WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Pelagics Fishery Ecosystem Plan Team Meeting

May 9-11, 2023
9:00 a.m. – 5:00 p.m.
Council Office Conference Room
Honolulu, Hawaii

Meeting Report

1. Welcome and Introductions

Donald Kobayashi, Pelagic Fishery Ecosystem Plan Team (PPT, or Plan Team) Chair, opened the meeting, reviewed meeting protocols, and invited Plan Team members to introduce themselves. Present were Lynn Rassel, Kelsey Lizama, Nathan VanEe, Bryan Ishida, Jason Helyer, Robert Ahrens, Melissa Snover, Russell Ito, T. Todd Jones, Kirsten Leong, Domingo Ochavillo, Michael Kinney, Minling Pan, Brent Tibbatts, Jenny Suter, Phoebe Woodworth-Jefcoats, Frank Roberto, Chelsey Young, Ashley Tomita, Réka Domokos, and Valerie Post. Not present were Sean Felise, Emily Crigler, and Felipe Carvalho.

2. Approval of draft agenda

Kobayashi noted that an additional discussion item would be added under agenda item 19, Other Business, regarding the proposed sanctuary designation around the Pacific Remote Island Area (PRIA). The draft agenda for the May 2023 Pelagic Plan Team meeting was approved by consensus.

Council staff provided a brief update on recommendations made at the previous Pelagic Plan Team meeting in May 2022 and shared a more comprehensive update document with members.

3. Review 2022 Annual SAFE Report Modules

A. Fishery Data Modules

i. American Samoa

Domingo Ochavillo, American Samoa Department of Marine and Wildlife Resources (DMWR), presented updates for American Samoa pelagic fisheries in 2022 using data recently provided by the PIFSC Fisheries Research and Monitoring Division (FRMD). The number of vessels landing pelagic species has been experiencing a declining trend over the past decade, but there were more troll vessels in 2022 than in 2021. The number of active longline vessels was similar to last year. Both longlining sets and trolling trips decreased in 2022 from the previous year in the midst of an overall declining trend for the longline fishery.

Despite decreasing effort, total landings for tuna and non-tuna pelagic management unit species (PMUS) increased notably in 2022 from the previous year driven by albacore, marking the

second straight year of catch increases for the fishery after an otherwise declining trend for pelagic fisheries since 2017. Commercial landings also increased for tuna, but there was a slight decrease in this sector for non-tuna PMUS. Generally, commercial landings followed the same pattern in 2021 with increased tuna catches but decreased catches for non-tuna PMUS. Species-specific trends in catch and catch per unit effort (CPUE) were also presented, with the most notable trends being the increase in longline catch rates for albacore and nearly zero troll catch of yellowfin tuna and wahoo in 2022. Trolling effort and catch rate notably decreased from 2021 to 2022.

Plan Team discussion on the review of this section included the following:

- The longline diversification project in American Samoa has resulted in at least one vessel doing some jigging in the waters around New Zealand, but Ochavillo did not have the full details on other vessels that may also be using new gears. There had previously been issues with gear changes on the vessels, but there is hope that the shipyard will continue to improve.
- Regarding increased albacore catches, there may be several notable drivers and implications.
    - A Plan Team member noted that during or after an El Niño, there is a higher albacore CPUE due to higher upwelling and an equatorial countercurrent near Papua New Guinea that brings nutrient-rich waters to the northern American Samoa exclusive economic zone (EEZ). However, the region has currently been experiencing a three-year La Niña, and the Pacific Community (SPC) had found that La Niña is conducive for the recruitment of South Pacific albacore. The Plan Team speculated that El Niño may drive catchability due to physical forcing whereas La Niña may impact recruitment.
    - The SPC study also noted varying catch rates by vessel, indicating the contribution of individual fisher to overall catch rates for the species.
    - The relaxation of the Large Vessel Prohibited Area (LVPA) around American Samoa also coincides with the increase in albacore catch.
    - Evaluating the existence of albacore in eddies by examining surface conditions (i.e., those that fishers may be monitoring and targeting) might not be helpful, as the eddies associated with the previously described El Niño processes are a different kind of eddy that occur mid-ocean and are not easily distinguishable. However, these eddies could be identified by surface currents (if those measurements can be obtained) or by warm sea surface temperature. Albacore CPUE in these waters lagged 4-6 months after El Niño, possibly due to the increase in forage biomass.
    - Regarding changes to the longline fishery that may explain the trends in catch and CPUE, it was noted that there has been low participation and effort over the last few years. The increase in catch resulted in an increased catch rate when considered alongside the relatively lower effort. The Plan Team agreed that better records of changes in the fishery, including regulatory, behavioral, and data collection changes, are needed to better separate fisheries impacts from environmental drivers.
- In the American Samoa troll fishery, there were several species with no catch.
    - While the number of troll boats increased in 2022, the number of trips declined. Trollers mostly caught skipjack, but there was a noted absence of species like wahoo.
    - Fisher observations could be useful in explaining drivers associated with fisher behavior or environmental effects. As a longer time series of observations is generated, patterns in the data may be identified.
    - While the longline data comes from federal logbooks, the troll data comes from the

boat-based creel survey expansion. The apparent declines in catch rates in some pelagic species may be due to the survey not capturing all individuals engaging in the fishery, though the fishery has decreased to a very small size (i.e., 10 boats) such that it would be unlikely that fishers are being missed. However, it remains unclear if the design of the survey allows all of the individuals participating in the fishery to have a potential to be sampled in the creel survey program.
    - Some of the provided troll data are difficult to believe (e.g., less than 200 trolling hours in 2022), as it seems unlikely that someone with a boat would fish for only 20 hours over the course of a year (i.e., potentially corresponding to two or three trips).
    - The creel surveys have had known issues since their inception.
    - Effects of relaxing the LVPA should also be analyzed.
    - There have been significant changes in the American Samoa fisheries (i.e., they have shrunk) since the creel survey was implemented in the 1980s. Smaller fisheries have lower probability of intercepts in the creel surveys, which may mean that the survey should fundamentally change. The Plan Team agreed that DMWR should formally revisit the design of the survey with PIFSC FRMD.
- While catch rates have increased in the longline fishery, participation remains low. Longline fishers have identified that one of the main issues is finding labor and captains with U.S. Coast Guard (USCG) endorsement/Master's certification. The Council had previously recommended that American Samoa captains be granted exceptions to these rules because it precludes many potential candidates due to the stringent requirements. It was noted that "good" captains often move to Hawaii.

ii. CNMI

Kelsey Lizama, Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife (DFW), presented updates for pelagic fisheries of the CNMI in 2022. In 2022, the boat-based creel survey program had fewer survey days and interviews from both 2020 and 2021. The number of fishers landing pelagic species from commercial receipt invoices continued its increasing trend since 2019, but the number of trips catching pelagic species from commercial receipt invoices showed a slight decline. There was a very slight decrease in the number of trolling trips and hours in the CNMI pelagic fisheries, and the average length of fishing trips slightly decreased as well.

Commercial landings in 2022 decreased notably for pelagic species, which was mainly driven by decreases for skipjack tuna that comprise the majority of the landings. Despite these decreases there was a large increase in commercial purchase landings for mahimahi. The total estimated landings from the creel surveys were driven by skipjack tuna but also saw a substantial decrease from 2021 to 2022. Non-tuna PMUS experienced a slight increase in total estimated catch, but it was relatively small considering the proportion of catch comprised of tuna species. Increases in catches of non-tuna PMUS were driven by increases in mahimahi and especially wahoo. Catch rates generally decreased for the CNMI pelagic fisheries except for these two non-tuna species.

Plan Team discussion on the review of this section included the following:
- There is no longline fishery in the CNMI, but the FADs are mostly positioned on the west side of Saipan because it is more protected there and that is where the boat ramps are situated. The east side has waters that are rough almost year-round. Environmental drivers may also contribute to increased catch rates there.

    - Fishers may troll out to a bottomfishing ground and utilize FADs along the way.
    - There is no code for mixed trips in the CNMI, so these are recorded as two separate interviews. Because creel surveys are expanded at the trip level, this may contribute to double counting of trips where one "piece" of effort becomes two.
- Regarding the appearance of zero charter catch, DFW could not say with certainty that no charter vessels were operating.
    - Coupled with the turnover of DFW staff, data can get lost over the years and a better system is needed to handle this type of data over time.
    - Additionally, the CPUE data points associated with the zero pounds of catch for CNMI charter fisheries should be blanks instead of zeroes.
    - It is not clear if there were any interviews for charter vessels because the error could be as simple as not ticking the box on the creel survey form.
    - The Plan Team discussed if a third category of data reporting should be added alongside "zero" and "n.d." to represent data with high uncertainty.
    - DFW has no protocols for data reliability or cross-checking in place, and these things would not be practical to implement at this moment. Good hires are hard to come by, and there was not a digital archive of data until recently. Only a small amount of data have been proofed.
    - Additional internships to help train territorial staff may be helpful to build capacity in the CNMI and other territories.
    - If there were zero charter vessel interviews, the charter data should be non-disclosed due to data confidentiality rules because the number of data sources is less than three.
- There remains difficulties in accessing some of the marinas that charter vessels are known to preferentially utilize.
- CPUE from the creel surveys is calculated at the interview level, meaning that some language in the introductory sections of the CNMI data module should be updated. CPUE from the commercial receipt book data should not be reported because it essentially provides the number of purchased items during an interaction with a vendor; the information is only collected because WPacFIN does not know if the data may be used internally by the territorial resource management agencies. If PIFSC can verify that agencies are not using that data, it can likely not be collected.
    - More specifically, PIFSC expands the mean catch rate per trip at the trip/port/method strata, which is spread out among species based on composition of catch. This is multiplied by effort based on the gear type estimate, which gives a catch expansion. In stock assessments, the catch rate is at the trip level and standardized at the interview level.
- Creel surveys are supposed to measure all of the catch brought in by interviewed fishers, but this rarely happens. There are instances of multiple boats returning at the same time or an abundance of fish being caught on one trip that hinder measurement of every individual. The next best thing is for the surveyor to randomly select fish, which is also difficult. Usually, surveyors get a one to three fish of each species from the fisher to measure, but it would be ideal to move away from this approach. DFW staff were receptive to help direct improvement efforts for data collection.
- The initiative to align data streams reported in the annual SAFE report and those used for stock assessments likely goes beyond what can be accomplished at the Pelagic Plan Team meeting.
- The annual SAFE report tracks landings of blue marlin and other marlin species, but there is only one code for miscellaneous marlin species. There is no certainty that all landings reported are the blue marlin PMUS, which needs to be monitored as a species listed in the pelagic FEP.
    - It is important to distinguish between marlin species and allow species-level resolution in the presented data.

    - Data collection should be altered to obtain this species-level resolution. PIFSC FRMD should meet with DFW to facilitate changes in the data collection processes to add codes for the various marlin species.
    - Difficulties in distinguishing between blue and black marlin were emphasized. These uncertainties should be acknowledged in the presentation of the data.
    - Data technicians should be empowered to better understand the importance of their roles and should be invested in.
    - Networking with the fishers could facilitate improved data collection.
- Regarding the confusion surrounding the presentation of certain data points, the Pelagic Plan Team should be provided with a style guide, similar to an action item from the recent Archipelagic Plan Team meeting.
- Sawtooth patterns are observable in many of the CNMI data time series. It is not clear if this is noise in the data or due to sampling design.

iii. Guam

Brent Tibbatts, Guam Division of Aquatic and Wildlife Resources (DAWR), presented updates for Guam pelagic fisheries in 2022. In 2022, DAWR completed all 96 of its 96 scheduled creel survey days, documenting 949 trips and conducting 568 interviews. There was a notable decrease in the number of active troll vessels in Guam pelagic fisheries down to levels observed in 2019 and 2020. The number of trolling trips and hours only slightly declined, as the average length per trip has remained relatively consistent for the past seven years. The total estimated pelagic landings decreased notably from 2021, driven by a decrease in tuna PMUS while there was a slight increase in catches of non-tuna PMUS, similar to the CNMI. Also similar to the CNMI, skipjack tuna comprises the vast majority of tuna PMUS landings in Guam. While catches for skipjack and yellowfin tuna notably decreased, catches of mahimahi and wahoo increased. Commercial landings were not able to be reported due to data confidentiality rules regarding the presentation of data from less than three sources (i.e., dealers/vendors). Trolling catch rates slightly declined related to poor catches per hour for tuna species, but catch rates for mahimahi and wahoo harvested by non-chater fisheries experienced modest increases.

Plan Team discussion on the review of this section included the following:
- Pomfrets are included as pelagic MUS despite being caught while bottomfishing because some fishers harvest the species through deep trolling as well as in the Hawaii longline and handline fisheries. The species is part of the Pelagic FEP, so monitoring is maintained in the SAFE report.
- There was discussion on if data are lost due to fishers processing fish on the way back from their fishing grounds, but this is likely rare and only one fish typically gets processed.
- The Plan Team discussed the utility of presenting the full time series of available fishery performance data versus the current approach of providing data only from the past decade.
    - Contrasts the approach for oceanic and climate indicators, which are meant to monitor long-term change.
    - Issues with table creep, but this is not a problem for figures/visualizations and the data could alternatively be hosted in tabular form in the report appendix or on the Council's online portals for the annual SAFE reports.
    - There may also be issues with the lack of regulatory context or changes in data collection protocols over time when analyzing longer time series trends. It becomes harder to explain events further in the past, and there are more parsimonious explanations for shorter time series.
    - It was noted that the complete time series data already exist on the WPacFIN website.

    - It would be time consuming to recreate time series and figures, which is the majority of the reason why this initiative was not enacted in the past year (i.e., lack of capacity) after it was discussed at the previous Pelagic Plan Team meeting. WPacFIN has recently grown such that it will be able to do more things, but they are currently focused on supporting State and territorial data collection and need to balance these requests.
    - While it may not be time consuming to incorporate longer time series after the first year, the most recent year of data is not simply appended to the time series because the terminal year is always in flux as corrections to data are implemented.
- The catch plots for mahimahi and other non-tuna species show downward trends in catches with relatively flat effort time series.
    - This may be more regional than just in the waters around Guam. For example, after an El Niño, mahimahi catch seems to increase, but the region has been experiencing La Niña for the past few years. It seems to be a good year for the species so far in 2023.
    - Wahoo is highly variable, but the overall trendline is flat. Many expect to see a correction for this species soon.
    - Except for the biology of the species, it is otherwise unclear why catch rates would be declining.
    - While there was a decrease in mahimahi in the subtropical latitudes, temperate areas experienced more catches of the species in recent years.

iv. Hawaii

Russell Ito, PIFSC FRMD, presented updates for Hawaii pelagic fisheries in 2022. Overall, there was an decrease in Hawaii commercial marine licenses (CML) in 2022 from 2021 by 64 licenses. The 957 longline licenses in 2022 are an all-time high, but the number of trolling licenses decreased slightly. The increase in aku boat permits is probably inaccurate due to it being listed first on the form and fishers haphazardly selecting it. Across all Hawaii pelagic fisheries in 2022, there were slightly less landings than 2021, and revenues decreased proportionally from just over $31 million to about $29.5 million with a relatively consistent average fish price. The decrease in catch and revenue was driven by the deep-set longline fishery, as other pelagic fisheries in Hawaii experienced an increase in catch and revenue except for the relatively consistent troll fishery.

Tunas continue to dominate pelagic fisheries in Hawaii, followed by billfish and other PMUS. Total catch in 2022 was slightly lower than average due to a decrease in tuna landings. While there has been a slight decrease in catch of bigeye tuna from 2015 to 2022, catches of yellowfin increased over the same time period. Billfish catch had been decreasing from its peak in 2017 before an increase in 2022 relative to 2020 and 2021. There were increases in catch for swordfish, blue marlin, and striped marlin also in 2022 with contributions from both the deep- and shallow-set longline sectors. Total catch of other PMUS has been decreasing since 2015 to a low in 2022, driven by a general mahimahi decline over the past decade with contributions from oilfish, moonfish, and monchong. After experiencing a large increase in catch in 2021, ono decreased the lowest observed catch levels of the past decade.

With respect to major gear types harvesting pelagic species in Hawaii, the deep-set longline fishery added one vessel but had a decreased number of trips and sets from 2021 to 2022. The number of hooks set also decreased from its record high in 2021 to 63.3 million. Revenue for the fishery decreased since the previous year but was in line with the decadal average. CPUE for the gear type was generally considered from 2021 to 2022 but was lower than average for bigeye

tuna while being higher than average for yellowfin tuna. In the shallow-set longline fishery, there was an increase in vessels, trips, and sets in 2022 representing the highest observed levels since 2017. Revenue for the shallow-set fishery roughly doubled in 2022 from 2021 and was well over the highest seen in the past decade. The main Hawaiian Islands (MHI) troll fishery had decreases in effort in both fishers and days fished from 2021 but were above the lows of 2020. Despite a slight decrease in catch, adjusted revenue was consistent with the previous year. The MHI handline fishery ended its three year declining trend in number of fishers and experienced increases in both participants and days fished from 2021 to 2022; catch and revenue increased alongside effort. The offshore handline fishery had slightly less participation and effort in 2022 than observed in 2021, but catch and revenue both saw large increases.

Plan Team discussion on the review of this section included the following:

- There have been post-COVID behavioral changes in the small boat fisheries associated with higher fuel prices such that fishers are making fewer trips and paying more attention to weather and other related factors to limit their fuel consumption. In the longline fleet that also experienced increased fuel prices, there were less impacts because average prices of target species were also very high.
    - Weather conditions did not play as big of a part for longliners. While fuel prices were an issue, they did not stop longliners from fishing because the market paid good fish prices.
    - However, the breakdown of the supply chain made it difficult to get replacement parts or supplies (i.e., leading to more vessel breakdowns than usual).
- The number of longline CMLs presented (i.e., 957) can be confusing because these are licenses and not permits. When individuals register for a CML, they self-select their primary fishing method. This is why aku "boat" is represented despite not having any trips since 2018; "aku boat" is one of the first gear types on the form and fishers sometimes check it out of convenience.
- The deep-set longline fishery targeting bigeye tuna has been using milkfish as their primary bait type, as it is inexpensive and hardy. There are fewer dual-permitted vessels operating out of California than in previous years; there used to be 10, but this number has reduced to two.
    - Several deep-set longline vessels relocated back to Hawaii, though vessels do still go to California for repairs and to pick up crew.
    - There is less interest in operating out of San Diego, California because the market in Hawaii is better..
    - Swordfish (shallow-set longline) are also being preferentially landed in Hawaii because of elevated fish prices.
- Shortline vessels and fishers may not be not prevalent enough to be considered their own fishery, as it is mainly a gear type employed in the offshore handline fishery and the number of people fishing shortline exclusively is limited (i.e., approximately five fishers).
    - However, this can be problematic as shortline gear is not included in the definition of the offshore handline fishery.
- The shallow-set longline fishery seemed to be catching larger individuals of bigeye tuna than the deep-set longline fishery, but this is likely not due to high grading. It is more likely due to the shallow-set fishery operating in cooler waters that facilitate larger individuals.
- The shallow-set longline fishery average trip cost increased to a greater extant than the deep-set longline fishery in 2022, but the reasonings behind this are not clear. For example, this could be a result of a decrease in the proportion of cost versus revenue for a trip in this fishery sector. It is also of note that the impact of fuel price increases to shallow-set trip costs were greater than to the deep-set trip costs.
- There are potential data issues stemming from inconsistencies from dealer reports to fish catch reports in Hawaii pelagic longline and small boat fisheries.

    - For example, catch reports indicate more blue marlin caught than striped marlin, but the opposite is true when examining the dealer reports. For 2022, the summary from WPacFIN says there were 6,222 lb landed. Dealer data matched 1:1 indicates 7,280 lb. However, this may be attributable to the number of individuals landed versus the weight landed since blue marlin can be so much larger than striped marlin.
    - Misidentifications can also negatively impact these data summaries, especially for marlin species in logbooks that are self-reported. However, it is usually not clear which identifications are incorrect since reports are often matched based on trip (i.e., to calculate average weight information), and information is usually not matched to the same extent for the small boat fisheries such that this methodology is not used for reporting at the moment. The best way forward at the moment may be to acknowledge that these data are the declarations of the captains that fishery managers assume to be correct as PIFSC continues to interface with and educate them.
    - It was clarified that stock assessments use observer data over logbooks. However, logbook data issues are perpetuated in the annual landings summaries released by DAR.
    - DAR is interested in working with PIFSC on matching longline and small boat fish reports with dealer reports to come up with a more organized way to verify data.
- There was confusion regarding metrics of shark catch and landings in consideration of the recent wire leader prohibition in Hawaii longline fisheries and electronic reporting. Some data summaries reflected a sharp decrease in shark catch that preceded the wire leader prohibition, while others did not reflect the decrease. However, this was due to discrepancies between sharks caught and retained versus sharks sold such that the summaries better depicted market factors rather than the abundance of sharks.
    - Additionally, a new requirement implemented in November 2019 to comply with the CITES Appendix II listing of shortfin and longfin mako sharks requires a permit to land any mako sharks caught on the high seas. This requirement resulted in a sharp reduction in shortfin mako landings in the Hawaii longline fishery.
- Regarding electronic reporting in the longline fleets, a majority of the fishers feel that the tablet is easier to use than the paper logbooks. The tablets also improve efficiencies in monitoring quota against projections.
- DAR expressed interest in managing the Hawaii pelagic small boat summaries for the annual SAFE reports going forward.
    - Logistics will be needed for summaries in the Hawaii data module that account total pelagic catches for a given year across different gear types.
    - DAR is willing to work with PIFSC to ensure that work is split instead of compounded.
    - The Pelagic Plan Team can set guidelines within which data summaries are generated.

v. International

Council staff provided updates regarding international fisheries in 2022 and trends in fishery performance through 2021 using data sourced from the Western and Central Pacific Fisheries Commission (WCPFC), the Inter-American Tropical Tuna Commission (IATTC), the International Scientific Committee for Tuna and Tuna-Like Species in the North Pacific Ocean (ISC), and the Pacific Community (SPC). Total estimated catch of tuna species in the Pacific Ocean was more than 3 million mt in 2021, mostly of skipjack and yellowfin tuna with smaller contributions from bigeye tuna and albacore. Consistent with previous years, purse seining contributed the largest component of the total catch at about 2.5 million mt. While the trends in catch for historically-dominant purse seine fleets in the Western and Central Pacific Convention Area (WCP-CA) have been relatively stable since 1996, the combined Pacific Islands fleet purse seine catch increased from 214,218 mt in 2002 to 826,270 mt in 2021. In contrast, over the past decade, the number of U.S. purse seine vessels has

declined substantially as many reflag. Longline tuna catches in the Pacific Ocean have been relatively stable over the past decade at 100,000 mt but experienced declines in 2020 and 2021. Incidentally-caught species (i.e., billfish) are dominated by swordfish at nearly 40,000 mt annually. The pole and line fishery harvesting skipjack and mostly comprised by the Japanese distant water fleet due to diminishing Pacific Island fleets has been on a slight declining trend since 2018. There were three basin-wide assessments relevant to the Council's PMUS in 2022: Western and Central Pacific Ocean (WCPO) skipjack tuna, Pacific bluefin tuna, and Noth Pacific blue shark. Both skipjack tuna and North Pacific blue shark were found to not be overfished or experiencing overfishing, but the stock assessment for Pacific bluefin tuna found that, despite increases in biomass, the species is still likely overfished and experiencing overfishing.

Plan Team discussion on the review of this section included the following:

- Catch limits particularly for small Pacific bluefin tuna have allowed the stock to increase such that Pacific bluefin tuna are no longer subject to overfishing according to the 2022 Report to Congress on the Status of U.S. Fisheries .
    - There was also an increase in number of bluefin tuna logged by the Hawaii longline fishery from seven fish in 2021 to 15 fish in 2022.
- There was discussion about the purse seine fleets overtaking the longline fleets, but the purse seiners are not catching as much bigeye tuna as would be expected (i.e., stable amount caught over the past decade). This may be due to the usage of FADs for purse seining, as one would expect that increased FAD usage would lead to higher catches and CPUE for bigeye tuna.
    - There has been no increase in FADs but added restrictions over time, including sporadic closures of FADs sets and additional overlapping factors. It is also likely that this is a situation where effort creep is occurring.
- The Pacific Islands fleet total is comprised of what is attributed to individual nations. If there are charter arrangements between Pacific Islands and China, this would be reflected in Pacific Islands total. The Pacific Islands fleet has grown tremendously over the last 15 years while there has been a noted decline in the U.S. fleet over the past 10 years. A majority of those boats reflagged from the U.S. to Pacific Island nations.
- While the status of bigeye tuna has improved, it is not clear how this improvement may materialize in the form of increased quotas for participating nations. Due to the stock's improved status, there is some basis that the stock could withstand increased catch levels in adherence to the "non-official" objective of retaining stock biomass at 37% of unfished biomass. However, how this potential extra quota would be allocated is beyond the scope of the Pelagic Plan Team.
- The Plan Team discussed the difficulties in interpreting stacked bar charts and recommended utilizing other forms of data visualization in future reports.

vi. Fisher Observations

Roy Morioka, Council Advisory Panel, presented fisher observations for pelagic fisheries from each of the island areas collected during quarterly AP meetings and an annual summit hosted by the PIFSC Social-Ecological and Economic Systems (SEES) Program. The Council recently began collecting anecdotal "on the water" information from active fishers about the region's fisheries over the past year to systematically document empirical fisher knowledge stemming from developments during the COVID-19 pandemic. The PIFSC annual summit was held on February 7, 2022, for Guam and the CNMI and on February 8, 2022, for Hawaii and on February 14, 2023 for American Samoa.

In American Samoa, fishers noted a strong masi run in August through September alongside

good yellowfin and marlin fishing. However, if trolling started to slow down, fishers would switch to bottomfishing. The albacore season was good for longliners in light of rising food costs and decreased fish prices. The cannery has been absorbing fish from foreign-flagged purse seine vessels as more of them fish to the east of the territory. Shark depredation continues to be an issue, and waters were very warm with rough weather in 2022. The poor infrastructure in the territory introduces additional barriers to fishing, but there has been continued interest in the super *alia* program by fishers. Fishers noted that an earthquake in August caused deep water species to move to shallower waters.

In the CNMI, fishers noted that 2022 was characterized by strong catches of mahimahi and wahoo that flooded the markets and a consistent, year-round marlin bite. Fishers also agreed that atulai recruitment was strong. However, in 2022 there was also the loss of fish aggregating devices (FADs) around the archipelago and a number of vessels exiting the pelagic troll fishery. Military exercises continued to impact fishing near Tinian, and challenging market conditions coupled with high fuel costs also affected fishery performance. Like American Samoa, CNMI fishers continued to experience shark depredation and rough waters due to wind. However, fishers observed cooler water temperatures and strong prevailing currents in 2022. Pelagic fishers from Guam similarly observed a good fishing year overall for mahimahi. Here, they also noted the loss of FADs, high fuel prices, cooler water temperatures, and rougher weather that impacted fishing, especially bottomfishing.

Hawaii pelagic fishers observed a greater abundance of pelagic species statewide coupled with mixed economic conditions with varying fish flow into the markets. There was a strong ahi bite offshore despite the low longline catch and consistent fish prices. Some FADs were reported missing, with others in need of maintenance. Shark depredation persists in Hawaii as it does across the region. However, Hawaii experienced a relatively good weather year with high water temperature and freshwater flows noted. Also similar to other island areas, increased fuel prices remained an issue and fishers became more intentional about when they took their fishing trips. A strong mango and avocado bloom was observed, which normally correlates to a strong fishing year for ahi and otaru.

Plan Team discussion on the review of this section included the following:

- The recent initiative to compile fishers' observations has been helpful to Plan Team members, and there was discussion about expanding the effort. Fisher observations could develop into a time series of fisheries-related events.
    - The fishers observations initially began from COVID-related observations through the Council's AP, as there were issues with PIFSC gaining approval for a large survey.
    - The methodology of collecting the fisher observations can be expanded and made more structured in the future.
    - Additional fishers could be included for specific fisheries to help fill in the gaps and explain potential data anomalies associated with gear types for those fisheries.
    - Some fishers agree that the fisher observations could be expanded and would be willing to work with DAR or other groups to expand the database and how it relates to local fisheries and their productivity.
- Kauai fishers have been frustrated by the poor fish prices during runs of yellowfin because the market gets flooded easily.
    - Kauai fishers know that prices on Oahu are much better, but there is no way to transport the fishers' catch from Kauai to Oahu even when landings on Oahu are low.

Prices on Oahu for target species can be $6/lb to $10/lb whereas prices on Kauai could be as low as $2/lb.
    - Some Kauai fishers will not sell their catch because of the limited market.
    - On Maui, a fisher's cooperative was established and helped to command a set price, but no such organization has yet been formed on Kauai.
    - On the Big Island, Maui, and Molokai, some fishers are starting to find ways to transship their catch to reach more lucrative markets.
- Regarding the observation of "tuna eggs" in the ocean by a fisher taking an interisland flight, there were likely not tuna eggs, as the eggs are usually transparent. The phenomena was likely a bloom of brown algae that occurs as the water temperature warms.
- The differences in fishing between the Kohala and Kona coasts on the Big Island could be due to a counterclockwise gyre of the Kohala coast that brings in water from the south. When the Kohala current is running, the area off of Keahole begins to accumulate juvenile tuna and generally becomes a productive area. Otherwise, there is mostly deep water along the Kona coast, so fishing tends to spread out when the Kohala current is not active.
- Shark depredation continues to be an issue in each jurisdiction within the region.
    - Guam DAWR has started reporting on shark depredation but is still trying to figure out a good way to calculate and standardize estimates of depredation rates.
    - Morioka noted on a recent fishing trip that he lost eight bottomfish to shark depredation before landing his first; at the end of the trip, he had lost over 30 pieces and landed 11. When experiencing shark depredation, fishers are losing their time and their gear in addition to the fish.
    - The longline industry has been more willing to share depredation information that is not captured by the logbooks.
- Regarding the observation that good fishing seasons usually coincide with avocado and mango blooms in Hawaii, the Plan Team discussed if there are similar known linkages in the other island areas.
    - In Guam, the juvenile rabbitfish runs usually occur during the flowering of many indigenous plants and also when termites are in high abundance. Traditional island knowledge connects the flowering of certain plants, such as the camachile tree, and consideration of the lunar phase with fishing opportunities.
    - In American Samoa, the palolo spawns are also linked with local flowering plants.
    - These events may be correlated due to factors such as day length, cumulative degrees temperature, or the amount of precipitation.
    - A group called the National Phenology Network has been tracking the changes in the timing of biological events. In some instances, there are now mismatches in certain cultural events and the natural phenomena that they had originally aligned with.

4. Plan Team Working Group on Bycatch Reporting Updates

A. Bycatch Summary Improvements for Hawaii Small Boat Pelagics

Bryan Ishida, HDAR, presented the outcomes of the Plan Team working group to generate bycatch summaries for the Hawaii pelagic small boat fisheries in the annual SAFE report depicting both the amount and type (i.e., species) of bycatch. This effort was driven by a need to report both the amount and species of bycatch in regional fisheries consistent with the standardized bycatch reporting methodology. Hawaii small boat pelagic fishers have not previously had bycatch presented in the annual SAFE report. A Plan Team working group developed bycatch summaries for the top ten released species over the past ten years such that the summary would not be limited to the ten most

prominent taxa in the terminal year of the time series. However, in order to generate the bycatch summaries, fishery definitions used in generating the Hawaii pelagic fishery performance data summaries were adjusted to exclude gear types that would intuitively fall within each fishery. In the MHI troll fishery, blue marlin and yellowfin tuna had the highest releases in 2022 and over the past decade. In the MHI handline fishery, yellowfin and bigeye tuna contributed the majority of releases over the past ten years. The summaries will be incorporated into the annual SAFE report this year.

Plan Team discussion on the review of this agenda item included the following:
- Ishida noted that HDAR does not have the same level of quality control in bycatch data as they do for catch data.
- Some Plan Team members reflected on the species being discarded in these fisheries that may be kept in other situations (e.g., in the territorial jurisdictions).
- The Plan Team discussed the possibility of filtering data that comprise these bycatch summaries since odd species still appear (e.g., menpachi).
    - This is another example of the complications of mixed fisheries and gear types in the Pacific Islands region, as the system was not designed for these circumstances. Troll fishers also utilize inshore handline for a small portion of the trip, etc.

B. Status Update on Non-Commercial Modules

Remington provided a brief status update on the efforts to generate a non-commercial module for the pelagic annual SAFE report stemming from the working groups to develop Hawaii and territorial non-commercial modules for the archipelagic annual SAFE reports by the Archipelagic Plan Team. The Archipelagic Plan Team working groups each made headway and were able to generate data summaries for insular fisheries in each of the region's island areas, but no pelagic data summaries were completed. Remington suggested that the Pelagic Plan Team should contribute members to these working groups to ensure that progress is made for next year's annual SAFE report.

5. Continued Review 2022 Annual SAFE Report Modules

B. Ecosystem Chapter

i. Environmental & Climate Variables

Phoebe Woodworth-Jefcoats, PIFSC Ecosystem Sciences Division (ESD), provided updates to the climate and oceanic indicators section of the 2022 annual SAFE report. The presentation reviewed both basin-wide and pelagic-specific indicators, including atmospheric carbon dioxide (CO_2), oceanic pH, the Oceanic Niño Index (ONI) measuring the El Niño-Southern Oscillation (ENSO), the Pacific Decadal Oscillation (PDO), tropical storm activity, sea surface temperature (SST), temperature at 200 to 300 meters depth, chlorophyll-a, and the North Pacific subtropical frontal zone (STF) and transition zone chlorophyll front (TZCF). Additional fishery-based indicators included fish community size structure, bigeye tuna weight per unit effort (WPUE), bigeye tuna recruitment index, and bigeye tuna catch rate forecast.

Notable changes in indicators included the continuing exponential increase in atmospheric CO_2 to 419 ppm and commensurate decrease in oceanic pH to 8.05 based on data with a one-year lag time. In 2022, there were prevailing La Niña conditions and a negative PDO. Tropical storm activity was below average across the region for 2022. SST was relatively average (21.2 ℃) in 2022 in the area in which the Hawaii longline fisheries operate though there has been a steady increase year over year. Temperature at 200 to 300 m depth was also average at 11.2 ℃ with a minor declining trend over time. Chlorophyll-a concentrations were average at 0.13 mg/m^3. The STF was north of average in the

west, and the TZCF was north of average across a majority of the front. Median phytoplankton size, which is expected to decline with climate change, was roughly average in 2022. Other fishery-based indicators generally did not indicate a recruitment pulse last year, but the bigeye tuna forecast suggests steady CPUE and WPUE for the species over the next four years. With respect to size structure, swordfish were slightly smaller than average while bigeye tuna were slightly larger than average in 2022.

Plan Team discussion on the review of this section included the following:

- The most recent bigeye tuna recruitment pulse was just before 2015, which followed a large nearshore recruitment event in 2013 and 2014. However, the connection between these two events is unknown.
- Regarding the climatological baseline against which these climate and oceanic indicators are compared in the data summaries provided in the module, the Archipelagic Plan Team recently recommended that the baseline be revisited so it does not include all previous years through the current year. The Plan Team agreed that Pelagic Plan Team members should be included in the small group with Archipelagic Plan Team members to decide on an appropriate climatological baseline.
- Bigeye tuna size information comes from DAR dealer data.
- The benefit of presenting longer time series of fishery performance data was revisited, as fishery data could more readily be compared to the longer time series of environmental data such as atmospheric carbon dioxide if more data were presented.
- For atmospheric carbon dioxide concentrations, deforestation is not depicted in the interannual variability for the parameter. The biggest driver of this trend is the boreal forests in Canada and Russia, as they have experienced less deforestation relative to somewhere like the Amazon and higher latitudes have larger impacts on seasonality.
- For hurricanes tracked over the Eastern Pacific Ocean last year, it seemed as if many of the storms stayed in the east before going up the Baja Peninsula instead of crossing into the Central Pacific Ocean, resulting in a mild storm year (i.e., one storm near Hawaii). This could be explained by circulation patterns that may catch the storms and force them north if they form far enough to the east. If the storms form further west, they usually get caught in patterns that bring them west.
- Bigeye tuna may have stronger juvenile size classes and recruitment in certain years, and fishers sometimes note that they cannot get away from smaller individuals. It would be interesting to further evaluate the data to see if strength of recruitment in a given year is an indicator of larger individuals in the future, as this is also observed for striped marlin.
- The Plan Team discussed whether it should be evaluating mesoscale features of the environment in this module
    - These features could include the defining characteristics of the TZCF and STF, eddy structure and longevity, and other environmental features with which regional fisheries are interacting.
    - Empirical dynamic modeling (EMD) can be used for short term forecasts. Short term predictions of environmental drivers such as PDO or ENSO can be made using EDM. Within the EDM method cross-convergent mapping can be used to determine drivers influencing catch rate such as PDO, phytoplankton concentration, etc.. However, it can be difficult to develop a meaningful indicator of mesoscale features across the region, as different species have different preferences with respect to various parameters. Eddy kinetic energy was a candidate indicator but ultimately was not satisfactory.
    - PIFSC ESD is working to better understand the relationship between different phases of ENSO and PDO with regional fishery performance using generalized additive models (GAMs) and empirical orthogonal functions (EOFs). Results should be available next year.
- Climate and oceanic variable products could be geared toward specific fisheries by emphasizing

different sets of variables or measurements; this may have a greater appeal to different audiences in the fishing community.
    - One of the challenges when looking at the small boat fleet is the scale of environmental observations that are available to examine (e.g., smaller current structures and upwellings, etc.).
    - A group is using the Regional Ocean Modeling System (ROMS) for the MHI at the University of Hawaii but it is not clear if this modeling provides sufficient detail for coastal time series. There is also work with satellite imagery that is considering expansion to Hawaii, which may offer a unique way to look at these types of environmental features.
- Regarding the bigeye tuna index that aligns with a well-explained recruitment relationship, this could also be expanded to the MHI handline fishery that catches small individuals.
- There were results in a recent paper inferring spillover effects from the Papahanaumokuakea Marine National Monument, but the bigeye recruitment index with lagged CPUE shows recruitment pulses that predate the monument and could explain increased catch rates.
    - The spillover effects analysis did not include considerations for environmental variables, though it is likely that there would be environmental impacts on any identified spillover.
    - The authors of the paper only examined a few discrete time spans, opening the possibility that their results fail to capture specific recruiting events.
    - Because the bigeye recruitment index is considered over a much larger area than examined by the paper, the two approaches cannot be directly compared.
- During the fisher observations presentation for Hawaii, fishers noted an unusually good few weeks of fishing off Kona when multiple large marlin as well as ahi, and other pelagic fish were caught. Outlier events such as this period of great fishing off Kona in early 2023 may be associated with a strong oceanographic signal that could be used as a case study to explore the integration of observations from the fishing community with oceanographic research at PIFSC.
- Woodworth-Jefcoats presented on efforts by other regions to increase accessibility to stakeholders of fisheries performance and environmental data relevant to fishery management.
    - Related initiatives could include developing a Shiny application that automatically updates and allows users to specify variables and time periods of interest as well as clearly summarizing trends, statuses, and implications of various fishery objectives and parameters.
    - The Plan Team generally agreed that it should move towards automation for modules and improved summary reporting for fishery management objectives as they relate to the annual SAFE report. A Shiny application would be especially useful to provide to the Council's AP and during fisher observation

ii. Habitat section

Remington provided updates to the habitat section of the 2022 annual SAFE report. There were no pelagic EFH reviews completed in 2022 and no other data streams are provided in this module. Updates were minimal and limited to new information regarding ongoing research related to the habitat of pelagic fishery species, of which much of the focus is on bigeye tuna. These active research and data collection initiatives include cooperative research between PIFSC and the Hawaii Longline Association to record temperature and depth profiles for pelagic species, PIFSC research examining the abundance of micronekton (i.e., bigeye tuna forage) at Cross Seamount, PIFSC's Protected Species Ensemble Random Forest (PSERF) model to describe longline interactions with protected species, and the wide range of projects nested under the Bigeye Tuna Initiative. The COVID-19 pandemic had previously impacted field research for many of these projects, but data collection has resumed or is scheduled to do so for several.

iii. Marine Planning section

Council staff provided updates to the marine planning section of the 2022 annual SAFE report. There were no new aquaculture operations or major military training activities tracked in 2022 for any island area in the region. For each island area, information was added to the annual SAFE report regarding the Council's recent action to amend their FEPs to establish a management framework for commercial and research aquaculture. For Hawaii alternative energy, information was added to the report regarding the Light Detection and Ranging (LiDAR) buoy deployed by the Bureau of Ocean Energy Management (BOEM) in December 2022. Council staff prompted the Plan Team to discuss their preference for module updates in the future. There was some Plan Team discussion regarding the next steps for the module, with some members voicing opinions in favor of deleting the pelagic section because the information provided notedly overlaps with the information provided in the archipelagic marine planning sections. However, the Plan Team decided to retain the module because it reports additional information, such as FAD statuses.

iv. Socioeconomics section

Minling Pan, PIFSC SEES, provided updates to the socioeconomics section of the 2022 annual SAFE report. Fuel prices across the region reached decadal highs in 2022 at an average of $5.13/gallon after a 38% increase. The Hawaii longline fishery had a slight decrease in commercial landings and revenue, potentially due to adjusted tuna prices decreasing despite the nominal price increase. Yellowfin tuna comprised a larger proportion of the revenue relative to bigeye tuna (61% of the total). Hawaii longline trip costs increased commensurate with fuel price increases, however net revenue for deep-set trips declined 13% while shallow-set trips had an increase of 48%. The American Samoa longline fishery experienced a slight increase in commercial landings and revenue in 2022 in the midst of a decreasing trend over the past two decades. Similar to tuna in Hawaii, albacore in American Samoa had a slight increase in nominal price but a decrease in adjusted price as it has been since 2020. Also similar to Hawaii, fuel comprised the largest portion of trip costs for the longline fishery, which notably increased the cost per set. However, revenue per set also increased for the American Samoa fleet, perhaps associated with increased catches of albacore.

Next, Pan presented 2022 data summaries from regional non-longline pelagic fisheries, which tend to sell large portions of their catch. In American Samoa, non-longline gears generally comprise 9% of non-cannery market sale, but 2022 data were non-disclosed due to data confidentiality rules. However, the cost per trip in 2022 displayed a decrease despite fuel comprising 87% of the total. Data were also non-disclosed due to data confidentiality rules in the Guam troll fishery, including for trip costs. In the CNMI troll fishery, pounds sold and revenue were decreased in 2022 from the previous year, but it was of note that nearly 100% of recorded commercial landings were sold (as opposed to the average of 50% over the last two decades). The price of pelagic MUS in this fishery increased in 2022, as did troll trip costs associated with the increase in fuel price. In Hawaii small boat fisheries, there has been a decreasing trend in participating CML holders; despite this, both pounds sold and revenue increased in 2022 to the highest levels since 2015. Trolling comprised over half of the total revenue for these fisheries, though the increase in 2022 can be attributed to the handline fishery

Plan Team discussion on the review of this section included the following:

- The Plan Team was concerned that Hawaii longline cost-earnings data was last collected in

2013 and will not be updated until 2024, meaning that the data would not be updated for over a decade. PIFSC SEES is supposed to facilitate an update every five years, but there were delays in obtaining funding in 2018 followed by impacts associated with the pandemic. The cost-earnings survey updates will be more frequent going forward.
- The data displayed for Hawaii non-longline pelagic fisheries suggest that there were a negative amount of CMLs without catch sold in 2003 and 2004, which may be associated with missing data for a number of fishers in the early years. Pan intends to communicate with DAR about how they structured their time series around this time, as commercial landings are higher than total landings in some years as well.
- The Gini coefficient is a measurement of variation among a population or sample; in this case, revenue per vessel. The lower the coefficient, the lower the variability.
- The socioeconomic summaries match the fishery performance summaries indicating a slow decline of bigeye tuna being replaced by yellowfin tuna over the past five years.

Kirsten Leong, PIFSC SEES, then provided a presentation on a new effort to incorporate equity and environmental justice (EEJ) considerations into the socioeconomics module of the annual SAFE report. Leong began by contrasting 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. Leong 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). It would be low-hanging fruit to facilitate additional information for the socioeconomic module on the Council's online portal. Community social vulnerability indicators could be leaned on, and managers could begin tracking fish flow more closely.

Plan Team discussion on the review of this section included the following:
- The Archipelagic Plan Team also discussed this EEJ effort and how it was originally borne out of the pandemic before fisher observations became its own section. The Archipelagic Plan Team has a working group that the Pelagic Plan Team could likely contribute to in looking at the importance of fisheries for target catch but also secondary catch (e.g., non-target pelagics) and how they are used in the communities.
- For non-target longline catch, PIFSC SEES is especially interested in non-commercial data to better determine how non-market economies are supported, among other benefits of fishing. There is no current way to capture non-market benefits of fishing to the region or nation.
- It was clarified that the "national strategy" refers to the NMFS national strategy, not NOAA.
- Protected species have been a recurring topic while discussing EEJ issues as well.
- The difference between pounds caught and sold could be used as an indicator for fish staying in the community. Depending on the fishery and the nature of reporting, there are some fishers who do not report fish being kept and solely focus on those sold. Some of the smaller, family-based fisheries may be retaining more fish than expected, and this should be investigated more at a smaller scale. These fish are not spread over a huge area but are impactful for their small area.

v. Protected Species

Council staff provided updates to the protected species section of the 2022 annual SAFE report

as provided by the Protected Species Work Team. In 2022, the Hawaii shallow-set fishery was able to operate for the full-year, similar to 2021 and reflected in the relative increase in effort since 2018. There were 24 interactions with loggerhead, 11 interactions with leatherback, and 2 interactions with olive ridley sea turtles in 2022, and all sea turtle interaction in 2022 by the shallow-set fishery were below the incidental take statement (ITS) levels. Further, only one trip in 2022 reached the leatherback trip interaction limit of two before returning to port, while no trips exceeded the loggerhead trip interaction limit. Interactions with Guadalupe fur seals in the shallow-set fishery remained below the 1-year ITS in the 2019 Biological Opinion (BiOp), and all marine mammal interactions were below the potential biological removal (PBR). There were three observed pinniped interactions in 2022 after having zero in 2021, which was likely due to a combination of oceanographic conditions and occurrence of fishing effort east of 130° W. For seabirds, laysan and black-footed albatross interactions in the shallow-set fishery were higher in 2022 than in recent years; however, lower numbers in preceding years may have been due to limited effort associated with fishery closures during peak seabird interaction months. The pilot studies evaluating tori lines as deterrents are ongoing. Oceanic whitetip shark interactions in 2022 were the highest observed since 2011, which may be due to increased spatial overlap or potential increases in population. ESA-listed elasmobranch interactions remained below the 1-year ITS from the 2019 BiOp.

In the Hawaii deep-set longline fishery in 2022, observer coverage increased to a normal level of 20.2% alongside an increase in effort from the preceding two years. The draft BiOp for the continued authorization of the fishery was released in March 2023, and may be finalized before this year's SAFE report is finalized. Regarding sea turtle interactions in the deep-set fishery, olive ridley interactions have been reduced over the past three years relative to levels observed in 2015 through 2019. According to the PSERF model, winds, currents, and eddies increase the probabilities of olive ridley interaction with the deep-set fleet; there were higher eddy activities and current speeds observed in the 2015-2019 time period that decreased thereafter. Marine mammal interactions in the fishery were relatively low in 2022 and there were seven observed takes of false killer whales (FKW). The FKW Take Reduction Plan (FKWTRP), implemented in 2012, contains a trigger for the closure of the Southern Exclusion Zone (SEZ) that was met in 2021, but the SEZ did not close before the end of the year and remained open through 2022. Data through 2021 indicate Pelagic FKW M&SI is above the PBR within the EEZ. Regarding seabird interactions in the deep-set fishery, interactions with black-footed albatrosses have been declining since 2019, possibly associated with prevailing La Niña and PDO conditions. Interactions with oceanic whitetip sharks remain high but within normal bounds, and the Council continues to monitor the transition of leader material following the wire leader prohibition.

The American Samoa longline fishery data was no longer confidential in 2022 with observer coverage on 8.7% of trips. The draft BiOp for the continued authorization of American Samoa longline fishery was released in March 2023, and may be finalized before this year's SAFE report is finalized. There were no observed takes of sea turtles, marine mammals, or seabirds in the fishery except for one olive ridley sea turtle. The number of takes for oceanic whitetip shark was much lower than observed in all previous years since 2006. No substantive updates were made for non-longline pelagic fisheries sections of the report for 2022. Council staff requested the Plan Team to provide direction on maintaining data tables based on vessel arrival date, endorse Work Team additions to the research and assessment needs section of the module, and endorse Work Team considerations for incorporating additional BiOp monitoring requirements in

future reports.

Plan Team discussion on the review of this section included the following:

- Direction on maintaining data tables based on vessel arrival date can be determined during the Work Team meeting with PIRO PRD.
- The Plan Team discussed how the variability in the populations of protected species impacts their interaction rates in regional fisheries.
    - The current management is static with an ITS based on historical data, but this management does not consider changes in populations for non-target species. For example, the loggerhead population continues to increase, and interaction thresholds are continuously met.
    - PIRO SFD recently requested PIFSC FRMD to examine long-term population changes for non-target and protected species, and Plan Team support could help further the initiative.
- Regarding the recently implemented loggerhead and leatherback trip limits, the Plan Team discussed if there would be ways to measure their effectiveness this soon after implementation (i.e., two years of data).
    - The first instances where a trip has reached a trip limit are occurring. The annual SAFE report tracks trip limits because the Council requested to review them on an annual basis to see if the limits need to be adjusted.
    - The Plan Team felt that information may be too limited to assess the effectiveness for this limit level of five for loggerhead and two for leatherback. More years of data may be required for a more comprehensive analysis, but one could evaluate the number of trips that hit the limit or came close to doing so, which was two.
    - With the removal of the loggerhead hard cap, there is going to be an adjustment in the upper end of the distribution of interaction numbers, and it may take a few more years for the numbers to settle into the uncapped numbers. Information was limited for many years by the hard cap, so there may be a shift in the distribution described by Marti McCracken's parameters. As the distribution is better understood, population variability analyses can be revisited. As for describing the efficacy of the trip limits, this could perhaps be done with more data.
    - There has been a relatively high turtle catch so far in 2023. The trip limit is effective in allowing managers to see where turtle interactions are occurring. While a lower limit would allow this to happen more often, turning vessels back to port is not ideal.
    - For the higher numbers seen in 2022 and 2023, data from the environmental and climate variables module indicated a northern shift in the distribution of temperature bands. A look at the interactions by latitude would be a starting point to evaluate the potential that the northern shift could explain the interactions.
- Regarding the oceanographic impacts on the occurrence of olive ridley turtles as indicated by PSERF, observer data can be aligned with oceanography to look at ocean conditions related to certain sets.
- In a November 2022 workshop with the fishing industry convened the Council, PIFSC and University of Florida, that utilized the ecosystem based fisheries management (EBFM) model, it was noted that the error on the SST data available on the vessel may be up to one degree off from the data used for the TurtleWatch product. A degree of difference is the difference of being in or out of the temperature band, which led to workshop discussions about how to make spatial tools more useful.
- The Plan Team endorsed Work Team additions to the research and assessment needs section of the module and considerations for incorporating additional BiOp monitoring requirements into future annual SAFE reports.

6. Online Portal SAFE Report Updates on Protected Species

Remington briefly walked Plan Team members through the new protected species section of the Council's online portal for the pelagic annual SAFE report, which was recently generated to mirror the SAFE report module and has not yet been published publicly. The online portal allows users of the annual SAFE report to more easily navigate and access the different sections of the report, provides data in both tabular and graphical formats, and allows users to directly download the presented data if they chose. With Plan Team approval, the protected species section of the online portal would be updated with 2022 information and published on the public-facing version of the online portal this summer.

Plan Team discussion on the review of the online portal included the following:

- The Plan Team cautioned against the online portal presenting information that contradicts NMFS websites as there may be multiple streams of data that may not match up depending on how the data are summarized.
- The online portal can only present annual data in a graphical format, not monthly data. Monthly data also may not be ideal for protected species considerations given issues about reporting interactions based on the data of the vessel returning; monthly data would not necessarily be more representative but would require additional considerations.
- Automation would be useful not only for updating the online portal each year, but also for updating certain modules (e.g., protected species, climate and oceanic variables, etc.). The workflow from updated data, to a Word document for the annual SAFE report, to Markdown format for the online portal could likely be simplified.
    - Automating annual updates for modules and the portal would provide section authors more time to review the data and have meaningful discussions about related trends.
    - The Plan Team members agreed to form a working group to begin thinking about automation. Also related to the utility of the online portal, the Plan Team suggested that the working group also evaluate which report modules would benefit from housing longer data time series on the online portal.

7. Public Comment

There was no public comment.

8. SAFE Report Discussion

A. 2022 Report Region Wide Improvements & Recommendations

B. Other SAFE Report Matters

Agenda items 8a and 8b were taken together by the Plan Team. Remington guided the Plan Team through focused discussion on several items that required member input before opening the floor to all Plan Team members regarding improvements and other recommendations for the pelagic annual SAFE report. Generally, the Plan Team discussed how to better incorporate the Plan Team meeting report (i.e., and the informative data narratives therein) into the annual SAFE report, developing a list of regulatory and data collection changes for each island area within the region, revising stacked bar charts in the annual SAFE report, determining the next section to be developed for the online portal for the pelagic annual SAFE report, representing uncertain data in the annual SAFE report, the development of a life history module for the annual SAFE report, and the timing of the Pelagic Plan Team's regular meeting in May each year.

Plan Team discussion on these items included the following:

- The best way to incorporate the narratives on the data modules from the Pelagic Plan Team reports into the annual SAFE report was not immediately clear, as adding detailed text would lengthen the report substantially. Other options include adding the Plan Team report via hyperlink, as an appendix, or on the Council's online portal. Some members were in favor of supplementing the data visualizations with accompanying text, with others suggesting jointly written Plan Team sections of the report. The Plan Team ultimately agreed to append the Plan Team report to the annual SAFE report as an appendix after thorough review.

- Regarding the development of timelines of regulatory and data collection changes, Remington volunteered to lead the effort with assistance from territorial representatives and other Plan Team members. This will help historical context and nuance from experts to not be lost over time.
    - Some of these changes have been tracked in previous stock assessments and data evaluation workshops as well as the previous Fisheries Statistics of the Western Pacific report.
    - There is great value in having a legacy database of fishery changes. One was developed for the longline fishery a couple of years ago to assist with CPUE standardization.
- Regarding the next step in development for the Council's online portal for the annual SAFE report, the Plan Team agreed that the socioeconomics module would be the most valuable to be generated next.
- Regarding stacked bar charts, the Plan Team agreed that new formats should be implemented for next year's reports.
- Regarding a potential third "category" of data to represent uncertain data points, the Plan Team instead suggested acknowledging the caveats of the data.
- Regarding the annual SAFE report lacking life history information for pelagic MUS, the Plan Team agreed to establish a working group to develop a life history module.
- There is a truncated turnaround time for the annual SAFE report from when the annual data summaries are received from PIFSC to the timing of the Pelagic Plan Team meeting, and Plan Team members would benefit from having more time to review the data as well as to prepare their report sections and PowerPoint presentations.
    - There would be benefit in pushing the Pelagic Plan Team meeting back slightly, which could coincide with plans by the Archipelagic Plan Team to hold both meetings in the same week.
    - The Plan Team meeting cannot happen before the data freeze date of March 15 but also cannot be too late in May when the RFMOs begin holding meetings.
    - The general consensus was to move the meeting back, but intersessional meetings can be held as well. The Plan Team further discussed this item under agenda item 19 for Other Business.

9. Revising the Council's Pelagic Fisheries Research Plan & Priorities

Council staff provided a presentation to the Plan Team on updating the Pelagic Fisheries Research Plan and related priorities. Under the MSA, each Council must develop multi-year research priorities for fisheries, fishery interactions and other areas of management research. The most recent Pelagic Fisheries Research Plan was drafted in 2018 and updated in 2021, and Council staff are engaging Council advisory bodies to identify new priorities. The priorities for the Pelagic Fisheries Research Plan will coincide with new MSA five-year priorities for 2025-2029. There are several existing priorities to revise, such as evaluating effects on fisheries from spatial closures and large-scale marine protected areas, and the new plan should have new management objectives and research priorities. The new plan should focus on optimizing fishery performance, developing dynamic management and fishery development opportunities, and ensuring local food security, among other objectives. Potential research priorities are wide ranging and could potentially include improving knowledge on the stock structure and distributions for pelagic MUS, understanding causality of region fishery performance, understanding the effects on fisheries from spatial closures, mitigating

shark depredation, understanding the importance of territorial fisheries to food security, etc. Council staff reviewed several of the potential priorities and requested the Plan Team to provide feedback on whether they support the priorities, linking the priorities to the main management objectives, identifying knowledge gaps and focal areas under each priority, and guiding potential implementation. The Plan Team should consider what priorities have recently been met, what has changed since the Pelagic Fisheries Research Plan was last updated, and emerging issues.

Plan Team discussion on this agenda item included the following:

- Council staff requested the Plan Team members to review, revise, and provide comments on a file denoting the current draft of the priorities under the new Pelagic Fisheries Research Plan.
- The Plan Team agreed that the priorities should be framed around management objectives.
- The new potential management objective to strengthen underserved fishing communities aligns well with many of the current efforts of the PIFSC SEES Program, but it could be broader. The current priorities focus on territorial food security, but things like conservation benefits and social cohesion could be better measured.
- While stating these priorities in the Pelagic Fisheries Research Plan does not automatically provide funding for the priorities, it does provide additional support for funding requests (e.g., the Saltonstall-Kennedy Grant Competition).
- The Plan Team discussed changing the priority for mitigating shark depredation to a priority of mitigating depredation in general in consideration of being over the FKW PBR. There is a need for additional mitigation measures and new devices do not seem to fill this gap, so behavioral mitigation techniques are needed.
- The Plan Team added several items to the list of knowledge gaps, including determining the population structure and abundance of giant manta rays and improvements to life histories for pelagic species.
- The Plan Team ultimately agreed with further developing the research priorities and management objectives as presented.

10. Update on Biological Opinions for the Hawaii and American Samoa Longline Fisheries

Melissa Snover, PIRO PRD, provided an overview of the draft BiOps for the Hawaii-based deep-set and American Samoa longline fisheries. The estimated completion date of the document is May 2023. The draft BiOp for the deep-set longline fishery concluded that the fishery is not likely to jeopardize green, loggerhead, olive ridley, and leatherback sea turtles, giant manta rays, scalloped hammerhead sharks, oceanic whitetip sharks, sperm whales, and the MHI insular FKW. The BiOp provides five-year ITSs above which PIRO SFD must request the reinitiation of formal consultation with PIRO PRD. Draft reasonable and prudent measures (RPMs) for the deep-set fishery include that (1) ESA-listed species caught alive must be released from fishing gear in a manner that minimizes injury and likelihood of further gear entanglement, and that (2) the fishery has a monitoring and reporting program sufficient to confirm that extent of take is not exceeded.

The American Samoa longline fishery draft BiOp concluded that the fishery is not likely to jeopardize green, olive ridley, hawksbill, and leatherback sea turtles, scalloped hammerhead sharks, oceanic whitetip sharks, and giant manta rays. Similar to the Hawaii deep-set BiOp, this BiOp provides five-year ITSs for the species likely to be adversely affected above which PIRO SFD must request the reinitiation of formal consultation with PIRO PRD. Draft RPMs and related terms and conditions of those RPMs for the American Samoa fishery are analogous to those for the Hawaii deep-set fishery.

Plan Team discussion on this agenda item included the following:

- The Council plans to begin discussions at its June meeting regarding reasonable and prudent measures (RPMs) in the final BiOp that require regulatory implementation. If there are additional implementation needs, Council staff will request further input from the Pelagic Plan Team at an intersessional meeting.

11. False Killer Whale Take Reduction Team Meeting Outcomes

Council staff provided a presentation to the Plan Team on the outcomes of March 2023 FKW Take Reduction Team (TRT) meeting. The FKW Take Reduction Plan (TRP) was implemented in December 2012 with the primary measures requiring the use of "weak" circle hooks (i.e., 4.5 mm width) and monobranch lines of a minimum 2.0 mm diameter as well as provisions for SEZ closures. The March 2023 FKWTRT meeting was held with the purpose of the team considering recommendations to modify the TRP to reduce M&SI estimates to below PBR. Short-term goals include reducing M&SI below PBR within six months and to reduce M&SI to levels approaching zero within five years. At the meeting, the TRT came to consensus on several recommendations but did not reach consensus on key measures to reduce M&SI. TRT consensus recommendations include electronic monitoring, crew training, a pelagic stock assessment, Marine Mammal Protection Act (MMPA) comparability findings, effectiveness monitoring, and acoustic monitoring. Non-consensus recommendations ranged from those regarding technological and gear-based improvements (e.g., fighting line device, braided leaders), handling guidance, effort reduction, analyses to evaluate the potential effectiveness of these control measures, and conducting a management strategy evaluation to simulate likely performance and tradeoffs of effort reduction. NMFS is expected to developed proposed modifications to the TRP based on TRT recommendations. Council staff requested the Plan Team to provide input on approaches and considerations for evaluating potential effort control measures regarding the reduction of FKW interactions and impacts to the deep-set longline fishery.

Plan Team discussion on this agenda item included the following:

- Regarding gear and handling measures that did not reach consensus: .
    - Regarding the fighting line device, a Plan Team member suggested examining the use of a barrel gaff that is usually used off cliff edges. The barrel gaff prevents breakage by sliding past the main line swivel and clipping when the fisher pulls back.
    - The group on the TRT who recommended effort reduction said they would not object to additional gear modifications. The TRT discussed potential reductions achieved by the fighting line device, but based on that conversation, some members felt that there would not be sufficient reduction in M&SI to below PBR with gear modifications.
    - The Plan Team discussed the potential of the loop leader idea that came from the industry but has not yet been tested. The TRT felt that it is worth trying. However, leaving a hook in the animal's mouth is still classified as M&SI, so this approach would not assist in getting M&SI below PBR. The gear may still be worth testing, which could also evaluate potential risk to seabirds.
    - The crew is the most important part of techniques being used effectively.
- Regarding the boundary denoting the pelagic stock of Hawaii FKW, the Plan Team was not aware if the boundary is reevaluated and adjusted based on changes in the nature of the fishery and its interactions with FKW. For example, last year, there was more fishing effort southwest of the MHI outside of the triangle boundary.
    - The industry also took issue with the boundary because, while it encompasses a lot of historical effort, it is arbitrary and there is effort outside of the area.
    - There is also foreign longline fishing activity in this region outside the EEZ that overlaps with the Hawaii fleet; this can be observed in Global Fishing Watch data.

- Regarding a potential approach to doing an effort reduction analysis, the Plan Team discussed that it is possible. Given the expected interaction rate and effort reduction, the things to consider are the effect of the reduction and observed interactions on McCracken's uncertainty on estimates of take. As effort goes down, the number of interactions will go down, which would increase variance. There is a trade-off with uncertainty and lower effort, in that uncertainty with FKW estimates will become higher with lower effort (if assuming static observer coverage level) such that risk level may remain the same.
    - The TRT identified three layered ways to reduce effort: (1) set and/or hook based reduction within the management area, (2) rolling closures by vessel, and (3) effort caps.
    - NMFS has never done an effort control measure in any TRP across the country, but if NMFS is going to consider it, the Council would want it vetted through their process since the fishery is managed under the Pelagic FEP.
- The TRT discussed general correlation over time between FKW interactions and the number of hooks set per day, but there has been no specific analysis.
    - The number of interactions are so low that it makes statistical analysis hard to do. The number of depredation events provides more information as there is a 6% chance of one occurring in a set. One could see if there is an attraction effect with more effort in a given area to be more likely to experience a depredation event. There does not seem to be a positive feedback effect from depredation events on effort in the region.
    - There is interest by the fishing industry to collect information on depredation events. Many events are not recorded.

12. Electronic Monitoring: Developing Implementation Options & Scenarios

Jennifer Stahl, PIFSC FRMD, and Heather Cronin, PIRO SFD, presented the Electronic Technologies Steering Committee (ETSC) report on developing implementation scenarios and options for electronic monitoring (EM). The ETSC reconvened in October 2022 and an EM overview was presented to the Council at its 193rd meeting in December 2022. The Council recommended that the ETSC and Pelagic Plan Team begin development of options and scenarios for the pre-implementation of EM in U.S. longline fisheries in the Pacific Islands by September 2023. The role of the Pelagic Plan Team is to consider EM in the context of regional fisheries, recommend EM scenarios/options for development by the ETSC, and recommend options for a pre-implementation EM program.

EM involves the use of technologies (i.e., video cameras, gear sensors, and reporting systems) to monitor fishing operations, effort, and catch, and EM research began in the Pacific Islands Region in 2009. Currently, there are 20 volunteer vessels with EM, which includes cameras with views of the deck and surrounding water, GPS sensors to determine location and speed, and hydraulic pressure and magnetic sensors to trigger camera recording when hauling. Previous research has determined alignment of EM with observer data, optimal review speeds, protected species detections, and most recently, protected species post-release condition. Challenges in using EM to observe protected species interactions include that most occur at night, are mouth-hooked, and are released with trailing gear; however, determinations are possible even when the animal is not brought aboard the vessel if the line is visibly cut or coiled. Artificial Intelligence (AI) research is being applied to EM to reduce human video review time and costs, and a model is being built to detect fish on deck as well as protected species in the water and on deck. A pre-implementation program for EM in the region would establish and refine EM program structure, protocols, infrastructure, and costs as well as provide information for a future FEP amendment to implement EM in regional longline fisheries. Management objectives, focusing on the MSA, ESA, MMPA, include catch accounting of all species, bycatch accounting for all discarded species, and protected species monitoring.

The first decision to be made is whether to focus on the Hawaii deep-set, Hawaii shallow-set, or American Samoa longline fishery, with considerations for achieving target observer coverage levels and reducing observer program costs. The focus for the Hawaii deep-set longline fishery would be to maintain coverage levels to estimate protected species (i.e., especially leatherback sea turtles, FKW, and oceanic whitetip sharks) and shark bycatch as well as meet FKWTRT priorities. While the deep-set fishery contains the first 20 vessels with EM systems installed, the start-up costs would be relatively high since it is the largest longline fishery sector and night hauls would make detections of protected species more challenging. The focus for the Hawaii shallow-set longline fishery would be to maintain coverage levels (i.e. 100%) to estimate protected species interactions, sea turtle trip limits, and shark bycatch. The shallow-set fishery usually hauls during the day, has higher sea turtle interaction rates that may be easier to assess, and may have better buy-in due to the 100% observer coverage rate. However, focusing on the shallow-set fishery does not satisfy FKWTRT recommendations, replacing observers with EM would result in data loss from biological samples, and EM could not encourage captains to return to port after hitting a trip limit. The focus for the American Samoa longline fishery would be to maintain observer coverage to monitor protected species interactions as well as shark bycatch. While EM could reduce the high costs of coverage in American Samoa associated with the logistics of deploying observers, EM installation and support could be challenging and the fishery hauls their sets in at night.

Cronin asked the Plan Team for feedback on information needed to prioritize EM options, if there are other scenarios or management objectives to consider, Plan Team participation at ETSC meetings and to draft an options paper, and information needed for presentations to the Council.

Plan Team discussion on this agenda item included the following:

- With respect to the difficulties in assessing nighttime video from EM cameras, the Plan Team discussed whether night vision or infrared cameras could alleviate concerns.
    - It is important to consider if these types of cameras could cause glare, and there may be a forthcoming study to explore different lights.
    - The reliability of EM cameras (and their storage) depends on their sensors that trigger the cameras to record and the ongoing maintenance of them; using AI to trigger camera recordings may also address issues and make it easier to review EM footage at lower costs.
    - The cameras have infrared capabilities but these do not activate when the boat lights are on. Infrared imagery is in black and white, making it more difficult to observe hooking location.
    - The cameras do have limited life and must eventually be replaced, so there is some expected maintenance involved.
- The EM cameras can be used during inclement weather.
    - These cameras have been used worldwide in all types of weather, but cameras must be wiped down at the start of a trip or in between hauls to keep water off the lens.
    - Clear animal identifications during rain depend on implementation of a vessel monitoring plan with protocol to clean the camera lens before each haul.
- The mandates initially for electronic reporting and now for EM were not directly funded and received funding from proposals written by PIFSC FRMD. The Plan Team commended all for the collaboration.
- Some on the Plan Team preferred utilizing the Hawaii deep-set longline fishery over the shallow-set longline fishery for the pre-implementation program.
    - There is 100% observer coverage in the shallow-set fishery, so there is no room to improve coverage rates there.
    - There are fewer total shallow-set longline vessels relative to the deep-set fishery and fewer vessels (~12-13) than there are EM cameras currently.

    - There is an opportunity to increase coverage in the deep-set fishery and improve monitoring of non-target species in addition to protected species, as the Pacific Islands are lead stock assessors for species like billfish and sharks at the RFMO level.
    - The deep-set fishery has a more recent BiOp.
    - The deep-set fishery was the sector in which the initial EM cameras were deployed. There were 18 volunteer vessels at the start and 20 currently. The vessel owners seem to be okay with EM because they have security cameras anyway.
    - The shallow-set fishery is seasonal whereas the deep-set fishery is year-round.
    - Ideally for this fishery sector, EM would be implemented on every vessel and certain ones would be selected to account for percent coverage. It would make sense to record every haul but sample only a portion (potentially complicating deep-set implementation). Generally, EM implementation is easier when it is on every vessel and is non-voluntary.
- Other Plan Team members preferred utilizing the Hawaii shallow-set fishery over the deep-set longline fishery for the pre-implementation program.
    - Buy-in for the pre-implementation program would likely be easier to obtain as an initial step, noting that EM will eventually be implemented for all fisheries.
    - Daytime hauls would make footage review easier.
    - It could be easier for the shallow-set fishery to replace observers with EM cameras, as there will be less data loss.
    - If observer coverage is allowed to dip beneath 100% due to the implementation of EM cameras, there would be less strain on observer resources that would allow them to be allocated elsewhere as needed.
    - There are roughly 20 current cameras, with three of them that have been used for shallow-set trips.
- Plan Team members generally did not support using the American Samoa longline fishery for the EM pre-implementation program.
    - Selecting this fishery would have logistical difficulties not present for the Hawaii longline fisheries.
- There was discussion regarding whether the use of a hybrid approach covering both the deep- and shallow-set fishery sectors would be appropriate for the EM pre-implementation plan.
    - A dichotomy exists between the deep-set and shallow-set fishery because there are different monitoring requirements in each, so the pre-implementation program would differ between the two.
    - The Plan Team considered recommending either “Hawaii-based longline fishery.”
    - A hybrid approach would be difficult for the initial EM program because the two fishery sectors are managed differently.
    - For the deep-set fishery, there may be less data per camera deployed because of the 20% coverage; there may only be data for one or two trips per year whereas the shallow-set fishery would use EM to capture every trip.
- No more “overlap” is needed across both observers and EM cameras, as previous research included 238 hauls where observer data were compared to EM data.
    - There is also a new study on protected species post-release condition.
    - However, there is still interest in collecting information on rarer events such as interactions with leatherback sea turtles and FKW.
    - PIFSC has been writing funding requests for future research on oceanic whitetip sharks if they come into camera view.
    - Another area of focus is to compare AI detection results to human video review.
- The Plan Team discussed whether EM cameras would replace human observer coverage.
    - It could in the future but does not have to. Initially, EM would likely supplement observers, which is more expensive. There are various approaches.

    - While the shallow-set fishery has had 100% observer coverage, this level is at the discretion of the NMFS Regional Administrator.
    - When considering the trade-offs of supplementing observers versus replacing them, it is important to consider the role observers play in collecting biological samples. Observers are the only way to obtain some biological samples and it is important to keep in mind how to maintain sample streams.
    - This is a larger question that needs to be answered at the outset. The Plan Team generally assumed that the program would start with EM cameras supplementing observer coverage, but this would be answered by better defining management objectives (i.e., purpose of monitoring).
    - While observers play an important role in data collection, even at the national level, EM opens opportunities for science.
- The Plan Team discussed whether incentives could be used to encourage EM participation, such as exempted fishing permits (EFP) allowing them to fish in the SEZ.
    - Each other region started their EM program under an EFP because other regions tend to have more stringent requirements for observer coverage from which vessels need exemptions, whereas the Pacific Islands region has coverage targets and may not need an EFP.
    - EFPs also provide the opportunity to provide incentives for different gear types or areas for those participating in EM.
    - There could be issues for fishers losing those incentives when transitioning from pre-implementation to implementation. If incentives are offered, they should be able to be maintained through the life of the EM program and not just pre-implementation.
    - Observer coverage for the overlap area in the draft BiOp RPMs could be a way to create an EM incentive, but likely a weak incentive.
- The Plan Team was encouraged to identify the management objectives of the EM pre-implementation program for the September 2023 Council meeting. Multiple options could be developed by the Plan Team for the program.
- The Plan Team discussed the difference from the pre-implementation plan to the options paper currently being developed by the ETSC for the September 2023 Council meeting. An intersessional Plan Team meeting may be required before then.
    - While there is a regional plan and road map for EM, they are relatively broad.
    - The options paper would provide considerations for where the regional would start with the pre-implementation program, including management objectives moving forward from the research phase into the pre-implementation phase.
    - There are questions regarding where the program would be managed and if third parties would be involved, but these would come to light after moving forward with the focus of the program and associated management objectives.
    - The Plan Team still had confusion about the top management implications and considerations, and members suggested laying out scenarios for initial phase-in depending on priorities and trade-offs for each of those scenarios.
    - Members suggested that the options paper should describe if managers want a census or how fishing operations should be representatively sampled if not every vessel has EM, which is challenging without 100% coverage.
    - EM can be made to be a tool in the toolbox with model determination of statistically reliable rates of estimation for given management objectives.
    - There was some confusion regarding what the purpose of an intersessional Pelagic Plan Team meeting would be with respect to EM. The intention would be to present to the Plan Team the completed options paper that would describe initial approaches for the identified fishery in addition to management objectives and options for priorities that can be endorsed by the Plan Team and forwarded to the Council for its September meeting.

    - Presenting this topic to the Council in September would be preferable to December because it aligns with the Council's previous recommendation on this topic and because this is meant to represent an early, incremental step to facilitate Council discussion on EM. Council action will not occur on this options paper.
    - Council staff emphasized that the options paper would be used to inform the Council on progress and to receive feedback on items that need direction. The options paper can lay out next steps at the next stage for the Council as well as the timeline for what needs to be done. No NEPA analysis would be presented on this paper to the Council.
- Funding for EM has been supported by PIFSC FRMD proposals to this point, so the Plan Team discussed the availability of funding for the pre-implementation program.
    - No additional funding exists at PIRO other than soft funds acquired through competitive processes (e.g., through external parties).
    - Other regions have had to fund EM similarly before NMFS would contribute.
- There are additional considerations and questions regarding data storage obligations (e.g., how much data would be retained, where, and for how long). This also applies to AI.
    - For example, will the program be centralized at Silver Springs as a national effort, or would the effort be more regional? Would funding be provided for server space to store footage? For how many years of data? Would all of the footage be included, or would it be cropped?
    - There are national EM policy directives on data storage and similar topics, but whether the data are federal record depends on who owns and manages the data to determine . Decisions on setting up the program impact downstream questions.
    - There are regions where the fishers own the data that are stored by a third party. Only the footage that is transmitted to NMFS is federal record, and raw footage is kept out of the federal realm.
    - For AI in other regions, there is usually an agreement between NMFS, the third party developer, and the data owner to specify purposes for using the footage. AI developers usually want ownership.
- The ETSC sought Plan Team volunteers to further contribute to the effort of establishing the pre-implementation program.
- The Plan Team agreed to classify these EM efforts with volunteers proceeding with scoping for Hawaii fisheries as a work item rather than a recommendation that would be provided to the Council at its June meeting,

13. Multi-Year Territorial Bigeye Tuna Catch & Allocation Specifications

Council staff provided a presentation on the potential Council action to transition to territorial bigeye tuna catch and allocation specifications for multiple years. Previously, the Council recommended moving to a multi-year specification framework for territorial catch and allocation specifications, which would involve removing the requirements for ACLs for U.S. Participating Territories, allowing 1,500 mt allocation limits from each U.S. Participating Territory to U.S. longline vessels, and generating specifications for 2024-2026. The Council previously operated under Amendment 7 to the Pelagic FEP with a single-year framework before the Council took action in 2019 to allow for multi-year catch limits and/or setting an allocation limit without a catch limit. The recent conservation and management measure (CMM) for longline bigeye tuna catch limits has allocations that are determined politically, though there are no limits for Small Island Developing State and Participating Territories such as American Samoa, Guam, and the CNMI. Thus, the Council is considering the transition to multi-year specifications to allow the U.S. longline fishery for bigeye tuna to continue operating optimally and in a sustainable manner. Council staff requested that the Plan Team provide feedback on analyses needed to address economic impacts, how the annual SAFE report could be used to inform the specifications, tracking in-season accountability measures, and if

effort may increase associated with potential allocation increases.

Plan Team discussion on the review of this section included the following:

- Considering that this proposed action could result in a 20-30% increase in catch and effort, the most recent BiOp analyzed historical effort by the fishery and how those levels of effort impacted interactions with ESA-listed species.
    - The current territorial agreements allow for 3,500 mt that the fishery operates under, plus additional agreements bringing the total to 6,500 mt. Adding another 1,500 mt would then result in a 25% increase in catch in the WCPO, but catch and effort are not always correlated and extrinsic factors will likely impact the fishery.
    - In previous years, Guam had not participated in these agreements, and the same level of catch may occur if Guam continues to forgo its participation.
    - However, this framework would allow the chance for Guam to participate if they choose to do so. The action would provide more flexibility for specifications and does not necessarily require realizing 1,500 mt per territory.
    - Guam has been showing interest in participating recently where they had been locked out previously.
- Though the specifications would be analyzed every three years, effort is not likely to change substantially over the time period.
- If final action is taken in September or December 2023, implementation would be initiated by final rule sometime around July 2024, which coincides with when the U.S. fleet typically begins relying on these types of agreements.
    - There would be no rollover from unused quota after engaging in these agreements. The multi-year nature of these agreements prevents the Council from having to generate specifications on an annual basis such that the action is mostly administrative and resulting in similar functionalities.
- The additional quota could provide incentive for more vessels to join the fishery to maximize the quota, but that would cause issues bumping up against the upper limit of the limited entry rules for vessels in the fishery.
- There would need to be a new table in the annual SAFE report that would fully match how allocations are being conducted.
- The proposed action could include provisions that allow for multiple agreements between the territories and the longline fleet such that they sequentially engage in allocations.
    - Catch would be apportioned to multiple groups instead of one, and each group of vessels could receive different portions of the catch depending on their various agreements with the territories. Agreements would be transactions with private individuals in the longline fleet, as there are issues with having a single agreement under National Standard 4.
    - Allowing individual vessels to make agreements with the territories could create a lot more administrative work to track these agreements. Implementation by July 2024 could be difficult with respect to recordkeeping if multiple agreements would need to be monitored.
    - Currently, HLA allows members access to a single agreement, but it is not a regulatory requirement that only one agreement exists. The proposed action could amend the regulations to indicate that a single agreement should be unilaterally accepted rather than allowing agreements through multiple groups.
    - The proposed action should be both equitable as well as functional.
    - The WCPFC Record of Fishing Vessels is designed to allow vessels to be a part of one one agreement at a time.
    - The Plan Team generally agreed that a single agreement between a territory and the longline vessels would be more feasible than managing multiple agreements. Volunteers for the action team were also identified alongside existing members.

14. International Fisheries

A. 2nd Workshop on Tropical Tuna Longline Management

Council staff provided an update on the second workshop on WPCO tropical tuna longline management that was held on April 29-30, 2023, with an overarching goal of determining a path forward for longline components of a tropical tuna measure in 2023. WCPFC purse seine fisheries are managed through zone-based management that balances fishing days and FAD closures on the high seas and within their zones of national jurisdiction. However, there are also notable differences between Hawaii and American Samoa longline fleets relative to other Pacific Island and distant water fleets, such as the sizes of vessels and operational characteristics. For species like bigeye, there are considerations to change catch limits to effort, as incidental purse seine catch exceeds that of the longline fleets. Generally, participants of the workshop concluded that the bigeye tuna stock is in good condition that would allow for increase in catch limits, and catch and effort limits should be balanced between high seas and in-zone areas. The impacts of changing the catch limit for bigeye tuna could translate to a ~20% change in longline catch scalars, but maintaining future biomass at 2012-2015 depletion levels could withstand a 38% increase in both longline and purse seine FAD scalars. Further, any CMM should reflect adaptability in the face of uncertainty due to climate change impacts on fisheries (e.g., distributional changes). As for next steps, there may be a third workshop with a narrowed focus accounting for the WCPFC process for the revision of the tropical tuna measure, wider participation in informal discussions, and the time available before the annual WCPFC meeting in December 2023.

The Plan Team noted that it is good news that there is not much change in the next stock assessment for bigeye tuna. This can likely be attributed to a decrease in catch the past few years, perhaps associated with the COVID-19 pandemic but also increased uncertainty due to lower observer coverage. The recent prevalence of La Niña conditions also likely impacted catch rates.

B. Updates from IFD

Valerie Post, PIRO International Fisheries Division (IFD), provided the Plan Team with updates from IFD as well as current priorities as they relate to the WCPFC. Priorities for the WCPFC include adopting a new tropical tuna CMM, a CMM to extend the compliance monitoring scheme, a revised transshipment CMM, a CMM focused on crew safety, harvest control rules for North Pacific albacore, and management objectives and performance indicators for Pacific bluefin tuna. Additional priorities include monitoring progress according to the South Pacific albacore roadmap and integrating climate discussions across the WCFPC. PIRO IFD will be participating in several WCPFC meetings from now until the annual WCPFC meeting in December 2023.

Plan Team discussion on the review of this section included the following:

- Revising the transshipment CMM is a high priority for the United States. Although transshipments are observed, it is not clear if their reports are utilized.
- Several important developments occurred at a May 2023 meeting of the South Pacific albacore Roadmap Intersessional Working Group
    - The South Pacific Group, a group of fishing nations (now including Vanuatu) around American Samoa put out a proposal that would shift objectives from increasing CPUE in Pacific Island domestic fisheries to preserving current catch through charter arrangements.
    - American Samoa fisheries are Marine Stewardship Council (MSC)-certified to have fish caught within the EEZ and sold at a premium to the StarKist cannery, which is relevant because the WCPFC has been pressured by the MSC to implement target reference points

(TRP) and management procedures for albacore.

- Previously, in 2018 and for years prior, countries around American Samoa were in agreement with American Samoa that a conservative TRP level should be implemented and countries should increase their catch rates from island fisheries. Thus, the target needs to be a higher level of biomass. Since then, local fleets in other countries have been supplanted by vessels from Distant Water Fishing Nations operating under charter agreements.
- A proposal for a new TRP was table dropped right before the meeting, and the proposed TRP for South Pacific albacore would be a level of depletion that may protect charter arrangements in nations' EEZs, but this may reduce local fishing.
- It is unclear when the next meeting of the South Pacific albacore Roadmap Intersessional Working Group will occur. The Chair originally suggested June, but the United States suggested scheduling a meeting after the Scientific Committee in August so that new scientific advice would be available. Holding a meeting in June would also be dependent on finding open meeting dates.
- At the next South Pacific albacore meeting, it would be good for the U.S. to distance itself from the 2017-2018 reference period, and there will be an official statement from American Samoa on suitable reference periods at the next meeting.
- The Pacific Community is moving away from CPUE-based to depletion-based TRP, so the reference period could be either years or depletion level. Additional conversations are needed to determine an appropriate level.
- Because the stock is above its limit reference point and not in danger, this local depletion issue driving the performance of small island fisheries should be addressed with controls that reduce effort around American Samoa.

15. Feasibility of Stock Assessments for Incidental PMUS

No presentation was provided on this agenda item.

16. Public Comment

There was no public comment.

17. Follow-up Discussion on Pelagic Plan Team Agenda Items

Discussion points by the Plan Team under this agenda item are provided with the discussion for each original agenda item. Additional discussion occurred here on the recently initiated sanctuary designation process for the Pacific Remote Island Area (PRIA) following a previous nomination by the Pacific Remote Island Coalition. On March 21, the President's Administration directed the Department of Commerce to consider the sanctuary designation within 30 days for 100% of the PRIA. Public meetings on the designation are being held over the course of May through June 2. The most recent review of the Pacific Remote Island Coalition's nomination by the SSC in September 2022 suggested that there could be unintended consequences not considered, a lack of data support, and limited conservation benefits. Similarly, the Pacific Community recently found that the closure of the Phoenix Islands Protected Area (PIPA), which neighbors the PRIA, had little to no benefit. Consequences could include diminished U.S. fisheries and shared influence in the Pacific Ocean, conflict with EEJ principles and executive orders, and lack of consultation with the territories. The Council is awaiting the President's definition of "conservation" as well.

Plan Team discussion on the review of this section included the following:

- The sanctuary designation for the PRIA could be a political move and is likely to occur. The

Council would like to see the sanctuary process' goals and objectives for commercial, non-commercial, and subsistence fishing, as foreign fleets could benefit from the closure of U.S. waters.
    - Closing these waters could cause vessels to offload in canneries outside of American Samoa, and the cannery is very important to the American Samoa economy and food security.
    - Shifting some of the areas of the sanctuary such that Johnston Island remains open and Palmyra Atoll gets closed would be preferable.
    - The Council's job is to continue to maintain the sustainable fisheries of the U.S.
- No names from American Samoa were on the petition for the sanctuary.
- U.S. longline boats used to be useful in ensuring foreign fishing was not occurring in U.S. waters since the USCG could not enforce illegal fishing after the monument expansion.
    - While USCG assets have increased in recent years, there are many more smaller vessels stationed in the Pacific Islands.
    - Global Fishing Watch data shows daily that our fleets are forced to fish on the high seas in competition with foreign fleets.
- The U.S. purse seine fleet has decreased in size, and catches in recent years in the waters surrounding Palmyra Atoll and Howland/Baker represent roughly 7 to 8% of effort.
- There may be climate considerations for this sanctuary designation as species distributions shift in response to changing temperature. Adaptive management may be preferable to a static closure without a tangible conservation benefit without looking at other options.
- Looking at the broad goals of the sanctuary system, such as protecting protected species, there are already regulations for and protections for these items. This designation process needs to clearly list their goals and objectives, and fishing should be among time.
- Kiribati may be opening the PIPA to facilitate selling vessel days to China and other foreign fleets, but the U.S. is not providing money for fisheries interests for its own territories in the Pacific Islands.
- The Plan Team agreed that the objectives of the sanctuary designation need to be stated.
    - Protections from things like deep sea mining would be reasonable, but it is not clear if preventing fisheries from 50 to 200 nm from the PRIA shoreline or at depth protects anything or provides any potential benefits relative to the island effects.
    - The Plan Team should be working on how fisheries should be managed in the sanctuaries. However, it would be unlikely that fishing other than subsistence or cultural would be allowed; commercial fishing will probably be prohibited.

18. Pelagic Plan Team Recommendations

<u>Recommendations</u>

The Pelagic Plan Team:

1. Recommends the FDCRC to discuss and recommend increasing staff capacity and retention for the territorial fishery agencies.

2. Recommends PIFSC to look at the effect of protected species (prioritizing loggerhead sea turtles and leatherback sea turtles) population trends on predicted interactions and impacts of climate/environmental drivers.

3. Recommends that the Council form a working group including Pelagic Plan Team members T. Todd Jones, Rob Ahrens, Lynn Rassell, Melissa Snover, Russell Ito, and Council staff, to initiate a detailed review of fishery performance under the loggerhead and leatherback turtle trip interaction limits in the Hawaii shallow-set longline fishery including data since

implementation of the trip limits in September 2020 through the 2022-2023 fishing season. The working group should take into account loggerhead and leatherback turtle interaction patterns as they relate to oceanographic factors, potential effect of population trends on interaction trends, and industry feedback received at the November 2022 EBFM Spatial Decision Making Workshop. The working group should provide a report to the Pelagic Plan Team at the May 2024 meeting.

4. Recommends that PIFSC SEES continue to pursue funding to conduct cost-earnings surveys at their regular five-year intervals to better inform socioeconomic data summaries.

5. Recommends the Action Team to prioritize analyzing regulations for multi-year longline bigeye tuna catch and allocations to have a single unified agreement between U.S. vessels and Territories, noting the complexities of tracking attributions of fishing vessels to territorial allocations and RFMO requirements of charter arrangements being singular.

6. Recommends that the Council request NOAA, in its evaluation of the Pacific Remote Island Area sanctuary designation, to evaluate the holistic impacts of prohibiting tuna fishing 50 to 200 nm of the island areas and that resuming sustainable fishing be made an objective in the designation.

7. Endorses Pelagic Research Plan Priorities to be:
    - Improving knowledge on life history, stock structure, distributions, and connectivity of pelagic management unit species throughout Pacific
    - Understanding causality of fishery performance for Western Pacific Region pelagic fisheries, including incidentally caught species
    - Effects of spatial closures and large-scale marine protected areas on fisheries, island communities, and population dynamics on target and non-target species
    - Mitigation of depredation and development of deterrents to reduce depredation in U.S. Pacific Island fisheries.
    - Advancing ecosystem-based fisheries management
    - Impact of pelagic fisheries on sustaining community resiliency; and recommends Council staff to deliver a draft plan to the June 2023 SSC and Council.

Work Items

1. PIFSC FRMD to work with American Samoa DMWR to ensure that the creel survey design is appropriate given the smaller size of the pelagic troll fishery in recent years, noting that a declining fishery could mean a lower probability of creel survey intercepts.
2. PIFSC FRMD to work with CNMI DFW to properly revise the relevant creel survey and commercial receipt forms to account for different species of marlin, which may include developing new species codes for marlin species.
3. Council staff to work with PIFSC, PIRO, and the State and territorial resource management agencies to develop records of regulatory and data collection changes in regional fisheries, noting that this work would help provide context to fishery performance trends and help separate the impacts from large scale environmental processes.
4. Council staff to investigate the capacity to support more internships through the Council's scholarship program to support staffing for the territorial resource management agencies.
5. Council staff to work with PIFSC FRMD to determine an appropriate procedure to ensure that confidential data points are non-disclosed (e.g., for the charter fishery data in the CNMI) and to caveat data points with high uncertainty. Council staff should work with local resource management agencies to outreach to vendors to encourage reporting and obtain waivers to

view confidential data if possible.

6. Council staff to develop a style guide for presenting data and figures for the purposes of the annual SAFE reports and Pelagic Plan Team meetings consistent with the style guide being developed for the Archipelagic Plan Team.
7. PIFSC FRMD to work with Hawaii DAR on data issues regarding inconsistencies between catch reports and dealer reports to ensure that these deficiencies do not perpetuate further errors downstream.
8. Hawaii DAR to work with PIFSC FRMD to assume responsibility for Hawaii pelagic small boat fishery data summaries presented in the annual SAFE report and at the Pelagic Plan Team meeting.
9. Pelagic annual SAFE report section authors to revise any data visualizations utilizing stacked bar charts in their respective modules for future annual SAFE report updates and presentations to the Pelagic Plan Team.
10. Council staff to work with the established Plan Team working group to incorporate the new bycatch summaries for Hawaii's pelagic small boat fisheries into the annual SAFE report.
11. Plan Team member Kirsten Leong to supplement the Archipelagic Plan Team's working groups on non-commercial data modules to ensure appropriate summaries are developed for regional non-commercial fisheries. There are additional members comprising the working groups that span both the Archipelagic and Pelagic Plan Teams that will assist in development of the pelagic module.
12. Council staff to include Phoebe Woodworth-Jefcoats in the Archipelagic Plan Team small group with Kisei Tanaka and Tom Oliver to determine an appropriate climatological baseline against which annual oceanic and climate indicators can be compared.
13. Council staff to develop and implement the pelagic socioeconomics section to the Council's online portal for the annual SAFE reports.
14. Plan Team members Kirsten Leong and Chelsea Young to supplement the Archipelagic Plan Team's working group on the EEJ subsection to the socioeconomic module being developed for inclusion for the annual SAFE reports.
15. Protected Species Work Team to consider incorporating additional BiOp monitoring requirements into the protected species module of the pelagic annual SAFE report and provide drafts for Pelagic Plan Team review at its May 2024 meeting. Work Team to also revisit data summary method (e.g., by vessel arrival date vs. haul begin date) as appropriate.
16. Plan Team members Phoebe Woodworth-Jefcoats, Lynn Rassel, Melissa Snover, and Jenny Suter to work with Council staff to establish a working group to determine the feasibility of and opportunities for implementing automation in the annual SAFE report update process, including for updating the Council's online portal for the annual SAFE reports. This working group will also determine an appropriate manner by which longer time series of fishery performance data can be incorporated.
17. Council staff to append the Pelagic Plan Team report to the annual SAFE report via PDF to provide readers with important context discussed at the Plan Team meeting that is not otherwise provided in the annual SAFE report.
18. Plan Team members Michael Kinney, Brent Tibbatts, and representatives from local resource management agencies in the CNMI and American Samoa to work with Council staff to establish a working group to facilitate the development of a life history module for the pelagic annual SAFE report.
19. Plan Team members Rob Ahrens, Melissa Snover, Lynn Rassel, and Jenny Suter to work with the Electronic Technologies Steering Committee to present scenarios on pre-implementation of electronic monitoring in Hawaii-based longline fisheries, including focus on management scenarios in the shallow-set sector, deep-set sector, and a hybrid of the two sectors, to an Intersessional Pelagic Plan Team Meeting in advance of the September 2023 Council

meeting. They should focus on objectives related to monitoring protected species and improving data veracity used in stock assessments.

19. Other Business

Regarding the scheduling of Plan Team meeting dates and times, the Plan Team discussed that this meeting's agenda was planned based on precedence. However, in the future, there may be value in combining the meeting weeks for the Archipelagic and Pelagic Plan Team meetings going forward to facilitate cross-sectional discussion, ease scheduling and travel for members that fly in for the meetings, and ensure sufficient timing from when annual data summaries are provided to section authors before they must be presented to the Plan Teams at their regular meetings.