



CORDELL BANK NATIONAL MARINE SANCTUARY SANCTUARY ADVISORY COUNCIL

MEETING MINUTES

November 12, 2020

9:10 AM

Held as a Virtual Meeting

Note: The following meeting notes are an account of discussions at the meeting of the Sanctuary Advisory Council for Cordell Bank National Marine Sanctuary (CBNMS). The council is an advisory body to the sanctuary superintendent. The opinions and findings of this publication do not necessarily reflect the position of CBNMS and the National Oceanic and Atmospheric Administration (NOAA).

Call to Order/Welcome/Review Virtual Meeting Logistics/Roll Call (Bec Detrich)

Bec Detrich, Advisory Council Chair, called the meeting to order at 9:10 AM and welcomed everyone, noting there were some new governmental members. She went over some of the features of the virtual meeting platform as they related to running the meeting. Bec also thanked Jennifer Stock, CBNMS Education and Outreach coordinator, for providing technical support. Lilli Ferguson, advisory council coordinator, then called roll.

Nongovernmental Members Present:

George Clyde (Community-at-Large - Marin County)
Tom Anderson (Community-at-Large – Sonoma County)
Steve Tubbs (Community-at-Large – Sonoma County)
Scott Artis (Conservation)
Morgan Patton (Conservation)
Bec Detrich (Chair; Education)
Dick Ogg (Vice-Chair; Fishing)
Noah Wagner (Fishing)
Chris Hendry (Maritime Activities)
Kai Martin (Maritime Activities)
Jaime Jahncke (Research)

Agency Members and Alternates Present:

Brian Johnson (Greater Farallones National Marine Sanctuary [GFNMS] – Alt.)
Special Agent Rad Dew (NOAA Fisheries)
LT Kynan Barrios (NOAA Fisheries – Alt.)
LTJG Chris Bell (United States Coast Guard [USCG – Alt.]

Members of the CBNMS staff present:

Dan Howard (Sanctuary Superintendent)
Michael Carver (Deputy Superintendent and Resource Protection Coordinator)
Lilli Ferguson (Resource Protection Specialist and advisory council coordinator)
Danielle Lipski (Research Coordinator)
Rachel Pound (Research Operational Specialist [NOAA Affiliate])
Jennifer Stock (Education and Outreach Coordinator)

Review and Approve Agenda (Bec)

- The Cordell Bank National Marine Sanctuary Advisory Council (CBNMSAC) reviewed the agenda and unanimously approved it.

Review and Approve August Meeting Minutes (Bec)

- The advisory council reviewed the August 20, 2020 meeting minutes and unanimously approved them.

Advisory Council Business (Dan Howard)

- Announcement of New Members Beginning Terms: Self Introductions: Dan Howard, Sanctuary Superintendent, said this was a bittersweet day, due to having to say goodbye to some folks and welcome new ones. Beginning new terms as members of the advisory council, effective from this announcement are: Frank Borodic, Community-at-Large - Marin County; Rob Taboada, Community-at-Large - Marin County; Jeff Dorman, Research; and Chrissy Piotrowski, Research. They introduced themselves.
- Frank has lived in West Marin about 35 years. He is a retired clinical scientist. He and his wife operate a small inn. He has served, and does serve, on multiple boards.
- Rob has lived in Mill Valley about 15 years. He is a land use attorney and teaches at University of California, Hastings Law. It is his first time serving, though he has spoken to various boards many times.
- Jeff works at the Farallon Institute, a nonprofit based in Petaluma; he does oceanography research, geared for making policy and management and policy decisions and has worked on the California Current research for about 20 years, mostly on krill.
- Chrissy works on the management of marine invertebrate research specimens at the California Academy of Sciences, on specimens collected both locally and globally, including specimens from CBNMS dating back to the 1980s. She mentioned some collaborations she has had with national marine sanctuaries.
- Each of them expressed how they were interested in learning more about what is happening in CBNMS and its vicinity and were excited to join the advisory council.
- Dan mentioned how excited he was to have them join. He briefly explained what the advisory council does at these meetings. The meetings enable him to work with people representing broad interests and opinions relevant to CBNMS, and receive input from the group about the best way for sanctuary management to address issues. Everyone should feel free to speak during the discussions; the others listen respectfully. The idea is to have good discussions around the issues. People do not always have to agree on ways to approach an issue. Differences of opinion can lead to a better discussion. The role as advisory council member is to be a liaison with that represented community, and share information from the community at advisory council meetings. He said it might take a few meetings for the new members to become comfortable; they are welcome to ask questions of him or Lilli.

- Thank You to Outgoing Members: Dan said the members going off the advisory council have been with us for a long time. The contributions they made over the years to different issues helped shaped CBNMS management. As a token of appreciation, he said each would get a beautiful photograph of Cordell Bank. From the bottom of his heart, he thanked them for their time and good thinking. Two were present.
- Dan said Mike Cummings, Community-at-Large – Marin County has been “Steady Eddie,” showing up for every meeting and event, Dan said. He is quietly respectful, willing to listen, and always contributed in a humble way. He was a great supporter and we will miss his contributions.
- George Clyde, Community-at-Large – Marin County has been the “spark plug”, Dan felt. George has been the Chair of the CBNMSAC, was active in CBNMS boundary expansion activities, and was a mover behind the charter modification to promote nongovernmental alternate members to primary voting members so that all nongovernmental advisory council members participated at the same level. He was on the advisory council before the Office of National Marine Sanctuaries (ONMS) set term limits. He is also a board member of the Cordell Marine Sanctuary Foundation (CMSF).
- George said it had been a pleasure, and learned so much from Dan and the rest of the staff. It has been a good team with which to work. He was happy to see the composition now of the CBNMSAC, including the new members. He will miss coming the meetings, but may attend again (as a member of the public).
- Dan noted Dr. Tessa Hill, Research, was not able to be at the meeting, as she recently started a new position at U.C. Davis in the Provost’s Office, leading part of the university’s public engagement initiative. She was a good listener, and could navigate well between science and education. CBNMS will continue to work with her and her graduate students on ocean acidification and climate.

- Dr. Jaime Jahncke, Research, also has been with us a long time. Fortunately, he is one of three principal investigators for the Applied California Current Ecosystem Studies (ACCESS) program, so CBNMS will continue seeing him. His work is much broader than ACCESS; Dan reviewed some of that work. Jaime helped educate us and inform the CBNMSAC about ongoing ocean studies and the status of and trends within the sanctuary. Dan looked forward to continued partnership with him.
- Jaime was thankful for the opportunity, and will miss coming to the meetings; however, as Dan said, he will continue to be involved.
- Dan concluded by noting the outgoing folks could stay on in the virtual audience for the rest of the meeting as well as continue to attend future meetings if they wished, and thanked them again for their support. Bec also thanked them.

Sanctuary Superintendent's Report (Dan)

- Dan acknowledged it has been a crazy time, with COVID, wildfires, calls across the country for social justice, and the Presidential election. He hope everyone was OK, and sent all a word of good cheer for making it through together.
- He is considering the recommendations presented at the last CBNMSAC meeting about CBNMS engaging with Native Americans. This is something CBNMS needs to be thoughtful about; CBNMS needs a clear vision about why we are asking to engage in a long-term relationship. He talked to a few other sanctuary superintendents who have established long term relationships with tribes. One was Carol Bernthal, who gave a presentation on lessons learned with Washington Coastal Treaty Tribes to the subcommittee that examined the engagement issue. She was one of the Acting Superintendents at CBNMS while Dan was on sick leave, and is the Olympic Coast National Marine Sanctuary (OCNMS) Superintendent. He reviewed some lessons learned from her. Two seemed most appropriate to where we are right now: First, the level of engagement is dictated by overlap in interests and cannot be forced. Be aware of the starting point in the relationship. Second, it is critical to learn about tribal interests and sensitivities. Do not assume, but rather ask, and do your homework before initiating a first conversation. He felt that CBNMS was now at a starting point, trying to figure out how to proceed, if there is an overlap in interests, if there are sensitivities, and if there are reasons/areas of mutual to engage coastal tribes local to CBNMS that might benefit both parties. Others at ONMS, both at headquarters and in the West Coast Region, are also thinking about this right now; it is a 2021 priority. CBNMS will also work closely with the Greater Farallones National Marine Sanctuary (GFNMS) management, as they have already made some contact and have some connection with tribes on the north-central coast of California. He thanked the members who were on the CBNMSAC Native American Tribal Engagement Subcommittee for their recommendations, and the rest of the members, for their hard work on the issue. He will continue to work with the advisory council as CBNMS moves forward.
- There were a few questions. Has the CBNMS staff talked with anyone from those tribes yet? Dan replied yes, three tribes were contacted as part of the formal federal consultation for the boundary expansion. There was no response.
- Is there a document with a game plan on how to approach them? Dan said the ONMS Maritime Heritage Program put together a document on how to proceed in developing relationships. Right now there is no regional or site plan, and any CBNMS plan ought to be integrated into other ONMS efforts. He would like to develop a site plan if a decision is made there is common ground for proceeding. He said CBNMS is an offshore site, and we are not aware of tribal activities in it, but that does not mean there is no tribal cultural connection with CBNMS and the marine ecosystem.
- Brian Johnson said the interest at CBNMS was reflective of an interest at the national level; traditionally, the ONMS Maritime Heritage Program was interested in shipwrecks and things on the ocean bottom, and in the last year, that program has been developing materials on other topics, including how to engage. There have been internal ONMS discussions about increasing the capacity of the staff, and training people to avoid mistakes and be active listeners. It is important not to make things worse and historical context must be considered.

- There was a comment that a statewide group had formed on this topic, and there may be an opportunity for CBNMS to engage there.
- Dan said there may be a position in the budget for the West Coast Region to engage with tribal representatives, and if that were funded, ONMS would look to hire a person with experience with how to engage. Other opportunities to engage can also be discussed in the future.
- On the topic of COVID-19, the staff is still teleworking from home. He talked about the tiers Marin and Sonoma counties were in, and that cases around California and the country were peaking again. He did not think the CBNMS staff would go back to the office until positive cases decline or there is a vaccine.
- The CBNMS budget request for Fiscal Year (FY) 21 was submitted. There are no funds allocated yet for ONMS or CBNMS and the staff is operating under a Continuing Resolution until mid-December, with the funds representing a portion of the FY 20 allocation. The situation will stay this way until the bill with the new budget passes. He hopes the staff can resume fieldwork, education and outreach and resource protection activities in 2021, dependent on declining COVID rates and development of a vaccine. If not, CBNMS may have limited operations on vessels, and education and outreach would remain virtual.
- Dan said CBNMS submitted three FY 2020 accomplishments to ONMS for an accomplishments report: engaging industry to protect endangered whales, deep sea exploration of the sanctuary, and characterizing sound in the sanctuary.
- ONMS decided to keep the proposed Chumash National Heritage Marine Sanctuary on the list of consideration for designation, for five more years. Some members were going to draft a letter supporting this for the CBNMSAC's consideration, but ONMS's decision means a letter is not necessary right now.
- On behalf of Sarah Hameed of CMSF, Dan let the CBNMSAC know that CMSF put a statement on diversity, equity and inclusion on its website, cordellfoundation.org.

Planning Ahead for 2021 (Bec)

- Bec talked about the CBNMSAC's plan for 2021 meetings, provided to the advisory council in advance of the meeting, and thanked those who attended a planning session on this. Planning is typically done in October during a retreat, and while there was no retreat to COVID, some planning was done virtually. She went over the topics the advisory council will ideally discuss at each of its 2021 meetings, but noted things do come up. Usually there is at least one key topic focused on CBNMS per meeting.
- The August topic has now been set to be about climate change, Pacific salmon and steelhead in CBNMS; a speaker is still being determined.
- She listed the public advisory council meeting dates in 2021, which will be up on the CBNMS website and the retreat date (not a public meeting).
- Bec encouraged people to invite members of the public to attend the regular meetings.
- At each meeting, the advisory council will also hear key updates from the staff.

Selection of CBNMSAC Diversity Subcommittee Members (Bec)

- Bec went over the motion, made at the April 2019 meeting, to have a CBNMSAC diversity and inclusion subcommittee. Dan has mentioned diversity and inclusion are priorities for ONMS nationwide. Also, she was asked to lead a session during a call for advisory council chairs on diversity and inclusion. Other advisory councils' recruitment processes may look different from ours and may attract more diverse voices.
- It was Chris Hendry who had made the motion, with a second by Kai Martin: That the advisory council form a diversity and inclusion subcommittee. The advisory council unanimously approved that motion. The discussion leading up to the motion was that the CBNMSAC was not as diverse as it could be, and that the focus of the subcommittee should be on who is sitting in the [nongovernmental] advisory council seats, and not on the seats. An advisory council subcommittee could look at how to improve the recruitment methodology. As part of that discussion, Lilli had briefly reviewed the recruitment process for nongovernmental members, including that Dan makes recommendations from among the applications received during each recruitment round to the Director of the ONMS, who makes appointments.

- In learning from the CBNMS subcommittee that examined the issue of CBNMS tribal engagement, Bec felt a small group of people, who have the bandwidth and time to meet 3-4 times between this meeting and the February CBNMSAC meeting would be ideal. It is at that meeting she hoped the subcommittee could provide its findings. At the meeting, the full advisory council would discuss and consider any recommendations. Anything agreed upon by the full advisory council would be provided to Dan.
- She asked who had the time and was actively excited to engage on this topic, and who might chair it. The subcommittee chair would set the meeting days for the group and facilitate the process, and would have support from (at a minimum) herself and Lilli, who could help by sharing the guidelines about advisory council subcommittees.
- Bec felt the work would be done by February, but that could be open for discussion.
- She and Lilli affirmed that nongovernmental members typically start their terms in November. Lilli reviewed some of the steps that lead up to that, and stated she normally starts the process for seeking applicants in July or August. She also said she could help the chair with logistical support and would also serve as a technical contributor to the group.
- Chris mentioned he is temporarily moving to Angola in 2021, but, after consideration of Lilli's words about assistance, said he could chair the subcommittee.
- Dan felt that looking at how and where recruitment is done and who engages in helping with the recruitment would be helpful. Perhaps think of recommendations on who to contact.
- Others who volunteered to be subcommittee members were Jeff, Rob, and Dick Ogg.
- Bec encouraged Chris to contact Irma Cuevas, who could not be at the meeting, as she expressed interest to Bec on the topic previously. Ideally, the subcommittee should report back/make any recommendations on possible next steps for the advisory council in February.

Public Comment

- There was none.

NOAA Ocean Noise Reference Station Results for CBNMS (Samara Haver)

- Samara Haver has been working with CBNMS for a number of years, and a paper about her work on the soundscape in CBNMS and GFNMS recently published in The Journal of the Acoustical Society of America. The sound data were recorded at a NOAA Ocean Noise Reference Station in CBNMS. She is working on her Ph.D. at Oregon State University. Danielle Lipski, CBNMS Research Coordinator, noted that CBNMS is already using some of the results, in the effort to reduce ship strikes of endangered whales and in the Condition Report update.
- Samara thanked the coauthors, those who helped with the fieldwork, and the sponsors.
- The hydrophone, part of a larger, calibrated Ocean Noise Reference Station (NRS) network, gathers data year-round when in the water, via passive acoustic monitoring, in support of the NOAA ocean noise strategy. It is submerged, with a subsurface float and an anchor; there is no surface expression. The data can be used to document trends in noise in U.S. ocean waters. Olympic Coast, Channel Islands, and Stellwagen Bank national marine sanctuaries are also part of the network.
- In CBNMS, the data can supplement other data streams, and support learning about animal health and fitness. The hydrophone was first deployed in CBNMS October 2015, then retrieved in 2017; that data are the focus of this analysis. It was swapped out/data obtained again in October 2019, and redeployed.
- Hydrophones pick up sounds from whales, fish, snapping shrimp, ships, geophysical sounds, ice, volcanos, earthquakes, storms, etc.; the sounds make up the soundscape. Different environments have different influences, and these change over time.
- She explained her methods and how sound is measured. She analyzed the recordings for baleen whale vocalizations, both with an automatic detector, and manually. Sometimes there are masking sounds. The data can be compared to other types of data: shipping activity (from Automated Identification Systems [AIS]), visual whale sighting data (Southeast Farallon Island [SEFI]/ACCESS), wind speed (NOAA weather buoy), rainfall (Bodega Marine Laboratory [BML]), and earthquakes (U.S. Geological Survey).

- In CBNMS, the data recorded noises from whales, vessels, and weather events. Looking at the monthly data, there are seasonal patterns of blue and fin whales; humpback whales detected year-round. In the winter and early spring, they mostly heard fin and humpback whales. Towards the end of summer, they started to hear blue whales. Then, fall through December, they heard all whale species – that is the peak.
- Before the hydrophone was deployed in CBNMS, information on whales came from visual surveys.
- In general, most hydrophone are deployed in deep water.
- There are theoretical zones of influence on whales from ocean noise, depicted as a bull’s eye circle with rings for injury, response, making, and detection. Whale may have been present at certain times, but they may not have heard whale sounds for a variety of reasons, such as masking by other noises, the whales were too far away from the hydrophone etc.
- Human effects on species can depend on the intensity and pitch of the sounds. She outlined the primary frequency noise for shipping, and observed there is a noise overlap between that and baleen whale noise.
- CBNMS data were compared to data near the shipping lanes heading into and out of New York City.
- The low-frequency soundscape is dominated by whales; there are seasonal patterns of blue and fin whales, and humpback whales area detected year-round. Visual survey and acoustic monitoring detections are not the same. Vessel noise is consistent year-round, and matches the AIS results. Ambient sound levels similar to those in Southern California, which was expected because of similar whale habitat and large ports. However, they have different sound propagation environments.
- Implications for CBNMS management, for whale conservation, include: while vessel noise and whale noise is heard, it is not known where the whales are in relation to the shipping lanes; blue and fin whale chorusing was detected above ambient noise, but there is unknown impact to other species (e.g. grey whales); researchers need more information about the spatial distribution of species when they are heard; and researchers cannot localize with only one hydrophone.
- Samara and her research partners will continue to look at CBNMS soundscape trends, ask new questions, and look at implications for management.
- Dick commented he was particularly conscious of humpback whales due to the commercial crab fishery. He thought the data November through January, with sometimes not a lot of whales or whale sounds there, was what he saw. He is particularly interested in when there will not be interactions with Endangered Species Act (ESA) listed whale species and crab gear. He wondered if there were sounds from ships or pingers on fishing gear that could deter animals from being in an area or keep them away.
- Samara replied some research has been done, including on seal bombs and smaller whales getting caught in nets. Researchers do not know if a sound would attract whales closer or encourage them to swim away, or if at a certain level, a sound could potentially harm the whales. There has been a lot of research on the topic in the Atlantic Ocean and the lobster fishery.
- Another person asked if there were future plans for another hydrophone in CBNMS, to aid in tracking whale position. She replied there were no current plan to do this as part of the NRS network.
- A separate question was, is there any correlation between stranding and the vocalizations she is detecting? Samara said they have not combined their data with the stranding network data. They did measure the animals’ calls on an index, in the fall, when they heard louder calls or longer periods.
- A final question was, could she identify ships by the ship sounds or where the ships were coming from; or, are there ideas for future work on that? Yes, Samara affirmed vessels have their own acoustic signals. She is working to figure out what sounds come from what vessels, and if that is changing.

CBNMS Conservation Science, Resource Protection, and Education and Outreach Program Reports (Dani, Michael Carver, and Jennifer)

Conservation Science: Dani provided an overview about the process to update the CBNMS Condition Report. Condition Reports are done for every national marine sanctuary about every ten years, to assess the status and trends of resources in the sanctuary, to inform the review of the Management Plan. The report answers a series of standard questions on water quality, habitat, living resources, maritime heritage, ecosystem services, and human activities. The whole staff is now working on the report, including on background material and pressures. There are been two data indicator workshops with experts and there

will be three more. They are working to identify data sources for writing the report sections. Upcoming steps are compiling data summaries from December through March, holding a status and trends ratings workshop in March, and working on narratives, and editing and reviewing in Spring and Summer of 2021. There will be some advisory council participation either in the ratings workshops or reviewing the draft report. Some advisory council members have participated in the data indicator workshops. The report completion goal is 2022. Kaitlin Graiff and Rachel Pound have been supporting this process, especially the data indicator development.

- CBNMS has not been doing field projects, but hopes to do so in 2021; it is hard to say right now.

Resource Protection: Michael Carver introduced himself as the Resource Protection coordinator for CBNMS. The other key member of the CBNMS Resource Protection team is Lilli; she works on a variety of resource protection projects. He talked about the vision for resource protection, and how the staff use a variety of tools, including regulations and permits, to manage human uses and the resource, to provide comprehensive protection of the ecosystem now and for future generations.

- Permits allow for activities that are against the regulations when the benefits outweigh the costs to the sanctuary environment. One application has been received since the last meeting and is under review, from for continued operation of Coastal Data Information Program buoys in CBNMS and Monterey Bay National Marine Sanctuary.

- The ONMS resource protection staff from across the system had a virtual meeting in September, to understand what each other is doing to address resource threats and pressures and leverage staff capacity. This was the beginning of an ongoing process to look at better leveraging existing capacities within the program to advance the sanctuaries' resource protection priorities in a more coordinated manner.

- He described the vessel speed reduction (VSR) project, designed to reduce ship strikes of whales and other threats. Vessels 300 gross registered tons or larger are requested to slow to 10 knots or less May 1 – November 15. It also helps in meeting air quality mandates. The voluntary cooperation in the incentive program with the request has been going up; in 2015, it was about 28%; in 2019, about 58%; and for the first six months of the request period in 2020, it was about 65% (final 2020 to be available in a few months). The California Air Resources Board has awarded the VSR incentive program \$1.1 million dollars of Supplemental Environmental Project grant funds for the next three years; incentives have been utilized by a subset of the companies eligible for, and enrolled in, the program. The incentive funds will be paid from the grant.

- There was a question about if the VSR is decreasing the ship strikes of the whales. Michael responded we have examined that that in this area and the short answer is no; however, VSR analysis been done elsewhere shows different results, and Point Blue Conservation Science has conducted a conservation study look at various options moving forward. We are looking at that closely for 2021 season.

Education and Outreach: Jennifer mentioned education outreach goals for CBNMS included having an ocean literate public that better understands what the sanctuary is as well as humans' influence on the ocean.

- She shared some numbers for FY 20, with caveats about her having recently been on detail to Point Reyes National Seashore, and COVID-19 affecting programming. There was a research expedition on the *Nautilus*, and as part of the outreach around that, there were live video feeds, telepresence presentations to approximately 1,300 teachers and students; expedition members also received and responded to messages from the public. Exhibits at five venues (prior to being closed due to coronavirus) were viewed by nearly 110,000 visitors, and reached thousands more from other public outreach via community presentations, the Ocean Currents radio program, website visits from social media and email clicks, Twitter and Facebook.

- Winged Ambassadors is a program that promotes ocean literacy through the eyes of an albatross. From 2012-2020, based on online survey, over 5,000 teachers and over 350,000 students from 47 states and 38 countries were reached. She has a goal to make changes to improve the program this year, including having a digital bolus dissection activity.

- Jenny is working to update the Point Reyes National Seashore Bear Valley Visitor Center exhibits.
- Finally, she has been supporting remote learning activities. An intern created a digital scavenger hunt on the website. She is also reaching out to teachers to encourage them to sign up for a virtual classroom visit program in 2021.

Members' and Alternates' Reports (advisory council)

Lilli (on behalf of Mike) - noted he had sent her an email saying there was a glitch and he had not gotten the information to join the meeting and was sorry not to be able to make it. He asked her to pass on this to the CBNMSAC and staff: "Farewell and thanks to the CBNMS. I feel the utmost gratitude to the sanctuary and the council for allowing me to serve on the SAC over the last several years. During my time on the council I have witnessed the incredible work the Sanctuary has done and continues to do. In these tumultuous political times the sanctuaries have been forced to work within unrealistic budget constraints and attacks on science, yet the sanctuaries continue to shine in their mission. The dedication and commitment to the environment and its protection by both the sanctuary staff and members of the Advisory council is inspiring and you will always be seen by me as environmental warriors and will have my deepest appreciation and admiration. 'Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only that, that ever has.' Margaret Mead."

Brian - GFNMS just had Electric Vehicle charging station installed, in an effort to offset GFNMS emissions. Beach Watch monitoring surveys resumed, in a limited manner, along some shorelines. The GFNMS visitor center is closed, but a few classes are being conducted there. Staff members are coming into the office for a few mission-critical tasks; otherwise, it is closed.

LTJG Chris Bell – The Coast Guard has been doing a lot of rotary-wing flights in response to the opening of the Dungeness crab season, looking for whales, and they have seen a lot of whale activity.

- Dan asked if there was a way to get a hold of those data; LTJG Bell replied he was working with the Risk Assessment and Mitigation Program (RAMP) and the California Dungeness Crash Fishing Gear Working Group. He can forward the data to anyone who requests it.

Special Agent Rad Dew – NOAA Office of Law Enforcement (OLE) hired LT Kynan Barrios, a Supervisory Enforcement Officer. The announcement for new special agents statewide closes November 12; they hope to hire five to six statewide, including one for the Santa Rosa office. Soon, an announcement will go out seeking enforcement officers.

LT Barrios - is working for OLE of the Santa Rosa office; he is responsible for supervising all the enforcement officers for that state, including six that are soon to be hired. He was recently with the Bureau of Land Management in California, as Special Agent in Charge.

Chris – said there was not much to report for maritime activities, except being busy with COVID. He was excited to hear about the VSR results. If he had a breakdown of that data, it could be used to do outreach to the maritime community. It is still being discussed, through the Harbor Safety Committee, how to get more "air time" on the VSR.

Kai – agreed the maritime activities community had been quiet. He was also excited by the increase in cooperation with the VSR; his company was included, but somehow was not being tracked. He also echoed the earlier query about if vessels could be identified by sound. His company and others are looking at liquefied natural gas for powering vessels, and it would be great to compare noise from that to other vessel noise.

Noah Wagner – appreciated the recognition of the crazy times, with political and social unrest, COVID, juggling home schooling, etc. The salmon season ended November 8, and the word so far was it was a

good season, both commercially and recreationally. A lot of fishermen came in to Bodega Bay that had not been there in a long time, so marine slips were rented and more fuel was sold than last year. He has heard that the recreational crab season is pretty poor so far. Fishermen caught quite a lot of squid and unloaded it in Bodega Bay, which they do not see all the time. Pounds unloaded add to the local economy and communities. The county finally removed Mason's Marina pier and fish plant, which were decaying. It will be nice to get more access to the bay. The community fishing association has been doing a mini market since the summer on Saturdays and Sundays at Mason's Marina, and a community member has a pop up restaurant there. At the sport fishing center, there is now a permanent restroom. They have seen a big increase in tourism to the coast.

Dick – the commercial salmon season was reasonable, but not outstanding; the fish stayed extremely deep the entire year (60-80 fathoms) and did not tend to come on the shoreline. The salmon ate squid, fish and krill. The upcoming commercial crab season is delayed for two weeks, with the season slated to start December 1. The regulations will not allow them to fish if approximated 20 ESA-listed humpback whales are in a particular zone; there are seven zones along the California coastline. He thought the whales liked the weather here and may not move south to mate; strong southerly winds will change the bait in the area and then the whales will move away.

Scott Artis – he has heard that some constituents have the following topics on their minds: ship strikes of whales here, strikes of right whales on the East Coast, plastic debris entering the oceans (including masks and bags from parking lots), and the effects of climate change on ocean species in general as well as in the sanctuary.

Bec – noted she is the Executive Director, Trips for Kids Marin; they work closely with schools. Right now, the education front is focused on COVID, and how to help serve kids virtually; some schools are opening. It is challenging, especially for support organizations like hers, but there are lots of opportunities of virtual education. The national marine sanctuaries have been doing a great job with different virtual contacts; she has been participating in these networks. She is also encouraging high schools to join in all or part of these meetings, to see community action at work.

Rob – he is part of the recreational user community of the coastline. The surfing community is active in protecting coastline access. He hears from them and others; there is a feeling of wanting to participate in marine protection but not knowing how to do so. He is also hearing concerns about plastic trash.

Steve Tubbs – Sonoma County is slow and cautious about reopenings. He has not meet physically with the groups he interacts with since COVID began; it is all virtual meetings. Steelhead in the Classroom, sponsored by the California Department of Fish and Wildlife, the Sonoma County water agency, and others, is still going on, with virtual feeds of the tanks to the classrooms. He is excited about the planned special topic for the August meeting on salmon and steelhead as his constituency is interested in that. He is still sharing information about CBNMS and all the national marine sanctuaries, and about NMFS and NOAA in general, via Facebook.

Jeff – mentioned if one searches for “NOAA blobtracker”, there is a page for tracking North Pacific marine heatwaves.

Chrissy – stated CalAcademy was open for public visitors. Almost all of the staff have been working remotely, including on improving databases. Gary Williams, who is a curator of octocorals, participated virtually in a mission the week before this meeting; Jan Roletto of GFNMS will transfer a set of preserved specimens collected via remotely operated vehicle during that cruise. It is great to add to the vouchers in their collections. BML and the U.C. Davis Coastal and Marine Science Institute have a climate justice series, which starts November 30.

Briefing on Climate Change Impacts: Cordell Bank National Marine Sanctuary (Zachary Cannizzo)

- Zachary Cannizzo, Ph.D., is from the National Marine Sanctuary Foundation; he is a visiting climate scientist with the NOAA Climate Program Office and the Marine Protected Areas Center.
- He reviewed the purpose for the profile, the process to create it, and noted the profiles are posted on the ONMS website. There is one for each site in the system. The target audience is the sanctuary staff and management and the informed public, such as the advisory council. It describes what is going on and includes predictions of what climate change may do in the sanctuary.
- Zac worked with the CBNMS staff, primarily with Lilli and Dani, to select four major climate drivers and two case studies for this piece, which also briefly describes what the staff is doing. It is a science-driven document, done also with an extensive literature review and external input.
- The major climate drivers in the profile for CBNMS are changes to upwelling, deoxygenation and hypoxia, ocean acidification, and rising water temperatures and multiple stressors. It includes a regional-scale issue, the 2014-16 marine heatwave, and zooplankton as a focus resource.
- The majority of models suggested upwelling duration and intensity was expected to increase; however, there would be some periods of decrease. Reduced upwelling could mean less food available at higher tropic levels/lower productivity. Increased upwelling reduces oxygen, increases acidity, and could slow warming of the water at the surface. Changes to upwelling impact other drivers affecting climate.
- He reviewed the 2014-2016 marine heatwave, and how it altered food web dynamics. He said climate change could result in more events like these.
- Zooplankton are the base of the food web in CBNMS. Climate change can have a lot of impacts on the food web, including acidification affecting calcifying species, warm water leading to shifts to smaller, less nutritious species and less abundance.
- Globally, the amount of oxygen in ocean water is falling; since 1980, for California, it has fallen 20%. This can stress the organisms and ecology of the sanctuary.
- Ocean acidification is due to the interaction of carbon dioxide in the air being absorbed by the ocean. Upwelled West Coast waters are lower in acidity than surface waters. Zooplankton, the larvae of rockfish, and other, including seabirds and whales (due to effects on their prey) are vulnerable to acidification.
- Rising water temperatures are interconnected with others stressors, and we could see sea surface temperature rise in the sanctuary 7° F by 2100, which could exacerbate harmful algal blooms and hypoxia. Organisms have to deal with multiple stressors simultaneously; this needs to be kept in mind, though it is hard to know what the interactions are.
- Some ways the sanctuary staff is responding to climate change, with partners, are indicator development, monitoring, working to reduce greenhouse gas emissions, and education and outreach to spread the word to the public about climate change and what is happening in the sanctuary.
- Zac hoped the staff and CBNMS partners could use the piece to inform future actions.
- There was a question about direct and indirect effects on rockfish from climate change. Zac responded that the research is on a number of species, and they respond in slightly different ways. Across rockfish, ocean acidification could increase stress in adults and decrease larval survival, with that being variable among the species. Some rockfish will move away from low oxygen areas and some will not. There would also be impacts on prey.
- Bec and Dani thanked him.

The next CBNMSAC meeting is February 25 and is likely to be virtual.

Bec adjourned the meeting at 1:05 PM.