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Report of the Marine Planning and Climate Change Committee 6th Meeting
Council Office, 1164 Bishop St, Ste. 1400, Honolulu
April 5 and 6, 2017 (Wednesday and Thursday)
 (updated 2017.06.05)

The members of the Marine Planning and Climate Change Committee (MPCCC), an advisory body of the Western Pacific Regional Fishery Management Council, who were in attendance included Eileen Shea, chair; Sandra Aigalesala Fuimaono Lutu, American Samoa Coastal Zone Management (CZM) Program; Ray Tulafono, American Samoa community member; Selaina Vaitautolu Tuimavave, American Samoa Division of Marine and Wildlife Resources (DMWR); Sandy Ma, Hawai‘i Office of Planning (alternate); Alton Miyasaka, Hawai‘i Division of Aquatic Resources (HDAR, alternate); Lynn McNutt, Hawai‘i community member alternate; John Marra, NOAA Pacific Islands Fisheries Science Center (PIFSC); Phoebe Woodworth-Jefcoats, ecosystem scientist; Mike Marxen, US Fish and Wildlife Service (USFWS, alternate); Rich Salas, Commonwealth of the Northern Mariana Islands (CNMI) Bureau of Environmental and Coastal Quality (BECQ, alternate); Rose Ada-Hocog, CNMI community member; Jesse Rojas, Guam Bureau of Statistics and Plans (BSP, alternate); Ernest Chargualaf, Guam community member; and Vincent Leon Guerrero, Guam Office of the Governor. Augustin Kaipat was absent due to death of the CNMI Department of Lands and Natural Resources (DLNR) secretary. Others in attendance included Thomas Oliver, Pacific Islands Fisheries Science Center (PIFSC); Council staff members Kitty Simonds (executive director), Rebecca Walker (rapporteur), Charles Ka‘aia, and Sylvia Spalding; and public member Kelvin Char.

8:30 a.m.-5 p.m. Wednesday, April 5, 2017

I. Welcome and Approval of Agenda

Shea welcomed the Committee members.

The agenda was approved with no amendments.

II. Introductions and Regional Updates

The Committee observed a moment of silence for the late former CNMI Legislator, Council member and DLNR Secretary Richard Seman, who had passed away two days earlier.

The committee members introduced themselves and provided regional updates.

Tuimavave said American Samoa is revising its climate change strategy. It has been a challenge because recruitment is also underway for a person to run the climate change program. An ongoing project is the Village Marine Protected Area (MPA) Program. Some adaptations to the village fishery management plans have been completed. A regional ocean plan is being

developed through the Regional Planning Body (RPB). There is an ocean Geographic Information System (GIS) portal, which is a result of some climate change funding.

Lutu said the American Samoa CZM is the lead for the geospatial framework and is focusing on using story maps to capture sea level rise impacts, king tides and nuisance flooding and to increase the number of GIS users. It is also exploring the inclusion of the Department of Homeland Security (DHS) permitting review process to integrate the Federal Emergency Management Agency (FEMA)-approved Coastal Hazards Mitigation Plan. It has invited DHS to join the other eight agencies on the coastal hazards mitigation review board. The American Samoa CZM may revise some of building codes to account for climate change impacts. The Fatasi Coastal Challenge is an ongoing project. CZM is working with nine communities on marine debris prevention. There are changes in the dynamics and demographics of villages based on climate and infrastructure, and the Fatasi (large, Samoan canoe) is a platform for participatory update of flood maps.

Tuimavave said the emphasis is on partnerships with not only the federal government but also communities in outreach initiatives. Infrastructure improvements, the Power Authority and the Department of Health are other local government initiatives associated with climate change.

Lutu said the private partners are the messengers.

Tulafono said rezoning was just completed in his village. Villagers are encouraged to build in places other than the immediate coast, which is important for tsunami mitigation.

Lutu added that zoning is difficult in American Samoa because of the land tenure system. Their message conveys the tools and issues and ends with the advice to think about the children.

Ada-Hocog said zoning is difficult in all of the islands because people resist being told what they can or cannot do with their land.

Ma did not offer updates on state climate change initiatives for the State. She started with the State within the last month. The office submitted a handout. The office co-chairs the Community Adaptation to Climate Change Committee, which meets quarterly to plan for sea level rise and other impacts. A consultant is writing a report to the legislature before the next session.

McNutt gave her perspective as a member of the Council's Advisory Panel and a Kaua'i resident. Fishermen do not support the marine national monument (MNM) in the Northwestern Hawaiian Islands (NWHI). There are issues with community-based fishing areas on Ni'ihau because it is being perceived as connected to the military. McNutt expressed disappointment that DLNR wasn't at the MPCCC meeting (Miyasaka arrived late) because that department is the only one that can deal with runoff from the lands. The State is supposed to take care of land changes that affect the ocean, and McNutt said it isn't evident that it is stepping up to the table.

Marra noted that climate change information is available on two scales. The Pacific ENSO Update is a seasonal forecast that comes out quarterly from the National Weather Service. It is heavily atmospheric, such as rainfall, tropical cyclones, etc. Another version is attached to a regional dashboard available on the Web that brings in NOAA and NASA information across a

range of indicators. Marra continued that the National Climate Meeting IV is spinning up, but it is unknown where it will head under the current administration. An updated region-specific report on climate change projections will be available in the near future. The best source of climate change information right now is most likely the Australia Pacific Climate Change Science Report program; the individual country reports are very good.

Woodworth-Jefcoats passed because she is on the agenda.

Marxen gave some USFWS staff updates. He was hired as the monument planner, and Megan Nagel was hired as the first communication, outreach, and public affairs coordinator to be located in the office over the last 15 years. He expects progress to be made on the Marianas Trench MNM Management Plan because the transfer of submerged lands is complete. Public meetings will accompany the release of the draft plan sometime this fall. A lot of activity is underway at Midway Atoll National Wildlife Refuge as it is an emergency landing strip for commercial aircraft. USFWS will repair the seawall and perform experimental translocation black-footed albatross from Midway to O'ahu.

Salas said he is the climate change project coordinator in BECQ, which reports to the office of the Governor and has been tasked to develop a climate change adaptation plan. Vulnerability assessments for each of the populated islands have been completed and provide recommendations that will be integrated within the plan. A climate change working group has morphed into a resilience working group, which is developing the plan. In 2014, FEMA did an update of the state hazard mitigation plan. Through collaboration of the work group and BECQ, climate change was added as a risk in the plan. There will be another update this June.

Ada-Hocog reported on a subgroup of the resiliency working group that was instrumental in providing aid following Typhoon Soudelor. Ada-Hocog said percolation testing must be carried out to develop plans. CNMI recently lost the mayor of the Northern Islands who was a champion of air, land and sea issues. CNMI also lost DLNR Secretary Richard Seman, who was instrumental in working with fishermen to make sure the catch meets the regulations set by fish and wildlife. Frank Villagomez was the vice chair for the MPCCC but is now enrolled in the master's program at University of Guam. Last year, the CNMI Liberation Queen's winning platform was on climate change; she will be providing education and outreach with respect to climate change. Recently, CNMI kick started a project to build 500 canoes by a certain year to teach the importance of navigation, ocean, climate change and currents. It is also trying to create a cultural village that will showcase the Chamorro, Micronesian and Polynesian and their navigational tradition.

Chargualaf said BSP is working to mitigate runoff. Trees and vines are being planted in the most vulnerable areas in his village for erosion control and temperature mitigation. The water enters the ocean very quickly compared to the other villages.

Leon Guerrero reported that Pacific Islands Ocean Observing System (PacIOOS) visited recently. The Island Sustainability Conference is scheduled for sometime within the next two months. He said one of his goals is to see that changes at the director or gubernatorial level are fully transferred to the staff level. Guam will be updating its GIS program so all Guam planning document data is digitized and integrated. Guam is beginning to see effects of storm surges in

coastal villages. As Guam develops its plans, it will decide when to resurface roads and redo utilities. Acacia trees are being used to reforest in the south to hold soil that would normally runoff into the bays. Native species are being considered; there is a wild pig problem. Leon Guerrero added that Guam has been experiencing the impacts of migrants, which comprise 15 percent of the population, 25 percent of the students, and 40 percent of the present population. Guam did not negotiate the immigration terms and conditions, but it has to deal with the outcomes. Guam is not focused on the politics of climate change or making a value judgment about it. Instead, Guam is dealing with the impacts, which are runoff, floods and human migration into Guam. Leon Guerrero said he liked the data in the MPCCC meeting briefing documents because they are more solid than the anecdotes that he had. He said Guam has an unreported and unregulated (IUU) fishing community that came from the Federated States of Micronesia, and the impacts of that IUU fishing are not understood.

Spalding noted that the climate-related work with canoes in the American Samoa and CNMI reports was interesting and may be a way for the Committee to improve outreach efforts. She updated the Committee on the Council's climate-related outreach materials. The Council's scholarship student completed a project on climate change indicators in American Samoa. Craig Severance, a member of the Council's Scientific and Statistical Committee (SSC), attended a symposium on climate change displacement and migration on behalf of the Council. Spalding attended the Hawaii Sea Level Rise Vulnerability and Adaptation Workshop II, which will have a report when the round robin of the islands is complete.

Ka'ai'ai reported that he participated in the sectoral workshop in support of the 4th US National Climate Assessment. He spoke on indigenous knowledge, which is expected to be a component of the 4th report. Not a lot of knowledge about adaptive management in Hawaiian traditional management can be captured in a few paragraphs, but it would be a first step.

McNutt said that a 40-foot canoe was recently commissioned on Kaua'i. The college is developing a curriculum on navigation and boats of opportunity to collect data. She also talked about the honu (Hawaiian green sea turtle), which is considered a distinct population segment. The population nests primarily at French Frigate Shoals, an area that may have disappeared and reappeared again over time.

III. Update on Pacific Islands Regional Action Plan for the NOAA Climate Science Strategy

Woodworth-Jefcoats reported on highlights of the Pacific Islands Regional Action Plan (PIRAP). NOAA Fisheries instituted a Climate Science Strategy to provide decision-makers with the climate science that they need. Each of the regions has put together an action plan, which is built on the same framework, which ranges from maintaining climate science infrastructure to developing climate-informed indicators. The PIRAP is organized by seven objectives. The most relevant objective to the Committee is Objective 6, track changes and provide early warnings. After trends are identified, the mechanisms of climate impacts on ecosystems, living marine resources and resource-dependent communities can be identified, which is Objective 5. A number of studies and vulnerability assessments underway in FY17 for coral reef fish, corals and protected species.

Shea asked about the mechanism to provide advice to Secretariat of the Pacific Community (SPC) on tuna stock assessments.

Woodworth-Jefcoats explained the difference between climate reference points and stock assessments.

McNutt noted that NOAA science and ridge to reef management are disconnected.

Woodworth-Jefcoats deferred to Oliver.

Tulafono suggested a recommendation for the Council to write a letter to the SPC to include climate change information into the tuna stock assessments.

Walker asked for specificity in the recommendation for including climate change in the tuna assessments. She said assessment recommendations usually come from the SSC.

Shea said the recommendation could include consultation with the SSC.

Chargualaf said it would be beneficial if the Committee members had the authority to follow through with the recommendations in their respective island areas. He recommended that the policymaking branch be a part of the Committee dialogues so there is follow through on the issues.

Shea recommended that Chargualaf bring the issue up during the agenda item on membership.

Tulafono encouraged the governments of Guam and CNMI to have representatives attend Head of Fisheries meetings at SPC because that is where the decisions are made on stock assessments.

Leon Guerrero said there are high level politics involved there.

Tuimavave said we should find out what efforts have been made to incorporate climate change in the tuna stock assessments before we write a letter.

Spalding said she would review old emails on the topic.

Tuimavave said CNMI and Guam attended the SPC Head of Fisheries meeting. SPC is good at focusing on the needs of small island developing states at these meetings, whether it be through guidance or meeting science needs. SPC recognizes US Pacific islands, but there is always strength in numbers. Tuimavave asked at what point the PIRAP will arrive in the islands for review and comment.

Woodworth-Jefcoats said the plan was put out for public comment last spring. It was a Hawai'i-centric drafting team. There was a view to the broader region through the offices of PIFSC, PIRO and the Council. She invited Committee members to contact her if they had questions, ideas or comments or see gaps. PIFSC scientists will produce annual progress reports.

Chargualaf said that the monument on Guam was established without input from the local government. There is a movement on Guam to redefine its relationship with the United States. The United States should be mindful of the territory's needs. The federal government should incorporate matters that will help Guam in its endeavors to help itself. The federal government shouldn't be intrusive in local efforts on things that don't threaten national security or defense. Guam has inherent rights. He said that the local governments should see what they could do with recommendations put on the table and that national defense and protection mandates should balance fairly in the islands.

Shea said the notes from this meeting will reflect the issues that are raised. The Committee cannot solve that issue that Chargualaf raised. People representing federal agencies are at the meeting who can take the message forward that there should be consistency. Fisheries are part of the economy; that's an important message. The localized view is that defense can destroy what is a big part of the local economy.

McNutt noted that the Department of Defense (DoD) is exempt from regulations.

Lutu, speaking as a resident, said the islands are vulnerable and need the help of the United States for defense. Lutu said NOAA and the other federal agencies need to be a voice for the communities and comprehensively fill the gaps in meeting the needs of island peoples.

Shea asked if there is a clear mechanism for input from the island jurisdictions into the action plan, and, if so, how to people get the information in.

Woodworth-Jefcoats reported that PIFSC has staff based in the islands, which is one point of contact with PIFSC. Another avenue for connection would be if the jurisdictions have specific needs that tie in with the objectives of the action plan, which is in progress.

Spalding said the Council was involved in the working group to provide a voice for Hawai'i and the US Pacific Islands. The working group will meet annually, which can be a time to carry forward input from the Committee.

Leon Guerrero said Guam receives funds from transferring part of its tuna quota and wouldn't it be better if Guam learned the fishing industry by sending people to Hawai'i to learn about the longline fishery who could return to Guam to fish the tuna themselves. Guam used to have a transshipment industry to the market in Japan. That stopped. He said he was unsure of the market forces but knows that Manny Duenas at the fisherman's cooperative sells marlin and tuna. Leon Guerrero said he needs to learn the tuna migration pattern through the region so he can bring up some discussion. Guam is a vulnerable island because of the proximity to China and the US military presence. Leon Guerrero said he will learn how the licensing works so that Guam can flip it and fish outside its reef.

Tulafono said the quota is limited to bigeye tuna.

Leon Guerrero said he doesn't know what countries catch what amount.

Shea said she hears a recommendation for the PIFSC island staff to reach out to the local communities on the PIRAP to determine how local knowledge can be included in the plan.

Marra suggested that the local PIFSC representatives should be part of the MPCCC, which can be taken up in membership.

Ada-Hocog requested that Woodworth-Jefcoats forward the contact information for the PIFSC reps in the islands.

Leon Guerrero asked where NOAA sits within the federal government, which is within the Department of Commerce.

McNutt said the management agencies should reevaluate the regional allocation of the bigeye tuna resource. Hawai'i does not have enough, and the allocation is artificial. She suggested a recommendation to reexamine international allocations of bigeye tuna quota in light of the changing climate.

Shea said the Committee would return to this bigger issue. Some constraints are beyond the Committee's control and working with the Department of State can be harder than working with the DoD.

Woodworth-Jefcoats said one of the components of the PIRAP is to build models to show how tuna and billfish spatial structure may be affected by climate change, which speaks to McNutt's concerns.

Chargualaf reported on multiuse issues in Cocos Lagoon and the Achang Reef Flat Marine Preserve.

IV. Update on Marine Fisheries Advisory Committee's Resilience Working Group and Climate and Marine Resources Task Force

Spalding reported on meetings of the Marine Fisheries Advisory Committee (MAFAC) Resilience Working Group and Climate and Marine Resources Task Force. She said the Council is involved in two subgroups of the Working Group, one tasked with communications and one tasked with management approaches. The communications subgroup undertook a survey that is in the process of being analyzed. The management approaches subgroup has been focusing on fisheries management frameworks as an avenue for management to respond in a timely manner to climate impacts. The MAFAC Climate and Marine Resources Task Force was instrumental in the drafting and review of the NOAA Climate Science Strategy and has not met since then.

Tulafono asked who the Pacific Islands Region is on the MAFAC.

Spalding will report back. [She later reported to the group that the MAFAC website shows Henry Sesepasara as a member for a few more months.]

V. Overview of 2015 Annual Reports for the Fishery Ecosystem Plans of the Western Pacific Region—Where They Are and How to Use Them

Sabater provided an overview of the first Stock Assessment and Fishery Evaluation (SAFE) report published by this region in the past 30 years. Five SAFE reports were developed, one for each Fishery Ecosystem Plan (FEP). The insular SAFE reports have three chapters:

fishery performance, ecosystem considerations and data integration. Each fishery performance chapter has a short description of the fishery; crustaceans and precious corals fisheries descriptions are forthcoming. The report describes data collection methodologies and dashboard statistics, which are focused to indicate potential problems in the fishery. Other detailed fishery performance indicators are included, as well as the best scientific information available with respect to status determination criteria and stock status. The ecosystem considerations chapter includes fishery-independent measures of biomass and mean size, life history and length parameters, human dimensions, island fisheries interactions with protected species, climate and oceanic indicators, essential fish habitat (EFH) and marine planning. The SAFE reports can be downloaded from the Council website under Fishery Plans and Publications tab.

Tulafono congratulated the Council on their great work.

Leon Guerrero asked where the estimated harvest can be found.

Sabater will show him later.

Tuimavave asked if the human dimensions section would include market analysis of fisheries.

Sabater said it includes the average price per species and price per pound, as well as total revenue associated with commercial catch for coral reef and bottomfish fisheries. The report is table heavy, so the data can be used by others. Chart presentations are derived from the tables.

McNutt asked if value at landing is the total economic criteria for fishery evaluation. NOAA has a handbook on how to perform social and economic evaluation that includes after catch value. She asked if NMFS plans to look at more than just the price at landing.

Woodworth-Jefcoats said the other indicators are available in the PIRAP highlights document.

VI. Overview of 2016 Annual Report Components

A. Contractor Recommendations on Climate Change module

Spalding reported on the ECO49 contract to revise the Pelagic SAFE report.

B. 166th Council Recommendations

Spalding reported on progress of Council meeting recommendations relevant to the annual report and climate change.

Shea said a report on the climate change recommendations should be a part of the agenda at the next meeting.

C. Draft 2016 Climate Change Indicators from Plan Team

Shea introduced the report module. She said the Committee could consider a small working group to work with the Council staff on the socioeconomic data issues.

Tulafono said he was happy to learn the Council has acted on the Committee's recommendations. Regarding the production of easy-to-understand plain language fact sheets, he suggested adding translations.

1. Pelagic

Woodworth Jefcoats presented on the pelagic report. Three indicators were added while one will likely be removed.

Leon Guerrero asked where the ideal point is for each indicator.

Oliver said this is the best time series data that we have. The current estimate is about a 30 percent increase in acidity over the time scale of 100 years or so.

Marra said you can do the same thing with pH as you can with temperature; there are values within which there is a good place to make shells and values below which the shells can't be made.

Oliver said the impacts vary with sensitivity. There are impacts on coral reefs that are happening today in the most sensitive groups, like crustose coralline algae.

Spalding said including information on what the indicators mean is important for developing outreach materials.

Woodworth-Jefcoats said this information can be added to the rationale section for each indicator. She noted that finding a threshold value is tricky for the pelagic environment, but something can be added.

Oliver said that the indicators show that real changes are evident in the ocean. What level is harmful to resources users is a different question.

Tulafono asked how acidification varies spatially.

Oliver said acidification measures vary greatly. Aragonite saturation state is how much calcium is in the water. American Samoa has some of the highest measures, while the NWHI has some of the lowest. American Samoa has not quite double the levels in the NWHI. Some in situ measurements show the differences are very stable. Oliver said the desired point to make is the long trend, which is not available for American Samoa.

Marra said it is labeled oceanic pH, but one could think of it as saying there's more carbon dioxide in the ocean as well as the atmosphere.

Chargualaf said we can learn how to offset the cause and effects, since it's spatially variable.

McNutt asked if anyone is looking at the effects on limu (edible seaweed).

Oliver said PIFSC looks more at crustose coralline algae because it is more sensitive. If the algae species has calcium in it, it is a subject of study and probably affected in some way. Acidification doesn't seem to affect fleshy algae negatively or positively. Having enough algae in the system may be one way to compensate for these affects.

Woodworth-Jefcoats continued with the Oceanic Niño Index (ONI).

Marra suggested that she use the standard NOAA ONI plot.

Shea said the actual ONI state has impacts on tuna and the warmer temperature has impacts on coral reefs. The interest is in what is happening in a specific year and what the pattern is over many years.

Leon Guerrero asked if there are impacts from ONI to Guam.

Shea said there are effects on Guam.

Marra said the impacts are variable, but there are fairly strong patterns. The impacts are well understood and on a forecast timescale, the ONI is predictable. It is not predictable on the 20-year timescale.

Woodworth-Jefcoats went over the last few indicators.

McNutt wondered if the report should include a different threshold for storms, as smaller storms impact fishing.

Marra asked for clarification on which type of storms.

McNutt said frequency, intensity and direction made a difference in the Gulf of Alaska.

Marra said Dave Atkinson worked on some of the extra-tropical storms like frequency, direction and duration. There's a trade wind index, which gives a directional component; days above which the wind is above some threshold is another way to look at it. If the question is if there's another wind parameter to look at, there are some.

Woodworth-Jefcoats said the longline fishery is generally unaffected by extra-tropical storms.

Marra said the cyclones indicator in the report had readily available data.

Oliver said there's an indicator for wind for archipelagic, but it isn't tropical storms.

Marra said if you recommend it, it needs to be funded work because there is a lot of work that needs to go into it.

Spalding said the recommendation could include that the Council would help seek funding for this. She suggested defining what the storm terms mean in knots per hour and noted

that the pelagic fisheries include all fisheries catching pelagic species, not just the Hawai'i longline fishery.

Woodworth-Jefcoats continued with the indicators.

Spalding asked about the grid for the pelagic report for eddy kinetic energy.

Woodworth-Jefcoats said that it is only the operating area of the Hawai'i longline fleet.

Shea asked if it was doable to begin reporting on American Samoa in the 2017 report, for delivery in 2018.

Woodworth-Jefcoats said she could provide an American Samoa grid for eddy kinetic energy next year.

Woodworth-Jefcoats continued with the indicators. There was some discussion on the ocean color dataset, noting that it has issues in the 30 meter and shallower depth range. The committee agreed that oligotrophic area should be removed this year, since cloud cover is about 30 percent so it's not meaningful. Woodworth-Jefcoats reported that the longline indicators have been added to the Oceanwatch website, where the data may also be downloaded. \

Shea said that she and Spalding will create a list of websites and make it available to Committee members.

Woodworth-Jefcoats said the report includes links to the data sources.

Shea said that she prefers the plots with more lines rather than having many plots.

Ma said you usually hear that fish lengths are decreasing over time and asked if they were.

Woodworth-Jefcoats replied that they have not.

There was some discussion over licenses.

Miyasaka made a correction to the source of the data.

Spalding noted that the pelagic report appears to be Hawai'i longline driven.

Woodworth-Jefcoats said adding the yellowfin troll fishery is just a matter of locating resources to add the sections.

Chargualaf asked who the longline fishermen are in American Samoa.

Tulafono said most of the longliners are locals. He emphasized the importance of including both the American Samoa longliners and purse-seine area of operation in future reports.

Woodworth-Jefcoats asked where the area of operation is.

Walker reported that is the central equatorial Pacific; the American Samoa longliners rarely fish in the nearby high seas area.

2. Archipelagic

Oliver reported on the archipelagic reports.

McNutt asked how the data are downscaled.

Oliver said many are not downscaled, as they can't be, like ONI and pH at Station ALOHA. He said he would attempt to get the archipelagic indicator grids on the OceanWatch website as well. Oliver went over sea surface temperature and anomaly, sea level anomaly, degree heating weeks, and wave energy, as these were not captured in the pelagic report.

Chargualaf said, when he used to cast net on the reef, there was a time when the water was reddish.

Oliver said it may have been an algal bloom.

Chargualaf said it was localized.

Shea commented on the correlation of recent coral bleaching events in Hawai'i.

Oliver said one of the reasons this metric is favored is because the correlation between regional bleaching events and this metric is quite good. There is a lot of variability in space and among species, but it is a good metric for forecasting bleaching and for comparing events. There was some additional discussion on degree heating weeks.

Ma asked if there was a runoff overlay.

Oliver said there is a good product for Hawai'i, with plans for replicating it across the region. There is an indicator but it's not ready for prime time yet.

Shea asked if there is a sea level indicator.

Oliver updated it and asked if there is a better way to do it.

Tulafono asked how hot it needs to be for coral bleaching.

Oliver said the rule of thumb is about 1° F warmer than average summer temperatures.

Marra said the corals are tough in American Samoa.

Oliver said the blue line on the graph is the bleaching threshold, which is pretty indicative on the regional level.

Spalding said noted that the degree heating weeks rationale section says widespread bleaching is expected.

Shea said we can encourage Reef Watch to make the degree heating week plot for the other jurisdictions, not just Hawai‘i.

Oliver said he would have that conversation with the director on Monday.

Marra said Guam is interested in looking at exposure days, not magnitude, for sea level anomaly. That would potentially be a better measure but is not quite ready yet.

Shea said it would be helpful to get a sense from the director for what it would take to make it happen and perhaps the Council could help look for some funding.

Chargualaf described the impacts of sea level changes and temperature on corals.

Marra said that there was a high water pulse in Hawai‘i; a University of Hawai‘i Sea Level Center website tracks this anomaly and gives a six-month forecast based on NOAA’s model, which may be useful. The pulses of sea level movement across the Pacific can be seen.

Oliver said six months is a planning horizon.

Marra showed the website over the break.

D. Draft 2016 Marine Planning Indicators from Plan Team

Walker presented the objectives and asked for inaccuracies and missing activities. The goals are to monitor the effectiveness of the FEP in meeting its objectives. Components are marine managed areas and activities and facilities that may impact fisheries, e.g., aquaculture, alternative energy and military. Walker reported on the changes made to the section that differ from the 2015 report: Telecommunications and executive orders on MPAs were added. The NOAA’s Office of Response and Restoration dataset was removed as it was not comprehensive as was the MPA Center’s MPA inventory. Not added (that was previously suggested) were planned facilities from RPB meeting in American Samoa. Also added, per recommendation by the contractor, were Guam fishing facilities and fish aggregation devices (FADs).

Walker reviewed the marine managed areas, including the 0 to 12 nautical mile MPA around the Pacific Remote Island Areas (PRIAs) and the Large Vessel Prohibited Area around American Samoa. She reviewed the maps in the chapters that also include monuments and other measures. She also reviewed the aquaculture facilities, noting that one in the US Pacific Islands was permitted and has broken loose. The Council is in process of comprehensively amending the FEPs to include aquaculture projects. The section looks only at federal waters.

Walker reviewed alternate energy. The Bureau of Ocean Energy Management (BOEM) called for information for proposed wind development around O‘ahu. Three companies responded with four projects. The Council put in a public comment. Call areas overlap with two of the most important commercial fishing areas off of O‘ahu, mostly for troll and some bottomfishing. BOEM will narrow the areas and sell leases.

Walker covered other projects such as the Honolulu Sea Water air conditioning, which is supposed to come online in 2017.

McNutt noted that the Council's Advisory Panel was concerned that the offshore wind energy would be like FADs.

Walker said she heard that BOEM would be fine with fisherman approaching the structures.

Woodworth-Jefcoats said she can look at what has been done on the East Coast as far as fishery impacts and regulations.

Oliver asked why the areas were chosen and said he'd look it up.

McNutt said the interisland ferry has been re-proposed.

Walker next covered military activities. She said a lawsuit was being heard on the CNMI Joint Military Training. She also covered the Marianas Training and Testing (MITT), divert activities in Saipan and Tinian, Garapan anchorage and testing at Farallon de Medinilla. The DoD paid CNMI about \$20,000 to bomb that island for 50 years. She also mentioned the Hawai'i-South California Training and Testing and Air Force activities around Kaua'i.

McNutt said the Pacific Missile Range Facility has increased activity that is not in the environmental impact statement and is shutting off Ka'ula island without enough warning to fishermen, increased live fire, new radars and new Federal Aviation Administration restrictions including drone program from Alaska (Arctic to the Tropics).

Spalding noted that the Council at its last meeting discussed military dumping.

Walker covered the RPB. She said it will continue planning in American Samoa. It met with chiefs in March and has plans to meet again in May. The RPB is to start in Mariana Archipelago later in year and will forgo planning in PRIAs and watch how the monument management plan plays out. There is data team that might meet on Guam.

E. Chapter 3: Data Integration Workshop

Sabater reported on the data integration workshop. The workshop consisted of background presentations and brainstorming, prioritization and work plan sessions.

Shea said consideration should be given to adding the outcomes of the island fisheries variables to the climate change report and adding language to the archipelagic and the pelagic climate change section noting the rainfall and wind speed relationships that are not already in the report.

Sabater said that they considered the indicators already in the report at the workshop.

Marra said they would need additional input on what type of rainfall, scales, etc.

Sabater said that the contractor will be working closely with PIFSC on the structure and scales of the available data.

Marra said he would be happy to talk to the contractor on his concerns.

VII. Public Comment on Draft 2016 Annual Reports

There was no public comment.

VIII. Committee Discussion and Work Item Recommendations for the Draft 2016 Annual Reports

Shea recounted from her notes: use the National Centers for Environmental Information for the plots, clarify the definition for cyclone and, in the future, add the methodology used by Dave Atkinson.

Marra said someone needs to decide what the wind parameters of interest are; he guessed it's some sort of rough seas metric.

The group agreed with dropping oligotrophic areas because of the cloud cover data gap and suggested exploring the possibility of including subtropical front/chlorophyll for the South Pacific. Committee members will review the diagrams and determine the best way to show the size frequency data. The Committee noted that the sedimentation source is clarified and that it liked the new degree heating and wave energy indexes.

Marra said another comment was the sea level frequency. He said, to generate resources, it would help if a concept note could be sketched out that describes what we have in mind and then have it endorsed by the Council. It will not happen right away. Marra suggested scheduling a meeting to draft the note.

McNutt reminded the chair of the reallocation issues.

Shea said that would come up tomorrow for overall recommendations.

Woodworth-Jefcoats asked if all of the pelagic indicators would be helpful for American Samoa or if they want it for only certain indicators.

The Committee members from American Samoa said they would decide overnight.

Oliver said, regarding the wind speed of the storms, they are all named storms, which implies 34 knots sustained or above.

Marxen said, regarding the requested point of contacts and organizational charts for federal agencies, it would be helpful to have them for the local agencies as well.

McNutt asked whether capturing rainfall is another issue for the conversation with the contractors.

Tulafono said he mentioned phosphates because they create the red tides in the harbor.

Oliver said the products developed for main Hawaiian Islands look at both nutrients and sediment. The gridded products are from Joey Lecky's master's projects. The hope is to perform the same project over the next six months.

McNutt said Dr. Carl Berg's data product is a stream, mixed, nearshore water sample dataset.

Marra said indicators being tracked in the report should be foundational and reliable.

The MPCC Committee at its 6th Meeting on April 5 and 6 identified the following SAFE Report Work Items [to Plan Teams]:

Climate Section

- Explore the incorporation of threshold values for key indicators where available and appropriate, e.g., pH.
- Include defining characteristic of terminology used, for example, named storms and hurricanes, i.e., knots per mile.
- Include wind data (number, frequency, direction, speed) for extra tropical storms.
- Explore options for incorporating extra tropical storms and high wind data in SAFE reports in 2017.
- Add Eddie Kinetic Energy for the South Pacific (American Samoa and PRIA grid boxes) in 2017.
- Expand the pelagic section to include American Samoa longline and purse-seine fisheries climate relevant indicators.
- Include sea level frequency (low water events) in the archipelagic reports.
- Work closely with the Chapter 3 Plan Team and contractor to define the specific new information to address the priority areas identified in the data integration workshop, e.g., what is meant by rainfall.
- Drop oligotrophic indicator until more appropriate and reliable data source can be identified (current source loses up to 30 percent coverage due to cloud coverage).

Marine Planning

- Follow marine highway proposed designations

8:30 a.m.-5:00p.m. Thursday, April 6, 2017

Leon Guerrero shared news from Guam that the Governor had just announced that his administration no longer supports the military buildup. There has been an H2B Visa situation; the local workforce is generally not interested in construction jobs. The approvals for visas have dropped to near zero, even if there are many construction jobs on the books. Because of the way the federal government is playing two sides of this, the governor said he will "shake the tree." He

called on the Attorney General to join the 12 businesses who sued the federal government on the blanket denial of H2B visas. This high stakes scenario was unanticipated.

IX. Review of Existing Climate Change Outreach and Resources by Island Area Participants

Lutu reported that American Samoa is in the process of developing outreach materials but lacks translation of the materials. She said papers are on the floor before the end of workshops, so maybe information should be on signs. She said MPCCC should come up with a slogan that generates a question in the minds of the audience. She said her agency's slogan is a Healthy Coast Is a Wealthy Coast because it is broad adapts to different problems. Her agency has moved to a marketing approach where it discusses the benefits of its product and not the details.

Tuimavave said the American Samoa DMWR develops outreach targeted toward students and the general public. She noted the differences in the various audiences: communities, cabinet, mayors, chiefs, etc. She said one must consider how to convey the information in a way that the Governor will take notice. There is still room for a lot of development and improvement. At the end of the day she would like something for American Samoa that is similar to the University of Hawai'i website to show future impacts to the territory.

Lutu said one outreach strategy is to target recreational users of the coast. For example, handball participants pick up trash along the coastline before using the area for practice. She is trying to locate a blow up clear kayak and a sponsor and is beginning meetings on MPA and coastal outreach. Hawaiian Airlines donates \$10,000 annually, and the Sheraton in Western Samoa gives \$5,000.

Shea asked about social media.

Lutu said someone needs to manage the message.

Chargualaf said Singapore is clean because of enforcement. The outskirts of Guam are dirty. It has to be government wide and part of a strict law with hefty fines.

Tuimavave said there is still litter even with monthly cleanups. American Samoa recently passed a litter law. A pitfall in enforcement is drivers can be cited by police officers only.

There was discussion on trash and a recommendation for the Council is to reach out to social scientists. The group also discussed how Sea Grant hasn't been supporting fisheries in this region.

Lutu has asked if they can specifically carve out funding for American Samoa.

Shea says this is disturbing to her as a Sea Grant person. She recommended that Sea Grant explore opportunities to better support scientific projects around the region. If the MPCCC concurred, a recommendation could be crafted for the Council to talk with Sea Grant about ways to be more effective with its policies to address the jurisdiction's concern.

McNutt said that we are the only maritime state and oceanography is not a part of the curriculum. What can we have as an educational program in the lower grades that feeds the higher grades?

Woodworth-Jefcoats seconded that.

Spalding said the Council has an Education Committee, which has an MOU with four-year universities in the region. The Council also runs a high school summer school and a scholarship program. High school students are applying for that scholarship, even though it geared to students who have completed their first two years of college.

Marxen commented on the environmental literacy program in Oregon.

There was extended discussion on education and curriculum needs.

Ada-Hocog offered perspective from the CNMI on litter.

Simonds asked if the Parent-Teacher Association would be an outlet for this concern. She said maybe we can craft some kind of recommendation.

Shea offered that this is the foundation of ocean and climate change literacy.

Tulafono said outreach is important. In American Samoa, they target the youth. Before the government agencies usually did their own outreach. After the communities complained about the agencies having similar outreach, they began going out as a group. That was an improvement over the previous independent government outreach. Tulafono said it is important to target young people because they are passionate. He also said, for people to understand, the materials have to be translated into their languages. Some don't understand English. The Sunday school materials are another important path for outreach on climate change impacts.

Simonds asked if information can be disseminated from the Office of Samoan Affairs. She suggested that might be another vehicle for getting information out to the villages. The format has to be structured and in Samoan.

Tulafono said they usually do that.

Simonds asked so how about a climate change one.

Lutu said she sits in her own village council. The two individuals from her village who sit in Samoan Affairs are not influential nor do they have a voice. Some villages have influential village mayors and police on the council, but many of the representatives are just the communicators but are not necessarily the people who can carry the message in the village. One would have to figure out which villages can be effectively reached through Samoan Affairs for other than just protocol.

Leon Guerrero offered his perspective on curriculum in Guam. He asked how one could get the education boards and science and geography groups to weave this into the curriculum, including the character education we expect our kids to have. What Mayor is going to fine

people who he's asking votes for in the next election? He said these great ideas must be examined in the context of pulling away family, village and clan responsibilities and instituting them in the government. He asked what is the outcome and message that we want to have in people's heads. He recommended having the universities or Sea Grant do the leg work.

Ada-Hocog suggested using the Association of Mayors.

Salas shared some outreach from BECQ. He showed a few video clips and a radio ad, which were well received by the group.

Tulafono said the message to the people is that climate change is real. He said he makes that same point out when he talks to local fishermen.

USFWS outreach – Marxen said they are a large organization across the states. The refuge system promotes fishing as a priority activity. There's a fish and aquatic program that does outreach related to that. There's also a training center that does outreach. We are really weak in the climate literacy aspects.

Important that we're clear on the outcomes that we're looking for here and our messaging needs.

Put together a suite of science projects related to climate change and fishing. Woodworth-Jefcoats said that PIFSC mentors students in Hawaii.

There was much discussion about social media. There was a lot of cross-pollination on social media outreach and best practices for targeting the student audience. Recommendation that all of our outreach include staffing necessary to do social media. Maybe WesPac can help with that.

Marra said the distinction between climate change and variability is necessary. I talked about the fact sheets and bulletin. There's an ENSO factsheet with some fisheries information. The other side is climate change stuff. There are some report cards in Coral reef Watch folks. The process is done for USAID NOAA services dialogues. Development of individual climate stories. There was a samosa related to fisheries. There's an example of a story with a fisheries piece in it.

Shea said everyone who provided an educational resource, provide the name of it and a link to the website. If we decide to pursue this science fair idea, indicate if you want to be a point of contact. Borrow Waldorf projects and curriculum that Marra was talking about.

Spalding gave an update on Council outreach materials.

X. Island Area Breakouts to Identify and Develop Climate Change Outreach Resources Focused on Fisheries and Fishing Communities

The group felt it was premature to draft island-specific climate change outreach resources and opted to continue the discussion at a regional level in a plenary session.

The group brainstormed on a potential slogan. One suggestion was Climate Strong, with the text surrounded by a fish for the logo. Another suggestion was to include the concept of respect because respect weaves through all Pacific Islands cultures. The group wanted the slogan/logo to convey respect, knowledge and action and be focused on strengthening communities and fisheries. A range of subheads were also considered:

- Climate Strong: Oceans, Fisheries and Us
- Respect Our Oceans: Change or Else
- Respect Your Ocean: Know the Change
- Respect Ocean Change
- Respecting Change
- Fishing for Change

Tuimavave suggested the Council contract a designer to develop three to five options to send to the MPCCC member for a vote. She said it should be visual, something they want to connect to. Have the slogan and then its meaning under it. Part of it is respect, knowledge, protection.

Lutu said it will go back to what her agency does, i.e., crate information packages for the purposes. She said the sub slogans will change over time. She suggested some tattoo marks or a picture of an island behind Climate Strong or a fish or something that would visually say a lot.

There was discussion on having community workshops.

Shea said one way to do that is to use a slide deck and template and have the Council and its partners in each jurisdiction organize workshops. She said that would not preclude doing a social media campaign as well.

Tuimavave said the group still has a lot of homework to do before the workshops. She said the American Samoa group didn't have time to get together with Marra and Oliver to develop a model. She said a management plan to avoid some of the impacts could be developed. She said they can't go to the communities with half baked goods. She suggested they first needed to determine points such as inundation projection levels or a determination on what is hot and how that affects gleaning. She said we aren't at that stage then.

Spalding said the last year was the first year that annual reports included marine planning and climate change. The Council considered conducting the workshops then to involve the communities early on for their input rather than wait for the final product. The lack of early engagement was something fishermen complained about with stock assessment, which they felt were based on parameters that didn't take their insights. Even though the products aren't complete, the workshops would be an opportunity to engage the fishing community and the community at large.

Lutu said she isn't sure how valuable her participation is on this committee, as she

doesn't understand fishing. She said that her agency is doing a lot of this already. The message is not synergized and shouldn't be because we talk in different ways. The CZM outreach strategy is to go in with a pen and ask the community where the water was before and not to tell them. She said communities are available only in the evenings on the weekends. She asked if CZM could ask the Council for stipend for outreach people. She said they would need support for meeting costs and stipends for outreach if her agency were to carry the message forward.

Tuimavave said she wasn't clear that one of the objectives of the workshops was to get feedback on the factors. She said they aren't ready to do that as they themselves can barely understand the content.

Lutu said how about suggesting indicators and asking the community what's important so that we go in to let them teach us, not us teach them. Ask them top three, which ones do they think are important? Do not show anything that doesn't apply in American Samoa in American Samoa.

Tuimavave said at the end of the day we would still like to use workshops, since that's the best way to get information from here to where it needs to be, and get feedback. There needs to be a series of things that needs to happen in the lead up to workshops.

The group agreed that a preliminary step to workshops would be a Train the Trainers session. Put them in one place that's away from their job. Give them a variety of tools.

There was a discussion on whether the next step would be to gather information from or give information to the community first? It was noted that a lot of information is already available, perhaps too much information.

Tulafono said that perhaps the best thing to do is to gather what we have, especially what's in the report, and arrange for workshops. Present what we have and what we know. Then get feedback from the community.

Shea said don't underestimate the value that scientists place on the community's reaction on what is relevant and what matters. More information is needed from the general community and not just folks conducting the studies.

Ada-Hocog said she's here as a member of the CNMI community, not employed by the government. As such, she doesn't have much access to information on rainfall in CNMI. She said that last summer she did the Council's high school fisheries program. The training they conducted was really helpful, and she brought it back and introduced it to her high school students.

Summarizing the discussion, Shea said she hears loud and clear to hold a train the trainer workshop open to members of the committee to spend a few days with the scientists. She also heard the possibility of some value to go out to the communities to understand why climate change matters to them. She said the group discussed potential slogans and have charged Spalding with coming up with versions for the committee to consider. Finally, one thing that will

come from a Train the Trainers workshop is better insight into how a slide deck might be put together.

XI. Presentation and Discussion of Breakout Results

As the group had opted to stay in plenary, there were no breakout presentations.

XII. Public Comment on MPCC Outreach

There was no public comment.

XIII. Committee Discussion and Recommendations on MPCC Outreach

The MPCC Committee made the following recommendations regarding the agenda items covered on the first day as well as outreach covered on the second day:

Regarding tuna management, the MPCCC recommended the following:

- That the Council write to the SPC noting its support of SPC incorporating climate change information into tuna stock assessments. The Committee noted that the PIRAP Plan for NOAA Climate Science Strategy has identifying climate-informed reference points as an objective for bottomfish and billfish stocks assessments but not for tuna as those assessments are done by the SPC.
- That the Council encourage the governments of the Territories to attend Head of Fisheries meetings at Secretariat of the Pacific Community to ensure that future tuna stock assessments are climate informed.
- That the Council request that the Permanent Advisory Committee to the US Delegation to the Western and Central Pacific Fisheries Commission recommend that the regional allocation of bigeye tuna longline limits and purse-seine vessel day scheme be reevaluated in light of the changing climate.

Regarding multi-jurisdictional coordination in climate activities, the MPCCC recommended the following:

- That the Council requests that PIFSC provide its points of contact in each jurisdiction to the MPCCC members and that these points of contact work closely with local MPCCC members on continuing basis in regards to a changing climate and fisheries and fishing communities including implementation of the PIRAP to the NOAA Science Strategy. The Committee notes the importance of local points of contact to provide local knowledge and insights.
- That the Council include climate change in its Regional Ecosystem Advisory Committees' agendas as a regular item. The Committee notes the importance of coordination across and among local and federal agencies on climate issues.

- That the Council develop and make available to the Committee the points of contact and organizational charts for federal and local agencies.
- That the Council request that Sea Grant explore opportunities for better support of outreach and education and scientific projects around the region.

Regarding the climate section in the SAFE reports, the MPCCC recommended the following:

- That the Council explore avenues of further funding to support development of future climate indicators that have been identified as SAFE work items for the future, such as rainfall, wind, extra-tropical storms, etc.

Regarding outreach and education, the MPCCC recommended the following:

- That the Council support citizen science for local data that might not be included in the SAFE reports due to criteria used.
- That the Council develop and/or support the development of climate-related outreach materials and activities that are visually appealing, culturally appropriate, visual and interactive; that convey positive and empowering messages; that engage and empower youth; that integrate navigation and seafaring legacy and fisheries; that use plain language, formal and informal education venues, storytelling, translation in native languages and social media, including sustained funding for social media moderators/
- That the Council direct staff to develop a catchy, meaningful and memorable slogan for the climate outreach efforts;
- That the Council, in preparation for community workshops on climate and fisheries, coordinate a train-the-trainers workshop that includes the NOAA scientists who presented at the 6th MPCCC meeting and the MPCCC committee members. Prior to workshop, MPCCC members would survey their communities to assess how climate is perceived. The workshop would complete development of the PowerPoint slide deck to be used at the community workshops.
- That the Council provide the MPCCC with a list of science fair projects and identifying mentors for such projects as well as information on how to access all the websites and other material presented and discussed at the 6th MPCCC meeting.

XIV. Old Business

A. MPCC Action Plan Update

Spalding provided an update on the Council's MPCC Action Plan and the status of each item. Committee members provided updates on their local climate change points of contact.

B. Other

There was no other old business.

XV. New Business

A. WPRFMC Five-Year Research Priorities

Sabater provided a presentation on the Council's Five-Year Research Priorities.

B. Cooperative Research Priorities

Sabater provided a presentation on the Council's Cooperative Research Priorities.

C. Other

There was no other new business.

XVI. Public Comment on MPCC Action Plan and Research Priorities

There were no public comments.

XVII. Committee Discussion and Recommendations on Action Plan and Research Priorities

There were no action plan or research priorities recommendations.

XVIII. 2017–2018 Committee Members and Officers Nominations

Regarding the 2017-2019 MPCCC members, the MPCCC recommended that the current members be reappointed; that Thomas Oliver (PIFSC), Lyn McNutt (Hawai'i) and Lori Crisostomo (Guam community member) be added; and that a member of the Council's Social Science Planning Committee be included as an ex officio member.

Regarding the 2017-2018 MPCCC officers, the MPCCC recommended that Eileen Shea be reappointed as the chair and that Ray Tulafono be appointed as vice chair.