WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Archipelagic Fishery Ecosystem Plan Team Meeting

February 16, 2022
1:00 p.m. – 4:00 p.m.
Council Office Conference Room, Honolulu, Hawaii

REPORT

1. Welcome and Introductions

T. Todd Jones, meeting chair, opened the meeting, reviewed meeting protocol, and asked members to introduce themselves during a roll call. Members of the Western Pacific Regional Fishery Management Council's (WPFMC, or Council) Archipelagic Fishery Ecosystem Plan Team (APT, or Plan Team) members present via teleconference were Felipe Carvalho, Bryan Ishida, Jenny Suter, Robert Ahrens, Keith Bigelow, Brent Tibbatts, Danika Kleiber, Paul Murakawa, Marc Nadon, Domingo Ochavillo, Joseph O'Malley, Thomas Oliver, Minling Pan, Michael Parke, Frank Parrish, Brett Schumacher, and Frank Villagomez. Not present were Reka Domokos-Boyer and Jason Biggs.

2. Approval of Draft Agenda & Assignment of Rapporteurs

Thomas Remington, Council contractor, was assigned as rapporteur for the APT meeting.

Jones provided background information on the purpose of this APT meeting. There have been multiple recent efforts relevant to the territorial bottomfish stock complexes, including reviewing and refining the current lists of bottomfish management unit species (BMUS) for the territories to ensure that they are well-aligned with the current fisheries. Guidelines for the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) require that management unit species (MUS) lists be reviewed routinely, however, the lists in the Western Pacific region had not been reviewed since 1986 until the 2019 amendment that reclassified many regional MUS as ecosystem component species.

At the previous APT meeting in April 2021, staff from the National Oceanic and Atmospheric Administration (NOAA) Office of Sustainable Fisheries (OSF) provided an informational presentation on designating MUS and the associated Magnuson-Stevens Act guidelines, and the APT developed a recommendation to reexamine the Magnuson-Stevens Act guidelines and assess the territorial BMUS lists. The Council endorsed this recommendation, and the APT formed a working group that has met three times, produced a life history synthesis, developed a cluster analysis, and generated a data evaluation for American Samoa. The APT has an opportunity to reset and move forward in a transparent, science-driven process, and this process is unfolding at a critical juncture where the territories are developing their own fishery

management plans (FMPs). The APT can determine which species under the Magnuson-Stevens Act should be managed by the federal fishery ecosystem plan (FEP) or territorial FMP through this multiyear process to redefine the BMUS lists. Jones noted that the effort to revise the BMUS lists is entirely separate from the stock assessment schedule for the current BMUS.

The question for the APT becomes how or where to manage species that require conservation and management, whether in the territorial FMP or federal FEP, and as a single species, in a complex, or with indicator species. This process will lead to an FEP amendment with updated BMUS lists and language to allow flexibility in the decision for management between single species, species complexes, and indicators, on status determination criteria (SDC), rate-based approaches, etc. The APT working group looked at the 10 factors used to decide if a species needs conservation and management and applied those factors to the results of the cluster analysis. Then, the working group examined life history in the context of selecting indicator species and evaluated the data to see where the species are primarily caught. However, harvest location can be muddied since some species are caught in both federal and territorial waters, especially in American Samoa where there are steep slopes nearshore. Of the 10 factors for determining the need of conservation and management, the first three (i.e., important component of marine environment, stock caught by the fishery, and FMP can improve condition of stock) are the most important. Also, factor 10, which is the extent that fishery is adequately managed by territories, is important to consider. As the APT goes through the revision process, the APT will be deciding where primary management responsibilities should fall.

Species can be grouped into a complex or multiple complexes as was done for BMUS previously, but guidelines for complexes indicate that included species should share geographic distribution, life history, and fishing vulnerability. Additionally, stocks with well-established SDC can be used as indicators to manage poorly-known stocks, but the indicator species should be representative of the vulnerability of the stocks in the complex; this is a major justification for current revision of the complexes since the current BMUS lists have emperors, shallow and deep snappers, jacks, and groupers included. Going forward, the APT needs to start revisiting the BMUS lists more routinely and should review available information to ensure the stocks in the complex or complexes are being sustainably managed.

At the current APT meeting, APT members will be presented the analyses generated by the working group, including the cluster analysis and life history synthesis. The goal of the meeting is to reach consensus about which species should be on the BMUS lists. Once the APT agrees on the list, there is still a lot of work to be done, such as determining SDC, designating essential fish habitat (EFH), determining annual catch limit (ACL) provisions as catch- or rate-based, monitoring bycatch, and performing community outreach. The last item on the meeting agenda stems from a Council recommendation in June 2021 to determine how to add non-commercial modules to the annual stock assessment and fishery evaluation (SAFE) reports. Ultimately, the APT must decide how to best calculate the non-commercial portion of total estimated catch, either by using expanded creel survey data or using the commercial receipt book program data.

The draft agenda for the February 2022 Intersessional APT meeting was approved.

3. Analysis of Available Data for the Reclassification of the Territory BMUS Complex

Robert Ahrens, PIFSC, presented life history information and a hierarchical cluster analysis using the creel survey data for the bottomfish fisheries in American Samoa and Guam that will inform the reclassification of territorial BMUS complexes. The purpose of the cluster analysis

was to identify groupings of species that may be receiving similar fishing pressure. The analyses were done with all the data initially before doing the clustering on data from only bottomfish trips with species that occurred in >20% of interviews. When looking at the outputs of the cluster analysis, it is important to realize that adjacent species on the vertical axis does not necessarily indicate that the species cluster together. Clusters are determined by the nodes moving along the x-axis, and another to the left of the red line in the cluster analysis figures can be consider a significant cluster that is not happening by random chance. In a cluster, the individuals appear to be caught together since interviews are likely to sample the species together, which may indicate that the species experience comparable fishing pressure.

Ahrens then presented the results for American Samoa using creel survey data from 2016 through 2020 because the data are more likely to be representative of the current fishery. Clear clusters formed around groupings of *Etelis* and *Pristipomoides* species, whereas the *Lethrinus*, *Lutjanus*, *Variola*, and other similar species tended to cluster into other groupings with shallower species. cluster. Thus, the analysis produced clear deep and shallow bottomfish clusters. The results from American Samoa were similar to those from Guam, with analogous groupings into deep and shallow complexes.

Jones stated that the selection criteria for the proposed BMUS lists are based on the 10 factors for species in need of conservation and management from Magnuson-Stevens Act guidelines and review by territorial agency representatives, the Council, PIFSC, and the NMFS Pacific Islands Regional Office (PIRO). In accordance with factor #2, species must be caught by the fishery, and the cluster analysis only included species that were present in a certain proportion of creel survey interviews. For factor #3 that states that a federal FMP should improve the condition of the stock, there are some difficulties in American Samoa due to the deep sloping habitat present there that causes a breakdown in shallow and deep water species only being caught in territorial and federal waters, respectively. However, fishing trips to the offshore banks and seamounts around American Samoa are assuredly targeting deepwater snappers. Factor #10 is addressed through the alignment of co-management by the territories and federal agencies since the proposed list revisions assume that the territorial management agencies would manage shallow-water species in their territorial FMPs. Jones stated that a species of concern would be included on either list in the federal FEP or territorial FMP, and NMFS would support territorial management of shallow species through their territorial FMP. Other considerations for species to include in the proposed lists are species that occur in both territorial and federal waters (e.g., *Aprion virescens*, *Variola louti*, and *Caranx* spp.) and species with declining catch over time.

Table 1 shows the proposed changes to the American Samoa BMUS list in the FEP as determined by the APT working group, and Table 2 presents the proposed changes to the Guam BMUS list. The lists contain all current BMUS as well as species identified by the cluster analysis, along with preliminary designations if the species should stay in the FEP, be added to the FEP, be added to the territorial FMP, or be discussed further. The goal for the APT is to come to consensus on these lists before developing an options paper and presenting it to the Council. Jones also stated that, while proposed BMUS lists for American Samoa and Guam were generated by the APT working group, the cluster analysis for the Commonwealth of the Northern Mariana Islands (CNMI) has not yet been completed. Ideally, the cluster analysis results for the CNMI would have similarities with the proposed Guam list.

Table 1. Proposed BMUS list revisions for American Samoa.

Classification	Scientific Name	FEP		tFMP	Rational
		Stay	Add		
Etelineae	*Aphareus rutilans*	x			Etelineae, deep
Etelineae	*Aprion virescens*			x	Etelineae, spans shallow and deep
Etelineae	*Etelis boweni*		x		Etelineae, deep
Etelineae	*Etelis carbunculus*	x			Etelineae, deep
Etelineae	*Etelis coruscans*	x			Etelineae, deep
Etelineae	*Pristipomoides argyrogrammicus*		x		Etelineae, deep
Etelineae	*Pristipomoides auricilla*		x		Etelineae, deep
Etelineae	*Pristipomoides filamentosus*	x			Etelineae, deep
Etelineae	*Pristipomoides flavipinnis*	x			Etelineae, deep
Etelineae	*Pristipomoides seiboldii*		x		Etelineae, deep
Etelineae	*Pristipomoides zonatus*	x			Etelineae, deep
Etelineae	*Pristipomoides multidens*		x		Etelineae, deep
Snapper	*Paracaesio stonei*		x		Deep-only snapper
Snapper	*Paracaesio kuskarii*		x		Deep-only snapper
Jack	*Caranx lugubris*			x	Spans shallow and deep
Grouper	*Variola louti*			x	Species of concern, spans shallow and deep
Emperor	*Lethrinus rubrioperculatus*			x	Primarily shallow
Snapper	*Lutjanus kasmira*			x	Primarily shallow

Table 2. Proposed BMUS list revisions for Guam.

Classification	Scientific Name	FEP		tFMP	Discuss	Rationale
		Stay	Add			
Etelineae	*Aphareus rutilans*	x				Etelineae, deep
Etelineae	*Aprion virescens*			x		Etelineae, spans shallow and deep
Etelineae	*Etelis boweni*		x			Etelineae, deep
Etelineae	*Etelis carbunculus*	x				Etelineae, deep
Etelineae	*Etelis coruscans*	x				Etelineae, deep
Etelineae	*Pristipomoides argyrogrammicus*		x			Etelineae, deep

Classification	Scientific Name	FEP		tFMP	Discuss	Rationale
		Stay	Add			
Etelineae	*Pristipomoides auricilla*	x				Etelineae, deep
Etelineae	*Pristipomoides filamentosus*	x				Etelineae, deep
Etelineae	*Pristipomoides flavipinnis*	x				Etelineae, deep
Etelineae	*Pristipomoides seiboldii*	x				Etelineae, deep
Etelineae	*Pristipomoides zonatus*	x				Etelineae, deep
Jack	*Caranx ignobilis*			x		Shallow
Jack	*Caranx lugubris*				x	Spans shallow and deep
Grouper	*Variola louti*			x		Species of concern, spans shallow and deep
Emperor	*Lethrinus rubrioperculatus*			x		Primarily shallow
Snapper	*Lutjanus kasmira*			x		Primarily shallow

A Plan Team member commented on potential regulatory issues that may need to be addressed through the process of revising the BMUS lists. Available guidance for stocks that require conservation and management indicates that any stocks that are predominantly in federal waters and are overfished or experiencing overfishing require conservation and management. Since American Samoa and Guam BMUS both are overfished and American Samoa BMUS are experiencing overfishing, the question if the BMUS lists can be revised may be brought to fishery managers. The guidance uses the phrase "predominantly in federal waters" (50 CFR 600.305(c)(1)), which means that more fishing on a stock occurs in federal waters than in territorial waters, but NMFS does not possess much information on where fish are caught in the fisheries. Additionally, the overfished status for these fisheries may change in response to the upcoming stock assessments before the BMUS revision amendment is finalized. The Plan Team member suggested that other APT members be prepared for questions associated with this issue. Another Plan Team member stated that species would not be removed from management but transitioned from the federal FEP to the territorial FMP, which relates to factor #10 to ensure that the stock is adequately managed. However, the assumption would be that if a stock is overfished, it would go against the idea that the stock is adequately managed, especially if it is mostly caught in federal waters. Ultimately, there would be no issues with transitioning species from the FEP to the territorial FMP.

A Plan Team member asked when life history information was considered during the development of the proposed lists. Jones stated that after the results of the cluster analyses showed clear shallow and deep water bottomfish complexes, the PIFSC Life History Program reviewed the clusters to see if they share life histories and vulnerabilities. The Plan Team member said life history is an important consideration because it can be assumed that habitat can be shared across species in both the shallow and deep water complexes. If this is the case, an approach for indicators could be to examine habitat condition. Certain areas will have deepwater complex species in territorial waters and vice versa. The Plan Team member asked, in the case

where there is catch of a species that occurs in both federal and territorial waters, if there is a methodology to assign the primary management responsibility based on the proportion of catch in each area. Jones responded that PIFSC did estimate the proportion of catch for these species in federal and territorial waters, but this evaluation breaks down in American Samoa since one could generally catch any species in either area. Focusing on the intention of bottomfish fishing trips, it seems that fishers traveling to the offshore banks are primarily targeting deepwater snappers. Even though the proportions of these species caught in federal and territorial waters is not clear, it leads to the idea of co-management between NMFS and the territory.

The APT's representative from the American Samoa Department of Marine and Wildlife Resources (DMWR) asked if it would be possible for the species list in the territorial FMPs to adopt some of the deepwater species. Jones confirmed, saying that the key idea is if the APT suggests the removal of a species from the federal FEP because it is better aligned to be managed territorially, the species can be moved to the territorial FMP with support from NMFS. However, this does not preclude the territorial agencies from adding however many more species. If the territories wish to include deepwater snappers in their FMP, it could improve the coordinated management for the complex despite potentially not having the same management approach. A Plan Team member noted that it would be preferable for the territories to also list the species from the federal FEP in the territorial FMP. The federal list should be shorter since federal management cannot improve the condition of inshore species, but for species in both areas, it would be best to be as complimentary as possible. For species that the Federal Government implements ACLs for, the simplest form of co-management would be the territory implementing the same management. If there is a situation where shallow-water species are in the territorial FMP, are not in the federal FEP, and are continuing to be caught in federal waters, federal managers would refer to regulations in the territorial FMP to manage catches occurring in federal waters. Jones noted that coordinated management is the critical juncture for moving towards a territorial FMP, and the APT currently has the opportunity to rethink the BMUS lists and how the system can be further improved.

The APT began discussions specific to the proposed Guam BMUS list (see Table 2). The main difference between the proposed Guam BMUS list and the proposed American Samoa BMUS list (see Table 1) is that the Guam list does not include *Pristipomoides multidens* nor *Paracaesio* spp. from deep water. All species from the current BMUS list were included with some additions based on the results of the cluster analysis and some potential removals to be listed in the territorial FMP. One species (*Caranx lugubris*) requires further discussion since is spans both shallow and deep waters but may be mostly caught in federal waters. However, *C. lugubris* has a very different life history from the deepwater snappers.

A Plan Team member asked if there were any species clustered into the shallow or deep water complexes that do not seem to fit from a life history perspective. Jones noted that *C.* lugubris clustered with deepwater snappers, but their life histories do not necessarily match. Another Plan Team member noted that *C. lugubris* is difficult because it is caught alongside deepwater snappers using the same gear, which indicates that their habitats are similar. With respect to other life history parameters, there is not a lot of information for this species, but it is likely that it grows faster than deepwater snappers as a jack. Natural mortality estimates seem to be similar between the jack and the deepwater snappers, but the values are still a little different. It is not clear where to draw the line for similarities or dissimilarities with clustered species. A Plan Team member asked to what degree there are outliers with respect to life history in the groupings from

the cluster analysis, since a key portion of the Magnuson-Stevens Act guidelines is ensuring that species within a complex have similar vulnerabilities; this Plan Team member was concerned that the APT is not adequately addressing the similarities (or lack thereof) of life history among species in a cluster. Jones noted that the three most difficult species to categorize are *A. virescens*, *V. louti*, and *C. lugubris*.

A Plan Team member noted that while life history is important information for determining what should be listed as a BMUS, the complex also does not have to be monolithic with respect to life history. Life history becomes more important during assessment and management of the complex but does not preclude species from being classified as BMUS (e.g., as for the Hawaii Deep 7 bottomfish complex). Jones noted that he originally thought that the groupings would align with species mostly caught in either territorial or federal waters did not work out for American Samoa in particular.

A Plan Team member provided a data figure that showed the proportion of *C. lugubris* caught in both territorial and federal waters in Guam. During the previous working group meeting, there was discussion about transferring *C. lugubris* to the territorial FMP, but the creel survey data needed to be further examined to determine where the species is primarily caught. The Guam Division of Aquatic and Wildlife Resources (DAWR) representative on the APT noted that he reviewed all available data on *C. lugubris* from the past 40 years, focusing on 20-year blocks. In the first 20 years, the 58% of the catch for the species came from territorial waters, and 66% of catch for the species came from territorial waters in the most recent 20 years. The catch rate for *C. lugubris* decreased by 60% between the two time periods and decreased to a greater extent in federal waters. The DAWR representative agreed that *C. lugubris* requires management but suggested that management may be more effective in territorial waters than federal waters.

Jones asked if a Guam fisher present at the APT meeting would give his perspective on harvested *C. lugubris* in the waters around Guam with respect to life history, the fishers' intent to harvest the species in federal waters (i.e., if the species is being targeted on fishing trips to the offshore banks or if it is incidental), where the species is primarily caught, whether the species should be managed territorially or federally, and any other concerns on the proposed list with the understanding that the BMUS revision process is only just beginning. James Borja, Guam fisher, stated that *C. lugubris* is caught both in territorial waters and at the offshore banks. *C. lugubris* is typically not a target species, and it is usually harvested from mid-water depths, transitioning from shallow to deep water at about 300 to 500 feet; it is not harvested at depths quite as deep as snappers but can be caught on bottomfish fishing trip depending on fishing area. Borja classified *C. lugubris* as primarily incidental catch while targeting deepwater snappers.

Jones thanked Borja and stated that, considering the information from the cluster analysis and data examination by DAWR, *C. lugubris* be moved to the territorial FMPs to be managed by the territorial management agencies with support from NMFS and the Council. Jones moved that the APT accept the proposed BMUS list for Guam as presented and asked if there was any dissent from APT members. Several APT members expressed support for the proposed BMUS lists for Guam and consensus was achieved.

A Plan Team member asked if any *A. virescens* (uku) are caught in territorial trolling fisheries, and Borja replied that it is rare for this to occur. Uku are present in both territorial and federal waters caught both via spearfishing and at depths of 300 to 400 feet.

Jones then moved to accept the proposed BMUS list for American Samoa as presented and asked if there was any dissent from APT members. The DMWR representative for the APT said that he supports the proposed BMUS lists and requested clarification that discussion on indicator species would be held later in the management process. Jones confirmed, and he asked if there was any dissent from APT members regarding the proposed BMUS lists for Guam and American Samoa. The DMWR representative also reminded APT members that the American Samoa territorial FMP will also adopt some of the deepwater species from the list in the federal FEP. Jones reiterated that agreeing to the proposed BMUS list for the federal FEP does not prevent the deepwater snappers from being listed in a territorial FMP. The APT reached consensus on the proposed changes to the American Samoa BMUS list.

4. Developing the Options for the Reclassification of the Territorial BMUS

Felipe Carvalho, PIFSC, and Council staff presented on the development of options for the reclassification of territorial BMUS complexes. The current BMUS lists originated from the original FMP published in 1986 that had 20 species of snappers, groupers, jacks, and emperors that were dominant in the catch. These lists were further refined during the 2009 transition from federal FMPs to FEPs and the 2019 FEP amendment reclassifying some MUS as ecosystem component species. Historically, the territorial bottomfish fisheries had several large vessels doing multiday fishing trips, sometimes to the offshore banks. More recently, the bottomfish fisheries in the territories have been relatively smaller, with smaller vessels going on nearshore, single-day trips and lower participation.

The bottomfish fisheries are managed through the federal FEPs, the control rules described therein (i.e., Maximum Sustainable Yield-based control rules from the 1996 Magnuson-Stevens Act reauthorization), and current conservation and management measures (e.g., gear prohibitions, ACLs, etc.). The FEP allows for flexibility in the application of the control rules to single species, species complexes, and/or indicator species, and the FEP allows for the PIFSC SAP to design stock assessments appropriately based on the quantity and quality of available data for each species in the complex. It was also noted that the Magnuson-Stevens Act requires the Council to review the FEPs and available information to determine if the MUS stocks are appropriately identified relative to changes in the fishery over time.

Revising the BMUS complexes is not solely about changing the species, as there are associated ramifications. After determining the final BMUS lists, there will be additional decisions about managing at the species level, as a complex, or using indicator species. For any of these choices, the APT must determine SDC and ACL provisions (potentially rate-based), redefine EFH, address bycatch, identify data streams, and consult fishing communities. Due to the large number of tasks associated with this effort, the timeline is relatively long. After the APT meeting, the proposed BMUS lists will be presented to the Council and its Scientific and Statistical Committee (SSC) at their March 2022 meetings, the APT will form working groups to gather information on the various necessary components of the FEP amendment from April to December 2022, community stakeholder meetings will be held in January 2023, a pre-amendment paper will be presented to the Council in March 2023, the APT will work on draft alternatives and the impact analysis between March and September 2023, the Council will take final action in December 2023, and the final rule would not be published until mid-2024.

The need for this action is to revisit the BMUS lists to determine whether the current species are representative of the territorial bottomfish fisheries and to potentially reclassify the BMUS

complex as smaller groupings with similar life history characteristics or as individual species. The purpose of this action is to refine the BMUS complex to reflect the current state of the bottomfish fisheries in American Samoa, Guam, and the CNMI. The proposed options for this action are as follows:

1. No Action (Status Quo);
2. Revise the BMUS Lists Based on the Cluster Analysis at the Species Level; and
3. Revise the BMUS Lists Based on the Cluster Analysis and Use Indicator Species.

Option 1 would retain the current BMUS complexes managed as a single fishery with varying life history characteristics and conservative catch projection estimate that ignore the separation of shallow and deep water bottomfish fishing. The status quo would not further facilitate coordinated management, change fishery monitoring, or modify the definition of EFH. Option 2 would revise the BMUS lists based on the cluster analysis at the species level, splitting shallow and deep water species such that the shallow-water species would be managed under the territorial FMPs. This option would open opportunities for coordinated management, apply Magnuson-Stevens Act requirements to individual species with individual assessments, allow for the application of the flexibility provision (50 CFR 600.310(h)(2)), prompt the redefining of EFH for deepwater species, and support territorial FMP development and data collection. Option 3 would be comparable to Option 2 except that indicator species would be used for assessment and management in lieu of doing so for individual species. The selection of indicator species would be driven by life history and would result in the assessment of indicators to represent the complex as a whole; however, other conservation and management measures would continue to apply to each species in the complex. The APT must decide which option to support.

Jones clarified that there is flexibility in the selection of indicator species under Option 3, and this option would allow the use of indicators as deemed appropriate by the PIFSC SAP through workshops, discussions with fishers, and coordination with the territorial agencies. Jones asked if there is a hybrid of Options 2 and 3 such that Option 2 would be something to strive for if improved data are available to include in an integrated model assessment. Further, Jones asked if Option 3 allows for the PIFSC SAP to have the ability to perform assessments on either single species or indicators. Jones said that he wants to ensure that Option 3 allows for flexibility. Council staff said that they believe Option 3 allows for flexibility, and National Standard 1 guidelines for data-limited stocks indicate that the PIFSC SAP could shift to single species assessments if the available information improves. Jones suggested to change Option 3 to allow the use of single species or indicator species for assessments where appropriate.

A Plan Team member asked why options that would constrain the assessment scientists and fishery managers are included. The FEP provides the option to assess MUS using single species, complexes, or complexes, which grants flexibility under the Magnuson-Stevens Act to allow for management as it is currently conducted in American Samoa (i.e., evaluate data to determine the most appropriate way to analyze the information). It is not clear why the APT would propose options that would decrease assessment and management possibilities in the future. Rather, the action should focus on the revision of the BMUS lists, and flexibility to use the best science available should be retained. Jones asked if the Plan Team member is suggesting there to be only two options, the status quo and revising the BMUS lists. The Plan Team member confirmed, suggesting that though the cluster analysis would be the basis for the proposed revisions, there are other information inputs, so the APT may not want to explicitly identify the cluster analysis

as the sole source. Jones stated that he agrees with retaining the language that ensures flexibility under the FEP.

A Plan Team member echoed the previous comments. The selection of Option 2 would cause managers to revert to a discussion held years ago when it was clarified that the PIFSC SAP needs to have maximum flexibility in deciding how to manage the BMUS complexes. Option 2 is too specific, so Option 3 would be a better path forward. Another Plan Team member cautioned against the use of indicator species without considering the differences in fish behavior and vulnerability based on habitat across species of the complex in addition to landings and fishing pressure before supporting a hybrid-version of Option 3. Jones replied that these considerations would come into focus during data filtering and modeling approach discussions prior to a stock assessment. Recently, PIFSC held data workshops with fishers to better understand the fishery data and background, but there will be additional workshops on the modelling approach. The 2023 stock assessment for American Samoa BMUS may utilize indicator species prior to the finalization of this amendment. Indicator species need to be chosen carefully based on modeling approaches and community feedback.

A Plan Team member noted that he agreed with all of the discussion so far, but he wanted to add that decision on how to revise the BMUS lists should be driven by habitat in addition to life history if it is not already a major consideration in the analyses. The consideration of habitat would allow for the determination of an optimum catch based on an optimum reproductive cycle based on biomass predictions. However, it is not clear how to best incorporate habitat information given the lack of relevant data for many of the territorial bottomfish species. Regardless, habitat should not be ignored, especially as NMFS moves closer towards ecosystem-based fisheries management. Jones replied that life history and habitat are considered inclusively alongside one another by determining how fishers target the BMUS and where they are harvested. As a team, the APT needs to be careful to consider each point, and there is no effort to exclude habitat considerations. Jones suggested that the APT may need to generate working groups for each of the major pieces of information that the FEP amendment will require. Another Plan Team member commented that habitat is not ignored during the assessment process, but it included alongside life history and fishery dynamics.

A Plan Team member noted that text for Option 3 in the options paper includes language about considering life history and vulnerability. The Plan Team member asked if Option 2 is preferable except that the data are not available in sufficient quality or quantity, and if Option 3 would provide the flexibility to produce better estimates with high quality data in the future. Another Plan Team member responded that Option 2 would be ideal if it was possible, but he also stated that the method of assessment and management is not necessarily something that needs to be defined in the FEP since it would restrict the PIFSC SAP. If the assessment scientists find a wrinkle in the data or a change in the fishery that precludes a single species assessment, they would be stuck scrambling to find a way to determine stock status for an individual, data-poor species. The current regulations allow for the PIFSC SAP to decide the best method of assessment, and it is beneficially for the FEP to retain this language. This Plan Team member supported Option 3 with refined language for added flexibility.

Jones invited Borja to provide his perspective on the proposed options. Borja agreed that the indicators must be selected under the consideration of differences in vulnerability based on habitat preference. It takes fishers a long time to understand the fishes' habitat preferences. Some species that are considered to live on the seafloor may also be present higher in the water

column, especially in situations where the fish are following food due to shifting currents. While many fishers in the Mariana Archipelago fish just off of the bottom, Borja has found BMUS in areas where most thing the fish are not present. Regarding overfishing, Borja believes this would be possible in the Mariana Archipelago if the fish were only present in one area, but the fish travel. Borja believes that bottomfish may travel the entire length of the Mariana Archipelago given how robust individuals are. Thus, Borja suggested that managers consider how high in the water column the fish are present, which species are fished out first, and if the fish travel. While it is likely that fish do travel, they are still easier to find at particular locations. Ultimately, Borja supported the APT separating shallow and deep water species but conceded that there are still many unknowns.

Jones ultimately suggested that the APT move to retain two options, Option 1 and Option 3, while maintaining the general language of the Magnuson-Stevens Act that allows for flexibility in deciding to assess the BMUS between single species, complex, and indicators based on what the data allow.

5. Review of the Non-Commercial Module for the Annual SAFE Report

Keith Bigelow and Jenny Suter, PIFSC, presented a review of the exploration off territorial bottomfish catch and sale data, including an evaluation of methods for estimating the non-commercial portion of total catch from the creel surveys and commercial receipt program, to develop new non-commercial fishing modules for the annual SAFE reports. Ashley Tomita, PIFSC, developed an internal report evaluating territorial non-commercial landings in response to a previous APT recommendation for PIFSC to calculate non-commercial catch estimates for inclusion in the annual SAFE reports using: 1) the total estimated creel catch minus the amount sold from commercial receipts, and 2) expanded creel survey data on the amount of catch intended to be sold.

For calculation method #1, the total amount of catch sold (i.e., the commercial portion of the catch) would be subtracted total expanded catch derived from the creel survey data to estimate the non-commercial portion of the fisheries. For calculation method #2, the reported amount of catch that was intended to be sold from creel surveys interviews would be expanded to represent the non-commercial portion of the fisheries. Suter presented figures that she generated using the internal report to better depict the differences in results between the two calculation methods. For American Samoa BMUS, sales from the commercial receipt data were relatively low, ranging from about 1,000 lb to 3,000 lb annually over the past decade, while the expanded data for intended sales was roughly 90% to 95% of the total catch estimate. While the two values were much closer in amount for Guam and CNMI BMUS, there were sometimes issues where the total amount sold from commercial receipts was greater than the total estimated catch from the creel survey expansions. Suter asked the APT what the best path forward would be to estimate the non-commercial portions of catch for the territorial bottomfish fisheries given the variable results between different ways of calculating the value.

Jones said that it is important to compare the expanded intended sales against the commercial receipts, and one could argue that vendor sales is more appropriate to use since the creel data is solely based on intent. In the recent fisher data workshop hosted by DMWR and the Council, the bottomfish fishers stated that they do sell most of their catch; this makes it difficult to accept the commercial receipt program data that suggests sales are low relative to total catch. Each calculation method would provide a different scenario in its result. The DMWR representative to

the APT agreed that fishers indicated they sell most of their catch, which was the opposite of the general assumption for the American Samoa BMUS fishery. It is not clear how to explain that the data for intended sales are greater than the commercial receipt books since the vendor reports should be higher if fishers are actually selling their catch. Jones suggested that the issues may be that vendors are not reporting or that BMUS are being sold individually and not through traditional vendors. The DMWR representative was hesitant in accepting these potential scenarios since there are not a lot of bottomfish fishers and it is unlikely that they are not reporting their sales. Jones replied that the issue may not be with the fishers but rather the vendors since commercial receipts are dealer-reported. The DMWR representative suggested that the issue could be either potential scenario, but it is unlikely that the problem is due fishers not reporting what is sold.

A Plan Team member stated that the pounds sold from commercial receipts appear to be relatively low, especially for American Samoa. Many purchases in the commercial receipts are reported in larger, general groups (e.g., miscellaneous bottomfish, emperors, etc.) rather than at the species level such that BMUS can be explicitly identified. In the 2019 stock assessments for territorial BMUS, expanded catch estimates from the creel surveys were compared to sales derived from commercial receipts inclusive of a portion of sales from species groups believed to contain BMUS. The comparison for American Samoa data showed that the amount of total catch solid is comparable to the creel survey data on intended sales at around 90% to 95% of total catch sold; this value also matches the proportion of BMUS catch sold as reported by fishers during the recent American Samoa data workshop. Thus, the difference between commercial receipt data used by Tomita and Suter in their evaluation of commercial sales was much less than the sales reported in the recent stock assessments because the assessments attributed additional commercial sales data to BMUS from sales reported in more general species groups. Bigelow agreed that the PIFSC SAP did not extract the same sale information that Tomita did in her non-commercial evaluation and expressed surprise that the proportion sold could be so high. Suter also noted that American Samoa is the only territory of the three that has a breakdown of commercial sales at the species level. Jones noted that as data collection moves toward electronic reporting, species identification requirements are being refined to ensure that fishers report this information. A Plan Team member noted that they thought that commercial receipt books summed species into larger groups because there are usually difficulties in identifying fish to the species level.

Jones said that the APT could decide to use the expanded data for intended sales since the information is comparable to commercial receipt book data, standardize and use the commercial receipt book data, or discuss further refinement to the non-commercial models at future APT meetings. Regarding the information about the proportion of BMUS sold from fishers at the recent data workshop, a Plan Team member noted that they would additionally ask fishers the difference between selling and bartering, what their definition of selling is, if they sell through vendors or individually, and if the COVID-19 pandemic impacted their sales habits. Another Plan Team member noted that the creel surveys in American Samoa are different from Guam and CNMI because the question on the proportion of the catch intended for sale is answered at a species level rather than in general for the entire catch by a fisher. Jones stated that he believes there is currently not enough information to make a decision, and this analysis can be seen as an initial step. Combined with the PIFSC SAP estimates of commercial sales and the information from fishers at the data workshop, a small group could further discuss the issue and report back to the APT at its April 2022 meeting. It will be especially important to consider what the fishers

consider as non-commercial, if bartering is involved, and if the fishers' definition of selling is different from how the fishery managers perceive. If the definition is consistent with the managers' understanding, then it could perhaps be as simple as using the expanded data on intended sales from the creel surveys.

6. Public Comment

There was no public comment.

7. Other Business

There was no other business.

8. Plan Team Discussion and Recommendations

Regarding the revision of the BMUS lists for American Samoa and Guam, the Archipelagic Plan Team:

1. Recommends the following species be considered for Council approval to comprise the proposed federal BMUS in American Samoa and Guam (Table 3) and territorial BMUS (Table 4) subject to further refinement through agency and community consultation.
2. Notes that these new species lists will not take into effect until the FEP amendment is completed at earliest in 2024.
3. Recommends the Council consider revising the territorial BMUS complex based on the results of the cluster analysis and life history synthesis/report, utilize the flexibility of the current FEP control rule and apply the control rule at the appropriate level depending on the available data.
4. Recommends the Council endorse the Archipelagic Plan Team working groups to provide the information to support the different sections of the BMUS revision amendment. The Archipelagic Plan Team working groups and proposed members are as follows:
   - Stock Status Determination Criteria (Carvalho, Nadon, Ahrens, Ochavillo, Sabater)
   - Essential Fish Habitat (Parke, O'Malley, Oliver, Ahrens, Tibbatts)
   - ACL and Accountability Measures using 600.310(h)(2) (Schumacher, Sabater)
   - Monitoring and Bycatch (Suter, Bigelow, Ochavillo, Biggs, Villagomez)
   - Fishing Communities (Kleiber, Pan, Council Island Coordinator Staff)

Table 3. Proposed Bottomfish Management Unit Species under the federal Fishery Ecosystem Plans in American Samoa and Guam.

American Samoa	**Guam**
Aphareus rutilans	*Aphareus rutilans*
Etelis boweni	*Etelis boweni*
Etelis carbunculus	*Etelis carbunculus*
Etelis coruscans	*Etelis coruscans*
Pristipomoides argyrogrammicus	*Pristipomoides argyrogrammicus*
Pristipomoides auricilla	*Pristipomoides auricilla*
Pristipomoides filamentosus	*Pristipomoides filamentosus*

American Samoa	Guam
Pristipomoides flavipinnis	*Pristipomoides flavipinnis*
Pristipomoides seiboldii	*Pristipomoides seiboldii*
Pristipomoides zonatus	*Pristipomoides zonatus*
Pristipomoides multidens	-
Paracaesio stonei	-
Paracaesio kuskarii	-

Table 4. Proposed Bottomfish Management Unit Species under the Territorial Fishery Management Plans in American Samoa and Guam.

American Samoa	Guam
Aprion virescens	*Aprion virescens*
Caranx ignobilis	*Caranx ignobilis*
Caranx lugubris	*Caranx lugubris*
Variola louti	*Variola louti*
Lethrinus rubrioperculatus	*Lethrinus rubrioperculatus*
Lutjanus kasmira	*Lutjanus kasmira*

Work Items

- The pertinent Archipelagic Plan Team members (i.e., Nadon, Kleiber, Pan, Suter, and Bigelow), Council staff, and the Council's Annual SAFE Report Coordinator to further investigate the differences in the non-commercial catch estimation results and provide a recommendation for moving forward at the regular annual Archipelagic Plan Team meeting in April 2022.

Plan Team Discussion on Recommendations

Regarding Recommendation #1, the DMWR representative on the APT suggested that wording be added to make clear that the revisions to the BMUS lists will not take effect until 2024 and are not associated with the upcoming stock assessments so as to not misinform fishers, which is now reflected in Recommendation #2. The APT member also stated that the species being moved to the species lists in the territorial FMPs are not final and are subject to changes after consultations with the fishing community. Jones agreed that the recommendation does not preclude any additional species being added to the territorial FMPs and is meant to refer to the shifting of the current federal BMUS list. Jones also noted that he understands the concerns that fishers may learn about the BMUS revisions and become confused considering the other ongoing actions relevant to American Samoa BMUS. Jones said that the BMUS revision action has to go through many steps and may take several years. It would be preferable to not conflate this action with upcoming stock assessments or the ongoing rebuilding plans in the territories. Once the amendment for the BMUS list revision is finalized the stock assessment schedule is subject to change since the action would prompt a new benchmark assessment to be conducted. Jones suggested that the Council, NMFS, and DMWR work together to ensure there are no misleading press releases that get ahead of the current progress with the BMUS revision amendment. Another Plan Team member asked if the annual SAFE reports will utilize the current or proposed lists, and Jones clarified that the current BMUS list will be used in the SAFE reports.

A Plan Team member asked if there will be revisions to the BMUS list in the FEP for the Commonwealth of the Northern Mariana Islands (CNMI). In the most recent APT working group meeting, a representative from the CNMI Division of Fish and Wildlife (DFW) stated that there were no initial issues with species included on the proposed Guam BMUS list if it were to be mirrored for the CNMI. PIFSC is currently completing a cluster analysis for the CNMI, but it may turn out that Guam and the CNMI will continue to share a single list. The Plan Team member asked if the efforts to revise the CNMI BMUS list will be separate from Guam and American Samoa or if it will "catch up" so that all revisions can be done at once. Council staff replied that the hope is to produce a single amendment, but the APT working group will need to be reconvened to specifically discuss the CNMI list in the near future.

Regarding Recommendation #4, Jones asked the APT for volunteers to participate in each of the working groups, emphasizing representation by members from the territorial resource management agencies. A Plan Team member asked for clarification on the responsibilities of the working groups, and Jones responded that the working groups would help to compile information to be used in the FEP amendment for the BMUS revisions between April and December of this year. Regarding the EFH working group, a Plan Team member asked if the responsibility would be to define EFH on maps for BMUS based on the new list, and Council staff replied that the EFH designations could be based on literature review and described qualitatively rather than explicitly shown on a map. Additionally, EFH must be described by life stage. A Plan Team member suggested that it would be good to have someone from the PIRO Habitat Conservation Division (HCD) join the EFH working group, and Jones asked Parke to reach out to PIRO HCD to inquire about their participation. Parke suggested that Kisei Tanaka may support Parke in his role on the EFH working group and stated that he would reach out to PIRO HCD for their participation.