WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Archipelagic Fishery Ecosystem Plan Team Meeting

April 19–21, 2022
1:00 – 5:00 p.m. (Hawaii)

Final Meeting Report

1. Welcome and Introductions

T. Todd Jones, Archipelagic Fishery Ecosystem Plan Team (APT, or Plan Team) Chair, opened the meeting, reviewed meeting protocol, and invited APT members to introduce themselves. Present were Robert Ahrens, Keith Bigelow, Danika Kleiber, Marc Nadon, Joseph O'Malley, Thomas Oliver, Minling Pan, Michael Parke, Frank Parrish, Brett Schumacher, Bryan Ishida, Brent Tibbatts, Jason Biggs, Frank Villagomez, and Domingo Ochavillo. Not present were Paul Murakawa, Reka Domokos-Boyer, and Jenny Suter, but Bradley Gough attended Day 1 of the meeting as ex-officio for fishery management plans (FMPs) in place of Suter.

2. Approval of Draft Agenda

The draft agenda for the 2022 APT meeting was approved.

3. Report on Previous Plan Team recommendations and Council Actions

Western Pacific Regional Fishery Management Council (Council) staff presented on progress regarding recommendations from the previous APT meeting in April 2021 and intersession APT meeting in January 2022. Regarding a range of APT recommendations associated with improving the Council's annual Stock Assessment and Fishery Evaluation (SAFE) reports, the Council adopted the APT recommendations. Efforts are ongoing with respect to the APT recommendations to revise the territorial bottomfish management unit species (BMUS) lists, and APT working groups were formed. Plan Team members were directed to the associated document in their briefing books for additional information.

4. 2021 Annual Stock Assessment and Fishery Evaluation Reports

A. Fishery Performance

1. Archipelagic Fishery Performance Modules

a. American Samoa

Domingo Ochavillo, American Samoa Department of Marine and Wildlife Resources (DMWR), presented updates for American Samoa archipelagic fisheries in 2021 using data recently provided by the National Marine Fisheries Service (NMFS) Pacific Islands Fisheries Science Center (PIFSC) Fisheries Research and Monitoring Division (FRMD). Creel survey effort has

declined by 50% from 2019 and 2020 to 2021. BMUS landings have been variable over time, potentially attributable to natural disasters and the government fuel subsidy. In 2021, there was a decline in BMUS landings of approximately 80 to 90% following a ~30% decline in 2020. Commercial sales of BMUS were not disclosed in 2021. Regarding ecosystem component species (ECS), landings derived from the commercial receipt program were larger than estimated from the boat-based creel survey expansion. Catch per unit effort (CPUE) remains variable on an interannual basis but has generally been declining in recent decades, with a small downtick in 2021. With respect to fishery effort, the number of bottomfish fishing trips declined 80% in 2021 after a 40% decline in 2020, and the number of unique active vessels also declined by roughly 50%.

A Plan Team member requested clarification on the status of commercial receipts in 2021, as there were trips presented but no catch. Gough stated that this was due to confidentiality rules associated with data non-disclosure because there were less than three vendors that reported sales. A Plan Team member asked how non-disclosed landings are incorporated into the decision making process if they occur but are not reported. Schumacher clarified that for accountability measures, when tracking catch against an annual catch limit (ACL), the higher value is used between total estimated catch from creel surveys and commercial catch from purchase receipts; however, there has never been a situation where less than three reports were present and the ACL was exceeded.

Plan Team members also discussed the decline in bottom fishing and BMUS trips. Specifically, BMUS landings in pounds and number of unique vessels indicate large declines from 2020 to 2021. Ochavillo clarified that the declines in landings and effort are likely attributable to impacts from COVID-19. In 2021, there were only three boats participating as opposed to the much higher participation observed in previous years, but this is likely not associated with underreporting.

Clay Tam, Council Advisory Panel (AP) chair, presented fisher observations for American Samoa collected during quarterly AP meetings. The Council recently began collecting anecdotal "on the water" information from active fishers about the region's fisheries over the past year, and PIFSC began supporting this effort to generate more standardized fisher observation information going forward. This was a combined meeting of the Hawaii and American Samoa APs held on Feb 24, 2022. However, there were no fishers present from American Samoa due to impacts associated with COVID.

b. Guam

Brent Tibbatts, Guam Division of Aquatic and Wildlife Resources (DAWR), presented updates for Guam archipelagic fisheries in 2021. Tibbatts summarized the Guam bottomfish fishery and noted there are frequently mixed fishing methods, so a fishing trip is rarely exclusively for bottomfish fishing. Regarding the species composition of Guam archipelagic fisheries, Plan Team members noted an increase in deep water over shallow water activity in recent years, which has led to a change in market demand. Tibbatts indicated that the shore-based fishery targets coral reef fish species and other juveniles for food and cultural importance, with hook and line gear dominating the catch. In 2021, the bottomfish fishery had high catches exceeding the ACL with commensurate increases in effort and CPUE. DAWR staff evaluated the raw interview

data to determine if there were catches or dates with anomalously high values. The day between Good Friday and Easter is typically a very busy for boat-based fishing, and a survey was conducted on that day in 2021, which may have caused an unrepresentative increase in total estimated catch derived from the creel survey expansion. The tallied number of boat-based fishing trips (and BMUS trips) was also high in 2021, which may be due to changes in the market or in response to rising gas prices, as bottomfish fishing trips use less fuel than trolling.

Similar to American Samoa, the Guam commercial bottomfish fishery has issues with non-disclosure of data. There were also issues in the first half of January conducting creel surveys due to COVID, but surveys were conducted normally through the rest of the year. The shore based fishery typically has six catch interview surveys and two participation surveys per month, but four and eight surveys were conducted, respectively, since DAWR staff do not have to interact with fishers during participation surveys. Moreover, aerial surveys were not conducted to contract issues associated with COVID. The number of interviews in 2021 was the highest since 2016 for boat-based surveys and 200 higher than the 10-year average. Regarding fishing activity, there were small craft advisories due to hazardous winds and high surf days. Additionally, consistent military activities (i.e., live fire and underwater detonations) continue to impact fishing access. After July, the military stopped providing notices to mariners regarding these activities, so data were not able to be reported for the second half of the year.

Plan Team members questioned the increases in effort and BMUS catch in 2021. Tibbatts noted that the 2021 numbers were higher than previous years, but the increases were expected due to anecdotal information reported by fishers. The younger generation has been able to perform well in the bottomfish fishery as technology has advanced and improved catchability. Regarding rabbitfish, a Plan Team member noted there are multiple codes for the species in the Guam creel survey, one for juveniles and one for adults. Tibbatts indicated that the species codes should be reported separately because the juveniles are harvested as a part of a pulse fishery. The Plan Team noted the increased BMUS catches should be revisited to confirm it is not an overestimate.

A Plan Team member wondered why the shark depredation rates on Guam are relatively low despite fishers consistently reporting it as problematic. Tibbatts indicated that fishermen sometimes retain the depredated catch, but shark interactions are defined as losing a fish or gear. The interaction rate is about 30 to 40%, and fishers may retain the head of the depredated catch.

Tam presented observations from Guam fishers for 2021. PIFSC held a fishermen's observation summit to glean fishers' empirical knowledge, as a lot of information has been transferred within the fishing communities via oral history. Guam bottomfish experienced a normal fishing year but had rougher waters and stronger winds compared to 2020, which lead to a transition from three-pound to six-pound fish. For ECS, there was a decrease in the presence of atulai, depressed seasonal runs of bluefish trevally, and increases in shark depredation in 2021. Tam also noted that an exchange of information comes from the bottomfish survey sampling from the Pacific Island Fisheries Group. Hawaii-based fishers shared information with Guam fishers, who then came to fish in Hawaii.

Over time, they became more proficient and improved their technique, which spread through the fishing community.

c. CNMI

Frank Villagomez, CNMI Division of Fish and Wildlife (DFW), presented updates for archipelagic fisheries of the CNMI in 2021. In 2021, there was an increase in creel interviews and sampling days, the highest since 2011. In 2019, there were few surveys due to a delay in acceptance of grant funding for DFW's creel program; however, there was an increase in commercial invoices collected. Commercial landings continue to be stable. Total catch estimates, in 2015 and 2018 were low likely due to natural disasters (i.e., typhoons). An increase in creel catch estimates for BMUS from bottomfish fishing and spearfishing in 2021 was also noted. When capturing bottomfish data during the creel survey, it can be difficult to accurately assess the harvest due to the nature of surveys and when fishers land their fish. Moreover, the lumping of assorted fish shows that commercial vendors may not be in compliance with current mandatory reporting regulations; DFW hopes to improve this in the coming year. Data collection for prioritized ECS was poor in previous years, but a large increase in catch was noted for 2021. There was also more spearfishing data collected in 2021 during COVID than in the last decade. Similar increases in ECS catch were noted for commercial data with the exception of notable declines relative to the 20-year average for *Naso unicornis* and *Siganus argenteus*.

Plan Team members noted large increases in catch for ECS and questioned whether this was due to greater fishing effort during COVID as a result of having more opportunities to fish. Villagomez confirmed with DFW staff that COVID was a factor that resulted in increased spearfishing activity. Plan Team members questioned the zeroes in previous commercial data summaries, which increased notably in 2021 for some species. The commercial receipts are likely not being impacted by the implementation of the Council's SellIt LogIt (SILI) application. There is ongoing confusion associated with where fishermen need to report, using SILI or with paper receipts to DFW. Jones stated that it seems that some fishers are reporting to both, and he asked if information is being lost to SILI when it should be reported to DFW. Villagomez stated that DFW staff constantly communicates the requirements, which are to provide data to DFW. Plan Team members discussed the large increase BMUS catch from 2019 to 2021. These increases were associated with twice as many vessels, trips, and gear hours when compared to previous years. Villagomez confirmed that there was more fishing occurring in 2021 due to COVID.

Tam presented observations from CNMI fishers for 2021. CNMI bottomfish, specifically onaga, experienced decreased spawning aggregations, despite the presence of larger fish. There was also discussion of increased shark depredation in the northern islands and the impacts of current high fuel prices leading to fishers cutting back time on the water. For pelagic species, mahimahi fishing was good with increased catch towards the end of the year. Marlin catch was sporadic throughout 2021 with smaller fish (~250 to 200 pounds) being observed.

d. Hawaii

Bryan Ishida, State of Hawaii Division of Aquatic Resources (DAR), presented updates for Hawaii archipelagic fisheries in 2021. Relative to the historical trends there was a decrease in all parameters for the Deep 7 bottomfish, however there was a slight increase in catch from 2020 to 2021 due to contributions from deep-sea handline. However, CPUE decreased for deep-sea handline while it increased for non-deep-sea handline gears. The CPUE decrease is likely due to

changes of characteristics within the fishery (used to be small with few participants before expanding greatly in the late 1980s). Catch composition was relatively normal, with ‘ōpakapaka and onaga making up the majority. Overall, there was a little less ‘ōpakapaka than last year in terms of proportion and a larger increase in ehu. Uku 2021 values were all down relative to the historical trends. Both uku and the Deep 7 are a big portion of the sales to hotels and restaurants, but uku does not have a seasonal push around the holidays for local consumption. The near shutdown of the tourist industry in 2020 associated with COVID impacted the fishery. Overall, the fishery was less dominated by deep sea handline in recent years, as other gears are becoming more common when individuals start to specifically target uku. Many fishers are deciding to reclassify their gears (e.g., don't use heavy gear, report as an inshore handline).

For coral reef ECS, compared to trends for priority ECS, most fishery values were down in 2021. Opihi had less effort but with increased catch, which is inconsistent because the number caught went up higher relative to weight. This illustrates the problem of counting or measuring small species. All other ECS but ta’ape decreased, which had an increase in the number of individuals caught (likely due to how people were reporting since species were caught in very high numbers). For crustaceans, the shrimp trap data remains confidential due to the number of participants. Kona crab loop nets decreased for all metrics except for CPUE, and all other gears (incidental catches of Kona crab) contained mixed results. Ishida noted that he does not like to present CMUS together since they are disparate fisheries. Mainland shrimp vessels have not been around since about 2015, so most recent efforts are for local sale by three or fewer vessels each year. For precious corals, there is no report for 2021 as the data remains confidential.

During the discussion, Plan Team members noted that certain crustaceans (i.e., lobsters) and octopus were combined in fisher reports. For the SAFE report, it would be beneficial to break out the species and present them with separate colors, maybe in a histogram. Plan Team members also questioned the large declines in the bottomfish catch data while gindai experienced increases. Ishida stated that fishers are still catching a lot of gindai, but it is a small amount relative to total catch (2%). In terms of fishers on the water, there may be new available gears that allow individuals in small vessels to make deep drops in areas other than the usual fishing grounds. Plan Team members agreed to track this notion in the future, despite the small makeup of the overall catch for gindai.

Tam presented observations from Hawaii fishers for 2021. Onaga and ehu fishing was consistent through June 2021. Opakapaka did not show up in large groups, and fishers are trying to determine where the opakapaka go as they have not aggregated at areas they normally fish in the last five years. Maui jet ski fishers caught bottomfish in areas where small boats do not usually catch them as well. Last year experienced strong currents, La Niña trade winds, and higher waters, which all negatively affected opakapaka catchability. There was also a lack of bioluminescence in the Kaiwi channel. For crustaceans, Kona crabs came in early. For ECS, 2021 experienced big schools of akule off Kona and Kauai throughout the summer. An increase in baitfish and squid seemed to correlate with the mango and avocado blooming. Kaneohe and Hawaii Kai opelu koa were not able to hold bait, so ahi catches were relatively low. More generally, fishers noted that more fishers are entering the fisheries, which could affect CPUE, that there has been an increase in fish flow through informal channels, and that some fishers give much of their fish away, which is crucial for food sustainability. Due to decreased tourism associated with pandemic restrictions, fishers were driven to diversify the means by which they

distribute their fish, which were experiencing all-time high prices for bottomfish. The low supply of imported fish also caused prices to increase.

2. APT Discussion: Improving Bycatch Reporting

Thomas Remington, Lynker, led a period of Plan Team discussion focused on improving bycatch reporting in the annual SAFE reports to ensure consistency with the Council's standardized bycatch reporting methodology (SBRM). Bycatch tables were updated in the archipelagic reports for each island area last year, including the addition of bycatch tables in the Hawaii report for the first time, and there were further improvements to the Hawaii bycatch summaries this year in the form of non-target species releases using a dominant gear type for the fishery at hand. However, there remains a need to accurately portray the amount (i.e., number or weight) and type (i.e., species or taxonomic grouping) of bycatch, and the Council requested that PIFSC FRMD generate species lists associated with fish released to better allow the Council to monitor trends in bycatch.

The Plan Team agreed that the reported bycatch estimates are not as fleshed out as they could be and are likely biased downwards due to fisher underreporting. The Plan Team would like to have a better understanding of what fishers are catching and discarding. Moving forward, the top 10 or top 90% of species that make up the bycatch will be included in text and/or tables. Occasionally, the top species change, but this monitoring of bycatch will also allow for better tracking of the ECS that do not have stock assessments. The current summaries on the amount of bycatch satisfy the SBRM requirements, but additional work is needed to provide the types of bycatch. A Plan Team member noted that previous tables that do not present non-target species bycatch are not helpful. Reported bycatch is useful, but a further breakdown by species will improve understanding. For uku, the Plan Team noted that defining the bycatch is more difficult because there are multiple gear types utilized. The Plan Team agreed that a group may be necessary to further discuss the issues with incorporating a species table and the issues with presenting non-target species bycatch for fisheries like the one for uku in Hawaii.

3. Building the Annual SAFE Non-Commercial Fisheries Modules

a. Territorial Non-Commercial Modules

Marc Nadon, PIFSC-Cooperative Institute for Marine and Atmospheric Research (CIMAR), and Danika Kleiber, PIFSC Social-Ecological and Economic Systems (SEES) Program, provided updates on efforts to generate non-commercial fishery performance modules for Guam, the CNMI, and American Samoa, including an update on the determination of estimation methods to calculate non-commercial catch estimates. An APT working group met in March 2022 to discuss the discrepancy between methods to estimate non-commercial catch and how to produce the sections for the territorial reports. There are issues with estimating non-commercial catch by subtracting commercial receipt book data from the total estimated catch derived from creel surveys since vendors do not always report sales to the species level. It is common for vendors to report sales in more general taxonomic groups, such as by family or by fishery (e.g., "*Etelis*" or "assorted bottomfish"); this has led to a discrepancy in the commercial sales data and the creel survey data for intended sales as well as fishers' qualitative assessment of the proportion of catch that is typically sold. Nadon presented an analysis that determines the proportions of these more

general reporting groups that should be allocated as BMUS. Using Nadon's method, the proportion of commercial to non-commercial catch increases to around 93% for 1993 to 2013.

Danika Kleiber and Minling Pan, PIFSC SEES, presented on improvements needed for social and economic data collection in the Pacific Islands Region. There is a need to identify the value of fish catch, especially the social and cultural importance. There are mandates associated with these questions under the MSA, and newer Executive Orders were issued to fulfill this mission. A recent analysis found social science data needs for seven of the 10 National Standards (NS) in the MSA, four of which were described in further detail. For NS1 regarding optimum yield (OY), it is important to identify who is benefiting and to consider why OY is below the maximum sustainable yield (MSY). Precautionary approaches are needed for species of cultural or food importance. For NS2 regarding the best scientific information available, management decisions should recognize the sociological and economic risks associated with the sources of uncertainty and gaps in the scientific information. For NS4 regarding fishing privileges, there must be a focus on fairness and equity to all fishers, which is associated with a need to improve demographic data. For NS8 regarding fishing communities, available need to be able to assist in informing management measures to sustain participation and avoid adverse economic impacts.

Jones stated that the Plan Team had a working group evaluate the development of a non-commercial module, focusing on the methods to calculate non-commercial catch by either subtracting commercial catch from total estimated catch or simply using expanded intent to sell data from creel surveys. When PIFSC met with DMWR and talked with fishers, the fishers indicated that they sell a lot more than the creel surveys suggest. Therefore, it is important to identify how fishers define themselves and note how that self-classification impacts data collection. No new module will be implemented this year, but the Plan Team will move forward to determine the configuration and content for next year. Working group members reviewed necessary scripts and indicated that not a lot of additional information is needed to update the allocation of general commercial reporting groups to BMUS year to year. The primary issue is reporting via larger groups and not the species level, but Nadon showed how the PIFSC Stock Assessment Program (SAP) breaks down the groups to assign a proportion to BMUS. The resulting number aligns with what fishers described at the American Samoa data evaluation workshop. The Plan Team needs to figure out which source is best to use, whether it be commercial data or creel survey data on intended sales.

A Plan Team member indicated that the first step would be dealing with the discrepancy between commercial receipt and creel survey data before a further exploration for continuous improvement can be conducted. Nadon noted that he can integrate his script into the SAFE reports as needed. Another potential issue is that two separate streams for commercial data would be presented. The WPacFIN scripts still use VFP instead of R, and PIFSC needs to facilitate changes to the WPacFIN data streams when issues are identified. Jones noted that it is preferable to align the territorial agencies and WPacFIN data with the stock assessments since WPacFIN data are used to monitor catch against the implemented ACLs.

A Plan Team member stated that there is a difference in the estimates when they are used in a stock assessment model versus monitoring toward an ACL. The issue of BMUS being reported in more general groups introduces uncertainty in previous commercial estimates used, and this has not been resolved from a management perspective. When the creel survey results have been

higher than the commercial reports, creel surveys are used. Ongoing discussions are necessary to address if commercial data are not accurate with respect to species identification, especially if the data can be used to support the closing of federal fisheries. Jones noted that the issue could be as simple as the annual SAFE reports utilizing data from Visual Fox Pro (VFP), whereas improvements to the data scripts are being made in R by WPacFIN. As PIFSC moves to transition from VFP to MySQL, all data streams should be derived from the same script.

b. Hawaii Non-Commercial Module

Thomas Remington, Lynker, presented background information on non-commercial data already included in the Hawaii annual SAFE report and the potential for developing a new module to be consistent with the development of non-commercial modules for the territorial reports. Currently, there is non-commercial effort data, but no indication of non-commercial catch. Remington asked the Plan Team to endorse a path forward for the development of the Hawaii non-commercial report section.

A Plan Team member wondered why HMRFS data have not been used in the past, and the Plan Team agreed that this data would be useful to include. The Plan Team determined that a simple module would be more favorable over something complex since the available data will need to be further evaluated.

4. Discussions

The Plan Team held discussions immediately after each agenda item.

5. Public Comment

There were no public comments.

B. Ecosystem Considerations

1. Protected Species

Council staff provided updates to the archipelagic protected species sections of the 2021 annual SAFE reports. Each section describes protected species considerations corresponding to the fisheries described in the FEPs as well as Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) issues surrounding them. Most of these fisheries use selective gears that do not have a lot of bycatch or protected species concerns, and most do not have abundant data on protected species interactions. Because there are not a lot of data, proxy indicators (i.e., areas, gear, effort, etc.) are used to track characteristics that might impact how the fishery interacts with protected species. Regarding updates to the sections, there is no new information for bottomfish ESA consultations for oceanic whitetip shark and giant manta ray as the consultations are still ongoing. Updates to identification of emerging issues for insular false killer whale recovery plan publication and pending coral critical habitat designation are past due and may kick off new ESA consultations. Research needs were not updated this year.

2. Climate, Ecosystem, and Biological Sections

a. Environmental and Climate Variables

Thomas Oliver, PIFSC ESD, presented updates to the climate and oceanic indicators sections of the 2021 archipelagic annual SAFE reports authored by Melanie Abecassis, NOAA Coast Watch Program, and Phoebe Woodworth-Jefcoats, PIFSC Ecosystem Sciences Division (ESD). Oliver discussed that indicators are specific, well-defined, and measurable variables that have been proven to reflect the status of some component of the ecosystem. The presentation aimed to aid moving from observations and correlations to understanding the specific nature of interactions and developing capabilities to predict future changes of importance in developing, evaluating, and adapting ecosystem-fishery plans in the Western Pacific Region. A suite of climate and ocean indicators were discussed in relation to the basin and island scale. The basin scale included: Atmospheric Concentration of Carbon Dioxide, Oceanic pH at Station ALOHA, Oceanic Niño Index, Pacific Decadal Oscillation, and Tropical Cyclones. The island scale included: Sea Surface Temperature, Coral Thermal Bleaching Exposure, Ocean Color – Chlorophyll-A Rainfall, and Sea Level/Sea Surface Height.

A Plan Team member asked if American Samoa rainfall was a negative anomaly in the previous year despite evidence that La Niña conditions are associated with higher rainfall in American Samoa. Oliver clarified that these data are from a globally gridded model, so there may be different nuances from local weather gauges and La Niña impacts can be very variable across regions. The recent La Niña appeared to be mild relative to previous events. The Plan Team noted they are looking for concerning trends in the data to focus as a way to better interpret impacts to fisheries, but 2021 was mainly an "update year" for this model relative to the more extreme conditions in recent years.

b. Online SAFE Portal Updates

Thomas Remington, Lynker, provided an update on improvements completed for the Council's online portal for the annual SAFE reports, focusing on the incorporation of climate and oceanic indicator information for the archipelagic reports. Remington asked the Plan Team to endorse the publication of the section on the online portal and sought direction on subsequent improvement projects for the portal, which could include incorporating socioeconomic information and/or generating pages to which protected species information may be added.

Oliver suggested pulling fishery performance data to be able to pair it with the environmental data to greatly facilitate analyses where environmental data influences fishery performance. Remington then indicated that climate and oceanic indicators was the first attempt at incorporating ecosystem considerations. Considering traffic on the online portal can be tracked, Plan Team members indicated that would like to see how many users are downloading information from the portal. Remington confirmed that some tracking information is available. Plan Team members generally endorsed the climate indicators portal and a socioeconomic section to be developed for next year.

c. Life History and Length-Derived Variables

Joseph O'Malley, PIFSC Life History Program, presented updates to the life history and length-derived variables sections of the 2021 annual SAFE reports. Improvements to the sections were limited to incorporating newly available age, growth, maturity, and natural mortality information for *Variola louti* in Guam, but there are several ongoing research projects under the Life History Program, including age and reproduction research for *E. coruscans* in Hawaii, growth for *P. filamentosus* in the MHI, L_{50} for *P. auricilla* and *P. flavipinnis* in American Samoa, and for *P. zonatus* and *V. louti* in Guam for *E. coruscans, P. auricilla, P. flavipinnis*, and *P. zonatus* in the CNMI.

d. Biomass Estimates for Coral Reef Ecosystem Components

Nadon provided updates to the coral reef ecosystem parameters sections of the annual SAFE reports. No new surveys occurred in 2020 or 2021 due to the COVID-19 pandemic, and the numbers presented in these sections for the 2021 annual SAFE reports are identical to the 2019 reports. A research cruise is ongoing in the Mariana Archipelago.

Under this agenda item, Jones fostered Plan Team discussion regarding the management of ecosystem component species (ECS). At the April 2021 APT meeting, there was a work item for the Plan Team to provide clarification on what it means and how to manage ECS. The Plan Team's habitat working group also endorsed further discussion on this point. The Lynker report to improve the EFH sections of the annual SAFE reports mostly focused on nearshore species and environments that are now included under ECS considerations, and the report content was not as relevant for remaining MUS (e.g., bottomfish). There are a lot of data and a lot of important species that are ECS, but it is not clear what it means to manage ECS nor what the consequences are for low population values for ECS (i.e., are there any ECS thresholds for which management actions should be taken). Portions of the ongoing process to revise the BMUS lists feed into this discussion, as there may be enhanced collaboration with territories on ECS management as they develop their territorial FMPs. Ultimately, ECS should be managed under the relevant management plan, which, in this case, would be the territorial FMPs.

A Plan Team member noted that for bottomfish, there is a nice split between shallow and deep species, but elsewhere, there seems to be overlap between fish species. The Plan Team needs to consider what potential consequences for local monitoring are. Jones added that if we see a decline in biomass for an ECS, there needs to be a protocol. There may not be a clear answer, which is becoming evident in current discussions for BMUS revisions. This may need to be addressed on a case by case basis as the Plan Team uncovers more context during the BMUS revision amendment process. Council staff added that if reef fisheries are 90% in territorial waters, those species will always be components of the FEPs as ECS. The important part to discuss is establishing collaborative management with the territories. The Plan Team recommended that reef BMUS species get designated as ECS but get picked up by the territorial FMP to satisfy criteria 10 in NS1. The Plan Team needs to establish a collaborative framework. Other confounding factors come into play when pelagics and forage fish are discussed as predators and prey. Modeling efforts and EBFM frameworks that allow for management of the predator and prey fish species would likely be the next steps. For reef fish, the responsibilities should fall predominantly on local agencies. If fishing mortality in territorial waters leads to

declines while the territorial FMPs are active, territorial efforts are a good first step. It is important to define what occurs in territorial versus federal waters. If an ECS is determined to be declining, one option would be to look at the issue from an EBFM perspective, including initiating more discussion with local agencies. Aside from territorial FMPs, the Plan Team can support the initiation of the EBFM framework and begin operationalizing this concept. The Plan Team could offer efforts that put in management measures for anything that impacts ECS outside of three miles, but the ECS must always be treated as components of the federal ecosystem even in the absence of management authority. This can be part of the EBFM workshop in the future – how to deal with ECS and integrating local and federal management. A Plan Team member indicated the challenge for EBFM is to take complementary datasets and approaches to contribute to the whole. The notion of federal responsibility for MUS/ECS and territorial components should be explained at such a workshop.

3. Habitat

Michael Parke, PIFSC ESD, provided updates to the essential fish habitat (EFH) sections of the 2021 archipelagic annual SAFE reports. Similar to 2020, there were no new Rapid Assessment and Monitoring Program (RAMP) surveys conducted in 2021 to allow for updates of the benthic monitoring data presented in the sections. A Mariana Archipelago cruise departed April 2022 and a bigeye tuna cruise is departing soon. Mahimahi and uku gut content analyses continue despite difficulties getting samples and getting into the lab. The ongoing surface slick work continues. For recent field work, early results indicate implications for early life stage EFH and HAPC and desktop analyses are incorporating habitat more often. Bottomfish cooperative fishing and sampling work was completed in 2021, expanded from 500 to 750 survey grids to investigate optimal sampling intensity with respect to specific precision targets. The 2021 effort also expanded detailed temperature/depth sampling by incorporating temperature/depth recorders on hook-and-line sampling gear in addition to previously instrumented camera gear. This environmental information can be used to inform and refine existing Deep 7 EFH. O'Malley published a comprehensive review of BMUS life history and habitat requirements; there are little new relevant data to affect EFH definitions. Parke indicated that for all fisheries and EFH refinements it is essential to determine more applicable indicators for interactions between benthos, water column, and fishes. Major habitat work for nearshore habitats for MUS has been funded by PIRO, but this research is focused only on mahimahi and uku, which have both been found to consume reef larvae and other food originating from shallow reef sources.

Remington described the Plan Team's habitat working group meeting held in May 2021 to discuss improvements to the habitat modules of the annual SAFE reports. Last year, the Plan team recommended a working group form to meet and try to revise the habitat modules. Future EFH refinements will depend on a number of data collections including distribution of early life history stages (eggs and larvae) of MUS by habitat, clear identification of juvenile habitat (including physical, chemical, and biological features that determine suitable juvenile habitat), food habits (feeding depth, major prey species etc.), determination of habitat-related densities for all MUS life history stages, and growth, reproduction, and survival rates for MUS within habitats. New habitat related research to collect these data is limited. The Lynker report contracted by the Council made many recommendations for habitat module improvements, but they were mostly focused on coral reef habitats whose link to most MUS is yet to be established. Modeling efforts by Franklin and Tanaka are attempting to determine the environmental drivers

that affect presence/absence and habitat-related densities of Uku, but are limited by the lack of spatially-randomized & effort-standardized *in situ* observations across relevant life stages (e.g., larvae, juvenile, and adult).

4. Socioeconomics

Minling Pan, PIFSC SEES Program, presented updates to the archipelagic socioeconomic sections of the 2021 annual SAFE reports, including fishing trip costs, estimated revenue, and pounds sold for each island area. Pan noted specific metrics related to each island area and highlighted the increased fuel prices, the decreasing unemployment rate in HI, and the revenue breakdowns for the MUS. Total commercial landings and revenue increased from 2020 to 2021 for Hawaii and CNMI and decreased for Guam and American Samoa.

Jones prompted Plan Team discussion on whether a special section detailing the impacts of the COVID-19 pandemic on the Western Pacific Region's fisheries should again be included in the 2021 annual SAFE reports, as was done for the 2020 reports. A Plan Team member indicated that fishing costs, including fuel, consistently move up and down, but there are more impacts in 2021 as a result of the COVID-19 pandemic. Looking at 2021 from an economics perspective, the Plan Team noted the impacts and agreed this is valuable information that can be included in the SAFE reports. Not only are funds an issue, but data acquisition and the recovery of the fishing communities over the past two years should be included.

Kleiber provided additional information regarding a feedback survey on the utility of the socioeconomics module in the annual SAFE reports. The socioeconomic modules appeared to support a diverse suite of fishery management documents. Others cited the modules as useful for educational purposes and to support proposal justifications. Broadly speaking, there was interest in updated information on the economic impacts of regional commercial and noncommercial fisheries and how they relate to the broader economy, culture, and community dependence on fisheries. In considering anticipated needs, respondents felt Environmental Justice and shifting demographics were two key elements that felt warranted additional treatment in future socioeconomic modules. The most common responses for other suggested improvements relate to the temporal scale of analyses (extending beyond the current 10-year time series presented in the reports) and the desire for an online data analytics tool that would allow for more user-friendly access to the data and figures in the socioeconomic modules. An additional request was to include a management/policy review into the workflow to ensure the fisheries management information included in the modules is current and accurate.

Kleiber encouraged the Plan Team to review at the Fishery Ecosystem Analysis Tool (FEAT) for the Pacific Islands to see what other information is available. Then, Council staff offered that the Social Science Planning Committee made recommendations on this topic to endorse the proposed changes.

5. Marine Planning

Remington presented updates for the marine planning sections of the 2021 annual SAFE reports, including information on fishing and non-fishing activities that have the potential to impact fisheries in each island area. There were scarce updates across the region, though there has been

some progress to alternative energy facilities in Hawaii and military activities in the Mariana Archipelago. Remington asked the Plan Team to discuss whether the marine planning sections could be better maintained through a Plan Team author, if the Plan Team is satisfied with the report module under Council authorship, and if the Plan Team would like to see other changes to the module, as it would be possible to remove information that is updated annually in the sections until the APT finds sufficient reason to conduct thorough updates. Plan Team members indicated that the section is useful and may become more important in the future due to concerns with environmental justice and aquaculture. Therefore, the Plan Team endorsed Council staff continuing to update the module going forward.

6. Discussions

The Plan Team held discussions immediately after each agenda item.

7. Public Comment

Craig Severance recommended that Kleiber provide her presentation on National Standard mandates for data collection to the SSC at its upcoming meeting in June. It is necessary to understand the cultural value of fish in a ceremonial context to perpetuate cultural identity. Also, if only landings are tracked, there is no indication of what happens post-harvest. One suggestion would be to conduct interviews at community events to ask where the fish came from and generate a frequency distribution. Social scientists need to take caution with the terms "barter" and "customary exchange" since they are distinct.

Jones stated that the Plan Team is recommending establishing a team to better determine definition of commercial and non-commercial fishing as fishery managers are attempting to better understand the available data and post-harvest fish flow. Severance responded that a workshop could be useful to have culturally-based operating definitions of sustenance and subsistence fishing.

C. Administrative Reports

1. Number of Federal Permits and Logbook Reports

Brett Schumacher, PIRO Sustainable Fisheries Division (SFD), presented updates on the 2021 annual SAFE report section that provides the number of federal permit holders and associated federal logbook catch and effort reports for archipelagic fisheries in each of the island areas of the Western Pacific Region as authored by Keith Kamikawa, PIRO SFD. Schumacher also presented a list of regulatory and administrative actions taken by NMFS in 2021 relevant to archipelagic fisheries in each of the island areas of the Western Pacific Region.

The Plan Team discussed the differences in the number of bottomfish permits and the number of associated reports. Schumacher indicated that anyone with a bottomfish permit is required to report, however this is difficult to enforce. The reporting is used as a comparison for commercial catches on the main Hawaiian Islands and is cross-referenced when needed. The Plan Team discussed what percentage of marketed bottomfish is caught by non-commercial fishers. DAR staff noted that their team follows up on reports and that the dealers should be checking for valid

CMLs. Schumacher offered that the PIFSC SAP conducts assessments for the Deep 7 species where they do not use non-commercial data but rather use a correction on a species-by-species basis to estimate the proportion of commercial catch to non-commercial catch to evaluate total catch.

2. Regulatory Actions

The APT received the presentation for Regulatory Actions under the preceding agenda item (4.C.1).

3. Discussions

The Plan Team held discussions immediately after each agenda item.

4. Public Comment

There were no public comments.

5. Archipelagic Plan Team Action Items

A. Aquaculture Management Framework Alternatives (Action Item)

Council staff provided updates on the aquaculture management framework, including a description of the Programmatic Environmental Impact Statement (PEIS) that was recently released for public review. Within the presentation, Council staff outlined three alternatives for the aquaculture management framework that include no action, a limited aquaculture management program, and an expanded aquaculture management program. The no action alternative would result in no aquaculture program. The limited program would offer a "one stop shop" for permitting, recordkeeping, and reporting. It would include a commercial permit valid for 10 years and a research permit valid for 3 years. Gear types would be limited and target species would only be the MUS and ECS. The expanded program would also offer a "one stop shop" for permitting, recordkeeping, and reporting. However, the commercial permit under the expanded program would be valid for 20 years and the research permit would be valid for 6 years. More gear types would be allowed and target species would be any native species. At this time, the Plan Team has a chance to provide comments prior to the Council taking final action.

Council staff indicated that the proposed permitting is for federal waters and modeled off the Gulf Council's FMP. Within State waters, DAR has its own permitting process and the territories would also need their own permitting process. Jones asked about the position of SFD on permitting aquaculture and collection associated data. PIRO SFD staff noted that Tori Spence is working on the PEIS, and the Regional Office is supportive of the effort. They are currently reviewing the different feedback that came in during the public comment period, but in general, it is a NMFS priority and SFD is supportive.

The Plan Team then shifted discussion to the three different alternatives, but with a focus on the limited and expanded programs (i.e., Alternatives 2 and 3). After noting the limited program includes a commercial permit of 10 years, a Plan Team member noted that economists have stated that 20 years is a minimum for the type of returns that you need for the scale of investments required. Additionally, technology that is being used to push aquaculture forward

worldwide is expanding or improving to make it more feasible for open ocean areas. The reality, from the NOAA perspective, is that they are in favor of industrializing aquaculture as soon as possible. How appropriate some of that is in island nations has not yet been discussed in extensive detail.

The next major point of discussion was tied to the involvement of MUS and ECS only (Alternative 2), or any native species (Alternative 3). A Plan Team member stated that it may be best to limit to taxa that have little chance to become invasive, so native is reasonable, especially given they are tied to the most expansive alternative. Other Plan Team members, including those from each island area, supported this recommendation for Alternative 3, but expressed some concern about the 20 year permit. Council staff stated that in the permit application process, there will need to be a decommission plan, insurance bond, and impact analysis. The EIS gives some info on gear types, but if the Council goes with something else, an EA may also be needed. Additionally, this will also still have to go through the NEPA process to show what they will do and what species will be used. A Plan Team member added that monitoring programs should be in place to ensure cumulative impacts are considered (and ones from multiple operations) as ongoing parts of the permit.

B. Alternatives for NWHI Fishing Regulations (Action Item)

Council staff provided updates on the status of fishing regulations in the Northwest Hawaiian Islands (NWHI) associated with the designation of portions of the Papahānaumokuākea Marine National Monument as a national marine sanctuary. The Council then agreed to develop fishing regulations for the proposed NWHI sanctuary and directed staff to respond to the Office of National Marine Sanctuaries 304(a)(5) package request with preliminarily preferred options for permitting and reporting requirements for commercial (outside current monument boundaries), non-commercial, Native Hawaiian practices, and research fishing in the sanctuary boundaries. Therefore, the APT is providing guidance for initial action by the Council in June. Final action will likely be in December 2022 or March 2023, depending on what National Marine Sanctuaries (NMS) has available (EIS started in the fall - and sanctuary boundaries will drive what the Council's decision will be).

A Plan Team member noted that knowing the sanctuary boundaries relative to the monument is important despite not yet being established. If the sanctuary and monument are the same, then the monument proclamation will constrain available management. SFD will have a roll, as will the sanctuary office, but it would be more a complicated rulemaking than normal. SFD will have meetings with NMS to get an update, but there are still lots of unknowns at this point. Council staff added that the whole process will be a monument management plan, Council regulations, and sanctuary management plan rolled into one. Regarding the timing of finalizing the boundaries, it is dependent on when the EIS is developed. Scoping sessions have already begun, but due to requests of an expansion past the monument, more information is still being considered.

A Plan Team member asked about the addition of Native Hawaiian practices to the definition of non-commercial fishing and why this specificity was incorporated in addition to definitions for indigenous fishing. Council staff replied that this is because the expansion area allows for these

practices, so if it is fishing related, the Council will want to ensure it is covered under the fishing permit.

Ultimately, the Plan Team was not comfortable making a recommendation on whether to move forward with the regulations because the management plans are still undefined. Jones added that the Plan Team shall indicate support for commercial and non-commercial regulations, but only if the boundary is well defined. If the boundary is outside the current monument, then the Plan Team could make a motion to implement draft regulations.

6. Cluster Analysis for the CNMI BMUS Revision

Robert Ahrens, PIFSC FRMD, presented the results of a hierarchical cluster analysis performed using boat-based creel survey data from the CNMI to support decisions regarding the forthcoming BMUS list revision amendment. Results of hierarchical clustering of creel interviews for boat-based operations in CNMI were presented. The dendrograms were intended to delineate species aggregations that are potentially experiencing similar fishing pressure to facilitate, when used in conjunction with life history information, the determination of species complexes for FMPs and FEPs. Jones added that this is the same analysis that was applied to American Samoa and Guam and was presented to the Plan Team at the intersessional meeting earlier this year. The Plan Team endorsed the analysis for the proposed BMUS lists.

This list of species generated as a result of the cluster analysis is the exact same as for Guam. The species under the FEP would be BMUS, and the others would be ECS under the FEP but managed through the territorial FMP.

Regarding the dendrograms, Ahrens mentioned the stability for the outward groups. A Plan Team member asked about the inward groups, as some dendrograms had outgroups matching up in recent data but with the center groups being more complex. Ahrens replied that the moving around of the lines can be an artifact, as it is difficult to sort the figures. Many are still associated with the same species. Only common species lists can be used, so some species differences do not show up in various periods for “tanglegrams” due to the 5% filter (i.e., fish must be present a certain amount of time). Additionally, disappearance of a species is not necessarily something to be concerned about because species are often reported together. Ultimately, the Plan Team endorsed the new list for CNMI as it matches with the list from Guam.

7. Status Report on the Multifaceted Approach to Territorial Data Collection

The Plan Team did not receive a presentation under this agenda item.

8. Main Hawaiian Island Uku Essential Fish Habitat Modeling

A. Level 1 Static Modeling Approach

Erik Franklin, Hawaii Institute of Marine Biology at the University of Hawaii, presented recently completed work on a static modeling approach for Level 1 uku EFH in the main Hawaiian Islands. These static approaches used species distribution models to identify and predict suitable

habitats for sub-adult and adult uku. For shallow models, aspect, depth, and wave heights were strong predictors of uku occurrence, while depth was the predominant habitat variable for the deep model.

Group discussion was held after completion of the subsequent level 2 dynamic model presentation.

B. Level 2 Dynamic Modeling Approach

Kisei Tanaka, PIFSC ESD, presented ongoing work on a dynamic modeling approach for Level 2 uku EFH in the main Hawaiian Islands. To help elucidate uku EFH, this study considered various oceanographic and topographic characteristics as predictive variables and identified low but steady uku densities in shallow main Hawaiian Island waters. A previous Plan Team habitat working group initiated this effort, which could be used to inform the EFH modules of the annual SAFE reports going forward.

In regard to questions surrounding temporal variability in the models, Tanaka indicated that the diver survey is not covering the seasonality of the species because they sample one to two days per year every three years on an island. Franklin added that, for the static model, they were mostly seeing geomorphological covariates because of the lack of good additional data on seasonality. For level 1, Franklin is taking 10 years of data to see where they occur to predict something about occurrence (i.e., no fluctuations). The Plan Team added that temporal variability is something to keep in mind when trying to describe shifts in distribution, as it could be a big difference in early July and late August.

A Plan Team member noted that, regarding spawning and distribution, the biggest EFH for uku is the Penguin Banks spawning aggregation area (where spawning occurs in the summer). Due to the lack of temporal data and diving at the bank (and camera survey infrequency), the Plan Team cannot capture any increase of uku on Penguin Bank but can still study the importance of that area using FRS data (i.e., CPUE). Additionally, the Plan Team noted that looking at the evolution of catch rate from month to month on Penguin Banks may suggest this is a special spawning aggregation area. Further validation could come from qualitative fisher observations. Franklin noted that the map he generated does not light up Penguin Banks, but a lot of core habitat areas are in the area.

Regarding if this feedback could be used to inform EFH modules, the Plan Team indicated that both the static and dynamic approaches are useful and could be taken to a Level 3 EFH at some point. As of now, the statements of uku densities in shallow waters being very low are unlikely since uku are caught all the time; perhaps the survey just does not capture them well. However, there was Plan Team consensus that the modeling approaches were acceptable. Overall, the Plan Team had a discussion about the utility of models while acknowledging they are not perfect as a result of data availability. In the future, if better data is available the models can and will be updated. A Plan Team member stated that it would be beneficial to compare the size frequency breakdown of the diver and camera data with the fisheries data to see if it is consistent and to determine if there are any behavioral biases within the data sets. Going forward, the Plan Team suggested that the data continue to be collected and the surveys be improved to increase the quality of the model outputs.

Ultimately, the Plan Team recommended endorsing both models. The modules should include qualitative information to supplement the model results. PIFSC and the Council should work towards improving the data inputs (i.e., seasonal pattern to distribution and spawning aggregation) and include commercial fishery data and size frequency data in future work.

9. Discussions

The Plan Team held discussions immediately after each agenda item.

10. Public Comment

Nathan Van Ee, CNMI DFW, commented that spearfishers observe uku in shallow waters frequently. He asked if the general consensus was that they were underrepresented in the data or if they were attracted to the survey methods and were overestimated.

Tanaka stated that the data set is likely underestimating. There are many reasons, but it is probably related to survey timing not corresponding with uku ecology in shallow waters. A few days a year is not enough to capture true densities.

11. Fishery Ecosystem Plan Team Recommendations

Regarding American Samoa and Guam BMUS catch, the APT

1. Recommends the Council request PIFSC, DAWR, DMWR, and the Guam and American Samoa Advisory Panels review the reported increase and decrease, respectively, of total estimated BMUS landings in 2021 to determine whether the values are statistical and/or operational anomalies associated with data collection or if the values are indicative of the actual 2021 BMUS fishery performance.

Regarding the bycatch reporting improvements in the annual SAFE reports, the APT

2. Endorses the current bycatch tables, noting that fisher-reported data may be biased downward, and recommends adding a separate table to describe the type of bycatch (e.g., a top-10 ranked species list and/or top 90 percentile) that comprises the number released for non-target species in the archipelagic bycatch tables.
3. Forms a working group comprised of Keith Bigelow, Brad Gough, Matt Seeley, Brian Ishida, and Thomas Remington to address the development of the top-10 ranked species and/or top 90 percentile list approach and the issue of reporting non-target species bycatch for MUS fisheries that are targeted by multiple gear types (e.g., uku in the main Hawaiian Islands).

Regarding the territorial non-commercial fisheries module to be included in the annual SAFE reports, the APT

4. Recommend the following members: Marc Nadon, Danika Kleiber, Ashley Tomita, and Keith Bigelow, finalize the configuration and content for the territorial non-commercial modules, based on the commercial catch summarization procedure presented to the APT, at the upcoming intersessional meeting for incorporation in the 2022 annual SAFE reports.

5. Recommend the following members: Bryan Ishida and Paul Murakawa, and Thomas Remington work with Hongguang Ma and Thomas Ogawa in the development of the Hawaii non-commercial module utilizing a similar approach as the NOAA Saltwater Recreational Fisheries Snapshot for Western Pacific Non-Commercial Fisheries.

Regarding the estimation of total catch, the APT

6. Recommends the Council request PIFSC to continue the development of scripts that would enable consistency between the catch time series used in stock assessment and the annual SAFE reports to improve the monitoring of catch relative to implemented Annual Catch Limits.

Regarding the management of ecosystem component species, the APT

7. Recommends the PIFSC-ESD coordinate with the Council in the planning of the EBFM Workshop, incorporating the management of ECS as a thematic area. The APT notes that providing separate data streams together to inform the status of ECS in the context of EBFM would be useful to support the territorial management process. Further, the APT recommends PIFSC-ESD invite staff from the Office of Sustainable Fisheries to provide guidance on the NS1 provision for designating and managing ECS as part of the workshop in combination with provisions of NS1 criteria 10.

Regarding the aquaculture management framework alternatives, the APT

8. Endorses Alternative 3, which includes an expanded scope for the management framework, but notes concerns regarding the proposed 20-year duration for issued permits, non-native species, and ensuring there are appropriate monitoring plans implemented. However, the APT notes that at least a portion of these appropriate monitoring plans will be implicit through the permitting process.

Regarding the alternatives for the NWHI fishing regulations, the APT

9. Defers the development of recommendations until the Office of National Marine Sanctuaries provides explicit boundaries for the proposed sanctuary relative to the Papahānaumokuākea Marine National Monument. When the sanctuary boundaries are further defined, the APT will revisit this topic at a future meeting.

Regarding the CNMI BMUS hierarchical cluster analysis, the APT

10. Recommends the Council endorse the proposed BMUS list for CNMI and include this BMUS list for consideration by the previously established APT MSA subgroup in the development of their MSA requirement sections for the FEP amendment associated with the BMUS revisions.

Federal FEP	**Federal ECS/Territorial FMP**
Aphareus rutilans	*Caranx ignobilis*
Etelis bowenii	*Caranx lugubris*
Etelis carbunculus	*Variola louti*
Etelis coruscans	*Lethrinus rubrioperculatus*
Pristipomoides argyrogrammicus	*Lutjanus kasmira*
Pristipomoides auricilla	
Pristipomoides filamentosus	
Pristipomoides flavipinnis	
Pristipomoides seiboldii	
Pristipomoides zonatus	

Regarding the main Hawaiian Island Uku Essential Fish Habitat modeling approaches, the APT

11. Recommends the Council endorse both modeling approaches to formulate the habitat module of the Annual SAFE report noting concerns regarding the limitations of the data inputs. The modules should include qualitative information to supplement the model results. PIFSC and Council should work towards improving the data inputs (i.e., seasonal pattern to distribution and spawning aggregation) and include commercial fishery data and size frequency data in future EFH modeling work.

APT Work Item Recommendations

Regarding Fishery Performance and Ecosystem Considerations chapters of the annual SAFE reports, the APT requests for members to follow the following best practices:

- Ensure data points with confidential data not be included in graphical depictions of the data;
- Ensure proper axis labels are added to figures to avoid confusion;
- Present both tables and figures of the relevant data from recent years (i.e., recent 10 years).

Regarding the Hawaii fishery performance module in the annual SAFE report, the APT recommends separating the fishery statistics for: Kona crab and deepwater shrimp; and lobsters monitored as ECS (e.g., red and green spiny lobsters).

Regarding the non-disclosure of commercial fishery data from Guam, the APT recommends that PIFSC work with DAWR and Council staff to encourage participation in the commercial receipt book program from the vendors currently participating.

Regarding the online SAFE report portal, the APT endorses the addition of the archipelagic climate and oceanic indicators section to online Annual SAFE report portal and recommends that the next improvement effort should include incorporating the socio-economic module into the online portal.

Regarding the socio-economic module of the annual SAFE reports, the APT endorses recommended module improvements stemming from PIFSC survey feedback. Further, the pertinent APT members shall:

- Generate another special COVID sections that highlight the impacts of the pandemic associated with socioeconomic parameters and incorporate the sections into the 2021 annual SAFE reports.
- Include Environmental Justice information as a subsection of the socioeconomic module in subsequent iterations of the annual SAFE reports.
- Add complete and/or longer time series of socioeconomic data to the Council's online SAFE report portal after the incorporation of the module is complete.
- Facilitate additional feedback from the APT on the utility of the socioeconomic module after review of the FEAT tool.
- Present NS1, 2, 4, 8-mandated socioeconomic data needs to the Council's SSC.
- Evaluate MUS fisheries' post-harvest distribution chain, taking caution to distinguish between "barter" and "customary exchange" in interpreting the available information.

Regarding the marine planning module of the annual SAFE reports, the APT endorses Council staff Zach Yamada as the section author in charge of updating the modules in future report cycles.

12. Other Business

There was no other business.

PAU