Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

GREATER FARALLONES NATIONAL MARINE SANCTUARY

SUPERINTENDENT'S QUARTERLY REPORT

APRIL - JUNE, 2017

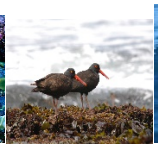
Executive Order calls for sanctuary expansion review

In response to the April 28, 2017 Presidential Executive Order 13795, "America First Offshore Energy Strategy" calling for a review of documents and procedures involved in the expansion of NOAA's Greater Farallones National Marine Sanctuary, the sanctuary submitted the required materials on June 29, 2017. The expansion of the original Farallones sanctuary off the San Francisco Bay Area extended the sanctuary north to include the waters off Sonoma County and southern Mendocino County.

The Farallones marine sanctuary had utilized a process to ensure the expansion had the fullest possible public involvement, employing measures that included extensive public input via scoping meetings and hearings, extended comment periods, and consultations with agencies, scientists, tribes, and various other stakeholder groups. NOAA also produced an Environmental Impact Statement, which became final in 2015.

The Executive Order solicited public comment during an initial 30-day public comment period through July 26, but due to public interest extended it through August 15, 2017. The public was invited to submit comments relating to: "1) An analysis of the acreage affected and the budgetary impacts of managing each National Marine Sanctuary or Marine National Monument designation or expansion; 2) An analysis of the adequacy of any required Federal, State, and tribal consultations conducted before the designations or expansions; and 3) The opportunity costs associated with potential energy and mineral exploration and production from the Outer Continental Shelf, in addition to any impacts on production in the adjacent region."

For information, see https://www.whitehouse.gov/the-press-office/2017/04/28/presidential-executive-order-implementing-america-first-offshore-energy . For a link to the comments submitted: *https://www.regulations.gov/docket?D=NOAA-NOS-2017-0066*


MANAGEMENT

Executive Order, review of sanctuary expansion:
See top story, above.

Advisory Council Quarterly Meeting
On May 24, 2017, the Sanctuary Advisory Council met in Bodega Bay. For details, see http://farallones.noaa.gov/manage.sac.html.

CONSERVATION SCIENCE /RESEARCH
Monitoring To Understand Long-Term Trends

Scientists co-author conference abstracts
In April Farallones Conservation Science staff from Beach Watch and Applied Ecosystem California Current Surveys (ACCESS) co-authored three abstracts submitted to the 22nd Biennial Society for Marine Mammalogy Conference on the Biology of Marine Mammals this October 2017 in Halifax, Nova Scotia, Canada. One abstract reviews the seabirds and marine mammals affected by the anomalously warm water years, 2014-2016, which resulted in massive mortality events among Cassin's Auklets and Guadalupe fur seals; and the anomalous northern distribution of sea slugs and other vertebrates and invertebrates. A second abstract reviews the effort to incorporate effort-based shoreline survey data of marine mammals, into the Central and Northern CA Ocean Observing System database. A third abstract summarizes the increase of entangled baleen whales in the Cordell Bank, Greater Farallones and Monterey Bay sanctuaries and our resource protection actions. Beach Watch and ACCESS are integrated sentinel site monitoring projects, providing information and data on wildlife, pollution, and socio-economic issues.

Examining roles of aquatic vegetation in ocean acidification
Conservation Science staff took part in a workshop this spring, sponsored by Ocean Protection Council, Ocean Science Trust, NOAA Office of Coastal Management and researchers from west coast universities to review the state of the science on the ability of aquatic vegetation to ameliorate ocean acidification. The group identified science needs and potential sites for demonstration projects in California. They also discussed the differences between localized benefits of aquatic vegetation and the pros and cons of relocating sequestered carbon back to the atmosphere; and the value of carbon removal from the ocean to reduce the impacts from acidification. Localized benefits to shellfish were enumerated, and the limitations of eelgrass and kelp to sequester carbon and reduce acidification. A summary report will be available in the next few months and include next steps and timeline and potential funding.

Scientific collaborations enhance capabilities for data gathering by resource sharing among the partners, and by involving a multi-disciplinary approach to provide a broader picture of the data's interrelationships at an ecosystem-level.

Staff lectures at San Francisco State University
This April the Farallones Conservation Science coordinator was a guest lecturer on federal and state laws and conservation actions to protect marine mammals. The lecture was delivered to a class of senior level undergraduate students at San Francisco State University's Romberg Tiburon Center for Environmental Studies. Students learned about the numerous federal and state laws protecting marine mammal populations, their habitats and their forage species. This lecture has been given to numerous undergraduate and graduate classes at several northern California colleges and universities. Highlighted in this lecture is how National Marine Sanctuaries augment and enhance other federal and state marine mammal protections and conservation actions. Participating in local and regional science classes brings awareness to the public and future scientists about the breadth and depth of marine mammal conservation and protections provided by national marine sanctuaries.

Coastal Monitoring – Beach Watch

Redwood Coast tribes to monitor ancestral lands

In June,Greater Farallones Conservation Science staff met with a representative of the Kashia Band of Pomo Indians of Stewarts Point Rancheria, California. The tribe reached out to learn more about our Beach Watch (BW) program and our human activities monitoring data, which Beach Watch provides to the State's MPA Watch program. The tribe is interested in initiating monitoring programs on their ancestral lands along the Sonoma County coast. Beach Watch, which started conducting wildlife and human use surveys in the area in 2014, is of particular interest to the tribe. Conservation Science staff provided an overview of Beach Watch, volunteer recruitment and training, and how protocols have evolved over the past two decades to provide coastal managers with targeted data, pertaining to their site specific management issues.

Farallones scientists collaborate on seabird data

This spring Conservation Science staff participated in a meeting with staff from Central-Northern California Ocean Observing System (CeNCOOS) and BeachCOMBERS to determine how to best display beached bird data on the CeNCOOS data portal. Participants discussed common structure for data parameters, timeline and funding, with the goal to provide data feeds from the Beach Watch database. There are similar efforts underway to post effort-based marine mammal stranding and sightings data for both live and dead marine mammals. Beach Watch data feeds will include effort-based rates for live and dead marine mammals and dead seabirds. Using the CeNCOOS data portal, the public and researchers can easily map observations and couple this data with environmental data. As a sentinel site, the sanctuary recognizes the importance of sharing data to improve information flow and interpret science findings for management agencies.

North Coast Beach Watch monitors sought

In June, the Greater Farallones Association and Farallones sanctuary held two orientations to recruit volunteer citizen scientists to help collect data on the condition of our shores along the Sonoma and southern Mendocino coasts. In Gualala and Bodega Bay around 40 prospective monitors learned about the Beach Watch program that gathers long-term data on the physical and wildlife profiles of the coast, and their roles and responsibilities, if selected. For information visit www.beachwatch.farallones.org.

Sanctuary Ecosystem Assessment Surveys

ACCESS May cruise finds abundant, early whales

In late May, Greater Farallones and Cordell Bank national marine sanctuaries, with Point Blue Conservation Science, launched the first Applied California Current Ecosystem Studies (ACCESS) research cruise of the year. Sampling included bird and marine mammal abundance, ocean acidification, and zooplankton prey availability.

Highlights included numerous humpback and blue whales, more than are normally seen in May. Most baleen whales were observed at the shelf break where they are typically found, a site of major upwelling and high productivity. Net sampling recorded small and adult-sized krill, as well as large amounts of phytoplankton nearshore. ACCESS is a collaborative partnership of Point Blue Conservation Science, Cordell Bank and Greater Farallones National Marine Sanctuaries, which provides ecosystem information for management about resources at risk from ship strikes, ocean acidification, marine debris, and ecosystem health.

ACCESS expanded to Monterey sanctuary

In mid-May, the Applied California Current Ecosystem Studies (ACCESS) completed a four-day cruise - the first ACCESS survey to extend south of Año Nuevo. Partners included Point Blue Conservation Science, Greater Farallones National Marine Sanctuary, and Monterey Bay National Marine Sanctuary, The Nature Conservancy (TNC), the Ocean Protection Council, and the Dungeness Crab Fishing Gear Working Group. Over the past two

years, there have been increased sightings of entangled humpback, blue and gray whales in commercial crab pot gear. Sanctuary staff are working with other NOAA agencies, TNC and the Working Group to collect data, model the co-occurrence of large whales and crab pots, and identify baleen whale hot spots. They hope to decrease the risk of whale entanglement in central California. The team provided a presentation for the working group on May 16. The co-occurrence of whales and crab pot gear is a data gap filled by the ACCESS project, which also provides data on ecosystem health and climate change.

RESOURCE PROTECTION

Protecting Breeding Seabird Colonies

Farallones, airport partner in pilot education

The Seabird Protection Network partnered with the Half Moon Bay Airport to help reduce seabird colony disturbance at the annual Pacific Coast Dream Machines air show and fly-in this April. The event attracts numerous pilots from across California to the airport just two miles from Devil's Slide Rock, home to a vulnerable seabird colony, posing a high risk for aircraft-caused disturbances. Hundreds of letters went to pilots in advance of the show; Network staff spoke at the air show's pilot briefing and hosted a table to answer questions about seabirds and NOAA Regulated Overflight Zones (NROZs).

Photo credit: Paul Hobi/GFNMS

Protecting Marine Mammals

Northern California sanctuaries take part in ship strike reduction initiative

In June, a program to protect endangered whales was expanded from the Channel Islands to the Cordell Bank, Greater Farallones and Monterey Bay national marine sanctuaries, and the Bay Area Air Quality Management District. The objective is reducing whale ship strike deaths through the "Blue Whales and Blue Skies" incentive-based vessel speed reduction program. Transit at lower speeds is also fuel efficient and less polluting.

Enrollment runs through June 30, and the program is effective from July 1 through November 15, when these whales are abundant. Partners include the Santa Barbara County Air Pollution Control District, Ventura County Air Pollution Control District, Volgenau Foundation, and NOAA's Channel Islands National Marine Sanctuary. The San Francisco Bay Area contains several major ports, with roughly 9,000

Photo: John Calambokidis/Cascadia Research

transits through the Golden Gate of large vessels (300+ gross tons) annually. These waters are rich feeding grounds for blue, humpback and fin whales, making ship strikes inevitable. At high speeds (14-18 kts.) these can be fatal, but lower-speed collisions are more survivable.

Whale influx, fatality prompt urgent action alert

On May 26, Greater Farallones National Marine Sanctuary issued a Superintendent's Statement about the influx of feeding whales into waters near the shipping lanes approaching the Golden Gate. Although humpback whales have been most abundant, endangered blue whales also feed here. In

late May, an adult female blue whale washed up dead on Agate Beach just north of San Francisco. A necropsy (autopsy) revealed extensive blunt force trauma, at least ten broken ribs and a crushed skull; the necropsy team cited ship strike as the cause of death. Communications staff representing the sanctuary and the request of nearby Pt. Reyes National Seashore fielded media questions and briefed them on the sanctuaries' ACCESS (Applied California Current Ecosystem Studies) work to identify ship strike hotspots. The GFNMS vessel *R/V Fulmar* was operating just offshore at the time of the stranding. They also learned about past and current efforts to reduce ship strike risk through shipping lane extension, and reduced vessel speeds. Rapid and effective public outreach is necessary when emergency situations arise, to alert parties to the threat, and to promote the sanctuary's profile in active conservation efforts.

Photo: California Academy of Sciences

EDUCATION

Increasing Awareness of the Sanctuary

Exhibits

New Ocean Conservation Center Opens at Zoo

On June 8, World Ocean Day, Farallones education staff joined the San Francisco Zoo's officials to celebrate the opening of its newest facility, the Coastal Conservation Center-Sentinel Education Site. The facility overlooks the Pacific Ocean, over both the Monterey Bay and Greater Farallones national marine sanctuaries. Against this living backdrop, Zoo Camp participants and eventually other Zoo visitors will engage in Science, Technology, Engineering, Art and Math (STEAM) activities to learn about our changing ocean and become involved in solutions that address coastal issues. Sanctuary staff provided guidance on marine life species to profile, teaching tools, and contributed graphic elements to illustrate parts of the center's new interactive exhibits.

The San Francisco Zoo attracts over one million visitors a year, but land animals have predominated as attractions; education has focused primarily on terrestrial habitats and fauna. By partnering with them on this project the national marine sanctuary's wildlife resources will be highlighted, and its ocean and climate literacy messaging will exponentially increase.

Events - Public Programs

Farallones Octopus Soirée - a tentacular, spectacular success!

On Saturday, April 8 two hundred eager adults enjoyed Greater Farallones National Marine Sanctuary's and San Francisco Zoo's "Octopus Soirée" - a sold-out evening of innovative, integrated science, art and fun. The soirée celebrated the remarkably intelligent, resourceful and adaptable octopus, spotlighting the sanctuary's two primary species: the giant Pacific octopus, and the red octopus. Cephalopod researcher Jenny Hofmeister, Ph.D. of Scripps Institution of Oceanography delivered a thought-provoking presentation and demonstrated how unique and sometimes bizarre these marine predators, escape artists and masters of disguise can be. Exhibits included a real octopus specimen and ancient ammonite fossils - their extinct ancestors. Guests enjoyed multiple hands-on art activities such as printing, creating stop-motion videos, and otherwise becoming immersed in cephalopod science. Using the enormous fascination and allure of octopuses, this enthusiastic and diverse

group were encouraged to increase their personal efforts to protect marine life and coastal ecosystems.

Other Outreach

Yacht club members asked to help protect whales from harassment

On Wednesday, June 21, communications staff addressed a capacity audience at the Sausalito Yacht Club. Joining another researcher speaking on cetaceans in San Francisco Bay, sanctuary staff reported on chronic harassment of feeding humpbacks near the Golden Gate Bridge, in the middle of busy shipping lanes. Commercial and recreational boaters, jetskiers, windsurfers and kiteboarders are rushing and boxing them in, jumping them, approaching within feet, and disrupting their activities. Photos show a powerboat strike a whale; its injuries undetermined. Videos show a kite-surfer hitting two whales, and whales forced to dive or change direction abruptly to avoid collisions: https://www.youtube.com/watch?v=_V1rqCqbwNA .

Such disruption could cause whales to resurface in the path of oncoming ships. The club members were asked to spread the word throughout their boating community that these actions are harmful to whales, and may carry legal consequences. Ship strike by large vessels, even smaller craft, can be dire threats. With a current lack of enforcement, strategic direct and media outreach is playing an important role in reducing or eliminating these dangerous activities.

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 the series.

Whales, singing seabirds delight coast explorers

On March 25, sixteen Sanctuary Explorations participants experienced the breathtaking beauty of the wild north coast at Point Arena-Stornetta Public Lands with Farallones sanctuary naturalists and wildlife experts. Local experts offered unique insight about the Point-Arena Stornetta Public lands, while whale researchers Scott and Tree Mercer spoke about their ongoing studies. The group sighted a pair of singing Pigeon Guillemots starting to nest, plus many gray whales slowly rounding the historic Point Arena Lighthouse. Participants learned about these federally protected lands and waters, local geology and natural history of many local species. They also learned about our Beach Watch citizen science program currently monitoring these shores. A rare bottlenose dolphin sighting ended this exciting adventure!

Earth Day whale watch yields super sightings

To celebrate Earth Day, Greater Farallones National Marine Sanctuary education staff partnered with the Oceanic Society on a Half Moon Bay gray whale cruise Saturday, April 22. Thirty-eight participants from the Sanctuary Explorations program had a spectacular day of sightings. In just three hours they encountered a gray whale mother and calf pair migrating north just outside the harbor; 10 humpback whales, two minke whales, a fin whale and a sea otter! Many seabirds, including Common Murres, Pigeon Guillemots, cormorants, several gull species, and Brown Pelicans were seen; sea lions sunned themselves on harbor buoys. Participants learned about the natural history of gray whales, the conservation efforts to protect this once-endangered species, and good whale watching practices and etiquette.

Between the tides: adventures at Duxbury Reef

Greater Farallones National Marine Sanctuary education staff and docents provided a morning tidepool adventure for Sanctuary Exploration participants at Duxbury Reef in Bolinas on Sunday May 28. Twenty-five participants explored the rich intertidal habitat at the edge of the sea while learning

how the animals and algae survive under ever-changing conditions. They learned proper "etiquette" to explore tidepool life in a respectful, safe manner.

Duxbury Reef, one of the largest shale reefs in North America, provided a broad expanse of explorable habitat: chitons, anemones, urchins, nudibranchs, a monkeyface prickleback fish, many species of algae and large clusters of eggs. En route to the site, the group passed a beachcast, shipstruck blue whale -- an impromptu teachable moment.

Weekend Family Workshops

Farallones sanctuary Weekend Family Workshops give budding marine scientists 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. This quarter 311 people participated in them.

Topics included building a Remotely Operated Vehicle (ROV), "assembling" a white shark, plankton sampling and study, crab studies, and our new Octo Lab programs about octopuses. The programs engage ocean enthusiasts of all ages – including some who have never explored the shore, or who have never taken part in a dissection.

Farallones Octo Lab Family Workshop

In May, the Greater Farallones Association added a brand new workshop to its list of programs - Octo Lab! Seventy participants attended the Saturday and Sunday classes. During the lab, participants received individual defrosted octopus specimens and data sheets. From there they moved freely from station to station, conducting and collecting research about their octopuses. Stations provided directions and the appropriate tools for data collection. Measuring, weighing, sketching, and even squishing were all factors of this lab. Post lab, participants made octopus prints from pre-carved linoleum blocks to take home as keepsakes.

Weekend family workshops are held twice each month at GFNMS facilities at Crissy Field, Presidio. These programs foster connections within the sanctuary community and provide ocean education to children of all ages.

Visitor Center

The Farallones sanctuary Visitor Center serves ocean enthusiasts of all ages, from the San Francisco 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 attendance for this quarter totalled 3,669.

Farallones 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. Visitor Center field trips served 1,104 students this quarter.

Oceans After School: Using the endless appeal of our local marine wildlife and habitats the sanctuary education team offers 18 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 eight-week window and primarily serve low-income, under-served students. One hundred seven students completed the program this quarter.

At-Your-School (AYS) Programs

The At Your School (AYS) programs served 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 throughout the Bay Area to bring ocean education to schools in Alameda, Contra Costa, San Mateo, Marin, Santa Clara, San Francisco, Sonoma and Mendocino counties. In total, the programs served 910 students and teachers this quarter.

Bringing ocean science to Mendonoma schools

From March 27th through March 30th, 2017 educators from Greater Farallones National Marine Sanctuary traveled to Sonoma and Mendocino counties for a Coastal Science Blitz: they delivered 17 At Your School (AYS) Programs at seven elementary and high schools. A total of 338 students in grades K through 12th grade learned about ocean acidification and impacts on plankton, deep ocean exploration with Remotely Operated Vehicles, and local seabird ecology and conservation. Students also learned about the significance of the newly expanded national marine sanctuary status of the Sonoma and Mendocino coastal waters.
The AYS program brings specimens, live animals and engaging activities into classrooms around the San Francisco Bay Area and the northern California coast with the goal of connecting students with their national marine sanctuaries and increasing ocean literacy through hands-on learning.

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. 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. This quarter, 446 students and teachers took part in LiMPETS programs.

LiMPETS impacts on students demonstrated

The Greater Farallones LiMPETS team presented at the Bay Area Conservation Biology Symposium in Santa Cruz, CA on May 6, 2017. Along with displaying the long-term ecological trends revealed by student-collected data, Greater Farallones Association staff explained the student-learning outcomes of the program, citing independent evaluations assessing the Marin, San Francisco and San Mateo LiMPETS programs (Long-term Monitoring Program and Experiential Training for Students). Results of these evaluations include: 90% of students acquired new knowledge of marine science concepts & understanding of scientific process through their participation in LiMPETS. Thirty-three percent of students reported that LiMPETS impacted their decision to pursue a career in science. In interviews conducted 7 to 12 months after their participation in LiMPETS, 90% of the students indicated that their concern over protecting the ocean grew because of LiMPETS program participation. LiMPETS, an in-depth citizen science and STEM education program middle and high school students, has a lasting impact on students, leading them to become informed ocean stewards.

OPERATIONS

Farallones staff use muscle-powered transport for National Bike to Work Day

GFNMS staff participated in National Bike to Work Day activities on Thursday, May 11. Despite San Francisco's hilly terrain, a number of employees donned helmets, gloves, and glasses to travel to and

from the Greater Farallones sanctuary offices in the San Francisco Presidio. The "clean-air and cardio" event celebrated and promoted the use of non-motorized, muscle-powered alternatives to polluting, motorized transport as a regular – not just recreational – activity for daily commuting and other practical uses. The Greater Farallones site has tracked its emissions since 2008, and has determined that over 70% of the greenhouse gases generated come from vehicles, and the majority of that resulting from staff commuting to the office. Zero emission bicycles are good for the earth, the heart, and the soul!

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2017 Calendar Updates

August

4 Kent Island restoration. Contact Kate.bimrose@noaa.gov

7-11 Marine Explorers Camp. Contact Rietta.hohman@noaa.gov

12 Get Into your Sanctuary (GIYS) events: include a Farallones nature cruise, family workshops, games, outdoor activities. Contact sara.heintzelman@noaa.gov See http://farallones.noaa.gov/education/specialevents.html

Thru Aug 31 GIYS Photo Contest: See details at http://sanctuaries.noaa.gov/earthis…/photo-contest-2017.html

16 Sanctuary Advisory Council Meeting (joint with Monterey Bay NMS), Half Moon Bay

19 Kent Island restoration. Contact Kate.bimrose@noaa.gov

September

1 Kent Island restoration. Contact Kate.bimrose@noaa.gov

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

October

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

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

November

29 Sanctuary Advisory Council meeting, San Francisco

Ongoing: Each month the Visitor Center offers special Weekend Family Workshops with themes such as sharks, squid, salmon, plankton and now ROVs! Book a program with ocean focus for your exclusive birthday parties or other special events. To schedule individual programs, or special event arrangements, contact Justin.Holl@noaa.gov.

Also, every Saturday at noon our Visitor Center naturalists feed aquarium critters. Just drop in!

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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.

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.

Follow Greater Farallones National Marine Sanctuary on Facebook and Twitter: click on

Learn more about the Sanctuary Advisory Council: http://farallones.noaa.gov/manage/sac.html

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