December 9, 2011

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

105th Meeting of the Scientific and Statistical Committee
October 6-8, 2010
Council Office

4. Report from the Pacific Islands Fisheries Science Center Director

The SSC heard with interest the September report by PI
FSC Director Pooley updating the ongoing scientific activities.

The SSC noted with interest that recent results from radioisotope methods used to improve age determinations of opakapaka suggest the age at maximum size may be as much as 2 times greater than previously calculated, based on sampling of larger specimens from the NWHI. These data certainly will lead to a reassessment of the resilience of this species to fishing pressure.

December 9, 2011

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

105th Meeting of the Scientific and Statistical Committee
October 6-8, 2010
Council Office

5. Program Planning

A. ACL Process (Action)

Council staff described the progress to date by the SSC and the Council in drafting the Omnibus Amendment to bring the Council's FEPs into agreement with the reauthorized MSA. During the presentation, several tasks were identified that the SSC needed to address this session, and the SSC suggested another. The SSC conducted extensive, and detailed discussion on the ACL amendment, both in the plenary and in an SSC working group which met on the margins of the meeting concerning the scientific rigor of various approaches and their flexibility.

SSC Task 1. Recommend Method for Determining Overfishing
The reauthorized MSA requires that the Council specify in each of its FMPs whether it will base their determination of the occurrence of overfishing of a stock or stock complex using either the status determination criterion (SDC) Maximum Fishing Mortality Threshold (MFMT) or the Overfishing Limit (OFL).

The SSC recommends that the Council use Maximum Fishing Mortality Threshold (MFMT) to make the final determination of whether overfishing is occurring. However, OFL could be used as a trigger to conduct a new stock assessment and set a more current MFMT level. MFMT is derived from stock status parameters estimated using some stock assessment model fit to a time series of data generally covering the history of the fishery. In contrast, OFL is based on a forecasted estimate of biomass often two or more years beyond the last year of the data used in the stock assessment. Forecasts inherently have high uncertainty.

SSC Task 2. Recommend Risk of Overfishing Range to the Council
The SSC is responsible for setting the Acceptable Biological Catch (ABC). Using the SSC's draft ABC Control Rule, provisionally approved at the 148th Council meeting, ABC is equal to OFL reduced to account for scientific uncertainty, and the Council is to provide the risk of overfishing to be used in computing this reduction, i.e. the buffer between OFL and ABC.

Using guidance provided in NS1 Guidelines, by NMFS at the 2nd National SSC meeting, and by example with proposed actions by other Councils, Council staff provided range alternatives of 1) 0% to ≤50%, 2) 0% to < 50%, and 3) 0% to ≤45%.

The SSC recommends the Council adopt alternative 1, in which the range of the risk of overfishing is 0% to ≤50%. Thus, P^*_{MAX} is defined as 50%.

SSC Task 3. Recommend Mechanisms for Specifying the Risk of Overfishing
The uncertainty in the estimation of OFL, that is, the expected value of MSY in the year of management, is characterized in technical terms by the probability distribution of OFL. For a

normal distribution, this uncertainty has the familiar bell shaped distribution, and each point on the distribution is a potential risk of overfishing that the Council might be willing to tolerate. The Council's choice is basically a reflection of their risk tolerance levels. The SSC can suggest approaches to the task, but the choice of the specific risk level is strictly a Council responsibility. The SSC reviewed the available options; some qualitative and some quantitative, and discussed the pros and cons of each option. One of the primary concern of the SSC is that stock resilience is not captured in the alternatives except alternative 3.

The SSC recommends Alternative 3, a qualitative method proposed by the SAFMC, for choosing risk of overfishing (P*). The dimensions, criteria, and weightings contained in the risk ranking tables will be developed by a team. Further, the SSC recommends the team(s) be composed of Council and SSC members, as well as relevant experts for the stock/stock complexes being discussed. The team(s) will conduct the first assessment of P* during the establishment of the first ACL, and will review the analysis after every new stock assessment. Each time substantive new information is available, the analysis should be revised.

Alternative 3. Qualitative Determination of the Risk of Overfishing (P).*
This approach is a qualitative method of determining risk of overfishing (P*), given scientific uncertainty associated with the following: 1) assessment information, 2) assessment uncertainty, 3) stock status, and 4) productivity and susceptibility. The risk assessment team will include Council, SSC, and other experts. Team members will use their knowledge and expertise to score criteria within each of the four dimensions listed above. These scores will be used to reduce the maximum risk of overfishing (P^*_{MAX}). **A hypothetical example is provided below where P^*_{MAX} is 50%.**

1) Assessment Information

Description	Score
Quantitative assessment provides estimates of exploitation and B; includes MSY-derived benchmarks	0.0
Reliable measures of exploitation or B, no MSY benchmarks, proxy reference points	2.5
Relative measures of exploitation or B, absolute measures of stock unavailable, proxy reference points	5.0
Reliable catch history	7.5
Scarce or unreliable catch records	12.5

2) Assessment Uncertainty

Description	Score
Complete. Key determinant – uncertainty in both assessment inputs and environmental conditions included	0.0
High. Key determinant – reflects more than just uncertainty in future recruitment	2.5
Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections	5.0
Low. Distributions of Fmsy and MSY are lacking	7.5
None. Only single point estimates; no sensitivities or uncertainty evaluations	12.5

3) Stock Status

Description	Score
Neither overfished nor overfishing. Stock is at high B and low exploitation relatives to benchmark values	0.0
Neither overfished nor overfishing. Stock may be in close proximity to benchmark values	2.5
Stock is either overfished or overfishing	5.0
Stock is overfished and overfishing	7.5
Either status criterion is unknown	12.5

4) Productivity and Susceptibility

Description	Score
Low risk. High productivity, low vulnerability, low susceptibility	0.0
Medium risk. Moderate productivity, vulnerability, and susceptibility	5.0
High risk. Low productivity, high vulnerability, high susceptibility	12.5

5) Worked example

Dimension	Score
Assessment information	2.5
Assessment uncertainty	5.0
Stock status	2.5
PSA	5.0
Total Score	**15.0**
Risk of overfishing: P* = 50-total score, where 50 equals P^*_{MAX}	**35**

The SSC recognizes that the method described under Alternative 3 for determining P* would only be applicable for Tiers 1-3. **For data poor fisheries in Tier 4, the SSC recommends using a multiplier of the long-term median catch history determined by the biological knowledge of the stock or stock complex, given considerations of the guidance provided by Restrepo (1998) in sections 2.2.1 (recommended data poor defaults).**

A.1. Reef fishery data analysis

Council staff presented a detailed analysis of reef fish data from the Western Pacific Region, including catch time series, estimates of reef fish biomass (from Underwater visual census surveys), exploitation rates from reef fish life history studies and participation in fishing. Staff explained the limitations of the data, for example the absence of observations on jacks, drummers and emperors from the Guam reef fish biomass, but that species in these families were common in the reef fish catch. Staff showed that commercial catches may be a relatively low proportion of biomass at the archipelagic level but could be high in populated areas.

The SSC heard with interest the report by Council staff on reef fish data on catches, catch trends and levels of exploitation with respect to establishing ACLs. The SSC encouraged further analysis of these data with respect to forming stock complexes, while taking into account ecosystem considerations, for ABCs for coral reef fisheries in the Western Pacific.

December 9, 2011

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

105th Meeting of the Scientific and Statistical Committee
October 6-8, 2010
Council Office

6. Insular Fisheries

A.1. Bottomfish Scoping Meetings.

Council staff updated the SSC on recent scoping meetings.
Community concerns were expressed that there be no modifications to the large vessel closure areas and the new regulations on bottomfishing be modified to exclude the spearfishing sector from permit requirements.

A.2. Community Fishery Monitoring

Council staff updated the SSC on recent activities and outreach to involve members of the communities under each FEP in a variety of fishery information and environmental monitoring efforts a including a web-based "fishbox". **The SSC commends Council Staff for these efforts.**

A.3. Biosampling in the Marianas and Samoa

PIFSC staff provided an update on the BioSampling program and the capacity building efforts in reef fish research. **The SSC commends PIFSC Staff for these efforts.**

B 1 Bottomfish Assessment

PIFSC staff provided an update of the status of its bottomfish stock assessment activities. The new stock assessment will focus on the Deep 7 as well as BMUS, CPUE standardization, and ways to account for recreational landings. The Science Center expects to complete the assessment and the independent CIE review before the March SSC meeting. **The SSC Looks forward to reviewing this Stock assessment**

B.2. Bottomfish EFH/HAPC

UH researcher Chris Kelly updated the SSC on efforts to refine essential fish habitat definitions (EFH) for bottomfish and to delineate habitat areas of primary concern (HAPC's) in the MHI. Kelley reviewed the depth distributions of bottomfish species and species complexes as well as modeling results of larval and egg transport around the MHI. Kelley also presented the SSC with a map of 16 potential HAPC sites under consideration.

B.3. Mesophotic coral ecosystem assessments

Dr. Richard Pyle, Bishop Museum, and Anthony Montgomery, HDAR, reported on ongoing research on mesophotic coral ecosystems in the Au'au Channel. One of the main objectives of the project was to establish a baseline for future monitoring efforts. The presenters outlined

several potential threats to mesophotic coral ecosystems, including fishing damage, marine injury, introduced species, and development projects.

B.4. Puwalu Recommendation

Council staff updated the SSC on the community consultation workshops and the upcoming November Puwalu which is intended to bring Hawaiian practicioners and others together to discuss best practices, codes of conduct and other community based management strategies.

C. American Samoa report

Marlowe Sabater reported on the fishery trends in American Samoa using catch, CPUE, biomass and fishing mortality to determine the status of the resource. The results of the fishing mortality analysis corroborate the independent analysis of Luck and Dalzell (2010) showing low catch to biomass ratio in the Pacific Islands. The results indicate that in general reef fish stocks are in good shape because of reduced fishing pressure and that some other studies that have indicated overfishing were nor solidly grounded.

D. Tsunami rehabilitation

Dawn Kotowicz incoming socioeconomics staff member at PIFSC presented the SSC with results of a study of social resilience in a fishing community in Thailand following the 2004 tsunami.

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

105th Meeting of the Scientific and Statistical Committee
October 6-8, 2010
Council Office

7. Pelagic Fisheries

A. Hawaii Longline Bigeye Tuna Management

The SSC heard the presentation by Council staff regarding the alternatives for changing the fishing season from a calendar year season. The key impacts of this action result from both the length and the timing of the season. The timing of the closed season is an issue especially relevant to consumers because of the high demand for fresh tuna during the holiday season. The following aspects pertaining to this issue were discussed or otherwise noted, highlighting newly received feedback from constituents:

a. Fishermen did not seem to be significantly interested in changing the fishing season;

b. Dealers can potentially obtain fish from outside of Hawaii, as well as from Hawaii based fishermen in the EPO, in the event that a closure occurs prior to the holiday season, and consumers will therefore be able obtain fish during the Holiday season;

c. Altering the fishing season did not seem to improve fleet-wide annual revenue;

d. there was not significant movement by fishermen into the EPO during the summer months of low landings of bigeye from the WCPO and high prices at the auction;

e. Other management entities, such as the IATTC and WCPFC require reporting on a calendar year, and any changes to the fishing season from a calendar year would require additional monitoring and reporting costs.

The SSC therefore recommends no action on this item.

B. Proposed Changes to American Samoa Large Pelagic Fishing Vessel Area Closure

The SSC notes that the issue of the area closure around American Samoa is primarily a non-scientific issue, but that the incongruence with the new Rose Atoll MNM must be resolved for management and enforcement purposes. **The SSC therefore suggests that the Council take action to minimize incongruence with the Rose Atoll NMM, and notes that alternative 2c will provide more fishing area for large vessel American Samoa Long line fleet. The SSC further suggests that the Council consider an area closure reduction, to 25 or 12 nm, as long as this reduction continues to protect South Bank for potential future recreational fishing expansion. The SSC further suggests that any amendment to reduce the size of the current large pelagic vessel area closure be temporary with an option for continuation if so desired by the Council.**

C. Hawaii Longline Bigeye Catch Shares

Council staff Paul Dalzell gave a second progress report on development of a mechanism for allocating bigeye catch shares for the Hawaii longline fishery. A database has been developed by linking the permit dataset maintained by PIRO (with permit holders and permit numbers) and the logbook dataset maintained by PIFSC (with catch data). The integrated database made it possible to tract catch history associated with each permit slot. However, the catch per permit slot was not equal to the catch per permit holder, where the later was necessary data for developing an allocation system.

D. Mitigation to Reduce Catches of North Pacific Striped Marlin in the Hawaii-Based Tuna Fishery

The SSC heard the presentation from PIFSC staff summarizing analysis of mitigation measures for North Pacific striped marlin in the Hawaii-based longline fishery. Two approaches related to gear modifications (removal of shallow hooks, changing hook type) and the third approach attempted to delineate spatial "hot-spots" of abundance. Striped marlin were caught most frequently on shallow hooks near the floats and the opposite was observed for bigeye tuna. Larger circle hooks reduced the catch rate of many non-target species including striped marlin, whereas bigeye tuna catch rates were not significantly impacted. Analysis of historical catch data revealed no persistent striped marlin "hot-spots".

E. American Samoa and Hawaii Quarterly Longline Fishery Reports

Dave Hamm provided the 2010 second quarter report for American Samoa and noted the following statistics. catches and CPUE were up compared to the second quarter of last year for albacore, yellowfin, and significantly for bigeye tuna, although the historical catches and CPUE for bigeye have been relatively low and the large increase is really a result of the historic low harvest levels. The increase of albacore has more relevance as it is the target species for the fishery. Billfish catches and CPUE were lower in comparison to the second quarter of 2009. Despite the fact that the number of hooks were down 19% the total catch increased 3% from the second quarter of 2009.

Russell Ito provided the 2010 second quarter report for the Hawaii longline fishery. The number of sets have been relatively stable for the past five years, although there were about 300 less in 2010 compared to 2009. a total of 9 million hooks were set outside the EEZ. The deep set fishing effort was highest to the SW of the MHI, while shallow set effort was highest north of the MHI near the area closure. Bigeye catch was up 42% from 2009 with ¾ occurring outside the Hawaii EEZ. Bigeye CPUE was 3.54 fish/1000 hooks or 40% greater than 2009, which was a poor year for bigeye historically. The highest bigeye effort was in the same general location as last year, although much higher, and there was not as much effort east of 150, as was observed last year. The swordfish catch was down 37% from 2009, with only 42% taken on the high seas, in contrast to the historical trend which has shown 80-90% being taken on the high seas. Shallow set CPUE was 7.6/1000 hooks, or down 23% from 2009. CPUE density was closer to the islands area closure compared to 2009.

Blue shark landings were 14,000 or up 18% from 2009 with ¾ being taken on high seas, while the CPUE has not changed much over time. Both shallow set and deep set blue shark CPUE was

lower than in recent years.

It was noted that there is less variability in CPUE after 2000 in most species time series, and it was questioned if it was a result of better defining deep set trips, although it was believed that the pattern is most likely due to an increase in fishermen knowledge.

F. International Fisheries Meetings

F.1 WCPFC

Keith Bigelow provided a summary of the WCPFC science committee held in Tonga in august. Bigeye tuna landings decreased, although the stock assessment was more optimistic than in previous years, with the caveat that the assessment is very sensitive to the stock-recruitment relationship, and if that is assumed to be 0.75 instead of 1.o, the stock is concluded to be in an overfished condition. The stock assessment for skipjack tuna concluded that SKJ is not experiencing overfishing nor is it overfished. Skipjack landings were 1.8 million mt, well above the presumed MSY value of 1.35 million mt. There was some concern that skipjack were contracting along the equator, thus resulting in less fish for more northern (southern) latitude fisheries.

There was some debate at the meeting regarding sharks, and which should be included as managed species. There was also an initiative by Australian researchers to implement more management measures for seabirds, which was rejected due to a perceived lack of supporting data. There was interest in identifying reference points for WCPFC fisheries. A FAD closure occurred for 2 months in 2009 and 3 months in 2010, and it was found that the 2009 closure did not have a noticeable impact. Stock assessments for 2011 will be for bigeye, skipjack, yellowfin and south pacific albacore.

Council staff provided an update on the recent WCPFC technical and compliance committee. It was noted that John Hampton looked at the observer data from the 2009 2-month purse seine FAD closure, and he observed sets before sunrise, indicating fishing on floating objects, or floating with fads. Dr. Hampton noted that bigeye catch was 3%, and that bigeye catch on free swimming schools should be no greater than 1%. He therefore concluded that non-compliance occurred. Analysis of the 3-month 2010 purse seine fad closure will provide further insight into this matter. There is an ongoing process in the committee to evaluate what actions to take in the event of non-compliance, as currently no real mechanisms exist regarding non-compliance.

F.2 IATTC

IATTC conducted stock assessments on a series of species and suggested measures for management. However, only the seabird measure was passed due to political disagreement between two members.

F3. IFF5

The SSC heard the presentation from Council staff summarizing the recent IFF5 meeting in Taipei, Taiwan, which had a theme of Marine Spatial Planning and Bycatch Mitigation. This meeting was widely attended and resulted in the comprehensive Taipei Declaration as well as

numerous individual statements of commitment. There remains the possibility of IFF6.

December 9, 2011

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

105th Meeting of the Scientific and Statistical Committee
October 6-8, 2010
Council Office

8. Protected Species

A. False killer whale issues

Issue 1: Longline depredation mitigation

A presentation was given to the SSC on the use of acoustic and other techniques to mitigate false killer whale (FKW) depredation in pelagic longline fisheries. Some acoustic methods such as sonar interference (e.g., echolocation activated pingers) are promising in reducing depredation. Acoustic recording buoys are also being tested to detect FKW presence and depredation activity near longline gear in order to alert a skipper to take evasive action. The SSC thanked Geoff McPherson from James Cook University / Global Detection Systems (Australia) for an informative presentation.

Issue 2: Take reduction plan proposed rule

A presentation was given by PIRO staff to update the SSC on the False Killer Whale Take Reduction Plan. A Draft Take Reduction Plan was submitted on July 19 (2010) to NMFS by the Take Reduction Team. The draft TRP proposes a number of regulatory measures such as circle hook use, vessel owner/skipper training in marine mammal handling/release techniques and various longline fishery time-area closures. Non-regulatory measures included increased observer coverage. The SSC thanked Nancy Young for an informative presentation.

Issue 3: Stock assessment cruise

A presentation was given by PIFSC staff to update the SSC on vessel-based visual and acoustic line-transect surveys to estimate cetacean density in the Hawaiian Archipelago EEZ — with a particular emphasis on FKW density. Highest sighting rates so far have been of sperm whales and dolphins. No sightings have been recorded so far of FKWs in the insular range, while 8 acoustic detections and 5 visual detections have been made in the remaining areas of the EEZ. Average group size of FKWs observed so far is 21 (range 1-52). The SSC thanked Erin Oleson for an informative presentation.

Issue 4: Insular false killer whale status review

A presentation was given by PIFSC staff to update the SSC on the recently completed insular FKW status review and determination on whether the Hawaiian insular population qualifies as a distinct population segment (DPS) under the ESA. The FKW is a relatively uncommon toothed whale that is long-lived and has low reproductive output. The Hawaiian insular FKW population is currently estimated at around 150-170 whales and it has apparently declined since the 1990s.

The Hawaiian insular FKW population is genetically distinct from the Hawaiian pelagic FKW population and other Pacific populations based on mtDNA and nDNA. The Biological Review Team (BRT) concluded that the Hawaiian insular FKW population is a DPS of the global FKW taxon based on genetic and other evidence. The BRT conducted a risk analysis on the insular DPS, which resulted in 44 out of 45 models indicating a >5% chance of decline to fewer than 20 individuals within 75 years, and thus concluded that this population was at high risk of extinction. It was noted that the model was also run by removing the population estimate from the 1989 aerial survey (>400), and the results still showed a population decline. The SSC thanked Erin Oleson for an informative presentation.

Issue 5: Insular false killer whale petition response

A presentation was given by PIRO staff to update the SSC on progress with the NMFS 12-month finding on the Hawaiian insular FKW petition, which will determine if listing is warranted under the ESA. Publication of the 12-month finding is now overdue, but it is expected to be published in the Federal Register in 2-4 weeks. Updates on the proposed schedules for other petitions (loggerheads, monk seals, corals, bumphead parrotfish) were also given. The SSC thanked Lance Smith for an informative presentation.

B. Biological Opinion: American Samoa longline fishery

Green sea turtle incidental take in the American Samoan longline fishery has apparently increased in recent years triggering a Biological Opinion (BiOp). The requested ESA consultation addresses a draft amendment to the Pelagics FEP. The purpose of consultation was to determine the effect on the amendment on green turtles. On average, 33 juvenile green turtle mortalities per annum were estimated in the American Samoan longline fishery prior to amendment implementation. The proposed action is expected to reduce the annual mortality to 15 juvenile green turtles, which is equivalent to 4 adult females. Currently, an estimated 18,000-38,000 adult females nest in Oceania annually. The BiOp concluded that no jeopardy would arise from the proposed amendment but some incidental take was expected (45 interactions/3years authorized), so it includes some reasonable and prudent measures proposed based on ensuring deeper setting of longline gear. It was mentioned that this BiOp considered climate change impacts on sea turtles in more detail than in the 2008 BiOp to Amendment 18 of the Pelagics FEP with new information available and published. However, the conclusions regarding climate change impacts on sea turtles did not change despite the more-detailed analysis. The SSC thanked Lance Smith for an informative presentation.

C. US National Research Council Review

A presentation was given by an SSC member on a recent National Research Council (US Academy of Sciences) review on sea turtle population assessment methodologies. The NRC panel included three members of the WPRFMC's SSC. The NRC review found that while counts of sea turtles are needed, more detailed information on key demographic parameters such as survival, breeding and recruitment probabilities are needed to diagnose population status and trends. The review also found that current US monitoring provides insufficient information on sea turtle demography to evaluate the effectiveness of protective measures for US stocks. It was mentioned that an expanded capture-mark-recapture study could be done at the East Island green

sea turtle rookery to derive better demographic information for the Hawaiian green sea turtle stock. PIFSC Director undertook to review possible roadblocks to getting this study underway and to report back to the SSC. The SSC thanked Milani Chaloupka for an informative presentation.

The SSC endorsed the Council's STAC recommendation from its March 2010 meeting that the Council adopt the NRC recommendations that focus on field based studies to support demographic parameter estimation essential for risk modelling.

Council staff also provided a brief summary of the Council's comment letter in response to the loggerhead turtle proposed rule regarding ESA listing. Council's letter noted that the loggerhead turtle nesting time series of the North Pacific Ocean DPS did not adequately take into account available long-term data, and that detailed examination of available data suggests a different population trend than what was concluded in the status review and subsequent proposed rule. It was also noted that egg harvesting in Japan during and after World War II was substantial, and that the impacts of such activities on recent nesting trends were not adequately considered.