



**121st Meeting of the Scientific and Statistical Committee
1164 Bishop Street, Suite 1400, Honolulu HI 96813
October 13-14 2015**

Report from the Pacific Islands Fisheries Science Center Director

Mike Seki (PIFSC Director) updated the SSC on recent activities at the Center. He noted recent program re-alignments and staff changes, including some as yet unfilled positions. The bottomfish independent survey instrument the “MOUSS” (Modular Optical Underwater Survey) still needed some calibration before it could become fully functional. He also noted that the external Review of the Protected Species Program and the Center’s response would be posted on the Center’s website shortly. The SSC thanked Dr. Seki for his report.

Program Planning

A. Integrated Stock Assessment Model for Data Poor Stocks

Steve Martell (International Pacific Halibut Commission) gave a presentation on data-poor assessment methods with a focus on Catch-MSY, a catch-only method that provides an estimate of productivity required to sustain historical catch. While the original Catch-MSY model was not intended as an assessment tool, Martell introduced an extended version that incorporates age information (via growth curve parameters), prior knowledge, and target values of F_{MSY} and MSY to estimate r and K probability distributions. Martell closed the presentation with an identification of known issues to the approach and an overview of the R package available on the GitHub portal called catchMSY. The SSC thanked Dr Martell for his interesting presentation.

B. Territorial Bottomfish P* Working Group Report

SSC member Domingo Ochavillo presented the outcome of the meeting for the Territorial Bottomfish P* Working Group to establish the acceptable risk of overfishing for American Samoa, Guam, and CNMI. Their analysis included the four dimensions: assessment information, uncertainty characterization, stock status, and productivity susceptibility analysis (PSA). The working group recommended that the P* risk of overfishing be 37% for American Samoa, 36% for Guam, and 36% for CNMI. SSC discussion included the suggestion of weighting the catches for each species by value to improve the PSA input. The SSC thanked Dr. Ochavillo for his interesting presentation.

C. Specification of Acceptable Biological Catch for the Territorial Bottomfish Fishery for Fishing Years 2016 and 2017 (Action Item)

Council Staff presented the ABC specification for territorial bottomfish and a review of the reference points for each fishery including the MSY , H_{MSY} and B_{MSY} . None of the fisheries are

overfished or experiencing overfishing currently, and the same holds true historically except for a single year of overfishing (2000) in Guam. Six alternatives for the 2016-2017 ABC specification were presented: Alternative 1: no action; Alternative 2: status quo ABCs; Alternative 3: ABCs corresponding to < 30% overfishing probability; Alternative 4: ABCs corresponding to 30-39% overfishing probability; Alternative 5: ABCs corresponding to 40-45% overfishing probability; and Alternative 6: ABCs corresponding to 46-50% overfishing probability. The SSC thanked Council staff for their interesting presentation.

The SSC recommends that the Council adopt Alternative 4 with a 30-39% overfishing probability for the 2016-2017 territorial bottomfish ABC specification, with specific recommendations of 37% for American Samoa, 36% for Guam, and 36% for CNMI, in accordance with the P* analysis. For American Samoa, the 2016 and 2017 ABCs would be set at 106,000 lb. For Guam, the 2016 and 2017 ABC would be set at 66,000 lb. For CNMI, the 2016 and 2017 ABC would be set at 228,000 lb.

D. Atlantis Model for Near-Shore Ecosystems in Guam

Mariska Weijerman (PIFSC JIMAR) gave a presentation of an Atlantis ecosystem model application to Guam coral reefs. Atlantis is an end-to-end ecosystem model used to simulate biological community dynamics forced by environmental and anthropogenic factors and is a useful management strategy evaluation (MSE) tool. The modeling approach also included forecasts using a suite of experimental factors related to land-based sources of pollution and fishing. It was mentioned that ecosystems not experiencing anthropogenic stresses seem better able to withstand environmental changes. The SSC thanked Dr. Weijerman for her interesting presentation.

E. Implementing an Assessment Prioritization Process

Rick Methot (NMFS HQ) gave a presentation outlining a new NMFS national process for prioritizing stock assessments on a regional basis. The talk included a history of the prioritization process from 2011 to the present. The new process is motivated by identifying a balance of conservation and utilization of fishery resources based on uncertain knowledge and limited stock assessment funding. The prioritization process includes the evaluation of stock status, fishery importance, assessment information, ecosystem importance, and stock biology to determine which stocks need assessments using a structured scoring framework. The next steps for the WPRFMC are to define a stock list for prioritization (need to give consideration to the stock complex issue), design a collaborative process to assemble factor scores through workshops, and identify a feasible timeline for implementation. The SSC thanked Dr. Methot for his interesting presentation.

F. CIE Review Reports

1. McCracken Bycatch Estimation Model

Marti McCracken (NOAA) gave a presentation on results of a CIE review of her bycatch estimation model for fish and protected species. McCracken described the terms of reference for the review and detailed the progress of her work for each one. SSC members discussed the use of Poisson, zero-inflated, delta lognormal, or empirical Bayes with beta-binomial models for rare event estimation. Final results from the CIE review are pending but preliminary results are positive. The SSC thanked Dr. McCracken for her interesting presentation.

2. Nadon Length-based Assessment Model

Marc Nadon (PIFSC JIMAR) gave a presentation on results of a CIE review of his length-based assessment model for coral reef fish species. Nadon reviewed the status of a suite of reef fish species in Hawaii relative to 30% spawning potential ratio and presented a life history parameter simulation methodology. Nadon demonstrated the application of the methods to catch data and diver survey data with empirical and the simulated life history data. Final results from the CIE review are pending but preliminary comments are positive. The SSC thanked Dr. Nadon for his interesting presentation.

Pelagic Fisheries

A. Hawaii & American Samoa longline fisheries reports

Russell Ito (PIFSC) presented the Hawaii longline fishery report, and Keith Bigelow (PIFSC) presented the American Samoa longline fishery report. The SSC thanked Ito and Bigelow for their interesting presentations.

The SSC heard a presentation by Justin Hospital (PIFSC) about socioeconomic perspectives of fishermen, dealers, and buyers on the bigeye tuna closure, which occurred August-October 2015. The concern over the closure delayed an investigation into attitudes to catch-share programs. Hospital intends to restart that investigation. Paul Dalzell (Council staff) added an additional presentation on economic impacts of the closure. The SSC thanked Hospital and Dalzell for their interesting presentations.

B. NBR Longline bycatch reports 2011-2013

Keith Bigelow (PIFSC) presented the National Bycatch Report (NBR) longline bycatch reports for 2011-2013. The SSC thanked Bigelow for his presentation.

C. International Fisheries

The SSC heard reports on the following meetings.

1. ISC report

The International Scientific Committee (ISC) report was presented by Mike Seki (PIFSC) on behalf of ISC Chair Gerard DiNardo (SWFSC). The ISC is the science advisor to the WCPFC Northern Committee and is concerned primarily with North Pacific albacore, Pacific bluefin tuna, North Pacific striped marlin and North Pacific swordfish. Seki reported on the most recent meeting in July in Kona and on the activities of the various working groups, workshops and interactions with other regional organizations. The SSC thanked Dr. Seki for his presentation.

2. WCPFC Science Committee Report

Keith Bigelow (PIFSC) reported on the 11th meeting of the WCPFC Science Committee. He noted that record catches were reported for total catch, purse seine tuna catch, skipjack tuna catch and yellowfin tuna catch. El Nino was affecting the purse seine fishery with higher catches in the Central Pacific east of 160°E. Declines in purse seine market prices had driven down the value of the catch. The SSC thanked Bigelow for his presentation.

a. South Pacific Albacore Stock Assessment and Economic Performance

Bigelow also reported on the South Pacific Albacore Stock Assessment which concluded that SP albacore are neither overfished nor subject to overfishing. However, the economic performance of the fishery has been poor, with the fishery affected by high fuel prices. The SSC thanked Bigelow for his presentation.

3. WCPFC Northern Committee report

Valerie Chan (PIRO) reported on the Northern Committee meeting. There was no quorum for that meeting so another will be held at WCPFC 12 in Bali to formally adopt the report. One proposal was adopted which re-inserted a provision that the NC would develop an emergency rule into the bluefin CMM that members would comply with if drastically reduced levels of recruitment were detected. The US had two proposals, one to establish a management framework and two, developing a limit reference point. Neither was adopted.

The US submitted a harvest strategies evaluation proposal for northern albacore, but it was not adopted. NC members with albacore fisheries are to bring their harvest strategies to Bali in December 2015. with the thought that if a consensus could be found, that a set of harvest strategies could be then forwarded to the ISC who will be holding a workshop in April 2016 to move the process forward.

The US submitted a proposal for North Pacific swordfish with a fishing mortality limit of F_{msy} . Japan countered with a biomass limit and did not want a fishing mortality limit. Therefore, no proposal was adopted. The SSC thanked Dr. Chan for her presentation.

4. Majuro purse seine bigeye management workshop

Eric Kingma (Council staff) reported on the second purse seine bigeye management workshop convened by the Council, this second one in partnership with Marshall Islands Marine Resource Authority. The goal of the workshop was to identify potential purse seine bigeye management options that could make the existing measure more effective in terms of bigeye conservation.

5. US proposals for WCPFC 12

Keith Bigelow (PIFSC) presented a spatial analysis derived from the MULTIFAN-CL spatially disaggregated stock assessment for WCPO bigeye by the Oceanic Fisheries Program of SPC. Bigelow used the stock assessment regions to show the distribution of bigeye biomass and catches. Such an analysis may be useful as a departure point in developing spatially explicit management measures for WCPO bigeye. The SSC thanked Bigelow for his presentation.

6. US bigeye quota in the EPO

Paul Dalzell (Council staff) showed that the EPO had become increasingly important to the Hawaii longline fishery over the past decade with current catches up to about 2600 mt. Dalzell noted that the IATTC Resolution, which among other things limits US longliners > 24 m to a bigeye catch of 500 mt, will be reopened in 2016. US Commissioner Barry Thom is keen to receive bigeye longline catch

proposals which can be advanced by the US at the IATTC plenary in mid-2016. The SSC thanked Dalzell for his presentation.

The SSC formed two Working Groups at the 121st SSC, one to review spatial management measures for bigeye in the WCPO, and the other to explore options for a combined US longline bigeye catch limit. The preliminary Working Group reports are attached.

The SSC adopted the reports of the RFMO Spatial Management, Research and Monitoring Working Group and the Socio-Economic Working Group

Guest Speaker: Judy Amesbury: Who Wears the Beads?

Protected Species

A. American Samoa Longline Fishery Biological Opinion

Dawn Golden (NMFS PIRO) provided a presentation on the ESA Section 7 Biological Opinion for the American Samoa longline fishery. The Biological Opinion is currently in draft form.

The Biological Opinion analyzed protected species interactions at 2007 fishing effort levels. The anticipated annual interactions (AI), annual mortalities (AM) and adult female mortality equivalence (AFM) are as follows:

Green sea turtles: 20 AI, 18 AM, 0.10 AFM

Leatherback turtles: 23 AI, 16.28 AM, 0.55 AFM

Olive Ridley turtles: 11 AI, 3.3 AM, 0.31 AFM

Hawksbill turtles: 2 AI, 0.99 AM, 0.35 AFM

South Pacific loggerhead DPS: 2 AI, 1 AM, 0.14 AFM

Indo-West Pacific scalloped hammerhead sharks: 12 AI, 3.96 AM (no AFM estimate)

The draft Biological Opinion concludes that the proposed action will not jeopardize any of the ESA-listed species and includes 3-year incidental take statements for each species.

The SSC thanked Golden for the presentation.

B. Development of a Tier System for Application to PBR

Members of the Independent Advisory Team (IAT) of Marine Mammal Assessment (Dr. Paula Moreno, Dr. John Brandon, and Dr. Andre Punt via teleconference) reviewed a tiered approach to estimating potential biological removal (PBR) for a management strategy evaluation (MSE) model for both single and two stocks. The tiered approach considers alternate methods of estimating abundance and considers additional sources of information to set PBR for stocks of varying data richness. A simulation for a single stock using the tiered approach resulted in slightly higher N_{\min} with an equivalent level of risk. Furthermore, incorporating additional abundance estimates decreased inter-survey variability in PBR. The team intends to evaluate the performance of this approach for two stocks. A demo and discussion session on this tiered approach was held immediately after the 121st SSC meeting.

The SSC thanks the members of the IAT for their informative presentation.

C. Update on Leatherback Turtle Interactions in the Hawaii Deep-set Longline Fishery

Council staff reviewed the progress of a Council recommendation from the 163rd Meeting and a related informal working group formed to evaluate factors related to higher leatherback interactions in the Hawaii deep-set longline fishery. The WG consisted of staff from the Council, NMFS PIRO and PIFSC. There was an increase in observed interactions in the last two years that appears to coincide with several oceanographic conditions and operational changes in the fishery. There was also apparent spatial and temporal structure to the size of the turtles and the number of interactions.

Some of the discussion related to the effect of changing to circle hooks from tuna hooks and the level of observer coverage. In addition, it was suggested that the research group analyze interactions as a function of effort by different hook types where possible.

The SSC supports the objectives of the working group and looks forward to the report from the WG at the next SSC meeting.



RFMO Spatial Management, Research and Monitoring Working Group
Bob Skillman (chair), Milani Chaloupka, Erik Franklin, Pierre Kleiber, Don Kobayashi,
John Sibert

The Working Group (WG) was asked to provide guidance and recommendations regarding specific research and monitoring by the WCPFC relative to CMMs.

Three specific topics were suggested to the WG:

- 1) Spatial longline management
- 2) Work plans for major conservation and management measures
- 3) Longline observer coverage rates

With regards to 1. **spatial longline management**, the WG reviewed Keith Bigelow's spatial analysis and noted the discrepancies between impact of longline fishing and burden of catch limits. The WG proposed three potential spatial management options:

- Apply quotas only to the equatorial region where BET catches are highest (e.g. between 15 deg S and 15 deg N latitude). Fisheries in areas outside of the equatorial region of the Western and Central Pacific Ocean would not be subject to catch limits (for data see Bigelow presentation page 3).
- Establish quotas in the WCPFC stock assessment regions according to estimated proportion of the total stock in each region (for data see Bigelow presentation, p 10).
- Complete closure of high seas to longline fishing west of 150 deg W and south of 5 deg N, the area near the Line Islands, suspected to be a BET spawning area (see Sibert et al, 2012)¹. This option is complementary to the above options.

With regards to 2. **work plans**:

- The WG notes that the SSC has recommended on more than one occasion that the WCPFC require registration of FADs as fishing gear and hopes the SSC will reiterate this recommendation.
- The proposed high eastern seas closure is motivated by protection of BET spawning areas. The WG recommends

¹ Sibert, J. et al. 2012. Shifting from marine reserves to maritime zoning for conservation of Pacific bigeye tuna (*Thunnus obesus*). PNAS, vol. 109, no. 44, 18221–18225.

further research on the timing and geographic extent of BET spawning and extension of this research farther east into the IATTC region.

- The WG recommends that the SSC endorse continued operational model development to evaluate other potential spatial fishery management options.
- The WG recommends that the WCPFC adopts comprehensive tuna research and monitoring plans to address conservation issues and to better inform the development and evaluation of Conservation and Management Measures.

Regarding 3. **observer coverage:**

- The WG believes that fishing trips is the most practical metric to use for designing and implementing monitoring programs.
- The WG deems that a minimum of 5% of all longline trips for carrying ROP certified observers to be reasonable.
- However, the WG recommends the SSC recommend that the WCPFC analyze resulting data to estimate coverage from the perspective of hooks, sets, and days fished to help evaluate the efficacy of the observer program. Further, the WG recommends computing coefficients of variation for key factors to be estimated from the observer data to ensure that the data collected can statistically inform management. Such information would help address the % coverage needed to meet the objectives of the observer program.



**Report of the Socio-Economic Working Group of the 121st SSC
October 14th, 2015**

The working group was tasked to provide comment regarding the socioeconomic aspects of and implications of:

1. Creating an omnibus U.S. longline bigeye quota that includes the existing U.S. WCPFC quota (3,505 mt), plus the Hawaii portion (500 mt) of the U.S. IATTC quota for vessels over 24 m, plus the 2000 mt. quotas established by Council action for each of the U.S. Territories (American Samoa, CNMI, and Guam);
2. Creating an omnibus U.S. total bigeye quota for Pacific longline and purse seine vessels combined;
3. A NMFS document entitled "DRAFT GUIDANCE FOR CONDUCTING REVIEWS OF CATCH SHARE PROGRAMS."

With regard to item 1, the working group noted that such an omnibus longline quota of approximately 10,000 mt in the WCPFC zone would reduce the economic uncertainty for participants in the Hawaii longline industry. It would reduce the potential for in-season closures and their accompanying negative economic and social impacts and therefore might slow or eliminate the potential development of a catch share or other rights-based management regime. However, such a proposal would likely not be well received by the U.S. Territorial governments and fishermen, as they would perceive a loss of fisheries development opportunities as well as a loss of prestige, territorial catch history, and potential revenue. Although this could be accomplished as an internal matter under U.S. jurisdiction, it may serve to increase friction between the US and other PNA/FFA CCMs and criticism from and by E-NGOs. So, as long as the Amendment 7-based quota transfer opportunities are available to Hawaii longline fishers, the working group felt that action toward an omnibus quota was currently unnecessary.

It was noted that there are many uncertainties, such as the potential for additional RFMO actions to reduce bigeye harvest levels in response to the current stock trajectory. The working group lacks the information needed to assess many of the impacts of a significant change in the quotas and allocations. A review of previous and current research and the development of new research needs regarding the longline fleet and associated businesses, the impact of imports, attitudes of fishermen, and unknown costs and benefits (as well as to whom they will accrue) is in order.

With regard to item 2, the working group noted that because the purse seine fleet operates under an effort management scheme, the size of an effective omnibus national quota would be difficult to determine, let alone implement and monitor. In addition, unless strong safeguards are put in place, the purse seine industry, with higher revenues and political influence, could be able to control most of the national quota at the expense of the U.S Pacific longline industry.

In regard to item 3, the working group members will, in the next few weeks, review the document and prepare written comments to Council staff before the close of the comment period in January 2016, along with any further thoughts regarding items 1 and 2.