WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Report of the
Second Meeting of the Protected Species Advisory Committee
Council Office
May 27-28, 2015

1. Welcome and Introductions

Jim Lynch, Chair, welcomed members of the Protected Species Advisory Committee (PSAC) and other meeting participants. Attending members were George Balazs, Milani Chaloupka, David Hyrenbach, Lyn McNutt, Carl Meyer, Sam Kahng, Jim Lynch, and Clay Tam. Erin Olsen was not able to attend.

2. Approval of Agenda

Lynch noted that an added public comment opportunity will be provided before lunch on the first day. No other changes were made, and the agenda was approved.

3. Status of the First Protected Species Advisory Committee Meeting Recommendations

Asuka Ishizaki, Council staff, reviewed the status of the recommendations from the January 2014 PSAC meeting. Regarding recommendations on American Samoa longline fishery observer data, she noted that the Pacific Islands Fisheries Science Center has produced expansions of the observer data, but detailed analyses on protected species interaction patterns have not been done to date due to rare nature of interactions. Recommendation regarding research priorities and the 5-year program plan were adopted by the Council.

4. Fishery Management Updates

A. Recent Council Actions

1. American Samoa Large Vessel Prohibited Area Temporary Exemption

Paul Dalzell, Council staff, provided a summary of recent Council action to provide a temporary exemption to the American Samoa large vessel prohibited area (LVPA). The original purpose of the LVPA was to reduce competition between the small *alia* vessels and the larger longline vessels. However, the LVPA is no longer serving its original purpose due to the *alia* fleet reduction, and the large longline fleet has suffered severe economic difficulty in recent years. At the March 2015 meeting, the Council took final action and recommended providing an exemption to the LVPA up to 12 nm around Tutuila, Manua, and Swains. The action may reduce catch competition, allow vessels to follow the fish, and reduce trip lengths.

Members noted that the LVPA exemption would provide a good opportunity to determine whether longline vessels would fish away from offshore banks.

2. Other Pelagic Fisheries Actions

Dalzell provided updates on two additional pelagic actions, namely Amendment 7 to allow territories to transfer bigeye quota to Hawaii, and the WCPO NP striped marlin measure to deal with overfishing of the stock. The Council took action at the 162nd Meeting to specify the bigeye tuna catch limit for 2015, including limits on the amount of catch that could be transferred under Amendment 7. The Council also recommended a catch limit for striped marlin at the 162nd Meeting. Both actions are currently under review by NMFS.

PSAC members sought clarification on the time period used as the baseline for establishing the striped marlin catch limits under the Western and Central Pacific Fisheries Commission (WCPFC). Dalzell explained that baselines for WCPFC measures often times do not have biological bases and can be arbitrary.

3. Insular Fisheries Actions

Marlowe Sabater, Council staff, provided an update on upcoming Council actions on insular fisheries. At the 163rd meeting, the Council will specify annual catch limits (ACL) for the main Hawaiian Islands (MHI) deep-set 7 bottomfish fishery for 2016-2018 and will also take action on accountability measures for the fishery. Sabater reviewed the alternatives for establishing the ACL based on the level of risk of overfishing. Impacts to monk seal critical habitat may need to be considered for this action if the final rule to revise critical habitat is published. The Council will also consider omnibus amendments to the Pacific Islands ACL specification process at the 163rd meeting.

Regarding monk seals, one PSAC member commented that people on Kauai are concerned about the cumulative impact of all critical habitat designations, and noted that social and economic effects of monk seals in Hawaii are significant.

One PSAC member asked whether a submodel for evaluating protected species impacts in the process of ACL specification has been considered. Sabater responded that added that impacts are currently analyzed as part of the National Environmental Policy Act (NEPA) requirement, but noted that building such analysis into the ACL specification would further improve the process.

B. Endangered Species Act (ESA) Section 7 Consultations

1. Overview of Section 7 Consultations

Ariel Jacobs, PIRO Sustainable Fisheries Division (SFD) provided a brief overview of ESA section 7 consultations. For federal fisheries actions, the action agency (SFD) consults with the consulting agency (Protected Resources Division (PRD)) on activities that may affect a listed species. Action agency is authorizing or funding the federal action. The key obligation of the federal agency is to avoid jeopardy and minimize take. Consultation is not required there is no effect to ESA-listed species or critical habitat, but consultation is required when an action may affect species or critical habitat. Consultations are initiated with SFD submitting a biological evaluation (BE) to PRD. For informal consultations, PRD responds with a letter of concurrence with SFD's determination that the action is not likely to adversely affect (NLAA) listed species.

For formal consultations, PRD prepares a biological opinion (BiOp), which contains incidental take statements (ITS).

A PSAC member asked who makes a "no effects" determination. Jacobs responded that the action agency makes that determination. Dawn Golden (PRD) added that it is difficult to make a no effects determination, and it is in the best interest of the action agency to go through a Section 7 consultation. Ishizaki added that most of the Council's fisheries go through informal consultations and result in NLAA determinations.

2. Biological Opinion for the Hawaii Deep-set Longline Fishery and Related Marine Mammal Protection Act Permit

Dawn Golden, PIRO PRD, provided an overview of the biological opinion for the deep-set longline fishery. The consultation was reinitiated in June 2013. The previous biological opinion was competed in 2005. The consultation was triggered due to several reasons, including the main Hawaiian Islands insular false killer whale listing, take of sperm whale, also leatherback ITS exceeded during the consultation. The consultation was concluded in September 2014. The consultation took longer than the 135 day period due to MMPA requirements that also needed to be met. In addition to the direct takes in the fishery, the biological opinion considers various factors, such as population status, all anthropogenic threats, conservation efforts, and climate change impacts. In the BE, SFD provides PRD with anticipated annual interactions, although PRD may provide revised interactions if there are additional available information.

Estimated mortalities for sea turtles were calculated by PRD based on Ryder et al. technical memo. PRD also requested the Pacific Islands Fisheries Science Center (PIFSC) to provide a population viability analysis for sea turtles. PIFSC first conducted an analysis to determine adult female mortality equivalent, and determined the take was low and no additional PVA was conducted. PRD concluded that the fishery would not reduce the survivability of the affected species and issued 3-year ITSs for turtles, marine mammals and scalloped hammerhead sharks.

Golden also summarized the concurrent MMPA permitting process that was done with the 2014 BiOp. The process involved making a "negligible impact determination (NID)" based on specified criteria. All species will have to reach the NID for NMFS to issue the associated MMPA permit. NMFS reached a NID conclusion for sperm whales, humpback whales and MHI insular false killer whales and issued a 3-year permit covering the fishery.

One PSAC member, while acknowledging that scalloped hammerhead shark interactions in the high seas longline are low, commented that sharks released alive does not mean that they will survive. However, data are limited and additional research is needed. Golden agreed that scalloped hammerhead survival rate data are lacking, but added that the species was recently listed and PRD is working with the observer program to better document this species' interactions. Golden also added that post-hooking mortality tagging would also be useful.

A PSAC member commented that apparent differences in evaluation of impacts, especially on land and water, are a concern, especially on Kauai with sea turtles and monk seals. Another

member noted that this is an existing conundrum with ESA, and added that it may be useful to have US Fish and Wildlife Service (USFWS) staff participate in PSAC meetings.

One PSAC member noted that a different method was used in the 2005 deep-set BiOp for setting the ITS, and asked how the approaches used in the 2005 and 2014 BiOps differed. Golden responded that different statistical approaches were used (bootstrapping vs. Bayesian), and follow up discussions with Don Kobayashi and Marti McCraken would be useful. Council staff added that the 2005 BiOp used an 80 percent confidence interval rather than the point estimate to set the ITS. The PSAC member added that the Council and this committee can provide assistance with analysis on the front end of these consultations.

Regarding marine mammals, PSAC members asked whether uncertainty can be built into the recovery factor in calculating the potential biological removal (PBR), and how frequently stock assessments are conducted. Golden responded that uncertainty is already built in and recovery factor is set at the most conservative level of the insular false killer whales. Stock assessment reports are updated annually, but surveys are conducted more infrequently.

3. Consultation for the American Samoa Longline Fishery

Ariel Jacobs provided a presentation on the American Samoa longline fishery consultation, which was reinitiated in May 2015. The fishery previously had a BiOp in 2010 and included ITSs for four sea turtle species. The 2010 BiOp considered the existing 50nm LVPA and new gear modification to reduce green turtle interactions in the fishery. The reconsultation was triggered by ITSs for leatherback and olive ridley turtles, new species listings (scalloped hammerheads and corals), and Council recommendation to allow an exemption to the LVPA to fish up to 12 nm. The ongoing consultation considers the recent Council recommendation on the LVPA exemptions. Damage to corals from pelagic longline gear or transiting vessels is unlikely to occur and therefore discountable. Anticipated take for sea turtles and scalloped hammerhead shark were estimated based on the observed takes, mortality rates and anticipated level of fishing effort. SFD determined in that proposed action is likely to adversely affect turtles and scalloped hammerhead shark (thereby triggering formal consultation) and not likely to adversely affect corals.

PSAC members sought clarification on the hawksbill turtle sighting alongside a longline vessel that was used as a justification to include the species in the consultation. Jacobs explained that observer coverage in the American Samoa longline fishery was low before 2010 and leatherback and olive ridley turtles were not observed in the fishery until after the 2010 BiOp. Golden added that hawksbills have been reported in non-U.S. longline vessels and inclusion in the consultation provides for a precautionary approach. Ishizaki added that including hawksbill turtles in the consultation would also provide ESA coverage for the fishery if a hawksbill turtle is observed in the future.

4. Consultations on Corals and Scalloped Hammerhead Shark

Sarah Ellgen (PIRO Sustainable Fisheries Division) provided a presentation on recent consultations on corals and scalloped hammerheads for the Marianas and AS Fishery Ecosystem

Plans (FEPs). NMFS concluded that the FEP fisheries are not likely to adversely affect corals and scalloped hammerhead shark. Corals were listed in Sept 2014 and sharks were listed in July 2014. Coral species found in AS and Marianas have been recorded at depths up to 50 m. PIFSC and Council provided background analyses on spatial analysis and literature review for corals, and these were utilized in the BE.

One PSAC member asked if the concept of PBR is being considered for corals. Golden responded that PBR is a MMPA concept and jeopardy is analyzed under ESA. Given limited data, best that can be done to analyze impacts is considering potential coral habitat overlap with fisheries. Ellgen also pointed out that take prohibition is not applied to ESA-listed threatened corals. A follow up question was asked regarding the identification of *Acropora* samples from American Samoa and whether experts such as Charlie Veron had verified the occurrences of those species. Ishizaki responded that as a result of expert review, *Acropora rudis* is no longer thought to occur in American Samoa, while *Acropora jacquelineae* is still included in the list of species occurring in American Samoa.

5. Protected Species Updates

A. Council Protected Species Activities Update

Ishizaki provided an update on Council's protected species activities since the first meeting. These include developing a protected species annual report module, considering management of green turtles under ESA, SSC subcommittee review of false killer whale boundaries and bycatch proration methods, efforts to obtain funding to test catch depredation mitigation device, Hawaii Longline Association (HLA) training video and pre-consultation projects and coordination with PIRO sustainable fisheries and protected species divisions. Council-funded projects include genetic analysis of North Pacific loggerheads, developing a tier system for PBR and Hawaii green turtle data analysis.

B. Green Turtle Status Review and Proposed Rule

Dawn Golden provided a presentation on the green turtle proposed rule, which was published in March 2015 and a public comment period is open until June 22, 2015. The proposed rule identified 11 distinct population segments (DPS) of green turtles around the world and proposed listing eight as threatened and three as endangered. The Hawaii green turtle population has been identified as the Central North Pacific DPS, and is proposed for a threatened listing due to its extremely limited spatial distribution and increasing threats due to climate change threats, including sea level rise, disease, habitat degradation and coastal fisheries. The Central West Pacific DPS (including the Mariana Archipelago) and the Central South Pacific DPS (including American Samoa) are proposed for endangered listings.

NMFS and USFWS are proposing to apply the existing take prohibitions on all threatened DPSs. NMFS and USFWS are not proposing critical habitat at this time but are requesting information on potential areas. Additional public hearings have been requested, and NMFS and USFWS will announce any additional hearings in June. Golden noted that, for future consultations, impacts will have to be analyzed for each DPSs rather than species as a whole.

PSAC members sought clarification on how the DPS boundaries relate to fishery interactions, and whether turtles interacting with fisheries can be assigned to DPSs. Golden explained that nesting areas are segregated but there is high level of mixing outside of Hawaii and populations overlap. Observers can collect samples or bring back dead turtles, and genetic analysis is conducted to inform source populations, but haplotypes may span multiple DPSs. Population assignment and assessment of impacts are further complicated by the fact that longline fisheries interact primarily with smaller juveniles while data most readily available are for adult females. A PSAC member commented that multiple analyses such as trace elements may help identify origins of individual turtles.

One PSAC member noted that the proposed rule considered nester abundance as one of the criteria of assessing risk, and commented that abundance in each DPS would be related to carrying capacity. One member asked whether there would be potential for traditional harvest, to which another member pointed out that a blanket take prohibition is being proposed even though NMFS has discretion to provide take exemptions under ESA section 4(d).

PSAC discussed in length regarding the proposed threatened listing for the Hawaii population and how available science was applied to the decision. One member pointed out that the Status Review Report included a population viability analysis (PVA) that showed the Hawaii population had zero possibility of population decline and asked how that resulted in the listing decisions. Two members of the Status Review Team (SRT) were present for the discussion and commented that the SRT did not make any listing recommendations as they were specifically advised not to make such recommendations. Golden added that the SRT report was one of the factors considered for the decision, and that the PVA did not factor in future climate change effects or the narrow nesting distribution. PSAC members also questioned the finding in the proposed decision that disease is an increasing threat in Hawaii, to which the two SRT members present noted that the SRT did not make that finding. One PSAC member stressed that disease is not an increasing threat for the Hawaii population.

PSAC members expressed concern regarding the apparent disparity between available scientific information and the proposed decision, and the lack of transparency to justify the discrepancy.

C. Humpback Whale Status Review and Proposed Rule

Golden provided a presentation on the humpback whale proposed rule, which was published in April 2015. Public comment is open until July 20, 2015. Two petitions were submitted from Hawaii and Alaska. The proposed rule identified 14 DPSs; two DPSs will be listed as threatened, 2 DPSs are proposed as endangered and remaining DPSs are not proposed for listing. DPSs not proposed for listing will continue to be protected under the MMPA.

One PSAC member expressed concern regarding the comment period for the humpback whale listing ending after the comment period for the Humpback Whale National Marine Sanctuary draft management plan.

Another PSAC member questioned why climate change and disease were not identified as key threats for humpback whales when they were a significant factor in the green turtle decision.

Golden responded that humpback whales are not expected to be impacted as much from these factors (e.g., they are not dependent on nesting beach prone to erosion). A PSAC member pointed out that areas such as productive North Pacific where humpbacks feed have been forecasted to contract, so carrying capacity of the humpback whales could theoretically decrease significantly.

6. Review of Protected Species Interactions in the Hawaii Longline Fishery

A. Overview of Protected Species Interactions

Ishizaki provided a brief overview of sea turtle and seabird interactions in the Hawaii longline fishery. Sea turtle measures implemented in 2004 resulted in approximately 90% reductions in loggerhead and leatherback turtle interactions in the shallow-set fishery. Similarly, seabird mitigation measures implemented in 2002 and 2006 resulted in approximately 90% reductions in Laysan and black-footed albatross interactions. The updated FEP Annual Reports will provide a mechanism to review protected species interactions on an annual basis starting in 2016. At the current meeting, PSAC was tasked to take stock of sea turtle and seabird interactions in the Hawaii longline fishery.

B. Fishing Effort and Spatial Trends

Dalzell presented on the fishing effort and spatial trends in the Hawaii shallow-set and deep-set longline fisheries. There has been an increasing shift in fishing effort to the northeast in recent years, with a few vessels having moved to California. Hawaii longline fishery has 164 permits and has not reached the full permit capacity, but in past few years the number of active permits has increased to approximately 140 vessels. Number of hooks set in the fishery has increased over the years, with most of the effort outside of the EEZ. Spatial distribution of fishing effort over 2005-2014 were presented for shallow-set and deep-set fisheries.

One PSAC member asked whether oceanography is related to shift in fishing effort. Dalzell pointed to a few studies that have shown shifts in biomes and species distribution that appear to be consistent with the shift in effort, but also noted that fishery itself is also dynamic and fishermen behavior tend to be unpredictable.

C. Sea Turtle Interactions

1. Observed and Expanded Interactions

Ishizaki provided an overview of the observed and expanded sea turtle interactions in the Hawaii shallow-set and deep-set longline fisheries. Take data for 2004-2015 were summarized for both fisheries. Shallow-set fishery has 100 percent observer coverage, so observed takes are equal to total number of interactions in the fishery. Deep-set fishery is observed at around 20 percent, and takes are expanded statistically to estimate total takes.

PSAC members asked whether detailed analyses have been conducted on take data to better understand interaction patterns. Ishizaki responded that some work has been done such as in the case of loggerhead turtles in the shallow-set fishery, but detailed analyses of recent take patterns in the deep-set fishery are lacking.

One PSAC member pointed to studies done in the 1990s that suggested longline fishery interactions with leatherback turtles being associated with oceanographic features such as eddies, and suggested analyses on interaction patterns consider such patterns. Another PSAC member noted that sea turtle takes are rare events, which confounds statistical analyses, and added that fishery operation characteristics could be more important factors to consider.

2. Sea Turtle Abundance Trends

Ishizaki provided a brief overview of potential source populations of sea turtles interacting in the Hawaii longline fishery based on genetic analyses and recent abundance and trends data available in the 2014 deep-set BiOp and the recent proposed rule on the green turtle ESA listing status. All loggerhead turtles observed in the shallow-set and deep-set fisheries are attributed to the Japanese nesting population, which are increasing. Most leatherback turtles observed in the longline fisheries are attributed to the Western Pacific population, which has experienced long-term declines. Olive ridley and green turtles interacting in the Hawaii longline fisheries are attributed to multiple populations across the Pacific.

3. ESA Consultation Analyses

Kyle Van Houtan, PIFSC, provided a presentation on estimating annual nester equivalents (ANE) for sea turtle bycatch in the Hawaii longline fisheries. Approaches for estimating impacts on populations have changed over time based on feedback received. The most recent 2014 deep-set BiOp used a modified ANE approach compared to the 2012 shallow-set BiOp.

ANE takes into consideration fishery takes (with size composition), post-release survival, population sex ratio, natural survival and breeding age. In the shallow-set BiOp, loggerhead and leatherback ANEs were 4 and 1 mortalities, respectively, and a population viability analysis (PVA) was performed using the ANEs. In the recent deep-set BiOp, discount value was determined for each observed take rather than using an average discount value. Based on the modified approach, the ANE for loggerhead and leatherback turtles were 0.11 and 0.08 mortalities, respectively. Given that the mortality equivalent is less than 1, PVA was not conducted for the deep-set fishery.

Van Houtan noted that changes to the following may result in future revisions to the ANE approach: additional observer data; post-release survival; gear/fishery changes; observer coverage and estimates; and life history parameters.

One PSAC member asked how many interactions would equate to an ANE of 1 in the deep-set fishery, as such equivalency could be informative for management. Van Houtan responded that such analysis has not been done. Another PSAC member asked whether sensitivity analysis has been conducted on the different parameters in the ANE analysis. Van Houtan responded that all parameters included in the ANE analysis influence the outcome, and noted that updated information on survival and other demographic data would be useful for future analyses.

D. Seabird Interactions

1. Observed and Expanded Interactions

John Peschon, PIRO Observer Program, and Sarah Ellgen presented on the seabird interactions in the Hawaii longline fishery. The seabird report is produced annually and provides a good source of information on seabird interactions in the fishery. Peschon presented observed and expanded take of seabirds in the deep-set and shallow-set fisheries for the 2013 fishing year. In addition to the east ward movement in the shallow-set fishery, there appeared to be increased effort in the western end of the fishing effort distribution in 2013. Observers also record sightings of ESA-listed seabirds, although no short-tailed albatrosses have been observed taken in Hawaii longline fisheries. Ellgen reported on the seabird interactions for 2004-2013. Interaction rates in the deep-set fishery have been increasing over time but are still lower than pre-mitigation measures. Observed takes for 2014 and 1st quarter for 2015 were also presented, which showed interaction rates in shallow-set and deep-set fisheries were lower in 2014 compared to 2013. Expanded takes for the deep-set fishery are not yet available for 2014 and 2015 data.

PSAC members sought clarifications on the nature of interactions (bycatch during set or haul and differences in survival rates) and mitigation methods now used in the fishery (use of line shooters; side setting). Peschon explained that the condition of the seabirds at capture (dead or alive) is a proxy for whether they are caught during set or haul. Deep-set interactions are more likely to occur during setting with a higher mortality rate. Most interactions in the shallow-set fishery occur during haul, and most are released alive using proper handling techniques. Line shooters are used consistently in the deep-set fishery when fishing north of 23 degrees. Proportion of vessels side setting has changed over time and this is reported in the annual seabird report.

One PSAC member asked whether there are differences in vessel configuration or spatial effort between observed and unobserved vessels. Peschon explained that analysis conducted in the past indicated that observed trips are representative of the entire fleet and there are no appreciable statistical differences between the fishing patterns and characteristics of the observed and unobserved vessels. Another PSAC member asked if there are data available to conduct analysis by vessel or permit number to determine patterns, as done for fish stock assessments, to which Peschon responded in the affirmative.

2. Albatross Abundance Trends

Beth Flint, USFWS, provided a presentation on the population status of Laysan and black-footed albatrosses in the Hawaiian Islands. Monitoring is conducted at several locations, although two important field camps (Tern Island in French Frigate Shoals and Laysan Island) closed down in recent years due to storm damage and funding limitations. Population census is conducted for the nesting colonies, where active nests are counted.

For the 2015 season, unprecedentedly high number of active Laysan albatross nests was counted at Midway, whereas black-footed albatross counts were within anticipated levels. Black-footed albatross nest counts at Midway have been stable for the last ten years, and Laysan albatross nest

counts have also been flat with the exception of this past season. Recent global assessments compiled by the Agreement on the Conservation of Albatrosses and Petrels (ACAP) show that black-footed albatrosses are increasing, Laysan albatrosses are stable, and short-tailed albatrosses are growing at the maximum possible rate.

Breeding success rates have been tracked over time, and declines in success in some years coincides with oceanographic factors. Results from the Laysan and black-footed albatross demography study are forthcoming. This study was initiated based on a recommendation from the 1998 workshop organized by the Council.

Flint also discussed issues related to albatross status. These included habitat management to improve reproductive success and genetic analysis informing population segments. The most important issue facing albatrosses in NP is climate change. Two recent storm events and the Tohoku tsunami resulted in high chick loss, and effects of climate change on at-sea distribution is also a future concern.

One PSAC member asked how far back the trend data are available. Flint responded that consistently quantifiable data extends from 1990 onward, but earlier data are available. Another PSAC member asked whether the field station at Tern Island was expected to be rebuilt. Flint speculated that a year-found field camp was unlikely to be reestablished, but seasonal camps have been established. Council staff asked whether fishery impacts continue to be priority issues for albatrosses. Flint responded that fishery impacts are a higher priority for certain species in the southern hemisphere, but bycatch issues for Laysan and black-footed albatrosses are now lower priority compared to issues such as climate change. A PSAC member asked what proportion of the population is monitored, to which Flint responded that large colonies are monitored but not all, and added that adult survival would be a better monitoring measure.

3. Ongoing Research to Assess Seabird Catch Rates

Eric Gilman provided brief overviews of two studies focused on Hawaii longline fishery seabird bycatch. Both studies are in the initial stages.

The first study is a follow-up to the 2008 study on the Hawaii longline deep-set bigeye tuna fishery, analyzing observer program data to develop a standardized seabird catch rate model to identify fishing gear designs and fishing methods that could be modified to reduce seabird bycatch. Since 2004, observers have conducted scan counts during setting and hauling, and this dataset will be used to standardize catch rates. Variables considered in the model will include temporal distribution, shape/width of hook, bait species, Beaufort scale, effort information, length of line, weight, and use of mitigation measures. Study will results will include temporal trend and relative effect size of significant explanatory variables.

The second study will implement recommendations from a previous study and trial methods to reduce seabird bycatch during hauling in the Hawaii longline swordfish fishery. The project will involve interviews with vessel captains to identify promising methods for reducing bycatch during haul and commercial demonstration to field test those methods.

7. Public Comment

There were no public comments.

8. Monitoring Fishery Ecosystem Plans (FEP) through Annual Reports

A. Annual Report Outline and Review Schedules

Chris Hawkins, Council staff, provided an overview of ongoing efforts to expand the scope of the Council's fishery annual reports. These efforts include incorporating new Stock Assessment and Fisheries Evaluation (SAFE) report requirements and additional ecosystem elements determined by the Council to be regionally important. Efforts to date include the development of a draft contents outline, identification of new or different Plan Team expertise, and leadership engagement. The timeline for producing the new report is 2016, though some individual report elements may take longer to come online.

One PSAC member pointed out some Pacific and North Pacific efforts that might be instructive, such as color coding ecosystem conditions, the California Current Ecosystem Report produced for the Pacific Fishery Management Council, and the North Pacific Marine Science Organization (PICES) work in the North Pacific.

B. Considerations for Monitoring Protected Species Interactions

Ishizaki provided additional details on the protected species module in the annual reports. Existing reports have limited to no protected species information. Drivers for the protected species module include requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to reduce bycatch, FEP consistency with other applicable law, and protected species measures implemented under the FEPs. Various reports and documents including ESA consultation documents and annual seabird reports have useful information. The protected species module in the annual report would consolidate those information for the purpose of monitoring fisheries managed under the FEPs. Ishizaki described the four proposed protected species module components (incidental take data; indicators; new and ongoing relevant research; identification of research and data needs), as well as various considerations, such as factors that affect monitoring approach by fishery/species, avoiding duplication, and data time lag issues. Ishizaki concluded the overview by describing some major timeline milestones going forward.

C. Statistical Control Chart Approach for Monitoring Protected Species Interactions

Milani Chaloupka provided a presentation on a statistical control chart approach that can be used to monitor protected species interactions. This approach addresses recommendations from the National Academy of Sciences report in 2010 that identified the importance of demographic data for diagnosing sea turtle population status and trends. Control charts are useful for assessing and communicating parameter trends in a standardized and statistically robust format, providing means for trend diagnosis, and identifying appropriate management actions. The approach uses 1, 2, and 3 standard deviations (medium average deviation or MAD) in monitored parameters and sets pre-defined management triggers for each deviation level.

Chaloupka provided an example of the control chart approach using a flatback turtle monitoring project in Australia, where demographic and other parameters are monitored and pre-defined management alters, reviews, or actions are triggered based on deviations from the baseline. Chaloupka also showed an example of how the control chart could be applied to assess leatherback take trends in the deep-set fishery, which indicated that the level of observed take in 2013 in the deep-set fishery is close to 3 deviations from the average and would be considered an anomalous data point from the historical take.

One PSAC member asked what the significance of the 3 deviation point is, and Chaloupka clarified that 3 deviations is based on statistical anomaly and covers 99 percent of the variability. Another PSAC member commented that it would be useful to work with NMFS to discuss on whether a control chart approach could be used for ESA consultation purposes rather than having it used only as an internal monitoring scheme for the Council. PSAC members generally agreed that the control chart approach could provide a powerful tool if management triggers can be agreed upon. Chaloupka suggested that the control chart approach for sea turtles in the Hawaii longline fishery could monitor variables such as ANE or mortalities, and can use quarterly data rather than annual data.

D. Discussion on Effective Monitoring of Protected Species under the FEP Annual Reports

PSAC members provided a number of suggestions for the Annual report protected species module as well as approaches for monitoring protected species interactions through the reports. These suggestions are summarized below:

Content & Monitoring

- Consider interspecies interactions and cumulative impact issues – building cumulative analysis
- In a coarse sense, shifts in temporal and spatial in fishing effort (e.g., amount of shallowest effort east of 140 for seabirds)
- Non-longline & unobserved fisheries
    - Better characterization of new gear & changing effort (include interpretation of any potential impact of new gear in protected species module)
    - Weather conditions affect nearshore fisheries
    - Species distribution and hotspots
    - Depredation information as proxy for unobserved fisheries
        - If including, caveats to available data should be clearly stated
        - May be useful for providing a snapshot and for addressing data gaps
- Consider including information sources for protected species interactions in other fisheries such as purse seine fisheries (reference external reports and websites)
- Consider reviewing entanglement cases for monk seals and turtles to detect new gear used in fisheries

Report Structure

- Structure reports so that they can be easily pulled into for BEs, Council amendments and associated NEPA documents; annual report should be reviewed after consultations to ensure consistency;
- For those fisheries for which there are no BEs, look at listing documents and factors for declines, and use those to guide questions to address in the annual report

Module Development and PSAC Input

- Develop outline of one of these reports and annotate each section; circulate to PSAC for comments, then have SSC to review
- PSAC to develop simple metrics that can be used as "first warning" for protected species interactions

Information Sources

- Listing status review reports and 5-year status review reports under ESA
- Consider routine data requests to NOAA for oceanographic and climactic data from satellites to use to understand other variables, such as fishing location and PS interaction rates.

Council staff will consider PSAC's input summarized above in the development of the protected species module. At the next meeting, PSAC will review the above list as part of the review of the draft annual report.

9. Council's Research Priorities

A. Five-year Research Priorities

Ishizaki described the background of the Council's five-year research priorities document. A major update to the priorities was done last year, and this year the SSC will be reviewing the document for any necessary updates, and PSAC was asked to provide input in this regard. Discussions from the Council's Plan Team suggested adding coral mapping to the priorities.

One PSAC member pointed out that difficulties with species identification provide challenges for coral mapping, and additional deep-water surveys to better understand biogeographical ranges of ESA-listed coral species may be more informative. PSAC members discussed more research in abundance and occurrence of these corals throughout the region, and suggested focusing research in areas where known fishing activities are taking place.

B. Cooperative Research Priorities

Sabater provided an overview of cooperative research program and how the research is implemented and funded. The cooperative research program under the MSA is intended to address needs identified under the MSA and conducted through partnerships among managers, scientists, fishing industry participants and educational institutions. Sabater also described the proposal evaluation ranking and RFP requirements (eligibility, etc.), as well as the history of regional cooperative research funding. The existing cooperative research priorities do not explicitly include protected species projects; thus PSAC input is sought in this regard.

PSAC members asked about the connection between the Council's 5-year research priorities and the region's cooperative research priorities. Council staff responded that there is some connectivity but there are probably improvements that can be made to better align the priorities. The committee discussed ways in which they could review and evaluate the two in order to synergize where possible.

Council staff presented a draft priority to be considered for the cooperative research priorities, which addresses protected species bycatch reduction and engineering in the Hawaii longline fishery.

10. Public Comment

There were no public comments.

11. Committee Discussion and Recommendations

The PSAC made the following recommendations by consensus.

Regarding the Council process for developing fishery regulations:
PSAC recommended that the Council consider integrating the process for developing fishery regulations during the SSC process with an evaluation of potential protected species impacts that may occur as a result of implementing the fishery actions. This integrated process would result in proposed fishery actions that are more consistent with both the MSA and ESA.

Regarding the Green Turtle Status Review and Proposed Rule:
The PSAC recommended the Council consider the following in responding to the proposed rule:

(a) Available scientific information does not indicate the disease is a significant factor of decline for this species. While the proposed rule does not identify disease as major factor for the listing decision, presentations provided at the public hearing and webinar suggest that it is an increasing threat. An international workshop on fibropapillomatosis will be held June 11-13, 2015, and results from this workshop should be considered in NMFS and USFWS' final decision.

(b) Sea turtles have resiliency to adapt to changes in nesting habitat. Sufficient alternative nesting habitats are available that would accommodate shifting nesting behaviors of sea turtles. Consequently, the committee believes that NMFS and USFWS' justification that this issue constitutes a significant threat to the Central North Pacific DPS is based on unsubstantiated assumptions.

(c) The committee is not aware of any other significant population-level threats that would suggest the Central North Pacific DPS warrants listing under the ESA now, or in the foreseeable future.

(d) The committee recommends the inclusion of the nesting data up to the 2014 season and any latest season available in the final decision.

Regarding ESA Consultations for the Hawaii deep-set longline fishery:
PSAC recommended that Council work with PSAC representatives and NMFS to review approaches used to estimate anticipated sea turtle take in the 2005 and 2014 deep-set longline biological opinions and discuss further potential alternative approaches to establishing reinitiation triggers for sea turtle consultations. It appears there may be alternative statistical approaches to analyzing the data, and establishing thresholds to insure that authorized take is not exceeded.

PSAC further recommended that the Council work with NMFS to evaluate the utility of the statistical control chart approach to monitor protected species interactions in fisheries.

Regarding Leatherback Interactions in the Hawaii Deep-set Longline fishery:
PSAC noted recent consultation conclusions and the ANE analysis that population level impacts of the deep-set fishery on WP leatherbacks remain negligible despite the anomalous observed take level in 2014. PSAC recommended that the Council evaluate further spatial and environmental information regarding take trends to assess if there are any significant correlations that should be considered in analyzing impacts and developing proposed fishery actions.

Regarding the 5-year Research Priorities:
PSAC recommended adding to the following to the description of protected species priority #4 in the existing priority ranking:

- Research to augment the knowledge regarding biogeographic distribution and abundance of ESA-listed coral species, with particular priority placed on the American Samoa and Mariana FEP fisheries.

Regarding the Cooperative Research Priorities:
PSAC recommended adding the following item:

- **Protected species bycatch reduction and engineering in the Hawaii longline fishery:** Addressing protected species interactions in the Hawaii longline fishery continue to be a high management priority. In particular, long-term technical solutions to false killer whale hookings and entanglement, as well as associated depredation events are needed to ensure that the fishery, as managed under the Pelagic Fishery Ecosystem Plan, continues to be managed consistently with the Marine Mammal Protection Act. Close collaboration between fishermen and researchers are essential in developing technical solutions that are effective and practical for commercial operations.

12. Other Business & Next Meeting

No other business was discussed. The next in-person meeting is anticipated in 2016, timed with the review of the draft Annual Reports.