Technical meeting to support the development of
purse seine-related port monitoring programs in the Western and Central Pacific Fisheries Commission
Convention area and adjacent ports.

Tokyo, Japan
March 23-24, 2010

1. The meeting opened with welcoming and introductory remarks provided by Mr. Takashi Koya, of the Fisheries Agency of Japan. The focus of the meeting was to discuss technical issues with regard to port monitoring and sampling. The results of this meeting will inform the Western and Central Pacific Fisheries Commission (Commission) and its subsidiary bodies on matters related to the implementation of CMM 2009-10, "Conservation and Management Measure to Monitor Landings of Purse Seine Vessels at Ports So As to Ensure Reliable Catch Data by Species."

2. Attendance included participation from Chinese Taipei, Japan, Korea, Papua New Guinea (PNG), the United States (US), the Community of the Pacific's Oceanic Fisheries Program (SPC OFP), and the International Seafood Sustainability Foundation (ISSF). Appendix [1] includes the participant list.

3. Dr. Miki Ogura, National Research Institute of Far Seas Fisheries served as meeting chair. The United States provided rapporteurs for the meeting. The draft agenda was adopted (Appendix [2]).

Current Regional Situation

4. A representative of the SPC OFP presented information regarding estimates of size and species composition of purse seine catches in the Western and Central Pacific Ocean (WCPO) [Appendix 3] that includes a composite sampling design for developing purse seine port sampling programs.

5. Discussion of the presentation including the following: (1) determining accurate estimates of purse seine catches by species and flag is a key objective of the Commission's fishery managers, and that ideally catches would be traced from capture to processing (and beyond); (2) all sources of data appear to include some sampling error, and (3) data sources (e.g., observers, port samplers, reporting by fishermen, canneries, transhippers) that can be linked with some degree of confidence provide the highest likelihood of obtaining accurate estimates of catches.

6. Participants noted that, even for the most closely monitored sampling programs found in the region, some estimating based on sampling results will usually be necessary given the aggregation of catch of small bigeye tuna (BET) and yellowfin tuna (YFT) at the smaller size categories. Ideally, for scientific purposes, monitoring programs would allow determination of the origin of fish by species from a vessel conducting a particular set type, in a particular area, at a known date.

7. After some discussion it was clear that the movement of fish after capture (e.g., to carriers, in transhipments, in landings) can vary and sometimes create challenges in terms of both catch sampling and monitoring. In addition, sorting of fish on the vessel prior to landing sometimes occurs.

8. The SPC OFP noted the recent acquisition of voluntarily provided data from some regional canners and fish trading companies, through the ISSF (described in more detail below) and indicated that an initial review of recently provided data suggest that this source may aid substantially in clarifying issues related to regional purse seine landings.

Presentation on purse seine port monitoring and sampling programs in the Western and Central Pacific Fisheries Commission Convention area.

Japan

9. A presentation on the port-sampling program of the Japanese tuna purse seine fishery was presented by a representative of the National Research Institute of Far Seas Fisheries [Appendix 4].

The results of the port sampling program for tuna purse seine fishery in Japan, which has been conducted since 1995 was presented. In order to confirm the accuracy of species identification in the markets of Japan and to estimate the catch by species, the research on the market category was conducted. The mixture of species occurred in several small size categories of yellowfin and bigeye with some seasonal and annual changes, in two major markets (Yaizu and Makurazaki), that is, bigeye is contained in the category of yellowfin, and vice versa. The high mixture only occurred in the unsorted categories, yellowfin size classes 1.5 kg and below, yellowfin 1.5 kg and greater in Yaizu, and yellowfin 1.5 kg and below in Makurazaki. For collecting informative size data, which are associated with the fishing date, position and school type, the port sampling for

the products of fish well was also conducted. About 300 to 400 fish per sample from a fish well were weighed and measured their length by species. The sampling coverage was about 10 % in the cruise based and estimated as 1 % based on the number of set. There were annual and seasonal differences of length distribution in some cases. The species composition of catch were corrected using the results of port sampling (n=78 samples) from 2006 to 2008 in accordance with the paragraph 15, CMM 2008-01. The results show that the bigeye catch in logbook is 37 % of the corrected catch, the figure is preliminary because the compilation of the catch in logbook is going on, lower than the corrected catch.

10. Discussion on the presentation noted the following: (1) the effort of Japanese researchers to develop links between fishing vessel well-based sampling and market information to better estimate BET landings; (2) the need to work toward more fully integrating these two sources of information; and (3) linking this information with logbook-based catch data currently provided to the Commission. It was noted that the information presented were in addition to the efforts of Japan to monitor 2009 BET catches under CMM 2008-01, "Conservation and Management Measure for Bigeye and Yellowfin Tuna in the Western and Central Pacific Ocean," paragraph 15.

U.S.

11. A summary of the U.S. purse seine sampling program, based in American Samoa, was provided by a representative of the National Marine Fisheries Service [Appendix 5]. It was noted there were additional background documents provided to the meeting to expand on issues presented.

12. The U.S. port sampling protocols implemented in American Samoa require sampling of fish wells on purse seine vessels with the same month, area and set type characteristics. A minimum of thirteen month, area, set type, and species samples for each well are targeted. NMFS personnel then verify log sheet information by comparing and abstracting the vessel's Regional Purse-Seine Logsheet (RPL) with the vessel's Logbook and Hatch Plan/Well Chart. Well sample selection is based on the established sampling protocols. Port samplers adjust sampling strategy according to the manner in which a vessel is unloaded and if there is any sorting, well mixing and/or mixed species. A valid sample consists of a minimum of 50 length frequency (LF) fish measurements for each species and size group. If during the LF sample, mixed species are encountered, the port sampler increases the sample size to 100 fish measurements, to complete a Species Composition (SC) sample. Each species encountered during the SC sample is recorded on a separate LF form.

After the SC sample is completed, a line is drawn through the LF forms for any species with less than 50 fish. The line is used to separate the SC measurements from the LF measurements, as the port sampler attempts to complete a 50 fish LF sample. Unloading Logsheets (ULs) are obtained from the purse seine vessel, listing the estimated or unloaded tonnage for each transhipment vessel and/or direct cannery landing for the trip. Cannery Final Out-Turn (FOT) reports (unloading weight by species, size group and in some cases, by well number) are obtained directly from the cannery in Pago Pago or, in the case of transhipments and direct landings in other regional ports, from vessel management. The UL weights and FOT weights are crosschecked and compared and discrepancies are queried for accuracy with management.

13. Discussion focused on how fish are selected for species and length frequency sampling, noting that recent evidence suggests the grab sampling may induce some bias on both the smaller and larger fish size categories in terms of achieving the objective of random selection. It was noted that for the U.S. that the splitting of catches between carriers was fairly common and it is possible for splitting and re-transshipping to create fish tracking challenges – but these are typically overcome by the required submission of unloading log sheets and final outturns that are compiled by the NMFS American Samoa office. A carrier of U.S.-caught fish may offload to as many as five or six canneries, sometimes outside the WCPFC area, which presents challenges. It was noted that there was a need to estimate BET landings for the smaller size categories based on the sampling as well as the information provided by the canneries. The US representative explained that they were in the process of establishing locally-implemented port sampling at key regional transshipment ports such as Majuro RMI and Pohnpei FSM, since the number of unloadings in American Samoa has declined.

PNG

14. A representative from the PNG National Fisheries Authority provided details on their purse seine landings monitoring program [see Appendix 6].

15. The PNG port-sampling program was initiated in 1999 and was originally conducted in the port of Madang. The program was re-established in 2005, for a duration of 3 months, and then later extended to 3 other ports (Wewak, Lae and Rabaul) in 2008. The duration of sampling was for a total of 90 days or 3 months at each port, all starting in the same month. In 2009/2010 the duration was extended to 12 months, with the hope to continue this work for another 2 years. However, the program will likely be discontinued in the port of Rabaul because the port is utilized only by vessels, which only fish in other Exclusive Economic Zones (EEZs). In most

cases the fish is sorted out before the vessel comes to port and therefore the data collected is not easy to link to set type, area and time of type. In contrast, vessels landing at the ports of Wewak, Madang and Lae fish almost exclusively in PNG waters including the archipelagic waters, with the catch predominantly from anchored FAD and log sets. This catch is not sorted at sea and if catch is delivered by motherships or carriers to port, it can easily be linked to the catching vessel, including set type, time of set and location of set.

16. The sampling method used in this program is such that an estimated 20% [by weight] of the catch is sampled. Each fish well is divided into 3 sections (top, middle and bottom layer) and from each layer and 3-4 brail nets are sampled which typically equals to 9-12 nets per fish well. Every fish from these nets is then identified and measured (fork length). Each net on average has about 200 fish, which amounts to about 1,800-2,400 fish measured per fish well. In this sampling scheme, all catcher vessels coming to these 4 ports are sampled. The program is currently employing 50 port samplers, plus a port sampling coordinator in each port. In addition, there is a port-sampling supervisor who oversees the operation in all 4 ports.

17. Discussion on the presentation noted the intensity of the port sampling and the fact that cost and personnel needs were well documented—suggesting a cost of 1 USD per fish measured. It was noted that the information was very extensive given the sampling period and beneficial for detailed analysis that would provide indications on sampling optimization of their EEZ and archipelagic waters and the larger WCPO. The value of the length frequency and species composition data collected were of particular note.

18. For the PNG situation it was noted that fish may be sorted and transferred to carriers two or three times before they leave the country via shipping or processing by PNG canneries. For one port it was estimated 2 or 3 out of 10 monthly transactions may involve fish moving from vessel to small carries to multiple large carriers.

New Zealand

19. A statement from a New Zealand scientist, unable to attend the meeting was read to the participants and is provided in Appendix 7.

Chinese Taipei

20. Meeting participants from Chinese Taipei indicated that they have experienced challenges tracking fish, especially the small fish categories that are transshipped after landing by their flagged purse seine vessels and are beginning to work with the Government of Thailand to better track fish landings and to monitor species composition.

Korea

21. Korea provided details on their port sampling indicating there are no mandatory sampling activities in domestic ports or canneries for the purpose of the Commission's stock assessment and/or domestic management. There are 4 domestic landing ports for tunas caught in WCPO in Korea, (and 5 canneries), where about 100,000 tons of tunas are landed and processed. In processing, large YFT are treated separately, while skipjack tuna (SKJ), small BET and YFT are grouped together and only sorted by body length (without differentiation of species). However, these species take different times to boil for canning. After boiling, SKJ and YFT tuna can be distinguished from each other in terms of the differing nature of the meat. It is believed that this method could be useful in terms of the species identification. Korea will participate with developing a model sampling scheme for improving data collection and in turn regional stock assessments. As such they will review status of domestic port sampling again and be willing to follow the sampling model suggested by the Commission.

SPC OFP

22. A summary of port sampling programs supported by the SPC OFP in Pacific Island States was presented by a representative of the SPC OFP [Appendix 8].

23. The SPC OFP has been supporting purse seine port sampling programs in the WCPO for approximately 25 years. During that time port sampling of purse seiners has occurred in as many as 18 OFP-supported ports. In the past 5-10 years, the number of ports in which purse seiners unload has been reduced to as few as seven ports – Pohnpei, Majuro, Tarawa, Honiara, Madang, Rabaul and Wewak and occasionally Christmas Island. Since early 2008, the three PNG ports have been involved in an entirely self-designed intensive port sampling program outside of the OFP sponsored protocols (see above).

24. The aim of the OFP sponsored protocols is to: "Identify wells which contain fish that were caught with the same school association, caught in the same calendar month, and caught in the

same area, and then to randomly sample five fish from every net that is unloaded from the well." The preferred area to sample from is within a 5 degree by 5-degree square.

25. Although Pacific Island port sampling programs are supported by the OFP, they are run by the relevant fisheries authorities of each country. Consequently, costs and funding arrangements vary During the past three years there has been a significant reduction in port sampling activities in SPC OFP-supported countries. The primary cause has been a redirection of resources required for a rapid increase in observer coverage. However, during this period further OFP analysis of available port sampling data has revealed concerns in data quality believed to result from problems related to onboard fish sorting, well transfers and the effects of grab sampling bias recently identified in similar observer sampling protocols. Additional work is required to address these concerns.

26. It was noted that the need for port samplers to review and interpret vessel well charts and fish movements on a vessel present challenges in terms of ensuring non-biased and complete sampling. Having someone skilled in reviewing these documents, many of which may be in a language foreign to the samplers, is a particular need in most ports. It was noted that transshipping sampling presents additional challenges.

27. It was noted that with the observer coverage required under CMM 2008-01 that observers could be a key source of tracking fish while it is stowed and sorted on a vessel before landing. This data could be collected by observers and ideally used by port monitors on a near real time basis for interpretation of movement of fish on the vessel during a trip. Completion of relevant data elements similar to the Well Transfer Reconciliation form as developed by SPC/FFA Data Collection Committee could be considered by the TCC. If a form is implemented and completed, the form should be made available to samplers upon landing, which could greatly address the challenges of tracking fish movements on a vessel.

ISSF

28. The President of ISSF presented information on the objectives of the non-governmental organization with a focus on its global scientific and data collection efforts [Appendix 9]. The details of the ISSF data provision program are available on their website: iss-foundation.org

29. Discussion on the presentation highlighted the need to maintain confidentiality standards for voluntarily provided data from ISSF participants to Regional Fishery Management Organizations

(RFMOs) and the fact that ISSF does not provide data directly. ISSF facilitates the transfer of data to the relevant RFMO – or for the Commission – to its scientific provider (SPC OFP). It was estimated that up to 50% of the total annual global tuna catch is reported through the ISSF participating companies. Some delegates noted that the current ISSF program is industry-based and that at least two Commission Members, Participating Territories, and Cooperating Non-members (CCMs) are working to get the Government of Thailand (a non-CCM) to cooperate in data collection and compilation efforts. Some meeting delegates suggested the need for information to flow to the flag state. The ISSF representative indicated that at this time their mandate is to facilitate the flow of data to the RFMOs.

Japanese update on their investigations into sampling opportunities in Thailand

30. Japanese participants provided a report on recent (August 2009 and February 2010) site visits to Thailand to various canneries there, as well as discussions with the local processor association and the representatives of the Government of Thailand. See Appendices 10 and 11.

A summary of Japanese plans to further sampling efforts in Thailand

31. Japanese participants presented a summary of Japanese plans to further sampling efforts in Thailand (see Appendix 12). Although all the delegates were generally supportive of the Japanese proposed sampling plan, some delegates expressed some concern about a Japanese interpretation of their commitments elaborated in paragraph 3 and were unable to commit to the four elements encompassed in that portion of the paper provided.

Forms

32. US participants proposed that a form with relevant data elements similar to the well transfer reconciliation be developed. The below part will be inserted to general section of the meeting report (subject to review by participants within a 30 day comment period).

- TCC could consider establishing a form with relevant data elements similar to the well transfer reconciliation.
- If the above form is adopted, allowances should be made for real time access to information encompassed on the form to port monitors to enable more efficient sampling

MODEL SAMPLING PROGRAM FOR WCPO PURSE SEINE FISHERY

33. Participants discussed a model sampling program for WCPO purse seine fishery.

Objectives

To estimate total catch and
To estimate species and size composition by set

•For fishery management, monitoring, reporting and documentation purposes:
1.Catch by species by vessel trip
2.Catch by species by flag (aggregate over vessel)
3.Total fishery catch by species (aggregate over flag)

•For stock assessment:
1.Catch by species by flag, area-time strata, set type
2.Size composition (length frequency) of the above

Consideration for Purse Seine Catch Monitoring/Sampling Model

At point of Purse Seine vessel unloading:
–Onshore processing facility (e.g. In Japan, Pago Pago)
–Transhipment to a reefer vessel for on-forwarding to processing facility (more common these days)

•Transhipment data will be collected based on CMM 2009-06, "Conservation and Management Measure on the Regulation of Transhipment"
•Will provide weighed estimates of catch by species or species category
•Separate documents for each part-unloading to an individual reefer
•Suitable to verify total trip catch and to some extent catch by species
•Data collection does not cover direct unloading to onshore processing facilities however it should.

Challenges monitoring transhipments

–Transhipment operation is rapid and difficult to sample

–Fish are frequently pre-sorted by species/size categories on board seiner consequently set identity is lost
–Lack of means to stratify sampling (through set identity); thus, much higher sampling coverage is required.
–Problem of set size bias would also apply.

At point of processing facility (e.g., cannery)
–In some locations, e.g. Thailand, Playas and Manta in Ecuador, there will be a combination of deliveries by reefer vessels and direct Purse Seine unloadings

•Can provide weighed catches for that part of a trip catch delivered to that cannery
•But – in some cases, transhipments are split and delivered to different cannery destinations

Issues / challenges

- Based on CMM 2009-10 and CMM 2008-01 paragraph 43, some CCMs have taken the initiative to collect data from canneries in non-CCMs and conduct sampling. Other CCMs are expected to participate in the initiative.
- Need to verify the accuracy of sorting at canneries and processing facilities
- Voluntary contribution of data by ISSF participating companies to RFMO scientific bodies, including the Commission is seen as a valuable supplemental source of these data.

Observer based sampling

–Opportunity – 100% observer coverage mandated by the Commission
–Individual sets can be sampled, linked directly to logsheet data, known set type, set location and set size
–All sets can potentially be sampled regardless of size, therefore no set-size bias problem

•Challenges–Representative sampling such as “spill sampling” may be a methodological improvement
–How to conduct sampling with minimal disruption to fish loading operation as well as with minimal damage to fish quality.
–Sampling design needed, unless we wish to sample all sets on all Purse Seine trips
–These issues currently under investigation as part of sampling trials
–Possibility of using video imaging technology to “sample” fish
–Difficult to estimate the total catch weight

Composite Purse Seine Catch Monitoring/Sampling Model

Based on the discussion, participants produced the following Composite Purse Seine Catch Monitoring/Sampling Model;

TASK 1 Monitoring/verification of purse seine trip catch by species

a) Weighed catches by vessel trip in commercial size/species categories – need for comprehensive coverage of all purse seine vessel and all trips. The options currentlyavailable and possibly available in the future:
- Final Out Turn (FOT) report data (e.g., U.S. system, fishing companies provide to Flag State)
- Direct cannery reporting, e.g., ISSF participating companies to RFMO scientific bodies including the Commission
- CMM 2009-10 and para. 43 of 2008-01 – Port State/canneries provide data to Flag States and the Commission
- Transhipment documentation – total catch estimates (typically volumetric not weighed estimates) for each transhipment. Issue: fish left on board purse seiner across multiple trips.
- In addition to the above, voluntary contribution of data by ISSF participating companies to scientific bodies, including WCPFC is seen as a valuable supplemental source of these data.
- This data need to be available to the Commission and Flag States.

b) Sampling by species/size categories in canneries/onshore processing facilities to:
- Disaggregate pooled-species categories to species level;
- Verify sorting accuracy in cannery/processing facility for unpooled-species categories (occasional audits etc.);
- Data need to be available to the Commission and Flag States.

TASK 2 Estimation of species/size composition for stock assessment and management purposes

a) Uses Task 1 data as the base data documenting per vessel, per fleet catch by species

b) Set-based (observers) and/or well-based (port sampling of direct purse seine unloadings), sampling stratified by set-type, area/time, and vessel flag.
- Issues:
  - Set-size bias problem (dependency of species composition on the size of theset) for well-based sampling
  - Observer sampling design and methodology for observers (e.g., spill sampling) needs to be established and implemented with industry cooperation and minimal disruptions to purse seine fishing operations.
  - Standards for port sampling to ensure consistency of data collection need to be established.
  - Possibility of discarded catches need consideration.
  - This data need to be available to the Commission and Flag State.

Appendices

1. List of participants
2. Meeting Agenda
3. SPC OFP presentation (Hampton)
4 . Japan presentation
5. US presentation
6. PNG presentation
7. NZ statement
8. SPC OPF presentation (Sharples)
9. ISSF presentation
10. Japanese report on Thailand
11. Japanese update on Thailand
12.Japanese plans ‘Sampling procedure for Thai canneries’