staff including National Parks and Bureau of Land Management. Showcasing Greater Farallones programs to docents within the recent sanctuary expansion area allows them to share the sanctuary's value with their constituents. This builds awareness and community support for sanctuary programs, and strengthens partnerships with local NGOs and agency representatives.

EDUCATION

Increasing Awareness of the Sanctuary

Exhibits

New Ocean Habitats Exhibit opens at renovated Randall Museum

After extensive renovation, a revitalized Randall Museum re-opened to the public in February. The new Coastal Ocean Habitats exhibit features the marine and estuarine flora and fauna of Greater Farallones National Marine Sanctuary and adjacent waters. Its live aquaria represent features and creatures of the rocky shore, sandy shore and estuarine habitats. The Marine Science Study Carrell invites the visitor to dive into additional ocean topics. Sanctuary education staff developed the graphics and videos for the exhibit with deep-sea footage obtained from NOAA's submersibles used to explore research in the deep ocean. The National Marine Sanctuary Foundation provided project support.

The Randall Museum is the only free nature museum focusing on science, natural history and the arts in San Francisco designed for children and families. Its mission is ensuring a diverse group of children and students are engaged in hands-on learning. Over 100,000 children a year participate in Science, Technology, Engineering and Mathematics (STEM) learning at the museum.

Events - Public Programs

Sanctuary Explorations Series

The Sanctuary Explorations 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 the series. This quarter, 89 people took part in the explorations.

Bulls, babes and beach brouhahas; Farallones Explorations visits e-seal colony

Forty Sanctuary Explorations participants enjoyed a special, in-depth experience of Año Nuevo State Reserve's famous elephant seal colony on Saturday, February 3. After an exclusive glimpse into the latest discoveries about elephant seals in our sanctuaries, they embarked on a walk to observe them firsthand, guided by sanctuary and State Parks interpretive naturalists. Año Nuevo is one of the world's largest mainland breeding colonies of northern elephant seals. Up to 10,000 seals breed, give birth, and molt here. Participants watched males battling for prime beach real estate and mating rights, while females nursed their newborn pups. Participants learned about the fascinating natural history, behavior and ecology of northern elephant seals while observing them during this fun and dynamic walk.

"E-seal" cow vocalizes at bull while pup editorializes.
Credit: Sara Heintzelman, GFNMS


Elephant seal courtship, brief but intense.
Credit: Jan Roletto, GFNMS

Intertidal excursion reveals abundant sea stars

Greater Farallones education staff and docents provided a tidepool adventure for Sanctuary Exploration participants at Pigeon Point on Sunday March 25, 2018. Twenty-three participants explored the intertidal habitat at the edge of the sea while learning how the animals and algae survive under ever-changing conditions. They also learned proper tidepool etiquette to explore and view tidepool life in a respectful, safe manner. Participants found chitons, anemones, urchins, more than 20 sea stars (a reassuring sign, after the sea star wasting syndrome), many algae species, and even saw gray whales migrating along the coast.


Sea stars add splashes of color to the intertidal zone.
Photo: Joe Heath/GFNMS

VISITOR CENTER PROGRAMS

Visitor Center

The Farallones sanctuary Visitor Center serves ocean enthusiasts of all ages, from the San Francisco Bay Area and all over the world. It welcomes drop-in visitors, as well as structured programs for various ages and interests.

Visitor Centers promote ocean literacy as well as other sanctuary education programs, through naturalists and exhibits. This quarter 5,141 people stopped by to virtually “explore” our sanctuary.

Visitor Center school programs include plankton netting for view under a 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: These programs promote ocean literacy and provide standards-based interactive programs inside the center and in the field for kindergarten through high school. Visitor Center field trips served 660 students this quarter.

Sanctuary leads plankton lab for Sierra Club

On January 11, sanctuary staff hosted 16 members of the Sierra Club Loma Prieta Chapter for a tour of the Visitor Center, including a special one-hour plankton exploration in the historic Pier Classroom. After learning about coastal upwelling and the diversity and abundance of local wildlife, the members had the opportunity to collect their own plankton samples and study live plankton using both traditional and projecting microscopes.

The Sierra Club leader had encountered the Visitor Center when scouting the area a few days earlier. After speaking with Visitor Center staff, the leader requested a more in-depth tour and plankton laboratory experience. Most of the group signed up to learn more about our monthly Sanctuary Explorations series.

University students explore plankton, bird diversity with sanctuary educators

On January 30, sanctuary staff taught 20 undergraduates from San Francisco State’s Nature Study course. At the request of marine phytoplankton ecologist Professor Edward Carpenter, sanctuary educators developed a three-hour field trip focused on the significance of National Marine Sanctuaries, a comparative plankton study, and a survey of local bird life.

After learning about coastal upwelling and the diversity and abundance of local wildlife in the Visitor Center, undergraduates divided into teams to collect and compare plankton samples using nets with two different mesh sizes. Following a discussion of plankton identification, life cycles, and adaptations, sanctuary educators gave a half-hour Ocean Acidification lecture including hands-on demonstrations, and led the students on a bird survey of the local bay, beach, and dunes.



Learning to deploy a plankton net. Comparing and keying out plankton species from projected images
Photo: Justin Holl, GFNMS

Visitor Center programs can create new partnerships between sanctuaries and universities and help in recruiting volunteers. Professor Carpenter has requested that the field trip become an annual event, and an undergraduate offered to join the sanctuary volunteer program.


Students launch albatross model into flight.
Credit: Justin Holl, GFNMS


Scanning for wildlife at GF Historic Tide Station
Credit: J. Holl/GFNMS

Farallones launches new Winter Mini-camp with marine mammal theme

On January 3, Greater Farallones National Marine Sanctuary and the Greater Farallones Association launched the second in a new series of Farallones Mini-Camps. Twelve campers, ages seven to 10, took part in the three-day program, where they received 24 hours of field and classroom studies focused on marine mammal biology and behaviors. The camp incorporated outdoor activities highlighting special adaptations of seals, sea lions, sea otters and whales: air-breathing yet ocean-dwelling mammals. The Farallones sanctuary's biological abundance and diversity supports 36 species of marine mammals The camp included excursions to Año Nuevo State Park to view breeding elephant seals on their rookery, including two battling bulls. They also visited The Marine Mammal Center to learn about marine mammals' challenges to survival, and their rescue and rehabilitation.

Field-based mini-camps provide children with personal experiences to connect with their national marine sanctuaries and increase their ocean literacy through exploration and discovery. Twenty-nine children took part in the new programs this quarter.


Examining whale skeleton. Credit Rietta Hohman/GFNMS


Campers learn why seals and sea lions strand, and who helps them. Credit Rietta Hohman/GFNMS

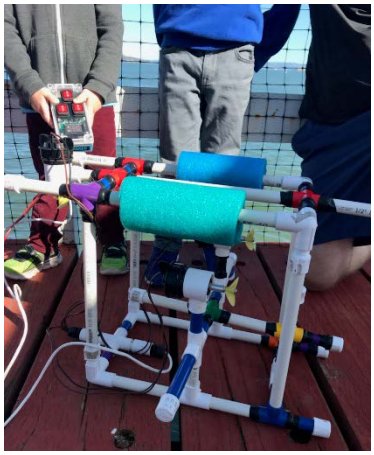
Weekend Family Workshops

Farallones sanctuary Weekend Family Workshops give budding marine scientists and their families an opportunity to share their enthusiasm and increase their ocean literacy at the sanctuary Visitor Center and Pier Classroom. These workshops have a regular following and provide new participants recruited from school programs an exciting hands-on opportunity to stay connected to sanctuary education programs throughout the year.

Weekend family workshops are held twice each month. They foster connections within the sanctuary community and their family, and provide ocean education to children of all ages. Two hundred twenty-three people enjoyed the workshops this quarter.

Underwater robots featured in Farallones plankton family workshops

This January, the Greater Farallones Association held two weekend family workshops. On January 20, we ran our Build a Remotely Operated Vehicle (ROV) program, which hosted 19 attendees. Working in small groups, participants built their own ROV models and test drove them off GFNMS's pier. On January 28, the Plankton workshop hosted 36 attendees. Participants collected their own sample of plankton from the SF bay, right outside the GFNMS pier, and looked at them under the microscope to identify their plankton findings.



Self-assembled ROV deployed from GFNMS Pier Classroom during weekend family workshop
Photo: C. Buel/GFNMS

GFNMS Visitor Center: Students' interactive learning about sea life adaptations. Credit: J. Holl/GFNMS

Oceans After School Programs

Sanctuary Educators Complete Oceans After School Series

Using the endless appeal of our local marine wildlife and habitats, the sanctuary education team completed the ninth and final week of an 18-hour Oceans after School curriculum, educating 44 third through fifth grade students from San Francisco's Visitacion Valley and Sunnyside Elementary schools. These science enrichment programs are dynamic, interactive, and integrated into California state standards. Program topics include the National Marine Sanctuary system, crabs, sharks, salmon, marine mammals, squid, seabirds, remotely operated vehicles, and plankton. Our marine science educators deliver the programs during a nine-week window and the students served are primarily low-income and underserved.

Oceans after School is a partnership between the sanctuary and City of San Francisco's Department of Children, Youth, and Their Families. The City provides funding for 12 sites throughout San Francisco and sanctuary educators provide low-income students with 18 hours of high quality science programming that promotes sanctuary awareness as well as ocean and climate literacy.

At Your School Programs

The At Your School (AYS) programs serve schools throughout the San Francisco Bay area and beyond, primarily during the school term. The AYS program has reached tens of thousands of students with

programs such as the Crab Cab, Seabird Shuttle, Sharkmobile and Ocean Acidification. AYS is an outreach program of Greater 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 grade.

During the quarter, AYS staff traveled to bring ocean education to schools. In total, the programs served 882 students and teachers this quarter.

Fisherman In The Classroom

Bringing Fisheries into the Classroom

Greater Farallones National Marine Sanctuary regularly collaborates with local fishermen to bring the treasures of the ocean to the desks of students in the San Francisco Bay Area. Through the "Fisherman In the Classroom" program, students hear about the challenges, economics, and rewards of fishing for salmon and Dungeness crab in national marine sanctuary waters, as well as the relationship between the fisherman and sanctuary conservation policies. Putting a human face on important issues such as sustainable fisheries, watershed restoration, and national marine sanctuaries, students learned the importance of sustainable use of our ocean resources. This quarter 482 students took part in this program. The schools served were Leadership High School, Argonne Elementary School, Mercy High School and Lick Wilmerding High School.

This program fulfills the objectives of increasing ocean literacy and promoting sustainable fishing. It also profiles the economic value of protecting healthy marine ecosystems that support commercial fishing in sanctuary waters.

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 become involved in real scientific investigations and become ocean stewards. It is a citizen science program that monitors the coastal ecosystems of California and helps youth develop a scientific understanding of the ocean. LiMPETS monitors the biology in rocky intertidal and sandy beach ecosystems and aims to provide publicly accessible, scientifically sound, long term data to inform marine resource management and the scientific community. This quarter 665 students and teachers from various schools and partners in the Bay Area carried out LiMPETS shore surveys. This included in-class trainings, and individual monitoring events at different monitoring sites. For details on LiMPETS, see www.limpets.org

Partner Events

Farallones promotes ocean films portraying sanctuary wildlife, messages

In February communications staff represented Greater Farallones at special previews for the International Ocean Film Festival in San Francisco. At the Presidio Golf Club, 70 members previewed the documentary "Straws" and learned of Farallones marine debris program. Club management announced it would become "plastic straw free." At the Presidio Live: Film+Dialogues presentation and panel discussion, 170 people heard Screening Committee communicators, scientists and filmmakers discuss the film selection process and program composition. One film, *Albatross,* featured seabirds that feed in Greater Farallones and Cordell Bank sanctuaries, yet breed in the Northwest Hawai'ian Islands monument.

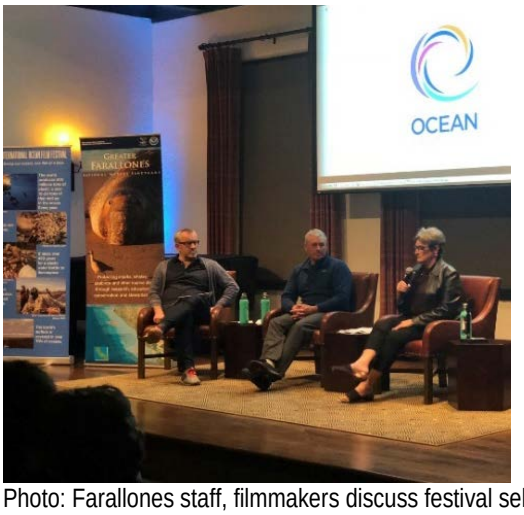


Photo: Farallones staff, filmmakers discuss festival selections, objectives Credit: Paul Eveloff/IOFF

Sanctuary-sponsored Int'l Ocean Film Festival draws record 5,000-plus audiences

From March 8 to 11, 5,026 people attended the Fifteenth Annual International Ocean Film Festival in San Francisco, CA, co-sponsored by NOAA, Greater Farallones, and the National Marine Sanctuary Foundation. A festival co-founder, Greater Farallones played a key role in selecting and developing the festival's film programs and panel discussions. The event took place at three Bay Area theaters. Farallones staff tabled at the main event to profile local marinelife and opportunities for sanctuary involvement. A free two-day film festival entertained and educated middle and high school students. The Cordell Bank sanctuary sponsored a student film competition showcasing young cinematographers' works. Film topics ranged from wildlife, conservation, science, exploration and fisheries, to coastal cultures, adventure and recreation.
See https://vimeo.com/242877037


The film "Albatross" was an IOFF award winner. Credit: USF&WS

By combining films about conservation and sustainability with other topics like sports, adventure, and maritime heritage, the festival brings together a diverse audience who love the ocean in many different ways. This promotes community through commonality. Film festivals offer a forum in which people of all demographics and interests can share ocean experiences on the screen, and foster an ocean stewardship ethic among filmgoers.

Film festival spotlights Farallones' citizen science, climate discussions

On March 10, sanctuary education and resource protection staff took part in a panel discussion at the International Ocean Film Festival. Panelists highlighted citizen science and outreach initiatives spearheaded by the Greater Farallones sanctuary, including Beach Watch, LIMPETS, and the Seabird Protection Network. Approximately 100 people learned how citizen scientists make valuable contributions to the sanctuary's monitoring and conservation efforts. Farallones communications and resource protection staff were involved in a panel discussion on changing ocean climate, vulnerabilities and adaptations, and ongoing work with academia and non-profit scientific partners.

Increasing awareness of ocean noise impacts

On January 28 Greater Farallones communications staff assembled a panel of experts to discuss ocean noise and current research at the Sausalito Herring Celebration, following a screening of the documentary film, *Sonic Sea*. Panelists included Danielle Lipski of Cordell Bank National Marine Sanctuary: Cordell and partners deployed acoustic moorings to create a "soundscape" of noise from whales, ships and other sources. Experts Brandon Southall of SEA, Inc. and Michael Stocker of Ocean Conservation Research discussed anthropogenic sounds' causes and effects on marinelife, and measures to minimize them.

The Greater Farallones' exhibit focused on cetacean (dolphins and whale) sound production and processing. The festival was co-sponsored by the Army Corps of Engineers/Bay Model and the Sausalito Community Boating Center to promote sustainable seafood, conservation and ocean awareness through small boat activities. Partnerships with the boating community help expand and enrich sanctuary outreach capabilities, and introduce a different aspect of NOAA.

Greater Farallones participates in Academy of Sciences Nightlife

Beach Watch and LiMPETS, two of Greater Farallones' citizen science programs, presented at the California Academy of Sciences' Nightlife on January 25. At the event, themed "Surf Zone," 250 attendees learned about the extraordinary abundance and diversity of marine life along the California coast and the Farallones sanctuary, and our coastal research programs. Partner events not

only strengthen our vital collaborations, but also bring awareness of the sanctuary to a broader, more diverse audience.

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2018 Calendar Updates

May

6 Sanctuary Explorations, Whales and Wildflowers, Salt Point State Park. Contact sheintzelman@farallones.org

9 Sanctuary Advisory Council meeting, Red Barn, Pt. Reyes National Seashore. https://farallones.noaa.gov/manage/sac.html

19 Kent Island restoration – now through October). Contact Kate.bimrose@noaa.gov

June

1 & 16 Kent Island restoration – now through October). Contact Kate.bimrose@noaa.gov

July

6 Sanctuary Explorations, "Seabirds of Alcatraz." Contact sheintzelman@farallones.org

6 & 21 Kent Island restoration. Contact Kate.bimrose@noaa.gov

August

3 & 18 Kent Island restoration. Contact Kate.bimrose@noaa.gov

4-5 Get Into Your Sanctuary – various events including whale watching, kayaking, workshops. Contact sheintzelman@farallones.org

29 Sanctuary Advisory Council Meeting, location Half Moon Bay Yacht Club

September

7 & 15 Kent Island restoration. Contact Kate.bimrose@noaa.gov

29 SharktoberFest, GFNMS HQ. http://farallones.noaa.gov

October

5 & 20 Kent Island restoration. Contact Kate.bimrose@noaa.gov

November

14 Sanctuary Advisory Council meeting, San Francisco Zoo, San Francisco.

Ongoing Public Programs

Exploring Greater Farallones Sanctuary!

Year-round, the Greater Farallones Sanctuary Explorations Series provides monthly opportunities to connect with and experience Greater Farallones National Marine Sanctuary and surrounding waters. Excursions have included Bioluminescence Paddling at Tomales Bay, Farallones Day Whale and Wildlife Cruises, tidepooling, and exploring coastal flora and fauna! Join one of our seasonal upcoming programs. Visit http://farallones.noaa.gov/visit/exploration-program.html

Greater Farallones Visitor Center

Throughout the year, the Greater Farallones Sanctuary Visitor Center in the San Francisco Presidio offers special Weekend Family Workshops with themes such as sharks, squid, salmon, octopuses, plankton, ROVs and sea otters! These programs can also be the focus for your exclusive birthday parties or other special events. To book programs for individuals, or for your special event, contact Justin.Holl@noaa.gov. Also, from Wednesdays through Sundays, 10 a.m. to 4 p.m., our VC naturalists can introduce you to our aquarium critters. Drop in!

Bolinas Lagoon/Kent Island Restoration Project

Help the sanctuary run Bolinas Lagoon's non-native plant invaders out of Dodge! From April through October, we recruit teams to remove invasive plants on Kent Island and help restore Bolinas Lagoon! Removing them opens up habitat for the return of native plants and wildlife species, and frees captured sediment that impacts the flow and
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function of Bolinas Lagoon. Sign up for select Friday and Saturday programs, and learn as you work. It's free. For information: Kate Bimrose kbimrose@farallones.org, see https://farallones.noaa.gov/eco/bolinas/kentisland.html

Sanctuary Soirees

Sanctuary soirees are held twice yearly, and are sophisticated evenings celebrating science, art and culture. They feature top-of-the-line scientist presentations blended with arts, music and crafts for an adult (16+ ys.) audience. These events are held each spring and late fall. Keep posted through our website at http://farallones.noaa.gov/ and our nonprofit association at http://farallones.org

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GET INVOLVED, AND STAY INFORMED!

Visit the Greater Farallones Association website for updates, details and registration for sanctuary expeditions: www.farallones.org, as well as the Association Facebook page. The Farallones sanctuary Facebook is also now up and running at Facebook.com/the Farallones sanctuary.

To learn how you can become 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.

Learn more about the Sanctuary Advisory Council: http://Farallones.noaa.gov/manage/SanctuaryAdvisory Council.htm

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Superintendent's Quarterly Report

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