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SCIENTIFIC DATA AVAILABLE TO THE WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

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WCPFC-SC11-2015/ST WP-1 rev. 1

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Revision 1

1. Clarifies that the tier-scoring system developed by the WCPFC science/data service provider (SPC/OFP) is a systematic process used to evaluate the 2014 scientific data submissions against the requirements in the "Scientific Data to be Provided to the Commission[2]". However, it is recognised that the tier-score evaluation is expected to be amongst the advice and information that will be available to the TCC for its review of compliance with "Scientific data to be Provided to the Commission" decision through the WCPFC Compliance Monitoring process.
2. Addition of a general note in Table 5 highlighting that 2014 historical operational longline data were provided to SPC for a collaborative study in accordance to the agreement with respective CCMs (see SC10 report-Attachment F and OFP [2015a] and OFP [2015b]).

[1] Oceanic Fisheries Programme (OFP), Secretariat of the Pacific Community (SPC), Noumea, New Caledonia.

[2] http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9

ABSTRACT

This paper reports on the major developments over the past year with regard to filling gaps in the provision of scientific data to the Commission.

Three CCMs with fleets active in the WCPFC Convention Area had not provided 2014 annual catch estimates by deadline of the 30th April 2015; two of these CCMs have now provided their estimates. Estimates for the key shark species (which is in accordance with the change in the requirements to include the key shark species catches) continue to improve but remain, with the provision of discard estimates, as the major data gap.

In general, the timeliness of the provision of aggregate catch/effort data continues to improve with nearly all CCMs providing data by the deadline of 30th April 2015. The quality of aggregate data provided continues to improve with a reduction in the number of notes assigned to the aggregate data in recent years.

Operational catch and effort data for the Korean longline and purse seine (2014) and the China longline fleets (2014) were made available for the first time, and were by far the most significant developments in resolving data gaps over the past year.

The main data gaps listed in the paper are:

- The non-submission of OPERATIONAL data for several key fleets (Section 2.3);
- The non-submission of number of vessels in the aggregate data for two key fleets (Section 2.4);
- The need for improvement in the submission of catch estimates for the key shark species (Section 2.5) and reporting of discard estimates;

The review of gaps in 2014 scientific data provisions includes the assignment of a tier-scoring evaluation level, as recommended by WCPFC11.

The second phase of the Western Pacific East Asia Oceanic Fisheries Management Project (WPEA OFM) which provides support to the Philippines, Indonesia and Vietnam to, *inter alia*, improve monitoring and data management of their domestic fisheries, has now commenced. There remains significant work to improve the coverage, quality and submission of logsheet, port sampling and observer data, and the reliability of annual catch estimates for certain gears. For Indonesia, the main data gaps continue to be the lack of aggregate catch/effort data and the uncertainty of the estimates for their small-scale tuna fisheries. For the Philippines, the main data gap is the reliability of the historical estimates for their small-scale artisanal hook-and-line fisheries. For Vietnam, the main data gap is the complete lack of historical annual catch estimates prior to 2000, and the need to improve the coverage of logbook data.

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1. INTRODUCTION

1. The obligations for provision of scientific data to the Commission are set out in the Scientific Committee (SC) documentation "*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) which 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*" were incorporated as ANNEX 1 of "*Scientific Data to be Provided to the Commission*" which was further refined and subsequently adopted at the Fourth Regular Session of the Commission, Tumon, Guam, USA, 2-7 December 2007 (Anon, 2007). The most recent revisions (covering the inclusion of catch estimates of key shark species and specifying the size class intervals for size data) were adopted at the Seventh Regular Session of the Commission (WCPFC7), Honolulu, Hawaii, 6–10 December 2011 (Anon. 2011), the Ninth Regular Session of the Commission (WCPFC9), Manila, Philippines, 6–10 December 2012 (Anon. 2012) and the Tenth Regular Session of the Commission (WCPFC10), Cairns, Australia 2–6 December 2013 (Anon. 2013), and can be found at http://www.wcpfc.int/guidelines-procedures-and-regulations, or more specifically at http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9.

2. 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.

3. While the catch, effort 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 these important data gaps, and to present information on the coverage of scientific data held by the WCPFC.

4. A system to review the provisions of scientific data to the WCPFC and highlight data gaps on the Commission's web site was initially developed prior to SC4 (refer to http://www.wcpfc.int/status-data-provision). 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 Commission members and co-operating non-members (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.

5. 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.

6. The WCPFC Data Catalogue has been updated on the WCPFC web site (http://www.wcpfc.int/wcpfc-data-catalogue-0) to cover the 2013 data provisions. This facility provides a description of the WCPFC data holdings by gear, species and data type (annual catch estimates, aggregate catch and effort data, operational catch/effort data and aggregated size data). The WCPFC Data Catalogue will continue to be enhanced in the coming years, as required. An indication of the coverage of aggregate catch and effort data, operational logsheet (catch and effort) data, unloadings data, port sampling data and observer data held by the OFP can also be viewed at http://www.spc.int/oceanfish/en/ofpsection/data-management/wcpfc/213/146-wcpo-tuna-fishery-data-coverage. It is expected that the data coverage facility will be enhanced and transferred to the Commission's web site at some stage in the future.

7. In regards to the tier-scoring evaluation for submitting scientific data to the Commission, the Tenth meeting of the Technical and Compliance Committee of the WCPFC (TCC10 – Pohnpei, Sept. 2014) reviewed a request to consider a tiered-scoring system to better reflect the magnitude and severity of the implications of the lack of scientific data provisions, and directed the SPC to produce an outline of how this system might work:

> ***"Para. 256. TCC10 requested SPC to develop a working paper on tiered scoring system to reflect the magnitude of implications of data gaps and report back to WCPFC11." (Anon., 2014a)***

8. A paper by SPC on a proposed tier-scoring system was considered at WCPFC11 and the SPC was directed by WCPFC11 (Anon, 2014b) to consider this system for the data gaps paper (this paper) prepared for SC11. The ANNEX of this paper briefly outlines the methodology for undertaking the tier-scoring evaluation of the 2014 scientific data submissions by CCMs, which is included in several tables (for 2014 data) in this paper.

2. STATUS OF DATA GAPS

9. 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), SC5 (OFP, 2009), SC6 (Williams, 2010), SC7 (Williams, 2011), SC8 (Williams, 2012), SC9 (Williams, 2013) and SC10 (Williams, 2014).

10. The following sections describe the most important current gaps in the WCPFC scientific data holdings. The text in *blue italics* reflects the recent work and/or developments to resolve the respective data gaps.

11. Readers are referred to previous versions of this paper for more detail on important categories of data gaps where there have not been any new developments over the past year. These sections will continue to be referenced in future versions of this paper when there are new developments and until they are resolved. Specifically, please refer to **Williams (2014)** for more detail on the following issues:

- Major data gaps for key fleets
  - Chinese Taipei STLL fleet prior to 2004 (Section 2.1.4)
  - Japanese pole-and-line fleet prior to 1972 (Section 2.1.4)
  - Japanese Coastal longline fleet prior to 1994 (Section 2.1.4)
- Coverage rates (Section 2.2)
- Nationality of the catch (Section 2.3)
- Aggregate catch and effort data (Section 2.6)
- Species composition data for purse seiners (Section 2.8 and Hampton & Williams, 2015)

2.1 Major data gaps for key fleets

2.1.1 Philippines tuna fishery data

12. During the past year, the WCPFC Secretariat and the SPC/OFP continued to work with their Philippine counterparts to improve the data available from the Philippines domestic fisheries. The UNDP/GEF-funded West Pacific East Asia Oceanic Fisheries Management (WPEA[3]) project, which is supporting this work, terminated in 2013, but additional bridging funds allowed work to continue during 2014 and the second WPEA project has now commenced. Significant progress has been made over the past 5 years with several important data gaps resolved.

[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

13. Significant developments in resolving data gaps in the Philippines' domestic fisheries over the past year include:

- *The Eighth Philippines Annual Catch Estimates Review Workshop (Anon, 2015a) was convened and attended by important stakeholders with knowledge and information on the tuna fisheries in the Philippines (government, industry and NGOs).*
- *Further progress was made this year on producing more reliable estimates for the municipal hook-and-line fishery, with the Philippines government committing funds to increase the monitoring of landings from this fishery in all provinces from around 100 tuna landing sites to 700+tuna landing sites. The substantial increase in data will be used in a study by Philippines University statisticians to determine the optimal coverage of sampling to implement in the future.*
- *The collection of operational logsheet data from the domestic purse seine fishery continues to progress with comprehensive data now available for 2008-2013.*
- *The coverage of logbook and observer data provided for the component of the Philippines domestic purse seine fleet fishing in the High Seas Pocket #1 was 100% for 2014 activities.*
- *Logbook data for the distant-water Philippines-flagged longline vessel (100% coverage) was provided for the first time.*

14. The most important data gaps for Philippines remain:

i. Improving logsheet coverage for the purse seine vessels fishing in the Philippines EEZ;
ii. More reliable estimates for the small-scale municipal gears;

2.1.2 Indonesian tuna fishery data

15. Prior to the WPEA project, the absence of a breakdown of annual catch estimates by gear type, the lack of operational logsheet and size data for the Indonesian domestic fisheries were amongst the most significant gaps in the provision of data to the WCPFC.

16. During the past year, with the assistance provided through the WPEA 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 Sixth Indonesia/WPCFC Area Annual Catch Estimates Review Workshop (Anon, 2015b) was conducted in Bogor, Indonesia in June 2015. Participants included the Directorate General of Capture Fisheries and the Research Center for Capture Fisheries and Marine Resources (DGCF). 2014 catch estimates by SPECIES and GEAR were compiled for the EEZ and archipelagic waters and historical estimates by GEAR and SPECIES were reviewed and refined.*
- *At this workshop, the DGCF reported a significant increase in tuna landing sites monitored and now are more independent and have more confidence in producing the estimates for each Fisheries Management Area by GEAR and SPECIES*
- *The workshop once again noted the steady increase in the provision of logbook data although these data have yet to be compiled and provided to the WCPFC.*

17. The most important data gaps for Indonesia remain:

i. The need for a detailed review of the sources of catch for several key gear types (longline, handline and pole-and-line) which would help explain the level of catch (this was a recommendation from the June 2015 workshop);
ii. Compilation and submission of available aggregate and operational catch/effort data for recent years since the logbooks became mandatory in the Indonesian domestic tuna fisheries (2011-2014).

2.1.3 Vietnamese tuna fishery data

18. Prior to the WPEA project, there were no annual catch estimates, no operational and no aggregated catch and effort data data available from Vietnam tuna fisheries, other than anecdotal information on catches

(e.g. Lewis, 2005). Since the establishment of the WPEA project, there has been considerable progress in Vietnam to establish data collection and management systems for their tuna fisheries and it has ultimately resulted in the submission of, *inter alia*, annual catch estimates to the WCPFC for the first time over recent years.

19. Operational logbook and size data continued to be collected from Vietnam tuna fisheries and data summaries for 2014 activities and have been prepared/included (with provisional annual catch estimates) into the 2014 Vietnam WCPFC Annual Report Part 1. However, at this stage, Vietnam has yet to authorise the inclusion of these data into the WCPFC data holdings. The next Vietnam annual catch estimates workshop is schedule for late 2015.

20. The most important data gaps for Vietnam remain:

i. the construction of historical annual catch estimates for each of the domestic Vietnamese fisheries prior to 2000;
ii. the compilation and provision of aggregate and operational catch/effort data from the longline fishery from logbooks collected since 2011;
iii. the establishment of logbook data collection for the purse seine and gillnet fisheries.

2.2 Operational catch and effort data

21. 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, but only one coastal state currently provides foreign-fleet operational data to the WCPFC. 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.

22. 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 used in WCPFC stock assessments. 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, which is fundamental work of the Commission.

23. The SC9 reiterated the important implications of the ongoing failure in the provision of operational data for the Commission's science listed in last year's data gaps paper [**see Williams (2013) para 34**]. Further, the independent review of the 2011 bigeye stock assessment (Ianelli et al., 2012) recommended the need to have arrangements for access to operational data from all fleets to identify changes in targeting and year-area interactions, analyses that cannot be undertaken with aggregate data. Williams (2014) provides further information on the WCPFC deliberations and decisions related to the provision of operational data.

24. Significant progress has been made with the provision of historical operational data over the past few years (see Section 3.3 below and Table 5 in this paper, and previous versions of this paper). Significant developments during the past year include:

- *Provision of operational data for the Korean Longline fleet for 2014;*
- *Provision of operational data for the Korean Purse seine fleet for 2014;*
- *Provision of operational data for the China Longline fleet for 2014 (although coverage is low);*

25. The operational catch and effort data for the Korean longline and purse seine (2014) and the China longline fleets (2014) were made available for the first time, and were by far the most significant developments in resolving data gaps over the past year. The intent in providing these data is very positive and we look forward to the provision of historical operational data for these fleets in the future (to resolve the gap in historical data provision). **There are now only two CCMs (Japan and Chinese Taipei) with non-domestic fleets operating throughout the WCPFC area which have yet to provide operational catch/effort data to the WCPFC.**

26. For the countries yet to provide operational data to the WCPFC, there have been some positive developments in arranging for the WCPFC scientific service providers access to operational data in a collaborative study (see OFP, 2015a and OFP, 2015b). However, these opportunities are time-limited, incur additional costs and resources, and do not provide the necessary long-term access or time required to satisfy the wide range of Commission work that can only be achieved with substantially more access to the operational data.

2.3 Annual catch estimates by EEZ

27. Section 4 of the *Scientific Data to be provided to the Commission* (i.e. Catch and effort data aggregated by time period and geographic area) indicates that -

> *"If the coverage rate of the operational catch and effort data that are provided to the Commission is less than 100%, then catch and effort data that have been raised to represent the total catch and effort shall also be aggregated by periods of year and areas of national jurisdiction and high seas within the WCPFC Statistical Area."*

28. Developments during the past year include:

- *The provision of operational catch/effort data by Korea (see Section 2.2) for 2014 now excludes them from having to provide annual catch estimate by EEZ for 2014, since annual catch estimates by EEZ can be determined from their operational data.*
- *The provision of operational catch/effort data by China (see Section 2.2) for 2014 would normally exclude them from providing annual catch estimate by EEZ for 2014, but the coverage of their operational data is very low, which is insufficient to produce accurate Annual catch estimates by EEZ/high seas areas for 2014, so this data gap remains valid.*

29. Several CCMs have not provided **HISTORICAL** operational catch and effort data and so are obliged under this requirement of the data provision rules to provide catch (by species) and effort data aggregated by YEAR and EEZ/High seas areas to the WCPFC until such time as operational data are provided (**see Tables 3 and 4**).

2.4 Number of vessels in the aggregate data

30. 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 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 of the rules), 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."***

31. 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.

32. The status of the provision of "number of individual vessels per stratum" for those CCMs that only provide aggregate data before this year is listed in Williams (2014) – Section 2.7. Developments during the past year include:

- *China provided operational LONGLINE catch/effort logsheet data for 2014 in its WCPFC data provision this year and this submission removes the need to provide the number of vessels in their aggregate data. However, coverage of their 2014 operational data is very low, so this data gap is maintained, as is this data gap for previous years.*
- *Korea provided operational LONGLINE and PURSE SEINE catch/effort logsheet data for 2014 in its WCPFC data provision this year and this submission removes the need to provide the number of vessels in their aggregate data. However, this data gaps is maintained for previous years' data (that is, until such time as operational data is provided for previous years).*

33. With the recent provision of additional information from key fleets on vessel numbers and advice on whether to apply the 'three-vessel' rule to their aggregate data (see letters in the APPENDIX), the method of compiling the WCPFC public domain data will be reviewed during the coming year in an attempt to provide a more useful version, at least for more recent years[4] (see https://www.wcpfc.int/node/4648).

2.5 Key shark species

34. The requirement to submit annual catch estimates, aggregate and operational catch data for key shark species has now been in force for several years and the quality and coverage of data continues to improve as the implementation of logbooks catering for this level of reporting is well advanced and CCMs are better equipped at collecting and managing these data.

35. However, there remain gaps in the submission of key shark species catch data and the following highlight some procedural matters for consideration:

- A number of coastal states have now implemented the new, extended longline logbooks which require foreign and domestic fleets fishing in their waters to report catches of shark to the species level; the implementation of logbooks by flag states on distant-water longline vessels has also been reported. While catches for shark species continue to improve there is some concern that catches may be non- or under-reported and more in-depth review/investigation is required to determine the extent of issues and the quality of the catch estimates provided. Most CCMs now submit catch for all key shark species, including legitimate instances when there was no catch of a key shark species by their fleet. In the first year of submissions, it was obvious where catch was under-reported for a key shark species in some cases, but this type of qualitative evaluation is not possible now and is considered beyond the scope of the data-gaps review process;
- Some CCMs have indicated that, since there is 100% observer coverage in the purse seine fishery, the annual catch estimates and aggregate/operational catch data for key shark species should be determined from the observer data. In these cases, no data gap has been assigned;
- Some CCMs have indicated that the WCFPC science and data service provider should use available observer and logbook data to provide a better estimate the catches of key shark species for their LONGLINE fleet. This work has been conducted in the past, but needs to be recognized as an ongoing task of the service provider.
- Improvements to the data gap notes for key shark species are suggested in Clarke (2015).

[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. The current WCFPC public domain data are essentially useless and non-representative since too many cells have been removed as a result of applying the three-vessel rule. See http://www.wcpfc.int/doc/st-wp-08/timothy-lawson-and-peter-williams-status-public-domain-catch-and-effort-data-held-weste

3. RECENT PROVISIONS OF SCIENTIFIC DATA TO THE WCPFC

36. 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 of the following year (see "Reporting obligations" at the following web page http://www.wcpfc.int/status-data-provision).

37. As noted in the introduction, the tables of data submission for 2014 presented herein now include a column with a "tier-scoring evaluation score" which will be used under the WCPFC compliance monitoring process and reviewed at TCC11 (September 2015).

3.1 Annual Catch Estimates

38. Tables 1 and 2 list the dates on which catch estimates for 2013 and 2014, respectively, were provided, and include notes on the data that have been provided, mainly highlighting gaps or problems in those data (4th column) and general notes on the data provided (5th column), and now for years 2014 onwards, an indicator for the tier-scoring evaluation level (6th column).

39. Annual catch estimates for 2013 have now been provided by all CCMs. Annual catch estimates for 2014 have now been provided by all CCMs except one (Belize–waiting confirmation on whether they actively fished in 2014).

40. The 2013 annual catch estimates for ALL CCM fleets had been provided by the 30th April 2014 deadline which was a significant achievement. For 2014 annual catch estimates, there were 31 out of 34 CCM fleets (91%) that had provided estimates by the 30 April 2015 deadline and a further 2 CCMs have since provided their estimates. Provisional estimates were initially provided by Indonesia, Philippines and Vietnam, and were updated by the former two CCMs following respective annual catch estimates workshops held in May and June 2015 (the Vietnam annual catch estimates workshop is scheduled for late 2015). Revisions to annual catch estimates were also received from other CCMs prior to July 2015, and we expect further revisions to be included in the WCFPC Part 1 Annual Reports.

41. The quality of estimates provided continues to improve with further reduction in the number of data-gap notes although the main gaps in the annual catch estimates remain:

- Issues with estimates for key shark species, and
- Issues with estimates of discards.

3.2 Aggregate Catch/Effort data

42. Tables 3 and 4 list the dates on which aggregated catch and effort data were provided for 2013 and 2014, respectively. The notes in the 4th column of the table refer to instances where the data provided do not satisfy criteria specified in the guidelines for the provision of Scientific Data to the WCPFC, and general notes on the data are provided in the 5th column (these notes are not data gap issues but are informative), and now for years 2014 onwards, an indicator for the tier-scoring evaluation level (6th column).

43. 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 2015) since they were available at that time.

44. Notable issues in aggregate catch/effort data that have been resolved in recent years include:

- *Japan has provided the catch in weight by species in their longline aggregate data provision for the first time. This provision covers years 2008-2014 and resolves a significant data gap in reconciling their aggregate data with their annual catch estimates. It is hoped that catch in weight can also be provided for their aggregate longline data prior to 2008;*
- *Japan (2008-2014) and Chinese Taipei (2012-2014) have recently provided "Annual catch estimates by areas of national jurisdiction (EEZs) and high seas".*

45. The notable gaps in the provision of 2013 and 2014 aggregate data include:

- It is not clear whether incomplete aggregate longline data for the latter months of 2014 (i.e. the most recent year) have been provided for some fleets;
- Several fleets (e.g. China and Korea) do not yet provide HISTORICAL operational data, in which case, the "*Scientific Data to be Provided to the Commission*" requires the provision of aggregate data for the "Annual catch estimates by areas of national jurisdiction (EEZs) and high seas" which have not been provided for these fleets;
- 2013 and 2014 aggregate catch and effort data for the domestic fleet from Indonesian (longline, purse seine and pole-and-line) were not provided at the time of submitting this paper. Logsheet data for these fleets are available so we hope that some aggregated data can be submitted in the future.

46. In general, the timeliness of the provision of aggregate catch/effort data continues to improve with nearly all CCMs providing data by the deadline of 30th April 2015. The quality of aggregate data provided continues to improve with a reduction in the number of notes assigned to the aggregate data in recent years.

3.3 Operational catch/effort data

47. Table 5 shows the schedule for the submissions of 2014 operational catch and effort data to the WCFPC. **Historical operational data for the Asian tuna fleets (China, Japan, Korea and Chinese Taipei) are the main data gaps.** As at July 2015, the status of the provisions of historical operational data to the WCPFC is as follows:

- *Provision of operational data for the Korean Longline and Purse seine fleets for 2014; this is the first provision of operational data by Korea and a very position sign of future intentions to provide historical operational data;*
- *Provision of operational data for the China Longline fleet for 2014 (although coverage is low); this is the first provision of operational data by China and a very position sign of future intentions to provide historical operational data;*
- Operational purse-seine logsheet data have 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;
- Operational catch and effort data for the US Hawaiian Longline fleet have now been provided for 2007-2014; Data prior to 2007 remain outstanding.
- Operational catch and effort data for the American Samoa longline fleet have now been provided for 2007-2014; Data for 2005 and 2006 remain outstanding.
- *Operational catch and effort data for the Philippines domestic purse seine fleet have now been authorized for provision to the WCPFC;*
- Operational catch and effort data for the Vietnam longline fleet are available to the WCPFC science and data service providers (SPC);
- Operational catch and effort data for the Indonesian domestic longline and purse-seine fleets are outstanding.

48. Gradual progress continues to be made in the provision of historical operational catch and effort data to the WCPFC and it is hoped that the outstanding operational catch and effort data can be provided by relevant CCMs in the near future.

3.4 Size data

49. Table 7 shows the schedule for the submissions of 2014 size data to the WCFPC. The notes in the 4th column of the table refer to instances where the data provided do not satisfy criteria specified in the guidelines for the provision of Scientific Data to the WCPFC, general notes on the data are provided in the 5th column (these notes are not data gap issues but are informative), and an indicator for the tier-scoring evaluation level (6th column).. The main gap in the provision of 2014 size data refer to lack of size data despite the flag-state obligation to provide size data to the WCPFC (although, in several instances where there are gaps, size data have been collected and made available for the fleet by Coastal states).

3.5 Regional Observer Programme (ROP) data

50. The SPC/OFP has been processing observer data on behalf of their member countries for close to 20 years and the Seventh Regular Session of the Commission (6–10 December 2011) approved the continuation of this work in respect of the Regional Observer Programme (ROP) data in the short-medium term (Anon., 2012). Williams et al. (2015) describes the recent developments, future work and initiatives with respect to ROP data management; this paper also shows the current coverage of available, processed observer data.

51. The backlog in the provision of ROP data to SPC has improved considerably, but there are still some efficiency gains to be made. SPC continues to collaborate with a number of stakeholders (e.g. national fisheries authorities, FFA and the fishing industry) in undertaking trials in observer E-Reporting and E-Monitoring which has the potential for efficiency gains in the timeliness and quality of observer data (for example, see the report from the recent WCPFC ERandEM workshop – Anon, 2015c).

52. Significant provisions of ROP data in the past year include –

- *Provision of 2013 and 2014 observer data from the Philippines National observer programme active on vessels permitted to fish in HSP1 (these data represent 100% observer coverage);*
- *Provision of 2014 ROP data for the Hawaiian and American Samoa longline vessels.*
- *Provision of longline observer trips on Chinese longline vessels covering a period of 2003-2013 (provided by China);*
- *Provision of FOUR Japanese purse seine observer trips conducted in 2014;*
- *Provision of Japanese longline observer trips conducted in 2014 to the WCFPC Secretariat*
- *Provision of Australia longline observer trips (2010-2013);*

3.6 Transmission of scientific data to the WCPFC Secretariat

53. 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) continues to be provided to the WCPFC Secretariat on a regular quarterly basis. The latest versions of WCPFC annual catch estimates, operational and aggregate catch/effort data were provided to the WCPFC Secretariat in July 2015, and the latest ROP data were downloaded to the WCPFC server in July 2015.

54. In addition to the provision of data, the WCPFC Secretariat has been the provided with the following services over the past year:

- Review of procedures and ongoing training on the TUBS data entry/management system and the Observer TUBs Reporting system was provided in March 2015. This new online observer reporting system includes a dedicated menu for CMM reporting based on ROP data to WCPFC Secretariat staff;
- The provision of the CES database system with the WCPFC data updates updated on a quarterly basis. This system is regularly updated and also available for download through a secure login/password.

4. COVERAGE RATES

55. Figures 1 and 2 present the coverage rates since 2000 for processed operational (logsheet) catch and effort data, unloadings data and observer data for the tropical purse seine and longline fisheries, respectively[5]. The coverage rates for operational data refer to the target tuna catches from individual fishing operations reported on logbooks that are held by the OFP. Coverage rates for observer data refer to the catch of target tunas that were reported by observers. Coverage rates for unloadings data refers to the landings of target tuna catch that were monitored and reported.

56. Figure 3 shows coverage rates for available aggregate and operational catch and effort data by fleet for the longline fishery covering recent years (2004–2014). Figure 4 shows coverage rates for available aggregate and operational catch and effort data by fleet for the purse-seine fishery covering recent years (2004–2014).

57. Figure 5 shows coverage rates for available size composition data by fleet for the longline fishery covering recent years (2004–2014). Figure 6 shows coverage rates for available size composition data by fleet for the purse-seine fishery covering recent years (2004–2014).

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

[5] Refer to http://www.wcpfc.int/coverage-rates-tuna-fishery-data for an explanation of how coverage is determined. Essentially, coverage estimates are determined using the annual catch estimates for target tuna species in the WCPFC Convention Area as the basis for comparison to other data types.

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ANNEX – Notes on tier-scoring evaluation system

WCPFC11 agreed to adopt the proposal to assign a tier-scoring evaluation system for the provision of scientific data to the WCPFC which clearly distinguishes between the three levels described below.[6] The tier-scoring system developed by the WCPFC science/data service provider (SPC/OFP) is a systematic process used to evaluate scientific data submissions against the requirements in the "Scientific Data to be Provided to the Commission[7]", which attempts to provide some measure of the significance of data gaps to the scientific work of the Commission.

The tier-scoring approach ranges from "LEVEL I" which indicates the most severe gap with little or no submission of data which has by far the greatest impacts on the scientific work of the Commission , and that "LEVEL III" would indicate fully satisfying the requirements for data submission.

I. No data are provided, or data have been provided but they have been evaluated as 'unusable' (instances where none of the data provided can be used in assessments). This level of data gap is the most severe and has by far the greatest impacts on the scientific work of the Commission.
II. Data have been provided, most of which can be used for the scientific work of the Commission, but (i) there are one or several (minimum-standard) data fields not provided and/or (ii) the coverage of the data is not according to the requirements. In these cases, some of the scientific work of the Commission cannot be undertaken. Within this level, further distinction on the level of data submission could be made by considering the number of missing data fields in the data provided (for example, a status of FOUR data gaps is considered more serious than a status of ONE data gap).
III. Data have been provided, there are no gaps in the (minimum standard) data fields provided and the coverage of data is sufficient to be used for undertaking the scientific work of the Commission.

It should be noted that the tier-score evaluation should not be considered a final compliance evaluation by the Commission on data gaps. However, it is recognized that the tier-score evaluation is expected to be amongst the advice and information that will be available to the TCC for its review of compliance with "Scientific data to be Provided to the Commission" decision through the WCPFC Compliance Monitoring process.

The methodology for determining the tier-scoring evaluation score listed in relevant columns of TABLES in this paper are as follows:

1. Where data have not been provided by a CCM, then a CATEGORY I level is assigned.
2. Where data provided by a CCM is deemed complete, without any gaps in (minimum standard) data fields provided, then a CATEGORY III level is assigned.
3. Where data provided by a CCM is deemed incomplete due to some fields missing, a CATEGORY II level is assigned, and the following procedures are used:
    a. The table below lists the total key attributes required in the submission of each type of scientific data.

KEY Attributes in each Scientific data type for TIER-SCORING EVALUATION					
Annual catch estimates	Aggregate catch/effort data - PS/PL	Aggregate catch/effort data - LL	Operational catch/effort data - PS/PL	Operational catch/effort data - LL	Size Data
26	26	42	28	47	9

    b. For each submission of data, the number of data field gaps are summed and subtracted from the total number of required data fields (by data type and gear) to produce a tier-scored percentage index for category II. For example, if a CCM submitted aggregate longline catch/effort data but did not include the catches of two key shark species (catch in weight and number = four data field gaps), then the tier-scored percentage index would be (42-4)/42 = 90%, and the assignment would be CATEGORY II (90%).
4. The required coverage of OPERATIONAL DATA is 100% and the coverage for each CCM submission has been listed in a dedicated column for COVERAGE in Table 5. The guidelines for the submission of scientific data indicate in section "4. Catch and effort data aggregated by time period and geographic area" that:

[6] WCPFC11 adopted the tier scoring system for evaluating compliance with the provision of scientific data to the Commission, on the understanding that TCC will keep looking at the process of refining the CMR. The tiered scoring system would be sent to the SC for its consideration.
[7] http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9

If the coverage rate of the operational catch and effort data that are provided to the Commission is less than 100%, then catch and effort data aggregated by time period and geographic area that have been raised to represent the total catch and effort shall be provided.

If the coverage rate of the operational catch and effort data that are provided to the Commission is less than 100%, then catch and effort data that have been raised to represent the total catch and effort shall also be aggregated by periods of year and areas of national jurisdiction and high seas within the WCPFC Statistical Area.

The guidelines also indicate that "*It is also recognized that certain members and cooperating non-members of the Commission may have practical difficulties in compiling operational data for fleets comprised of small vessels...*"

Instances where coverage of operational data is less than 100%, but (i) annual catch/effort estimates by geographic area have been made available and together with the operational level catch and effort data that has been submitted, is sufficient to allow the scientific work of the Commission to be undertaken, or (ii) the fleets in question are acknowledged to be "artisanal" in nature, have been distinctly highlighted in Table 5.

TABLES

Table 1. Provision of 2013 annual catches estimates to the WCPFC

COUNTRY / TERRITORY / ENTITY	GEAR(s)	Date submitted	DATA-GAP Notes	General NOTES
Australia	LL, PS, PL, HL,TR	28 Apr 2014		G, H
Belize	LL	28 Apr 2014	12, 13	
Canada	TR	03 Apr 2014		
China	LL, PS	30 Apr 2014	12, 13	
Cook Islands	LL, TR	18 Apr 2014		F, G, H
Ecuador	PS	28 Apr 2014		F
El Salvador	PS	29 Apr 2014		
Federated States of Micronesia	LL, PS	18 Apr 2014		F, G, H
Fiji Islands	LL, PL	18 Apr 2014		F, G, H
French Polynesia	LL, PL, OT	29 Apr 2014		G, H
Indonesia	LL	18 Apr 2014	11, 13	F
	PS, PL, HL, TR, OT	18 Apr 2014		F, J
Japan	PS, LL	30 Apr 2014	13	
	PL, TR, OT	30 Apr 2014		
Kiribati	LL, PS, OT	18 Apr 2014		G
Republic of Korea	LL, PS	30 Apr 2014		H
Marshall Islands	LL, PS	18 Apr 2014		F, G, H
New Caledonia	LL	18 Apr 2014		G, H
New Zealand	LL, PS, TR, PL	30 Apr 2014		G, H
Niue	LL	30 Apr 2014		D
Palau	LL, PL	30 Apr 2014		D
Papua New Guinea	LL, PS	18 Apr 2014		G, H
Philippines	PS	18 Apr 2014		F, G, H
	LL	18 Apr 2014	11, 13	F
	HL, RN, OT	18 Apr 2014		F, J
EU-Portugal	LL	29 Apr 2014	13	F
Samoa	LL	18 Apr 2014		G, H
Senegal	LL	30 Apr 2014		D
Solomon Islands	LL	18 Apr 2014		F, H, I
	PS, PL	18 Apr 2014		H
EU-Spain	LL	29 Apr 2014	14	
	PS	29 Apr 2014	13	
Chinese Taipei	LL, PS	18 Apr 2014		
Tokelau	OT	18 Apr 2014		F
Tonga	LL	18 Apr 2014		G, H
Tuvalu	LL, PS	30 Apr 2014		G, H
United States	LL, PS, TR, HL, PL	29 Apr 2014		G, H
Vanuatu	LL, PS	18 Apr 2014		G, H
Vietnam	LL	18 Apr 2014	11	F, J
	GN, PS	18 Apr 2014	11	F, J
Wallis and Futuna	LL	30 Apr 2014		D

DATA-GAP NOTES

1	Total annual catches were provided by SPECIES, but not broken down by GEAR.
2	Marlin catch estimate not provided to the species level.
3	Coverage of data used to determine estimates not provided
4	Type(s) of data used to determine estimates not provided
5	Methods used to determine estimates not provided
6	Breakdown of active vessels by GRT size class not provided
7	Swordfish catch estimates only provided
8	Billfish catch estimates not provided for the longline gear
9	Estimates of all main tuna species not provided
10	Estimates exclude archipelagic waters catches
11	Estimates of shark catch by species have NOT been provided
12	Estimates of shark catch by SPECIES provided, but not for all KEY species taken by this fleet
13	Estimates of DISCARDs not provided
14	Estimates of ALBACORE, SWORDFISH and STRIPED MARLIN for the South Pacific Ocean have NOT been provided

GENERAL NOTES

A	Catches were estimated by the SPC/OFP while assisting with the preparation of the national fisheries report.
B	Catch estimates were taken from the national fisheries report presented at the meeting of the Scientific Committee.
C	Total annual catches can be determined by aggregating operational data that were provided on this date.
D	Fleet(s) inactive for this calendar year in the WCPFC Convention Area
E	National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
F	Provisional estimates initially provided, and final estimates provided prior to SC10.
G	Estimates of all KEY shark species have been provided in AGGREGATE catch/effort data, OPERATIONAL catch/effort data and/or OBSERVER data provisions
H	Estimates of DISCARDs provided in AGGREGATE catch/effort data, OPERATIONAL catch/effort data or OBSERVER data provisions
I	Pending resolution of attribution of catches according to CHARTER arrangements
J	No Discards reported - advised that full retention is assumed in these fisheries.

Table 2. Provision of 2014 annual catches estimates to the WCPFC

COUNTRY / TERRITORY / ENTITY	GEAR(s)	Date submitted	DATA-GAP Notes	General NOTES	TIER-SCORING EVALUATION LEVEL
Australia	LL, PS, PL, HL,TR	29 Apr 2015		G, H	III
Belize	LL				I
Canada	TR	11 Apr 2015			III
China	LL, PS	30 Apr 2015	6, 12, 13		II (73%)
Cook Islands	LL, TR	20 Apr 2015		F, G, H	III
Ecuador	PS	30 Apr 2015		F	III
El Salvador	PS	18 Apr 2015			III
Federated States of Micronesia	LL, PS	20 Apr 2015		F, G, H	III
Fiji Islands	LL, PL	20 Apr 2015		F, G, H	III
French Polynesia	LL, PL, OT	20 Apr 2015		G, H	III
Indonesia	LL	26 May 2015	6, 11, 13	F	II (65%)
	PS, PL, HL, TR, OT	26 May 2015	6	F, J	II (96%)
Japan	PS, LL	27 Apr 2015	13	C	II (96%)
	PL, TR, OT	27 Apr 2015			III
Kiribati	LL, PS, OT	20 Apr 2015		G, H	III
Republic of Korea	LL, PS	30 Apr 2015		H	III
Marshall Islands	LL, PS	20 Apr 2015		F, G, H	III
New Caledonia	LL	20 Apr 2015		G, H	III
New Zealand	LL, PS, TR, PL	30 Apr 2015		G, H	III
Niue	LL	20 Apr 2015		D	III
Palau	LL, PL	20 Apr 2015		D	III
Papua New Guinea	LL, PS	20 Apr 2015		G, H	III
Philippines	PS	20 Apr 2015		F, G, H	III
	LL	20 Apr 2015		F, G	III
	HL, RN, OT	20 Apr 2015		F, J	III
EU-Portugal	LL	30 Apr 2015	13	F	II (96%)
Samoa	LL	20 Apr 2015		G, H	III
Senegal	LL	30 Apr 2015		D	III
Solomon Islands	LL	20 Apr 2015		F, H	III
	PS, PL	20 Apr 2015		H	III
EU-Spain	LL	30 Apr 2015			III
	PS	30 Apr 2015			III
Chinese Taipei	LL, PS	30 Apr 2015			III
Tokelau	OT	20 Apr 2015			III
Tonga	LL	20 Apr 2015		G, H	III
Tuvalu	LL, PS, OT	20 Apr 2015		G, H	III
United States	LL, PS, TR, HL, PL	29 Apr 2015		G, H	III
Vanuatu	LL, PS	20 Apr 2015		G, H	III
Vietnam	LL	04 Jul 2015	6, 11		II (69%)
	GN, PS	04 Jul 2015	6, 11		II (69%)
Wallis and Futuna	LL	20 Apr 2015		D	III

DATA-GAP NOTES

1	Total annual catches were provided by SPECIES, but not broken down by GEAR.
2	Marlin catch estimate not provided to the species level.
3	Coverage of data used to determine estimates not provided
4	Type(s) of data used to determine estimates not provided
5	Methods used to determine estimates not provided
6	Breakdown of active vessels by GRT size class not provided
7	Swordfish catch estimates only provided
8	Billfish catch estimates not provided for the longline gear
9	Estimates of all main tuna species not provided
10	Estimates exclude archipelagic waters catches
11	Estimates of shark catch by species have NOT been provided
12	Estimates of shark catch by SPECIES provided, but not for all KEY species taken by this fleet
13	Estimates of DISCARDs not provided
14	Estimates of ALBACORE, SWORDFISH and STRIPED MARLIN for the South Pacific Ocean have NOT been provided

GENERAL NOTES

A	Catches were estimated by the SPC/OFP while assisting with the preparation of the national fisheries report.
B	Catch estimates were taken from the national fisheries report presented at the meeting of the Scientific Committee.
C	Total annual catches can be determined by aggregating operational data that were provided on this date.
D	Fleet(s) inactive for this calendar year in the WCPFC Convention Area
E	National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
F	Provisional estimates initially provided, and final estimates provided prior to SC11.
G	Estimates of all KEY shark species have been provided in AGGREGATE catch/effort data, OPERATIONAL catch/effort data and/or OBSERVER data provisions
H	Estimates of DISCARDs provided in AGGREGATE catch/effort data, OPERATIONAL catch/effort data or OBSERVER data provisions
I	Pending resolution of attribution of catches according to CHARTER arrangements
J	No Discards reported - advised that full retention is assumed in these fisheries.

TIER-SCORING EVALUATION LEVEL

I	No data are provided, or data have been provided but they have been evaluated as 'unusable' (instances where none of the data provided can be used in assessments). This level of data gap is the most severe and has by far the greatest impacts on the scientific work of the Commission.
II	Data have been provided, most of which can be used for the scientific work of the Commission, but (i) there are one or several (minimum-standard) data fields not provided and/or (ii) the coverage of the data is not according to the requirements. In these cases, some of the scientific work of the Commission cannot be undertaken. The % value assigned in this category represents the estimated proportion of the key attribute data provided compared to the full set of key attribute data required as stipulated in the the WCPFC data submission guidelines.
III	Data have been provided, there are no gaps in the data provided and the coverage of data is according to the requirements.

Table 3. Provision of 2013 Aggregated catch and effort data to the WCPFC

COUNTRY / ENTITY	GEAR TYPE	Date Submitted	DATA-GAP Notes	General NOTES
Australia	LL, PL, PS, TR	28 Apr 2014		C,I
Belize	LL	28 Apr 2014	18, 19	
Canada	TR	03 Apr 2014		
China	LL (DWFN)	30 Apr 2014	10, 18, 19, 20	
	LL (offshore)	30 Apr 2014	10, 18, 19, 20	
	PS	30 Apr 2014	6, 8, 9, 13, 19, 20	D
Cook Islands	LL, TR	30 Apr 2014		J, I
Ecuador	PS	28 Apr 2014		C
El Salvador	PS	29 Apr 2014		C
Federated States of Micronesia	LL, PS	30 Apr 2014	21	J
Fiji Islands	LL, PL	30 Apr 2014	21	J
French Polynesia	LL	29 Apr 2014		J
Indonesia	LL, PS, PL			
	HL, TR, GN, OT			N
Japan	LL	30 Apr 2014	22	A, F,H, I, L
	PL	30 Apr 2014		L
	PS	30 Apr 2014		L
Kiribati	LL, PS	30 Apr 2014	21	J
Marshall Islands	LL, PS	30 Apr 2014	21	J
New Caledonia	LL	30 Apr 2014		J, I
New Zealand	LL, PL, HL, PS	30 Apr 2014		C,I
Niue	LL	30 Apr 2014		E
Palau	LL, PL	30 Apr 2014		E
Papua New Guinea	LL, PS	30 Apr 2014		J, I
Philippines	PS	30 Apr 2014	21	M
	LL			
	HL, RN, OT			N
EU-Portugal	LL	29 Apr 2014	1, 10, 12, 22	C, F
Republic of Korea	LL	30 Apr 2014	19	F
	PS	30 Apr 2014	13, 19	
Samoa	LL	30 Apr 2014		J, I
Senegal	LL	30 Apr 2014		E
Solomon Islands	LL	30 Apr 2014	21	K
	PL, PS	30 Apr 2014		J
EU-Spain	LL	29 Apr 2014	1, 10, 22	C, F
	PS	29 Apr 2014		C
Chinese Taipei	LL (DWFN)	30 Apr 2014	22	F, H, I, L
	LL (small)	30 Apr 2014		F, H, I, L
	PS	30 Apr 2014	13	L
Tonga	LL	30 Apr 2014		J, I
Tuvalu	LL, PS	30 Apr 2014	21	J
United States	LL (American Samoa)	29 Apr 2014		B, I
	LL (Hawaii)	29 Apr 2014		B, I
	PS (Treaty)	29 Apr 2014		J
	TR (North Pacific)	29 Apr 2014		B
	TR (South Pacific)	29 Apr 2014		B
Vanuatu	LL, PS	30 Apr 2014	21	J
Vietnam	LL, GN	30 Apr 2014	21	M
	PS			N
Wallis and Futuna	LL	30 Apr 2014		E

DATA-GAP 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	The 5°x5°/month Longline catch and effort data are not stratified by "Hooks between Floats"
11	Coverage of data provided is less than 50%
12	No breakdown of Billfish species catch provided
13	The estimation of bigeye in the reported yellowfin-plus-bigeye catch has not been undertaken in these data
14	The spatial aggregation is non-standard (must be 5°x5° for Longline; 1°x1° for surface fisheries)
15	Data have not been "raised" to represent total catch and effort
16	Species composition of main tuna species catch does correspond to annual catch estimates
17	Aggregate data provided for the WCPO area (Pacific Ocean west of 150°W) and not the WCPFC Convention Area
18	Catches of KEY shark species have been provided, but (i) not all KEY SPECIES COVERED, and/or (ii) COVERAGE of shark species catches is considered LOW.
19	Annual Catch and Effort estimates by areas of national jurisdiction (EEZs) and High Seas have NOT BEEN PROVIDED.
20	Vessel numbers by YEAR, MONTH and AREA used to filter public domain data have NOT BEEN PROVIDED
21	Catches of KEY shark species have not been provided, but can potentially be estimated from observer data.
22	Aggregate Catch/Effort data for ALBACORE, SWORDFISH and STRIPED MARLIN for the south Pacific Ocean east of the WCPFC Area have NOT been provided

GENERAL NOTES

A	Unraised data stratified by 5°x5°, month and hooks between floats were also provided
B	National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
C	Aggregate data not provided, but have been generated from Operational data submitted to the WCPFC.
D	Aggregate data not provided or incomplete, but have been generated from annual catch estimates and operational data made available by the Coastal States.
E	This fleet was inactive in the WCPFC Convention Area.
F	Distant-water longline fleet data do not cover the entire Pacific Ocean (required for stock assessments of certain species)
G	Represents a combination of data provided by the flag state (for domestically-based vessels) and coastal states
H	Vessel numbers per Month and Area provided.
I	Catches of KEY shark species provided in their AGGREGATE data
J	Aggregate data have been generated from annual catch estimates and operational data made available to the SPC by their member countries through national bilateral agreements or subregional arrangements (e.g. the US Multilateral Purse Seine treaty managed by FFA).
K	Pending resolution of attribution of catches according to CHARTER arrangements
L	Annual Catch and Effort estimates by areas of national jurisdiction (EEZs) and High Seas HAVE BEEN PROVIDED.
M	Aggregate data not provided, but have been generated from Annual catch estimates and operational data provided to SPC directly for stock assessments.
N	"It is recognized that certain members and cooperating non-members of the Commission may have practical difficulties in compiling operational data for fleets comprised of small vessels."

Table 4. Provision of 2014 Aggregated catch and effort data to the WCPFC

COUNTRY / ENTITY	GEAR TYPE	Date Submitted	DATA-GAP Notes	General NOTES	TIER-SCORING EVALUATION LEVEL
Australia	LL, PL, PS, TR	29 Apr 2015		C,I	III
Belize	LL	30 Apr 2015		D	III
Canada	TR	11 Apr 2015			III
China	LL (DWFN)	30 Apr 2015	18, 20		II (88%)
	PS	30 Apr 2015	19, 20, 24	D	II (88%)
Cook Islands	LL, TR	30 Apr 2015		J, I, O	III
Ecuador	PS	30 Apr 2015		C	III
El Salvador	PS	18 Apr 2015		C	III
Federated States of Micronesia	LL, PS	30 Apr 2015		J, O	III
Fiji Islands	LL, PL	30 Apr 2015		J, O	III
French Polynesia	LL	30 Apr 2015		J, O	III
Indonesia	LL, PS, PL			Q	I
	HL, TR, GN, OT			N, Q	I
Japan	LL	27 Apr 2015	22	A, F,H, I, L	II (98%)
	PL	27 Apr 2015		L	III
	PS	27 Apr 2015		L	III
Kiribati	LL, PS	30 Apr 2015		J, O	III
Marshall Islands	LL, PS	30 Apr 2015		J, O	III
New Caledonia	LL	30 Apr 2015		J, I, O	III
New Zealand	LL, PL, HL, PS	30 Apr 2015		C,I	III
Niue	LL	30 Apr 2015		E	III
Palau	LL, PL	30 Apr 2015		E	III
Papua New Guinea	LL, PS	30 Apr 2015		J, I, O	III
Philippines	PS	30 Apr 2015		M, Q	III
	LL	30 Apr 2015		M, O, Q	III
	HL, RN, OT			N, Q	I
EU-Portugal	LL	30 Apr 2015	1, 10	C, F	II (88%)
Republic of Korea	LL	30 Apr 2015		P	III
	PS	30 Apr 2015		P	III
Samoa	LL	30 Apr 2015		J, I, O	III
Senegal	LL	30 Apr 2015		E	III
Solomon Islands	LL	30 Apr 2015		J, K, O	III
	PL, PS	30 Apr 2015		J	III
EU-Spain	LL	30 Apr 2015	1, 10, 22	C, F	II (88%)
	PS	30 Apr 2015		C	III
Chinese Taipei	LL (DWFN)	30 Apr 2015		H, I, L	III
	LL (small)	30 Apr 2015		H, I, L	III
	PS	30 Apr 2015		L	III
Tonga	LL	30 Apr 2015		J, I, O	III
Tuvalu	LL, PS	30 Apr 2015		J, O	III
United States	LL (American Samoa)	29 Apr 2015		B, I	III
	LL (Hawaii)	29 Apr 2015		B, I	III
	PS (Treaty)	29 Apr 2015		J	III
	TR (North Pacific)	29 Apr 2015		B	III
	TR (South Pacific)	29 Apr 2015		B	III
Vanuatu	LL, PS	30 Apr 2015		J, O	III
Vietnam	LL	30 Apr 2015	11, 23	M, Q	II (50%)
	PS, GN	30 Apr 2015	11	M, Q	II (50%)
Wallis and Futuna	LL	30 Apr 2015		E, O	III

DATA-GAP 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	The 5°x5°/month Longline catch and effort data are not stratified by "Hooks between Floats"
11	Coverage of data provided is less than 50%
12	No breakdown of Billfish species catch provided
13	The estimation of bigeye in the reported yellowfin-plus-bigeye catch has not been undertaken in these data
14	The spatial aggregation is non-standard (must be 5°x5° for Longline; 1°x1° for surface fisheries)
15	Data have not been "raised" to represent total catch and effort
16	Species composition of main tuna species catch does correspond to annual catch estimates
17	Aggregate data provided for the WCPO area (Pacific Ocean west of 150°W) and not the WCPFC Convention Area
18	Catches of KEY shark species have been provided, but (i) not all KEY SPECIES COVERED, and/or (ii) COVERAGE of shark species catches is considered LOW.
19	Annual Catch and Effort estimates by areas of national jurisdiction (EEZs) and High Seas have NOT BEEN PROVIDED.
20	Vessel numbers by YEAR, MONTH and AREA used to filter public domain data have NOT BEEN PROVIDED
21	Catches of KEY shark species have not been provided, but can potentially be estimated from observer data.
22	Aggregate Catch/Effort data for ALBACORE, SWORDFISH and STRIPED MARLIN for the south Pacific Ocean east of the WCPFC Area have NOT been provided
23	Catches of KEY shark species have not been provided.
24	Effort in SETS by SET TYPE not provided for PURSE SEINE data

GENERAL NOTES

A	Unraised data stratified by 5°x5°, month and hooks between floats were also provided
B	National legislation (or policy) requires that time/area strata comprising data for less than three vessels can not be disseminated.
C	Aggregate data not provided, but have been generated from Operational data submitted to the WCPFC.
D	Aggregate data not provided or incomplete, but have been generated from annual catch estimates and operational data made available by the Coastal States.
E	This fleet was inactive in the WCPFC Convention Area.
F	Distant-water longline fleet data do not cover the entire Pacific Ocean (required for stock assessments of certain species)
G	Represents a combination of data provided by the flag state (for domestically-based vessels) and coastal states
H	Vessel numbers per Month and Area provided.
I	Catches of KEY shark species provided in their AGGREGATE data
J	Aggregate data have been generated from annual catch estimates and operational data made available to the SPC by their member countries through national bilateral agreements or subregional arrangements (e.g. the US Multilateral Purse Seine treaty managed by FFA).
K	Pending resolution of attribution of catches according to CHARTER arrangements
L	Annual Catch and Effort estimates by areas of national jurisdiction (EEZs) and High Seas HAVE BEEN PROVIDED.
M	Aggregate data not provided, but have been generated from Annual catch estimates and operational data provided to SPC directly for stock assessments.
N	"It is recognized that certain members and cooperating non-members of the Commission may have practical difficulties in compiling operational data for fleets comprised of small vessels."
O	Logsheet forms used by this fleet cover the collection of each of the KEY SHARK species and these logsheet data have been aggregated and provided to the WCPFC.
P	OPERATIONAL catch/effort data also provided and satisfies the requirements stipulated under AGGREGATE data.
Q	Flag State advised that there is full retention in their fishery, so no DISCARDS

TIER-SCORING EVALUATION LEVEL

I	No data are provided, or data have been provided but they have been evaluated as 'unusable' (instances where none of the data provided can be used in assessments). This level of data gap is the most severe and has by far the greatest impacts on the scientific work of the Commission.
II	Data have been provided, most of which can be used for the scientific work of the Commission, but (i) there are one or several (minimum-standard) data fields not provided and/or (ii) the coverage of the data is not according to the requirements. In these cases, some of the scientific work of the Commission cannot be undertaken. The % value assigned in this category represents the estimated proportion of the key attribute data provided compared to the full set of key attribute data required as stipulated in the the WCPFC data submission guidelines.
III	Data have been provided, there are no gaps in the data provided and the coverage of data is according to the requirements.

Table 5. Provision of 2014 Operational catch and effort data to the WCPFC

					TIER-SCORING EVALUATION LEVEL	
FLAG STATE / ENTITY	GEAR(s)	Date Submitted	DATA-GAP Notes	General NOTES	KEY ATTRIBUTES	COVERAGE
Australia	LL, PL, PS, TR	29 Apr 2015		E	III	100%
Belize	LL	30 Apr 2015		I	III	100%
Canada	TR			A	III	N/A
China	LL	30 Apr 2015	4, 6, 7, 8	L	II (32%)	15%
	PS				I	0%
Cook Islands	LL, TR	30 Apr 2015		C, J	III	100%
Ecuador	PS	30 Apr 2015			III	100%
El Salvador	PS	18 Apr 2015			III	100%
Federated States of Micronesia	LL	30 Apr 2015	11	C, J, F	III	89% *
	PS			C, J	III	100%
Fiji Islands	LL, PL	30 Apr 2015		C, J	III	100%
French Polynesia	LL	30 Apr 2015	11	C, J, F	III	75% *
	PL			G	III	0% #
	TR			G	III	0% #
Indonesia	LL, PS, PL			K	I	0%
	HL, TR, GN, OT			G, K	III	0% #
Japan	PS, PL			F	I	0%
	LL			F, L	I	0%
Kiribati	LL	30 Apr 2015	11	C, J, F	III	79% *
	PS			C, J	III	100%
Republic of Korea	LL, PS	30 Apr 2015		E, L	III	100%
Marshall Islands	LL	30 Apr 2015		C, J	III	100%
	PS			C, J	III	100%
New Caledonia	LL	30 Apr 2015		C, J	III	100%
New Zealand	LL	30 Apr 2015	11	E, F	III	65% *
	PL, TR, PS			E	III	100%
Niue	LL	30 Apr 2015		A	III	N/A
Palau	LL, PL	30 Apr 2015		A	III	N/A
Papua New Guinea	LL	30 Apr 2015	11	C, J, F	III	71% *
	PS		11	C, J, F	III	82% *
Philippines	PS	30 Apr 2015		J, K	III	100%
	LL	30 Apr 2015		J, K	III	100%
	HL, RN, OT			G	III	0% #
EU-Portugal	LL	30 Apr 2015	1, 7, 10	E	II (85%)	100%
Samoa	LL	30 Apr 2015		C, J	III	100%
Senegal	LL	30 Apr 2015		A	III	100%
Solomon Islands	LL	30 Apr 2015	6	C, J, F	III	37%
	PS		11	C, J, F	III	74% *
	PL			C, J	III	100%
EU-Spain	LL	30 Apr 2015	1, 7, 10	E	II (85%)	100%
	PS	30 Apr 2015			III	100%
Chinese Taipei	LL, PS			F, L	I	0%
Tonga	LL	30 Apr 2015		C, J	III	100%
Tuvalu	LL, PS	30 Apr 2015		C, J	III	100%
United States	LL (American Samoa)	29 Apr 2015	11	E, F	III	92% *
	LL (CNMI)	29 Apr 2015	11	E, F	III	89% *
	LL (Hawaii)	29 Apr 2015		E	III	100%
	PL, HL, TR (trop)			G	III	0% #
	PS, TR (ALB)	29 Apr 2015		B	III	100%
Vanuatu	LL	30 Apr 2015	11	C, J, F	III	84% *
	PS	30 Apr 2015		C, J	III	100%
Vietnam	LL	30 Apr 2015	6, 8	G, H, K, F	II (96%)	20%
	PS, GN	30 Apr 2015	6	G, H, K, F	II (96%)	20%
Wallis and Futuna	LL	30 Apr 2015		A	III	N/A

DATA-GAP NOTES

1	For LONGLINE GEAR - "Branchlines between floats" not provided
2	For LONGLINE GEAR - "Hooks per set" not provided
3	"Activity" not provided
4	"Time of set" not provided
5	For PURSE SEINE GEAR - categories of "School Association" were not provided
6	Coverage of data provided is < 50%
7	Discard information not included
8	Catches of KEY shark species have not been provided.
9	Catches of KEY shark species have been provided, but (i) not all KEY SPECIES COVERED, and/or (ii) COVERAGE of shark species catches is considered LOW.
10	The catch data are in units of weight (kgs or metric tonnes) only, rather than both numbers of fish and weight.
11	Coverage of data data provided is > 50% but < 100%

GENERAL NOTES

A	No activity in the WCPFC Convention Area during this year
B	Operational Logsheet data provided by FFA on behalf of their member countries on a regular basis
C	Operational Logsheet data provided to SPC by their member countries on a regular basis
D	Operational Logsheet data provided to SPC by their member countries on a regular basis, but authorisation to pass on to WCPFC yet to be provided.
E	Catches of KEY shark species have been provided
F	Coverage of operational data is not 100%, but Annual Catch and Effort estimates by areas of national jurisdiction (EEZs) and High Seas ARE AVAILABLE.
G	"It is recognized that certain members and cooperating non-members of the Commission may have practical difficulties in compiling operational data for fleets comprised of small vessels."
H	Operational Logsheet data provided to SPC for analyses related to stock assessments.
I	Operational Logsheet data provided to SPC by their member countries which are coastal states where this FLAG STATE fleet is based
J	Logsheet forms used by this fleet cover the collection of each of the KEY SHARK species.
K	Flag State advised that there is full retention in their fishery, so no DISCARDS.
L	2014 historical operational longline data were provided to SPC for a collaborative study in accordance to the agreement with respective CCMs (see SC10 report-Attachment F and OFP [2015a] and OFP [2015b].

TIER-SCORING EVALUATION LEVEL

I	No data are provided, or data have been provided but they have been evaluated as 'unusable' (instances where none of the data provided can be used in assessments). This level of data gap is the most severe and has by far the greatest impacts on the scientific work of the Commission.
II	Data have been provided, most of which can be used for the scientific work of the Commission, but (i) there are one or several (minimum-standard) data fields not provided and/or (ii) the coverage of the data is not according to the requirements. In these cases, some of the scientific work of the Commission cannot be undertaken. The % value assigned in this category represents the estimated proportion of the key attribute data provided compared to the full set of key attribute data required as stipulated in the the WCPFC data submission guidelines.
III	Data have been provided, there are no gaps in the (minimum standard) data fields provided and the coverage of data is sufficient to be used for undertaking the scientific work of the Commission.

COVERAGE

Coverage has been determined from VMS trip coverage where possible. Where VMS data are incomplete or not available, coverage has been deteremined in some cases by comparing the total target tuna catch from operational data for that gear to the total target tuna catch from ANNUAL CATCH ESTIMATES.

*	Instances where coverage of operational data is less than 100%, but annual catch/effort estimates by geographic area have been made available and together with the operational level catch and effort data that has been submitted, is sufficient to allow the scientific work of the Commission to be undertaken
#	"It is recognized that certain members and cooperating non-members of the Commission may have practical difficulties in compiling operational data for fleets comprised of small vessels."

Table 6. Provision of 2014 Size data to the WCPFC

FLAG STATE / ENTITY	GEAR(s)	Date Submitted	DATA-GAP Notes	General NOTES	TIER-SCORING EVALUATION LEVEL
Australia	LL	28 Apr 2015		B, C	III
	PL, PS, TR			J	III
Belize	LL		8	H	I
Canada	TR	11 Apr 2015		G	III
China	LL	30 Oct 2014		H	III
	PS		8	H	I
Cook Islands	LL	30 Apr 2015		A, H, K	III
Ecuador	PS		8	H	I
El Salvador	PS		8	H	I
Federated States of Micronesia	LL, PS	30 Apr 2015		A, H, I, K	III
Fiji Islands	LL, PL	30 Apr 2015		A, H, K	III
French Polynesia	LL	30 Apr 2015		A, H, K	III
	PL, TR			J	III
Indonesia	LL, PS, OT				I
Japan	PS	27 Apr 2015		A, H	III
	LL, PL	27 Apr 2015		A, H, I	III
Kiribati	LL		7		I
	PS	30 Apr 2015		A, H	III
Republic of Korea	LL, PS	30 Apr 2015		A, H	III
Marshall Islands	LL, PS	30 Apr 2015		A, H, K	III
New Caledonia	LL	30 Apr 2015		A, H, K	III
New Zealand	LL, PL, PS, TR	30 Apr 2015		A, H	III
Niue	LL	30 Apr 2015		G	III
Palau	LL, PL	30 Apr 2015		G	III
Papua New Guinea	LL, PS	30 Apr 2015		A, H	III
Philippines	PS, HL, RN, OT	30 Apr 2015		A, H, K	III
	LL		8		I
Portugal	LL		7		I
Samoa	LL	30 Apr 2015		A, H, K	III
Senegal	LL	30 Apr 2015		G	III
Solomon Islands	LL, PS, PL	30 Apr 2015		A, H	III
Spain	LL		7		I
	PS		8	H	I
Chinese Taipei	LL	30 Apr 2015		A, H, I	III
	PS	30 Apr 2015		A, H, I	III
Tonga	LL	30 Apr 2015		A, H, K	III
Tuvalu	LL, PS	30 Apr 2015		A, H	III
United States	LL (American Samoa)	29 Apr 2015		B, E, F	III
	LL (Hawaii)	29 Apr 2015		B, E, F	III
	HL	29 Apr 2015		B, E, F	III
	TR	29 Apr 2015		A	III
	PS	30 Apr 2015		A, H, K	III
Vanuatu	LL, PS	30 Apr 2015		A, H, I, K	III
Vietnam	LL	30 Apr 2015		A, K	III
	PS, GN	30 Apr 2015		A, K	III
Wallis and Futuna	LL	30 Apr 2015		G	III

DATA-GAP NOTES

1	Temporal stratification at the YEAR level has been provided only
2	Spatial stratification is larger than 10° latitude x 20° longitude
3	There is no breakdown by SCHOOL ASSOCIATION in PURSE SEINE samples provided by the FLAG STATE
4	The data were not stratified by latitide/longitude
5	LENGTH INTERVAL in data provided does not comply to WCPFC Requirements
6	WEIGHT INTERVAL in data provided does not comply to WCPFC Requirements
7	No SIZE data provided by the FLAG STATE
8	No SIZE data provided by the FLAG STATE, but SIZE data provided for this fleet by COASTAL STATES

GENERAL NOTES

A	LENGTH DATA PROVIDED and LENGTH INTERVALS comply with the WCPFC Requirements where data provided (Skipjack tuna – 1cm, Albacore tuna – 1cm, Yellowfin tuna – ideally 1cm, but not more than 2 cm, Bigeye tuna – ideally 1cm, but not more than 2 cm, Billfish – ideally 1cm, but not more than 5 cm)
B	WEIGHT DATA PROVIDED and WEIGHT INTERVALS comply with WCFPC requirements (1kgs)
C	Weights are gilled-and-gutted (kilograms)
D	Weights are gilled-and-gutted-and-tailed (kilograms)
E	Weights are gilled-and-gutted (pounds)
F	Broad areas which can be equated to 10° latitude x 20° longitude blocks were provided
G	No activity by this fleet in the WCPFC Convention Area
H	Includes data provided through the WCPFC Regional Observer Programme (ROP) data
I	Includes data collected through PORT SAMPLING by COASTAL STATES and provided to SPC on a regular basis.
J	Acknowledged to be small-scale/insignificant fisheries
K	Includes data collected through PORT SAMPLING by FLAG STATE.

TIER-SCORING EVALUATION LEVEL

I	No data are provided, or data have been provided but they have been evaluated as 'unusable' (instances where none of the data provided can be used in assessments). This level of data gap is the most severe and has by far the greatest impacts on the scientific work of the Commission.
II	Data have been provided, most of which can be used for the scientific work of the Commission, but (i) there are one or several (minimum-standard) data fields not provided and/or (ii) the coverage of the data is not according to the requirements. In these cases, some of the scientific work of the Commission cannot be undertaken. The % value assigned in this category represents the estimated proportion of the key attribute data provided compared to the full set of key attribute data required as stipulated in the the WCPFC data submission guidelines.
III	Data have been provided, there are no gaps in the data provided and the coverage of data is according to the requirements.

FIGURES

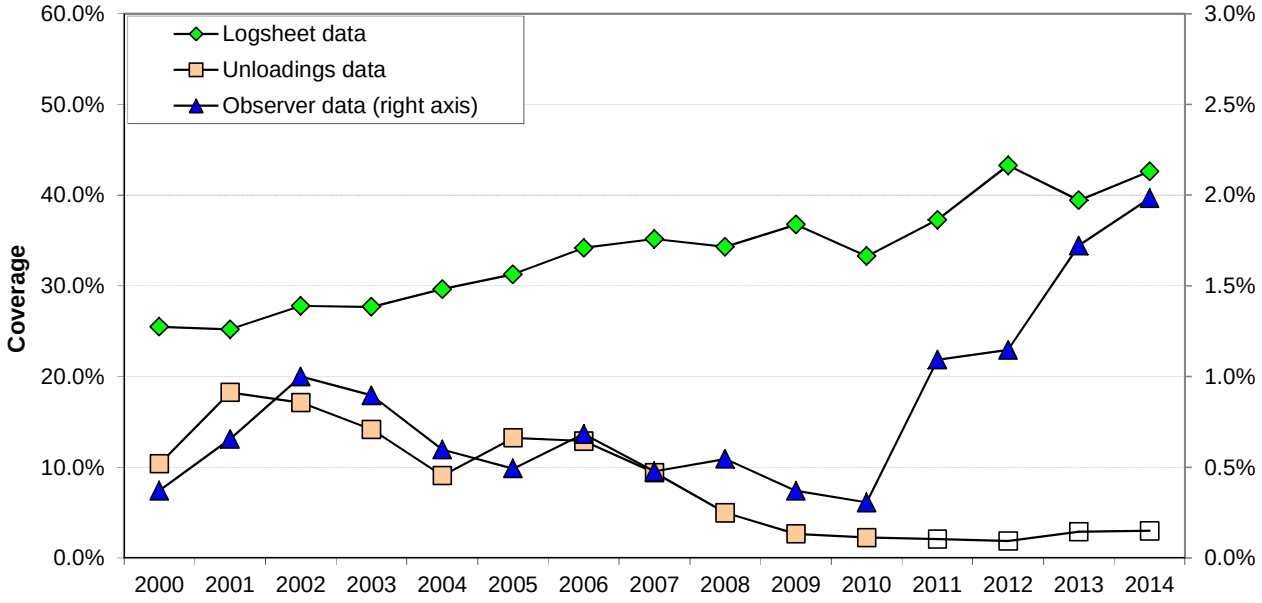

Figure 1. Annual trends in the coverage of WCPO LONGLINE data
Data held by SPC/OFP, some of which are provided to the WCFPC; 2013 and 2014 data are provisional

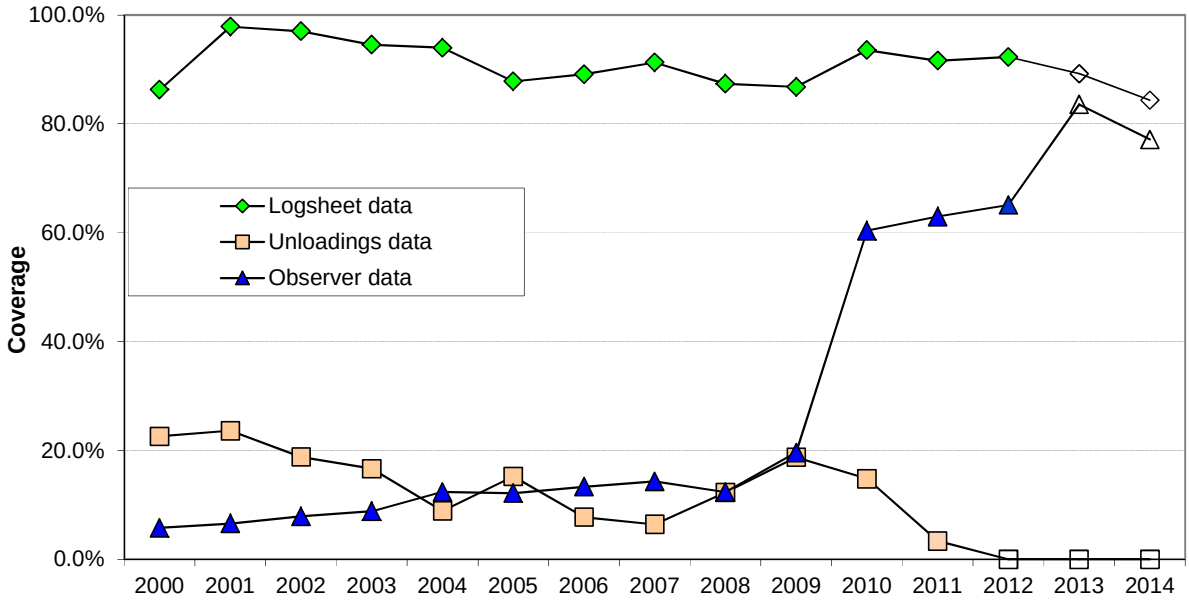

Figure 2. Annual trends in the coverage of tropical WCPO PURSE SEINE data
Purse seine tropical fishery: 20°N-20°S, excludes the domestic fisheries of Indonesia and Philippines
Data held by SPC/OFP, some of which are provided to the WCFPC; 2013 and 2014 data are provisional

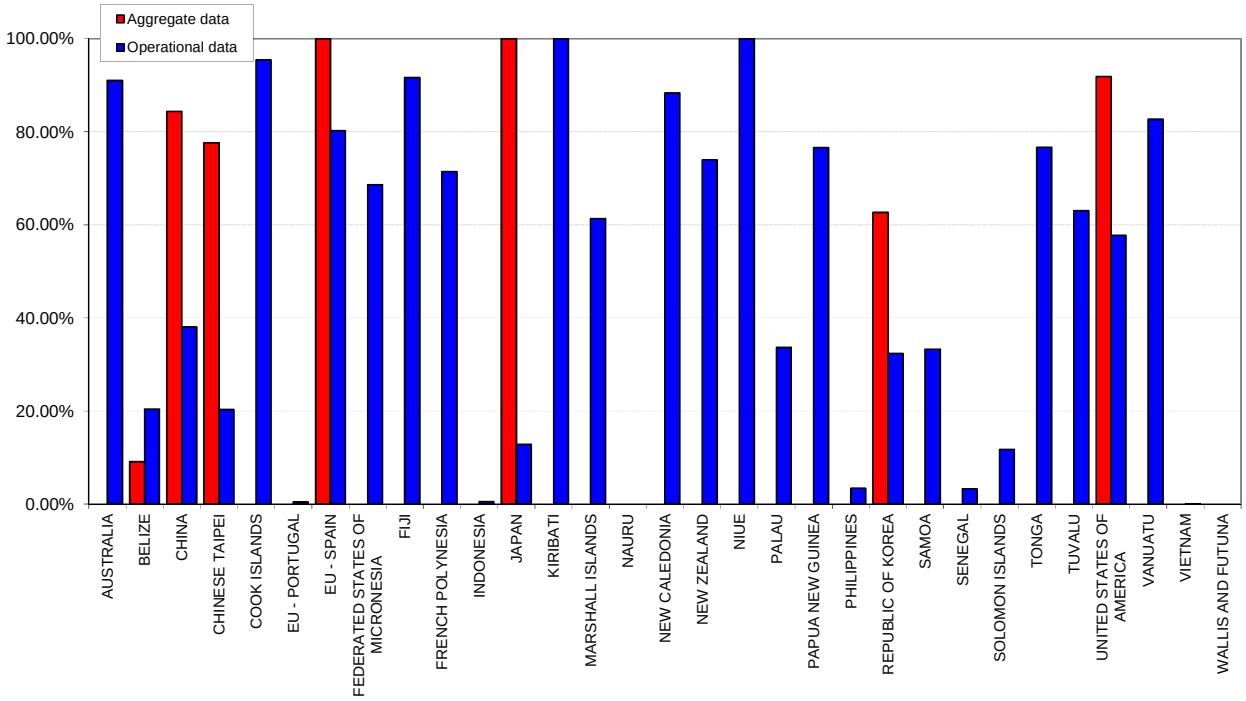

Figure 3. Coverage of (i) aggregate and (ii) operational catch/effort data by fleet from the LONGLINE FISHERY

Aggregate data provided to the WCPFC;
Operational data held by SPC/OFP, some of which are provided to the WCFPC; covers 2004–2014

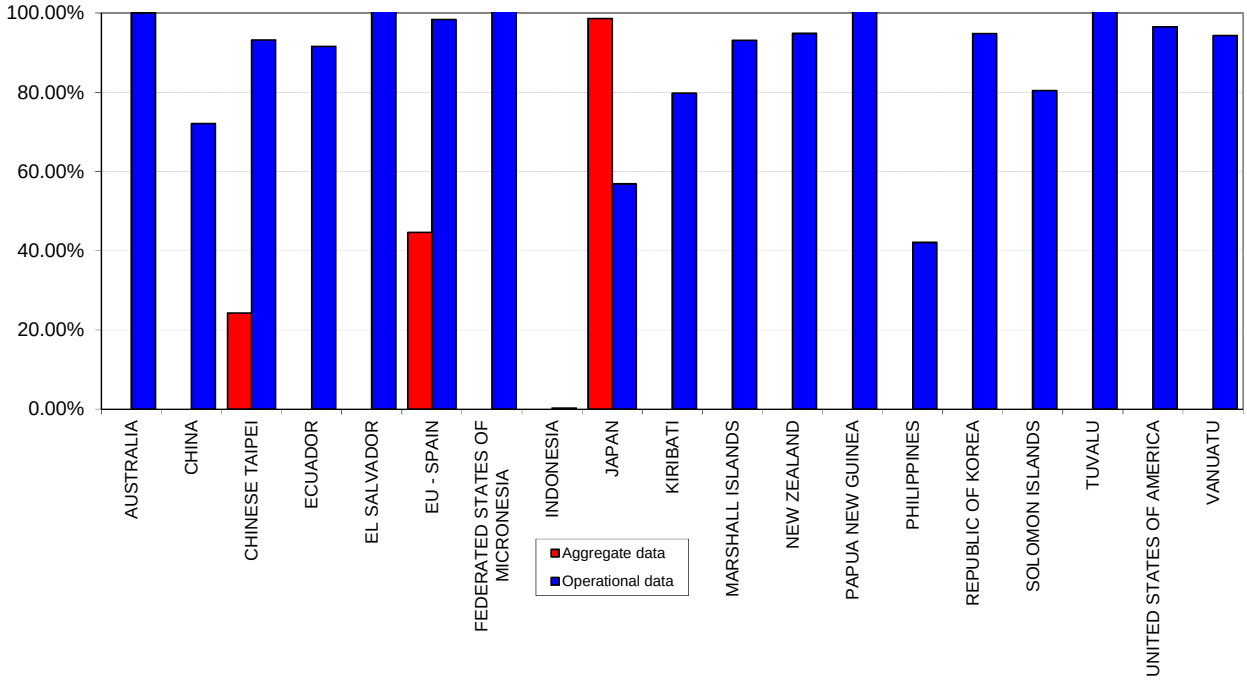

Figure 4. Coverage of (i) aggregate and (ii) operational catch/effort data by fleet from the PURSE-SEINE FISHERY

Aggregate data provided to the WCPFC;
operational data held by SPC/OFP, some of which are provided to the WCFPC; covers 2004–2014

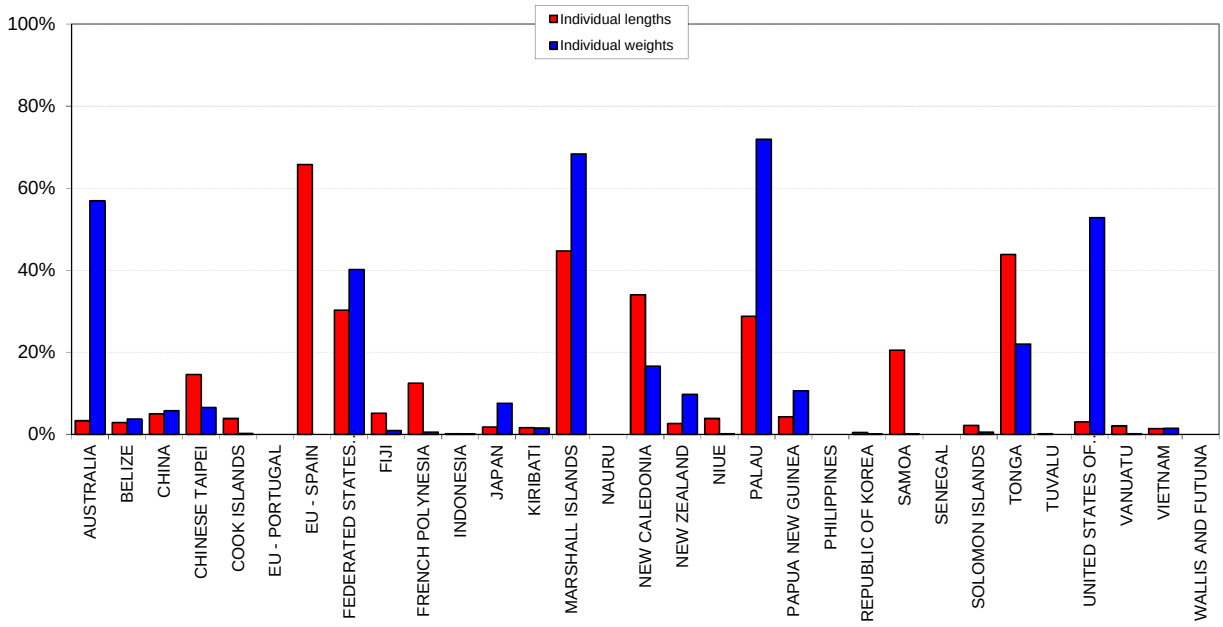

Figure 5. Coverage of size composition data by fleet from the LONGLINE FISHERY
Data provided to the WCPFC; covers 2004–2014

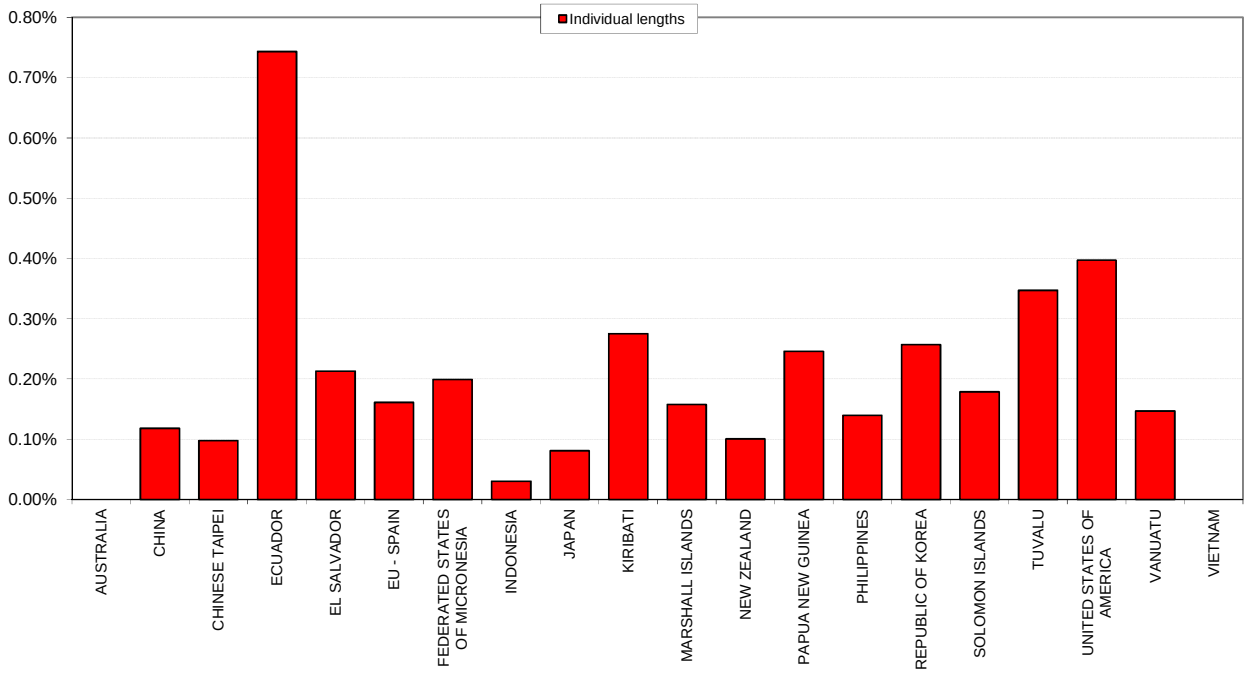

Figure 6. Coverage of size composition data by fleet from the PURSE-SEINE FISHERY
Data provided to the WCPFC; covers 2004–2014