



Briefing on Kelp Forests in Greater Farallones National Marine Sanctuary

State of the Resource

Condition Report Data (in preparation)

- Kelp habitat and ecosystem: Greater than 90% of kelp forest habitat in northern California has been lost since 2014 due to repeated warm water events lowering reproduction rates of kelp and disease events removing top predators of kelp forest grazers, red (*Mesocentrotus franciscanus*) and purple urchins (*Strongylocentrotus purpuratus*).
- There was widespread recruitment failure of kelp, resulting in habitat and food limitations for associated species within the ecosystem. In addition, purple urchin recruitment yielded populations that increased to greater than sixty times normal levels (Rogers-Bennett and Catton 2019) and shifted behavior from passive feeding on algal detritus to active grazing on kelp and other marine algae, effectively outcompeting other herbivores such as abalone and red urchin. Following the decimation of the benthic “fleshy” algae, purple urchins then began grazing on the long-lived and slow-growing crustose coralline algae, thus creating large swathes of bare rock, which are unsuitable for post-larvae settlement of abalone.
- Kelp canopy: A slight increase in kelp canopy cover was observed in 2021, but there has been no significant recovery of kelp forests in GFNMS as of 2022 (Bell et al., 2023). Historical kelp persistence, or areas where kelp canopy occurred more frequently than surrounding areas prior to 2014, was determined using remote sensing data such as Landsat and aerial plane-based surveys. From 2014–2022, kelp persistence was nearly nonexistent in the sanctuary due to extremely sparse growth (CDFW 2019; Bell et al., 2023).

Climate Vulnerability Assessment Findings

- Vulnerability is calculated from exposure to climate and non-climate stressors, sensitivity to those same stressors, and the resource’s ability to adapt to the impacts. Ratings presented are from the original 2015 report and from 2023 revisions of some indicators.
- Kelp Forest habitat has a **high** vulnerability score based on sensitivity and exposure to sea surface temperature, turbidity, and disturbance regimes (MHW). The adaptive capacity is moderate due to low structural and functional integrity, limitations to recovery including herbivory, and lack of species diversity.
- Kelp forest-relevant species of interest:
 - Red and purple urchins have a **moderate vulnerability** score based on sensitivity and exposure to sea surface temperature, pH and DO, disturbance regimes (MHW), sensitivity to competition (for red urchins only) and high

dependence on forage. Urchins have high adaptive capacity, based on their ability to adapt to forage conditions, adjust behavior, and persist with lowered body condition.

- Red abalone have a **high vulnerability** score based on sensitivity and exposure to sea surface temperature, low oxygen and pH, disturbance regimes (marine heatwaves), dependence on forage, and harvest (when fishery is open). Red abalone have moderate adaptive capacity as evidenced from a lack of recovery from high losses in 2014, dependence on kelp forests, and competition from urchins.

Pressures on Kelp Forests

Human activities and natural processes can affect the condition of kelp forests through a variety of pathways. This section has been included to inform the public about the most significant overarching pressures, past, present, and potential, that may impact kelp forests. While some pressures are beyond the scope of what ONMS can address, the sanctuaries are monitoring and working on efforts to respond to pressures related to climate change.

Summary of Relevant Regulations

The following GFNMS prohibitions can prevent impacts to kelp from listed prohibited activities:

1. Exploring for, developing, or producing oil, gas or minerals.
2. Discharging or depositing from within or into the Sanctuary any material or other matter.
3. Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality.
4. Constructing, placing or abandoning any structure, drilling into, dredging, or otherwise altering the submerged lands of the Sanctuary.
5. Deserting a vessel aground, at anchor, or adrift in the Sanctuary.
6. Leaving harmful matter aboard a grounded or deserted vessel in the Sanctuary.

See links to full text, definition, exceptions, and exemptions on the regulations pages of the [GFNMS](#) website.

Summary of Relevant Sanctuary Projects

Conservation Science

- Since 2019, GFNMS, Greater Farallones Association (GFA), and our partners have been conducting research to inform kelp restoration along Marin, Sonoma and southern Mendocino counties. Depending on location, activities have included: kelp canopy mapping to identify areas of kelp persistence, environmental monitoring, ecosystem assessments, kelp propagation, outplanting methods testing, assessment of urchin removals, and kelp wrack surveys.

Resource Protection

- The sanctuary is a collaborative partner in multiple efforts to restore kelp habitat with an emphasis on kelp forests along the Sonoma coast at priority locations based on historic presence, persistence, and accessibility. Four suitable locations have been identified: Ocean Cove, Stillwater Cove, Timber Cove and Ft. Ross Cove. Gerstle Cove was identified as a suitable control site.
- The sanctuary reviews project proposals that could potentially violate sanctuary regulations or are likely to destroy, cause the loss of, or injure sanctuary resources in kelp forests.
- Through permitting actions the sanctuary manages, reduces, or eliminates injury to kelp forest habitat.
- The sanctuary works with NOAA's Office of Law Enforcement and the U.S. Coast Guard to document and enforce sanctuary regulations that protect kelp forests, works with NOAA's General Council to issue fines, conducts damage assessments, and works with responsible parties to address impacts to kelp forests.

Education and Outreach

- Fisherman in the Classroom and LiMPETS school programming supported by NOAA BWET and other funding sources delivered kelp-focused programming. Students participated in a Fisherman in the Classroom program led by sea urchin divers and visited bull kelp field sites (either Gerstle Cove or Fort Ross Cove) to learn about drone surveys to measure the extent of bull kelp canopy and to conduct intertidal urchin surveys. Students collected, dissected, and analyzed urchin data to increase understanding of the role of urchins in kelp disappearance.
- Public programming included the Sea Urchin Soirée and the Seaweed Soirée, bull kelp updates presented to Sanctuary Naturalists, and a Sanctuary Explorations Seaweed workshop at Shell Beach on the Sonoma Coast to increase community and stakeholder understanding of the kelp ecosystem.
- Web stories, print, TV, and social media on kelp were published as well as media days on the regional research vessel *Fulmar* and at the kelp lab space at Bodega Marine Laboratory were hosted. Multiple kelp-themed *Ocean Currents* radio programs are archived on the NOAA website including a program on the disappearance of bull kelp in sanctuary waters to increase target public awareness of kelp loss and the need for restoration.

Infrastructure and Vessels

Sanctuary infrastructure supports kelp work through through office space, at sea assets, and administrative, logistical, and operational assistance including:

- Meeting spaces for staff and partners to collaborate on kelp projects and storage for field equipment.
- Crissy Field Visitor Center as an exhibit and teaching space to deliver kelp related programs to educate the public about the importance of kelp.
- GIS to support kelp habitat mapping and conduct spatial analysis to plan and assess restoration activities.

- Government vehicles for transportation to and from marinas and field sites for kelp monitoring, research, and education projects.
- Vessel support for field operations to research, monitor, and restore kelp.

Summary and Staff Recommendations

Summary

Greater than 90% of kelp forest habitat in the sanctuary has been lost since 2014. Since 2019, GFNMS, Greater Farallones Association (GFA), and our partners have been conducting research to inform kelp restoration, focused on bull kelp. The sanctuary is a collaborative partner in multiple efforts to restore kelp habitat at priority locations based on historic presence, persistence, and accessibility. Education projects inform students and adults about the importance of kelp forests through Fisherman in the Classroom and LiMPETS school programming, public programming, and radio, print, TV, and social media on kelp. Sanctuary infrastructure supports kelp research and education through providing office space, a visitor center, at sea assets, and administrative, logistical, and operational assistance such as GIS support for mapping and spatial analysis.

Staff Recommendations

Conservation Science

- Actively partner and collaborate to continue research and analysis to inform kelp restoration efforts including: kelp culture and outplanting techniques, urchin removals, environmental and ecosystem monitoring, kelp canopy mapping, and methods for restoration effectiveness monitoring.
- Conduct analysis of status and trends of species and habitat metrics to understand and evaluate changes in this ecosystem in GFNMS. Maximize the use of kelp data to understand sanctuary habitat status and trends to inform management. Increase capacity for data management and analysis to support these activities.

Resource Protection

- Actively partner and collaborate on kelp restoration activities in the sanctuary.
- Review the effectiveness of regulations related to how humans use or control ocean resources that may impact kelp forests in the sanctuary and recommend changes if needed.

Education and Outreach

- Assess kelp education programming effectiveness in increasing student, stakeholder, and community awareness about the importance of kelp ecosystems and the need for restoration to ensure a healthy sanctuary.
- Support student, stakeholder, and community involvement in kelp research and restoration.

- Actively partner with organizations to communicate the importance of healthy kelp ecosystems in the sanctuary.

Infrastructure and Vessels

- Partner with Bodega Marine Lab to share space to conduct kelp ecosystem research.
- Maintain meeting space and offices in San Francisco and Point Reyes Station to facilitate collaboration among science, resource protection, education, and operations staff and partners.
- Expand Crissy Field visitor center to develop a kelp habitat exhibit and to develop teaching space to train teachers and deliver kelp habitat education programming about the importance of kelp habitat and stewardship.
- Ensure staff have vehicle and vessel access to kelp field sites to conduct research and monitoring.



Topic Briefing on Rocky Shores in GFNMS

State of the Resource

- Condition Report Data (in preparation)
 - Rocky intertidal habitat
 - Annual percent cover of acorn barnacles (*Chthamalus fissus*, *C. dalli*, *Balanus glandula*) and dwarf/golden rockweed (*Pelvetiopsis* spp.) was variable but generally stable since 2010, as measured at 4 sites.
 - Annual percent cover of turfweed algae (*Endocladia muricata*) was stable at Sea Ranch but declining at Bodega Marine Life Refuge.
 - Annual percent cover of northern rockweed (*Fucus* spp.) declined substantially at Bolinas Point and was very low in plots at Bodega Marine Life Refuge since 2010.
 - The percent cover of the foundation species surfgrass (*Phyllospadix* spp.) appears stable but was only monitored at one site (MARINe 2022).
 - Sea palm
 - Sea palm abundance declined from a high in 2008 to near zero during the 2014-2016 marine heatwave (MHW) at three locations (not specified because of “species of concern” status by the state). It appears to be slowly recovering since the MHW. In 2021, researchers recorded higher densities in Sonoma County and the state’s north-central marine protected areas within and adjacent to GFNMS as compared to areas that do not have stronger take regulations (Raimondi & Smith, 2022).
 - California mussels
 - Percent cover of mussels at three sites in the sanctuary, Bodega Marine Life Refuge, Sea Ranch, and Bolinas Point, varied between 80-100% over the past 10 years but are generally high and stable. Percent cover of mussels declined at Bodega Marine Life Refuge 2014-2016, and at Sea Ranch and Bolinas Point 2016-2020, but as of 2022, cover at all three sites appears to be trending toward recovery (MARINe, 2022).
 - Rocky Shore community stability - Stable with good diversity.
 - Species communities at Bodega Marine Life Refuge, Bolinas Point, and Santa Maria Creek (adjacent to the sanctuary) were remarkably stable over time while Sea Ranch varied more (plots in earlier years contained high cover of the turfweed (*Endocladia muricata*), black pine red algae (*Neorhodomela larix*), and acorn barnacles (*Chthamalus/Balanus* spp.), and more recent years shifted to higher cover of rockweed (*Pelvetiopsis limitata*).
- Climate Vulnerability Assessment Findings. Vulnerability is calculated from exposure to climate and non-climate stressors, sensitivity to those same stressors, and the resource’s ability to adapt to the impacts. Ratings presented are from the original 2015 report and from 2023 revisions of some indicators.

- Rocky intertidal habitat has a high vulnerability score based on high exposure to increased air and sea temperatures, changes in precipitation, salinity, pH, sea level rise and debris flow from storms; high sensitivity to increased sea surface temperature, sea level rise, disturbance regimes, and recreation (trampling); and high adaptive capacity (a decrease from very high) due to documented impacts from MHW events. The vulnerability of rocky intertidal habitat increased since the original assessment, due to documented disruptions from the marine heatwave including temperature stress and cascading impacts of changes to key species (seastars, intertidal kelp, urchins).
- Coralline algae (considered as a complex of species) has a moderate vulnerability score based on high exposure to reduced pH, moderate exposure to changes in sea surface temperature, and low exposure to changes in air temperature; very high sensitivity to increased sea surface temperature, and high sensitivity to disturbance regimes and urchin overgrazing; and low adaptive capacity due to the slow-growing nature of this species complex and slow recovery times from disturbance.
- Ochre seastar has a moderate vulnerability score based on high exposure to changes in air and sea surface temperature, precipitation, salinity, sea level rise, and decreased pH; moderate sensitivity to sea surface temperature, high sensitivity to disease and disturbance events; and moderate adaptive capacity due to the highly variable recovery documented throughout the sanctuary from massive mortality events (Sea Star Wasting).
- Sea palm has a high vulnerability score based on high exposure to increased sea surface temperature and disturbance (MHW), high sensitivity to temperature, disturbance regimes, and harvest, and moderate adaptive capacity due to extirpation at the southern end of the species' range.
- California mussels have a moderate vulnerability score based on high exposure to increased changes in air and sea surface temperatures, changes in precipitation, salinity, decreased pH, and sea level rise; moderate sensitivity to temperature, disturbance regimes, harvest, and dependency on sensitive habitat, and very high sensitivity to disturbance regimes; and moderate adaptive capacity due to impacts from the MHW and high species value.

Other Science Information

- South Farallon Islands, Rocky Shore community stability - Stable with good diversity.
 - Species communities at Southeast Farallon and Maintop Islands (i.e., South Farallon Islands), were remarkably stable 1992-2010, prior to the 2014-2016 marine heat wave (MHW). Since the MHW, red and black abalone have not been documented in the low intertidal zone, drift algae appears to be absent, while high diversity and percent cover of algae and invertebrates greater than 100% continues (Roletto et al, 2014, GFNMS unpublished report, GFNMS unpublished data).
 - Increased storminess causing increased erosion and scouring of intertidal species was noted to correspond with decreased percent cover of

surfgrass in February 2023, on SE Farallon Island (GFNMS unpublished data).

Pressures on rocky shores

Human activities and natural processes can affect the condition of rocky shores through a variety of pathways. This section has been included to inform the public about the most significant overarching pressures, past, present, and potential, that may impact rocky shores. While some pressures are beyond the scope of what ONMS can address, the sanctuaries are monitoring pressures from climate change including potential loss of rocky reefs due to sea level rise, storminess and improper tide pooling etiquette, collection, and trampling.

Summary of Relevant Regulations

The following GFNMS prohibitions can prevent impacts to rocky shores from listed prohibited activities:

1. Exploring for, developing, or producing oil, gas or minerals.
2. Discharging or depositing from within or into the Sanctuary any material or other matter.
3. Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality.
4. Constructing, placing or abandoning any structure, drilling into, dredging, or otherwise altering the submerged lands of the Sanctuary.
5. Deserting a vessel aground, at anchor, or adrift in the Sanctuary.
6. Leaving harmful matter aboard a grounded or deserted vessel in the Sanctuary.

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Summary of Relevant Sanctuary Projects

Conservation Science:

- Data on rocky shores are collected by GFNMS at Southeast Farallon Island since 1992 and along the mainland by partners such as Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) through the Multi-agency Rocky Intertidal Network (MARINE). Data are also collected through the Long-term Monitoring Program and Experiential Training for Students (LiMPETS).

Resource Protection:

- The sanctuary reviews project proposals that could potentially violate sanctuary regulations or are likely to destroy, cause the loss of, or injure rocky shores.
- Through permitting actions the sanctuary manages, reduces, or eliminates injury to rocky shores.
- The sanctuary reviews monitoring data from California MPA watch, assesses if there are impacts to the sanctuary from human use (i.e. tidepooling), and engages with partners to address impacts.

- The sanctuary prioritizes the removal of large marine debris such as vessels, shipping containers and cars from rocky shore habitat given its extreme vulnerability to irreparable damage and permanent potential removal of rocks.
- The sanctuary works with NOAA's Office of Law Enforcement and the U.S. Coast Guard to document and enforce sanctuary regulations that protect rocky shores, works with NOAA's General Council to issue fines, conducts damage assessments, and works with responsible parties to address impacts to rocky shores.

Education and Outreach:

- GFNMS and CBNMS educate kindergarten through university students through classroom presentations and field trips about the importance of rocky intertidal habitats in the sanctuary and how to be stewards of rocky intertidal habitats
- GFNMS and CBNMS strive to inspire sanctuary volunteers, community members, and stakeholders to be habitat stewards through tide pool excursions to local rocky reefs, virtual tours of Duxbury reef, public lectures, and teacher workshops in addition to web stories, print, TV, and social media on rocky intertidal content.
- Rocky intertidal messages are also delivered through visitor center and museum exhibits and outdoor interpretive signs such as tide pool signs at Fitzgerald Marine Reserve that help increase appreciation and awareness of rocky intertidal habitats and highlight the value of sanctuaries.
- Partnerships extend our reach such as the Rocky Shore Partnership with the California Academy of Sciences where sanctuary staff partnered with Academy staff to jointly train field docents to monitor Duxbury and Mavericks reefs and also trained over 700 California Academy of Sciences docents in sanctuary messaging to work in the Academy's Coast Exhibit, primarily at the tide pool touch tank.

Infrastructure and Vessels:

Sanctuary infrastructure supports rocky shore work through office space, at sea assets, and administrative, logistical, and operational assistance.

- Meeting spaces for staff and partner collaboration on rocky shore projects and storage for field equipment.
- Crissy Field Visitor Center as a space to deliver rocky shore related programs and educate the public about rocky reefs through exhibits such as our rocky intertidal aquariums.
- GIS support to map rocky shore habitat, to conduct spatial analysis, and produce educational products.
- Government vehicles for transportation to and from rocky intertidal field sites for monitoring and education projects.
- Farallon Islands mooring buoy to prevent damage to rocky reef habitat.

Summary and Staff Recommendations

Summary

Rocky shore communities that are monitored appear to have good diversity and most are stable. Data on rocky shores have been collected by GFNMS at Southeast Farallon Island since

1992 and along the mainland by partners. Data is also collected through LIMPETS. GFNMS engages with partners to address impacts on the rocky shores from human use (i.e. tidepooling), and prioritizes the removal of large marine debris given its extreme vulnerability to irreparable damage and permanent potential removal of rocks. Education projects inform students and adults about the importance of rocky shores through classroom presentations, field trips, virtual tours, public lectures, teacher workshops, web stories, print, TV, social media, visitor center and museum exhibits and outdoor interpretive signs. The sanctuary supports rocky shore projects by providing meeting and storage spaces, supporting exhibits at the visitor center, providing GIS support, and maintaining government vehicles and the Farallon Islands mooring buoy.

Staff Recommendations:

Conservation Science:

- Work with partners to continue and expand rocky intertidal sampling on the Southeast Farallon Island and continue partnership in MARINE to support data collection at mainland sites to provide data continuity and allow for long term trend analysis of climate and other impacts.
- Conduct analysis of status and trends of species and intertidal community metrics to understand and evaluate changes in this ecosystem in GFNMS to inform management. Increase capacity for data management and analysis to support these activities.

Resource Protection:

- Prioritize the removal of large marine debris such as vessels, shipping containers and cars from rocky shore habitat to minimize irreparable damage to and permanent damage to rocky substrate.
- Review the effectiveness of rocky shore habitat protection measures, such as California's Marine Protected Areas, and recommend changes needed to increase protections.

Education and Outreach:

- Continue to increase student, stakeholder, and community awareness about the importance of rocky intertidal habitats to the sanctuary's health.
- Support student, stakeholder, and community involvement in rocky shore protection where protection and messaging is most needed to ensure a healthy sanctuary.

Infrastructure:

- Continue to maintain the Southeast Farallon Island mooring buoy to minimize rocky reef damage.
- Maintain meeting space and offices in San Francisco and Point Reyes Station to facilitate collaboration among staff and with partners.
- Expand Crissy Field visitor center to enhance the rocky shore habitat exhibit and to create teaching space to train teachers how to monitor rocky shore habitat and for staff to deliver student and public rocky habitat education programming, so that the public understands the importance and how to be stewards of rocky shores.

- Ensure staff can access rocky shore sites including the Southeast Farallon Island to conduct monitoring and education programming.

Draft Letter of Support for the Applied California Current Ecosystem Studies (ACCESS) and 20 Year Celebration

September 8, 2023

Maria Brown,
Sanctuary Superintendent

Dear Superintendent Brown,

The Sanctuary Advisory Councils of Cordell Bank National Marine Sanctuary (CBNMS) and Greater Farallones National Marine Sanctuary (GFNMS) congratulate the Office of National Marine Sanctuaries (ONMS) on 20 years of data collection by the Applied California Current Ecosystem Studies (ACCESS) project and request continued support for the next 20 years to ensure ongoing research and monitoring to inform sanctuary management.

GFNMS, CBNMS, and Point Blue Conservation Science have collaborated on ACCESS research and monitoring since 2004 to enhance the ability to protect and manage GFNMS, CBNMS and the northern portion of Monterey Bay National Marine Sanctuary (MBNMS). The ACCESS project has led to a wealth of data and information that is used to inform management of these areas. ACCESS data were critical to the recent development of the GFNMS and CBNMS condition reports, without which the sanctuary would be lacking information on the status and trends of many resources in the sanctuaries. Data and analyses from ACCESS are used to address such issues as ship strikes and entanglement of endangered and threatened baleen whales, location of foraging hot spots of seabirds and marine mammals, and understanding environmental changes and their influences on the abundance and distribution of seabirds, marine mammals, and their forage species. ACCESS data are used in the prediction of spatial use patterns of focal marine species, helping to illustrate how patterns of use may change in response to changing ocean conditions. This information can help to identify areas of significant ecological resources, areas where important habitat may overlap with human uses, and help to illuminate where management actions may be most effective.

As oceans face extreme variability and changing conditions resulting from climate change, it is critical to continue the important work of ACCESS. We urge you to continue sustained support for the project into the future and to plan for the long term by supporting planning and growth. ACCESS serves as an exemplary model of ecosystem monitoring that can be shared with other sanctuary sites. Also, it is important to continue training the next generation of scientists and allow for succession planning so that ACCESS can continue uninterrupted into the future. With further investments, ACCESS can continue to collect baseline ecosystem data, assess alternative management strategies to protect top predators and their forage species, identify additional areas as important ecological hot spots, and develop products that can be used in condition

reports so that sanctuaries can then identify proactive management actions and maintain healthy ocean ecosystems across multiple sites.

We acknowledge and appreciate ONMS's foresight and leadership in funding this critical project early on and maintaining support over time. The extension of the ACCESS project will further improve the management and effectiveness of our three central California sanctuaries and we urge your continued support of this program moving forward.

Sincerely,

GFNMS Advisory Council

CBNMS Advisory Council

The councils are an advisory body to the sanctuary superintendent. The opinions and findings of this letter/publication do not necessarily reflect the position of the sanctuaries and the National Oceanic and Atmospheric Administration



GREATER FARALLONES & CORDELL BANK NATIONAL MARINE SANCTUARIES
JOINT ADVISORY COUNCIL MEETING
9:00am – 4:30pm PT
Hybrid Meeting
Dance Palace Community and Cultural Center and Google Meet

MEETING HIGHLIGHTS

Note: The following notes are an account of discussions at the Sanctuary Advisory Council meeting and do not necessarily reflect the opinion or position of the Cordell Bank National Marine Sanctuary (CBNMS), Greater Farallones National Marine Sanctuary (GFNMS), or the National Oceanic and Atmospheric Administration (NOAA).

To view slides from any presentation referenced in this document, please email tishma.patel@noaa.gov.

GFNMS Advisory Council Business

GFNMS Advisory Council (GFNMS AC) Vice Chair Bibit Traut welcomed all to the meeting and called roll for the council. See Appendix I for GFNMS AC attendance record for this meeting.

Tishma informed the council that the annual retreat will take place in October; looking for ideas for locations/ideas for activities.

The council then approved the draft meeting highlights from the April 2023 council meeting. Conservation member Kathi George motioned to approve the highlights and Community-at-Large (CAL) San Francisco-San Mateo member Barton Selby seconded.

GFNMS AC MOTION: Approve February Meeting Highlights

Vote: 10 yes, 0 no, 0 abstain

A copy of the meeting highlights is available upon request to tishma.patel@noaa.gov, and will be posted online at <https://cordellbank.noaa.gov/council/documents.html>.

GFNMS Advisory Council Member and Alternate Reports

Council members and alternates shared reports from their constituencies.

- Bibit Traut, Education Member
 - Recently seen bald eagle on Tomales Bay
 - Maybe a paddle board event for retreat or GIYS event
 - College of Marin Bolinas field station opening soon
 - Attending Sanctuary Advisory Council (SAC) Chairs and Coordinators meeting at end of September in upstate New York; let her know if anything you want her to bring up
- Jacqueline Moore, Maritime Activities Member

- Busy time; vessel carriers participating in VSR programs
 - We're seeing greater compliance
- Abby Mohan, California Natural Resource Agency (CNRA) alternate
 - No longer Maritime Recreation Member, now in CNRA seat as alternate
 - 30x30 program manager now
- Bart Selby, CAL SF/SM Member
 - Windy few months; there has been less human presence recently
 - Likely many whales
- George Clyde, CAL Marin Member
 - New non-native invasive species in Tomales Bay; invasive sea anemone native to Australia, New Zealand, and Chile; first report in North America; likely already abundant in Tomales Bay
- Richard James, CAL Marin Alternate
 - At mouth of Russian River, tons of pelicans and at least 500 harbor seals; Sonoma County Sheriff helicopter flew at about 200-300 ft and flushed pelicans
 - Abandoned oyster racks in Tomales Bay from 1980s; about 5 ft long by 2 ft wide; working with NOAA restoration center to get removed
 - Abandoned tires at Marconi Boat Ramp
 - Next week, Sonoma County voting on Fort Ross Pumped Storage Project plan and language around dredged materials is problematic
- Gerry McChesney, US Fish and Wildlife Service (USFWS) Alternate
 - ~450,000 seabirds on Farallones Islands; Point Blue Conservation Science has been monitoring; decent seabird breeding season so far; El Nino may be starting to show at islands
 - Pinniped numbers increasing steadily; surpassed over a 1,000 CA sea lions born; Stellar sea lions had about 80 pups
 - Need to replace moorings at island in September; shared ownership with GFNMS; permit application to get through
- Dick Ogg, Commercial Fishing Alternate
 - Salmon fishery closed
 - Seeing thousands of tiny pyrosomes offshore; impact ability to fish; this usually is an indicator of warm ocean water that is farther away from us (not where we fish); our water temperature has been a bit below normal, unsure if warm water is going to move in
 - Domoic Acid problem in Southern CA
- Craig Kenkel, National Park Service Member
 - Eelgrass surveying in Drake's Estero this week
 - In September, going in front of CA Coastal Commission to present water quality report
- Kathi George, Conservation Member
 - No domoic acid cases at The Marine Mammal Center yet
 - 1 entangled gray whale in San Francisco Bay in June
 - 2 dead gray whale whales in June; Cause of death undetermined
 - Lots of whales offshore

- Chairing Harbor Safety Committee Working Group to investigate reducing ship strikes within SF Bay/Pacifica exclusion zone; Jess Morten is also involved
- Sarah Bates, Fishing Member
 - Salmon fishery closed
 - Mostly working on hatchery proposals
- Mary Miller, Education Alternate
 - Exploratorium hosting evening event on ocean acidification on 8/17 – will send blurb
- Jaime Jahncke, Research Member
 - La Jolla meeting focused on California Current report

Tishma informed the council that recruitment would be taking place in early August

CBNMS Advisory Council Arrive and Roll Call

CBNMS Advisory Council (CBNMS AC) Vice Chair Steve Tubbs welcomed all to the meeting and called roll for the council.

See Appendix II for CBNMS AC attendance record for this meeting.

GFNMS and CBNMS Superintendent's Report

Maria Brown, Superintendent of GFNMS and CBNMS, provided updates on GFNMS and CBNMS Operations, Research, Education/Outreach, and Resource Protection program activities since the last council meeting in February.

Highlights included 1) \$2 million in IRA funds for converting shop garage on Crissy Field into ocean learning center, 2) working on GIS tool for coral restoration, 3) publishing of the CBNMS Condition Report, 4) science team conducting ACCESS cruises, 4) kelp restoration research cruise in Drake's Bay, 5) education program number updates, and 6) recent GFNMS/MBNMS engagement with the Pacific Fishery Management Council regarding deep sea coral restoration.

Maria highlighted recent permit applications received, permits issued, and permits under review. Kai Martin asked which permits correspond to each sanctuary.

Bart Selby inquired if permit applications are required to detail impacts to sanctuary resources. Maria responded that they are required to do so.

Dick Ogg inquired why weather buoys need to get permits. Maria responded that NOAA has to apply for permits, because they are technically breaking sanctuary regulations via disturbance to the seabed. Lilli added that the current permit application is to extend the current permit period.

Abby Mohan mentioned that a summary of kelp restoration lessons learned would be good to document and disseminate. Maria mentioned that we can do that.

Dick Ogg inquired about urchin removal activities. Maria informed Dick that the kelp team is investigating the best methods to control urchin populations and monitor site restoration site.

Max Delaney provided the response and enforcement report. Since the last meeting, three incidents occurred in the sanctuary. Richard James asked if the sanctuary or NOAA has any plans to communicate these outcomes versus uninsured vessel incidents. Max informed Richard that there is an opportunity to spread the word via the working groups and committees the sanctuary sits on. Maria added that the ACC could add a recommendation to the Open Ocean recommendations to be covered later in the agenda.

George Clyde inquired about the vessel American Challenger and asked for an update. Max highlighted that there are still agency resources going into the enforcement and removal of the vessel.

Bart Selby mentioned that every day thousands of 2 lb lead fishing weights/anchors litter the CA coastline. Maria mentioned that we can not regulate those activities because it is deemed lawful fishing activities, and the council could provide recommendations to address this concern today.

Maria mentioned that our next meeting will be a joint retreat in October and solicited ideas for the retreat. Bibit recommended that examining phase shifts could be fruitful. Wind energy as a topic was also brought up; this topic was seconded by Jacqueline Moore. Kathi George mentioned learning how the State's 30x30 efforts will intersect with the sanctuary would be valuable. Jenny Stock mentioned that the Cordell Bank Virtual Reality could be incorporated into the retreat. Abby mentioned that getting out to see the kelp restoration sites would be great. Sea otter reintroduction and deep sea corals were also mentioned as potential topics.

Monterey Bay National Marine Sanctuary Superintendent's Report

Lisa Wooninck, Superintendent of Monterey Bay National Marine Sanctuary (MBNMS), provided a brief report on recent and upcoming events at the sanctuary.

Highlights included 1) Inflation Reduction Act funding updates which include \$7 million to create new MBNMS offices at California State University Monterey Bay, 2) Bipartisan Infrastructure Law funding updates including marine debris removal along the west coast sanctuaries, 3) the redesign of new signage and installation of over 40 new signs, 4) sea otter outreach efforts regarding increased sea otter presence in the Monterey Bay due to winter storms, and 5) new species discovered within MBNMS

Public Comment

Michael Newman: Comment regarding having the entire coast as a National Marine Sanctuary

George Clyde: USFWS reports on sea otter reintroduction highlight impacts to fishing industry from reintroduction. Tourism is a concern that must be mitigated if sea otters are to be introduced.

Eileen Boken: Comment regarding kelp forest reforestation and sea otter reintroduction as topics to be discussed by the California Coastal Commission.

Jeff Loomans: Support for AB953 letter and thanks for all the work on kelp restoration

Action item: Open Ocean Environment

GFNMS/CBNMS staff provided a comprehensive presentation on Open Ocean Environment work that has taken place since the last management plan review in 2014. The presentations included information on resource protection, conservation science, and education activities as well as staff recommendations for activities for the next management plan.

Following the presentations, the councils engaged in a discussion with sanctuary staff.

Abby Mohan inquired how settlement funds like those received from the cruise ship discharge are used. Maria responded that funds must go towards restoring the sanctuary.

Bart Selby asked if the Ocean Currents radio show would be coming back? Jenny informed Bart that this could be a recommendation from the advisory council.

Bibit Traut asked if there were any efforts to expand US Coast Guard presence north of Bodega Bay to increase response efficiency in the Open Ocean.

Dick Ogg proposed that commercial fishermen could be useful in collecting real time hypoxia data and inquired if there was a way to make this happen.

Mary Miller asked the best way to provide advice on topic briefings. Maria responded that the council can give recommendations today if it feels like they have a good sense for recommendations. The council could also delve deeper and stand up a working group to explore issues/topics in more depth. Both options are open to the council.

Kai Martin asked if greenhouse gas emissions monitoring was occurring at the site level or the national level. Brian mentioned that it began at the site level and it is currently a national level effort.

Kai Martin also asked if this is the appropriate time to recommend that the SF/Pacifica Exclusion Zone be integrated into the sanctuary system. Maria responded that now is an appropriate time.

Richard James suggested that the sanctuary estimate how much taxpayer dollars are used to salvage uninsured vessels within the sanctuary. He also suggested the sanctuary strategically place “ambassadors” at boat ramps and other entry points into the sanctuary (and collaborate with agencies and partners) in order to better educate the public on sanctuary regulations.

Morgan Patton mentioned that the statewide MPA Collaborative can help with community outreach.

Following discussion, the councils made edits and additions to staff recommendations. GFNMS Advisory Council California Natural Resources Agency member Abby Mohan motioned to support the staff recommendations with Sanctuary Advisory Council edits.

CBNMS Advisory Council Maritime Activities member Kai Martin seconded.

CBNMS AC MOTION: To support recommendations for Open Ocean Environment

Vote: 4 yes, 0 no, 0 abstention. There was not a quorum and the council will need to vote again at the next AC meeting.

To view the recommendations within the topic briefing, please visit <https://cordellbank.noaa.gov/council/actions.html>.

GFNMS AC MOTION: To support recommendations for Open Ocean Environment

Vote: 10 yes, 0 no, 0 abstention. The recommendations will be forwarded to the sanctuary.

To view the recommendations within the topic briefing, please visit https://farallones.noaa.gov/manage/sac_actions.html.

Action item: GFNMS AC and CBNMS AC Letter of Support for Proposed Designation of a National Marine Sanctuary for Lake Erie

The councils discussed and provided edits to a draft letter of support for the Proposed Designation of a National Marine Sanctuary for Lake Erie prepared by GFNMS AC Vice Chair Bibit Traut. GFNMS Advisory Council Conservation member Kathi George motioned to approve the letter. CBNMS Advisory Council Maritime Activities member Kai Martin seconded.

CBNMS AC MOTION: Approve Joint Letter of Support for the Proposed Designation of a National Marine Sanctuary for Lake Erie

Vote: 4 yes, 0 no, 0 abstention. There was not a quorum and the council will need to vote again at the next AC meeting.

GFNMS AC MOTION: Approve Joint Letter of Support for the Proposed Designation of a National Marine Sanctuary for Lake Erie

Vote: 10 yes, 0 no, 0 abstention. The recommendations will be forwarded to the sanctuary.

Action item: GFNMS AC and CBNMS AC Letter of Support for California Assembly Bill 953 to Reduce Vessel Speed to Protect Whales

The councils discussed and provided edits to a draft letter of support for California Assembly Bill 953 to Reduce Vessel Speed to Protect Whales prepared by CBNMS AC Chair Jeffrey Dorman.

Jacqueline Moore mentioned that the bill will next be heard by the Senate Appropriations Committee and can provide the correct address.

George Clyde mentioned that Assemblymember Damon Connolly sponsored the bill and noted that he should be cc'd on the bill.

GFNMS Advisory Council Maritime Commercial Activities member Jacqueline Moore motions to approve the letter. GFNMS Advisory Council Research member Jaime Jahncke seconded.

CBNMS AC MOTION: Approve Joint Letter of Support for California Assembly Bill 953 to Reduce Vessel Speed to Protect Whales

Votes: 5 yes, 0 no, 0 abstentions. Advisory Council Chair Jeffrey Dorman provided his vote via email. The recommendations will be forwarded to the sanctuary.

GFNMS AC MOTION: Approve Joint Letter of Support for California Assembly Bill 953 to Reduce Vessel Speed to Protect Whales

Votes: 9 yes, 0 no, 1 abstentions. The recommendations will be forwarded to the sanctuary.

Action item: Preserve Our Maritime History

GFNMS/CBNMS staff provided a comprehensive presentation on work that has taken place since the last management plan review in 2014 regarding preserving our Maritime History. The presentations included information on resource protection, conservation science, and education activities as well as staff recommendations for activities for the next management plan. Following the presentations, the council engaged in discussion with sanctuary staff.

Bibit Traut asked if Tribal culturally important resources along the GFNMS coastline were cataloged and taken into account. Lilli Ferguson mentioned that the sanctuary was not aware of any to date.

Dick Ogg inquired about how sanctuary protections for maritime resources intersect with the pumping project at Fort Ross. Maria mentioned that if there are impacts below the mean high tide mark, then the sanctuary would need to be consulted.

Gerry McChesney mentioned shipwrecks that still have oil and/or fuel and begin to release those pollutants years later should be taken into consideration.

Following discussion, the councils made edits and additions to staff recommendations. The councils motioned to vote on supporting the staff recommendations with Sanctuary Advisory Council edits.

CBNMS AC MOTION: To support recommendations to Preserve Our Maritime History

Votes: 4 yes, 0 no, 0 abstention. There was not a quorum and the council will need to vote again at the next AC meeting.

To view the recommendations within the topic briefing, please visit <https://cordellbank.noaa.gov/council/actions.html>.

GFNMS AC MOTION: To support recommendations to Preserve Our Maritime History

Votes: 7 yes, 0 no, 0 abstention. The recommendations will be forwarded to the sanctuary.

To view the recommendations within the topic briefing, please visit https://farallones.noaa.gov/manage/sac_actions.html.

CBNMS Advisory Council Business

The council approved the draft meeting highlights from the April 2023 council meeting.

CBNMS AC MOTION: Approve April 2023 meeting highlights

Votes: 4 yes, 0 no, 0 abstention. There was not a quorum and the council will need to vote again at the next AC meeting.

Tishma mentioned that the council would need to schedule the Cordell Bank NMS Meeting for later this year to vote on items in which there was not a quorum.

CBNMS AC Member and Alternate Reports

- Steve Tubbs, CAL Sonoma
 - Sharing ocean-related content with followers via social media and leading hikes at Point Reyes National Seashore
- Morgan Patton, Conservation
 - Working on state Decadal MPA review
 - MPA Watch trainings taking place right now
 - Cleaner California Coast campaign ongoing for litter reduction along the coast
- Kai Martin, Maritime Activities
 - Supportive of AB953
 - Tracking offshore wind development
 - Impacts to shipping lanes
 - Investigating shipping industry role in offshore industry
 - North American Marine Environment Protection Association (NAMEPA) engagement on educational outreach program
 - Tracking how zero emissions vessels affect ocean noise
- Chrissy Piotrowski, Research
 - Making historical marine biodiversity data public online
 - Receiving holotypes of new species recently described in MBNMS
 - Mini CBNMS exhibit still on display at Cal Academy

Meeting highlights prepared by Tishma Patel, Advisory Council Coordinator.

Appendix I. GFNMS AC Attendance for the July 2023 GFNMS/CBNMS Advisory Council Meeting. The blue rows are voting members and the purple rows are non-voting members.

| Name | Seat | Attendance |
|-------------|--------------------------------|-------------------|
| Sarah Bates | Commercial Fishing (Member) | Y |
| Richard Ogg | Commercial Fishing (Alternate) | Y |

| | | |
|------------------|--|----|
| George Clyde | Community-at-Large Marin (Member) | Y |
| Richard James | Community-at-Large Marin (Alternate) | Y |
| Vacant | Community-at-Large Mendocino-Sonoma (Member) | -- |
| Vacant | Community-at-Large Mendocino-Sonoma (Alternate) | -- |
| Bart Selby | Community-at-Large San Francisco-San Mateo (Member) | Y |
| Vacant | Community-at-Large San Francisco-San Mateo (Alternate) | -- |
| Francesca Koe | Conservation (Member) | N |
| Kathi George | Conservation (Member) | Y |
| Vacant | Conservation (Alternate) | -- |
| Vacant | Conservation (Alternate) | -- |
| Bibit Traut | Education (Member) | Y |
| Mary Miller | Education (Alternate) | Y |
| Jacqueline Moore | Maritime Commercial Activities (Member) | Y |

| | | |
|------------------|--|----|
| Vacant | Maritime Commercial Activities (Alternate) | -- |
| Vacant | Maritime Recreational Activities (Member) | |
| Peter Molnar | Maritime Recreational Activities (Alternate) | N |
| Jaime Jahncke | Research (Member) | Y |
| Ellen Hines | Research (Alternate) | N |
| Vacant | Youth (Member) | -- |
| Vacant | Youth (Alternate) | -- |
| Jenn Eckerle | California Department of Natural Resources (Member) | N |
| Abby Mohan | California Department of Natural Resources (Alternate) | Y |
| Craig Kenkel | National Park Service (Member) | Y |
| Ben Becker | National Park Service (Alternate) | N |
| LT Lelea Lingo | U.S. Coast Guard (Member) | N |
| LTJG Andrew Kang | U.S. Coast Guard (Alternate) | N |

| | | |
|-----------------|---|----|
| Matthew Brown | U.S. Fish and Wildlife Service (Member) | N |
| Gerry McChesney | U.S. Fish and Wildlife Service (Alternate) | Y |
| Jennifer Boyce | National Marine Fisheries Service (Member) | Y |
| Vacant | National Marine Fisheries Service (Alternate) | -- |
| Chris Mobley | Channel Islands National Marine Sanctuary (Member) | N |
| Mike Murray | Channel Islands National Marine Sanctuary (Alternate) | N |
| Lisa Wooninck | Monterey Bay National Marine Sanctuary (Member) | Y |
| Dawn Hayes | Monterey Bay National Marine Sanctuary (Alternate) | N |

Appendix II. CBNMS AC Attendance for the July 2023 GFNMS/CBNMS Advisory Council Meeting. The blue rows are voting members and the purple rows are non-voting members.

| Name | Seat | Attendance |
|--------|--------------------------|------------|
| Vacant | Community-at-Large Marin | -- |
| Vacant | Community-at-Large Marin | -- |

| | | |
|------------------------|---------------------------|----|
| Frank Capurro | Community-at-Large Sonoma | N |
| Steve Tubbs | Community-at-Large Sonoma | Y |
| Scott Artis | Conservation | N |
| Morgan Patton | Conservation | Y |
| Vacant | Education | -- |
| Vacant | Education | -- |
| Chris Ohanian | Fishing | N |
| Vacant | Fishing | -- |
| Vacant | Maritime Activities | -- |
| Kai Martin | Maritime Activities | Y |
| Jeff Dorman (Chair) | Research | N |
| Chrissy Piotrowski | Research | Y |

| | | |
|------------------|---|----|
| Lisa Wooninck | Monterey Bay National Marine Sanctuary (Non-voting member) | Y |
| Dawn Hayes | Monterey Bay National Marine Sanctuary (Non-voting alternate) | N |
| LT Kynan Barrios | National Marine Fisheries Service (Non-voting member) | N |
| Vacant | National Marine Fisheries Service (Non-voting alternate) | -- |
| LT Lelea Lingo | United States Coast Guard (Non-voting member) | N |
| LTJG Andrew Kang | United States Coast Guard (Non-voting alternate) | N |

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