WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Report of the Archipelagic Fishery Ecosystem Plan Team Meeting

April 19-20, 2023
Council Office, Honolulu, Hawaii

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 Marlowe Sabater, Felipe Carvalho, Jenny Suter, Robert Ahrens, Keith Bigelow, Danika Kleiber, Marc Nadon, Thomas Oliver, Minling Pan, Kisei Tanaka, Frank Parrish, Brett Schumacher, Bryan Ishida, Brent Tibbatts, Jason Biggs, Tye Kindinger, Angela Dela Cruz, Irene Kelly, Sean Hanser, and Domingo Ochavillo. Not present were Ian Bertram, Joseph O'Malley, and Paul Murakawa. Eva Schemmel sat in for O'Malley on Day 1 of the meeting.

2. Approval of Draft Agenda

The draft agenda for the April 2023 Plan Team meeting was approved by consensus.

3. Report on Previous Plan Team Recommendations and Council Actions

Western Pacific Regional Fishery Management Council (Council) staff presented progress regarding recommendations from the previous Plan Team meetings held in April 2022 and January 2023. Many of these recommendations led to improvements for the annual Stock Assessment and Fishery Evaluation (SAFE) reports, as well as to several action items presented at this April 2023 meeting.

4. 2022 Annual Stock Assessment and Fishery Evaluation (SAFE) Report

A. Fishery Performance

1. Archipelagic Fisheries Modules

a. American Samoa

Domingo Ochavillo, American Samoa Department of Marine and Wildlife Resources (DMWR), presented updates for American Samoa archipelagic fisheries in 2022 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 2020 to 2022, possibly due to a combination of impacts from COVID-19, the lack of fuel subsidies, and the declining bottomfish fishery. Landings of bottomfish management unit species (BMUS) in American Samoa have been variable over time, potentially attributable to natural disasters and the government fuel subsidy. Boat-based BMUS landings continued to decline in 2022 from a decadal high in 2014; however, shore-based BMUS landings were the second highest in the past three decades of recorded data. Commercial sales of BMUS were not disclosed in 2022 related to data confidentiality rules. Regarding ecosystem component species (ECS), the top ten landed species derived from the commercial receipt program were all different from species estimated from the boat-based creel survey expansion and incorrectly included some imported species (e.g., tilapia and snubnose pompano) that are not classified as ECS in the American Samoa Archipelago Fishery Ecosystem Plan (American

Samoa FEP). Catch per unit effort (CPUE) remains variable on an interannual basis but has generally been declining in recent decades, with a small downtick in 2022 for all bottomfish species but slight uptick for BMUS. With respect to fishery effort, the number of bottomfish fishing trips continues to decline from a 10-year peak starting in 2014.

The Plan Team addressed best practices for developing and presenting fishery performance summary figures and tables for the annual SAFE reports to foster consistency. For non-disclosed data (i.e., due to data confidentiality rules), data points should be omitted instead of portrayed as a zero. Data units should be clearly denoted on the y-axis, and the legend should clearly indicate the difference between presented data series. Another Plan Team member suggested that the standard deviation also be included in future data visualizations.

Ochavillo requested a review and validation of the 2022 estimated shore-based BMUS catch, as it was higher than the estimated boat-based BMUS catch and was the second highest estimated value since the inception of the time series in 1986. This could be a statistical issue or reflective of more residents fishing from shore during COVID-19 in the territory. Ochavilo also addressed the inclusion of tilapia and snubnose pompano in the top ten commercial ECS, which are likely included on commercial receipts because they are imported as frozen seafood. These species are not ECS and should be removed from the report. Further, the Plan Team also discussed the use of functional groups to better inform monitoring and management of ECS.

A Plan Team member noted that, as a result of the new stock assessment for American Samoa BMUS, fishery managers may begin managing these fisheries at the species level. Additionally, many trends in American Samoa BMUS catch per unit effort (CPUE) become clearer at the species level (e.g., *Lutjanus kasmira* has been driving the downward trend in total estimated catch since around the year 2000). While CPUE for the BMUS complex as a whole had historically been relatively consistent, there was a notable drop in 2016. The member suggested moving toward species-based monitoring and reporting, and the Plan Team generally agreed that changes will need to be made in the American Samoa fishery performance module for the 2023 report to monitor individual species as well as the complex. This is especially pertinent because ACLs will likely be specified for each species.

There was some additional discussion regarding the metrics by which CPUE should be reported (i.e., lb/trip vs. lb/hour). The PIFSC Stock Assessment Program (SAP) recently discovered an issue in which CPUE and the effort units were not the same when catch data were expanded; everything was recorded in lb/trip before 2000 and in lb/hour thereafter. Additionally, effort was being recorded in number of trips whereas CPUE was in number of hours. Any shifts in the trend of the length of fishing trips would therefore cause a change in CPUE, such as in the period from 2008 to 2012 with many relatively long fishing trips. A member noted that the annual SAFE report should indicate this context for the noted time period, and the Plan Team agreed that these metrics will need to be evaluated when transitioning to species-based reporting.

A Plan Team member asked what it means that there has been a decline in the BMUS CPUE in recent years, and if this could be reflective of fishing methods becoming ineffective or a shift in the fishery distribution or approach. Another member responded that the ratio estimator for CPUE has not been standardized for any of those changes in spatial distribution of fishing effort

or fleet contribution, so the raw data should not be interpreted as a meaningful trend. CPUE gets standardized during the stock assessment process, which indicates population patterns. Jones added the recent WPSAR of the BMUS stock assessment provided a more detailed view of trends, but the Plan Team is concerned with anomalies in the data or if there are any notable changes (e.g., in the BMUS catch or top ten most harvested ECS). A Plan Team member suggested that uncertainty could be included in the presented estimates to better showcase how changes in creel survey estimates have improved over time.

Thomas Remington, Council contractor through Lynker, presented the fishery observations in place of Clayward Tam, Council Advisory Panel (AP) chair. The fisher observations came from two sources: an annual fisher's observation summit hosted by PIFSC and quarterly informal AP meetings hosted by the Council. The American Samoa fisher observation summit was held on February 14, 2023, with eight fishers in attendance. The fishers noted difficulties in fishing deep water due to strong winds and that not many big fish were caught. Onaga and ehu seemed to be the primary catches, though there were concerns about bottomfish and their absence in the markets. Observations from the AP meetings included strong weather preventing fishing, more deep-water species closer to shore, decreased fishing effort due to COVID-19 lockdowns and associated mandates, and continued shark depredation.

A Plan Team member asked if PIFSC or the Council keeps track of who is offering their observations each year to determine if the same people are contributing over time. Ochavillo noted that the bottomfish fishery is in decline with limited participation, possibly to the lowest point in history, so there is not a large diversity of available, active fishers. Another Plan Team member noted that a fisher attending the recent Western Pacific Stock Assessment Review (WPSAR) for the new American Samoa BMUS stock assessment indicated that many bottomfish fishing vessels are out of the water to receive anti-fouling paint but should come back online soon. Plan Team members associated with the PIFSC Social-Ecological and Economic Systems (SEES) Program noted that they would follow up to determine if this information is available.

b. Guam

Brent Tibbatts, Guam Division of Aquatic and Wildlife Resources (DAWR), presented updates for the Guam archipelagic fisheries in 2022 using data recently provided by the PIFSC FRMD. All scheduled surveys were completed in 2022 except for aerial surveys, which have been missing in recent years due to COVID-19 restrictions. A contract to continue these surveys may be obtained in 2023. With respect to military operations, there were 59 Broadcast Notices to Mariners (BNM) in 2022, and there were 126 warnings for area W-517 south of Guam. DAWR is continuing to request the military provide these notices in a more detailed format. Total estimated BMUS catch from creel surveys remained slightly elevated, similar to last year, but commercial data were confidential. Since the ban on SCUBA spearfishing, there has been an increase in BMUS harvest in shallower depths (i.e., from snorkel spearfishing, which is supported by the elevated CPUE for this gear). Additionally, catches for 2022 may be elevated due to more fishers electing to report their catches after realizing the importance of their data in the wake of the recent bottomfish rebuilding plan in the territory; this has resulted in increased cooperation with fishers. In addition, catches of ECS in 2022 seemed anomalously high. Elevated catches of BMUS may also be attributable to the low number of bad weather days on Guam in 2022. Similar to American Samoa, there is little BMUS bycatch on Guam.

The Plan Team discussed the non-disclosure of Guam commercial receipt book data for the fourth consecutive year. A member noted that it would be possible to obtain waivers from the reporting vendors to be able to review their submitted data. Jones added that one of the major Guam vendors has signed a waiver at the Council level to release their data, so this could be a viable option. Tibbatts responded that DAWR could ask the vendors, assuming support from the Plan Team. Another Plan Team member asked if DAWR is undertaking efforts to foster relationships with active vendors to ensure the data can be reported in the future. Tibbatts confirmed that there are ongoing outreach efforts with some vendor cooperation and some vendor mistrust; the issue is further complicated by language barriers and the tendencies of some vendors to report sporadically. Tibbatts added that DAWR is working with the Guam Bureau of Statistics and Planning (BSP) on improving the commercial data stream, and he noted an interesting situation in which a fisher approached Guam BSP to obtain a letter stating that the individual is an official fisher such that they could sell their catch to a hotel; hotels may begin requiring documentation like this when fishers sell direct.

Regarding the noted increase in survey participation, a Plan Team member asked if there are any data on the number of fishers declining the surveys versus accepting them. Tibbatts stated that DAWR collects that metadata even though it is not presented in the annual SAFE reports, as they record "no interview" on the data sheet if the fisher refuses. Tibbatts speculated that the level of survey refusal is lower now (i.e., 2-5%) than 10 years ago when fishers were being told not to allow DAWR to interview them.

A Plan Team member asked if the ban on SCUBA spearfishing shifted any facets of the Guam BMUS fishery. Tibbatts responded that there is ongoing monitoring of areas in which DAWR knows SCUBA spearfishing was popular in the past, and a local marine laboratory is repeating surveys conducted a decade ago to measure any changes. Anecdotally, spearfishers are noting that they have seen species never seen before around Guam, like the bumphead parrotfish.

Remington presented the Guam fishery observations in place of Tam. The Mariana Archipelago fisher observation summit took place on February 7, 2023, and was attended by nine individuals from Guam and 11 from the CNMI. At the summit, fishers noted that bottomfish fishing was relatively normal, but opakapaka were present in lesser numbers. While Guam experienced a strong recruitment of atulai, the mañahak run did not happen in 2022. Issues of shark depredation were also emphasized alongside a noted increase of effort harvesting nearshore fish from Micronesian fishing vessels. Observations reported at the AP meetings included high costs of gas, small runs of fish like mañahak and ti'ao, relatively calm waters, and extreme tides and water temperatures late in the year.

Tibbatts added that the Micronesian fishing vessels harvest reef fish and pelagics commercially up to six days each week, and their activity has been increasing over the last decade. Regarding shark depredation, Tibbatts added that he recently discovered a 1968 pilot study indicating shark depredation at Galvez Bank, meaning that depredation has been a problem for over 50 years.

c. CNMI

Angela Dela Cruz, CNMI Division of Fish and Wildlife (DFW), presented updates for the CNMI archipelagic fisheries in 2022 using data recently provided by the PIFSC FRMD. While the amount of creel survey sampling decreased in 2022, there was an uptick in commercial receipt invoices received. Relatedly, it was noted that many fishers indicate they do not sell to the markets, but then are later observed selling to the markets by DFW staff. There was a slight decrease in BMUS catch in 2022 in both the creel survey and commercial receipt book data streams, but these levels were still generally higher than the decadal average. Atulai dominated ECS landings in both data streams as well. The general increase in ECS catch may be due to DFW having more success in interviewing younger fishers, and the recent peak in the number of fishing vessels was likely due to monetary stipends associated with COVID-19. Despite the slight decrease in BMUS catch, BMUS CPUE did not decrease to the same extent for pounds per trip and even increased when considering pounds per gear hour; this may be due to the relatively decreased fishing effort recorded in 2022. As with American Samoa and Guam, BMUS bycatch in the CNMI is extremely limited, as fishers tend to keep whatever they catch.

Remington presented the CNMI fishery observations in place of Tam. At the Mariana Archipelago fisher observations summit hosted by PIFSC, fishers noted that there were decreased spawning aggregations for onaga, but there large individuals were seen. Observations from the AP meetings included that warmer waters, rough weather, military activities, and high gas prices inhibited fishing; shark depredation issues continue; seabirds have begun attacking lures; good atulai runs and manahak recruitment; and difficulties spearing parrotfish at their normal depths. The Plan Team discussed at what depths the spearfishers are targeting parrotfish, and it was noted that some can go up to 30 m deep.

d. Hawaii

Bryan Ishida, Hawaii Division of Aquatic Resources (HDAR), presented updates for the Hawaii archipelagic fisheries in 2022 using data collected through their Commercial Marine License (CML) program. There was a slight increase in the number of people reporting catch of Deep 7 bottomfish with deep-sea handline relative to historical averages, and catches showed a slight increase relative to historical trends for ehu, kalekale, and gindai with this gear type. The relative proportion of opakapaka and onaga catches relative to the rest of the Deep 7 was lower than the 20-year average. Bycatch remains rare in the Deep 7 fishery due to barotrauma and because there is no minimum size requirement except for the sale of opakapaka and onaga, but fishers will usually retain these small individuals for personal consumption. Trends in the number of licenses, trips, and catch for uku were all down relative to the historical trends despite an increase in CPUE with the inshore handline gear. For the top 10 most harvested coral reef ECS, akule and opelu continue to dominate the catches. With respect to priority ECS identified by HDAR, most species showed decreases compared to historical trends except for kala and ta'ape. Ta'ape can be caught in large numbers with bag netting and can be bought and sold at a relatively low price, making it a good alternative to more expensive species. Catches of kona crab continue to be relatively low coinciding with a low release rate, but CPUE for the fishery had increased relative to historical averages. There are no catch data available to be presented for precious corals due to data confidentiality rules.

The Plan Team discussed the long term bottomfish CPUE trends and the units in which CPUE is reported. Ishida noted that CPUE is reported in pounds per trip, but there may have been a switch to pounds per day at some point in the time series. Remington requested that the units for this parameter be examined so that it is presented appropriately in the annual SAFE report. Ishida noted that the metric may have already been changed and made uniform by the Western Pacific Fisheries Information Network (WPacFIN).

A Plan Team member inquired about the persistent decline in number of trips for ECS such as he'e, kala, nenue, and manini following a peak in 2012. Ishida noted that there was a big uptick in high liners fishing around that time potentially associated with the economic downturn in 2008, with some of the fishers being night-diving generalists that caught whatever species they could. The markets also became more receptive to reef fish; however, many of these high liners have since dropped out of the fisheries as the number of CMLs decreases statewide. There are also likely increased fish sales through informal channels.

The Plan Team also discussed the tendency of fishers to target uku as an alternative to Deep 7. However, Ishida noted that fishers consider uku to be a Deep 7 species, and there have been suggestions to add it to the Deep 7 list so that it would be managed as a component of the fishery as a whole. In years where the Deep 7 ACL had been exceeded, some fishers would shift to uku, and uku is used as a replacement for Deep 7 especially in hotels and restaurants due to its lower price. It has been over a decade since the Deep 7 fishery had to close, but there were several years where closures occurred in sequence. These closures established a stronger market for uku as a substitute.

The Plan Team discussed the Hawaii kona crab fishery and recorded discards of individuals in that fishery associated with State regulations. After implementing rules against the take of females, more releases are recorded. A Plan Team member asked if there is anything known about fishers' behavioral change associated with the regulations, as there are now more individuals being caught than there were previously. Ishida said it is a function of compliance and reporting correctly. Some kona crab catch reports have no releases recorded, which is likely impossible given the regulations prohibiting the take of females and small individuals. Thus, lately, there may simply be more fishers reporting their releases correctly. The Plan Team also discussed a recent study by Poseidon Fisheries Research that determined female discard mortality to be just over 10% and uninjured discard mortality to be less than 5%. A member noted that there are an increasing number of EFH consultations for things like aquaculture operations and coral nurseries where there is potential Kona crab habitat, but there is not good information available to understand potential impacts. The Plan Team agreed that they need to keep a close eye on the fishery.

Remington presented the Hawaii fishery observations in place of Tam. The Hawaii fisher observations summit hosted by PIFSC took place on February 8, 2023, with 18 fishers in attendance from Hawaii, Maui, Oahu, and Kauai. At this meeting, fishers reported consistent bottomfish prices, less pressure on uku due to a strong ahi bite, and strong recruitment of juvenile bottomfish. For ECS, fishers observed an increase in baitfish, perhaps associated with a strong mango and avocado bloom on shore. There were complaints among fishers regarding depredation from sharks and dolphins and high fuel prices.

A Plan Team member who attended the summit and offered some observations as a fisher reported that he shared that juvenile opakapaka began being seen nearshore over sandy bottoms, and another fisher from Kauai reported the same thing. One of the potentially linking characteristics was the presence of fronting sources of freshwater. The member noted that he normally only caught nabeta over these fishing grounds, but after the large windward floods, he began seeing a lot of opakapaka. Several other Plan Team members reported observing the same things, which prompted studies into opakapaka natal origins. In Guam, a new water treatment outflow has allowed kayak fishers to catch small deepwater snappers at 150 ft depth. Other members noted past studies by Weng in 1999 and 2000 that linked akule abundance with rainfall. A Plan Team member asked if there are any linkages between increased baitfish and a good fishing season. Another member responded that batifish have been abundant in recent years with large recruitments, and these phenomena may also be associated with the presence of freshwater.

2. Discussions

Additional Plan Team discussion was held on several items including validating Guam total estimated BMUS catch from 2022, participation in fisher observation data collection, and aligning data expansion methodologies for consistency throughout the region.

Validation of Total Estimated BMUS Catch in Guam for 2022

Jones brought a motion to the Plan Team to support the validation of the most recent total catch estimate from creel survey data for BMUS harvested in Guam over the course of 2022. There was a doubling of effort for bottomfishing, an abundance of good weather days in the past year, and catches have been elevated for the past two years well above the 10-year average. The catch estimate from 2022 exceeds the ACL associated with the recently implemented rebuilding plan, so Jones suggested that WPacFIN work with DAWR to examine the data to ensure their accuracy, especially noting the large jump in total estimated catch from the mid-year expansion to the end-of-year expansion. The representative from DAWR indicated that the raw data sheets from the boat-based surveys have not yet been transmitted to WPacFIN but will be in the near future. There were a couple of interviews where catches were unusually high. DAWR reviewed the interview with the staff that performed it, and there were concerns about the misidentification or miscount of certain species in high liner interviews. It remains possible that the relatively high catch estimate could be reflective of actual catch since fishers began reporting more consistently after learning about the rebuilding plan ACL.

A Plan Team member representing WPacFIN noted that they are in constant communication with territorial agency staff regarding the data, but anomalies cannot be identified until expansion and summarization occurs at this stage in the process. Since data were slightly delayed this year, there was not as much chance for data review between the territorial agencies and WPacFIN. In the future, it would be ideal to provide ample time for data review prior to the Plan Team meeting. A Plan Team member asked the DAWR representative if more fishers were reporting such that it was more likely that individuals with higher catch rates were willing to report, thus changing the mean catch rate. The representative agreed and noted that these sentiments were expressed at AP meetings where Guam high liners are members.

Another Plan Team member noted that PIFSC had been monitoring the mid-year expansion of the BMUS catch data from Guam at their monthly coordination meetings. Total estimated

catches between January and June 2022 was about 15,000 lb and was 22,000 lb by September; however, the full year's estimated catch is now more than double. The member believed that something odd happened from October to December 2022 that should be reviewed, especially considering that this time period is when few bad weather days occurred. The WPacFIN representative added that the expansion process was designed for a full year and may not have been as accurate in producing the mid-year estimate. Another Plan Team member agreed and suggested examining if there are missing strata in the mid-year expansion that had information incorporated into those strata later in the year that contributed to the notable increase.

Jones suggested a working group convene to review the anomalously high value by reviewing the original data sheets. The number should be validated prior to the SSC and Council meetings in June 2023 to allow for appropriate management decisions to be made at that time.

Representation in for Fishers Observations

For the second discussion topic, Danika Kleiber, PIFSC SEES, followed up on a previous question by a Plan Team member regarding the individuals providing the fisher observations and the regularity of their participation in the process. Kleiber reviewed the data from this year as well as 2021 and found that there were over twice as many participants in 2022 (noting the lack of an American Samoa summit in 2021) with 40% of fishers participating in both years. There was a lack of representation of fishers from some islands in the CNMI and Hawaii. Kleiber suggested that, going forward, the Plan Team should think about how to collect social and ecological observations alongside fishery information, collecting demographic information, and including additional contextual questions for fishers. A Plan Team member noted that the suggestions are great, and there have only been a few years of the fisher observations. These observations could become more meaningful after additional years of this effort, and managers should think about how to incorporate Kleiber's suggestions.

Consistency in Data

For the third discussion topic, Jenny Suter, PIFSC, noted that WPacFIN worked with the PIFSC SAP over the course of the year to achieve greater parity between the processes that each group use to summarize data (i.e., R expansion versus Visual FoxPro, or VFP, expansion). This year, a comparison was made between the two processes to better understand the differences and move forward with a single process. Now, WPacFIN is adopting the R scripts that PIFSC SAP uses for providing data for the annual SAFE reports. Suter described this development as a huge improvement for data processes across the region. A Plan Team member asked if the new approach would 'correct' previous catch estimates, and Suter noted that it has potential to change previous estimates and WPacFIN needs ample review time for this reason. The member requested a report describing how the process will change so that managers can better understand the changes and their implications. Jones clarified that the effort is about aligning the data that are used in stock assessments (i.e., which contribute to the specification of ACLs) with data that are used to monitor catch against the ACLs. Jones requested that WPacFIN and the PIFSC SAP confer on this action item to provide a report to the Plan Team at its next meeting.

3. Public Comment

There was no public comment.

B. Ecosystem Considerations

1. Protected Species

Council staff presented updates to the protected species sections of the 2022 archipelagic annual SAFE reports. There is no observer coverage for bottomfish and crustacean fisheries of the region, destructive gear types are prohibited, and there are little to no reported interactions with protected species in these fisheries. Rather, through the annual SAFE reports, the Council monitors effort and gear characteristics as an indicator for change in the potential for protected species interactions in these fisheries. Section updates for the 2022 reports included updates to identification of emerging issues and including information on ESA consultation coverage. Of note, ESA consultations for regional bottomfish fisheries associated with the new listings of oceanic whitetip shark (OWT) and giant manta ray (GMR) were completed in August 2022 in the form of a biological opinion (BiOp). The American Samoa bottomfish fishery was determined not likely to adversely affect these species, while the Hawaii, CNMI, and Guam bottomfish fisheries were determined likely to adversely affect OWT with no jeopardy. Hitting the incidental take statement (ITS) in these fisheries would serve as a consultation reinitiation trigger; the ITS for Hawaii is two interactions over five years, four interactions over five years for the CNMI, and one interaction over five years for Guam. The 2022 BiOp had several Reasonable and Prudent Measures (RPM) associated with Terms and Conditions (T&C) that must be met, including that NMFS must monitor the take of OWT, use appropriate methods to account for unidentified sharks that may have been OWT, and report the previous year's observed and estimated take (i.e., including the methods used to account for unidentified sharks). Council staff ultimately requested that the Plan Team endorse a working group to address the 2022 BiOp RPM T&C.

A Plan Team member commented that they do not see a path forward to account for unidentified sharks or to estimate total shark take based on the current data collection systems. Another Plan Team member clarified that "estimate" might not be synonymous with "expanded" in this scenario since expansions are dangerous to use in conjunction with an ITS; it is more likely that "estimated" is referring to the identification of a whitetip shark while not being sure if it is an OWT. The provided threshold is one interaction, so any method one may apply to determine the proportion of interactions based on historical data will round up to the threshold. The best path forward to meet the T&C may be to encourage improved data collection, though this may mean engaging with the federal logbook program to encourage individuals to record interactions.

Jones noted that the territorial resource management agencies are moving towards mandatory commercial reporting and asked the Plan Team if the T&C may be satisfied by using commercial reports only. The HDAR representative to the Plan Team stated that, for CMLs in Hawaii, bycatch should be reported but many fishers do not report because either they forget, they preferentially use their dealer receipts to fill out their catch reports, or they are overly cautious reporting interactions with a sensitive species. A Plan Team member noted that some of the data for the BiOp came from creel surveys, so there are concerns in establishing the ITS based on one data stream and monitoring it with another. Jones asked the Plan Team if the current data reporting system (i.e., creel surveys in the territories) meets the needs of the T&C, noting that there may be no other way to determine unidentified sharks other than improving species identification. Council staff asked if using the raw creel survey records without any expansions is

the appropriate approach, and if so, if PIRO Sustainable Fisheries Division (SFD) could provide written justification to PIRO Protected Resources Division as to why expansions are not ideal.

Council staff noted that the Council's perspective is to monitor the fisheries to prevent exceedances of the ITS. Encouraging reporting is necessary, and hitting the ITS would only reinitiate consultation. A Plan Team member noted the potential to do an estimate of what interactions would be while considering reporting bias and how one might use this information. However, a physical, observed landing would be a different story. Jones suggested the formation of a working group to review how these provisions should be addressed, as it could be as simple as reporting creel survey data (or CML and HMRFS data in the case of Hawaii) in the annual SAFE reports as is normally done.

2. Climate, Ecosystems and Biological Section

a. Environmental & Climate Variables

Thomas Oliver, PIFSC Ecosystem Sciences Division (ESD), presented updates to the environmental and climate variables sections of the 2022 archipelagic annual SAFE reports. Both basin-wide indicators were presented as well as island-scale parameters that were different for each island area within the region; basin-wide indicators were presented first. The atmospheric concentration of carbon dioxide continues to increase at a faster rate each year and was an average of 418.56 ppm in 2022. Conversely, pH continues to decrease over time, and there has been a steady decrease of 0.045 pH units (i.e., a 10.9% increase in acidity) since 1990; in 2021, the average pH was 8.05. The Oceanic Niño Index (ONI) tracks the El Niño Southern Oscillation (ENSO) phase, and there is an 80% chance to enter an El Niño phase this summer with a 40% chance that it would be relatively strong. The Pacific Decadal Oscillation was in a negative (i.e., cool) cycle in 2022. Tropical cyclone activity in 2022 was roughly in line with historical averages. Oliver then presented island-scale indicators after the basin-wide indicators. Sea surface temperature continued to increase around Hawaii, the Mariana Archipelago, and the PRIA though negative anomalies were detected around American Samoa. These increased temperatures were not associated with coral bleaching or mortality events in 2022 except for in the Mariana Archipelago late in the year. Trends in chlorophyll-a were mixed but generally consisted of weak anomalies. Sea levels continued to rise in all island areas.

A Plan Team member asked if it would be useful to summarize some of this information further in terms of loadings into the pelagic/benthic environment as well as respiration rates in the environment and how those change over time; this could show how variables are forcing ecosystems and relates to a previous Plan Team discussion about species abundance associated with rainfall and other freshwater inputs. Oliver responded that it would be possible to do some version of a climatologically-forced metabolism model in those cases to ground it akin to an ocean model incorporating temperature and nutrient loading nearshore. PIFSC ESD has been engaged more with hydrodynamic predictive models coming out of the University of Hawaii, most of which are still short of respiration effect but provide a much greater potential to do fishery metabolic modeling than the surface-based information provided in the annual SAFE report section that is focused on fisheries relevancy.

The Plan Team discussed the choice of climatological baselines utilized in the module, as the climatology seems to extend each year that the module is produced and may contribute to a

shifting baseline. Oliver responded that there was no consistent baseline period across all included indicators. The member stated that the purpose of the module is to show trends of the most recent years compared to historical trends, and changing the baseline each year introduces more historical variability in those baselines. Oliver noted that changing this baseline would be easy to implement if a climatological period could be chosen, and he offered the range of 1997-2007 where data are available for most indicators.

A Plan Tam member offered that the point of monitoring the environmental and oceanic variables is to eventually determine the correlation between fisheries performance and changes in the ecosystem, and the member asked how close we are to integrating environmental and fishery datasets. Oliver replied that, independent of this module, the science has come a long way in recent years. The Coral Reef Conservation Program (CRCP) funded an initiative called the Environmental Data Summary Project where, with point or polygon data, a large number of remotely sensed and model-derived parameters can be matched to *in situ* data. The member noted that it could be beneficial to evolve the SAFE reports to a more useful state than simply monitoring past fishery performance trends by creating additional links to fishery dependent data. Oliver noted that information could be correlated on an island-scale by year. The finer spatial scale for fishery data there is, the easier it would be to find climate drivers.

b. Life History and Length-Derived Variables

Eva Schemmel, PIFSC FRMD, presented updates to the life history sections of the 2022 archipelagic annual SAFE reports. In Hawaii, life history research was completed for onaga reproduction, and research is ongoing for onaga age and growth as well as opakapaka growth estimates. For American Samoa, there was no new research completed in 2022 but reproduction studies are ongoing for *Pristipomoides flavipinnis* and *P. auricilla*. In the Mariana Archipelago, life history research was completed for gindai age, growth, and reproduction as well as *Variola louti* age, growth, and reproduction. Studies are still ongoing for onaga aging criteria and age, growth, and reproduction as well as *P. flavipinnis* and *P. auricilla* reproduction. Additional studies include an assessment of sampling strategies for estimating fish growth from fishery-dependent samples and age validation using eye lenses.

A Plan Team member asked if work is being done to standardize the methods by which age, growth, and maturity are determined for species across the jurisdictions of the region. Schemmel replied that bottomfish are hard to age, but the standardized methods are improving. However, preferred methods are slightly changing over the years, and this information can be shared with the territorial resource management agencies.

Jones noted that PIFSC is planning to host a biosampling summit in the Mariana Archipelago later in 2023 in Guam to review available samples and determine how to move forward with the initiative collaboratively.

c. Biomass Estimates for Coral Reef Ecosystem Components

Tye Kindinger, PIFSC ESD, presented updates on biomass estimates for coral reef ECS, particularly in the Mariana Archipelago where the only National Coral Monitoring Program (NCRMP) stationary point count (SPC) surveys have occurred since 2019. There was an increase in the proportion of hard coral cover in the Mariana Archipelago since the 2016-2018 surveys

driven by increases in the northern islands. There were observed increases in the biomass of several fish functional groups as well as total fish biomass around many of the islands of the CNMI but mostly in the northern islands as well. Surveys are expected to be conducted in the PRIA and Samoa Archipelago in 2023.

A Plan Team member asked if the SPC sampling was evenly distributed throughout the depth range of 0 to 30 m. Kindinger responded that the surveys are split into shallow, mid, and deep bins that are allocated based on the amount of area for each survey. Jones asked about the increase in parrotfish around Saipan in 2022, and Kindinger responded that parrotfish are tricky to track because they are behaviorally responsive. Even if there is a declining reef condition with poor structure that would not support reef fish in the long run, there would likely be a short-term increase in algae that would attract parrotfish. This reasoning also likely holds for increases in herbivores around Rota and Saipan.

3. Habitat – EFH modeling

Kisei Tanaka, PIFSC ESD, presented updates to the habitat modules of the annual SAFE reports associated with recent EFH modeling efforts undertaken for uku (*Aprion virescens*) in Hawaii. Two new models describing uku EFH were developed in recent years, Franklin (2021) and Tanaka et al. (2022). The results of these models were described in the habitat modules of the annual SAFE reports, but there were no other major habitat-related updates. These models represent the first attempt to utilize model-based results to describe and identify EFH in the region. The Level 1 model used boosted regression tree-based species distribution models for the presence/absence of uku, and the Level 2 model was a statistical mixed effects model with fixed and random effects. At its meetings in September 2022, the Council and its SSC recognized both models as improvements over the status quo, endorsed recommendations from the WPSAR, and considered both models as the best scientific information available (BSIA). Tanaka described the definition of EFH utilized for these model outputs as the area containing 95% of occupied habitat, and occupied habitat is defined as area circumscribing the top 95% of the SDM-predicted occupancy (level 1) or abundance (level 2) of the species.

Jones noted that it is an interesting situation to have two separate models designated as BSIA, and he asked if there would be any utility to the described EFH subareas. A Plan Team member noted that the more focused partitions of EFH could help inform the type of conservation recommendations that NMFS may offer an action agency during an EFH consultation.

When asked to further clarify the EFH definition, Tanaka stated that after defining the survey range, he developed a model to interpolate the species and the area encompassing the top 95% of model-interpolated species occupancy or abundance was defined as EFH. There was some discussion among the Plan Team regarding the differences in uses and applications of EFH versus critical habitat.

A Plan Team member emphasized the importance of Penguin Bank for uku, especially in the summertime when the species utilizes the area for spawning. Further, a significant amount of catch for uku (i.e., 30-40%) comes from Penguin Bank and it is a major CPUE hotspot. The member asked if there is a way to better incorporate fishery-dependent information into the EFH designation. Tanaka clarified that the Level 1 model that combines data inputs from several

different surveys does account for Penguin Bank, but it is an interpolated model output without consideration for the temporal component. Tanaka offered that fishery-dependent datasets could be brought in to determine the importance of Penguin Bank for uku spawning aggregations, and several Plan Team members agreed that metrics like CPUE could and should be incorporated into the Level 1 and 2 model outputs despite Penguin Bank still appearing as a "hotspot" on the current EFH maps. There were concerns about the spatial specificity of fishery-dependent data, but Plan Team members still believed the information could be adequately incorporated in a relatively simple manner.

A Plan Team member asked if designating a Habitat Area of Particular Concern (HAPC) would be appropriate for Penguin Banks, though other members suggested that EFH would likely be the focus of the FEP amendment. Remington noted that there are HAPCs designated for Hawaii bottomfish from the 2016 FEP amendment, inclusive of Penguin Bank as a HAPC, and the Council is hesitate to utilize the HAPC designation for uku EFH since there is precedence for those designation processes to be more involved (e.g., going through WPSAR).

4. Socioeconomics

Minling Pan, PIFSC SEES Program, presented updates for the socioeconomics modules of the archipelagic annual SAFE reports for 2022. Across all island areas, fuel prices increased dramatically in 2022. In American Samoa and Guam, commercial data on BMUS were not disclosed due to data confidentiality rules associated with reporting information from less than three dealers and/or vendors. However, on American Samoa trip costs showed a slight decrease relative to recent years, which is likely due to reduced fuel usage from fishers taking fewer bottomfish fishing trips in 2022. Data on Guam trip costs were also confidential. In the CNMI, BMUS pounds sold and revenue decreased 21% and 16%, respectively, from 2021 to 2022; it is of note that there was a large increase in both of these parameters in 2021 due to increased fishery participation and reporting. Bottomfish prices in the CNMI slightly increased over the past year, but trip costs decreased due to lower fuel usage, similar to American Samoa. In Hawaii, Deep 7 bottomfish continued to dominate with respect to revenue at 76% of the total. Commercial landings and revenue for Hawaii MUS increased 16% and 28%, respectively, from 2021 to 2022; this was mostly driven by increases in Deep 7 landings and revenue (26% and 43% from last year, respectively). Uku pounds sold dropped slightly while having increased revenue due to increased fish price. Despite the short-term increases for both Deep 7 and uku, both fisheries display declining trends in commercial landings and revenue over the past 20 years. For crustacean MUS in Hawaii, revenue in 2022 was higher than 2021 due to increases in price but was notably lower than peaks in 2013-2015 and 2018.

A Plan Team member asked where the large amount of harvested akule typically goes, and another member noted that the species gets moved through markets in Chinatown, Kalihi, and Waipahu. The member noted that most of the commercially-caught ECS can be found on restaurant menus as well. There was additional discussion among the Plan Team as to why there was a higher proportion of total catch sold earlier in the time series, and a member suggested that this could be due to the influence of catch from the Northwestern Hawaiian Islands.

To be consistent with the Hawaii fishery performance module in the annual SAFE report, the Plan Team agreed that the data for crustacean management unit species (CMUS; i.e., kona crab and deepwater shrimp) should be presented separately rather than combined in the module.

Kleiber provided a presentation on a new effort by the PIFSC SEES Program to incorporate equity and environmental justice (EEJ) considerations into the socioeconomics modules of the annual SAFE reports, initially distinguishing between equality and equity. Equity involves recognizing that different individuals do not start from the same place and must acknowledge and make adjustments to imbalances. Core EEJ areas include policy and plans, research and monitoring, outreach and engagement, benefits, and inclusive governance. Available information to inform EEJ in the Pacific Islands includes the National EEJ Strategy, reports from 2022 EEJ meetings in island areas across the region, mapping tools for vulnerability, disadvantage, and risk, and other information such as lists of non-self-governing territories. Kleiber asked the Plan Team what level of detail from these sources of information is required and how key themes should be presented (e.g., inductive vs. binned to match core EEJ areas).

A Plan Team member suggested that the inductive approach may make the most sense if there is a good match between the messages heard from the fishing communities and the binning suggested. Kleiber agreed and noted that she was having trouble with the tools, exemplifying data issues commonly encountered in the territories. Jones asked how this EEJ information should be presented in the annual SAFE reports given their focus on fisheries. Kleiber responded that the SAFE reports could provide an annual update on EEJ efforts in the region to facilitate EEJ scorecard reporting to the White House. The hope is that, through these processes, fisheries managers improve relationships with fishing communities to bolster data collection and management. A Plan Team member asked if the intent is to measure how NOAA is doing with respect to EEJ, and Kleiber noted that this is likely the intent behind the EEJ scorecard.

Jones prompted additional discussion about how information from the overall EEJ initiative could be used or portrayed in vehicles such as the annual SAFE reports. For example, the Plan Team should consider what could be used from ongoing EEJ work to supplement content already housed in the reports (e.g., noting underrepresented communities or underfunded initiatives). Kleiber agreed that reporting on benefit distributions of fishery programs could be very important. Jones asked how the EEJ initiative could be used to support the region's fisheries and related communities given the cultural importance of fishing in the region. The ideas should be narrowed down to identify data, research, and resource gaps, and Kleiber noted that additional discussions are required.

A Plan Team representative from DAWR noted the uptick in importance regarding indigenous knowledge, and other territorial representatives agreed that additional discussion is needed on EEJ in light of recent events such as the expansion of the PRIA Marine National Monument, etc. EEJ can be used as a way to shed light on how ongoing initiatives are seen from varying perspectives. The representative from HDAR noted that there should be distinctions between archipelagic and pelagic fishery issues, as combining the two could lead to glossing over the intricacies of certain circumstances. Ultimately, the Plan Team agreed that Kleiber and representatives from the State and territorial resource management agencies should confer to further refine the EEJ subsection of the socioeconomic module by referencing the national and

regional strategies, with a focus on fishery issues for the region (e.g., being underfunded in many capacities).

a. Online SAFE Portal Updates

Remington provided a brief walk-through of the newly developed socioeconomic section of the Council's online portal for the annual SAFE reports, which facilitates easier navigation of the reports' content and allows users to directly download the data presented in the reports. The new section mirrors the current socioeconomic sections of the annual SAFE reports but could include longer data time series in the future. The Plan Team approved by consensus the publishing of the socioeconomic section on the online portal and encouraged the EEJ subsections to be included.

5. Marine Planning

Remington presented the updates to the marine planning modules of the annual SAFE reports in place of Council staff. There were no updates on aquaculture operations, military activities, or alternative energy facilities for any of the territories or the PRIA. However, in each section, information was added regarding the Council action to amend its FEPs to establish a management framework for commercial and research aquaculture. Additionally, for Hawaii, information was added regarding the deployment of a Light Detection and Ranging (LIDAR) buoy by the Bureau of Ocean Energy Management (BOEM) 12 miles northeast of Oahu in December 2022 for offshore wind resource characterization on behalf of the Department of Energy's Wind Energy Technology Office. Remington asked the Plan Team for their perspective on future direction for the module.

The Plan Team discussed the potential of the module to discuss actions that are already having an impact on fishing activities on a larger scale in addition to future items that have yet to become reality; however, the section is only able to track these activities qualitatively. Tracking these initiatives could facilitate the development of cumulative effects analyses going forward. Remington noted that a similar proposal was brought before the Plan Team in recent years, but there was not sufficient capacity for anyone to take on the project nor any identified, standardized way to regularly glean the appropriate information. Jones noted that it would be a benefit to be in front of forthcoming actions and being more anticipatory. Jones suggested that a working group be formed to flesh out potential issues and report back at the next Plan Team meeting, and the Plan Team approved the suggestion by consensus. The Plan Team also agreed that EEJ implications should be part of the discussion.

A Plan Team member asked if military notices and FAD updates are presented in the annual SAFE reports. A Plan Team member confirmed this, and Remington concurred that FADs are tracked in the pelagic annual SAFE report with information provided by the territorial resource management agencies. The military notices were presented with Guam fishery performance.

A Plan Team member asked for additional information on the LIDAR buoy deployed by BOEM, and Remington indicated that Council staff would follow up with additional information.

6. Discussions

Discussions occurred directly after each agenda item.

7. Public Comment

There was no public comment.

C. Administrative Reports

1. Number of federal permits and catch reports

Brett Schumacher, PIRO SFD, presented the administrative reports. The presentation included the number of federal permits and amount of reporting associated with these permits occurring in Hawaii, American Samoa, the CNMI, Guam, and the PRIA. Permits and reporting were summarized for ecosystem components, crustaceans, precious corals, and bottomfish, though there were typically very few permits for most fisheries and no reporting able to be disclosed (i.e., reports from Hawaii deepwater shrimp permits were non-disclosed due to confidentiality rules). Additionally, Schumacher presented the regulatory actions published by NMFS in 2022, which included the rebuilding plan for the American Samoa bottomfish fishery. These included the rebuilding plans for the American Samoa and Guam bottomfish fisheries as well as ACLs and AMs for MHI Deep 7 bottomfish and uku.

Regarding the presentation of recent ACL specifications, the Plan Team agreed that these ACLs should be presented alongside fishery performance data to provide necessary context to the fishery-dependent data. A Plan Team member asked about ACL tracking for uku that now must consider both commercial and non-commercial catch totals and how the uku ACL is tracked throughout the year. Another member noted that HDAR tracks commercial landings through its CMLs, but non-commercial landings are tracked through HMRFS. In-season monitoring is not as effective as it could be and PIRO and HDAR should continue to work on sufficiently tracking landings, especially considering there is a rolling average used for post-season calculations. Schumacher added that PIRO was looking into using a rolling average for in-season monitoring, but those provisions are not fully descriptive in the Magnuson-Stevens Act. A Plan Team member noted that, with in-season monitoring, it could dangerous to come across an anomalous creel interview in the middle of the year that causes the ACL to be exceeded. The only thing preventing this from occurring during postseason account is the use of a three year average. In this case, PIRO needs to wait until the end of the year to verify the catch, which is concerning when closing down a fishery based on estimates with high uncertainties.

The Plan Team discussed that the Council has the opportunity to recommend in-season monitoring for the uku fishery given that they wanted to manage uku under one ACL and not with sector allocation. As requested by the Council, PIFSC is scheduled to perform a management strategy evaluation (MSE) in 2024 that will look at the impacts of sector allocation and ACL tracking for the Hawaii uku fishery.

The Plan Team further discussed how the only non-commercial tracking of bottomfish in Hawaii is through HMRFS' creel surveys performed at common access points like boat launches. The information is expanded using additional context from mail surveys and census data to estimate effort. A Plan team member offered that PIFSC could examine the nature of the HMRFS data stream to identify how the expansion changes over the season. Then, incorporating a three-year average into that data using smoothers or filters could be scoped. Identifying the probabilities of missing components of catch that is being monitored might offer a better handle on how to frame discussions as PIFSC forms the MSE in 2024.

A Plan Team member noted that the previous uku assessment assumed that commercial and non-commercial catch were roughly equal proportions of the total (i.e., 50/50). However, fishers doubt that non-commercial catch could be so large. Much of this uncertainty stems from different ways major bias is present in how HMRFS generates uku catch estimates. Plan Team members agreed to make an action item for future work by Nadon, Ahrens, Sabater, and Remington.

2. Regulatory actions in 2022

This agenda item was presented alongside the previous agenda item regarding the number of federal permits and catch reports.

3. Discussions

There was no additional Plan Team discussion at this time.

4. Public Comment

There was no public comment.

5. APT Final Review: Working Group SAFE Report Products

Remington provided background information on the formation of each of the Plan Team working groups and their progress to date. The working groups convened following recommendations from the April 2022 Plan Team meeting in which the Plan Team identified areas of improvement in the archipelagic annual SAFE reports. The working groups provided a status update to the Plan Team at its intersessional meeting in January 2023, and the Plan Team was offered another chance for review of the working group products before incorporation of the improvements into the 2022 annual SAFE reports.

A. Bycatch Summary Improvements

Bigelow provided a presentation on bycatch summary improvements for the Hawaii MUS fisheries in the Hawaii annual SAFE report. The Plan Team discussed the prevalence of bycatch for target bottomfish species in the provided summary tables. The releases of these species could be related to the individuals being relatively small, shark depredation, or could be associated with a tagging research study for the fish. The Plan Team deliberated as to whether tagged fish should be included as bycatch, but it would be difficult to determine the proportion of the bottomfish species released due to tagging because of how this information is recorded on CML reports. The Plan Team decided to acknowledge this aspect of the summary data by qualifying the tables with explicit notes explaining the circumstances. The Plan Team ultimately approved of the inclusion of the new bycatch summaries into the Hawaii annual SAFE report by consensus.

B. Territorial Non-Commercial Module

Marc Nadon, PIFSC SAP, provided a status update on progress made on the territorial non-commercial modules for the archipelagic annual SAFE reports since the January 2023 meeting. Initial non-commercial bottomfish data summaries were generated for each of the territories using revised code. The working group used the revised code to calculate taxonomic proportions of lower-level groups that contains only species and of the highest-level groups (i.e.,

bottomfishes), which contains a mix of species and other groups, created a species proportion table for each of the eight groups, and went back to commercial datasets to multiply the grouped catch in each year by the species composition proportions.

A Plan Team member noted this is the biggest progress observed to move forward with the non-commercial module, but it should include the number of vessels. The member noted that the presented pattern in non-commercial catch in American Samoa appears accurate, as the commercial fishery was most active from the 1990s to the late 2000s before there was a notable shift to non-commercial fishing.

Another Plan Team member suggested it would be very helpful to have these standardized processes in the WPacFIN data warehouse to allow for an appropriate review of the data. The member also noted that the data ultimately belong to the territorial resource management agencies, and reviewing the data requires a lot of back and forth discussions with those groups to ensure their buy-in. This type of data filtering would also impact the commercial data stream. Jones indicated this process started in 2022 with the American Samoa stock assessment but would also be done for Guam and the CNMI.

The Plan Team generally noted that bottomfish fishing in American Samoa is much more variable when compared to the other territories and that it is important to look into the factors that are spurring these changes. There is also likely useful information associated with data from the 1980s and 1990s where bottomfish exports were occurring. To avoid issues with errors in the data and improve data review, Plan Team members proposed a work item to have the PIFSC SAP review the available expansion code and continue discussions on species groupings.

C. Hawaii Non-Commercial Module

Ishida provided a status update on the draft Hawaii non-commercial module for Plan Team review. The module focused on the data and collection in lieu of analyzing trends in the five years of provided data. The presentation highlighted the discussion from the January Plan Team meeting and offered details about why non-commercial HMRFS data cannot be combined with Hawaii CML data to equal total HMRFS data catch estimates; they are two different methods and not two halves of one process. Total HMRFS removals are likely overestimates because they are geared for non-commercial estimates and are likely not representative of commercial landings. Ishida also presented how the non-commercial Deep-7 bottomfish, uku, top 10 ECS, and HDAR priority ECS data summary tables would be displayed in the annual SAFE reports.

Plan Team members discussed shore-based catch for uku and questioned what is being landed by kayak fishing. Ishida noted that it is hard to fully understand the impacts of kayak fishing on the stock, as these fishers are continuing to become more efficient at catching uku and can be difficult to capture in interviews. A Plan Team member noted that, as a result, there is potential for overlap between shore-based and boat-based fishing for kayak fishing. Plan Team members agreed to explore this potential overlap further through discussions with Tom Ogawa.

Regarding the metrics of percent standard error presented in the module, a Plan Team member noted there is less concern on these values for shore-based fishing, and year to year variability is more informative. HMRFS can be improved by increasing the sample size or

making strata more refined. The lingering concern is if these numbers are being inflated or deflated with inherent biases in the survey. The Plan Team agreed that a small working group should further review the data for biases, including examining the estimation of effort against catch estimations from interviews. Ishida added that HDAR is interested in finding ways to better use these data.

The Plan Team agreed to include these tables for Deep-7 and uku this year with a suggestion to also include the standard deviations. For ECS, Plan Team members noted that the tables look different because there are fewer weights available for ECS (non-data for invertebrates), but recommended including them where the roving shoreline section was right after the commercial data. Nadon noted that more catch information is needed in the future. Jones added that the Plan Team is trying to move to having the sustainable fisheries report earlier on to know the ACLs.

6. Archipelagic Plan Team Action Items

A. Refinement of Uku EFH in the MHI

Remington presented the background and options related to the refinement of uku EFH in the MHI based on recent modeling efforts. The working group that developed the options was initiated by the Plan Team at its January 2023 intersessional meeting. The group met and developed an options paper to refine uku EFH based on the Level 1 and 2 models developed by Franklin (2021) and Tanaka et al. (2022), respectively. Remington indicated that the Plan Team should review the four provided options and make comments and recommendations to the working group for revisions, as well as identify a preferred option to the SSC and Council.

A Plan Team member questioned what is gained by moving to a higher level for EFH in terms of management actions. Remington noted that increasing the level of EFH is progress compliant with the MSA, and ultimately, having a better idea of the ecologically meaningful areas can help with EFH consultations. Moreover, the Plan Team member indicated Penguin Banks is likely a spawning hot spot for uku and wondered whether there is a management action that would provide guidelines on the importance of the area to the species. Another Plan Team member added that considering Penguin Banks is a reason to expand the action to a fifth option that would overlay fishery-dependent information on the modeling results; this option would promote a better understanding of the data that went into the EFH models that did not have a wealth of input data from Penguin Bank.

Another Plan Team member highlighted what is gained by doing a data driven model for refining EFH. Moving forward with this approach to support management decisions based on BSIA is important. Additionally, this represents the first attempt at using model-based EFH, and the platform of EFH models was built to be updated as new information becomes available. The Plan Team member also felt that the idea to incorporate fishery-dependent data is a valid approach for developing an Option 5. Therefore, Option 4, which overlays the level 1 and level 2 data, is likely the best option unless the Plan Team decides to move forward with an Option 5 that includes the fishery performance data.

A Plan Team member agreed that it makes sense to continue layering these analyses. Level 1 information gives a broad base map outline of where uku can occur, and Level 2 is important because it defines nearshore habitat and outlines at a finer scale of nearshore habitat. Option 5

would include a CPUE fishing grid, which would present Penguin Bank as an important EFH area. This approach was further supported by the Plan Team with added justification that ignoring the fishery data is not preferable. Jones suggested that the Plan Team recommend supporting Option 5 that includes an overlay of Level 1, Level 2, and CPUE information. The Plan Team tasked a working group to prepare the text and maps for presentation to the SSC and Council at their June 2023 meetings.

There was additional discussion among the Plan Team regarding available information for designating EFH for other life stages (e.g., egg and post-hatch pelagic). A Plan Team member wondered if it would be worth waiting for additional information to become available on these early life stages rather than refining EFH now. Jones indicated that the Plan Team has the ability and opportunity to use BSIA now, which will improve the EFH designations, but also has the opportunity to continue to refine EFH at a later date (i.e., as the MSA requires reviews of EFH at least every five years).

B. Establishing SDC for MHI Kona Crab

Remington provided a presentation on the establishment of status determination criteria (SDC) for MHI Kona crab in the Hawaii FEP, which was a follow up on the presentation the Plan Team received in January 2023. The Council took initial action at their meeting in March 2023, identifying Alternative 2 (i.e., rolling over the SDC from the Kapur et al. 2019 stock assessment) as their preliminary preference. The FEP amendment will be revised to reflect Alternative 2 as the preferred alternative and will be presented to the Council for final action at its June meeting.

A Plan Team member reinforced that the PIFSC SAP endorses Alternative 2. There were no further comments by the Plan Team provided to the Council for final action.

C. Territorial BMUS Revision

Council staff provided a presentation on the status of the territorial BMUS revision that has recently transitioned to the American Samoa BMUS revision. The goal of this agenda item was to offer Plan Team members an opportunity to comment on the draft amendment and MSA component reports (included in the draft amendment) prior to initial action by the Council at its June 2023 meeting. Alternative 1 is the no action/status quo alternative that would not recommend or implement changes to the existing BMUS list in the American Samoa FEP. Management of the BMUS would continue to include annual specifications of ACLs and AMs, including for those species comprising the list that are not predominantly caught in federal waters and are not overfished or subject to overfishing. Under Alternative 1, American Samoa fisheries for BMUS would continue to operate as they have in recent years with respect to location, target and non-target species, catch, effort, fisher participation, gear composition, seasonality, intensity, and bycatch. Alternative 2 would amend the American Samoa FEP to reclassify five current BMUS as ECS and seven current non-MUS as BMUS in addition to the changes specified by the MSA component reports. The Council recommended the proposed reclassifications in consideration of the hierarchical cluster analysis and previous Plan Team deliberations, which included a review of the MSA component reports and ten factors provided in NMFS' National Standard 1 guidelines. Alternative 2 is inherently administrative in nature and is not likely to directly impact or change the fishery in terms of location, target and non-

target species, catch, effort, fisher participation, gear composition, seasonality, intensity, or bycatch. Due to waning participation in the fishery in recent years, it is not likely that implemented ACLs and AMs functionally constrained the fishery for the species proposed to be reclassified as ECS. Ultimately, under Alternative 2, it is expected that the American Samoa bottomfish fishery will continue operating as it has in recent years.

Plan team members approved moving forward with just American Samoa in the BMUS revision at this time to better align the revisions with the upcoming benchmark stock assessments for BMUS in the Mariana Archipelago and to keep Guam and the CNMI together, as they are in the Mariana Archipelago FEP.

A Plan Team member emphasized concerns related to EFH that may arise as a result of the BMUS revision. Removing shallow water species through the revision would still allow the water column to be covered from the shoreline out to the EEZ boundary considering the EFH extent for pelagics and bottomfish. However, the actual substrate for EFH and where HAPC are designated are at deeper depths; therefore, a disputable nearshore area may or may not be covered as EFH on the substrate. Another Plan Team member indicated that several EFH documents for deep-7 bottomfish have identical language noting the shoreline and substrate down to 240 m for adults and juveniles. However, an FMP amendment from 2005 generated some confusion in the interpretation of the EFH designations. Ultimately, the Plan Team agreed that there needs to be ongoing discussions about the outcomes of the action on EFH. Another Plan Team member noted that, given the uncertainty that exists in the habitat use for juveniles, the intention may have been to only specify habitat at 100 m and deeper. While that is the predominant range that adults are caught in, there is too much uncertainty in the ontogeny of these species to exclude habitats before having a better understanding of life history.

To supplement the concerns on EFH, Council staff noted that even though the EFH MSA component report has been drafted, it does not mean it cannot be revised before complete incorporation into the draft amendment. Currently, EFH in the component report is defined based on what is known using available life history data available through a literature review. To further improve the draft amendment and component report for review by the SSC and Council at their June 2023 meetings, the Plan Team recommended PIRO Habitat Conservation Division (JCD) draft an EFH statement that could be incorporated into the draft amendment.

A Plan Team member noted that there are available diver surveys that can supplement the EFH information used by previous working groups to develop the EFH component report. Within these surveys, information is available on depth ranges for juveniles and adults of various BMUS. Another Plan Team member indicated that the FEP will need to describe EFH via maps and text, which is part of the end product on which the Council will take final action. The collaborative effort by the Action Team on this action will allow for the inclusion of all the necessary information collected by the PIFSC Life History Program and PIRO HCD.

Remington wondered why the 2005 FMP amendment would take precedence over the 2016 FEP amendment. A Plan Team member offered that the 2009 FEPs were a consolidation of information from the FMPs and were intended to carry forward these provisions. Therefore, this amendment needs to be clear in stating the species and associated changes through the

component reports. A Plan Team member added that the draft amendment is not replacing the existing system but adding a new context and tools to the toolbox (i.e., a new tier to the development of ACLs and AMs, new SDC options, etc.). These details of the component reports are nested in the BMUS revision and are intrinsic to the action.

Ultimately, the Plan Team recommended Alternative 2 for SSC and Council consideration. This includes moving forward with the proposed revision and associated component report changes. In addition, HCD indicated they will review and work on the EFH component report with the action team to ensure that the action will address the habitat needs in American Samoa.

D. ACL Specifications

1. CNMI Bottomfish ACL Specifications

Council staff provided a presentation on the options associated with specifying ACLs for the CNMI BMUS for 2024 to 2025. No new stock assessment information has been made available since the Langseth et al. (2019) stock assessment, which was certified as BSIA by the Council's SSC. Using that assessment, three options were presented to the Plan Team for discussion. Option 1 was a no action alternative that would not be compliant with the MSA and acts as the environmental baseline against which other options can be compared. Option 2 would specify a ACL of 84,000 lb corresponding with a 41% risk of overfishing using 2025 as the terminal year. This option increases the risk of overfishing from 39% to 41% to maintain the status quo ACL with an ACT of 78,000 lb. Option 3 would specify an ACL of 82,000 lb corresponding to a 39% risk of overfishing using 2025 as the terminal year. This option would maintain the status quo 39% risk of overfishing with an ACT of 75,000 lb.

Plan Team members discussed the three options and noted that Option 1 cannot be selected. Support was provided for Option 3, given the spirit of the P* approach, which maintains the previously approved risk of overfishing. Plan Team members noted that maintaining the risk of overfishing instead of carrying over the ACL and ACT at a higher level of overfishing is the sustainable and appropriate approach from a management perspective.

Council staff offered that Option 3 results in a reduction in both the ACL and ACT and may send the wrong message to the fishing communities. The fishing community has been under-harvesting these thresholds in recent years and the reduction in the ACL and ACT may be interpreted as punishment. In response, the Plan Team noted that justification must be provided to the Council in June as to how the options to specify the ACL and ACT were generated and why Option 3 was the consensus recommendation by the Plan Team

2. Kona Crab ACL Specifications

Council staff provided a presentation on the options associated with specifying ACLs for the MHI Kona crab fishery for 2024 to 2026. No new stock assessment information was available since the Kapur et al. (2019) assessment, which was certified as BSIA by the Council's SSC. Using that assessment, four options were presented to the Plan Team for discussion. Option 1 was a no action alternative that would not be compliant with the MSA. Option 2 was a status quo option that specified the ACL equal to the ABC of 30,802 lb (P*=38%) and ACT at 25,491 lb, which was 10% lower than the SEEM analysis at P*=20%. Option 3 specified the ACL equal to the ABC of 30,802 lb (P*=38%) and ACT at 28,324 lb based on the P* and SEEM analyses.

Option 4 specified the ACL=ABC at 30,802 lb (P*=38%) and ACT at 21,243 lb, which is 20% lower than the SEEM analysis at P*=10%.

A Plan Team member indicated that the P* and SEEM working groups originally recommended Option 2 and the Plan Team should be consistent with this. Therefore, the Plan Team agreed that that the Council select Option 2 to rollover the previous ACL of 30,802 lb alongside an ACT of 25,491 lb for 2024-2025, maintaining the risk of overfishing of 38% and 20%, respectively, from the previous P* and SEEM evaluations. The Plan Team noted that the current ACT of 25,491 lb has not been reached since its implementation in 2020 and is not likely to be exceeded in the next two years.

3. American Samoa BMUS Update

Council staff provided an update on the status of the WPSAR for the new American Samoa BMUS stock assessment and indicated the report will be presented to the SSC and Council at their June 2023 meetings. Anticipating a BSIA recommendation by the SSC, the Council will likely recommend the formation of P* and SEEM working groups. Final action to specify ACLs associated with American Samoa BMUS is anticipated in December 2023.

The Plan Team provided no comments on the BMUS update.

7. MSA research priorities and cooperative research priorities updates

Council staff provided an update on the MSA and cooperative research priorities. Priorities are established for five-year periods and are separated into topics such as island fisheries, human communities, pelagic fisheries, and protected species. Current plans are to link priorities across disciplines for research required under the MSA with cooperative and pelagic research plans as well as other Council research plans. Council staff emphasized the need to revise the MSA priorities and include cross-cutting across several topics and areas. The Plan Team provided no comments on revisions to the priorities.

8. Discussions

The Plan Team held discussions immediately after each agenda item.

9. Public Comment

There were no public comments.

10. Fishery Ecosystem Plan Team Recommendations

The Archipelagic Plan Team made the following recommendations:

Regarding the bycatch summary improvements, the APT

1. Recommends the Council approve the inclusion of new archipelagic bycatch summaries that describe both the amount and type of bycatch in Hawaii's bottomfish fisheries in the fishery performance module of the Hawaii Archipelago annual SAFE report.

Regarding the development of the territorial non-commercial modules for the American Samoa and Mariana Archipelago annual SAFE reports, the APT

2. Recommends the Council request NMFS PIFSC continue its effort to develop the territorial non-commercial module and related R scripts for approval and inclusion in the annual SAFE reports for 2023, noting that other time series data streams (e.g., commercial receipt book) may also be updated in pursuit of a single data summarization and/or expansion process for the Western Pacific region.

Regarding the draft Hawaii non-commercial module, the APT

3. Recommends the Council approve the inclusion of the draft Hawaii non-commercial module based on HMRFS data into the Hawaii Archipelago annual SAFE report as presented, noting that additional investigation is needed to determine if there may be biases in the interview-derived data.

Regarding the refinement of uku EFH in the MHI, the APT

4. Recommends the Council select Option 5 to refine the EFH designation for uku in the Hawaii Archipelago FEP based on an overlay of Level 1 and 2 modeling products alongside fishery-dependent CPUE data. The APT noted that there may also be forthcoming information on the spatial distribution of egg and post-hatch pelagic life stages of uku for further refinement of the EFH designations for the species in the next one to three years.

Regarding the establishment of SDC for MHI Kona crab, the APT

5. Recommends the Council select Alternative 2 to establish SDC for Kona Crab in the Hawaii Archipelago FEP based on the SDC utilized in the previous stock assessment (Kapur et al. 2019) and NMFS technical guidance (Restrepo et al. 1998).

Regarding the territorial BMUS revision, the APT

6. Recommends the Council select Alternative 2 to revise the American Samoa BMUS list in the American Samoa FEP based on the results of the hierarchical cluster analysis by PIFSC, a review of the ten non-exhaustive factors for determining which species require federal conservation and management as specified in National Standard 1, and the life history synthesis, as well as the five related Magnuson-Stevens Act management components (i.e., SDC, ACLs/AMs, EFH, monitoring and bycatch, and fishing communities) based on the generation of MSA component reports developed by the APT. The APT agreed to move forward with territorial BMUS revisions in alignment with the current schedule stock assessments for each island area such that the list revisions will occur separately for each jurisdiction.

Regarding CNMI BMUS ACL specifications, the APT

7. Recommends the Council select Option 3 that would retain the previous risk of overfishing of 39% based on the previous P* analysis, associated with an ACL of 82,000 lb and an ACT of 75,000 lb for 2024-2025. The APT noted that the risk of overfishing was presented by the SSC and Council through their standardized P* and SEEM processes, though these processes are subject to change based on the availability of new fishery information.

Regarding Kona crab ACL specifications, the APT

8. Recommends the Council select Option 2 that would rollover the previous ACL of 30,802 lb alongside an ACT of 25,491 lb for 2024-2025, maintaining the risk of overfishing of 38% and 20%, respectively, from the previous P* and SEEM evaluations. The APT noted that the current ACT of 25,491 lb have not been reached since their implementation in 2020 and are unlikely to in the next two years.

The APT also agreed to address the following items:

1. **Regarding the Guam BMUS catch in 2022,** the APT
    a. Notes that the fishing community began cooperating in the creel survey catch interviews at higher rates in recent years after realizing the importance of accurate catch and effort information with respect to the current BMUS rebuilding ACL;
    b. Notes that local bottomfish fishing activities declined in the last quarter of 2022 due to numerous small craft advisories, as reported in the annual SAFE report;
    c. Notes that the BMUS catch in the past two years were above the 10-year average;
    d. Therefore, tasks the following APT members to conduct a thorough review and validation of the Guam BMUS data for inclusion in the 2022 annual SAFE report: Todd Jones, Jenny Suter, Marlowe Sabater, Robert Ahrens, and Brent Tibbatts. The APT working group should coordinate closely with Council and PIRO staff on the progress of the review.

2. **Regarding the integration of the catch estimations for monitoring of ACLs, annual SAFE reporting, and conducting stock assessments,** the APT assigns Jenny Suter and Marc Nadon to oversee the development of the R-scripts as necessary in pursuit of a single data summarization or expansion process and report on the progress of this effort at the next APT meeting.

3. **Regarding the development of a style guide to inform future SAFE report presentations,** the APT tasks the Annual SAFE Report Coordinator, Thomas Remington, with developing a style guide that is based on standardized approaches from other regions and international standards, as available, and includes guidance for the following aspects of fishery performance reports to the APT:
    - Inclusion of appropriate labels, units, legends, and titles for all presented figures and/or data (i.e., especially for CPUE);
    - Adherence to data confidentiality protocols (e.g., 'n.d.' should be an omitted data point and not a 0 in data visualizations);
    - Inclusion of ACLs related to time series of annual catch; and
    - Terminology regarding 'catch' (i.e., vs. 'landings,' etc.) as denoted by the PIFSC SAP.

4. **Regarding the presentation of catch value uncertainties in the annual SAFE report,** the APT requests WPacFIN to explore the feasibility of including uncertainty values in future iterations of the fishery performance modules of the annual SAFE reports.

5. **Regarding the American Samoa BMUS data presented in the annual SAFE report,** the APT:

- In anticipation of the Council's review and acceptance of the new American Samoa BMUS stock assessment, assigns Marc Nadon, Domingo Ochavillo, and Jenny Suter to revise the reporting scheme in the fishery performance module of the annual SAFE report to track catch, effort, CPUE, and other requisite metrics on a species level in addition to the species complex level for appropriate ACL monitoring.
- Requests PIFSC-FRMD remove imported fish species that are not listed as ECS in the American Samoa FEP (e.g., tilapia and snubnose pompano) from fishery performance data summaries.
- Requests PIFSC FRMD validate the shore-based BMUS catch estimate for 2022.

6. **Regarding socioeconomic data collection associated with the Fisher Observations,** the APT recommends including questions to fishers that address what aspect of the fisheries they are involved in, broadening questions to address what aspects of the fishing community are included, asking how long individuals have been involved in the fisheries, focusing on demographic variables (i.e., age, race/ethnicity, gender/sex), and tracking respondents that are consistent from year to year.

7. **Regarding socioeconomic data reporting in the annual SAFE reports,** the APT recommends splitting CMUS data between kona crab and deepwater shrimp due to the disparate nature of the fisheries, consistent with the Hawaii fishery performance module.

8. **Regarding disclosing the number of BMUS vendors in Guam,** the APT recommends DAWR representatives on the APT continue to conduct outreach and identify if any BMUS vendors are amenable to signing a waiver to release their data such that they can be reviewed by the APT, assuming the number of reporting vendors remains less than three in future years.

9. **Regarding CPUE metrics in the annual SAFE reports,** the APT recommends Council staff work with representatives of the resource management agencies of the four island areas to the APT to determine the appropriate CPUE metrics reported in the fishery performance module of the annual SAFE reports (i.e., pounds/trip vs. pounds/day).

10. **Regarding improvements to the climate and environmental variable module,** the APT assigns Thomas Oliver and Kisei Tanaka to determine a climatological period that is appropriate for the climate indicators that better represents the trend of the most recent years compared to the historical trends to reduce the effects of sliding baseline.

11. **Regarding the potential Equity and Environmental Justice module in the annual SAFE report,** the APT assigns Danika Kleiber, Domingo Ochavillo, Bryan Ishida, Angela Dela Cruz, and Brent Tibbatts to contribute expertise to the EEJ subsection of the socioeconomics module currently under development, potentially pulling from the national and regional strategy with a focus on the fishery aspects and noting the discontinuation of the special COVID sections included in the annual SAFE reports the past two years.

12. **Regarding the online portal for the annual SAFE report,** the APT approves the addition of the socioeconomic module as presented and endorses its update for the current reporting year and in the future.

13. **Regarding the Protected Species module of the SAFE report,** the APT forms a working group comprised of Brett Schumacher, Rob Ahrens, and Council staff to draft methods used to report oceanic whitetip shark interactions in regional bottomfish fisheries to meet the annual monitoring requirement specified in the 2022 Bottomfish Biological Opinion's Reasonable and Prudent Measures for inclusion in the 2023 annual SAFE reports. The APT finds that expanding creel survey data is not appropriate for rare interaction species and recommends improved reporting of any oceanic whitetip shark interactions through ongoing initiatives to improve fishery data collection methods.

14. **Regarding the Marine Planning module,** the APT assigns Sean Hanser, Domingo Ochavillo, Bryan Ishida, Danika Kleiber, Angela Dela Cruz, and Brent Tibbatts to work with Council staff (Zach Yamada) on potential improvements to the module that captures cumulative effects that have potential impacts to Western Pacific fisheries.

15. **Regarding the LIDAR buoy off Oahu,** the APT requests Council staff to provide Frank Parrish with additional information about its installation and operation.

16. **Regarding the inclusion of catch-and-release individuals in the new bycatch summaries,** the APT recommends qualifying these data with an asterisk indicating the number includes tagged individuals.

17. **Regarding the HMRFS data to be reported in the Hawaii non-commercial module,** the APT recommends determining how kayak fishers are characterized in the data (i.e., shore- or boat-based), including standard deviation where possible, and including scientific names with common names in the same column.

18. **Regarding the tracking of uku catch relative to the Annual Catch Target,** the APT assigns Marc Nadon, Rob Ahrens, Marlowe Sabater, Brett Schumacher, Bryan Ishida, and Council staff to form a working group to explore approaches to utilize both FRS commercial catch estimates and HMRFS non-commercial catch estimates as they pertain to tracking total catch for in-season ACL monitoring (e.g., for Hawaii Deep 7 bottomfish and uku). The working group should also investigate the potential biases in the non-commercial catch estimation.

19. **Regarding the American Samoa BMUS revision EFH component,** the APT assigns Frank Parrish, Tom Oliver, Joe O'Malley, Marc Nadon, Kisei Tanaka, and Sean Hanser to a working group that will review the draft EFH MSA component report for inclusion to the draft amendment by early June (before the SSC meeting).

20. **Regarding the management of ECS listed in the FEPs,** the APT reiterates a previous work item to invite OSF to attend a future APT meeting to provide guidance as to what management of ECS should include.

11. Other Business

Plan Team members discussed the possibility of hosting the next APT meeting in early May, close to the Pelagic Plan Team meeting and possibly within the same week, to offer more time to obtain updated data and revise annual SAFE report modules and ease travel for members of both teams.