TECHNICAL AND COMPLIANCE COMMITTEE
Sixth Regular Session
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Pohnpei, Federated States of Micronesia

SIXTH REGULAR SCIENCE COMMITTEE ISSUES FOR TCC6

WCPFC-TCC6-2010/31
1 September 2010

Paper prepared by Secretariat

The Sixth Regular Meeting of the Science Committee raised the following issues for TCC6 consideration. Paragraph numbers follow those in the preliminary version of the SC6 Summary Report on the website.

1. Lateness of Data Inputs

241. CCMs noted the importance of the timely provision of input data to stock assessments, in order to ensure there is sufficient time to undertake comprehensive stock assessments for reporting to the Scientific Committee. Support was expressed for the TCC to review the lateness in the provision of data for the 2010 assessments by some CCMs.

2. Further Evaluation of CMM 2008-01

272. WCPFC6 requested that work be undertaken at SC6 and TCC6 to support bringing forward a new package of measures for consideration at WCPFC7. Some of the changes made to the assessment this year such as the improved data on Philippines and Indonesian catches, may improve the quality of scientific advice.

3. Analysis of 2009 FADs Closure

391. Following the discussion on this issue, the SC made the following recommendations:

- The Commission and the TCC note the analysis of fishing activities during the 2009 FAD closure presented in working paper SC6-MI-WP-03 when reviewing the implementation of CMM-2008-01.
- That further analyses be undertaken as additional data and information comes forward to investigate the effectiveness of FAD closures on reducing juvenile bigeye mortality.
- That observer reports that document purse seine effort during the 2009 FAD closure be examined to investigate the setting characteristics of unassociated effort in proximity to drifting objects.
- That observer reports be used to characterise the details of FAD sets made in contravention to CMM-2008-01.

- That the Commission give additional support to allow timely analysis of the observer data including the analysis of the size-trends in the catch to assist with the understanding of the FAD closure.

4. KOBE II Workshop Recommendations (Attached)

396. Regarding the recommendations from the Workshop on RFMO Management of Tuna Fisheries, it was decided to agree on Recommendations #4 to #7 and defer the others to the TCC. Regarding Recommendation #11 concerning measures of capacity, it was agreed that in the absence of a WCPFC definition of capacity, the FAO definition should be used in the interim.

5. EB-WP-07 (Effect of line shooter and mainline tension on the sink rates of pelagic longlines, and implications for seabird interactions)

437. The importance of line-weighting research was acknowledged, and the need for additional research on the effectiveness of line shooters highlighted, in particular effectiveness across different fisheries sectors. Discussion was held regarding the utility of deep-setting line shooters in reducing seabird interactions, with differing views expressed regarding their efficacy. It was noted that the deep-setting line shooters in combination with weighted hooks are very effective in the Hawaiian longline fishery, and that different situations may demand different remedies. Some CCMs suggested that a review of the way that line shooters are used may be needed by TCC. The potential burdens on fishermen from increase of observer coverage were noted, and the possibility that catch rate or fishing operations may be affected.

439. The SC made the following recommendations:

v. *On the location of the southern latitudinal boundary:*

b. The SC recommended that SPC-OFP and ACAP provide advice on observer data and information on seabird distribution to the Secretariat after which a decision could be made on whether to proceed with a formal new analysis of risk levels of longline fishing to seabirds in the southern hemisphere. Members with observer programs in this area should collaborate with SPC to assist in improving the data holdings for assessing risk levels of longline fishing to seabirds.

vi. *On the use of deep setting line shooter:*

d. The SC recommended that the TCC consider the development of specifications for ‘deep setting line shooter‘, for inclusion in CMM 2007-04.

vii. *On the format of Table 1 in CMM 2007-04:*

b. The SC recommended that when CMM 2007-04 is next modified, the TCC should consider the utility of separating Table 1 into two separate tables, one each for the area north of 23 degrees North and the area south of 30 degrees South.

6. Data Gaps (SC6-ST-WP-01 Attached)

452. The Scientific Committee recommended that SC6-ST-WP-01 be forwarded to the TCC for their consideration.

7. ROP Report

482. The ROP Coordinator noted that a more comprehensive report on data management costs, cross endorsement and other issues would be available for the TCC6 meeting.

486. CCMs expressed their strong support for the ROP and their appreciation to those involved in setting it up. SC6-ST-WP-06 highlights some initial problems with the ROP, and in particular with regard to the absence of long-term arrangements for ROP data management. It was noted that at WCPFC6 the Commission decided that ROP data management should be carried out by SPC for one year. The longer-term option for ROP data management was still to be determined. It was noted that the role of the SC is to emphasize the importance of timely provision of observer data to support scientific analyses and verification of catch and effort data, and that many of the issues with the ROP are beyond the scope of the SC, and should be considered by the TCC.

488. The matter of cross-endorsement of WCPFC/IATTC Observers was noted as being an issue of interest to FFA Members. The WCPFC Secretariat has prepared a draft IATTC-WCPFC agreement on cross-endorsement which is attached to SC6-ST-WP-06. It was noted that the late availability of this paper hampered review of the draft agreement. It was requested that any further work by the WCPFC Secretariat to progress this agreement be deferred until TCC6 has reviewed the draft proposal.

TCC6 is invited to review and comment on the issues arising from SC6.

ATTACHMENT A

KOBE II WORKSHOP RECOMMENDATIONS

The Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean

Scientific Committee
Sixth Regular Session

Nuku'alofa, Tonga
10-19 August 2010

JOINT TUNA RFMOS WORKSHOPS IN 2010: RESPONSE TO RECOMMENDATIONS

Summary of SC responses to Kobe II Recommendations

There were four Kobe II meetings in 2010, two in Barcelona in May and June on Science and MCS issues with two more in Brisbane in late July to discuss By-Catch and Management Issues. The Secretariat compiled the recommendations from these workshops in GN-WP-06 and they were discussed by a small working group of SC6. Although only some of the MCS and Management issues were not directly within the work scope of SC6, the Committee was requested to provide comments where it was appropriate. The small working group developed the attached matrix for approval by SC6 with inputs from interested parties and all convenors of thematic sessions.

In general, there was general agreement in principle or full agreement, with most of the recommendations, noting that in several cases WCPFC was already working in line with the recommendations and was working with the tuna RFMOs to achieve greater solidarity and cooperation in the management of the tuna and tuna-like stocks consistent with regional parameters and sensitivities. In a few cases, the interpretation of the wording of the recommendation was not consistent amongst all Members so the Chair of the SC has been asked to clarify the intent of the wording and recommendation for further response by SC.

It is recommended that SC forward their responses to the WCPC7 via TCC6 for further additions in the MCS and Management areas for consideration and direction for future work priorities. Finally, the SC6 recommends that the Secretariat continue its work and prepare a progress report for Kobe III.

1. INTRODUCTION

In accordance with the decision of the second joint tuna RFMOs in San Sebastian, the following four workshops were convened in 2010:

a) Meeting of experts to share best practices on the provision of scientific advice (Barcelona, Spain, May 31 to June 2, 2010);
b) International workshop on improvement, harmonization and compatibility of monitoring, control and surveillance measures, including monitoring catches from catching vessels to markets (Barcelona Spain - June 3 to 5, 2010);

c) International workshop on tuna RFMO management of issues relating to bycatch and to call on RFMOs to avoid duplication of work on this issue (Brisbane, Australia, June 23-25, 2010); and
d) International workshop on RFMO management of tuna fisheries (Brisbane, Australia – 29 June to 1 July, 2010).

All workshop reports can be found at http://www.tuna-org.org/meetings2010.htm by following the relevant links. Recommendations produced from workshops a), c) and d) above, are tabled below, with proposed actions for consideration by the Scientific Committee. SC6 (including each theme session) may provide its responses to the recommendations in each cell in the second column below. The populated tables from SC6 will be delivered to TCC6, and all compiled information will be provided to the Commission.

a) Workshop on the provision of scientific advice

Recommendations	Response	Comments
Routine data collected by year: Catch, effort and size data		
1. All members of Tuna-RFMOs are called upon to give a top priority to the provision of data of good quality in a timely manner, according to the existing mandatory data requirements of tuna RFMOs, in order to facilitate the work of tuna RFMOs scientific bodies in the provision of scientific advice based on the most recent information.	Agreed	Implement the rules and procedures for data provision by CCMs and investigate methods to enforce these provisions.
2. Lags in the submission of fishery data should be reduced making a full use of communication technologies (e.g. web based) and efforts should be undertaken that basic data formats are harmonized.	Agreed	
3. Efforts should be undertaken so that basic data used in stock assessment (catch, effort and sizes by flag and time/area strata) provided by members should be made available via the websites of tuna RFMOs or by other means.	Agreed	The release of non-public domain date must be in accordance with WCPFC Rules Posting of data must adhere to rules of the WCPFC
4. Fine scale operational data should be made available in a timely manner to support stock assessment work, and confidentiality concerns should be addressed through RFMOs rules and procedures for access protection and security of data.	Agreed	We support the provision of operational data from all fleets
5. Tuna RFMOs should ensure adequate sampling for catch, effort and size composition across all fleets and especially distant water longliners for which this information is becoming	Agreed	

limited.		
6. Tuna RFMOs should cooperate to improve the quality of data, in particular for methods to estimate: (1) species and size composition of tunas caught by purse seiners and by artisanal fisheries and (2) catch and size of farmed tunas.	Agreed	
7. Tuna RFMOs should use alternative sources of data, notably observer and cannery data, to both validate the information routinely reported by Parties and estimate catches from non-reporting fleets.	Agreed	
Biological data		
8. Regular large scale tagging programs should be developed, along with appropriate reporting systems, to estimate natural mortality growth and movement patterns by sex, and other fundamental parameters for stock assessments.	Agreed	The CPFC has recently made progress to achieving this, PTTP is a large scale programme recently completed and supported by the Members In lieu of large scale programmes, there is considerable utility in supporting small scale tag release programmes that are integrated with the analyses of other programmes.
9. Archival tagging should be an ongoing activity of tagging programs as it provides additional insights into tuna behavior and vulnerability.	Agreed	WCPFC supports the utilization of all electronic tagging technologies
10. Spatial aspects of assessment should be encouraged within all tuna RFMOs in order to substantiate spatial management measures.	Agreed	
11. The use of high-resolution spatial ecosystem modeling frameworks should be encouraged in all tuna RFMOs since they offer the opportunity to better integrate biological features of tuna stocks and their environment.	Agreed	
Stock assessment		
12. Tuna RFMOs should promote peer reviews of their stock assessment works.	Agreed	
13. Tuna RFMOs should use more than one stock assessment model and avoid the use of assumption-rich models in data-poor situations.	Agreed	WCPFC have utilized more than one model in some instances

		Where time and resources are available
14. Chairs of Scientific Committees should jointly develop checklists and minimum standards for stock assessments.		Request SC Chair to seek clarification of the text.
Communication by tuna RFMOs		
15. Standardized executive summaries should be developed for consideration by all tuna RFMOs to summarize stock status and management recommendations. These summaries should be discussed and proposed by the chairs of the Scientific Committees at Kobe III.	Agreed	Develop a draft template for discussion at KOBE III
16. The application of the Kobe II strategy matrix should be expanded and applied primarily to stocks for which sufficient information is available.	Agreed	See Attachment A for Kobe II strategy matrix Some progress already, the methodology by SPC in Mi-WP-01 is consistent with the Kobe II Matrix Approach
17. Tuna RFMOs should develop mechanisms to deliver timely and adequate information on their scientific outcomes to the public.	Agreed	All Commission scientific work (papers) is posted on the Commission's website.
18. All documents, data and assumptions related to past assessments undertaken by tuna RFMOs should be made available in order to allow evaluation by any interested stakeholder.	Agreed	Currently practiced with papers posted on the Commission website. Release of Non-Public domain data is released in accordance with WCPF Rules and Procedures for access to, protection of and dissemination of WCPFC data.
Enhanced cooperation between tuna RFMOs		
19. Chairs of Scientific Committees should establish an annotated list of common issues that could be addressed jointly by tuna RFMOs and prioritize them for discussion at the Kobe III meeting.	Agreed	"SC6 recommended that the Kobe Science Working Group conduct a review of the treatment of steepness (a key parameter in the relationship between equilibrium recruitment and equilibrium spawning biomass) in tuna stock assessments globally, and recommend a common approach, on a species-by-species basis as necessary."

		(Correspondence to be directed to the Chair of SC2)
20. Tuna RFMOs should actively cooperate with programs integrating ecosystem and socio-economic approaches such as CLIOTOP to support the conservation of multi-species resources.	Agreed	
Capacity-building		
21. Where determined by a Tuna RFMO, a review of the effectiveness of capacity-building assistance already provided should be undertaken. Reviews of tuna scientific management capacity in developing countries, within the framework of the respective RFMO may also be conducted at their request.		Not required for WCPFC Members as it is already being addressed through WPEA for Philippines and Indonesia and Vietnam and for FFA Members it is a lower priority
22. Developed countries should strengthen in a sustained manner their financial and technical support for capacity-building in developing countries, notably small island developing States, on the basis of adequate institutional arrangements in those countries and making full use of local, sub-regional and regional synergies.	Agreed	
23. Tuna RFMOs should have assistance funds that cover various forms of capacity-building (e.g. training of technicians and scientists, scholarships and fellowships, attendance to meetings, institutional building, development of fisheries).	Agreed	
24. Tuna RFMOs, if necessary, should ensure regular training of technicians for collecting and processing of data for developing states, notably those where tuna is landed.	Agreed	Carried out for SPC member countries, Indonesia, Philippines and Vietnam by SPC-OFP with funding assistance from JTF and WCPFC-SRF i.e. Tuna Data Workshops, TUFMAN software development, training, and tech support.
25. The structural weaknesses in the receiving mechanism for capacity building within a country should be improved by working closely with Tuna RFMOs.	Agreed	

b) Workshop on Bycatch

Participants in the Kobe II Bycatch Workshop support bringing the following recommendations forward to the respective RFMOs as regards bycatch across five taxa (seabirds, sea turtles, finfish, marine mammals, and sharks):

Recommendations	Response	Comments
I. Improving assessment of bycatch within T-RFMOs		
1. RFMOs should assess the impact of fisheries for tuna, tuna like and other species covered by the conventions on bycatch by taxon using the best available data.	Agree in principle	
2. RFMOs should consider adopting standards for bycatch data collection which, at a minimum, allows the data to contribute to the assessment of bycatch species population status and evaluation of the effectiveness of bycatch measures. The data should allow the RFMOs to assess the level of interaction of the fisheries with bycatch species.	Agree in principle	The rules of data to be provided by CCMs to be expanded to include by-catch data reporting.
3. Encourage the participation of appropriate scientists in relevant T-RFMO working groups to conduct and evaluate bycatch assessments and proposed mitigation strategies; and	Agree in principle	
4. Implement/enhance observer and port sampling programs with sufficient coverage to quantify/estimate bycatch and require timely reporting to inform mitigation needs and support conservation and management objectives, addressing practical and financial constraints	Agree in principle	
II. Improving ways to mitigate/reduce bycatch within T-RFMO		
5. RFMO measures should reflect adopted international agreements, tools and guidelines to reduce bycatch, including the relevant provisions of the FAO Code of Conduct, the IPOAs for Seabirds and Sharks, the FAO guidelines on sea turtles, the best practice guidelines for IPOAS for seabirds, and the precautionary approach and ecosystem approaches.	Agree in principle	
6. For populations of concern including those evaluated as depleted, RFMOs should develop and adopt immediate,	Agree in principle	

effective management measures, for example, prohibition as appropriate on retention of such species where alternative effective sustainability measures are not in place.		
7. Evaluate the effectiveness of current bycatch mitigation measures, and their impact on target species catch and management, and identify priorities for action and gaps in implementation, including enforcement of current measures and capacity building needs in developing states	Agree in principle	
8. Seek binding measures or strengthen existing mitigation measures, including the development of mandatory reporting requirements for bycatch of all five taxa across all gear types and fishing methods where bycatch is a concern; and	Agree in principle	
9. Identify research priorities, including potential pilot projects to further develop and evaluate the effectiveness of current or proposed bycatch mitigation measures, working with fishers, fishing industry, IGOs and NGOs, universities and others as appropriate, and facilitate a full compendium of information regarding mitigation techniques or tools currently in use, e.g. building on the WCPFC Bycatch Mitigation Information System.	Agree in principle	
10. Due to the conservation status of certain populations and in accordance with priorities in the RFMO areas, expedite action on reducing bycatch of threatened and endangered species.	Agree in principle	
11. Adopt the following principles as the basis for developing best practice on bycatch avoidance and mitigation measures and on bycatch conservation and management measure. • binding, • clear and direct, • measureable, • science-based, • ecosystem-based, • ecologically efficient (reduces the mortality of bycatch),	Agree in principle	

• practical and safe, • economically efficient, • holisitic, • collaboratively developed with industry and stakeholders, and • fully implemented.		
III. Improving cooperation and coordination across RFMOs		
12. As a matter of priority, establish a joint T-RFMO technical working group to promote greater cooperation and coordination among RFMOs with the attached Terms of Reference. The RFMOs are encouraged to expedite the formation of the joint working group.	Agree in principle	WCPFC Secretariat to take a lead role in coordination of the working group between RFMOs. (Discussion on make up of the group has yet to be held)
13. Actively develop collaborations between relevant fishing industry, IGOs and NGOs, universities and others as appropriate, and RFMOs to assess the impact of bycatch on the five taxa, study the effectiveness of bycatch mitigation measures, and further the understanding of population dynamics of species of conservation concern; and	Agree in principle	
14. Develop the long-term capacity of T-RFMOs to coordinate and cooperate for data collection, assessment of bycatch, outreach, education, and observer training, including establishing a process to share information on current bycatch initiatives and potential capacity building activities.	Agree in principle	
15. RFMOs are encouraged to report progress to Kobe III on the formation and on progress against the recommendations in part I and II of this workshop report.	Secretariat to prepare report for Kobe III	
IV. Capacity building for developing countries		
16. Acknowledging the additional or new requirements of bycatch mitigation and the need to build further capacity for implementation, in carrying out the recommendations in I, II, and III above, consider capacity building programs for developing countries to assist in their implementation. Establish a list of	Agree in principle	

existing capacity building programs related to bycatch issues (see attached Appendix 2 for example) to avoid duplication where possible and facilitate coordination of new capacity building programs.		

c) WS on RFMO Management of tuna fisheries

Key themes

a. The long-term profitability of all tuna fisheries is linked to their sustainability and proper management, and all RFMOs should ensure that all stocks of tunas are maintained at sustainable and optimal levels through science-based measures.

b. Overcapacity is a symptom of broader management problems, and in developing solutions we need to ensure that we deal with both the problem of overcapacity and the longer-term management issues.

c. In some areas a high proportion of the world's tuna resources are harvested from the waters of developing coastal states. For some of these countries and many small island developing states they are their only tradable resource, and developing coastal States seek a better return for access to tuna resources. Providing developing coastal States with the assistance to better manage, utilise and trade and market these resources will increase the economic return. In this context, developed fishing countries should work with developing coastal States to build industries that provide a better return, including as appropriate reducing and restructuring fleets.

d. Rights in RFMOs and under international law come with associated obligations, and these must be honoured by all member and cooperating non-member countries.

e. Tuna sashimi markets are now world-wide, not just in Japan; e.g. USA, EU, China, Chinese Taipei, and Korea.

f. Fish-aggregating devices (FADs) increase the catches in purse-seine fisheries for skipjack tuna, but FAD fishing for skipjack also captures juvenile bigeye and yellowfin tunas, lowering the longterm catch rates of those species.

g. Rights already exist in most tuna fisheries, e.g. participatory rights in RFMOs, allocations in some RFMOs, and states' rights under international law.

h. Some participants stated that now is not the time to build further purse seiners, unless industry can secure long-term access rights in partnership with developing coastal States.

i. The issues relating to overcapacity and overfishing in tuna RFMOs do not change; hopefully the players now understand that they must act.

Recommendations

Recommendations	Response	Comments
RFMOs should, as a matter of urgency:		
1. Develop publicly available authorised and active vessel[1] lists for all gears. These lists will include small-scale fishing vessels that are capable of catching significant amounts of fish under the competency of tuna RFMOs.	Agree in principle	
2. Encourage secretariats to continue their work on the global list of tuna vessels, including the assignment of a unique vessel identifier.	Agree in principle	
3. As appropriate, RFMOs include only	Agree in principle	

[1] The definition of 'active vessel' is to be determined by individual RFMOs

vessels on their active vessel[1] register in any scheme for reducing capacity by eliminating vessels.		
4. Review existing capacity against the best available scientific advice on sustainable levels of catch and implement measures to address any overcapacity identified.	Agreed	Capacity should be reviewed and attempts made to address overcapacity issues
5. Each tuna RFMO consider implementing where appropriate a freeze on fishing capacity on a fishery by fishery basis. Such a freeze should not constrain the access to, development of, and benefit from sustainable tuna fisheries by developing coastal States.	Agreed	Capacity should be reviewed and attempts made to address overcapacity issues
6. All RFMOs establish strong requirements for the provision of accurate data and information to secretariats so that the status of tuna stocks can be accurately assessed. All RFMO members and cooperating non-members should make a firm commitment to provide these data on a timely basis, and it should be cross-checked with market, landings and processing establishment data under the competency of tuna RFMOs.	Agreed	SC (SPC) may provide comments on CCM's data provision. The SC may consider a plan for the cross-checking of available data.
7. Develop a consistent enforceable regime for sanctions and penalties, to be applied to RFMO members and non-members and their vessels that breach the rules and regulations developed and implemented by RFMOs.	Agreed	Refer to TTC for consideration as appropriate when data agreements have been breached
8. Ensure that the effectiveness of all conservation and management measures is not undermined by exemption or exclusion clauses.	Agree in principle	
9. Ensure that all conservation and management measures are implemented in a consistent and transparent manner and are achieving their management goals.	Agree in principle	
10. Review and strengthen their MCS framework to improve the integrity of their management regime and measures.	Agree in principle	
RFMOs should, in the medium term:		
11. Develop measures of capacity and, in the absence of an agreed capacity definition, adopt the FAO definition "The amount of fish (or fishing effort) that can be produced over a period of time (e.g. a year or a fishing season) by a	Agreed	The FAO definition will be used in the interim until the Commission develops its own definition for "capacity".

vessel or a fleet if fully utilised and for a given resource condition.”		
12. Ensure that all stocks maintained at sustainable and optimal levels through science-based measures.	Agree in principle	
13. Review and develop management regimes, based *inter alia* on the concept of fishing rights for fisheries under the RFMOs’ competence.	Agree in principle	
14. Consider using right-based management approaches and other approaches as part of a 'tool box' to address the aspirations of developing states, overfishing, overcapacity and allocation.	Agree in principle	
15. The tuna RFMOs should ensure a constant exchange of information with regard to the capacity of fleets operating within their zones as well as the mechanisms to manage this capacity. Kobe III will provide an opportunity for the tuna RFMOs to provide an update on progress with these issues.	Agree in principle	Secretariat to report on progress at regular intervals

Attachment 2

DATA GAPS

SCIENTIFIC COMMITTEE
SIXTH REGULAR SESSION

Nuku'alofa, Tonga
10-19 August 2010

SCIENTIFIC DATA AVAILABLE TO THE WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

WCPFC-SC6-2010/ST WP-1(rev. 3)

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1. INTRODUCTION

Recommendations from the Scientific Committee (SC) entitled "*Scientific Data to be Provided to the Commission*" and "*Standards for the Provision of Operational Catch and Effort Data to the Commission*" (Anon. 2005a, Annex VII) were adopted by the Western and Central Pacific Fisheries Commission (WCPFC) at its second session in December 2005 (Anon. 2005b, par. 25). The "*Standards for the Provision of Operational Catch and Effort Data to the Commission*" have been incorporated as ANNEX 1 of "*Scientific Data to be Provided to the Commission*[2]" which was further refined and subsequently adopted at the Fourth Regular Session of the Commission, Tumon, Guam, USA, 2-7 December 2007. The most recent revision (covering the inclusion of vessel numbers in the provision of aggregate data) was adopted at the Sixth Regular Session of the Commission, Papeete, Tahiti, 7–11 December 2009 (Anon. 2009, par. 188).

As specified in the recommendations for the provision of data, the SPC Oceanic Fisheries Programme (OFP), which has been engaged by the Commission to provide scientific services (including the collection, compilation and dissemination of fisheries data) under Article 13 of the Convention, has compiled annual catch estimates, operational (logsheet or logbook) catch and effort data, aggregated catch and effort data, and size composition data on behalf of the Commission. In conducting scientific research and analyses in support of the work of the Commission, the OFP has also compiled other types of data, such as reports of unloadings, observer data, port sampling data, tagging data, oceanographic data and various types of biological data.

While the catch and effort data and size composition data currently available are extensive, there are important gaps. The purpose of this paper is to review recent developments concerning the compilation of data by the OFP, on behalf of the Commission, particularly in regard to the important data gaps, and to present information on the coverage of scientific data held by the WCPFC.

A system to review the provisions of scientific data to the WCPFC and highlight data gaps on the Commission's web site was developed prior to SC4 (refer to http://www.wcpfc.int/statprov). This system serves to provide the following functions:

- Provide the WCPFC Secretariat, the Scientific Committee and data managers with a broad indication of the status of data collected and provided to the WCPFC (i.e. identify data gaps);
- Provide CCMs with a concise summary of what data have/have not been provided to the WCPFC, and any deficiencies with the data provided;
- Serve as a reference for WCPFC Secretariat and data managers when following up with CCMs on any outstanding issues with respect to the collection/provision of data to the WCPFC (identify data gaps which may prompt 'data rescues', for example);
- Provide the users (e.g. researchers) with a concise summary of what data are available and inform them of any problems that are apparent in data provided.

CCMs have been encouraged to use this tool to ensure their data provisions have been registered with the Commission and review where data provisions are outstanding.

Detailed quantitative information on the catch and effort data, size composition data, tagging data, unloadings data and observer data held by the OFP is presented in the OFP Data Catalogue, which can be viewed at http://www.spc.int/oceanfish/Html/Statistics/DataCat/DATACAT.htm. An indication of the coverage of aggregate catch and effort data, operational logsheet (catch and effort)

[2] Can be viewed at http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-wcpfc6

data, unloadings data, port sampling data and observer data held by the OFP can also be viewed at http://www.spc.int/oceanfish/Html/Statistics/Coverage/index.asp. It is expected that these facilities will be enhanced and transferred to the Commission's web site at some stage in the future.

2. RECENT DEVELOPMENTS IN RESOLVING DATA GAPS

Data gaps and other issues related to the provision of data have been reported at SC1 (Williams and Lawson, 2005), SC2 (OFP, 2006), SC3 (OFP, 2007), SC4 (OFP, 2008) and SC5 (OFP, 2009). The following sub-sections summarise some of the major recent developments concerning the data gaps.

2.1 Philippines tuna fishery data

The breakdown of catch estimates by gear type and the lack of operational logsheet data for the Philippines domestic fisheries are amongst the most significant gaps in the provision of data to the WCPFC. During the past year, the WCPFC Secretariat and the SPC/OFP continued to work with their Philippine counterparts to improve the data available from these fisheries. The establishment of the UNDP/GEF-funded West Pacific East Asia Oceanic Fisheries Management (WPEA-OFP[3]) project in 2010 will support this work over the next three years, with an expectation of a larger, five-year project to follow. Significant developments in resolving data gaps in the Philippines' domestic fisheries over the past year include:

- A study (Itano and Williams, 2009) was undertaken in late 2009 to determine the viability of large bigeye and yellowfin tuna catch estimates determined for the Philippines Region 4B (Palawan), as one of the main contributors in the national annual catch estimates. The study identified several problems in the data collection system (e.g. species identification and bias in sampling due to low coverage) that resulted in a large over-estimation of the bigeye tuna catch. Most of the study's recommendations have now been implemented and, *inter alia*, resulted in the adjustment to the national bigeye tuna catch estimates.
- An Annual Catch Estimates Workshop (Anon, 2010e) was convened and attended by important stakeholders with knowledge and information on the tuna fisheries in the Philippines (government, industry and NGOs). The outcome of this workshop was agreement on more reliable annual catch estimates for the Philippines tuna fisheries and a plan for further improvement in the data collection and estimation processes in the coming years.
- A review of the species composition and size data collected under the National Stock Assessment Project (NSAP) was conducted in a workshop held at BFAR offices in May 2010 (Anon, 2010d). These data provide fundamental information for tuna stock assessments and for the annual catch estimation process, and the workshop identified areas where better information could be provided in the future.
- A cannery database system was developed by SPC/OFP and installed in the offices of the Philippines Bureau of Fisheries and Aquatic Resources (BFAR) in March 2010. This database system caters for the entry of Philippine tuna fishery cannery receipts data submitted to BFAR by all tuna canneries based in the Philippines and produces reports differentiating catches by domestic and foreign fleets, and catches within the EEZ and ex-EEZ (i.e. high seas and other EEZ), which are fundamental input into the annual catch
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[3] Refer to http://www.wcpfc.int/doc/2009/wpea-ofm-project-document; significant co-financing is included with this project in supporting the work in Indonesia, Philippines and Vietnam

estimation process. BFAR have collected and entered data covering 2008 and 2009 cannery receipts, mainly from purse seine and ringnet vessels.

- The collection of operational logsheet data from the domestic purse seine fishery continues to improve. The data collected and processed for 2008 represents about 70% coverage of activities, and the data collected and processed for 2009 represents about 50% coverage at this stage.

2.2 Indonesian tuna fishery data

The breakdown of annual catch estimates by gear type and the lack of operational logsheet and size data for the Indonesian domestic fisheries are amongst the most significant gaps in the provision of data to the WCPFC. During the past year, with the assistance provided through the WPEA-OFM project, the WCPFC Secretariat and the SPC/OFP continued to work with their Indonesian counterparts to improve the data available from these fisheries. Significant developments in the past year, include:

- The first Indonesian (WCPFC Area) Annual Catch estimates Review Workshop was held in Jakarta during March 2010 (see Anon, 2010b). This workshop was attended by participants (24) from Directorate General of Capture Fisheries (DGCF), the Research Center for Capture Fisheries (RCCF), port authority departments, fishing associations and the fishing industry. The outcome of this workshop was the production of annual catch estimates by gear and species for 2000–2009 for the Indonesian fisheries, although the estimates excluded catch from archipelagic waters. The workshop participants indicated that more work is required, but acknowledged that this process is very important and is now been established as an annual event which should ultimately result in reliable catch estimates from the Indonesian tuna fisheries in the future.
- The RCCF Database specialist attended a one-week training course at SPC/OFP in February 2010. The training was designed to provide advanced skills in database development for tuna fisheries data and also included a review of the port sampling data collected in Indonesia during 2008 and 2009, with recommendations for improving data collected where problems were identified. The provision of aggregate port sampling data to the WCPFC was one of the main outputs of this training attachment.
- A port sampling training workshop was conducted in Bitung, North Sulawesi during April 2010. This workshop was convened to train twenty new enumerators to be based in Bitung and Kendari ports which will provide a good basis for obtaining size and species composition data from the Indonesian longline, purse seine and pole-and-line fisheries in the next few years.

2.3 Vietnamese tuna fishery data

The lack of annual catch estimates and other data for stock assessments for the Vietnamese domestic fisheries is acknowledged to be an important gap in the provision of data to the WCPFC. During the past year the WCPFC Secretariat and the SPC/OFP commenced working with their Vietnamese counterparts to improve the data available from these fisheries. Significant developments in the past year, include:

- A Tuna Data Collection workshop (Anon, 2010c) was convened and attended by important stakeholders with knowledge and information on the tuna fisheries in Vietnam. The main outcome of this workshop was a plan to establish logsheet and port sampling data collection

systems for the domestic longline fishery during 2010 which would then be extended to the other gear types in 2011.

- Vietnamese fisheries scientists have yet to participate in the WCPFC meetings and functions, so support through the WPEA was provided in 2010 to attend (i) attachment training in tuna data collection and management at SPC/OFP, and (ii) the Stock Assessment Workshop (SAW) in June 2010 (two scientists).

2.4 Number of vessels in the aggregate data

The compilation of public domain catch and effort data has been hampered by the lack of key effort information (number of vessels) in the aggregate data provided by Commission members and co-operating non-members (CCMs). In acknowledging the difficulties in filtering aggregate data in order to adhere to the Commission's rules for the dissemination of public domain data (see Para. 9 in this document), WCPFC6 agreed to the following recommendation put forward by the Ad Hoc Task Group for Data (AHTG–Data) :

"188. WCPFC6 agreed, as advised by the AHTG–Data and recommended by TCC5, that the Commission amend its Procedures and Standards for Scientific Data to be Provided to the Commission to include in Section 4 (Catch and effort data aggregated by time period and geographic area) the following new paragraph:

> ***CCMs are to provide, to the extent possible, the number of individual vessels per stratum and area covered by their operational data with the aggregated catch and effort data they submit to the Commission.****"*

CCMs that provide operational logsheet data to the Commission, or the SPC-member countries that provide operational logsheet data to the SPC, are **not** required to provide this additional information since the WCPFC Data Managers (SPC) can undertake the work of filtering out the strata representing the activities of less than 3 vessels in the process of aggregating the operational data.

The status of the provision of "number of individual vessels per stratum" for those CCMs that only provide aggregate data is as follows:

- Chinese Taipei have provided information on the number of vessels per stratum in their provision of 2007, 2008 and 2009 aggregate data for their distant-water (DWLL) and offshore (STLL) longline fleets. This information will therefore allow the production of a public domain version of their aggregate data for these years only but not the entire time series of their aggregate data. A request for clarification was sent to Chinese Taipei in regards to whether the cells representing the activities of "less than 4 vessels" have been removed from their recent data provision or not, noting that the WCPFC rules regarding the filtering of data apply to public domain data dissemination and not data submissions to the WCPFC.
- The USA has filtered their aggregated longline data to remove strata which represent the activities of less than 3 vessels because this is a requirement in their national legislation. The aggregate data they provide to the WCPFC are therefore considered to be in the public domain.
- Japan has yet to provide information on the number of vessels per stratum with their aggregate longline data.

- China has yet to provide information on the number of vessels per stratum with their aggregate longline data.
- Korea has yet to provide information on the number of vessels per stratum with their aggregate longline data.
- Spain has yet to provide information on the number of vessels per stratum with their aggregate longline data.

At this stage, there is insufficient information provided to change the current method of compiling the WCPFC public domain data[4] (see http://www.wcpfc.int/science-and-scientific-data-functions/public-domain-data).

2.5 Collection of Observer Spill sampling data

The collection of paired "spill" and "grab" samples by observers is an important WCPFC project which is fundamental for the estimation of size selectivity bias in grab samples of the purse-seine species and size composition. This project has progressed in the past year with the addition of data collected and processed from thirteen trips. A description of the recently-provided data and an update on the estimation of selectivity bias can be found in Lawson (2010).

2.6 Provision of purse-seine unloading and cannery data

Over the past year, comprehensive purse-seine landings data have been provided to the WCPFC which have the potential for providing better estimates of the species composition of the purse-seine catch when used in conjunction with data collected from other sources (e.g. observers and logsheets). The catch from Japanese purse seine vessels landing in Japanese ports is separated into species and broad size categories, weighed and the data recorded on a certificate which is authorized by an "auditing" company. The Japanese purse-seine landings data collected during 2009, in accordance with an option for data reporting and provision under CMM 2008-01, were provided to the WCPFC Secretariat on a monthly basis during 2009 (for further information see http://www.wcpfc.int/doc/wcpfc6-2009ip19/preliminary-report-port-monitoring-unloading-japanese-purse-seiners-and-some-sug).

In late 2009, the International Seafood Sustainability Foundation (ISSF) requested their participating fishing companies to provide summarized landings data to their respective Tuna Regional Fisheries Management Organisations (RFMOs) to assist in analyses comparing the catches recorded in fishing vessel logbooks and observer records. Since January 2010, ISSF canneries have provided detailed individual vessel landings data on a quarterly basis to the WCPFC. These data potentially provide an excellent basis for cross-checking the purse-seine data collected from other sources.

3. STATUS OF DATA GAPS

3.1 The main data gaps related to Stock assessment of target tunas

The following are considered the main data gaps in the historical aggregated catch and effort, and size composition data, used in stock assessments for the target tuna species:

[4] It is noted that an analysis provided in SC5 ST WP-5 showed that even if the number of vessels per stratum is provided, aggregate catch and effort data for individual flags that have been filtered for less than three vessels will not be accurate. See http://www.wcpfc.int/doc/st-wp-08/timothy-lawson-and-peter-williams-status-public-domain-catch-and-effort-data-held-weste

3.1.1 Important data gaps from key fleets

Chinese-Taipei domestic (based in Chinese Taipei) offshore (STLL) longline fleet

- There are no operational (logsheet), aggregated catch and effort, nor size data available for years prior to 2004.

Indonesian tuna fisheries

- Total catch estimates for the period prior to 1970 are missing.
- Estimates of annual catches have not been stratified by gear type for the period 1991–1999.
- Estimates of annual catches of 'yellowfin' covering the period from 1970 to 1999 also include bigeye.
- There is a general lack of operational, aggregated catch and effort, and size composition data.
- The most recent catch estimates for 2000-2009 have been provided for the Indonesian fisheries by gear and species, but exclude archipelagic waters catches. The requirements for submission of scientific data to the WCPFC stipulates that annual catch estimates should cover the WCPFC Convention Statistical Area, which includes the archipelagic waters of Indonesia north of 8°S.
- For the period from 1970 to 1999, large annual catches have been reported for 'unclassified' gear types; information is required regarding the gear types included in 'unclassified' and the size composition of catches taken by 'unclassified' gear types.

Some of the data gaps listed in previous years have been resolved to some extent over the past 2-3 years through the work of the following initiatives:

(i) the Indonesian/WCPFC Tuna Data Collection Workshops conducted in 2007, 2008 and 2009, reported in previous versions of this paper;
(ii) the establishment of a national logbook data collection system;
(iii) the Indonesian Data Rescue Project (2009), reported in last year's paper;
(iv) the Indonesian/WCPFC Annual Catch Estimates Workshop conducted in 2010

Japanese coastal fleets

- There are no operational or aggregated catch and effort data, nor size composition data, available.

Japanese pole-and-line fleet

- There are no operational or aggregated catch and effort data, nor size composition data, are available for the period prior to 1972.

Philippines tuna fisheries

- Total catch estimates for the period prior to 1970 are missing.
- There is a general lack of operational and aggregated catch and effort data.
- Only limited size composition and species composition data are available for the period prior to the National Stock Assessment Programme (NSAP), which commenced in 1997.
- For the period from 1970 to 2007, significant annual catches have been reported for 'unclassified' gear types; information is required regarding the gear types included in 'unclassified' and the size composition of catches taken by 'unclassified' gear types. The catches of 'unclassified' gear

types have been mostly allocated to the municipal 'hook-and-line' fishery, but catches in some regions appear to be unrealistically high for yellowfin and bigeye tuna.

Some of the data gaps listed in previous years have been resolved to some extent over the past 2-3 years through the work of the following initiatives:

(i) the Annual Catch Estimates Review Workshops conducted in 2008 and 2010 has helped resolve the issues related to the large "unclassified" gear catches and led to more reliable bigeye tuna catch estimates;
(ii) the establishment of purse-seine logsheet data collection since 2008;
(iii) the ongoing work of the NSAP in providing important size and species composition data;
(iv) a study in late 2009 (Itano and Williams, 2009) which helped resolve issues related to high bigeye tuna catches;
(v) the establishment of data collection from other sources (e.g. cannery receipts) which has contributed to the catch estimation process.

Vietnamese tuna fisheries

- There are no annual catch estimates, operational or aggregated catch and effort data, nor size composition data currently available, other than anecdotal information on catches (e.g. Lewis, 2005).

3.1.2 Historical coverage rates

- For several fleets, particularly those of the small Pacific island countries, better estimates of historical coverage rates of logsheet and unloadings data are required to improve annual catch estimates and aggregated catch and effort data. In this regard, the identification and rescue of historical data are required.

3.1.3 Nationality of the catch

- There have been difficulties in certain circumstances in assigning the catch to one national entity or another. While it is acknowledged that catches should normally be assigned to the country of the flag flown by the fishing vessel, there are sometimes circumstances where this may not be appropriate. The Coordinating Working Party on Fishery Statistics (CWP), convened by FAO, has listed some situations in which difficulties in assigning a nationality might exist. The CWP also provides guidelines for how the nationality of the catch may be assigned in certain situations where it might not be appropriate for the nationality of the catch to be equivalent to the flag flown by the fishing vessel (see http://www.fao.org/fishery/cwp/handbook/C). In the WCPFC fisheries, there are a number of situations where the assignment of the nationality of the catch is not straightforward, for example:
    - Foreign-flagged vessels domestically-based in Pacific Island countries, including domestic charter arrangements
    - Vanuatu-flagged purse seine vessels fishing under the FSM Arrangement under the "home party" of Papua New Guinea

- The consistent assignment of "fishing nation" in all types of scientific data has a number of important implications within the SC and other areas of the Commission's work. With the establishment earlier this year of a WCPFC Conservation Management Measure (CMM) on chartering procedures for assignment of catch data to national entities are being developed. These

procedures are required to ensure that "double-counting" of catch and effort data provided by the flag and chartering entities does not occur.

A number of coastal states have provided notifications over the past two years that locally-based foreign fleets should be considered as charter vessels and the data assigned to the coastal state. However, several issues remain to be resolved before the data can be re-assigned (from flag-state to coastal-state), in particular, confirmation from the "flag" state that they have removed the data corresponding to the chartered vessels from their aggregate data to ensure "double-counting" does not occur.

3.1.4 Operational catch and effort data

- Coastal states (which are members of the SPC and FFA) collect operational catch and effort data through bilateral access agreements with foreign fleets fishing in their waters; these data are processed and held by the SPC on behalf of the coastal states. Operational catch and effort data are not available outside the EEZs of FFA member countries for Japanese fleets, the Korean distant-water longline fleet, and the Chinese and Chinese Taipei distant-water longline fleets that target bigeye and yellowfin. (Operational catch and effort data for Chinese and Chinese Taipei distant-water longliners targeting albacore are compiled by port samplers in Pago Pago, American Samoa and Levuka, Fiji).
- Operational catch and effort data, together with fine-scale oceanographic data that may affect catch rates, are required for the development of indices of abundance. Operational catch and effort data are also required to determine the spatial distribution of the catch in relation to EEZs, the high seas areas and other management-related areas.

Progress has been made with the provision of historical operational data over the past two years (See Section 4.3 below and Table 7).

3.1.5 Aggregate catch and effort data

- Certain stock assessments require aggregate catch and effort data that cover the extent of the stock for that species[5]. In the case of bigeye tuna, for example, stock assessments cover the Pacific Ocean and therefore the provision of aggregated longline data is required to cover the Pacific Ocean. In the case of south Pacific Albacore, stock assessments cover the Pacific Ocean, south of the equator. The following lists the vessel nations and years where aggregate longline catch/effort data does <u>not</u> cover the Pacific Ocean :
    - Chinese distant-water longline fleet for all years;
    - Chinese Taipei distant-water longline fleet for 2002, 2004-2009;
    - Korean distant-water longline fleet for 1998–1999;
    - Japan distant-water longline fleet for 2005–2009.

The requirements for the provision of scientific data to the WCPFC cater for the voluntary submission of data covering the Pacific Ocean:

> *"Catch and effort data aggregated by periods of month and areas of 5° longitude and 5° latitude that have been raised to represent the total catch and effort, and unraised longline catch and effort data stratified by the number of hooks between floats and the finest possible resolution of time period and geographic area, covering distant-water longliners*

[5] The provision of distant-water longline data covering the whole Pacific was a change in the guidelines on the Provision on Scientific Data to the Commission that was approved at WCPFC4 in December 2007.

may also be provided for the Pacific Ocean east of the eastern boundary of the WCPFC Statistical Area"

SC5 considered that this problem could also be resolved through the data exchange MOU with IATTC whereby WCPFC could obtain the balance of the Pacific Ocean data (i.e. EPO data) from IATTC and combine it with the WCPFC data to cover the Pacific Ocean. WCPFC6 (December 2009) subsequently approved the data exchange arrangement with IATTC.

- In some instances, the aggregated catch and effort data provided to the WCPFC for the most recent year of activities have not been raised and represent low coverage of activities. For example, this is the case with the 2009 aggregate longline data provided by Korea where coverage of aggregate data provided was only 29% of the annual catch estimates – these data are typically not loaded into the WCPFC databases used for the stock assessments due to the low-coverage problem.

  Also, the 2008 aggregate Korean longline data (with adequate coverage) were not provided until June 2010 which delayed the 2010 stock assessments.

- In some instances, it is not possible to reconcile the aggregate longline catch data with annual catch estimates. For example, this is the case with the aggregated catch/effort data covering the Japanese distant-water longline fleet, where catch is provided in numbers of fish only

- In some instances, the unit of catch provided in the aggregate longline catch data is not suitable for use in stock assessments. For example, the aggregated catch data provided for the distant-water Chinese longline fleet are in units of "kilograms" only, and the stock assessments require the catch to be in "numbers of fish" by species.

  This problem has been rectified in the data provided for recent years (2008–2009), but is still a problem with the Chinese longline data provided for 2003–2007.

3.1.6 Species composition data for purse seiners

- Species composition data collected by observers and port samplers are needed to improve estimates of the catches of yellowfin and bigeye for purse-seine fleets, other than vessels fishing under the United States Treaty, the FSM Arrangement and the domestic PNG fleet.

  This problem is being addressed through (i) the establishment of 100% observer coverage since January 2010, (ii) the WCPFC project on spill sampling, and (iii) initiatives related to the collection of landings data and cannery receipts.

3.1.7 Size composition data for longliners

- Size composition data are not available for Vanuatu and Chinese distant-water longline fleets targeting bigeye and yellowfin in the eastern tropical areas of the WCPFC Statistical Area.

3.2 The main data gaps related to Stock assessment of shark species

The SC5 *"… requested SPC-OFP to commence work on preliminary stock assessments for key shark species, and to develop a research plan to support further assessment for consideration at SC6 …".*

There are a number of data-gap issues with respect to shark catches in the WCPFC Convention Area and these are elaborated in Clarke and Harley, 2010.

3.3 The main data gaps related to ecosystem approach to fisheries

Gaps in data collection/provision, sampling design and research related to the implementation of an ecosystem approach to fisheries include the following:

- The coverage of catch data for non-target species, including species of special interest (marine reptiles, marine mammals, sharks and sea birds), collected by observers needs to be increased for most longline and purse-seine fleets, and particularly the distant-water longline fleets, for which observer coverage has been negligible. Exceptions to the need for increased coverage are the longline fleets of New Zealand, Papua New Guinea and the United States (based in Hawaii), the purse seine fleet of Papua New Guinea and purse seiners fishing under the United States Treaty and the FSM Arrangement. Coverage of the Australian longline fleet has increased in recent years.
- Biological data covering non-target species are lacking; the types of data required include length and weight, length and age at maturity, longevity, growth rate, fecundity, habitat use (vertical and horizontal range), and trophic interactions.
- Other gaps include quality-controlled ocean bathymetry data, especially regarding seamount definitions and locations, oceanographic data products resolving mesoscale features relevant to fisheries, and acoustic data for the validation of models of mid-trophic components of oceanic ecosystems.

4. RECENT PROVISIONS OF SCIENTIFIC DATA TO THE WCPFC

Under the policy for the provision of data to the Commission, annual catch estimates and aggregated catch and effort data must be provided by 30 April 2008 (see “Reporting obligations” at the following web page http://www.wcpfc.int/statprov).

4.1 Annual Catch Estimates

Tables 1 and 2 list the dates on which catch estimates for 2008 and 2009, respectively, were provided, and include notes on the data that have been provided, highlighting gaps or problems in the data provided.

Annual catch estimates for 2008 have been provided by all CCMs and CNMs, but yet to be provided by one country (Panama). Annual catch estimates for 2009 have been provided by all CCMs, but have yet to be provided by three CNMs and Panama. For 2008 annual catch estimates, there were 16 out of 24 CCMs (75%) that had provided estimates by the 30 April 2009 deadline, with 19 out of 24 entities (79%) having provided estimates by 15 May 2009. For 2009 annual catch estimates, there were 23 out of 25 CCMs (92%) that had provided estimates by the 30 April 2010 deadline which indicates a clear improvement in the timeliness of the provision of estimates; only two CCMs (Cook Islands and USA) missed the deadline with their provision of 2009 annual catch estimates.

The quality of estimates provided continues to improve with a reduction in the number of notes assigned to the annual catch estimates for 2009 compared to 2008 estimates. Work in the coming year will include:

- Reconciliation of historical Pacific Bluefin annual catch estimates with relevant CCMs;
- Reconciliation of the historical annual number of vessels by size category with each CCM.

4.2 Aggregate Catch/Effort data

Tables 3, 4 and 5 list the dates on which aggregated catch and effort data were provided for 2007, 2008 and 2009, respectively, and include notes on the data that have been provided (see Table 6), highlighting gaps or problems in the data provided. The notes in the right-hand column of each table may refer to instances where the data provided do not satisfy criteria specified in the guidelines for the provision of Scientific Data to the WCPFC.

Pacific Island countries provide operational catch/effort (logsheet) data [which are aggregated by the OFP] on a regular basis and their provisions of aggregate catch/effort data have therefore been flagged as being provided on the deadline (30 April) since they are available at that time. The one exception was the delay in the provision of operational logsheet data for 2009 from Fiji due to a crash with the network server holding their data.

The notable gaps in the provision of 2007, 2008 and 2009 aggregate data include:

- The China longline aggregate data prior to 2008 only cover the WCPO area (the Pacific Ocean west of 150°W) instead of the WCPFC Convention Area
- The 2008 aggregate Korean longline data (with adequate coverage) were not provided until June 2010 which delayed the 2010 stock assessments (as noted in Section 3.1.5 above). 2008 aggregate data for this fleet were provided in 2009, but coverage was only 36%, so could not be used in stock assessments
- The low coverage of data in the 2009 aggregate Korean longline data provision meant that it could not be used in stock assessments
- The late submission of 2009 US aggregate longline data resulted in delays to the 2010 stock assessments. [The aggregate US longline data are incomplete due to US legislation requiring the removal of cells representing the activities of less than three vessels.]

In general, the timeliness of the provision of aggregate catch/effort data has improved in the past few years, and there now remain very few gaps in the data provided for recent years. The quality of aggregate data provided has also improved with a reduction in the number of notes assigned to the aggregate data for 2009 compared to the 2007 and 2008 estimates.

4.3 Historical operational catch/effort data

The WCPFC Executive Director sent out a circular on data-related issues to Commission members, cooperating non-members and Participating Territories on March 14, 2008. Concerning the provision of historical data to the WCPFC, the circular requested that -

- *"…in regard to **operational catch and effort data**, please advise me if operational catch and effort data provided to the OFP prior to December 2005 should be considered as also having been provided to the Commission. Unless such authorization is given to me, these data will **not** be considered as having also been provided to the Commission."*

Since SC5 in August 2009, authorization for the release to the WCPFC of historical operational catch and effort, held by the SPC-OFP on behalf of their member countries, has been received from four CCMs (see Table 7).

Operational purse-seine logsheet data have also been provided by the Philippines (for 2004 activities) and Japan (for 2001–2004 activities) in relation to CMM 2008-01. For Japan, the provision of these data was in accordance with paragraphs 15 and 16 of CMM 2008-01.

4.4 Regional Observer Programme (ROP) data

The SPC/OFP has been processing observer data on behalf of their member countries for more than 15 years. Continuing this role in respect of the Regional Observer Programme (ROP) data has been identified as one of a number of potential options. Over the past year, the SPC/OFP has employed four dedicated ROP data entry staff[6] to cover the increase in data collected as a result of the CMM 2008-01 requirement for 100% observer coverage in the purse seine fishery as of January 2010.

The definition of an ROP trip and the requirement by CCMs to provide ROP data to the WCPFC Secretariat have been clearly stated in the Convention and in CMM 2007-01. However, there has been a delay in providing the ROP data to the WCPFC due to the following reasons:

- The overwhelming stress on the resources of national and regional observer programmes as a result of the CMM 2008-01 requirement for 100% coverage in the purse-seine fishery has meant that countries have been severely delayed in sending their data to SPC for processing;
- When the backlog of hard-copy observer data are provided in the future, SPC will be under-staffed to keep up with the data entry;
- SPC hold observer data on behalf of their member countries but require authorization to release their ROP-defined data to the WCPFC. Member countries have been formally requested to provide the authorization to release their ROP-defined data to the WCPFC, and the current status of these authorizations is included in Table 8.

Table 9 shows the historical ROP-defined trip data collected and held by SPC, and the ROP data provisions to the WCPFC to date, based on the authorizations listed in Table 8.

4.5 Transmission of scientific data to the WCPFC Secretariat

The WCPFC scientific data, comprising the historical time series of annual catch estimates, aggregate catch/effort data, size data, and the operational (logsheet) and ROP data (authorized for release) are transmitted using encryption and secure FTP to the WCPFC Secretariat's network server on a regular basis. Over the past twelve months, the latest versions of each data type have been sent to the WCPFC Secretariat in November 2009, April 2010 and July 2010.

In addition to the transmission of these data, the WCPFC Secretariat has been the provided with the following services over the past year:

- The WCPFC IT Manager was trained in using the Catch and Effort database Query System (CES), software developed by SPC/OFP, which allows WCPFC staff to extract summarized tables, graphs and maps of the WCPFC annual catch estimates, aggregate catch/effort and operational data;
- The provision of the CES database system with WCPFC data updates in April 2010 and August 2010;

[6] One ROP data entry staff is funded by the WCPFC and three ROP data entry staff are funded by the New Caledonian government.

- The provision of the Observer Trip Viewer system (used to extract summarized tables, graphs and maps of the ROP data which have been authorized for release) was provided in June 2010 and August 2010.

5. COVERAGE RATES

Figure 1 presents coverage rates since 1970 for operational (logsheet) catch and effort data, port sampling data and observer data for all gear types combined[7]. The coverage rates for logsheet catch and effort data refer to catch and effort data for individual fishing operations (longline sets, pole-and-line days fished or searched, purse-seine sets and troll days fished) that are held by the OFP. Coverage rates for observer data refer to the catch of target tunas that was observed. Coverage rates for port sampling data refer to the catch of target tunas from longline trips that were sampled and the catch of target tunas from purse-seine sets that were sampled.

Figure 2 shows coverage rates for available aggregate and operational catch and effort data by fleet for the longline fishery covering recent years (2000–2009). Figure 3 shows coverage rates for available aggregate and operational catch and effort data by fleet for the purse-seine fishery covering recent years (2000–2009).

Figure 4 shows coverage rates for available size composition data by fleet for the longline fishery covering recent years (2000–2009). Figure 5 shows coverage rates for available size composition data by fleet for the purse-seine fishery covering recent years (2000–2009).

Coverage rates for recent years will increase as additional data are compiled.

[7] Refer to http://www.spc.int/oceanfish/Html/Statistics/Coverage/index.asp for an explanation of how coverage is determined.

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TABLES

Table 1. Provision of 2008 annual catches estimates to the WCPFC

COUNTRY / TERRITORY / ENTITY	GEAR(s)	Date submitted	see NOTES
Australia	LL, PS, PL, HL,TR	30 Apr 2009	
Belize	LL	8 Apr 2009	
Canada	TR	3 Apr 2009	
China	LL, PS	14 Aug 2009	(10)
Cook Islands	LL, TR	1 Jul 2009	
Ecuador	PS	25 Sep 2009	
El Salvador	PS	8 May 2009	(4)
Federated States of Micronesia	LL, PS	30 Apr 2009	
Fiji Islands	LL, PL	1 May 2009	(10)
French Polynesia	LL, PL, OT	30 Apr 2009	
Indonesia	LL, PS, OT	5 Apr 2010	(16)
Japan	PS	1 May 2009	
	LL, PL, TR, OT	30 Apr 2010	
Kiribati	PS, OT	30 Apr 2009	
Republic of Korea	LL, PS	30 Apr 2009	
Marshall Islands	LL, PS	22 Apr 2009	
New Caledonia	LL	24 Apr 2009	(5)
New Zealand	LL, PS, TR, PL	1 May 2009	
Niue	LL	5 May 2009	
Palau	LL, PL	30 Apr 2009	(9)
Panama	PS		
Papua New Guinea	LL, PS	30 Apr 2009	
Philippines	PS, HL, RN, OT	15 Jun 2009	
Samoa	LL	29 Apr 2009	
Senegal	LL	25 Sept 2009	(9)
Solomon Islands	LL, PS, PL	3 May 2009	
Spain	LL	2 Jul 2009	
	PS	9 Jun 2009	
Chinese Taipei	LL, PS	30 Apr 2009	
Tonga	LL	25 Feb 2009	
United States	LL, PS, TR, PL	1 May 2009 9 Oct 2009	
Vanuatu	LL, PS	16 Jul 2009	

NOTES

1 Catches were estimated by the OFP while assisting with the preparation of the national fisheries report.
2 Catch estimates were taken from the national fisheries report presented at the meeting of the Scientific Committee.
3 Total annual catches were provided by SPECIES, but not broken down by GEAR.
4 Total annual catches can be determined by aggregating operational data that were provided on this date.
5 Marlin catch estimate not provided to the species level.
6 Coverage of data used to determine estimates not provided
7 Type(s) of data used to determine estimates not provided
8 Methods used to determine estimates not provided
9 Fleet(s) inactive for this calendar year
10 Breakdown of active vessels by GRT size class not provided
11 Swordfish catch estimates only provided
12 National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
13 Billfish catch estimates not provided for the longline gear
14 Estimates of all main tuna species not provided

Table 2. Provision of 2009 annual catches estimates to the WCPFC

COUNTRY / TERRITORY / ENTITY	GEAR(s)	Date submitted	see NOTES
Australia	LL, PS, PL, HL,TR	1 May 2010	
Belize	LL	16 Mar 2010	
Canada	TR	30 Mar 2010	(9)
China	LL, PS	27 Apr 2010	
Cook Islands	LL, TR	2 Jun 2010	
Ecuador	PS		
El Salvador	PS		
Federated States of Micronesia	LL, PS	30 Apr 2010	
Fiji Islands	LL, PL	29 Apr 2010	
French Polynesia	LL, PL, OT	30 Apr 2010	
Indonesia	LL, PS, OT	5 Apr 2010	(16)
Japan	PS	30 Apr 2010	
	LL, PL, TR, OT	30 Apr 2010	
Kiribati	PS, OT	30 Apr 2010	
Republic of Korea	LL, PS	28 Apr 2010	
Marshall Islands	LL, PS	26 Apr 2010	
New Caledonia	LL	28 Apr 2010	(5)
New Zealand	LL, PS, TR, PL	30 Apr 2010	
Niue	LL	28 Apr 2010	
Palau	LL, PL	30 Apr 2010	(9)
Panama	PS		
Papua New Guinea	LL, PS	30 Apr 2010	
Philippines	PS, HL, RN, OT	28 Apr 2010	
Samoa	LL	30 Apr 2010	
Senegal	LL		
Solomon Islands	LL, PS, PL	29 Apr 2010	
Spain	LL	30 Apr 2010	(5)
	PS	30 Apr 2010	
Chinese Taipei	LL, PS	28 Apr 2010	
Tokelau	OT	14 Apr 2010	
Tonga	LL	16 Apr 2010	
United States	LL, PS, TR, PL	11 Jun 2010	
Vanuatu	LL, PS	28 Apr 2010	

NOTES

1 Catches were estimated by the OFP while assisting with the preparation of the national fisheries report.
2 Catch estimates were taken from the national fisheries report presented at the meeting of the Scientific Committee.
3 Total annual catches were provided by SPECIES, but not broken down by GEAR.
4 Total annual catches can be determined by aggregating operational data that were provided on this date.
5 Marlin catch estimate not provided to the species level.
6 Coverage of data used to determine estimates not provided
7 Type(s) of data used to determine estimates not provided
8 Methods used to determine estimates not provided
9 Fleet(s) inactive for this calendar year in the WCPFC Convention Area
10 Breakdown of active vessels by GRT size class not provided
11 Swordfish catch estimates only provided
12 National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
13 Billfish catch estimates not provided for the longline gear
14 Estimates of all main tuna species not provided
15 Provisional estimates provided
16 Estimates exclude archipelagic waters catches

Table 3. Provision of 2007 Aggregated catch and effort data to the WCPFC

COUNTRY / ENTITY	GEAR TYPE	Date Submitted	see NOTES
Australia	LL, PL, PS, TR	29 Apr 2008	(17)
Belize	LL	30 Apr 2008	(12)
Canada	TR	24 Apr 2008	(11)
China	LL (DWFN)	10 Jun 2008	(1), (12), (14), (18)
	LL (offshore)	10 Jun 2008	(1), (12), (14) (18)
	PS		
Chinese Taipei	LL (DWFN)	30 Apr 2008 22 Aug 2008 30 Apr 2009 28 Apr 2010	(10), (24)
	LL (small)	8 Aug 2008 30 Apr 2009	(13), (23), (24)
	PS	30 Apr 2008	(6), (15)
Cook Islands	LL, TR	30 Apr 2008	(20)
Ecuador	PS		
El Salvador	PS	8 Sep 2008	(17)
Federated States of Micronesia	LL, PS	30 Apr 2008	(20)
Fiji Islands	LL, PL	30 Apr 2008	(20)
French Polynesia	LL	10 Apr 2008	(20)
Indonesia	LL, PS, OT		
Japan	LL	11 May 2009 17 Sep 2009 30 Apr 2010	(2), (10)
	PL	11 May 2009 30 Apr 2010	
	PS	5 Jun 2008 30 Apr 2010	
Kiribati	PS	30 Apr 2008	(20)
Marshall Islands	LL, PS	30 Apr 2008	(20)
New Caledonia	LL	18 Mar 2008	(20)
New Zealand	LL, PL, HL, PS	16 Apr 2008 1 May 2009	(17)
Niue	LL	30 Apr 2008	(20)
Palau	LL, PL	30 Apr 2008	(20)
Panama	PS		
Papua New Guinea	LL, PS	30 Apr 2008	(20)
Philippines	PS, HL, RN, OT		
Republic of Korea	LL	29 Apr 2008 30 Apr 2009	(12), (18)
	PS	29 Apr 2008 30 Apr 2009	(6), (15), (18)
Samoa	LL	30 Apr 2008	(20)
Senegal	LL	21 Nov 2008	(12), (17)
Solomon Islands	LL, PS	30 Apr 2008	(20)
	PL		
Spain	LL	11 Dec 2008	(3), (12)
	PS	13 May 2008 7 Dec 2008	
Tonga	LL	30 Apr 2008	(20)
United States	LL (American Samoa)	7 Jun 2008 9 Oct 2009	(11)
	LL (Hawaii)	7 Jun 2008 28 Sep 2008 9 Oct 2009	(11)
	PS (Treaty)	30 Apr 2008	(17)
	TR (North Pacific)	7 Jun 2008 9 Oct 2009	(11)
	TR (South Pacific)	7 Jun 2008 9 Oct 2009	(11)
Vanuatu	LL, PS	30 Apr 2008	(20)

Table 4. Provision of 2008 Aggregated catch and effort data to the WCPFC

COUNTRY / ENTITY	GEAR TYPE	Date Submitted	see NOTES
Australia	LL, PL, PS, TR	30 Apr 2009	(17)
Belize	LL	8 Apr 2009 28 Apr 2009	
Canada	TR	3 Apr 2009	(21)
China	LL (DWFN)	14 Aug 2009	(12)
	LL (offshore)	14 Aug 2009	(12)
	PS		
Chinese Taipei	LL (DWFN)	30 Apr 2009 28 Apr 2010	(10), (24)
	LL (small)	30 Apr 2009 28 Apr 2010	(13), (23), (24)
	PS	30 Apr 2009	(15)
Cook Islands	LL, TR	30 Apr 2009	(20)
Ecuador	PS		
El Salvador	PS	8 May 2009	(17)
Federated States of Micronesia	LL, PS	30 Apr 2009	(20)
Fiji Islands	LL, PL	30 Apr 2009	(20)
French Polynesia	LL	30 Apr 2009	(20)
Indonesia	LL, PS, OT		
Japan	LL	17 Sep 2009 30 Apr 2010	(2), (10)
	PL	30 Apr 2010	
	PS	11 May 2009 30 Apr 2010	
Kiribati	PS	30 Apr 2009	(20)
Marshall Islands	LL, PS	30 Apr 2009	(20)
New Caledonia	LL	30 Apr 2009	(20)
New Zealand	LL, PL, HL, PS	1 May 2009	(17)
Niue	LL	30 Apr 2009	(20)
Palau	LL, PL	30 Apr 2009	(20)
Panama	PS		
Papua New Guinea	LL, PS	30 Apr 2009	(20)
Philippines	PS, HL	26 Jun 2009	(13), (17)
	RN, OT		
Republic of Korea	LL	22 Jun 2010 30 Apr 2009	(12), (18)
	PS	30 Apr 2009	(6), (15), (18)
Samoa	LL	30 Apr 2009	(20)
Senegal	LL		
Solomon Islands	LL, PS	30 Apr 2009	(20)
	PL	30 Apr 2009	(20)
Spain	LL	24 Jun 2010	(3), (12)
	PS	9 Jun 2009	
Tonga	LL	30 Apr 2009	(20)
United States	LL (American Samoa)	9 Oct 2009	(11)
	LL (Hawaii)	9 Oct 2009	(11)
	PS (Treaty)	30 Apr 2009	(17)
	TR (North Pacific)	9 Oct 2009	(11)
	TR (South Pacific)	9 Oct 2009	(11)
Vanuatu	LL, PS	30 Apr 2009	(20)

Table 5. Provision of 2009 Aggregated catch and effort data to the WCPFC

COUNTRY / ENTITY	GEAR TYPE	Date Submitted	see NOTES
Australia	LL, PL, PS, TR	30 Apr 2010	(17)
Belize	LL	16 Mar 2010	
Canada	TR	30 Mar 2010	(21)
China	LL (DWFN)	27 Apr 2010	
	LL (offshore)	27 Apr 2010 12 Jun 2010	
	PS	12 Jun 2010	(6), (8), (9)
Chinese Taipei	LL (DWFN)	28 Apr 2010	(10), (24)
	LL (small)	28 Apr 2010	(13), (23), (24)
	PS	28 Apr 2010	(15)
Cook Islands	LL, TR	30 Apr 2010	(20)
Ecuador	PS		
El Salvador	PS		
Federated States of Micronesia	LL, PS	30 Apr 2010	(20)
Fiji Islands	LL, PL		
French Polynesia	LL	30 Apr 2010	(20)
Indonesia	LL, PS, OT		
Japan	LL	30 Apr 2010	(2), (10)
	PL	30 Apr 2010	
	PS	30 Apr 2010	
Kiribati	PS	30 Apr 2010	(20)
Marshall Islands	LL, PS	30 Apr 2010	(20)
New Caledonia	LL	30 Apr 2010	(20)
New Zealand	LL, PL, HL, PS	30 Apr 2010	(17)
Niue	LL	30 Apr 2010	(20)
Palau	LL, PL	30 Apr 2010	(20)
Panama	PS		
Papua New Guinea	LL, PS	30 Apr 2010	(20)
Philippines	PS, HL	22 May 2010	(13), (17)
	RN, OT		
Republic of Korea	LL	28 Apr 2010	(12), (13),(18)
	PS	28 Apr 2010	(6), (15), (18)
Samoa	LL	30 Apr 2010	(20)
Senegal	LL		
Solomon Islands	LL, PS	30 Apr 2010	(20)
	PL	30 Apr 2010	(20)
Spain	LL	30 Jul 2010	(3), (12)
	PS	30 Apr 2010	
Tonga	LL	30 Apr 2010	(20)
United States	LL (American Samoa)	11 Jun 2010	(11)
	LL (Hawaii)	11 Jun 2010	(11)
	PS (Treaty)	30 Apr 2009	(17)
	TR (North Pacific)		
	TR (South Pacific)		
Vanuatu	LL, PS	30 Apr 2010	(20)

Table 6. Notes on the provision of aggregated catch and effort data to the WCPFC

NOTES

1	The catch data are in units of weight (kgs or metric tonnes) only, rather than both numbers of fish and weight.
2	The catch data are in units of numbers of fish only, rather than both numbers of fish and kilograms.
3	The catch data are for swordfish only.
4	The unit of effort is "days on which a set was made", rather than "days fished or searched".
5	The unit of effort is "sets" rather than "days fished or searched".
6	The catch/effort data are not stratified by the required categories of school association
7	The units of effort are unknown, or non-standard
8	No effort data provided
9	The data are aggregated by 5°x5° instead of 1°x1°
10	Unraised data stratified by 5°x5°, month and hooks between floats were also provided
11	National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
12	The 5°x5°/month Longline catch and effort data are not stratified by "Hooks between Floats"
13	Coverage of data provided is less than 50%
14	No breakdown of Billfish species catch provided
15	The estimation of bigeye in the reported yellowfin-plus-bigeye catch has not been undertaken in these data
16	The spatial aggregation is non-standard (must be 5°x5° for Longline; 1°x1° for surface fisheries)
17	Aggregate data not provided, but have been generated from annual catch estimates and/or operational data submitted to the WCPFC.
18	Data have not been "raised" to represent total catch and effort
19	Species composition of main tuna species catch does correspond to annual catch estimates
20	Aggregate data not provided, but have been generated from annual catch estimates and operational data made available to the SPC by their member countries.
21	This fleet was inactive in the WCPFC Convention Area.
22	Distant-water longline fleet data do not cover the entire Pacific Ocean (required for stock assessments of certain species)
23	Represents a combination of data provided by the flag state (for domestically-based vessels) and coastal states
24	Vessel numbers per Month and Area provided. Data with cells representing 3 vessels or less have not been provided.

Table 7. Provision of historical operational catch/effort data to the WCPFC

	Flag State Data (Convention Area)			Coastal State Data (EEZ only)		
ENTITY	GEAR(s)	Date of Notification	Provided by	GEAR(s) / FLEET(s)	Date of Notification	NOTES
Australia	LL, PL, PS, TR	16 Apr 2008	SPC-OFP	ALL	16 Apr 2008	SPC authorised to release
Belize	LL		No	Not Applicable		
Canada	TR		No	Not Applicable		
China	LL, PS		No			
Cook Islands	LL	10 Jun 2009	SPC-OFP			SPC authorised to release
Ecuador	PS		No	Not Applicable		
El Salvador	PS		No	Not Applicable		
Federated States of Micronesia	LL, PS	13 Jan 2010	SPC-OFP			SPC authorised to release
Fiji Islands	LL, PL	22 Jun 2009	SPC-OFP			SPC authorised to release
French Polynesia	LL, PL, TR	1 Jul 2010	SPC-OFP			SPC authorised to release
Indonesia	LL, PS, OT		No	Not Applicable		
Japan	PS	17 Apr 2009	Japan (Partial)	Not Applicable		(1) [2001-2004 only]
Japan	LL, PL		No	Not Applicable		
Kiribati	PS, LL		No			
Republic of Korea	LL, PS		No	Not Applicable		
Marshall Islands	LL, PS	9 Jul 2009	SPC-OFP			SPC authorised to release
Nauru	LL	19 Aug 2009	SPC-OFP	ALL	19 Aug 2009	SPC authorised to release
New Caledonia	LL		No			
New Zealand	LL, PL, HL, PS	20 March 2008	SPC-OFP	ALL	20 March 2008	SPC authorised to release
Niue	LL	3 Sep 2009	SPC-OFP			SPC authorised to release
Palau	LL, PL		No			
Panama	PS		No	Not Applicable		
Papua New Guinea	LL, PS		No			
Philippines	PS	*01 Dec 2008*	Philippines (Partial)	Not Applicable		(1) [2004 only]
	HL, RN, OT		No	Not Applicable		
Samoa	LL		No			
Senegal	LL		No	Not Applicable		
Solomon Islands	LL, PS, PL		No			
Spain	LL		No	Not Applicable		
	PS		No	Not Applicable		
Chinese Taipei	LL, PS		No	Not Applicable		
Tonga	LL		No			
United States	LL, TR, PL		No	Not Applicable		
United States	PS	30 Apr 2008	FFA / SPC-OFP	Not Applicable		US Multilateral treaty only (since 1988)
Vanuatu	LL, PS	22 Dec 2008	SPC-OFP			SPC authorised to release

NOTES

1 Flag state data provided in accordance with paragraph 15 and 16 of Conservation and Management Measure for Bigeye and Yellowfin Tuna in the Western and Central Pacific Ocean (CMM 2008-1).

Table 8. Status of ROP data provisions to the WCPFC

	ROP Data Provisions			
OBSERVER PROGRAMME	GEAR(s) covered	Date of Notification	Provided by	NOTES
Australia	LL		—	
China	LL, PS		—	
Cook Islands	LL		—	
Federated States of Micronesia	LL, PS	17 Jun 2010	SPC/OFP	Provided on behalf of FSM (NORMA)
Fiji Islands	LL, PL		—	
French Polynesia	LL, PL, TR		—	
Indonesia	LL, PS		—	
Japan	PS		—	
Japan	LL, PL		—	
Kiribati	PS, LL		—	
Republic of Korea	LL, PS		—	
Marshall Islands	LL, PS		—	
Nauru	LL, PS	7 Jul 2010	SPC/OFP	Provided on behalf of Nauru Fisheries
New Caledonia	LL		—	
New Zealand	LL	*1 Jan 2009*	MAF/NZ	Provided with annual data submission
New Zealand	PS		—	
Niue	LL		—	
Palau	LL, PL		—	
Papua New Guinea	LL, PS	2 Jun 2010	SPC/OFP	Provided on behalf of PNG/NFA
Philippines	PS		—	
Samoa	LL		—	
Solomon Islands	LL, PS, PL		—	
Chinese Taipei	LL, PS		—	
Tonga	LL		—	
United States	LL, TR, PL		—	
United States	PS		—	
Vanuatu	LL, PS		—	

NOTES

Table 9. Historical ROP-defined trip data collected and ROP data provisions to the WCPFC (20 July 2010)

	LONGLINE			PURSE SEINE			POLE-AND-LINE		
Year	ROP-defined trips held by SPC/OFP	ROP trips provided to WCPFC	Non-ROP trips provided to WCPFC	ROP-defined trips held by SPC/OFP	ROP trips provided to WCPFC	Non-ROP trips provided to WCPFC	ROP-defined trips held by SPC/OFP	ROP trips provided to WCPFC	Non-ROP trips provided to WCPFC
1980	2	0	0	0	0	0	0	0	0
1981	3	0	0	0	0	0	0	0	0
1982	4	0	0	0	0	0	0	0	0
1984	2	0	0	0	0	0	0	0	0
1985	3	0	0	0	0	0	0	0	0
1986	1	0	0	0	0	0	0	0	0
1987	6	0	0	0	0	0	0	0	0
1988	14	0	0	5	0	0	0	0	0
1989	13	0	0	12	0	0	0	0	0
1990	27	0	0	7	0	0	0	0	0
1991	73	0	0	37	0	0	0	0	0
1992	74	0	0	17	0	0	0	0	0
1993	114	0	0	33	0	0	1	0	0
1994	139	0	0	52	0	0	0	0	0
1995	130	0	0	56	0	0	0	0	0
1996	123	0	0	75	1	0	0	0	0
1997	126	0	0	87	0	0	2	0	0
1998	106	0	0	103	0	0	25	0	0
1999	96	0	0	84	0	0	50	0	0
2000	166	0	0	71	0	0	29	0	0
2001	295	0	0	84	0	0	1	0	0
2002	413	0	0	126	0	0	122	0	0
2003	395	0	0	148	0	0	135	0	0
2004	351	0	0	190	0	0	4	0	0
2005	123	0	0	193	0	0	9	0	0
2006	138	0	0	204	0	0	13	0	0
2007	94	0	0	197	0	0	0	0	0
2008	47	2	17	177	0	0	0	0	0
2009	28	0	0	111	32	0	0	0	0
2010	5	0	0	2	0	0	0	0	0

FIGURES

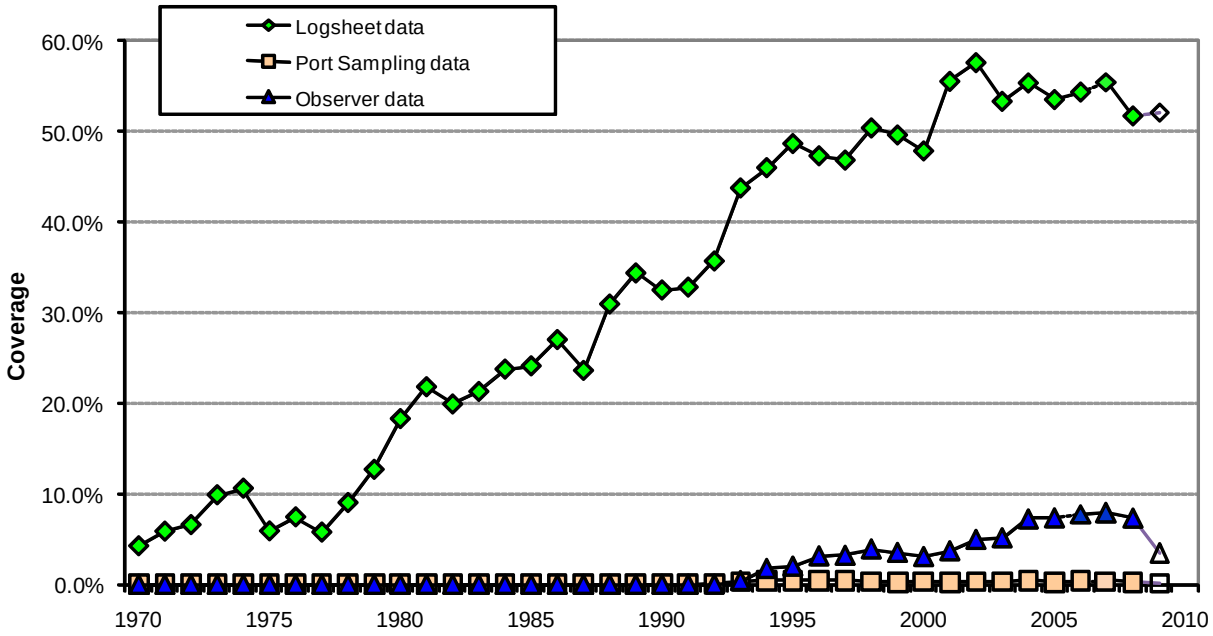


Figure 1. Coverage of operational (logsheet) data, port sampling data and observer data compiled by the OFP

(Data held by SPC/OFP, some of which are provided to the WCFPC;
2008 and 2009 data are provisional)

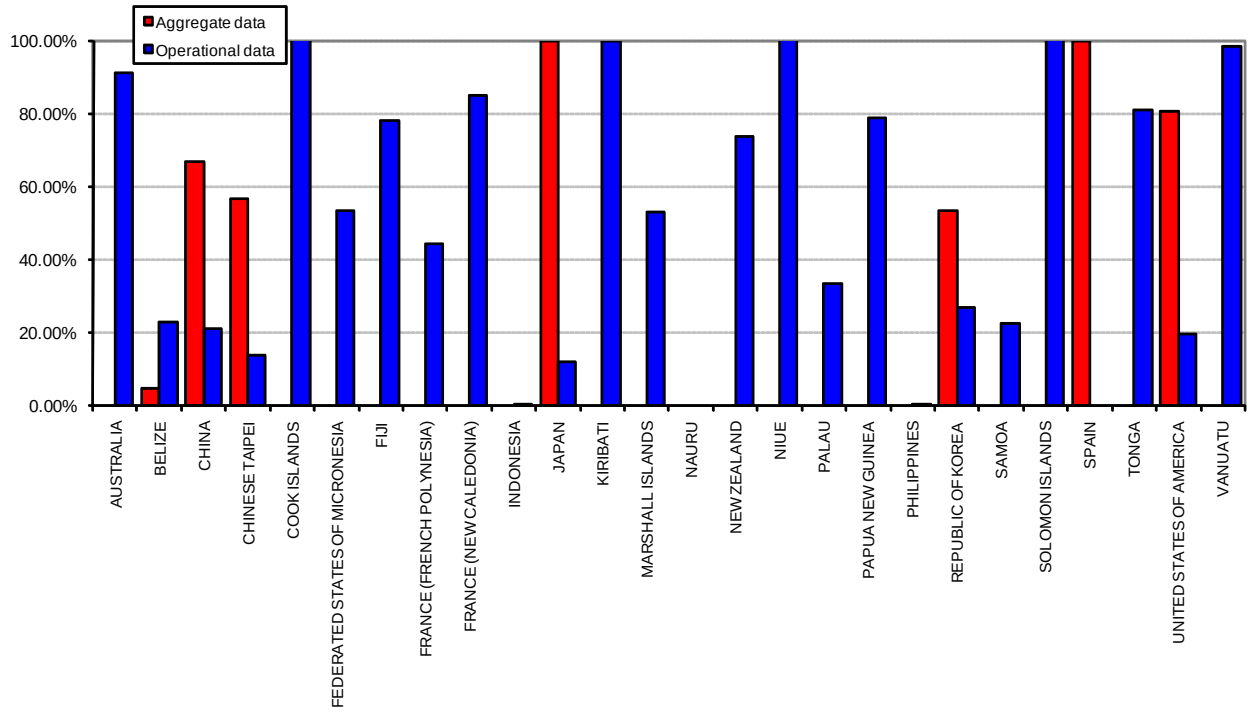
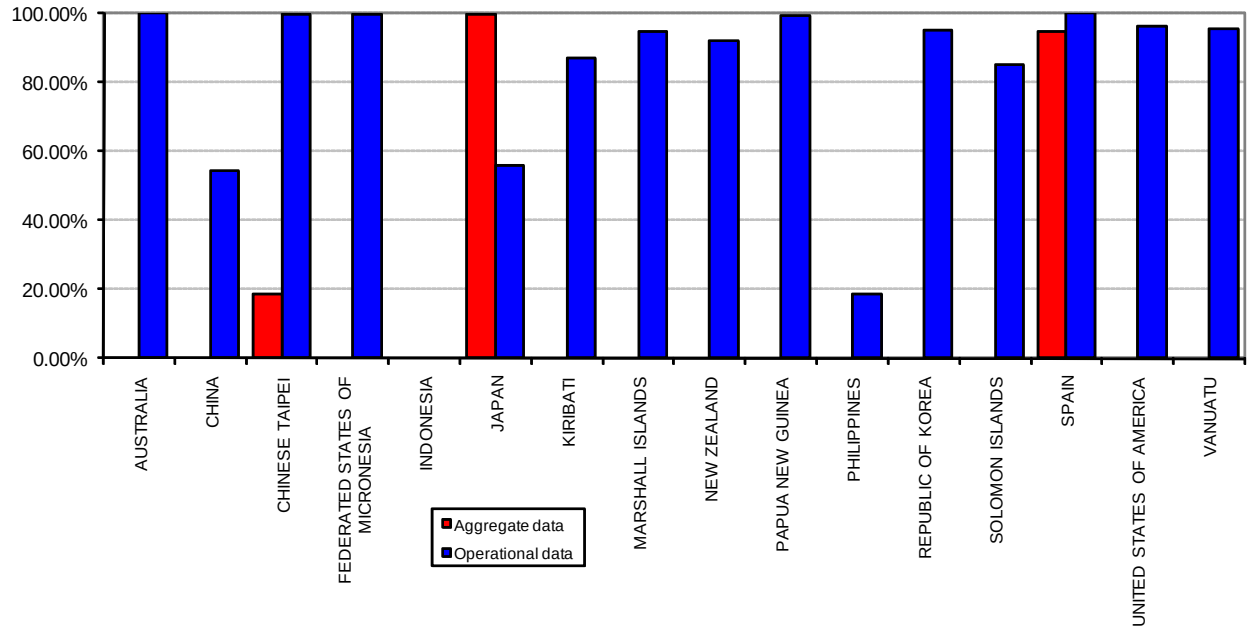


Figure 2. Coverage of (i) aggregate and (ii) operational catch/effort data by fleet from the LONGLINE FISHERY

(Aggregate data provided to the WCPFC; operational data held by SPC/OFP, some of which are provided to the WCFPC; covers 2000–2009)



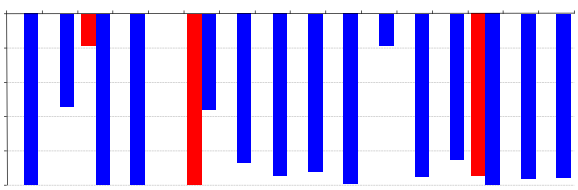


Figure 3. Coverage of (i) aggregate and (ii) operational catch/effort data by fleet from the PURSE-SEINE FISHERY

(Aggregate data provided to the WCPFC; operational data held by SPC/OFP, some of which are provided to the WCFPC; covers 2000–2009)

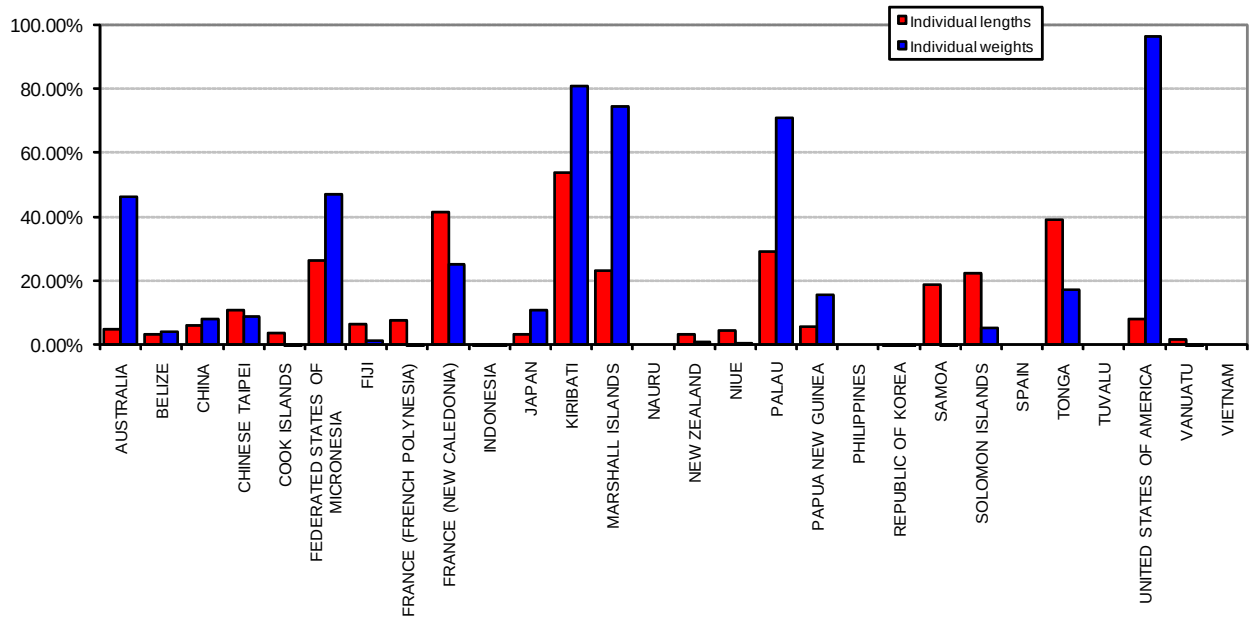
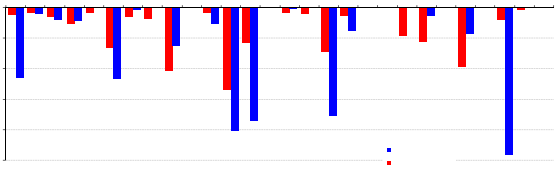


Figure 4. Coverage of size composition data by fleet from the LONGLINE FISHERY

(Data provided to the WCPFC; covers 2000–2009)



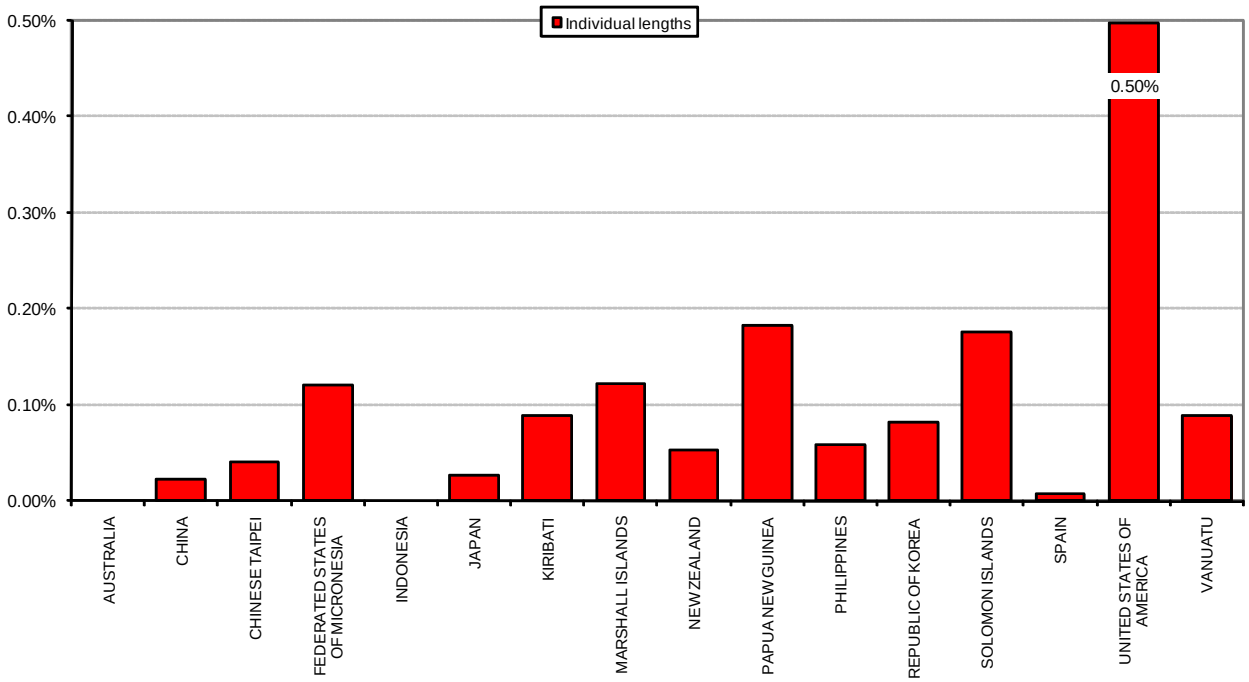


Figure 5. Coverage of size composition data by fleet from the PURSE-SEINE FISHERY

(Data provided to the WCPFC; covers 2000–2009)