WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Ecosystem Component Working Group Meeting
September 7-8, 2017
11:00 am to 4:00 pm
Council Office Conference Room

DRAFT REPORT
Ver: 10/06/2017

1. Introductions

Craig Severance, working group chair, opened the meeting and called for introductions. In attendance were Craig Severance (SSC), Dave Itano (SSC), Justin Hospital (NMFS-PIFSC), Ivor Williams (NMFS PIFSC), Brett Taylor (NMFS PIFSC), Kurt Kawamoto (NMFS PIFSC), Ryan Okano (Division of Aquatic Resources), Alton Miyasaka (Division of Aquatic Resources), Trey Dunn and Michael Tenorio (CNMI DFW), Jarad Makaiau (NMFS PIRO), Marlowe Sabater (Council staff) and Becky Walker (Council staff).

The working group agreed to operate by consensus and to include minority reports where necessary. This is an important working group to ensure that species of cultural or other significance are retained in the management unit.

A conference call was held on October 5, 2017 with the Guam Division of Aquatic and Wildlife Resources to go over the list of species and provided rationale of the inclusion and deletion of some species. These changes are reflected in the appropriate sections of the report.

2. National Standard 1 background

Council staff presented a background on National Standard 1 (NS1) requirements for species in need of conservation and management which is the objective of this exercise. There were thousands of species retained in the fishery during the transition to ecosystem based management, resulting in the need to specify 115 annual catch limits (ACLs) grouped into stock complexes. Many of the ACLS are meaningless, because the Fishery Ecosystem Plan (FEP) does not have the ability to improve or maintain the condition of stocks which are caught mostly in state or territorial waters.

Staff outlined the ACL specification process. In the past, the social, economic, ecological and management (SEEM) uncertainty group has recommended setting an annual catch target below the ACL, on account of management uncertainty.

The Council directed staff at its 163rd meeting to reclassify species under the ecosystem component species designation. The need to bin species under ecosystem components originated in the second action of the 2012 omnibus amendment establishing the ACL specification process. The Council still intends to utilize the ecosystem component classification in the FEPs using

national standard guidelines, but this amendment was placed on a lower priority based on the need to specify ACLs.

This amendment is a way to bring back the original intent of the FEPs. Species with a substantial amount of information are suitable for the tactical catch-based approach, but species with little information are more suitable for the ecosystem-based approach. The Council has a history of managing species as components of the ecosystem. For example, potentially harvested coral reef taxa, non-NWHI crustaceans, and deepwater shrimp were managed as ecosystem components before the term was introduced in NS1. Stocks that are predominantly caught in federal waters and are likely to be experiencing overfishing or are overfished must be included within the FEPs. The NS1 guidelines include ten factors for Councils to consider when determining whether species are in need of conservation and management. The Council identified datasets for five of the factors: 1) whether the stock is an important component of the marine environment; 2) is caught by the fishery; 3) is a target of the fishery; 4) is important to commercial, recreational, or subsistence fishermen; or 5) is important to the Nation or to the regional economy. The remainder of the factors – 6) whether an FMP can improve the condition of the stock; 7) the need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution; 8) the economic condition of a fishery and whether an FMP can further that resolution; 9) the needs of a developing fishery, and whether an FMP can foster orderly growth; and 10) the extent to which the fishery is adequately managed by states or other entities – must be assessed qualitatively. The guidelines allow Councils to adopt management measures for ecosystem component species as long as they are designed to manage the ecosystem, not to manage a fishery.

The working group noted that many species are caught in multi-species fisheries, but are not target species. The Council has struggled over the years with whether the fishery is defined based on the fishery or the species, particularly with the coral reef fishery.

In discussing PIFSC's role in management of ecosystem component species, the group noted Magnuson-Stevens Act requirements for ecosystem component species. The requirements for species in the fishery, like status determination criteria (SDC), ACLs, etc., do not apply to ecosystem component species. This amendment will specify how the Council monitors ecosystem component species, which will define PIFSC's role as a science provider. The management measures have not necessarily been defined for ecosystem component species.

3. Analysis for species in need of federal conservation and management

a. PIFSC and SSC recommendations

Council staff presented the 12 recommendations with respect to streamlining and improving the ecosystem component analysis. To explore species catch trends over time and catch to biomass for identification of species that are no longer targeted by the fishery, the SSC will evaluate plots of species catch over time and catch to biomass plots if available. This working group will examine the species that are filtered out to ensure that the final listing includes those species with social, cultural, economic, biological and ecological importance. It will, review biosampling data from PIFSC to consider whether

species should be retained in the fishery management unit due to productivity and life history traits and conduct a post-hoc analysis, which includes scoring for the NS1 criteria for species in need of conservation and management that were not evaluated through the statistical analysis.

Staff explored the recommendation to conduct the analysis on a fishery or gear level, but because of time constraints and an inadequate number of data points available, this recommendation was not done for the analysis. Histograms were generated for each of the input variables by the number of species to explore different potential levels of cutoff based on the distribution of input variables. The cumulative percentage was explored as a method for cutoff and showed that it was aggressive in removing species at each filtering stage. PERMANOVA was conducted to test the fidelity of the groupings at each filtering stage. An absolute cutoff based on the depth that delineates federal waters was not used because this would eliminate all habitats, therefore all MUS, for American Samoa. Species that are filtered out at each stage of the decision tree were documented and will be included as an appendix in the report. Staff explored the changes in species composition that will remain in the fishery when changing the sequence of filters in the analysis.

b. Final multivariate analysis results

Council staff reviewed the methods of the multivariate analysis used to identify species which should be retained in the management unit, which has been presented to the SSC and Council in previous meetings.

If the species is of very low occurrence, the species get dropped in the first level of filtering in the analysis. The major task of the working group is to individually identify those species that are culturally, biologically, or economically important and retain them if necessary. A quartile cutoff was used in the final analysis because the cumulative percentage is too aggressive in filtering species out.

Council staff presented results on the effect of changing the filtering sequence. The type of species filtered out is quite different, but the species composition and ordination plot is the same in the final filtering stage despite the order. The species filtered out at each stage are different but the end result is the same. Each filtering stage has equal weight.

Each filtering stage generated an nMDS plot that showed the clustering of species based on the input variables. The distribution of species within a variable follows the quartile level and the availability of data. The vector lines appeared to explain the directionality of the species distribution.

The PERMANOVA results for each filtering stage consistently showed significant differences between quartiles within each variable tested. Higher level cutoffs would result in no PERMANOVA test being conducted because low degrees of freedom.

i. Guam

There are 2,329 species in the Guam MUS list. Ordination plots show the amount of information available for each of the eight factors, and species without data are easily identifiable. The filtering process is applied only to those species with data. After the first quartile of those species that aren't frequently caught was removed, Guam still has 257 species on the list. After removing the first quartile of maximum depth that filters species in shallow waters (proxy for territorial waters), leaves 196 species. The first filter already removed species with low catch hence the results between the second and third filter are the same. The fourth filter was applied removing species with low economic contribution it dropped the list to 97 species. Filtering out species with low biomass leaves 44 species. When using the higher cutoff levels to median for each variable, the analysis yields only 13 species, while cutoffs at the highest quartile, only the giant trevally remains in the fishery.

One of the decision points for the working group is the selection of the cutoff level. Species which make it through the filters inherently have some data, which may be enough to manage as a fishery. The Napoleon wrasse unexpectedly made it through the median cutoff in Guam.

The chair reminded the working group that it's role is to identify species which were filtered out that should still be maintained in the management unit and provide rationale for this decision.

The working group, when conducting the evaluation, should think about the Council's responsibility which is catch in federal waters. Understanding that the data collection system is not able to provide the spatial breakdown of catch, the group considered if there is a way to better represent what is caught in federal waters. The proportion of habitat and biomass by habitat type could be used as a proxy if you're looking at the spatial composition of habitat, what type of habitat is the most abundant in federal waters and relating that back to the species. When looking at the final list of species from a chosen cutoff level, is there confidence that the species composition represents the species caught in federal waters. The filtering process is a coarse but objective way of evaluating the available information applied uniformly across a broad range of species. Expert local knowledge would further refine the final list of species.

In the first quartile cutoff, the shallow water species – with max depth as a proxy – should have already been filtered out. The first quartile would be depths of 0 to 30 m or so. Those remaining on the list would theoretically be found in deeper waters. The biomass filter cuts off the deeper species because those species are not covered by the PIFSC CREP surveys. Most fishes would occur in federal waters which are not reflected in the catch, which is a special circumstance of the Western Pacific. **The group recognized the need to keep the eteline snappers in the management unit.** The group could make the decision to use the filtering mechanism for non-BMUS species.

Staff clarified that the removal of the deeper species at the biomass filter is an artifact of the analysis, because the biomass dataset is collected between 0 and 30 m. South Bank is in federal waters in American Samoa and some fishermen dive there and see typical coral reef species, including uku and dogtooth tuna. There is no guarantee that the species occur in federal waters, but a gut check is necessary to make sure it's in federal waters.

The biomass filter can be used for context, but it's not appropriate for the deeper species which usually occur in federal waters. **The group discussed the biomass filter and came to consensus to only use the biomass filter if the species occurs in shallow waters only**. Distinctions can be made and the analysis could apply the biomass filter to only the shallow water complex.

ii. American Samoa and CNMI

There is a level of confidence that the ordination is a true grouping in the American Samoa and CNMI results. The working group did not see the need to review the ordinance plots.

In the CNMI the resolution of some of the data is only at the family level when the third quartile cutoff is applied. This is the level to which most of the data is pooled and identified. There may be other data that would be more useful for species harvested in the CNMI, which might change the list. The biosampling program has high resolution species composition information, but only has a short time series and cannot be incorporated into this analysis. Expert judgment can be used to refine the species lists from the analysis. It may be of concern that parrotfish are not included in the results, as the redlip is highly targeted. This is because the species creel survey data only had three species codes related to parrotfish. Not a lot of parrotfish data went into the analysis therefore, the species would be absent in the final results.

The group can decide if the data quality in CNMI at the family level, and potentially other management areas, is sufficient to trust the results of the analysis.

c. Draft Hawaii analysis for species in need of CMMs

Jarad Makaiau described the analysis conducted by HT Harvey and Associates on the analysis of catch from the CML database for Hawaii. The primary assumption is that catches from the inshore reporting grid by the Division of Aquatic Resources constitute the state portion of the catch and anything beyond are to be considered as federal catch. The proportion of federal catch was calculated for each species in the CML database. A 20% cutoff level was used because this is considered as optimal for federal management to have any effect on the stock. The contractor conducted an expert survey to address four of the 10 factors in NS1. The contractor also subjected the species that comprise more than 20% of catch in federal waters to a RAPFISH analysis. After all the layers of analysis have been applied, the species are ranked by priority in terms of federal

conservation and management. There was a list of 115 species analyzed and only 26 remain after the above 20% cutoff.

4. Discussion on decision points (cutoff levels and application of filters)

The chair directed participants to consider the validity of the decision points before considering the numbers of species and those which should remain in the management unit.

The analysis presents cutoff levels at the first quartile (1-25%), median (up to 50%), and third quartile (up to 75%). The relative rate of removal/retention of species varies by the chosen cutoff level. More species are retained with a lower cutoff level and fewer species are retained at higher levels. Justification has to be made in choosing a cutoff level and the selection should not be due only to the number of species remaining.

There was consensus among the working group members to drop the biomass filter for a species whose biomass is found mostly in deeper waters. If it's in more than half the time, use it instead of a quartile range. The group agreed to retain the species if the species has more than half of the species occurrence is in deep water.

The nature of the analysis is inherently more subtractive than additive. It was suggested to choose the important species to be included. The analysis presents an objective way of screening species because it is driven by the information and the available data. It is less subjective compared to selecting species based on varying levels of importance. This was the approach taken when the Council conducted the risk ranking exercise in 2011.

The working group discussed the Guam species results and raised the point that species like bigeye scads do not seem warranted for federal management. Scads are abundant with periodic massive recruitments and the species is difficult to fish down. Giant trevally is abundant because it's possibly seen frequently on dives. The group suggested elevating *Etelis* species and demoting giant trevally, based on the biology.

The Council is required to define the stocks it will manage through the plans. If the median cutoff was chosen it will comprise complexes of parrotfish, surgeonfish, BMUS (which will be done anyway), Napoleon wrasse – that represents the major fisheries in the Territories. At some point, species level ACLs will be developed because ultimately the management attention will be on the remaining species. The vast majority, however, is harvested in nearshore waters.

The median cutoff seemed reasonable which would result in 13 species for Guam, 14 for American Samoa, but only 2 for CNMI.

A working group member suggested changing the cutoff levels at each filtering stage that could reasonably capture the optimal information. For example, the goal should capture reasonable representation in the catch hence set the catch filter to median cutoff. At the same time be conservative in terms of revenue hence set the cutoff at the first quartile for revenue to filter out species with really low economic value.

The working group tested the effects of setting the cutoff levels to the following: median frequency of occurrence, median for total catch, median for maximum depth, and first quartile for revenue for the Guam data set. Another column could be added with species that should always be kept in federal management. The working group came to consensus to set the revenue cutoff to the first quartile only to put more weight in retaining species of economic importance. The working group also decided to use biomass only for informational purposes because it has many limitations especially for deep water species. It is, however, an excellent estimate for species found in shallow water hard bottom areas.

The group ran a gut-check for each quartile running at these combinations: Occurrence at median cutoff, maximum depth at median cutoff, 50%, leaving in species with no data – this resulted in 126 species. The group then set the total catch at median cutoff and revenue at third quartile. This resulted in 106 species. The group then applied the biomass filter that resulted at 88 species. The species composition is comprised of species with no available data for most variables tested.

The chair asked participants from the territories if they have species of concern that have or have not shown up on the list, or perceive them as an issue. CNMI expressed concern about not having parrotfish listed.

The chair asked that the territories review the report and draft list and add species of concern before the report is presented to the SSC.

Fifty five individual species does not commit the Council to have 55 ACLs. Maybe the third quartile should be applied for total pounds to avoid having surprising species which are at the tail end of the distribution. Species can be lumped into groups (either taxonomic or functional). The Council has discretion to identify which species they want to manage and define what comprises a stock. Where possible and practicable, we will manage species individually. Species can be aggregated into a complex or managed through an indicator stock. Menpachi will never be managed at a species level due to difficulty in species identification and fishermen will report it to the level they are able to. These groups will always be a species complex.

The group explored what happened if the depth was set to the third quartile. This resulted in 42 species remaining and still some species with no data were retained. Looking at top quarter for occurrence, 34 species were retained. Most top commercial species remained, though some species not caught in federal waters remained, like octopus. Scarids don't make the depth filter. The group decided not to be harsh on depth in Guam, because there is a lot of shallow habitat found in Guam, especially at the banks.

The working group reached consensus to set the cut-off to median level for occurrence, third quartile for maximum depth, third quartile for total catch, and up to lower quartile for revenue and median for biomass, and retained species with "no data" for each filter. In addition, higher level groupings (e.g. genus, family level, miscellaneous species) were also removed.

The group noted that revenue information is from dealer data and the data are not robust. A working group member indicated that during the SSC meeting, he pointed to the use of Biosampling data in terms of validating the species showing up in the markets. He noted that the highest frequency fish in Guam biosampling are not on the list and this acknowledges the deficiency in the market receipts. It would be nice to marry that data – biosampling could easily be extrapolated to revenue. That's why the revenue would be really good as a filter. The biosampling is extremely reliable for what is coming though. That's primarily coming through the Coop though on Guam. Council staff would be relying on the working group members who have access and knowledge of the BioSampling information to improve on the species composition results. Some working group members could provide input on the top 25 species in terms of pounds landed from BioSampling. This could be converted to percentages to address issues related to data confidentiality.

Hawaii only used the Fisher Reporting System data coming from the commercial fisheries. The contractor did not use the recreational catch estimates from MRIP. The Chair pointed out that the Council has a position on the use of MRIP data that goes back to 2006. The 2013 report by Williams and Ma reduces the year to year variability in the data, and the raw data is better than is generally perceived. The expansions are not known, and it's probably worth reviewing the new NSC report in detail before the Council considers using the data. The new report identified some similar concerns. **The decision of not using the MRIP data for management should be reexamined**.

The committee reviewed CNMI data using median level for occurrence, third quartile for maximum depth, third quartile for total catch, and up to lower quartile for revenue, and retained species with no data for each filter. This resulted in a list of species all with no data. The group investigated where we lost all of the data. In the redo, kept lower quartile for occurrence and ended up with 117 species. The CNMI members said the BioSampling data would be better for reef fish for this analysis. The amendment doesn't have to look at all of the different things that were considered. In the amendment you can focus on the specific datasets that we're working with to make the inclusion in the fishery recommendation.

If the third quartiles across all filters are applied, the list generated 14 species in CNMI most of which are family level groups. The working group noted that lower quartile cutoffs should be used to avoid the species with no available data and entries with family level grouping. **The working group reached consensus to start out with the median level cutoff, remove the high level groupings and the group further refined the list based on the biosampling species composition**. The difference in the number of species retained between the first quartile and the median cutoff is about a dozen. The list of species when all four filters were applied was deemed acceptable and representative. Parrotfishes and rabbitfishes are the main species that are missing.

The working group reviewed the application of each quartile and filter for reasonableness. **There was consensus to not use the biomass filter for CNMI. The first quartile is a better place to start than the median cutoff**. The median is missing quite a few of the important fish that need to be considered. CNMI still does not have local waters for FDM and the north side of Tinian is in federal waters. The depth cutoff doesn't necessarily work in filtering the shallow water species.

There are quite a few areas, like west of FDM, Pathfinder Reef, and Arakane Reef west of Saipan, which have shallow water habitat. Using the lower quartile leaves more lethrinids which are a lot more important, and they fall out in the median cutoff. The working group members from CNMI cross referenced the working file with the BioSampling Program species list (the CNMI list is updated to 2013) and reported their new list the following day.

In American Samoa, if the third quartile is applied for all filters, only *Lutjanus kasmira* remains. If the biomass filter is not applied and the cutoff level used is median, the blueline surgeonfish falls out because of the max depth filter. Blueline surgeonfish dominates the coral reef fish catches for the creel surveys. The BioSampling data from American Samoa lists a number of surgeon fish species comprising the top portion of the catch.

The working group used the same approach for CNMI as for American Samoa where the first quartile was used as a cutoff and did not apply the biomass filter. This resulted in 68 species in the preliminary list. The working group shuffled the cutoff levels and used the median level for occurrence, third quartile for maximum depth, median for total catch, and no filter for revenue or biomass. The group also removed invertebrates and family level groupings.

The approach in Guam was used for the cutoff levels resulted in retaining mostly the bottomfish management unit species. This is representative of the federal water fishery since there very little federal water habitats except for South Bank. *Caranx lugubris* and *Caranx ignobilis* are mostly caught by shore-based fishing. It was expected that *Caranx ignobilis* would be pretty well characterized in the data. The results are considered representative and they passed the gut-check test.

The analysis for Hawaii used a different approach since there are reporting grids available. The 2 nmi reporting grid is considered nearshore. The closest federal waters may actually be coming from state waters but it was assumed that the catch from this area is a federal portion of the catch. There were 26 stocks with greater than 20% of landings in Federal waters occurring in the 2004-2014 catch time series. Stocks with no proportions coming from beyond the 2nmi reporting grids were marked NA. Twenty percent was assumed reasonable to assume that some federal management measures could have a positive effect on the stock based on expert judgement by PIRO and Council staff. The working group discussed whether 20% is reasonable.

The Hawaii commercial dataset is not to the species level. The analysis did not consider the other datasets, because the Council monitors the CML database for the purposes of ACLs. The next step, after determining what is caught predominantly in federal waters, of the 26 species, which ones should be managed. A questionnaire was submitted to about 10 individuals looking at the 26 species and the 10 factors the Council should consider when deciding what species are in need of conservation and management. The RAPFISH analysis ranked species to suggest which are in greater need of conservation and management.

For the opelu fishery, there was broad agreement that it's targeted, and economically important, a little disagreement about whether an FMP would be effective in managing the fishery, and high disagreement about whether the state adequately manages fishery.

The group discussed whether the 20% cutoff was an appropriate starting point. The cutoff goes down to Kona crab so that the group agreed it is reasonable. *Caranx* juveniles are managed by the state. The State generally asserts that the state resources should be managed by the State. The 20% cutoff is a little bit high from the state's perspective. Another cutoff to consider is 50%. It is a problem for the State if the feds exert their authority. The operating principle should stay the same in terms of supporting the state of Hawaii. Species below 20% would still be in the FMP as ecosystem components. Funding for research doesn't go away for species below the 20% cutoff.

NMFS PIRO clarified that when species are to be removed from or added to the FEP, the ten NS1 factors should be considered explicitly. However, if species are to be designated as ecosystem components, the analysis can cover part of the ten factors and demonstrate qualitatively that the rest of the factors were considered in the process.

The working group revisited the species list that comprises the top 20%. The only targeted species in the list are in the Deep 7 bottomfish complex. The deep water shrimp *Heterocarpus* is a fragile resource that is entirely in federal waters. This fishery is almost self-regulating because of the type of fishing operation and its boom-and-bust nature.

The State of Hawaii mentioned that it is looking at changing the regulations for the Kona crab fishery. A question was raised what will happen if the regulatory changes by the State conflicts with the federal management measures? For example if the no-take of female statute is removed, this would result in higher retention of crabs which could potentially reach the ACL faster. Both the State of Hawaii and the Council should work together on making sure that the management of Kona crab does not conflict with each other. In this case, the ACL was cut by half (3500lbs) because only males are retained. If the female retention is allowed, the Council will need to revisit the ACL and increase the ACL by bringing back the other half that is supposed to account for the female mortality.

There was a recommendation to the group to increase the cutoff level to 48% dropping Kona crab, juvenile jacks, kahala, and rainbow runner. There was also a recommendation to drop *Heterocarpus laevigatus*.

Group discussion on final species listing for conservation and management

The chair started the meeting at 11:15 am and welcomed participants back. Council staff provided a recap of the consensus points and outcome of the meeting on day 1. The working group explored filters that produced a reasonable list of species which should remain in the management unit. Generally the group found that biomass is not an appropriate filter for species which occur deeper than 30 m. Family level groupings were removed from the species list, as well as octopus.

The requirement for removing species from the plan is more stringent by considering all ten NS1 factors. It will also be more difficult to bring the species back into the FEP if the species, in the future, would require conservation and management. **There was consensus to only consider whether species are in need of conservation and management or if they are ecosystem component species. The option to remove species from the FEPs is the least preferred.**

The task for the working group on the second day was to –

- Identify species in need of conservation and management
- Identify species to be retained or added in for other reasons
- Justify removal of species from the MUS and have them be left as ecosystem components

The risk ranking exercise in 2011 was pretty subjective so that has been abandoned, but the suggestion to use the MRIP for management should be reexamined based on a 2013 report by Williams and Ma. The working group agreed that it would not tackle the complex or individual species question, as this is a more suitable question to be answered in the future.

The working group discussed the utility of MRIP data. The query tool has an error which gives incorrect information. The group noted there was enough expertise in the room to determine which species are targets of recreational fisheries in federal waters, based on working group member's knowledge of the MRIP dataset.

Species in Need of Federal Conservation and Management for the Commonwealth of Northern Marianas Islands

Mike Tenorio presented on CNMI's list of preferred species. CNMI provided a list of the top 20 species from the BioSampling data that CNMI would like to be considered for inclusion in the FEPs. It was suggested to include five of BMUS species that were deemed important. Yellowtail kalekale is one of the most frequently caught. *Cephalopholis argus* shows up commonly in the markets. The eight-banded grouper does not commonly show up in the market. Usually for such large deep water species, they end up in the hotels (by order) without going to the market. If the fishermen caught a large individual, he'd have a harder time selling it as a whole and may end up cutting it into pieces for the vendors. The fishery for the eight band grouper is mostly in the Northern Islands but they are caught around Saipan as well. If there is a special order, fishers usually to go to Guguan and Agrigan, accessible by 30 or 40 foot vessels, or they get lucky around Saipan and Tinian. The working group accepted the reduced list of additional species from the BioSampling data (marked blue by CNMI working group members).

The preliminary species list from day one was tagged with yellow as not as important as the ones in blue. Species in red are for removal. The family level groupings were removed except for holocentrids (soldierfish) and mullidae (goatfish). In general, the family level is much easier to manage and the species under these families are not easily identifiable. Goatfish might be broken into three species, but not holocentrids. To avoid having the family level grouping,

CNMI could weed out the ones that would be best and will consider which species should be retained.

The working group compared the BioSampling data from CNMI and the life history program to determine if the lists match in terms of importance. The species can be clustered within a family. The working group deliberated on all the species in the initial list. The species highlighted in blue are the top priority from CNMI BioSampling (data up to 2013).

For territorial waters, the monument up north is co-managed with the federal government. The three islands unit, north side of Tinian, and FDM all include coral reef habitats. Understanding that the FEPs authority to CNMI for 0-3 management before the transfer of submerged lands by to the CNMI, the question was raised if there is an opportunity to have collaborative management of the species that will be retained despite the species occurring on habitats within CNMI waters? CNMI responded that they lack the capacity and skills needed for an assessment like this. If it can be done in this kind of process, it would be beneficial for both the federal and local government.

NMFS PIRO clarified that for coral reef MUS, NMFS has never asserted authority into 0-3. CNMI has regulations in place for coral reef species. The CNMI representative said they have fisheries regulations which are mainly related to gear. CNMI would like to look further into species specific management, and can utilize information generated from this exercise to generate better management measures if needed. There is a local drive to manage at a species level, especially for coral reef species. They have gone through the process of introducing bills which were put on hold because the agency prefers to put in regulations over laws.

The challenge is getting a good handle on how many of these species are harvested in federal waters. The shallow water species do not preclude the Council from removing these species from the FEP or binning as ecosystem components especially if CNMI is interested in establishing collaborative management. It is beneficial to retain some true coral reef species so that it does not limit the Council's responsibility in managing coral reef species, which is tied to funding. The task is to strike a balance between keeping the number of species manageable as well as representative, for various reasons.

The working group clarified that standardizing species across the territories is not one of the goals of the exercise. The goal of each discussion is to come up with the species of importance in each territory. PIFSC representatives indicated the list of species appeared representative, though not all are harvested in federal waters. The final list for CNMI is as follows:

Table 1. Final list of species that are in need of conservation and management for the Commonwealth of Northern Mariana Islands. The list was generated from the multivariate analysis and through careful deliberation of the Ecosystem Component Expert Working Group with consideration of the information from the BioSampling Program. The yellow highlights are deemed important by CNMI and the blue highlights are from the BioSampling information.

No	Scientific Name	Common Name	Family Name	FEP GROUP

1	*Caranx ignobilis*	giant trevally	Carangidae	BF Multi-species complex
2	*Caranx lugubris*	black trevally, jack	Carangidae	BF Multi-species complex
3	*Lethrinus rubrioperculatus*	redgill emperor	Lethrinidae	BF Multi-species complex
4	*Aphareus rutilans*	red snapper, silvermouth (lehi)	Lutjanidae	BF Multi-species complex
5	*Aprion virescens*	grey snapper, jobfish	Lutjanidae	BF Multi-species complex
6	*Etelis carbunculus*	red snapper (ehu)	Lutjanidae	BF Multi-species complex
7	*Etelis coruscans*	red snapper (onaga)	Lutjanidae	BF Multi-species complex
8	*Lutjanus kasmira*	blueline snapper	Lutjanidae	BF Multi-species complex
9	*Pristipomoides auricilla*	yellowtail kalikali	Lutjanidae	BF Multi-species complex
10	*Pristipomoides filamentosus*	pink snapper (paka)	Lutjanidae	BF Multi-species complex
11	*Pristipomoides flavipinnis*	yelloweye snapper	Lutjanidae	BF Multi-species complex
12	*Pristipomoides sieboldii*	pink snapper (kalekale)	Lutjanidae	BF Multi-species complex
13	*Pristipomoides zonatus*	flower snapper (gindai)	Lutjanidae	BF Multi-species complex
14	*Randallichthys filamentosus*	Randall's snapper	Lutjanidae	BF Multi-species complex
15	*Hypothordus octofasciatus*	eightband grouper	Serranidae	BF Multi-species complex
16	*Variola louti*	lunartail grouper (lyretail grouper)	Serranidae	BF Multi-species complex
17	*Acanthurus xanthopterus*	Yellowfin Surgeonfish	Acanthuridae	CRE-Fishes
18	*Naso lituratus*	Orangespine Unicornfish	Acanthuridae	CRE-Fishes
19	*Naso unicornis*	Bluespine Unicornfish	Acanthuridae	CRE-Fishes
20	*Carangoides orthogrammus*	Yellow Spotted Trevally	Carangidae	CRE-Fishes
21	*Caranx melampygus*	Bluefin Trevally	Carangidae	CRE-Fishes
22	*Caranx papuensis*	Brassy Trevally	Carangidae	CRE-Fishes
23	*Caranx sexfasciatus*	Bigeye Trevally	Carangidae	CRE-Fishes
24	*Caranx sp. (juvenile)*	EE: Juvenile Jacks	Carangidae	CRE-Fishes
25	*Scomberoides lysan*	Leatherback	Carangidae	CRE-Fishes
26	*Selar crumenophthalmus*	Bigeye Scad	Carangidae	CRE-Fishes
27	*Elagatis bipinnulata*	Rainbow Runner	Carangidae	CRE-Fishes
28	*Myripristis berndti*	Berndti's soldierfish	Holocentridae	CRE-Fishes
29	*Myripristis murdjan*	Murdjan's soldierfish	Holocentridae	CRE-Fishes
30	*Myripristis violacea*	violet soldierfish	Holocentridae	CRE-Fishes
31	*Cheilinus undulatus*	humphead wrasse	Labridae	CRE-Fishes

32	*Lethrinus harak*	Blackspot Emperor	Lethrinidae	CRE-Fishes
33	*Lethrinus obsoletus*	Yellowstripe Emperor	Lethrinidae	CRE-Fishes
34	*Lethrinus olivaceus*	Longnose Emperor	Lethrinidae	CRE-Fishes
35	*Lethrinus xanthochilus*	Yellowlips Emperor	Lethrinidae	CRE-Fishes
36	*Monotaxis grandoculis*	Bigeye Emperor	Lethrinidae	CRE-Fishes
37	*Aphareus furca*	Smalltooth Jobfish	Lutjanidae	CRE-Fishes
38	*Lutjanus gibbus*	Humpback Snapper	Lutjanidae	CRE-Fishes
39	*Mulloidichthys flavolineatus*	Yellowstripe Goatfish	Mullidae	CRE-Fishes
40	*Parupeneus barberinus*	Dash & Dot Goatfish	Mullidae	CRE-Fishes
41	*Chlorurus frontalis*	tanfaced parrotfish	Scaridae	CRE-Fishes
42	*Chlorurus microrhinos*	Pacific steephead parrotfish	Scaridae	CRE-Fishes
43	*Hipposcarus longiceps*	longnose parrotfish	Scaridae	CRE-Fishes
44	*Scarus altipinnis*	filament fin parrotfish	Scaridae	CRE-Fishes
45	*Scarus ghobban*	bluebarred parrotfish	Scaridae	CRE-Fishes
46	*Scarus rubroviolaceus*	red lipped parrotfish	Scaridae	CRE-Fishes
47	*Cephalopholis argus*	peacock grouper	Serranidae	CRE-Fishes
48	*Siganus argenteus*	forktailed rabbitfish	Siganidae	CRE-Fishes
49	*Siganus sp.*	Rabbitfish (menahac)	Siganidae	CRE-Fishes

Species in Need of Federal Conservation and Management for Guam

The working group reviewed the preliminary list of species for Guam. *Carcharhinus amblyrhynchos* (gray reef shark) was included in the list. Shark depredation of the catch is a primary issue in Guam. The Council explored options for shark management in this region. Shark depredation is not a harvest issue but could potentially be a bycatch issue. No retention of species which are not in need of conservation and management has been passed in the other areas. As an ecosystem component, we can put in specific regulations to prevent retention.

Shark depredation is not brought up by people fishing on the reef but primarily from deep water fisheries. Gray reef sharks are not the cause of shark depredation. Sharks were not perceived to be of need in conservation and management were hence removed. Sharks are already protected through other federal and territorial regulations. Needlefish were also removed because there are no fisheries for them.

PIFSC provided all of the BioSampling species with total weight from 2010 through day 1 of the meeting. The weight was converted to percentages to deal with confidentiality issues. *Naso unicornis* was the highest in terms of species composition. There is a lot of family style marketing that used to sell fish from FSM which is now a more complex system. The BioSampling data is limited to what comes through Guam Fishermen's Coop. The species composition at the coop was considered to be representative of other fish vendors who sell fish from local waters.

The working group noted that sixth on the list is humphead wrasse (*Cheilinus undulatus*). This species tend to dominate by weight because it tends to grow to large sizes, hence it makes it on top of the list, but those fish likely come from Rota. It's technically a CNMI fish but marketed in Guam. The *Diodon hystrix* (pufferfish) was removed because it's not highly targeted in federal waters. The group dropped trumpetfish and cornetfish because they're not targeted. The big triggerfishes are targeted in Guam but the pinktail triggerfish is not hence was dropped.

Variola louti is culturally important, and it's more common and is in the BMUS, so it was retained. *Leiognathus equulus* is a baitfish. Parrotfish is pretty important culturally but the group was not sure about federal occurrence. They do occur in federal waters but the experts were unsure that much is caught in the banks that occur in federal waters. *Hipposcarus longiceps* is the number one parrotfish in the fishery. The first 8 species represents 50% of the fishery by weight, but it's so equally partitioned beyond that that there isn't that much difference between species.

Naso hexacanthus can be abundant in deep water, but we're not sure if people fish for it in deep water. Since *Naso lituratus* is second by weight but since the fishery is entirely nearshore, the working group decided to remove the species.

Lethrinus rubrioperculatus was added back in because of its cultural importance. River snapper, *Lutjanus argentimaculatus*, requires freshwater, so it is not usually caught in federal waters, and was removed from the list. *Lutjanus gibbus* was added back in because it's a common snapper caught by the fishery. It was filtered out by depth. Of the shallow water, *Lutjanus gibbus* and *Lethrinus rubrioperculatus* top the list of shallow water species. Those types of shallow water BMUS are selectively included for various reasons, such as a target of the fishery or high catch levels.

The working group saw the need to add back in a couple of emperors, *Lethrinus olivaceus, Lethrinus xanthochilus* were added back in because they're commercially important. *Lethrinus erythracanthus* is the fourth most common of the emperors.

The list includes representative species from scarids, emperors, snappers, groupers, deepwater snappers. There's no surgeonfish because they're in nearshore waters. *Pristipomoides zonatus* was retained as the most common species across the Marianas. Kahala was noted as not an important species and neither were the barracudas. The members from DAWR recommended to remove *Seriola dumerili* from the list on the basis of not being a major component of the fisheries and they are not targeted. The barracudas are probably caught a lot but are not frequently sold, and are either thrown back or consumed. These species are widely known as ciguatoxic and barracudas are not caught that often. The bait fish (*Leiognathus equulus*) was dropped by the working group. **The conference call with DAWR on October 5, 2017, they indicated that they want to retain this species because it is targeted in Guam**.

The group discussed the inclusion of humphead wrasse. It is culturally and economically important, and it's an iconic species. It is charismatic and was on the list in CNMI. There was sufficient information in Guam that it made the preliminary list. The species were observed by CREP at the northern parts of Guam. The group noted that they may not be present on the banks,

because they banks lack the preferred recruitment habitat. The Council has previously identified humphead wrasse and bumphead parrotfish as of special management interest of the Council, but the likelihood of it being more than infrequently available for extraction in federal waters given its habitat requirements is low. They are rare in the catch records, relatively rare in observations, and vulnerable to overfishing, but federal management is not likely to maintain or improve the status of the species. **The working members from Guam recommended removing the humphead wrasse from their list based on the conference call held on October 5, 2017. They noted that the species likely occurs almost entirely in Territorial waters. It is possible for the species to occur at the outer banks but federal management of this vicariate species may not be warranted.**

The Territories never had a large active fishery for crustaceans and precious corals in Federal waters. There is only one crustacean permit active in Guam, and there have been no reports filed. The selective and non-destructive requirement forces everyone to harvest using rebreathers or submersibles. If the precious corals become ecosystem components, the Council will pull the regulations off the books, and the dragnets make it easier to do with less cost.

The working group noted that the fishery for the precious corals in the Territories was unable to develop through the entire length of the precious coral FMP. New technologies could change this in the future and the higher demand from China makes it more realistic. The only real concern is the timing it would take for the Council to react. When species gets dumped under EC the regulations directed to the species are removed. So, if the fishery does develop, the regulations will have to be developed again.

The working group noted that the WP precious corals are not the quality for the global market. When you do the plan amendment, framework provisions can be built in. **The working group defers decisions on the precious corals pending the review of the Territory working group members.** The crustaceans don't have regulatory issues and the interest in fishing for deepwater shrimp is low and is self-regulating. **The members from DAWR opted to keep the precious corals because there was a Chinese research vessel (from the Chinese Academy of Science) at South banks (Sept 5, 2017) mapping resources which may include mapping of precious coral beds. They found black corals at Caroline Banks.**

Table 2. Final list of species that are in need of conservation and management for Guam. The list was generated from the multivariate analysis and through careful deliberation of the Ecosystem Component Expert Working Group with consideration of the information from the BioSampling Program.

No	Scientific Name	Common Name	Family Name	FEP GROUP
1	*Caranx ignobilis*	giant trevally, jack	Carangidae	BF Multi-species complex
2	*Caranx lugubris*	black trevally, jack	Carangidae	BF Multi-species complex
~~3~~	~~*Seriola dumerili*~~	~~amberjack~~	~~Carangidae~~	~~BF Multi-species~~

				~~complex~~
4	*Lethrinus rubrioperculatus*	redgill emperor	Lethrinidae	BF Multi-species complex
5	*Aphareus rutilans*	red snapper, silvermouth (lehi)	Lutjanidae	BF Multi-species complex
6	*Etelis carbunculus*	red snapper (ehu)	Lutjanidae	BF Multi-species complex
7	*Etelis coruscans*	red snapper (onaga)	Lutjanidae	BF Multi-species complex
8	*Lutjanus kasmira*	blueline snapper	Lutjanidae	BF Multi-species complex
9	*Pristipomoides auricilla*	yellowtail snapper	Lutjanidae	BF Multi-species complex
10	*Pristipomoides filamentosus*	pink snapper (paka)	Lutjanidae	BF Multi-species complex
11	*Pristipomoides flavipinnis*	yelloweye snapper	Lutjanidae	BF Multi-species complex
12	*Pristipomoides sieboldii*	pink snapper (kalekale)	Lutjanidae	BF Multi-species complex
13	*Pristipomoides zonatus*	snapper (gindai)	Lutjanidae	BF Multi-species complex
14	*Variola louti*	lunartail (lyretail) grouper	Serranidae	BF Multi-species complex
15	*Naso hexacanthus*	Black tongue unicornfish	Acanthuridae	CRE-Fishes
16	*Naso unicornis*	Bluespine unicornfish	Acanthuridae	CRE-Fishes
17	*Carangoides orthogrammus*	Goldspot trevally	Carangidae	CRE-Fishes
18	*Caranx melampygus*	Bluefin trevally	Carangidae	CRE-Fishes
19	*Caranx sexfasciatus*	Bigeye trevally	Carangidae	CRE-Fishes
20	*Elagatis bipinnulata*	Rainbow runner	Carangidae	CRE-Fishes
21	*Selar crumenophthalmus*	Atulai	Carangidae	CRE-Fishes
22	*Myripristis berndti*	Bigscale Soldierfish	Holocentridae	CRE-Fishes
23	*Sargocentron spiniferum*	Long-Jawed Squirrelfish	Holocentridae	CRE-Fishes
~~24~~	~~*Cheilinus undulatus*~~	~~Napoleon wrasse~~	~~Labridae~~	~~CRE-Fishes~~
25	*Lethrinus erythracanthus*	Orange-Spotted Emperor	Lethrinidae	CRE-Fishes
26	*Lethrinus olivaceus*	Longface Emperor	Lethrinidae	CRE-Fishes
27	*Lethrinus xanthochilus*	Yellowlip Emperor	Lethrinidae	CRE-Fishes
28	*Monotaxis grandoculis*	Bigeye Emperor	Lethrinidae	CRE-Fishes
29	*Aphareus furca*	Silvermouth/Jobfish	Lutjanidae	CRE-Fishes
30	*Lutjanus fulvus*	Flametail Snapper	Lutjanidae	CRE-Fishes
31	*Lutjanus gibbus*	Humpback Snapper	Lutjanidae	CRE-Fishes
32	*Chlorurus microrhinos*	Steephead Parrotfish	Scaridae	CRE-Fishes
33	*Hipposcarus longiceps*	Parrotfish	Scaridae	CRE-Fishes
34	*Scarus altipinnis*	Filament finned Parrotfish	Scaridae	CRE-Fishes
35	*Scarus forsteni*	Tricolor Parrotfish	Scaridae	CRE-Fishes

36	*Scarus rubroviolaceus*	Parrotfish	Scaridae	CRE-Fishes
37	*Scarus schlegeli*	Chevron Parrotfish	Scaridae	CRE-Fishes
38	*Variola albimarginata*	White margin lyretail Grouper	Serranidae	CRE-Fishes
39	*Leiognathus equus*	Common Slipmouth	Leiognathidae	CRE-Fishes

Species in Need of Federal Conservation and Management for American Samoa

The Ecosystem Component Expert Working Group from American Samoa will review the preliminary list and will be given the opportunity to weigh in on the precious coral retention. The spiny lobsters, *Tridacna sp*. were removed because they were shallow water and nearshore. Kona crab was either in shallow water or not present in the management area. *Etelis radiosus* is uncommon in the fishery catch but it is more common in American Samoa than anywhere else. It's part of the eteline complex and will certainly be caught in federal waters. *Saloptia pauai* or golden grouper is one of the deeper water species and isn't in the BMUS, but it was in CREMUS. Galapagos shark was removed because the sharks are reef associated. The river eel was removed due to its dependence on freshwater. The butterflyfish was removed as a nearshore species. Generally, nearshore species were removed. The razorfish and siganids were removed because they're not highly targeted. *Paracaesio stonei* is a bottomfish though it's classified as a CREMUS. *Paracaesio* and *Saloptia* were caught using bottomfishing gear in the life history cruise. 48.6% of the commercial fishery by weight is *Acanthurus literatus*, which is very shallow and nearshore on the reef flat. The working group is more limiting on the reef fish because there is very little reef habitat in Federal waters. Barracuda was removed on Guam because there wasn't a targeted fishery, and so it was also removed in American Samoa. *Ctenochaetus strigosus* was removed because it's not found in deeper waters. Akule are not caught in Federal waters.

The list for American Samoa consists of groupers, snappers, emperors, and jacks. During the PIFSC life history cruise, the Center discovered a deep water bottomfish still currently being named (*Etelis* sp). The bottomfish is caught on the banks. The group noted that *Pristipomoides* are more common in American Samoa but the eteline snappers are not as common. The group decided to leave it to working group member Domingo Ochavillo to include parrotfishes or not, and do the same for *Cheilnus undulatus*.

Table 3. Final list of species that are in need of conservation and management for American Samoa. The list was generated from the multivariate analysis and through careful deliberation of the Ecosystem Component Expert Working Group with consideration of the information from the BioSampling Program.

No	Correct Scientific Name	Common Name	FAMILY	FEP GROUP
1	*Caranx lugubris*	black trevally, jack	Carangidae	BF Multi-species complex
2	*Seriola dumerili*	amberjack	Carangidae	BF Multi-species

				complex
3	*Lethrinus rubrioperculatus*	redgill emperor	Lethrinidae	BF Multi-species complex
4	*Aphareus rutilans*	(lehi) (silverjaw jobfish)	Lutjanidae	BF Multi-species complex
5	*Aprion virescens*	grey snapper, jobfish	Lutjanidae	BF Multi-species complex
6	*Etelis carbunculus*	red snapper	Lutjanidae	BF Multi-species complex
7	*Etelis coruscans*	longtail snapper	Lutjanidae	BF Multi-species complex
8	***Etelis sp. (from the PIFSC cruise)***	un id bottomfish sp	Lutjanidae	BF Multi-species complex
9	*Lutjanus kasmira*	blueline snapper	Lutjanidae	BF Multi-species complex
10	*Pristipomoides filamentosus*	pink snapper (paka)	Lutjanidae	BF Multi-species complex
11	*Pristipomoides flavipinnis*	yelloweye snapper	Lutjanidae	BF Multi-species complex
12	*Pristipomoides sieboldii*	pink snapper (kalekale)	Lutjanidae	BF Multi-species complex
13	*Pristipomoides zonatus*	flower snapper (gindai)	Lutjanidae	BF Multi-species complex
14	*Variola louti*	lunartail grouper (yellow edge lyretail)	Serranidae	BF Multi-species complex
15	*Acanthurus xanthopterus*	Yellowfin surgeonfish	Acanthuridae	CRE-Fishes
16	*Naso hexacanthus*	Black tongue unicornfish	Acanthuridae	CRE-Fishes
17	*Naso lituratus*	Orangespine unicornfish	Acanthuridae	CRE-Fishes
18	*Caranx sexfasciatus*	Bigeye trevally	Carangidae	CRE-Fishes
19	*Elagatis bipinnulata*	Rainbow runner	Carangidae	CRE-Fishes
20	*Selar crumenophthalmus*	Bigeye scad	Carangidae	CRE-Fishes
21	*Sargocentron melanospilos*	Blackspot squirrelfish	Holocentridae	CRE-Fishes
22	*Sargocentron microstoma*	Filelined squirrelfish	Holocentridae	CRE-Fishes
23	*Sargocentron xantherythrum*	Hawaiian squirrelfish	Holocentridae	CRE-Fishes
24	*Lethrinus xanthochilus*	Yellowlip Emperor	Lethrinidae	CRE-Fishes
25	*Etelis radiosus*	Scarlet snapper	Lutjanidae	CRE-Fishes
26	*Lutjanus bohar*	Twinspot/red snapper	Lutjanidae	CRE-Fishes
27	*Lutjanus gibbus*	Humpback snapper	Lutjanidae	CRE-Fishes
28	*Paracaesio stonei*	Stone's snapper	Lutjanidae	CRE-Fishes
29	*Hyporthodus octofasciatus*	Eightbar grouper	Serranidae	CRE-Fishes
30	*Saloptia powelli*	Powell's grouper	Serranidae	CRE-Fishes

Species in Need of Federal Conservation and Management for Hawaii

The Randall snapper was removed based on low catch and importance. It's seen more in submersible videos than it is in the auction or anywhere else. Golden kale was removed for the reason .

Working group member David Itano submitted an email for the group's consideration. He suggested including only the eteline deepwater snappers (*Etelis coruscans* and *E. carbunculus*) which are the subject and byproduct of a targeted fishery, are high value, slow growing and maturing, still not well understood biologically and may benefit from greater research and management attention now and in the future. The group noted the working group member's point that the deep 7 species are already regulated with a federally established annual catch limit and state mandated closed zones of prime bottomfish habitat suggesting that additional layers of federal management are unnecessary. The group accepted Itano's recommendations as clarified in later emails as a minority report, and the group achieved some agreement that the Deep & complex should remain "in the fishery"

Kona crab was kept in because it would be difficult to remove it from the management unit given its status. The group discussed the Deep 7. The stock assessment will have a single species assessment for opakapaka and an assessment as a Deep 7 complex. Ehu and kalekale are not targeted by the commercial fishery but the non-commercial guys and newcomers are catching these species. For bottomfish, it's complicated to remove species. For management convenience, until we can get a better handle on how a separation might affect management and the assessment, the group suggests that we keep the Deep 7 together in management. Uku remains as in need of conservation and management since a fishery is developing as an alternative to deep 7.

Beryx decadactylus was removed because it is not currently an MUS. Two species of deepwater shrimp should remain in – *H. laevigatus* is the targeted species while *H. ensifer* is not targeted, makes up a small portion of the catch and is not desirable. There is an equal amount of *Seriola rivoliana*, which is kampachi, caught as *S. dumerili*. Fifty four percent of the greater amberjack catch is in federal waters and it's quite a big number, 28,000 pounds according to MRIP. Other species in federal waters are the rainbow runner, opelu, akule (nighttime guys catch those at the buoys). These are targeted but there is no problem with the stock. Approximately 11,000 pounds are caught of giant trevally though the bulk of the catch is in state waters. There is very little directed fishery toward them because of the ciguatera. The group noted that ulua is important to the non-commercial fishermen only in State waters. *Alectis cilaris* was not an MUS and thus removed.

Rough scaled soldierfish, bigscale soldierfish, and Achilles tang were shown to be caught in federal waters according to the re-estimated MRIP catch numbers. However, based on expert knowledge these are species that are not really caught in federal waters and that have no active fisheries in federal waters but may very well occur in deeper depths in federal areas (except for Achilles tang). Naso hexacanthus, which are abundant in deep water, are 9% of catch. but are not targeted. There's a vertical drop bait catch and release targeted fishery for ulua and kāhala but they're not kept. White-tail soldierfish could be caught drift fishing on the banks but working group members were unsure.

For Hawaii, the absence of real reef fish on the list is quite obvious. Uku is part of the list. Pflueger's goatfish landing are quite large. Some of the IDs are not perfect in the MRIP dataset. The menpachi are probably caught on Penguin Bank but the group was skeptical that the fisheries exists in federal waters. In order to keep a few reef fish species, the candidates are moano(give species names?, *N. hexacanthus, M. pfluegeri*, which are most likely to be in federal waters due to the depth range.

The group discussed whether the MRIP highlighted ones are in need of management. The working group added kumu (*Parupeneus porphyreus*). Kumu is culturally important, potentially depleted, and they are found in deeper waters. Uku and kumu are something SSC wants to move forward with in terms of Nadon's assessment.

Part of the action of the Ecosystem Component species is establishing a dedicated monitoring program for species left in the management unit. The group discussed if market sampling will be a viable way to monitor these species. We would see changes in the market structure if some things become more common or less common and that can be monitored over time. The market structure changes drastically based on human behavior. There's a general complaint that a lot of the small reef fish are at Tamashiro in Hawaii but are hardly found anywhere else. Some people are assuming it's a demographic shift of more mainlanders here and how no one knows how to cook small reef fish. Something to think about is how to monitor the species once it's listed as in need of conservation and management.

The following species were removed: *Pontinus microcephalus* is not in the BMUS and there's not a resource concern. *Carangoides orthogrammus* is not frequently targeted, only caught, and the stocks are in good shape. Few if any fishers target rainbow runner, but they're always in Waipahu markets. Inexperienced fishermen catch a few but they're not generally targeted. They cluster around state buoys in federal waters. There was a split in working group about concern of the opelu – it's a very important bait fish for palu ahi, it's found well offshore as part of its life cycle, and it's culturally important. It could become a species of concern fairly rapidly. It depends on who you talk to on how the resource is perceived by fishermen.

The working group was not aware of any no targeted fishery for *M. pfluegeri*. Even if there was something terrible happening from Naso to kumu, the most extreme measure would be to prohibit retention. By doing that, the state is still free to do whatever they want. According to MRIP catch reports, approximately 1/3rd of *M. pfluegeri* comes out as taken offshore (i.e. largely federal). However, it is recognized that there are errors and inconsistencies in the MRIP and other data, and thus it's not clear how strong this evidence is.

A working group member suggested keeping spiny and slipper lobsters for Hawaii due to the existing species specific regulations. Precious coral is a given to keep because of the implications for the regulations. Consensus was reached in keeping spiny, slipper lobsters, and the groundfish at Hancock Seamount.

Table 4. Final list of species that are in need of conservation and management for Hawaii. The species comprise catches more than 20% in federal waters based on the 2nmi reporting grids in the

FRS database. The yellow highlights were added based on information from the re-estimated catches by Williams and Ma 2013 from MRIP.

No	SCIENTIFIC NAME	COMMON NAME	FEP GROUP
1	*Pleurocorallium secundum*	Pink coral	Precious coral
2	*Hemicorallium laauense*	Red coral	Precious coral
3	*Kulamanamana haumeaae*	Gold coral	Precious coral
4	*Narella sp*	Gold coral	Precious coral
5	*Calyptrophora sp*	Gold coral	Precious coral
6	*Callogorgia gilberti*	Gold coral	Precious coral
7	*Lepidisis olapa*	Bamboo coral	Precious coral
8	*Acanella sp*	Bamboo coral	Precious coral
9	*Antipathes griggi*	Black coral	Precious coral
10	*Antipathes grandis*	Black coral	Precious coral
11	*Myriopathes ulex*	Black coral	Precious coral
12	*Aphareus rutilans*	Lehi, Deep/Silvermouth	Deep 7 complex
13	*Pristipomoides filamentosus*	Opakapaka, Pink snapper	Deep 7 complex
14	*Etelis coruscans*	Onaga, Longtail snapper	Deep 7 complex
15	*Pristipomoides sieboldii*	Kalekale, Lavender jobfish	Deep 7 complex
16	*Etelis carbunculus*	Ehu, Squirrelfish snapper	Deep 7 complex
17	*Hyporthodus quernus*	Hapu'upu'u, Shapon, Sapon	Deep 7 complex
18	*Pristipomoides zonatus*	Gindai, Buninas, Flower snapper, Tai,	Deep 7 complex
19	*Aprion virescens*	Uku	Non deep 7 complex
20	*Seriola dumerili*	Kahala, Greater amberjack	Non deep 7 complex
~~**21**~~	~~*Elagatis bipinnulata*~~	~~Hawaiian Salmon, Rainbow Runner, Kamano~~	~~CRE-Fishes~~
22	*Caranx ignobilis*	White ulua, Mamulan, Tarakiton	CRE-Fishes
23	*Naso hexacanthus*	Opelu kala, Sleek unicornfish, Tataga (Black tongue)	CRE-Fishes
24	*Mulloidichthys pfluegeri*	Moelua, Moilua, Weke nono, Moana ula	CRE-Fishes
~~**25**~~	~~*Myripristis murdjan*~~	~~Uu, Menpachi, Bigscale/Blotcheye soldierfish~~	~~CRE-Fishes~~
26	*Selar crumenophthalmus*	Atulai, Akule, Lengo, Rengo	CRE-Fishes
27	*Parupeneus porphyreus*	Kumu, Whitesaddle goatfish	CRE-Fishes
28	*Heterocarpus laevigatus*	Deepwater shrimp, Nylon shrimp	Crustacean
29	*Ranina ranina*	Kona crab	Crustacean
30	*Panulirus marginatus*	Ula, Hawaiian red spiny lobster	Crustacean
31	*Panulirus penicillatus*	Ula hiwa, Green/Pronghorn/Tuffed spiny lobster	Crustacean
32	*Scyllaridae*	Hawaii slipper lobsters	Crustacean