WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

144th Meeting of the Scientific and Statistical Committee
June 14-16, 2022
Hybrid Meeting

FINAL REPORT

4. Pacific Islands Fisheries Science Center Director Report

Michael Seki provided the Pacific Islands Fisheries Science Center (PIFSC) Director's report, highlighting that the IRC facility has begun its "Office Re-entry" and PIFSC staff have begun to return to in-person office attendance, however CDC guidelines regarding the current COVID status elevation warranted a pause in these activities. Similarly, both NOAA Ships Rainier and Oscar Elton Sette have been conducting operations (research expeditions), but both operations have been paused due to COVID cases. All previous legs have been successful in meeting their benchmarks and richness of data gathered. Updates on the territorial bottomfish stock assessment improvement efforts were provided, highlighting progress on the completion of the Creel Survey Expansion Algorithm review, collaborative process of data exploration for the refinement of Guam's Territorial bottomfish management unit species (BMUS), completion of the CNMI cluster analysis, transition of the Catchit Logit system, and initiation of a technical review of Life History sample holdings (i.e., a compendium of What is held by Who, and Where?).

Updates were also provided on the Life History Program Research, Uku Essential Fish Habitat (EFH) Level 2 Dynamic Modeling, longline tagging bycatch reduction for loggerhead and leatherback turtles, and the published findings of the Net-Illumination studies. Finally, Seki highlighted population research of the Hawaiian Monk Seal and reported a total population size of 1,570 individuals, noting that 2021 was the first time in two decades that the monk seal population reached over 1,500 individuals within the Hawaiian Islands.

SSC Members thanked Seki for his report.

5. Program Planning

A. National Standard 2 Related Issues

1. Review of WPSAR Terms of Reference for Uku EFH

Council staff discussed developments for the EFH Model Tier 1 Review. The static and dynamic models have both been completed and presented to the Archipelagic Plan Team (APT). Council staff will present the Terms of Reference, which have been reviewed by PIFSC staff and approved by the WPSAR Chair, Milani Chaloupka. Finally, two additional reviewers (Javier and Smoliński) have been selected to join the review committee.

The SSC endorses the WPSAR Terms of Reference for Uku EFH.

2. Review of Regional BSIA Framework

Brett Schumacher, PIRO Sustainable Fisheries Division, presented on the Regional Best Scientific Information Available (BSIA) Framework. Pursuant to National Standards 2 (NS2), the Council must use BSIA. The MSA and NS2 guidelines provide legislative and policy context for the scientific basis of fish stock status determinations, catch recommendations and specifications, but they do not describe the specific steps involved. Per 302(g)(1)(E) of the MSA, peer review processes established by NOAA and a regional fishery management council are deemed to satisfy the requirements. NMFS Procedure 01-101-10 provides a framework for following the steps in the BSIA process, and complements NS1, NS2, and sections 302(g)(1)(B) and (E) of the MSA. PIFSC and PIRO, using Procedure 01-101-10, developed a draft BSIA Framework for the Pacific Islands Region (PIR) and provided it to Council staff for review. The current draft represents the consensus framework based on that review and subsequent discussions with PIFSC, PIRO, and Council staff. Under the framework, revised, peer-reviewed assessments and peer-review findings are delivered to and reviewed by the SSC. The SSC review phase is not a repeat of the technical peer review conducted by the WPSAR panel, but an evaluation of the adequacy of WPSAR review. The SSC also evaluates whether a revised peer-reviewed assessment appropriately addresses the short-term recommendations and issues identified in the WPSAR reports. For BSIA from international stock assessments, the SSC is provided an opportunity to provide guidance as to whether a stock assessment deemed BSIA by an international fishery management organization, is appropriate for management under the MSA. The SSC may request clarifications from PIFSC and PIRO, and may request that PIFSC calculate proxies for use in stock status determinations and domestic management measures.

See agenda item 5.A.3 for SSC discussion.

3. Revisiting BSIA and WPSAR Framework

The “review of the regional BSIA Framework” was discussed with “revisiting BSIA and WPSAR framework” in a joint presentation with Council staff. An SSC member sought clarification about the stock assessment process in determining if the stock is overfished when it is not reliable for absolute abundance. In some cases, the status may be fairly certain, but there may be greater uncertainty regarding the relative impact of the U.S. fishery, which is important for addressing domestic obligations under MSA Section 304(i).

The SSC discussed whether this needs to be further described in the WPSAR framework. There is no separate BSIA guidance under NS2 for international vs. domestic fisheries. Under the WPSAR Framework, the evaluation of scientific products for international fisheries is accomplished through regional fishery management organization scientific committees. Schumacher stated that U.S. interests are represented at these meetings though the U.S. delegation, which includes PIFSC, PIRO, and Council staff.

The SSC noted that information deemed BSIA for international management may not be informative for management under the MSA Section 304(i) guidelines, which requires the need to return to the BSIA framework. Information that is useful for the RFMO is not always readily applicable for management under MSA Section 304(i). Therefore, there is a need to ensure guidance from the RFMOs is appropriate for the domestic fisheries.

B. CNMI Bottomfish Cluster Analysis

Rob Ahrens, PIFSC Fishery Research and Monitoring Division, provided a summary of the cluster analysis that provides the analytical basis revising the bottomfish management unit species complex in the CNMI. In this report, the results of hierarchical clustering of creel interviews for boat-based operations were presented. The dendrograms were intended to delineate species aggregations that are potentially experiencing similar fishing pressure to facilitate, when used in conjunction with life history information, the determination of species complexes for fishery management plans (FMPs) and fishery ecosystem plans (FEPs). The revised BMUS list as a result of this analysis matches the results from the Guam cluster analysis.

An SSC member inquired about the process of conducting a sensitivity analysis when the stock complex is changed and has policy implications related to overfishing. The view from the APT was to adhere to the MSA recommendations starting with the notion of fish complexes. Fisheries are difficult to identify at the species level, and thus, complexes are the focus moving forward. There was also concern that the life history characteristics within the current BMUS list are disparate, and the revision of the BMUS list more accurately reflects the MSA guidelines.

SSC members discussed the use of both indigenous Chamorro and Refaluwasch names of the species. The SSC noted that the list of names may need reviewing for correct spelling and identification.

The SSC recommends that the results of the CNMI Bottomfish Cluster Analysis are utilized to revise the BMUS list.

C. National SSC Meeting Preparations

Council staff provided an overview of the themes and trigger questions for the 7th National SSC Meeting (also referred to as the Scientific Coordination Subcommittee [SCS] of the Council Coordination Committee) scheduled for August 15-17, 2022, in Sitka, Alaska. The meeting will focus on various aspects of addressing Ecosystem-Based Fishery Management (EBFM), including ecosystem indicators, multi-species modeling and addressing distributional shifts in managed stocks. The three primary themes of this meeting are:

- How to incorporate ecosystem indicators into the stock assessment process?

- Developing information to support management of interacting species in consideration of EBFM.
- How to assess and develop fishing level recommendations for species exhibiting distributional changes?

The SSC reviewed the themes and trigger questions and provided input to the SSC representatives attending the National SSC meeting (Harley, Franklin, Camacho).

The SSC requested that the selected delegates (Frank Camacho, Erik Franklin, and Shelton Harley, and Council staff Asuka Ishizaki) attending the meeting provide initial feedback on the focus areas and associated trigger question (see below):

For Session 1:

- Note that there appears to be a stronger focus on "incorporating environmental information" rather than "ecosystem indicators" and that the scope of the trigger questions should be broadened to reflect ecosystem indicators.
- Ensure that the definition of a "stock assessment process" is sufficiently broad to incorporate consideration of both the integration of information into the analytical models and the ability to look at relevant indicators alongside the stock assessment.
- SSC members noted that a standardized nationwide process should not be used for incorporating ecosystem indicators into the stock assessments process, as ecosystem indicators vary significantly across regions. An SSC member also recommended guidance be provided on climate-informed assessments.

For Session 2:

- SSC members suggested that a discussion should occur related to whether end to end ecosystem models/approaches are suitable for deriving management advice.
- SSC members suggested broadening the scope of this session to also consider an EBFM approach to the management of protected species.

For all Sessions:

- SSC members suggested there should be discussion on how existing management frameworks (e.g. the overfishing and rebuilding timeframes) are able to accommodate these types of effects covered across the three sessions.

D. Review of the Pacific Islands RAP to Implement the NOAA Fisheries Climate Science Strategy in 2022-2024

NMFS announced the availability of draft Regional Action Plans to implement the NMFS Climate Science Strategy over the next three years (2022-2024). The plans identified agency proposed goals and ongoing and needed research to address regional needs for climate-related information for use in stewardship of the nation's valuable living marine resources. NMFS is soliciting public comments on the draft Regional Action Plans through July 29, 2022.

The SSC recommends the Council consider including the following comments in its response letter to NMFS on the Draft PIRAP.

- **Include studies that have a retroactive perspective on various baselines (i.e., studies using otolith chemistry, etc.).** Many of the resources are obviously shifting distributions, but the impacts to the communities need to be further analyzed to garner an understanding of how fishers need to adapt, especially considering how actions taken such as more precautionary management might impact human communities.
- **Emphasize the need for community engagement to be an integral part of PIRAP 2.0.** The local communities across the Pacific region are the ones experiencing these changes and have logs spanning decades. This information and local knowledge are vital to the success of any regional action plan. Therefore, community engagement should be highlighted and discussed throughout the entire process. Also, more discrete focus should be included on where these actionable items will take place.
- **Shifting distributions will likely mean some current target species will move out of range of local fleets, but new species might appear. Focus should be given on how the management system will account for this and provide opportunities for exploitation of newly available species.** In many fisheries around the world shifting distributions have caused problems in existing total allowable catch allocations, with now much more abundant species having low quotas, which constrain the rest of the fishery.
- **The discussion on community impacts could be strengthened with explicit reference to social and economic impact assessment required for management actions.** Some reference to the need for diverse and culturally sensitive engagement with fishermen (i.e., fishing location decision models, the probable proprietary nature of that information for some and the need for sensitivity to anonymity given some distrust) should be highlighted.
- **Building local capacity for data collecting, monitoring, and interpretation is especially critical for Guam, American Samoa, and the CNMI.**
- **Shifting distributions and subsurface/sea surface temperatures are key factors that need to be addressed within the draft PIRAP.** Trophic relations and both forage fish and small pelagics that are targeted for subsistence and cultural needs deserve full consideration.

E. CCC Equity and Environmental Justice Update

Council staff presented an update on the Council Coordination Committee (CCC) Equity and Environmental Justice (EEJ) EEJ Working Group and the outcomes and next steps from the CCC agenda item. Council staff also presented details and outcomes of the WP EEJ & Fisheries Management workshop held April 29, 2022.

The CCC EEJ Working Group produced a report that defines the EEJ issue within a U.S. fisheries management context. Regional Councils provided related activities and issues. The report, while national in scope, included the information gleaned from the WP EEJ assessment. The report also provided several potential next steps that the CCC could take. The CCC considered this report at its May meeting and discussed next steps relating to EEJ. The workshop included discussion on the Council's impact and contributions in advancing EEJ for WP

fisheries. Participants also provided insights as to how the Council as an organization can leverage several tools; *fund, implement, empower, and advocate,* to effect change and address the variety of concerns raised during the Council's EEJ assessment.

Danika Kleiber, PIFSC and co-chair of the NOAA Fisheries national EEJ Work group, presented on the NOAA draft EEJ Strategy released publically May 4, 2022. The draft strategy is undergoing public review and public meetings are planned to gather input on the draft.

SSC members highlighted the importance of inclusive governance and noted several barriers: 1) system complexity, 2) overuse of jargon, and 3) negative attitude and distrust of the process.

F. National Standard-mandated social science data collection

Danika Kleiber, PIFSC, presented NS 1, 2, 4, 8-mandated socioeconomic data needs as the result of a recommendation from the APT. This agenda item was requested by Dr. Severance. (NS1: Optimum yield, NS2: BSIA, NS4: Fishing privileges, NS8: Fishing communities)

An SSC member asked what specific types of demographic data will be collected, and if data will be collected on multigenerational household structures since it may impact fish flow. A technical memo on specific demographics is in development with different demographic information included.

An SSC member shared that it is important to appropriately identify the local source of knowledge, and that social media can be used to spread misinformation in fishery communities.

SSC members discussed the need to review and consider the National Standards while developing management recommendations, and to include more social science and economic data in the process. NS 1, 2, 4, 8, 9, and 10 need full consideration and analyses must be given to social, economic, and cultural data streams to ensure successful management.

G. Development of Potential UH Fisheries Program

Council staff discussed the development of a potential University of Hawaii (UH) Fisheries Program. This may be based on the previously approved Coastal and Marine Resources Program (CMRP) from 2005. A fisheries program is needed to build capacity for employment and professional development in Hawaii and the US Pacific Territories, noting the importance fisheries have for culture, food security, and economic development. There is a need for academic and professional development infrastructure in the Pacific Islands, rather than reliance on 'mainland-centered' infrastructure. Council staff highlighted items in the CMRP documents that are outdated and may need to be updated or modified.

The SSC will revisit this topic at the September 2022 meeting once more information is available. The SSC also expressed support for the development of the program and noted that staff will be in contact with the appropriate faculty and administrators at UH to express support and assistance.

H. 2021 Annual SAFE Report and Recommendations

1. Archipelagic & Pelagic Report Highlights

Thomas Remington, Annual SAFE Report Coordinator, presented the highlights of the 2021 Archipelagic and Pelagic Annual SAFE Reports covering the fishery performance of Council managed fisheries, international fisheries modules, and the ecosystem considerations that potentially drive the fishery dynamics. The 2021 report included effects of the COVID-19 pandemic and associated restrictions on fisheries and data collection. The 2021 report incorporated the fisherman's observations that provide the qualitative description of the fisheries and the fishery environment from the fishermen's point-of-view.

Regarding the Archipelagic Annual SAFE Reports, the SSC discussed the low catch estimate for BMUS in American Samoa. SSC members indicated the low catch was attributable to decreased effort, the loss of a highliner, and lingering impacts from the pandemic in American Samoa.

Regarding the Pelagic Annual SAFE Report, the SSC discussed protected species interactions in the Hawaii shallow- and deep-set longline fisheries. In the shallow-set sector, changes in interaction levels in recent years were noted for black-footed albatross and oceanic whitetip sharks. In the deep-set sector, the highest observed number (15) of interactions occurred with false killer whales. Council staff indicated that an examination of the most recent data is part of the Plan Team's annual review, but the SSC could be included in this evaluation.

2. Archipelagic Report Recommendations

Recommendations were presented by T. Todd Jones, PIFSC staff and APT chair.

The SSC endorses the Archipelagic Report recommendations, which includes a discussion of the 2021 Guam values that were reviewed by a working group (PIFSC staff, Council Staff, and territorial agency staff). As a result of the review, the final Guam catch estimate was verified showing greater effort in 2021 than previous years.

3. Pelagic Report Recommendations

Recommendations were presented by T. Todd Jones, PIFSC staff, in lieu of Don Kobayashi, PPT chair.

The SSC endorses the Pelagic Report Recommendations.

I. Public Comment

Molly Lutcavage, Pacific Islands Fisheries Group and Large Pelagics Research Center, expressed support for the development of the potential UH Fisheries Program. There is great need for mentoring of faculty, opportunities for affiliate faculty status for fisheries scientists in the region and especially, opportunities for advanced graduate level training.

6. Protected Species

A. ESA Section 7 Consultations

1. Consultation updates for the Hawaii deep-set and American Samoa longline fisheries

Michael Tosatto, PIRO Regional Administrator, presented on the current status of ESA consultations for the Hawaii deep-set longline (DSLL) and American Samoa longline (ASLL) fisheries. Tosatto reported that the draft DSLL biological opinion (BiOp) is nearly ready to be shared with the Hawaii Longline Association, which is an Applicant to this fishery's consultation. The draft ASLL BiOp is expected to follow the DSLL. The consultation of the draft with HLA is expected to take place in July, but the exact timing is uncertain. Following the review by HLA, NMFS expects to address their comments and finalize the BiOp. NMFS was recently sued for not completing these consultations for oceanic whitetip sharks, and is currently developing the litigation strategy.

In response to SSC member questions regarding the timing and duration of the Council's draft review, Tosatto clarified that NMFS is aware of the Council's request, and if the Council is provided an opportunity to review, the Council would be notified, however he was not able to elaborate on when or how long that opportunity would be. He indicated that the Council will have the opportunity to see the BiOp when it is made available to the public.

The SSC recommends that the Council coordinate with NMFS to ensure that it receives an opportunity to review the draft DSLL and ASLL BiOps, and request that the SSC receive the drafts at least three weeks in advance of its meeting to ensure sufficient time to review.

The SSC thanks Tosatto for his update.

2. Review of the draft bottomfish fishery biological opinion

Tosatto presented an overview of the draft bottomfish fishery BiOp, which covers in the one document the bottomfish fisheries under the American Samoa, Marianas Archipelago, and Hawaii Fishery Ecosystem Plans (FEPs). The consultation was triggered by the 2018 listing of the oceanic whitetip shark (OWT) under the Endangered Species Act (ESA), as well as the listing of giant manta ray and chambered nautilus, and the designation of the main Hawaiian Islands (MHI) insular false killer whale critical habitat.

The BiOp concluded that the operation of the MHI, Guam and CNMI bottomfish fisheries are not likely to jeopardize OWTs, and the impacts from the American Samoa bottomfish fishery was determined to be discountable due to no known interactions with the species.

The draft BiOp includes an incidental take statement (ITS) of 1, 4, and 2 oceanic whitetip shark interactions over a 5 year period for Guam, CNMI and MHI, respectively. The associated mortality anticipated is one shark mortality over five years for each of the areas, based on an assumed 25% post-release mortality estimate. The draft BiOp estimates that this level of impact represents less than 0.001% of the WCPO OWT population. The reasonable and prudent measure (RPM) associated with the ITS requires that NMFS monitor the take of OWT in Guam,

CNMI and MHI bottomfish fisheries. The conservation recommendations are discretionary, and include actions for NMFS to work with fishers and local agencies to disseminate species identification materials, support consistent reporting of OWT bycatch in the bottomfish fisheries, and to establish methods to improve accuracy and frequency of reporting OWT.

In response to a query from a SSC member, Tosatto advised that he was confident that the draft bottomfish fishery BiOp reflects the best scientific and commercial information available. He further clarified that his signature on the final BiOp certifies BSIA and complies with the Data Quality Act requirements, which is different to stock assessments for which PIFSC certifies BSIA.

A SSC member queried the inadequacy of the biological background data (especially capture-mark-recapture data) used in the draft BiOp on the OWT and pointed out the use of outdated information on the vertical habitat for OWTs exposed to the fisheries. The adequacy of the scientific information used was also queried.

The SSC noted Tosatto's clarification that exceeding the ITS of 1 mortality over 5 years would require that the consultation to be reinitiated, but that the re-consultation process could be done in a more streamlined manner.

The SSC questioned the appropriateness of including an RPM for Guam, CNMI and MHI since OWT take is not prohibited under ESA regulations and whether there is a precedent for such development. Tosatto indicated that NMFS deliberated whether RPMs would apply in this situation and determined it was appropriate to include it in the draft BiOp for the purpose of taking a hard look at the issue prior to the final BiOp, and noted that the aim was for the consulting agency (PIRO Protected Resources Division) to require that the action agency (PIRO Sustainable Fisheries Division) to monitor the take of OWTs so that the take does not exceed a level that would have impacts to the species.

The SSC formed a working group to provide a detailed review of the draft bottomfish BiOp. **The SSC adopts the following working group report and recommends that the Council consider these comments in its response to the draft BiOp:**

WORKING GROUP REPORT

The working group convened during the 144th SSC Meeting and was tasked to lead the review of the draft bottomfish BiOp. The working group specifically addressed the following three questions:

- Does the draft BiOp accurately assess the effects (direct and indirect) of the bottomfish fishery on oceanic whitetip sharks?
- Are the scientific or commercial data or information presented in the draft BiOp accurately interpreted and provide support for the discussion, findings, and conclusions made in the document?
- Does the scientific or commercial data or information presented in the draft BiOp provide support for the RPMs and associated Terms and Conditions as well as Conservation Recommendations?

The BiOp clearly shows there is no jeopardy associated with the bottomfish fisheries in CNMI, Guam and MHI. The proposed RPM for the bottomfish fisheries does not minimize the impacts of the bottomfish fisheries, and the previously stated impacts are immeasurable with respect to OWT. The expected level of impact is orders of magnitude smaller than the estimated uncertainty in the population estimates. Therefore, the SSC suggests that RPMs are neither reasonable nor prudent for this species.

Overall, the SSC supports the draft BiOp finding of no jeopardy. The SSC recommends that monitoring of OWT interactions be integrated into existing programs and at the discretion of the action agency. It does not seem feasible to design an independent monitoring program to detect an extremely rare event (one shark mortality anticipated every 5 years). The SSC recognizes that there are uncertainties associated with available data on potential OWT interactions in the bottomfish fisheries, but notes that interaction risk is nevertheless extremely low in these fisheries.

The SSC provided the following specific comments:

- Need to update the fishery descriptions in the draft BiOp to better reflect the historical and current characteristics of the bottomfish fisheries in the region, including the description of shallow- and deep-dwelling components of the fishery and their main fishing grounds. The SSC notes that updating these descriptions does not change the overall assessment of impacts.

- Urgent need for better species identification to distinguish between OWT and other shark species. The SSC notes that the species codes used for the Hawaii CML data were updated around 2015 based on a recommendation from the Pelagic Plan Team to separate out oceanic whitetip sharks from whitetip reef sharks.

The SSC thanks Tosatto for his presentation.

B. Impact of Observer Coverage Level on Estimated Take

Chris Long, NRC post-doctoral researcher at PIFSC, presented an analysis on the potential effect of observer coverage level changes on the bias and precision of estimated protected species encounters. The analysis simulated the effects of observer coverage on protected species bycatch estimation by using the shallow-set longline fishery data with 100% observer coverage and known levels of protected species interactions.

The simulated sampling of the trip-level data was based on existing systematic sampling methods developed for the deep-set longline fishery, and data were presented on how changing coverage levels (5-95% in 5% intervals) affects the mean and variance of protected species interaction estimates.

C. Long advised that an observer coverage level of around 30-40% would be sufficient to derive robust design-based estimates of the species-specific incidental takes. A SSC member suggested considering how fisher behavior may change from different observer coverage levels, noting that

the analysis uses a dataset with 100% coverage.

The SSC thanks C. Long for his informative presentation.

C. Public Comment (at end of day 1)

There was no public comment.

D. ESA and Marine Mammal Protection Act Updates

1. National Updates (Serious Injury Determination Policy; GAMMS updates)

Kristy Long, NMFS Office of Protected Resources (OPR), and Amanda Bradford, PIFSC, presented an update on the review of the NMFS Serious Injury Determination Policy: Process for Distinguishing Serious from Non-Serious Injury of Marine Mammals. NMFS initiated the review in 2017. Based on the review, NMFS has identified several substantive topics that warrant a revision of the procedural directive associated with the policy, including issues related to guidance on capture myopathy, considering new injury types and extending existing sub-categories, and clarifying criteria associated with some small cetacean injury categories (including those involving lip and mouth hookings). The revised directives for serious injury determination are expected to be proposed this summer and finalized by the 2022/23 winter for the 2023 Stock Assessment Report (SAR) cycle.

Importantly, serious injury determinations are used in stock assessment reports and marine mammal conservation measures. Serious injury determinations are defined as any injury that likely results in mortality.

Small cetacean injuries often involve lip or mouth hooking. Prescriptive guidance is not considered feasible so expert-identified indicators for lip-hooking have been proposed. There is only limited literature on post-hooking survival outcomes for lip- or mouth-hooked cetaceans.

The SSC noted that there are no major studies underway, or proposed, to derive robust post-hooking survival rate estimates for small cetacean species such as the false killer whale (FKW) exposed to US pelagic longline fisheries. However, there is a FKW appropriation to fund a MHI insular FKW photo-identification based mark-recapture project by Cascadia Research Cooperative.

The SSC noted that most observations of cetaceans with trailing gear from a hook in the lip or mouth are currently recorded as a serious injury, while 40% of the observed 2021 FKW interactions in the Hawaii deep-set longline fishery had hooks or the crimp immediately above the hook visible.

The SSC recommends OPR/PIFSC consider hook type (e.g. circle- versus J-hooks, stainless versus other materials) as part of the criteria determining serious injury for mouth or lip-hooked false killer whales, noting that the Hawaii longline fishery exclusively uses circle hooks, which are most likely to result in lip hooking.

The SSC thanks K. Long and A. Bradford for their informative presentation.

2. Regional Updates

Elena Duke, PIRO Protected Resources Division, provided various ESA and MMPA updates, including the main Hawaiian Island insular FKW status review, coral recovery planning, false killer whale interaction update, and FY2022 FKW funded projects.

The details of the update included the following:

- In April 2022, NMFS published a 5-year review concluding that the MHI insular FKW distinct population segment (DPS) to remain as endangered.
- The shortfin mako shark status review report is currently undergoing internal review.
- NMFS is anticipating to circulate for public review in early 2024 a draft recovery plan for 15 listed Indo-Pacific coral species.
- NMFS has prepared a revised draft final rule for coral critical habitat.
- NMFS anticipates circulating a humpback whale DPS recovery plan for 3 DPSs that occur in US waters.
- There have been 4 FKW interactions in the DSLL in 2022 to date — one inside the EEZ resulted in a serious injury determination.

The SSC thanks E. Duke for her informative presentation.

E. False Killer Whale Interaction and Depredation Analysis

Robert Ahrens, PIFSC, presented preliminary results of an analysis to evaluate interaction and depredation patterns between the pelagic fishing industry and FKW using the Protected Species Ensemble Random Forest (PSERF) model. The analysis is in response to a Council recommendation from the March 2022 meeting. Using PSERF to model FKW interactions, there were several potentially informative predictors such as SST anomaly (SSTA), current front, soak time, and lunar radius. Informative predictors of FKW depredation events based on the PSERF model outputs were Julian day, SST, soak time, SSTA, and lunar radius. Fishing earlier in the year, increased SST and SSTA, increased soak time, fishing during a full moon, and the presence of an eddy all increase the probability of a depredation event. Future work will include an analysis on the effect on fishing effort and FKW interactions of the Southern Exclusion Zone (SEZ) closure, and will be coordinated with the needs of the FKW Take Reduction Team (TRT). The full analysis is expected to be completed by the end of July, presented to the TRT first, then to the Council advisory bodies in September 2022.

A SSC member pointed out that all forms of statistical bagging methods including random forest approaches do not account for spatial or temporally dependent data, and asked how spatial and temporal effects were accounted for. Ahrens responded that it doesn't but that he will explore this issue further.

A SSC member asked if there is any evidence in the observer data that Hawaii longline vessels may be "dropping whales off" with another vessel, as it is known to occur in the Alaska black

cod longline fishery, and suggested considering anecdotal information from the fleet. R. Ahrens was not certain whether there was sufficient data to evaluate such an effect, but noted that a more operational solution would be desirable to avoid depredation.

The SSC recommends PIFSC consider the following in the ongoing analysis:

- **explore whether the closeness of other vessels affects the model-based estimates on interactions and whether a specific vessel in that cluster appears to be the main attractor for FKWs**
- **use an simulation-based exploration of the potential effect of spatial and/or temporal data structure on the PSERF ability to identify potentially informative predictors of FKW interaction rates**

The SSC thanks Ahrens for his informative presentation.

F. Public Comment

There was no public comment.

7. Pelagic Fisheries

A. CCC Subcommittee Report on Area-Based Management

Council staff presented the CCC area-based management subcommittee report prepared for the May 2022 CCC meeting. The "30 x 30" initiative has the potential to greatly impact fisheries and fisheries management in the U.S. As such, it is imperative that the Councils be involved in the planning and implementation of achieving the goal of conserving 30% of the ocean by 2030. The CCC developed an Area-Based Management Subcommittee to take inventory of existing managed areas and track how they achieve "America the Beautiful" principles to account towards the "30 x 30" aspiration. At the May 2022 CCC meeting, the CCC discussed how existing area-based management implementations satisfy America the Beautiful principles towards being fully protective for purposes of conservation. The Subcommittee offered a definition of conservation and 'conservation area'. The CCC area-based management subcommittee identified candidate conservation areas in each fishery management council jurisdiction. These areas were identified for ecosystem conservation, year-round fishery management, or seasonal fishery management or 'other' non-permanent management. The Western Pacific (WP) Region, which is largest jurisdiction at 1,692,082 nm^2 in size, has about 61% of its waters satisfying these criterion (1,032,825 nm^2), 53% of which are permanent protections (947,004 nm^2) mostly through Marine National Monuments. WP Region protections correspond to 29.1% of all US marine waters under fishery council purviews per the subcommittee report and 27% according to a recently published article (Sullivan-Stack et al., 2022)[1].

The Pacific Remote Islands Coalition has proposed to expand the no-take areas of the Pacific Remote Island Marine National Monument (PRIMNM) to the entire EEZ of the Pacific Remote Island Areas, making it the largest MPA in the world. This would further close waters 50 nm to 200 nm of Palmyra and Howland/Baker island areas. Council staff outlined unintended consequences of the expansion, including increased competition with foreign fisheries, possible decreased US caught fish offloaded in American Samoa, and other conservation issues resulting from displaced US fishing.

The SSC noted that the draft definition of 'conservation areas' should reflect "fishing activities that minimize impacts to biodiversity". The SSC stated that the current unbalanced allocation of marine closures to the WP Region and tropical habitats is scientifically questionable because it does not represent proportional zoning among fishing regions and ecoregions. The SSC noted the challenges in developing a standardized approach to categorize the Areas.

The SSC noted that the objectives for area-based management (conservation, economic, social) be measurable. The SSC further noted that static closures through expanding Marine National Monuments might be in conflict with Executive Orders by disproportionately impacting the Pacific Islands and their underserved communities. The SSC asked whether it is fair and equitable that the Pacific Islands region bears the burden for the national '30 x 30' initiative.

[1] Sullivan-Stack et al. (2022). A Scientific Synthesis of Marine Protected Areas in the United States: Status and Recommendations. Front. Mar. Sci., 18 May 2022 | https://doi.org/10.3389/fmars.2022.849927

The SSC recommends that the Council request a comprehensive evaluation of the unintended consequences, including social and economic impacts, of a proposed expansion of the Pacific Island Remote Marine National Monument (and any further fishery closures, including those proclaimed through the Antiquities Act) be conducted and evaluated through a transparent and public process prior to implementation of any expansion.

B. Deep-Sea Mining Updates

Doug MacCauley, University of California Santa Barbara Professor of Ocean Science and Director of the Benioff Ocean Initiative, presented updates to activities with respect to deep-sea mining in the Pacific. MacCauley gave a presentation in 2020 on the expansion of activities and introduced Deep Sea Mining Watch, an integrated web portal and map where the public can see ongoing deep-sea mining activities. MacCauley provided updates to exploratory deep-sea mining activities, particularly those activities for extracting manganese nodules and cobalt, which are used for development of batteries for modern electronic devices and vehicles. In the Pacific, over a million square kilometers have been included in claims for deep sea prospecting. The ecological impacts of these burgeoning ocean industries on fishing and potential interactions with fishing activities remain to be fully elucidated. A moratorium on deep sea mining has been proposed by automotive and technology companies that would potentially utilize the mined elements. Mining may begin in some regions by July 2023. The International Seabed Authority (ISA) has very little representation for fisheries interests.

The SSC asked for clarification on the position of the US delegation to the ISA regarding seabed mining. MacCauley responded that the delegate would participate in the Council meeting and would be available for questions. The SSC noted the potential for carbon sequestration in the seabed and the need for future research on this topic was encouraged by MacCauley.

An SSC member asked if there were mitigation measures for the suspension of total dissolved minerals, such as iron, noting the impacts of the iron enrichment in nutrient-poor open ocean waters. McCauley said he did not know of any specifics, but noted the mineral composition in the plume coming off the effluent may have different impacts at various depths.

An SSC member asked if mining activity is akin to ‘mowing the lawn’ versus extracting in a single point and moving along to another location. McCauley replied that the ‘mowing the lawn’ patterns are more reflective of exploratory activities. The movement profiles of these activities when commercialized may be different.

An SSC member asked if the Bureau of Ocean Energy Management (BOEM) has any jurisdiction in these areas where deep-sea mining occurs. McCauley said that this issue is under the purview of the State Department. McCauley said that at the ISA, the US is an ‘elephant in the room’ - while not a signatory to the United Nations Convention on the Law of the Sea (UNCLOS), the US has potential of significant influence with ISA-related policies.

The SSC thanked D. McCauley for an informative presentation.

C. IATTC Science Advisory Committee

Andre Boustany, Monterey Bay Aquarium and US Science Advisory Subcommittee Chair (SAS), presented on outcomes of the IATTC Science Advisory Committee (SAC) and positions of the US SAS and the General Advisory Committee. The North Pacific albacore management strategy evaluation process has progressed significantly, of which effort limits and catch limits for management of the stock may be needed once a biomass threshold is breached. Harvest control rules were presented based on changes in fishing pressure relative to stock biomass. Most Management Strategy Evaluation output probabilities had a high probability of reaching management objectives. An interim stock assessment for skipjack tuna, the first of its kind for the eastern Pacific may be used to guide management advice at the IATTC annual meeting. The stock is likely not overfished, but has a stock status associated with high uncertainty. Pacific bluefin tuna stock assessment was also presented, with biomass levels at 10.2% SSB_0, an increase from the stock biomass being at 1.5% SSB_0 in 2010. Initiated a rebuilding target that has been met since 2018 and there is a high likelihood of reaching the rebuilding target (20% SSB_0) by 2034. Results from a South Pacific mahi-mahi stock assessment were presented, noting its sensitivity to recruitment with high natural mortality and intrinsic growth driving abundance fluctuations. Current harvest levels are sustainable, but with large uncertainty. An individual vessel limit scheme (IVL) update was provided. The IVL was set to reduce bigeye tuna catch in purse seine fisheries and to set an accountability measure on individual vessels to reduce fishing days if there is an overage of bigeye catch by those vessels.

Due to a COVID-induced loss of port sampling, there was potential for inaccurate landing estimates for 2020 and 2021. Based on modeling potential effects of bias, bigeye tuna landings may have been overestimated by 12% and 18% in 2020 and 2021.

The SSC thanked A. Boustany for an informative presentation.

D. SPC Pre-Assessment Workshop

Council staff presented the SPC's 2022 Pre-Assessment Workshop (PAW) held virtually from March 28 to March 31, 2022. In 2022, the SPC will assess skipjack tuna with some notable improvements to stock mixing from some tagging studies. However, important biological information has yet to be updated, including growth information and stock structure improvements. The PAW also discussed efforts to improve open and reproducible stock assessment results. Also discussed at the PAW were work plans to develop harvest strategies, including those for mixed fisheries that may have different impacts on stock biomass, such as with purse seine and longline fisheries on bigeye tuna. Harvest strategies for skipjack tuna and South Pacific albacore are priorities for 2022. The PAW briefly went over independent reviews for yellowfin tuna stock assessments and upcoming stock assessments for blue shark and shortfin mako shark in the Southwest Pacific.

E. Preparations for the WCPFC Science Committee

Council staff updated the SSC on the outcomes of the US Permanent Advisory Committee (PAC) to the WCPFC and updates on the development of the Pacific Strategy shared with the

SSC in March 2022. The PAC had discussed its views on a proposed expansion of the PRIMNM, which was shared in a previous presentation. The PAC discussed issues related to improving the conservation and management of South Pacific albacore so that a target reference point can be met to increase fishing performance of the American Samoa longline fleet and the need to make progress on harvest strategies. The PAC also had access to Council correspondence and documents requesting the US adopt a new holistic Pacific Strategy. Improving the US positions at the WCPFC through such a strategy was a priority for the PAC.

Council staff also provided information on agenda items at the next 18th Scientific Committee to the WCPFC (SC18). Expected issues of importance include stock assessments for skipjack tuna, bluefin tuna, and new benchmark North Pacific striped marlin stock assessment. SC18 will also discuss harvest strategies and updated information on mitigation measures for oceanic whitetip sharks.

A SSC member asked if the North Pacific striped marlin stock assessment will be available for review prior to the international scientific committees. A SSC member clarified that the assessment will not be available for review prior to the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC) meetings held July 8-18, 2022.

The SSC recommends that Council staff present to the PAC the need for a comprehensive evaluation of the unintended consequences, including social and economic impacts, of a proposed expansion of the Pacific Island Remote Marine National Monument (and any further fishery closures, including those proclaimed through the Antiquities Act) be conducted and evaluated through a transparent and public process prior to implementation of any expansion.

F. Public Comment

There was no public comment.