COMMISSION
Twentieth Regular Session
4-8 December 2023
Rarotonga, Cook Islands (Hybrid)

Scientific Data Available to the Western and Central Pacific Fisheries Commission

WCPFC20-2023-IP15
21 August 2023

SPC - OFP

TECHNICAL AND COMPLIANCE COMMITTEE

Nineteenth Regular Session

20 – 26 September 2023

Pohnpei, Federated States of Micronesia

SCIENTIFIC DATA AVAILABLE TO THE WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

WCPFC-TCC19-2023-IP03[1]

21 August 2023

SPC-OFP

[1] This paper was posted to SC19 as SC19-2023-ST-WP01

SCIENTIFIC COMMITTEE
NINETEENTH REGULAR SESSION

Koror, Palau
16 –24 August 2023

SCIENTIFIC DATA AVAILABLE TO THE WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

WCPFC-SC19-2023/ST-WP-01 (Rev.03)

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Revision 1

- Change to Tables 4, 6 and 9 to reflect the provision of 2022 operational and aggregate data for Ecuador purse seine fleet on 11th July 2023

Revision 2

- Change to Tables 4, 6 and 9 to reflect the provision of 2022 operational and aggregate data for Indonesia domestic fleets on 8th August 2023, and text in the paper referring to these tables. These data align with Annex 2, "guidelines for data submission of operational level catch and effort data fields for fisheries", in the "Scientific Data to be Provided to the Commission (SciData).

Revision 3

- Change to Tables 7, 8 and 9 to reflect the recent provisions of 2021 and 2022 size data for El Salvador Purse seine fleet and 2022 size data for the Vanuatu purse seine fleet (as at 21st August 2023).

ABSTRACT

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

The review of gaps in 2021 and 2022 scientific data provisions includes the assignment of a tier-scoring evaluation level. There have not been any significant developments in some categories of the main data gaps over the past five years and readers have therefore been referred to the relevant sections in past data-gap papers.

All CCMs provided **annual catch estimates** for 2021 by the deadline (30 April 2022), and only one CCM had not submitted annual catch estimates for 2022 by the deadline (30 April 2023); this CCM's submission was provided in July 2023.

Aggregate catch/effort data for 2022 were provided by the deadline of 30th April 2023 for most fleets. The main gap in the provision of 2022 aggregate catch/effort data was

i. the low coverage of operational data available to generate aggregate data for two CCMs (which has been the case in recent years)

The other main data gap is the anticipated under-reporting of key shark species in general. However, the quality of aggregate data provided continues to improve with a reduction in the number of data-gap notes assigned to the aggregate data in recent years.

Operational catch/effort data for 2022 were provided before the 30 April 2023 for all but three CCMs. The main gaps in the 2021 and 2022 data submissions include:

i. The low coverage in the data provided by two CCMs;
ii. The non-provision of several required fields in the data submission for one CCM.

The coverage of 2022 operational data for some fleets is not complete (100%), but we expect there will be additional operational data submissions in the coming year. There were noted gaps in the provision of 2021 and 2022 size data for several fleets where the impacts of COVID-19 prevented any **size data** collection (mainly through observers).

Tables providing a breakdown of the coverage levels for each operational data field by year and fleet have been prepared in response to a SC17 recommendation (Williams, 2021). The latest version of these tables are included in a separate SC19 Information Paper – Tables of coverage levels for operational data fields submitted to the WCPFC (WCPFC-SC19-2032-ST-IP07), for SC19 review. SPC-OFP continues to engage with relevant CCMs to resolve some of the gaps presented in these tables, with several gaps resolved over the past year.

The continuation of work on how the impacts (due to COVID-19) of the reduced observer coverage in the purse seine fishery on the precision of tuna catch estimates is presented in Peatman et al. (2023). The results of the sub-sampling analysis (described in Peatman et al., 2022) using the most recent data suggests that the reduction in observer coverage rates in 2020, 2021 and 2022 has significantly reduced the precision in estimated species proportions, with increases in CVs in the region of 90 to 250% depending on the species and set type. This study also recognized the importance of processor (cannery) data in the validation of purse seine species composition data.

Several CCMs adjusted their submission of 2022 operational data according to align to Annex 2, "guidelines for data submission of operational level catch and effort data fields for fisheries", in the "Scientific Data to be Provided to the Commission (SciData)", which greatly facilitated the import into the WCPFC databases this year.

Two proposals were received responding to the SC18 recommendation for additional or amended operational data fields in the SciData; these proposals are provided in two SC19 Statistics and Data Theme working papers.

This paper provides the following updates and proposals for SC19 consideration.

1. The WCPFC SSP has developed a template for CCMs to potentially use when submitting their annual catch estimates (ACE) to improve the efficiency and data quality control of loading the ACE data into the WCPFC databases. **SC19 is invited to note** that the use of this template is VOLUNTARY, but strongly encouraged, at least as a means of cross-checking the required ACE information that should be submitted. Please see https://www.wcpfc.int/ace-template. The WCPFC SSP is available to assist CCMs that are interested in using this template. It is anticipated that an online tool available on the WCPFC web site will be developed for CCMs to enter and manage their Annual Catch Estimates (ACE) in the longer term.
2. Recognizing the importance of processor (cannery) data for, *inter alia*, the validation of tuna species composition, **SC19 is invited to note** the progress with WCPFC Project 114 (provided in an SC19 Information paper Project 114 [Williams, 2023] - https://meetings.wcpfc.int/node/19348), and endorse the project for Years 2 and 3.

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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*" (***SciData***) 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 latest version of SciData can be found on the WCPFC web site here. The main revisions to this document since it was first adopted include:

- The inclusion of catch estimates of key shark species and specifying the size class intervals for size data), which were adopted at the Seventh Regular Session of the Commission (WCPFC7), Honolulu, Hawaii, 6–10 December 2010 (Anon. 2010), 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)
- The change to require estimates of discards/releases for the key WCPFC species to be submitted as a member country obligation, which was adopted at the Thirteenth Regular Session of the Commission (WCPFC13), Denarau Island, Fiji, 5–9 December 2016 (Anon. 2016).
- The inclusion of standard tables of operational level catch and effort data fields for longline, purse seine and pole-and-line gears as ANNEX 2, which was adopted at the Nineteenth Regular Session of the Commission (WCPFC19), Da Nang, Vietnam, 27 Nov – 3 Dec 2022 (Anon. 2023). These tables provide guidance for the submission of operational catch and effort data in a standard format, as described in Section 2.5 of Williams (2022).

2. As specified in the recommendations for the provision of data, the Oceanic Fisheries Programme (OFP) of the Pacific Community (SPC), 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 regarding these important data gaps.

2. STATUS OF DATA GAPS

4. Data gaps and other issues related to the provision of data have been reported at each Scientific Committee meeting since the first in 2005 [the first data gaps paper for SC1 (Williams and Lawson, 2005) and the most recent data gaps paper for SC18 (Williams, 2022)].

5. SPC-OFP deal with data issues on a daily basis. There were a number of issues successfully resolved over the past year through engagement directly with CCMs. These issues are too numerous to mention here although it is worthy to mention the continued cooperative nature by all CCMs is very much appreciated.

6. The following table provides a list of the **SC18 recommendations** related to data gaps, and reference to how each recommendation has been addressed over the past year.

SC18 Statistics and Data Theme RECOMMENDATIONs	**Summary of progress**
Data Gaps of the Commission	
1. SC18 recommended WCPFC support a project to improve the coverage and quality of purse seine processor data.	WCPFC19 approved the new Project (Project *114: Improved Coverage of Cannery Receipt Data for WCPFC Scientific Work.* An update to work conducted on this project is provided in an SC19 Information paper Project 114 (Williams, 2023)
2. SC18 recommended the inclusion of tables of the operational level catch and effort data fields for longline, purse seine and pole-and-line gears, as a guideline and without the column of "binding" and adding the title of "Annex 2, guidelines for data submission of operational level catch and effort data fields for fisheries", as an additional ANNEX of the "Scientific Data to be Provided to the Commission", with an additional paragraph under Section 3. Operational level catch and effort data as follows: *"Annex 2 provides tables of the guidelines of operational level catch and effort data fields for longline, purse seine and pole-and-line gears in order to clarify and assist members in understanding the requirements of each data field and thereby facilitate the submission of data to the WCPFC."*	WCPFC19 approved the update to SciData, which is available here. A brief summary of progress in using these guidelines is provided in Section 2.3.
3. Noting the inconsistency in the data reporting requirements between the Scientific Data to be Provided by the Commission (SciData), and other WCPFC reporting obligations (e.g., in CMMs), and the need to improve the data available for stock assessments, SC18 recommended that the Scientific Services Provider undertake a review of the minimum data reporting requirements and report to SC19 in 2023. SC18 requested CCMs to submit proposals for additional or amended data field, with associated justification, before 30th March 2023. For example, the proposal for including FAD minimum data fields recorded by vessel operators in the SciData which was presented to SC18 should be forwarded to SC19 for consideration.	More information on progress with this recommendation is provided in Section 2.4.

2.1 Data gaps reported elsewhere

7. Readers are referred to previous versions of this paper for more detail on important categories of data gaps where there have not been any significant developments over the past year, or other papers that provide more detail on recent developments to address specific gaps. These sections will continue to be referenced in future versions of this paper when there are significant developments and until they are resolved.

8. Please refer to the following categories of data gaps:

- **Major data gaps for key fleets** (Williams, 2014 – Section 2.1.4)
  - Chinese Taipei STLL (small-scale longline) fleet prior to 2004
- **Operational catch and effort data** (Williams, 2019 – Section 2.2), noting the need to continue the arrangement whereby the WCPFC scientific services provider has access to historical operational data for stock assessment purposes (see OFP, 2015a and OFP, 2015b).
- **Operational data coverage rates** (Williams, 2014 – Section 2.2)
- **Operational data fields** (SPC-OFP, 2023)
- **Indonesia, Philippines and Vietnam tuna fishery data** (Williams, 2020a – Section 2.2)
- **Key shark species** (Williams, 2017 – Section 2.3)
- **Nationality of the catch** (Williams, 2014 and Williams, 2020a – Section 2.3 in both papers);
- **Aggregate catch and effort data** (Williams, 2014 – Section 2.6)
- **Species composition data for purse seiners** (Williams, 2014 – Section 2.8; Peatman et al., 2020; Peatman et al., 2021; Peatman et al., 2022; Peatman et al., 2023)
- **Annual catch estimates by EEZ** (Williams, 2015 – Section 2.3)
- **Number of vessels in the aggregate data** (Williams, 2015 – Section 2.4)
- **Conversion factor data** (MacDonald, J. et al., 2023)

9. Some historical gaps could be resolved with the application of resources to conduct data rescue projects, for example. However, there are also some historical gaps that cannot be resolved but have been documented to explain those gaps in the context of the scientific work of the Commission.

2.2 Coverage levels for each operational data field by year and fleet

10. SC17 noted that the evaluation on data gaps regarding provision of operational catch and effort data required under the Scientific Data to be Provided by the Commission is based on whether the field is included in a data submission, rather than on an evaluation of data quality or completeness. Even if a data field is included in the data submission, it is possible that it may not be provided for each fishing operation, but this level of completeness (coverage) for each data field has not been undertaken to date.

11. The following SC17 recommendation requesting the coverage for each operational data field, is aimed at improving the quality and completeness of the data in the future.

Data gaps of the Commission

SC17 recommended that the SSP add a new annex to the data gaps paper to include a breakdown of the coverage levels for each operational data field by year and fleet.

12. The tables providing a breakdown of the coverage levels for each operational data field by year and fleet are considerable, so they have been included in a separate Information Papers, initially for SC18 and again this year for SC19 (SPC-OFP, 2023).

13. During the past year, the WCPFC SSP has engaged with several CCMs on improving the coverage of data fields in their operational data submissions. Several improvements in operational data fields are evident over the past year (referencing SPC-OFP, 2023) although some CCMs indicated they will need more time to resolve some of the gaps in their historical data submissions.

14. SPC-OFP will continue to engage with relevant CCMs to resolve the gaps presented in these tables. In some cases, it may be possible to resolve the gaps from other sources of information. For example, where VMS data are available, missing information on the departure and return ports and dates could be generated in the historic operational catch/effort data. It may also be possible to fill in gaps for data fields in the historic data such as 'hooks between float', where industry information can categorize certain sub-fleets that operate in a similar manner (with respect to this data field).

2.3 Progress in the provision of operational data according to new Scidata guidelines

15. WCPFC19 adopted the SC18 recommendation for the inclusion of tables of the operational level catch and effort data fields for longline, purse seine and pole-and-line gears, as a guideline in "Annex 2, guidelines for data submission of operational level catch and effort data fields for fisheries", in the SciData.

16. Several CCMs adjusted their submission of operational data for 2022 to align to these guidelines this year, which greatly facilitated the import into the WCPFC databases. The WCPFC SSP is very appreciative of the work done to align to the guidelines and, acknowledging the status is a 'work-in-progress', will continue to engage with and assist other CCMs to determine whether adjustments to their operational data submissions will be possible.

2.4 Proposals for additional operational data fields

17. SC18 recommended that the WCPFC Scientific Service Provider (SSP) undertake a review of the minimum data reporting requirements and report to SC19 in 2023, based on proposals submitted by CCMs for additional or amended data field, with associated justification before 30th March 2023. The WCPFC Science Manager sent out the following communication to remind to SC Heads of Delegation on the 28th February 2023.

Dear SC Heads of Delegates and Colleagues,

At the Eighteenth Regular Session of the Scientific Committee (SC18), SC18 agreed on a recommendation to improve the data available for stock assessments, which was endorsed by the Commission in December 2022. The recommendation is as follows (Para 33, SC18 Summary Report):

> *33. Noting the inconsistency in the data reporting requirements between the Scientific Data to be Provided by the Commission (SciData), and other WCPFC reporting obligations (e.g., in CMMs), and the need to improve the data available for stock assessments, SC18 recommended that the Scientific Services Provider undertake a review of the minimum data reporting requirements and report to SC19 in 2023. SC18 requested CCMs to submit proposals for additional or amended data field, with associated justification, before 30th March 2023. For example, the proposal for including FAD minimum data fields recorded by vessel operators in the SciData which was presented to SC18 should be forwarded to SC19 for consideration.*

This communication is to remind CCMs to submit their proposals for additional or amended data fields, with associated justification, before 30th March 2023.

In submitting your proposals, please provide information on each element using the following structure:

1. Source of data (e.g. Operational catch/effort data)
2. Gear (e.g. Longline)
3. Proposed new or amended DATA FIELD
4. Suggested PROTOCOL for collecting this DATA FIELD
5. Justification

Please submit your proposals to the Commission's Data Manager Mr Peter Williams (PeterW@spc.int) by 30 March 2023. Thank you very much for your cooperation.

18. The WCPFC SSP conducted a review in respect of *"… the inconsistency in the data reporting requirements between the Scientific Data to be Provided by the Commission (SciData), and other WCPFC reporting obligations (e.g., in CMMs), and the need to improve the data available for stock assessments…"* and the only Conservation Management Measure (CMM) where the reporting requirement does not appear to be specifically covered in operational data requirements of the SciData is *CMM 2018-04 - Conservation and Management of Sea Turtles* with regard to the following paragraphs:

> 5. CCMs with purse seine vessels that fish for species covered by the Convention shall:
> …
> c. Require that operators of such vessels record all incidents involving sea turtles during fishing operations and report such incidents to the appropriate authorities of the CCM.
> d. Provide the results of the reporting under paragraph 5(b) to the Commission in their annual reporting of Scientific Data to be Provided to the Commission.
>
> 7. CCMs with longline vessels that fish in a shallow-set manner1 shall:
> …
> d. Provide for their longline vessels to record all incidents involving sea turtles during fishing operations and report such incidents to the appropriate authorities of the CCM.
> e. Provide the results of the reporting under paragraph 7(d) in their annual reporting of Scientific Data to be Provided to the Commission

19. In regard to feedback from CCMs, two proposals were received by the deadline (30th March 2023), and these are available in the following SC19 Working papers:

> Australia. 2023. Proposal from Australia for additional or amended data fields for collection within WCPFC. SC19 ST-WP-03. Nineteenth Regular Session of the Scientific Committee of the WCPFC (SC19). Koror, Palau. 16–22 August 2023.
>
> PNA and Tokelau. 2023. FAD Minimum Data Fields to be Recorded by WCPFC Purse Seine Vessel Operators. SC19 ST-WP-05. Nineteenth Regular Session of the Scientific Committee of the WCPFC (SC19). Koror, Palau. 16–22 August 2023.

20. The SSP has reviewed and is supportive of these proposals and will proceed to support discussions on these proposals during SC19.

2.5 Impact of reduced observer coverage on purse seine species catch estimates and size data

21. The observer coverage in the purse seine fishery in 2020, 2021 and 2022 was much lower than the 100% target of the past decade due to the impacts of COVID-19; the estimated coverage for 2020 was ~50%, and only ~15% in 2021 and 2022 (Panizza, et al., 2023).

22. Even at 100% observer coverage, only ~0.1% of the catch can be sampled for species composition estimation, given the disruptions sampling causes to the brailing operation (and therefore is an objective to resolve under Project 60). At this level of sampling, the precision of the estimates declines with progressively higher resolution of the strata required (that is, estimates at the set level are not precise).

23. To determine the potential impacts of reduced observer coverage on the purse seine tuna species catch estimates (including the aggregate data used in assessments), Peatman et al. (2022) conducted a sub-sampling exercise under the WCPFC Project 60 work plan to assess the precision in grab-sample based estimates of species compositions in observer data for years 2016–2019 with reduced rates of observer coverage.

24. The sub-sampling analysis using the latest data suggests that the reduction in observer coverage rates in 2020, 2021 and 2022 significantly reduced the precision in estimated species proportions, with increases in CVs in the region of 90 to 250% depending on the species and set type.

25. With the lack of observer data in the purse seine fishery in the past three years, there is also spatial bias in the coverage of observer length samples available. Figure 2 in Panizza et al. (2023) shows the spatial coverage of 2022 observer data which is biased to the high sea pocket 1 (Philippines anchored FAD fishery) and the Papua New Guinea (PNG) EEZ compared to the remainder of the fishery. Figure 3.6.2 in Williams and Ruaia (2023) shows the lack of large yellowfin tuna in the unassociated set catch during 2022 for area east of 170°E, which may be more the lack of observer coverage in that area than the lack of large yellowfin tuna

in the catch. These two examples are issues that will need to be considered in future assessments that will use these data.

2.6 A standard for submitting annual catch estimate data – the ACE Template

26. Estimates of annual catches (ACE) by gear, fleet and species are to be submitted each year by the 30th April according to the requirements in Scientific Data to be Provided to the Commission (https://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9).

27. These estimates are submitted by CCMs in various formats and are transcribed by the SSP into the WCPFC Annual Catch Estimates (ACE) database. A review of the data provided during the transcription process often identifies data which are required but have not been provided. The transcribing of ACE received in various formats also takes time to interpret and cross-check, and the potential to introduce errors in re-entering data into the WCPFC ACE database.

28. In order to improve the efficiency and data quality control of loading the ACE data into the WCPFC databases, the SSP has developed a template for CCMs to potentially use when submitting their annual catch estimates. This template structure is already used by the Pacific Island member countries (CCMs) of the Commission when they prepare and submit their ACE through the Regional Tuna Data Workshops (TDWs) conducted by the SSP.

29. The use of this template is VOLUNTARY, but strongly encouraged, at least as a means of cross-checking the required ACE information that should be submitted. Please see https://www.wcpfc.int/ace-template. The SSP are available to assist CCMs that are interested in using this template. It is anticipated that an online tool available on the WCPFC web will be developed for CCMs to enter and manage their Annual Catch Estimates (ACE) in the longer term.

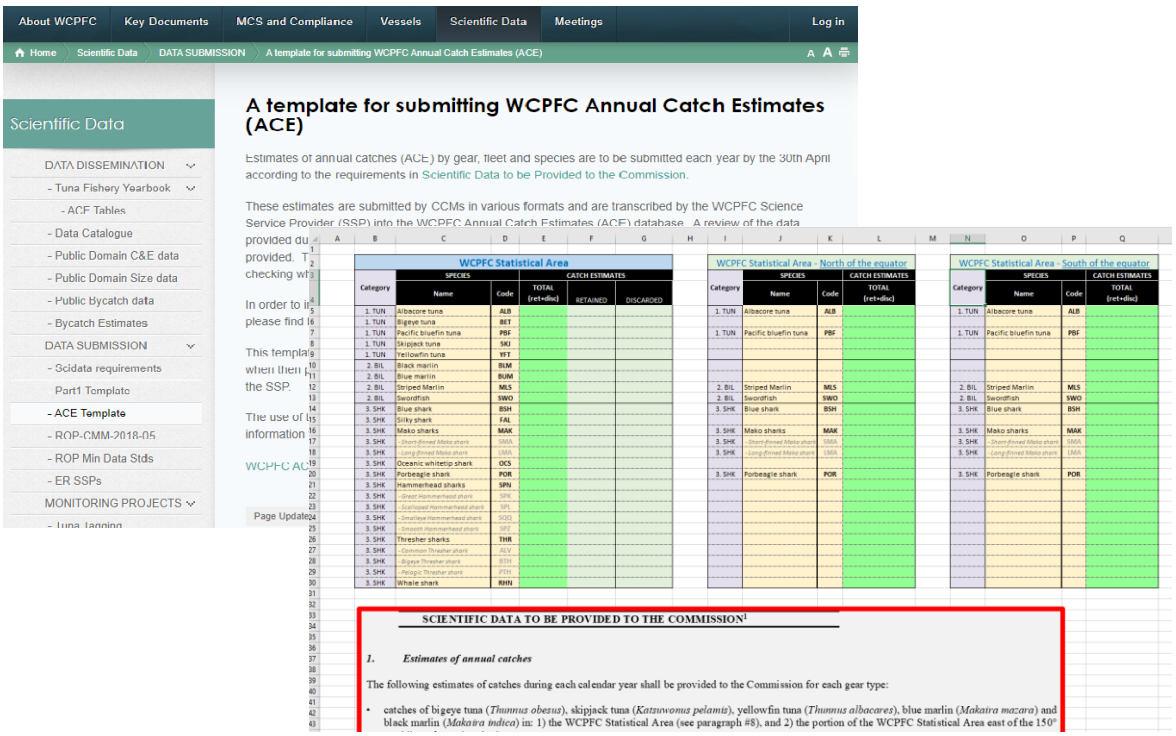

Figure 1. The new ACE Template available under the WCPFC Scientific data web page

3. RECENT PROVISIONS OF SCIENTIFIC DATA TO THE WCPFC

30. 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 "7. Time periods covered and schedule for the provision of data" at https://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9 .

31. As noted in the introduction, the tables of data submission presented herein include a column with a "tier-scoring evaluation score" which will be referred to under the WCPFC compliance monitoring process and reviewed at TCC19 (September 2023).

3.1 Annual Catch Estimates

32. Tables 1 and 2 list the dates on which catch estimates for 2021 and 2022, respectively, were provided, and include notes on the data that have been provided, mainly highlighting gaps or problems in those data (4th column), general notes on the data provided (5th column), and an indicator for the tier-scoring evaluation level (6th column).

33. All CCMs provided annual catch estimates for 2021 by the deadline (30 April 2022), and only one CCM had not submitted annual catch estimates for 2022 by the deadline (30 April 2023); this CCM's submission was provided in July 2023. Indonesia and Philippines typically schedule their annual catch estimates review workshops after the submission deadline but once again prepared and submitted provisional 2022 estimates prior to the 30th April deadline this year. Revisions to annual catch estimates were also received from several CCMs prior to July 2023, and we expect further revisions to be included in the WCPFC Part 1 Annual Reports for SC19.

34. As noted in previous years, the quality of estimates provided continues to improve with further reduction in the number of data-gap notes. Section 2.6 of this paper proposed a template for the provision of annual catch estimates on a voluntary basis in the future.

3.2 Aggregate Catch/Effort data

35. Tables 3 and 4 list the dates on which aggregated catch and effort data were provided for 2021 and 2022, 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, 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 in the 6th column.

36. 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 before the deadline (30 April 2023).

37. Notable issues in aggregate catch/effort data where progress has been made in recent years have been described in previous versions of this paper, including the continued improvement with the inclusion of key shark species catches in the aggregate data submissions.

38. The main gaps in the provision of 2022 aggregate catch/effort data are similar to recent years, namely

i. the low coverage of operational data available to generate aggregate data for the Vietnam and Indonesia fleets (non-binding), and
ii. the expected under-reporting of key shark species in general.

39. A noted improvement in the category of 2022 aggregate data is the inclusion of shark species catch in the Indonesia annual catch estimate and in their operational catch/effort data submission for 2022 (these data sources are used to generate aggregate data).

40. The timeliness of the provision of aggregate catch/effort data has been maintained from recent years with most CCMs providing 2022 data by the deadline of 30th April 2023.

3.3 Operational catch/effort data

41. Tables 5 and 6 show the schedule for the submissions of 2021 and 2022 operational catch and effort data to the WCPFC, respectively. The difficulties in implementing logbook programs for small-scale fisheries is acknowledged and indicated in these tables. The gaps in the 2022 data submissions include:

- the late submission of 2022 operational data for three CCMs;
- The low coverage in the data provided for the Indonesia and Vietnam fleets
- The non-provision of several required fields in the Indonesia data, for example, the hooks set and hooks between floats for the longline fishery.

42. Operational catch/effort data for 2022 were provided before the 30 April 2023 deadline by most CCMs except Ecuador (provided on 11th July 2023) and Indonesia (provided on 8th August 2023). The submission of 2022 operational data from Indonesia was in a format that aligned with Annex 2, "guidelines for data submission of operational level catch and effort data fields for fisheries", in the SciData, and included catches of several key shark species, both of which were very encouraging improvements on previous data submissions.

43. Most of the significant gaps in operational data have been resolved in recent years, as noted in Section 2.2 of Williams (2019). The coverage of operational data for some fleets is not complete (100%), although we expect more operational data for 2021 and 2022 will be submitted over the next six months.

44. The provision of **historical** operational data for the Asian tuna fleets (China, Indonesia, Japan, Korea and Chinese Taipei) remains the main data gap for the WCPFC and it is hoped that these data can be provided in the near future. As reported in previous years, nearly all CCMs have now modified data collection systems and are including a breakdown of the catch (and where relevant, the release) of the key shark species in their operational data submissions, although noting some issues in under-reporting key shark release/discarding.

3.4 Size data

45. Table 7 and Table 8 show the schedule for the submissions of 2021 and 2022 size data to the WCPFC, 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, 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 in the 6th column. The gaps in the provision of 2021 and 2022 size data include one fleet (US albacore troll) where the logistics of collecting size data are challenging, and for a number of fleets (Ecuador, Nauru, Samoa, Tuvalu and Vanuatu) where the impacts of COVID-19 prevented any size data collection (through observers). We also note that provision of size data is only binding at the CCM level (that is, if data are provided for one gear for that CCM, then that submission satisfies the provision of size data even if data have not been provided for another gear type for that CCM).

3.5 Overall scientific data submission evaluation

46. Table 9 provides an overall evaluation of each CCM's submission of scientific data to the WCPFC by consolidating the tier-scoring evaluations for each data type (see ANNEX 1 for further information), as requested by TCC11:

> ***Para. 388. TCC11 recommends that WCPFC12 tasks SPC to further refine the tier scoring system to provide, among other things, an indicator of compliance of CCMs as a whole with provision of scientific data.***

47. For the submission of 2022 data, 31 of the 34 CCMs/entities (91%) were evaluated as completely satisfying (100%) of the **binding** requirements for the provision of scientific data to the WCPFC. There are some gaps in catch/effort data for one CCM that would normally satisfy the requirements for submissions of aggregate and operational data. The three (3) CCMs that did not achieve 100% (for 2022 data submissions) satisfied at least at 75% of requirements or greater, noting that some of these data gaps may be resolved before TCC19.

3.6 Regional Observer Programme (ROP) data

48. The SPC/OFP has been processing observer data on behalf of its member countries for more than 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).

49. Panizza et al. (2023) provides a range of observer data summaries and describes the recent developments, future work and initiatives with respect to ROP data management. This paper includes

- Tables summarizing current coverage of available observer data by gear;
- Tables summarizing observer data by Pacific Island observer providers;
- Tables summarizing data generated from E-Monitoring trials that have been provided to the Scientific Services Provider.

4. RECENT DEVELOPMENTS IN DISSEMINATION OF DATA

4.1 WCPFC Data products

50. A range of data products have been made available on the WCPFC web site and these include:

- The WCPFC Tuna Fishery Yearbook presents annual catch estimates in the WCPFC Statistical Area from 1950 to 2021. https://www.wcpfc.int/statistical-bulletins
- The WCPFC Annual Catch and Effort Estimates (ACE) Tables by fleet include the essential Annual Fisheries Information Tables I – IV and Tabular Annual Fisheries Information Tables 1-5 and Figures 1-3 required in the Annual Report Part 1. https://www.wcpfc.int/ace-by-fleet.
- The WCPFC Data Catalogue (http://www.wcpfc.int/wcpfc-data-catalogue-0) which currently covers data provisions up to 2021. 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).
- Public domain aggregate catch/effort data products (six different combinations of time/area). https://www.wcpfc.int/public-domain.
- Public domain bycatch data providing tables of aggregated bycatch data and associated effort and observer data for the WCPFC using the Bycatch Data Exchange Protocol (BDEP) approach. https://www.wcpfc.int/public-domain-bycatch.
- Public domain size data providing tables of aggregated fish SIZE (Length) data provided by Commission Members (CCMs) and Cooperating Non-members (CNMs). The WCPFC public domain SIZE data can be accessed at https://www.wcpfc.int/public-size-data.

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TABLES

Table 1. Provision of 2021 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 2022		G, H	III
Canada	TR	28 Apr 2022			III
China	LL, PS	25 Apr 2022			III
Cook Islands	LL, PS, TR	07 Apr 2022		G, H	III
Ecuador	PS	27 Apr 2022			III
El Salvador	PS	29 Apr 2022			III
European Union	LL, PS	30 Apr 2022			III
Federated States of Micronesia	LL, PS	07 Apr 2022		G, H	III
Fiji Islands	LL, PL	07 Apr 2022		G, H	III
French Polynesia	LL, PL, OT	07 Apr 2022		G, H	III
Indonesia	LL	29 Apr 2022		F	III
	PS, PL, HL, TR, GN, OT	29 Apr 2022		F, J	III
Japan	PS, LL	28 Apr 2022		F, C	III
	PL, TR, OT	28 Apr 2022		F	III
Kiribati	LL, PS, OT	07 Apr 2022		G, H	III
Republic of Korea	LL, PS	19 Apr 2022		H	III
Marshall Islands	LL, PS	07 Apr 2022		G, H	III
Nauru	PS	07 Apr 2022		G, H	III
New Caledonia	LL	07 Apr 2022		G, H	III
New Zealand	LL, PS, TR, PL	29 Apr 2022		G, H	III
Niue	LL, OT	07 Apr 2022		D	III
Palau	LL, PL	07 Apr 2022		D	III
Papua New Guinea	LL	07 Apr 2022		D	III
Papua New Guinea	PS	07 Apr 2022		G, H	III
Philippines	PS	08 Apr 2022		G, H	III
	LL	08 Apr 2022		D	III
	HL, RN, OT	08 Apr 2022		F, J	III
Samoa	LL	07 Apr 2022		G, H	III
Solomon Islands	LL	07 Apr 2022		G, H	III
	PS, PL	07 Apr 2022		H	III
Chinese Taipei	LL, PS	28 Apr 2022			III
Tokelau	OT	07 Apr 2022			III
Tonga	LL	07 Apr 2022		G, H	III
Tuvalu	LL, PS, OT	07 Apr 2022		G, H	III
United States	LL, PS, TR, HL, PL	29 Apr 2022		G, H	III
Vanuatu	LL, PS	07 Apr 2022		G, H	III
Vietnam	LL/HL, GN, PS	29 Apr 2022		F, L	III
Wallis and Futuna	LL	07 Apr 2022		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 SHOULD BE provided (non-binding)
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 SC14.
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 (except for protected species).
K	Estimates of DISCARDs SHOULD be provided (non-binding)
L	Breakdown of vessels by GRT not provided but brekdown by HP provided and an understanding that most vessels are < 50 GRT

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 2. Provision of 2022 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	27 Apr 2023		G, H	III
Canada	TR	25 Apr 2023			III
China	LL, PS	28 Apr 2023			III
Cook Islands	LL, PS, TR	21 Apr 2023		G, H	III
Ecuador	PS	11 Jul 2023			III
El Salvador	PS	30 Apr 2023			III
European Union	LL, PS	29 Apr 2023			III
Federated States of Micronesia	LL, PS	21 Apr 2023		G, H	III
Fiji Islands	LL, PL	21 Apr 2023		G, H	III
French Polynesia	LL, PL, OT	21 Apr 2023		G, H	III
Indonesia	LL	30 Apr 2023		F	III
	PS, PL, HL, TR, GN, OT	30 Apr 2023		F, J	III
Japan	PS, LL	28 Apr 2023		F, C	III
	PL, TR, OT	28 Apr 2023		F	III
Kiribati	LL, PS, OT	21 Apr 2023		G, H	III
Republic of Korea	LL, PS	29 Apr 2023		H	III
Marshall Islands	LL, PS	21 Apr 2023		G, H	III
Nauru	PS	21 Apr 2023		G, H	III
New Caledonia	LL	21 Apr 2023		G, H	III
New Zealand	LL, PS, TR, PL	30 Apr 2023		G, H	III
Niue	LL, OT	30 Apr 2023		D	III
Palau	LL, PL	21 Apr 2023		D	III
Papua New Guinea	LL, PS	21 Apr 2023		G, H	III
Philippines	PS	14 Apr 2023		G, H	III
	LL	14 Apr 2023		D	III
	HL, RN, OT	14 Apr 2023		F, J	III
Samoa	LL	21 Apr 2023		G, H	III
Solomon Islands	LL	21 Apr 2023		G, H	III
	PS, PL	21 Apr 2023		H	III
Chinese Taipei	LL, PS	29 Apr 2023			III
Tokelau	OT	21 Apr 2023			III
Tonga	LL	21 Apr 2023		G, H	III
Tuvalu	LL, PS, OT	21 Apr 2023		G, H	III
United States	LL, PS, TR, HL, PL	26 Apr 2023		G, H	III
Vanuatu	LL, PS	21 Apr 2023		G, H	III
Vietnam	LL/HL, GN, PS	06 Apr 2023		F, L	III
Wallis and Futuna	LL	21 Apr 2023		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 SHOULD BE provided (non-binding)
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 this year's SC meeting.
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 (except for protected species).
K	Estimates of DISCARDs SHOULD be provided (non-binding)
L	Breakdown of vessels by GRT not provided but brekdown by HP provided and an understanding that most vessels are < 50 GRT

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 2021 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 2022		C,I	III
Canada	TR	28 Apr 2022			III
China	LL (DWFN)	25 Apr 2022		P	III
	PS	25 Apr 2022		E	III
Cook Islands	LL, PS, TR	07 Apr 2022		J, O	III
Ecuador	PS	27 Apr 2022		C	III
El Salvador	PS	29 Apr 2022		C	III
European Union	LL	30 Apr 2022		C, F, P, R	III
	PS	30 Apr 2022		C	III
Federated States of Micronesia	LL, PS	07 Apr 2022		J, O	III
Fiji Islands	LL, PL	07 Apr 2022		J, O	III
French Polynesia	LL	07 Apr 2022		J, O	III
Indonesia	LL, PS, PL	12 Jul 2022	18	Q, O, S, T	II (50%)
	HL, TR, GN, OT			N, Q	III
Japan	LL	28 Apr 2022		A, F,H, I, L, R	III
	PL	28 Apr 2022		L	III
	PS	28 Apr 2022		L	III
Kiribati	LL, PS	07 Apr 2022		J, O	III
Marshall Islands	LL, PS	07 Apr 2022		J, O	III
Nauru	PS	07 Apr 2022		J, O	III
New Caledonia	LL	07 Apr 2022		J, O	III
New Zealand	LL, PL, HL, PS	29 Apr 2022		C,I	III
Niue	LL	07 Apr 2022		E	III
Palau	LL, PL	07 Apr 2022		E	III
Papua New Guinea	LL	07 Apr 2022		E	III
	PS	07 Apr 2022		J, O	III
Philippines	PS	08 Apr 2022		M, Q	III
	LL	08 Apr 2022		E	III
	HL, RN, OT	08 Apr 2022		M, N, Q, T	III
Republic of Korea	LL	19 Apr 2022		P	III
	PS	19 Apr 2022		P	III
Samoa	LL	07 Apr 2022		J, O	III
Solomon Islands	LL	07 Apr 2022		J, O	III
	PL, PS	07 Apr 2022		J	III
Chinese Taipei	LL (DWFN)	28 Apr 2022		H, I, L	III
	LL (STLL)	28 Apr 2022		H, I, L	III
	PS	28 Apr 2022		L	III
Tonga	LL	07 Apr 2022		J, O	III
Tuvalu	LL, PS	07 Apr 2022		J, O	III
United States	LL (American Samoa)	29 Apr 2022		B, I	III
	LL (Hawaii)	29 Apr 2022		B, I	III
	PS (Treaty)	29 Apr 2022		J	III
	TR	29 Apr 2022		B	III
Vanuatu	LL, PS	07 Apr 2022		J, O	III
Vietnam	LL/HL	23 Apr 2022	18	M, Q, S, T	II (95%)
	PS, GN	23 Apr 2022	18	M, Q, S, T	II (92%)
Wallis and Futuna	LL	30 Apr 2022		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 MAY ALSO be provided (non-binding)
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 (except for protected species which must be released), so no DISCARDS
R	Aggregate Catch/Effort data for ALBACORE, SWORDFISH and STRIPED MARLIN for the south Pacific Ocean east of the WCPFC Area MAY ALSO be provided (non-binding)
S	Coverage of data provided is less than 50% (non-binding)
T	Aggregate data not provided, but can be estimated from Operational data submitted to the WCPFC and landings data collected under the WPEA project.

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 4. Provision of 2022 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	27 Apr 2023		C,I	III
Canada	TR	25 Apr 2023			III
China	LL (DWFN)	28 Apr 2023		P	III
	PS	28 Apr 2023		E	III
Cook Islands	LL, PS, TR	21 Apr 2023		J, O	III
Ecuador	PS	21 Jun 2023		D	III
El Salvador	PS	30 Apr 2023		C	III
European Union	LL	31 May 2023		C, F, P, R	III
	PS	29 Apr 2023		C	III
Federated States of Micronesia	LL, PS	21 Apr 2023		J, O	III
Fiji Islands	LL, PL	21 Apr 2023		J, O	III
French Polynesia	LL	21 Apr 2023		J, O	III
Indonesia	LL, PS, PL	08 Aug 2023		Q, O, S, T	III
	HL, TR, GN, OT	08 Aug 2023		N, Q	III
Japan	LL	28 Apr 2023		A, F,H, I, L, R	III
	PL	28 Apr 2023		L	III
	PS	28 Apr 2023		L	III
Kiribati	LL, PS	21 Apr 2023		J, O	III
Republic of Korea	LL, PS	29 Apr 2023		P	III
Marshall Islands	LL, PS	21 Apr 2023		J, O	III
Nauru	PS	21 Apr 2023		J, O	III
New Caledonia	LL	21 Apr 2023		J, O	III
New Zealand	LL, PL, HL, PS	30 Apr 2023		C,I	III
Niue	LL	30 Apr 2023		E	III
Palau	LL, PL	21 Apr 2023		E	III
Papua New Guinea	LL	21 Apr 2023		E	III
	PS	21 Apr 2023		J, O	III
Philippines	PS	14 Apr 2023		M, Q	III
	LL	14 Apr 2023		E	III
	HL, RN, OT	14 Apr 2023		M, N, Q, T	III
Samoa	LL	21 Apr 2023		J, O	III
Solomon Islands	LL	21 Apr 2023		J, O	III
	PL, PS	21 Apr 2023		J	III
Chinese Taipei	LL (DWFN)	29 Apr 2023		H, I, L	III
	LL (STLL)	29 Apr 2023		H, I, L	III
	PS	29 Apr 2023		L	III
Tonga	LL	21 Apr 2023		J, O	III
Tuvalu	LL, PS	21 Apr 2023		J, O	III
United States	LL (American Samoa)	26 Apr 2023		B, I	III
	LL (Hawaii)	26 Apr 2023		B, I	III
	PS	26 Apr 2023		J	III
	TR	26 Apr 2023		B	III
Vanuatu	LL, PS	21 Apr 2023		J, O	III
Vietnam	LL/HL	30 Apr 2023	18	M, Q, S, T	II (95%)
	PS, GN	30 Apr 2023	18	M, Q, S, T	II (92%)
Wallis and Futuna	LL	21 Apr 2023		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 MAY ALSO be provided (non-binding)
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 (except for protected species which must be released), so no DISCARDS
R Aggregate Catch/Effort data for ALBACORE, SWORDFISH and STRIPED MARLIN for the south Pacific Ocean east of the WCPFC Area MAY ALSO be provided (non-binding)
S Coverage of data provided is less than 50% (non-binding)
T Aggregate data not provided, but can be estimated from Operational (or trip-level logsheet) data submitted to the WCPFC and landings data collected under the WPEA project.

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 2021 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 2022		E	III	100%
Canada	TR	28 Apr 2022			III	100%
China	LL	25 Apr 2022	6	I	III	40% *
	PS	25 Apr 2022		A	III	100%
Cook Islands	LL, PS	07 Apr 2022		C, J	III	100%
Ecuador	PS	27 Apr 2022	11	F	III	90% *
El Salvador	PS	29 Apr 2022			III	100%
European Union	LL	30 Apr 2022		E	III	100%
	PS				III	100%
Federated States of Micronesia	LL	07 Apr 2022		C, J, F	III	100%
	PS			C, J	III	100%
Fiji Islands	LL, PL	07 Apr 2022		C, J	III	100%
French Polynesia	LL	07 Apr 2022		C, J, F	III	100%
	OT	07 Apr 2022		G, L	III	#
Indonesia	LL, PS, PL	12 Jul 2022	1,2,4,5,6,9	K	II (96%)	< 10%
	HL, TR, GN, OT			G, K	III	#
Japan	PS, PL	28 Apr 2022		E, M	III	100%
	LL	28 Apr 2022		E, M	III	100%
Kiribati	LL	07 Apr 2022		C, J, F, O	III	100%
	PS			C, J, F	III	100%
Republic of Korea	LL	19 Apr 2022		E, O	III	100%
	PS			E	III	100%
Marshall Islands	LL	07 Apr 2022		C, J	III	100%
	PS			C, J	III	100%
Nauru	PS	07 Apr 2022		C, J	III	100%
New Caledonia	LL	07 Apr 2022		C, J	III	100%
New Zealand	LL	29 Apr 2022		E, F	III	100%
	PL, TR, PS			E	III	100%
Niue	LL	07 Apr 2022		A	III	N/A
Palau	LL	07 Apr 2022		A	III	100%
Papua New Guinea	LL	07 Apr 2022		A	III	100%
	PS		11	C, J, F	III	90% *
Philippines	PS	08 Apr 2022	11	J, K	III	70% *
	LL	08 Apr 2022		A	III	N/A
	HL, RN, OT			G, K	III	#
Samoa	LL	07 Apr 2022		C, J	III	100%
Solomon Islands	LL	07 Apr 2022		C, J	III	100%
	PS			C, J, F	III	100%
	PL			C, J	III	100%
Chinese Taipei	LL	28 Apr 2022		E, F, O	III	90% *
	PS	28 Apr 2022		F	III	100%
Tonga	LL	07 Apr 2022		C, J	III	100%
Tuvalu	LL, PS	07 Apr 2022		C, J	III	100%
United States	LL (American Samoa)	29 Apr 2022		E	III	100%
	LL (CNMI, GUAM)	29 Apr 2022		E	III	100%
	LL (Hawaii)	29 Apr 2022		E	III	100%
	PL, HL, TR (trop)			G	III	#
	PS	29 Apr 2022		B	III	100%
	TR (ALB)	29 Apr 2022			III	100%
Vanuatu	LL	07 Apr 2022		C, J, F	III	95% *
	PS	07 Apr 2022		C, J, F	III	100%
Vietnam	LL/HL	29 Apr 2022	6, 8	G, H, K, F, N	III	< 10%
	PS, GN	29 Apr 2022	6, 8	G, H, K, F, N	III	< 10%
Wallis and Futuna	LL	30 Apr 2022		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 also 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	Represents a range of French Polynesia small-scale, artisanal gears taking tuna with a range of fishing methods. Vessels include the poti marara and bonitier fleets.
M	Operational data provided to the WCPFC for the WCPFC Area south of 20°N and aggregate 1°x1° year/month data provided for WCPFC Area north of 20°N
N	National logbook data provided, but does not completely satisfy the WCPFC operational data field requirements as yet.
O	Trip-level departure, return/unloading/transhipment information available within daily records, and/or through VMS.

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 2022 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	27 Apr 2023		E	III	100%
Canada	TR	25 Apr 2023			III	100%
China	LL	28 Apr 2023	11	I	III	75% *
	PS	28 Apr 2023		P	III	100%
Cook Islands	LL, PS	21 Apr 2023	11	C, J	III	75% *
Ecuador	PS	11 Jul 2023		I	III	100%
El Salvador	PS	30 Apr 2023			III	100%
European Union	LL	31 May 2023		E	III	100%
	PS	29 Apr 2023			III	100%
Federated States of Micronesia	LL	21 Apr 2023		C, J, F	III	100%
	PS			C, J	III	100%
Fiji Islands	LL, PL	21 Apr 2023		C, J	III	100%
French Polynesia	LL	21 Apr 2023		C, J, F	III	100%
	OT	21 Apr 2023		G, L	III	#
Indonesia	LL, PS, PL	08 Aug 2023	1,2,4,5,6	K, J	II (96%)	< 10%
	HL, TR, GN, OT	08 Aug 2023		G, K	III	#
Japan	PS, PL	28 Apr 2023		E, M	III	100%
	LL	28 Apr 2023		E, M	III	100%
Kiribati	LL	21 Apr 2023		C, J, F, O	III	75% *
	PS			C, J, F	III	100%
Republic of Korea	LL	29 Apr 2023		E, O	III	100%
	PS			E	III	100%
Marshall Islands	LL	21 Apr 2023		C, J	III	100%
	PS			C, J	III	95% *
Nauru	PS	21 Apr 2023		C, J	III	100%
New Caledonia	LL	21 Apr 2023		C, J	III	100%
New Zealand	LL	30 Apr 2023		E, F	III	100%
	PL, TR, PS			E	III	100%
Niue	LL	21 Apr 2023		A	III	N/A
Palau	LL			A	III	100%
Papua New Guinea	LL	21 Apr 2023		C, J	III	100%
	PS		11	C, J, F	III	90% *
Philippines	PS	14 Apr 2023		J, K	III	100%
	LL	14 Apr 2023		A	III	N/A
	HL, RN, OT			G, K	III	#
Samoa	LL	21 Apr 2023	11	C, J	III	95% *
Solomon Islands	LL	21 Apr 2023	11	C, J	III	75% *
	PS			C, J, F	III	100%
	PL			C, J	III	100%
Chinese Taipei	LL	29 Apr 2023	11	E, F, O	III	85% *
	PS	29 Apr 2023		F	III	100%
Tonga	LL	21 Apr 2023		C, J	III	100%
Tuvalu	LL, PS	21 Apr 2023		C, J	III	100%
United States	LL (American Samoa)	26 Apr 2023		E	III	100%
	LL (CNMI, GUAM)	26 Apr 2023		E	III	100%
	LL (Hawaii)	26 Apr 2023		E	III	100%
	PL, HL, TR (trop)			G	III	#
	PS	26 Apr 2023		B	III	100%
	TR (ALB)	26 Apr 2023			III	100%
Vanuatu	LL	21 Apr 2023	11	C, J, F	III	95% *
	PS	21 Apr 2023		C, J, F	III	100%
Vietnam	LL/HL	30 Apr 2023	6, 8	G, H, K, F, N	III	< 10%
	PS, GN	30 Apr 2023	6, 8	G, H, K, F, N	III	< 10%
Wallis and Futuna	LL	21 Apr 2023		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%
12	Trip-level data provided instead of data at the fishing operation level, with vessel identifier.

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 also provided to SPC by their member countries which are coastal states where this FLAG STATE fleet is based
J	Logsheet forms or Logbook E-Reporting system 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	Represents a range of French Polynesia small-scale, artisanal gears taking tuna with a range of fishing methods. Vessels include the poti marara and bonitier fleets.
M	Operational data provided to the WCPFC for the WCPFC Area south of 20°N and aggregate 1°x1° year/month data provided for WCPFC Area north of 20°N
N	National logbook data provided, but does not completely satisfy the WCPFC operational data field requirements as yet.
O	Trip-level departure, return/unloading/transhipment information available within daily records, and/or through VMS.
P	Vessels of this fleet have been chartered to Pacific Island countries in recent years, although chartering arrangements for this year are not yet understood, so available operational data for some vessels are assigned to this 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 (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 7. Provision of 2021 Size data to the WCPFC

FLAG STATE / ENTITY	GEAR(s)	Date Submitted	DATA-GAP Notes	General NOTES	TIER-SCORING EVALUATION LEVEL
Australia	LL	30 Apr 2022		B, C	III
	PL, PS, TR			J	III
Canada	TR	28 Apr 2022		A	III
China	LL	25 Apr 2022		A, H	III
	PS	25 Apr 2022		A, H	III
Cook Islands	LL, PS	07 Apr 2022		A, H, K	III
Ecuador	PS			H	I
El Salvador	PS	25 Aug 2022		H	III
European Union	LL			L, M, N	III
	PS	30 Apr 2022		H	III
Federated States of Micronesia	LL, PS	07 Apr 2022		A, H, I, K	III
Fiji Islands	LL, PL	07 Apr 2022		A, H, K	III
French Polynesia	LL	07 Apr 2022		A, H, K	III
Indonesia	LL, PS, OT	25 Mar 2022		A, K	III
Japan	PS	28 Apr 2022		A, H	III
	LL, PL	28 Apr 2022		A, H, I	III
Kiribati	LL, PS	28 Apr 2022		A, H, K	III
Republic of Korea	LL, PS	19 Apr 2022		A, H	III
Marshall Islands	LL, PS	07 Apr 2022		A, H, K	III
Nauru	PS			A, H, K	I
New Caledonia	LL	07 Apr 2022		A, H, K	III
New Zealand	LL, PL, PS, TR	29 Apr 2022		A, H	III
Niue	LL	07 Apr 2022		G	III
Palau	LL, PL	07 Apr 2022		A, H, K	III
Papua New Guinea	LL, PS	07 Apr 2022		A, H	III
Philippines	PS, HL, RN, OT	08 Apr 2022		A, H, K	III
	LL	08 Apr 2022		G	III
Samoa	LL			A, H, K	I
Solomon Islands	LL, PS, PL	07 Apr 2022		A, H	III
Chinese Taipei	LL	28 Apr 2022		A, H, I	III
	PS			A, H, I	III
Tonga	LL	07 Apr 2022		A, H, K	III
Tuvalu	LL, PS			A, H, N	I
United States	LL (American Samoa)	28 Apr 2022		B, E, F	III
	LL (Hawaii)	28 Apr 2022		B, E, F	III
	HL	28 Apr 2022		B, E, F	III
	TR			M	III
	PS	28 Apr 2022		A, H, K	III
Vanuatu	LL, PS			A, H, I, K	I
Vietnam	LL, PS	30 Apr 2022		M	III
	GN	30 Apr 2022		M	III
Wallis and Futuna	LL	09 Apr 2022		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.
L	Swordfish target fishery with swordfish size data provided at 5cm intervals.
M	Data not provided, despite activity in this fishery. However, this gap is not considered a WCPFC compliance issue.
N	No size data collection for this fleet due to the impact of COVID-19

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 8. Provision of 2022 Size data to the WCPFC

FLAG STATE / ENTITY	GEAR(s)	Date Submitted	DATA-GAP Notes	General NOTES	TIER-SCORING EVALUATION LEVEL
Australia	LL	14 May 2023		B, C	III
	PL, PS, TR			J	III
Canada	TR	25 Apr 2023		A	III
China	LL	28 Apr 2023		A, H	III
	PS	28 Apr 2023		A, H	III
Cook Islands	LL, PS	21 Apr 2023		A, H, K	III
Ecuador	PS			H	I
El Salvador	PS	21 Aug 2023		H	III
European Union	LL	13 July 2023		L, M, N	III
	PS			H	III
Federated States of Micronesia	LL, PS	21 Apr 2023		A, H, I, K	III
Fiji Islands	LL, PL	21 Apr 2023		A, H, K	III
French Polynesia	LL	21 Apr 2023		A, H, K	III
Indonesia	LL, PS, OT	29 May 2023		A, K	III
Japan	PS	28 Apr 2023		A, H	III
	LL, PL	28 Apr 2023		A, H, I	III
Kiribati	LL, PS	21 Apr 2023		A, H, K	III
Republic of Korea	LL, PS	29 Apr 2023		A, H	III
Marshall Islands	LL, PS	21 Apr 2023		A, H, K	III
Nauru	PS	21 Apr 2023		A, H, K	III
New Caledonia	LL	21 Apr 2023		A, H, K	III
New Zealand	LL, PL, PS, TR	30 Apr 2023		A, H	III
Niue	LL	21 Apr 2023		G	III
Palau	LL, PL	21 Apr 2023		A, H, K	III
Papua New Guinea	LL, PS	21 Apr 2023		A, H	III
Philippines	PS, HL, RN, OT	14 Apr 2023		A, H, K	III
	LL	14 Apr 2023		G	III
Samoa	LL	21 Apr 2023		A, H, K	III
Solomon Islands	LL, PS, PL	21 Apr 2023		A, H	III
Chinese Taipei	LL	29 Apr 2023		A, H, I	III
	PS	28 Apr 2023		A, H, I	III
Tonga	LL	21 Apr 2023		A, H, K	III
Tuvalu	LL, PS	21 Apr 2023		A, H, N	III
United States	LL (American Samoa)	26 Apr 2023		B, E, F	III
	LL (Hawaii)	26 Apr 2023		B, E, F	III
	HL	26 Apr 2023		B, E, F	III
	TR			M	III
	PS	26 Apr 2023		A, H, K	III
Vanuatu	LL			A, H, I, K	III
	PS	08 Aug 2023		A, H, I, K	III
Vietnam	LL, PS	30 Apr 2023		M	III
	GN	30 Apr 2023		M	III
Wallis and Futuna	LL	21 Apr 2023		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.
L	Swordfish target fishery with swordfish size data provided at 5cm intervals.
M	Data not provided, despite activity in this fishery. However, this gap is not considered a WCPFC compliance issue.
N	No size data collection for this fleet due to the impact of COVID-19

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 9. Overall compliance evaluation for the provision of 2022 scientific data to the WCPFC

COUNTRY / TERRITORY / ENTITY	GEAR(s)	Annual Catch estimates	Aggregate CATCH/EFFORT data	Operational CATCH/EFFORT data	SIZE data	OVERALL Science Data
Australia	LL, PS, PL, HL,TR	100%	100%	100%	100%	100%
Belize	LL	100%	100%	100%	100%	100%
Canada	TR	100%	100%	100%	100%	100%
China	LL, PS	100%	100%	100%	100%	100%
Cook Islands	LL, PS, TR	100%	100%	100%	100%	100%
Ecuador	PS	100%	100%	100%	0%	75%
El Salvador	PS	100%	100%	100%	100%	100%
European Union	LL	100%	100%	100%	100%	100%
	PS	100%	100%	100%		
Federated States of Micronesia	LL, PS	100%	100%	100%	100%	100%
Fiji Islands	LL, PL	100%	100%	100%	100%	100%
French Polynesia	LL, PL, OT	100%	100%	100%	100%	100%
Indonesia	LL, PS, PL, HL, TR, OT	100%	100%	96%	100%	99%
Japan	PS, LL, PL, TR, OT	100%	100%	100%	100%	100%
Kiribati	LL, PS, OT	100%	100%	100%	100%	100%
Republic of Korea	LL, PS	100%	100%	100%	100%	100%
Marshall Islands	LL, PS	100%	100%	100%	100%	100%
Nauru	PS	100%	100%	100%	100%	100%
New Caledonia	LL	100%	100%	100%	100%	100%
New Zealand	LL, PS, TR, PL	100%	100%	100%	100%	100%
Niue	LL	100%	100%	100%	100%	100%
Palau	LL, PL	100%	100%	100%	100%	100%
Papua New Guinea	LL, PS	100%	100%	100%	100%	100%
Philippines	PS, LL, HL, RN, OT	100%	100%	100%	100%	100%
Samoa	LL	100%	100%	100%	100%	100%
Senegal	LL	100%	100%	100%	100%	100%
Solomon Islands	LL, PS, PL	100%	100%	100%	100%	100%
Chinese Taipei	LL, PS	100%	100%	100%	100%	100%
Tokelau	OT	100%	100%	100%	100%	100%
Tonga	LL	100%	100%	100%	100%	100%
Tuvalu	LL, PS, OT	100%	100%	100%	100%	100%
United States	LL, PS, HL, PL	100%	100%	100%	100%	100%
	TR	100%	100%	100%	100%	
Vanuatu	LL, PS	100%	100%	100%	100%	100%
Vietnam	LL, GN, PS	100%	93%	100%	100%	98%
Wallis and Futuna	LL	100%	100%	100%	100%	100%

ANNEX 1 – 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.[1] 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[2]", 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 number of 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%).

[1] 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.

[2] http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-6-7-and-9 is the basis of the evaluation of submissions of 2016 scientific data, but the latest version adopted at WCPFC13 (https://www.wcpfc.int/system/files/Att%20G_Revised%20SciData%20decision.pdf) will be used for submissions of 2017 scientific data, onwards.

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 Tables 5 and 6. The guidelines for the submission of scientific data indicate in section "4. Catch and effort data aggregated by time period and geographic area" 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 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 Tables 5 and 6.

As recommended by TCC11 (Anon, 2015b; Para. 388), this paper attempts to provide an overall evaluation of scientific data to the WCPFC in Table 9. This evaluation only considered **binding** requirements from the "Scientific data to be provided to the Commission", and did not consider (i) coverage of data types and (ii) other non-binding requirements listed in this document. This approach is consistent with how TCC reviews and uses the tier-scored evaluation information. The method for determining the overall evaluation was to take the average evaluation of each data type submission (without weighting). In each case, the evaluation level 'III' scored 100%, the evaluation level 'I' scored 0% and the evaluation level 'II' used the respective score (%) assigned in that data type. Where a CCM had a separate evaluation by gear(s) within a particular data type, then the average evaluation across all gears for that CCM and data type was determined and used.