



**SCIENTIFIC COMMITTEE
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PROJECT 114 UPDATE:

Progress in improving CANNERY RECEIPT DATA for WCPFC scientific work

WCPFC-SC20-2024/ST-IP-05

Oceanic Fisheries Programme (OFP)
Pacific Community (SPC)
Noumea, New Caledonia.

ABSTRACT

This brief information paper reiterates the importance of this project through the BACKGROUND section of [ANNEX 1](#), highlighting the current paucity and potential uncertainty in the data currently available for estimating purse seine species composition.

The paper provides

- (i) an update of activities under Project 114 in the first six months of 2024,
- (ii) an indication of the planned activities for the second half of 2024 and into 2025
- (iii) a proposed new approach to engaging with CCMs that have processing companies, and
- (iv) some examples of recent purse seine species composition estimated from difference sources of data.

The WCPFC SSP will engage in bilateral side meetings with representatives of each of the key countries, identified in the gap analysis, in the fringes of SC20 to progress plans for collaborative work for this project in the coming year.

There have been several challenges in seeking cooperation in submitting processor data to date, due in part to the perceived sensitivity of the data. Until there is agreement to submit cannery data according to the WCPFC guidelines, we are suggesting an interim approach whereby the WCPFC SSP collaborates with national scientists in the key countries to generate estimates of purse seine species composition from processing data that would be provided to the national scientific agency only. This is an approach that the WCPFC SSP and Japan scientists have already successfully conducted in the past (see Peatman et al., 2017).

SC20 is invited to review and comment on the progress made on Project 114 activities to date and note the planned activities for the rest of 2024 and 2025.

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1. INTRODUCTION

2. The Twentieth Regular Session of the WCPFC (WCPFC20; Anon., 2024) approved Project 114 to continue to be conducted over three years (2023–2025); the agreed plan for Project 114 is shown in [ANNEX 1](#).
3. This brief paper provides an update of activities under Project 114 in the first six months of 2024 and an indication of the planned activities for the second half of 2024 and into 2025, pending approval from WCPFC21 on funding to continue the project.
4. The BACKGROUND section of [ANNEX 1](#) outlines the importance of this project, with Figure 1 below highlighting the current paucity and potential uncertainty in the data collected for estimating purse seine species composition.

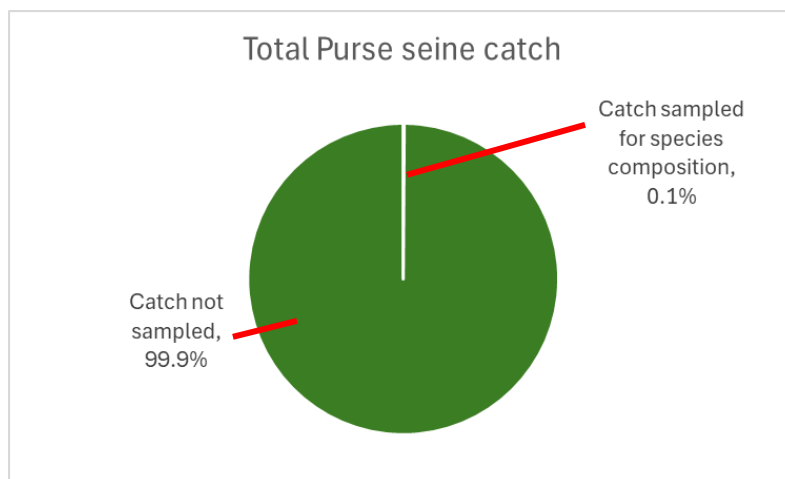


Figure 1. Proportion of total purse seine catch sampled by observers for species composition estimation.

2. PROJECT 114 – work conducted from January to June 2024

5. The work plan for the first six months of 2024 covered six (6) of the seven (7) objectives of Project 114, some of which is a continuation of work in previous years. This report also satisfies Objective 5 covering part of the second year of the Project. Cannery data coverage is not yet acceptable to undertake the work outlined under Objective 6 over the project, and so this objective was not covered during 2024. The work conducted in the first six months of 2024 covering the other objectives (#1, #2, #3, #4, #7) is described in the following sections.

6. The anticipated work for Project 114 covers “...the cost of an appropriate consultant and travel to cover Objectives 2, 3 and 5, and Objective 1, in collaboration with the SSP” (refer to [ANNEX 1](#)). The WCPFC Science Service Provider (SSP) is yet to engage a suitable consultant but has itself continued some of the required work in the first six months of Year 2 of Project 114 and the details are provided below.

OBJECTIVE 1. Identify the gaps in the cannery receipt data submissions to the WCPFC

7. Work commenced on this objective during 2023 through the review of past studies (e.g. Lewis, 2017) and a start on the compilation and consolidation of available information which were subsequently used to construct an understanding of product flow to canneries/processors from available purse-seine transshipments/unloadings data and other sources of data (for example, Vessel Monitoring System–VMS trip-level data for purse seine carrier vessels). The cannery data already provided by affiliate companies of the International Seafood Sustainability Foundation (ISSF) have been used in an attempt to identify and confirm the main gaps in the cannery receipt data for catches in the WCPFC Area.

8. Further work on the gap analysis was conducted in the first six months of 2024 and covered two main approaches:

- (i) Compare the ISSF-affiliated cannery company data for 2019 with estimated in-bound PS catch compiled through a recent Pew Foundation study¹ – see Table A1.
- (ii) Review VMS carrier trip data in an attempt to estimate frequency of carrier trip visits and catch volume by port(s) of return, as a proxy to potential cannery catch receipt volume. (Tables A2 and A3 provide an example of the summary output from these analyses).

9. Despite the incompleteness of the available data and some assumptions in the estimation processes, the preliminary findings identify the main gaps which provide a basis for engaging with relevant parties in respective countries to help refine the key data gaps, which can then be used to target requests for data submission. Certain output from the gap analysis was deemed to be non-public domain, so we only present examples of data summaries deemed to be in the public domain in [ANNEX 2](#).

10. Some preliminary observations from the initial gap analysis work include:

- The following countries are identified as priority for potential engagement/visits: Korea, Philippines, Japan, China, Thailand.
- A comparison between Table A1 and A3 in [ANNEX 2](#) for 2019 shows:
 - Confirmation that Thailand as the major processing country, but the processor data from the ISSF do not appear to cover all cannery receipts.
 - Table A3 does not include direct landings from PS fishing vessels, so American Samoa, PNG, Solomon Islands and Japan will be under-represented in this table to some extent.
 - Philippines landings compare relatively well between the two tables (although there may be a small component of direct landings by fishing vessels not included in Table A3 estimates).
 - Table A3 will probably include some longline catches for China, Chinese Taipei, Japan and Korea, which is why the estimated catch in Table A3 for these countries is higher than Table A1.
 - The total estimated catch in Table A3 for other-EPO countries aligns to some extent to the same category in Table A1.

11. The following section describes initial engagement with each of the countries listed as priority for potential visits and collaboration during the coming year.

OBJECTIVE 2. In Year 2 of the project (as an initial step)

2(a) Collaboration with one interested port state CCM, to approach several (but at least one) companies to request the provision of cannery data, using the *WCPFC Guidelines for the Voluntary Submission of Purse seine Processor data by CCMs to the Commission*². It is envisaged that agreement to submit cannery data will require agreement for data confidentiality and other aspects, to be set out in a Memorandum of Understanding (MOU) similar to that outlined in Lewis (2017).

12. The WCPFC SSP have continued engagement with several WCPFC member countries (CCMs) which began during WCPFC19 to request their assistance in organizing visits to key canneries in their countries. In the past six months, communications have been made with the Philippines, Korea, China and Thailand to plan potential visits to discuss options to advance the work of this project. The following describes the current status of this engagement.

13. **PHILIPPINES**. OFP (2023) describes the work involved in securing an agreement with Philippines processing companies to submit cannery receipt data to the WCPFC. A visit to each of the Philippine processing companies is planned for early August 2024 to discuss the technical aspects of preparing and

¹ Estimated in-bound PS Catch (2019) extracted from information in "Trade Flow Analysis of Pacific Tuna Fisheries Final Report | September 7, 2023" prepared for Pew Foundations.

² <https://www.wcpfc.int/doc/data-07/guidelines-voluntary-submission-purse-seine-processor-data-ccms-commission>

submitting their cannery data under this agreement. This visit had not been conducted at the time of writing this paper but will be reported in the updated version of this paper for WCPFC21.

14. **KOREA.** OFP (2023) describes the activities undertaken during 2023 (including a visit) to engage with relevant stakeholders in Korea to discuss the potential submission of processor data to the WCPFC. Further communications were conducted during the first six months of 2024, once again facilitated through the valuable assistance provided by the WCPFC Science Manager. At the time of writing this paper, we had received documentation from the National Fishery Products Quality Management Service (NFPQMS) and have requested further documentation to evaluate if it can be of use to the project.

15. Pending discussions in the fringes of SC20, the WCPFC SSP hopes to visit Korea in the second half of 2024 to progress work under this Project.

16. **CHINA.** The WCPFC SSP is receiving data from processing plants based in China, but the gap analysis identified that there appear to be landed purse seine catch which is not covered by the ISSF-affiliated companies. During the first six months of 2024, the WCPFC SSP has communicated with the official WCPFC Contact for China and scientific representatives from China to the WCPFC, explaining the importance of the project, the project's objectives, and requesting consideration of a visit to determine the feasibility of having data submitted from the processing plants in their country.

17. Pending discussions in the fringes of SC20 and if required TCC20, the WCPFC SSP hopes to visit China in the second half of 2024 to progress work under this Project.

18. **THAILAND.** The WCPFC SSP is receiving data from processing plants based in Thailand, but the gap analysis identified that there appear to be landed purse seine catch which is not covered by the ISSF-affiliated companies. The WCPFC SSP has communicated with the Thai representatives to the WCPFC to request a visit to discuss the feasibility of obtaining processor data from companies not affiliated with the ISSF.

19. Pending discussions in the fringes of SC20 and if required TCC20, the WCPFC SSP hopes to visit Thailand in the second half of 2024 to progress work under this Project.

20. **JAPAN.** The gap analysis identified significant landings in Japan that are not covered by the Project 114 data submissions. However, for many years, Japan scientists have been conducting their own analyses using their processor data to adjust the purse seine tuna catch estimates for the Japanese purse seine fleet (see Japan (2009a) and Japan (2009b)). Japan scientists have also collaborated with the WCPFC SSP to review the estimates produced from processor data, and sampling of the landed catch, with the estimates of species composition derived from observer data (see Peatman et al., 2017).

21. The WCPFC SSP plans to discuss where potential future collaboration can continue with Japan in the fringes of SC20.

OBJECTIVE 3. The documentation of the experience from Year 1 to outline a plan for approaching other processor companies in Years 2 and 3 of the project.

OBJECTIVE 4. In Years 2 and 3 of the project, continuation of the work in collaborating with additional relevant port state CCMs, to approach companies to request the provision of cannery data. Also, to revise/improve the protocols as mentioned in 2(b) as necessary.

22. A work plan for 2024 was devised based on the outcomes of the gap analysis and the engagement with relevant port state CCMs where the processing plants exist.

23. There have been several challenges in seeking cooperation in submitting processor data to date, due in part to the perceived sensitivity of the data. Until there is agreement to submit cannery data according to the WCPFC guidelines, we are suggesting an interim approach whereby the WCPFC SSP collaborates with national scientists in the key countries to generate estimates of purse seine species composition from

processing data that would be provided to the national scientific agency only. This is an approach that the WCPFC SSP and Japan scientists have already successfully conducted in the past (see Peatman et al., 2017).

24. If this approach is accepted, it would result in the WCPFC member country potentially submitted cannery-based estimates of purse seine species composition as a part of their annual scientific data submission to the WCPFC.

OBJECTIVE 7. The WCPFC Science Service Provider (SSP) continuing the management and data quality assurance of purse seine processor data submission.

25. The WCPFC SSP continued to receive, enter/import and manage a significant amount of ISSF cannery data during the past year. Table 1 provides a summary of cannery data up to 2023 which have been received and loaded as at June 2024, noting we have also already received a significant amount of data for 2024.

26. The cannery receipt data are managed through the TUFMAN 2 system developed by the WCPFC SSP. This system has been enhanced to generate links from the cannery receipt data (at the level of purse seine trip) to the trip data from both the logsheet and observer data sources. These links allow direct comparisons of tuna species composition which will facilitate the analytical work conducted by the WCPFC SSP in the future.

Table 1. Coverage of matched logsheet/observer/cannery trip data for the WCPFC tropical purse seine fishery (excludes Indonesia, Philippines and Vietnam domestic fisheries).

YEAR	Total Purse seine Tuna catch (MT)						
	WCPFC Estimates	Processor data	%	Matched Log / Cannery	%	Matched Log / Obs / Cannery	%
2013	1,570,125	498,424	31.7%	421,356	26.8%	373,440	23.8%
2014	1,737,573	509,689	29.3%	420,219	24.2%	380,278	21.9%
2015	1,544,180	436,504	28.3%	389,748	25.2%	336,345	21.8%
2016	1,544,386	467,132	30.2%	413,006	26.7%	353,175	22.9%
2017	1,469,031	473,818	32.3%	415,617	28.3%	382,596	26.0%
2018	1,676,092	529,670	31.6%	487,478	29.1%	474,088	28.3%
2019	1,716,606	554,944	32.3%	554,944	32.3%	502,877	29.3%
2020	1,539,338	690,886	44.9%	690,886	44.9%	220,054	14.3%
2021	1,425,829	667,787	46.8%	667,787	46.8%	38,685	2.7%
2022	1,497,386	632,524	42.2%	632,524	42.2%	52,505	3.5%
2023	1,456,398	604,472	41.5%	604,472	41.5%	244,329	16.8%

3. PROJECT 114 – planned work for August to December 2024

27. Pending a successful outcome of side meetings with representatives of each of the key countries in the fringes of SC20, the WCPFC SSP plans to visit each country to progress plans for collaborative work under Project 114. We note this will depend on the further easing of current travel restrictions out of New Caledonia.

28. Given the challenges in obtaining authorization to release cannery receipt data from processor companies, the project will consider the interim approach to explore ways for the national scientists to receive and compile summary cannery data rather than a submission to the WCPFC. These data can then be used for a collaborative study (between national scientists and WCPFC SSP) to better inform the purse seine species composition estimates for their national purse seine fleet; this is an approach that has proven successful between Japan scientists and the WCPFC SSP in the past.

29. If this interim approach is acceptable, visits and work is likely to be extended into 2025 and establish processes that will then be used henceforth.

4. Example of recent purse seine species composition for difference sources of data

30. Figure 1 shows an example of the potential of cannery data to cross-check estimates of observer species composition. In this example, the proportion of bigeye tuna in the US catch has increased for all sources since 2020 no doubt due to (i) the component of the US fleet that usually fishes in the more western tropical areas of the WCPFC exited the fishery in recent years, and (ii) a shift further east in the tropical WCPFC area for the remaining vessels, extending into EPO, where bigeye tuna catch is higher and to some extent, easier for vessels to estimate for logbook reporting. However, further review is required to understand why the percentage of bigeye in the total catch according to logsheet data is higher than the value according to cannery data and the S_BEST estimates (which are derived from observer data).

31. In any event, further review of the cannery data presented here is required since, for example, some of the cannery catch data may include catches outside the WCPFC Area (since the linking to logbook data has not been undertaken to identify trips which straddle the WCPFC-IATTC boundary), and catches of large yellowfin (and bigeye) tuna destined for canneries not providing data will bias the overall species composition from the available cannery data. It should also be noted that the species composition estimates in the ‘S_BEST’ data source is based on observer data, which had very low coverage during the period 2020-2022 due to the impacts of COVID. These adjustments are possible but have not yet been considered in the figure presented below.

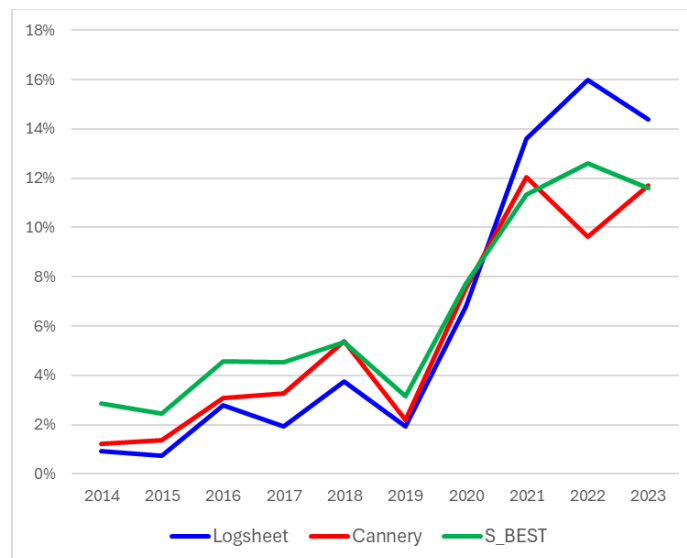


Figure 1. Annual trends of the proportion of bigeye tuna (%) in the purse seine catch for US vessels according to different sources of data.

“CANNERY” – unadjusted cannery data, coverage incomplete;

“S_BEST” – represents aggregated logbook data, with species composition adjusted from observer estimates (see Peatman 2020a and 2020b).

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ANNEX 1 – WCPFC Project 114 – Terms of Reference

WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION

TERMS OF REFERENCE

WCPFC Project 114: Improved Coverage of Cannery Receipt Data for WCPFC Scientific Work

BACKGROUND

Observers on purse seine vessels collect tuna species composition data which is a fundamental input to estimating the purse seine tuna catch by species. However, 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 (see Hampton and Williams, 2016, Lawson, 2014 and Peatman, 2020a). 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).

Purse seine processor (cannery) data have been identified as a potentially important source of data for verifying the estimates of purse seine tuna species catch determined from observer data (Lewis and Williams, 2016; Williams, 2017). The COVID-19 pandemic has resulted in a reduction in observer coverage in recent years (~50% in 2020 and ~10% in 2021), and therefore represents another important reason for considering the use of cannery data in estimation of purse seine tuna species composition as a supplement to observer information (Peatman et al., 2022).

Peatman (2020b) demonstrates the utility of cannery receipts data (for the US purse seine fleet) as an independent dataset for validation of observer sample-based species composition estimates.

Wider availability of comprehensive cannery receipts data would enable the benefits of cannery data to be realized for other purse seine fleets operating in the WCPO.

The Guidelines for the Voluntary Submission of Purse seine Processor data by CCMs to the Commission provide a mechanism for improving the coverage of cannery data for potential use.

Achievement of the objectives is subject to the following assumptions:

- Cooperation with relevant port state CCM authorities;
- Cooperation with processor companies;
- Cannery receipt data align to the *Guidelines for the Voluntary Submission of Purse seine Processor data by CCMs to the Commission*;
- The quality of cannery receipt data is appropriate;

OBJECTIVES

This project's overarching objective is to continue the work first started by Lewis (2017) to improve the coverage of cannery receipt data through collaboration with relevant port state CCM authorities.

The specific objectives will cover:

1. Identifying the gaps in the cannery receipt data submissions to the WCPFC;
2. In Year 1 of the project (as an initial step),
 - a) collaboration with one interested port state CCM, to approach several (but at least one) companies to request the provision of cannery data, using the *WCPFC Guidelines for the Voluntary Submission of Purse seine Processor data by CCMs to the Commission*³. It is envisaged that agreement to submit cannery data will require agreement for data confidentiality and other aspects, to be set out in Memorandum of Understanding (MOU) similar to that outlined in Lewis (2017).
 - b) As a key activity, document the protocols for how cannery receipt data are collected, including an assessment of the accuracy of species identification, particularly on how to distinguish juvenile bigeye and juvenile yellowfin tuna, and any requirements for sub-sampling certain size/species categories, noting the confidentiality of this information;
3. The documentation of the experience from Year 1 to outline a plan for approaching other processor companies in Years 2 and 3 of the project;
4. In Years 2 and 3 of the project, continuation of the work in collaborating with additional relevant port state CCMs, to approach companies to request the provision of cannery data. Also, to revise/improve the protocols as mentioned in 2(b) as necessary;
5. The provision of annual reports of project activities to the WCPFC Scientific Committee;
6. Where coverage of cannery data is adequate, the continuation of the analyses started in Peatman (2020b);
7. The WCPFC Science Service Provider (SSP) continuing the management and data quality assurance of purse seine processor data submission, including the identification of key gaps and resolving duplicate processor data (e.g. when valuable Final Outturn [FOT] data are provided from a different source).

SCOPE OF WORK

The proposed activities include:

- Seeking interest from relevant port-state CCMs to participate in Year 1 of the project;
- Selection of a suitable contractor;
- Initial collaboration (through email/virtual meetings) to plan a visit to the port state CCM country, include potentially identifying a cooperative processing company before the visit;
- Informing relevant flag and coastal state CCMs of any planned visits, and engaging with these CCMs during the project as required;
- Conduct the visit (1-2 weeks) under Year 1 objectives;
- Contractor liaison with the WCPFC Secretariat and SSP;
- Preparation of consultant report for year 1 activities (objectives 1, 2 and 3), including a plan for Year 2 and 3 activities;
- Consultant conducting Year 2 and 3 activities (Objective 4), in liaison with SSP and WCPFC Secretariat;
- Preparation and presentation of reports to SC;
- Ongoing work required under Objectives 6 and 7.

It is intended that annual reports will be prepared for SC19, SC20 and SC21.

³ <https://www.wcpfc.int/doc/data-07/guidelines-voluntary-submission-purse-seine-processor-data-ccms-commission>

TIMEFRAME

36 months (from January 2023 through December 2025)

BUDGET

The consultant will be managed/coordinated through the WCPFC Secretariat and the SSP.

Note that the involvement and resources provided by the SSP to manage this project are anticipated to be covered under the WCPFC SSP contract. The SSP will be directly involved in activities under Objectives 1, 5, 6 and 7, and under other Objectives as required to most efficiently undertake the work.

A revision to the indicative budgets for Years 2 and 3 (2024 and 2025) may be necessary after the first year's activities.

Year	Indicative budget	Anticipated work
2023	US\$35,000	Covers the cost of an appropriate consultant and travel to cover Objectives 2, 3 and 5 (and Objective 1, in collaboration with the SSP).
2024	US\$60,000	Covers the cost of an appropriate consultant and travel to cover Objectives 4 and 5 (in collaboration with the SSP).
2025	US\$35,000	Covers the cost of an appropriate consultant and travel to cover Objectives 4 and 5 (in collaboration with the SSP).

The consultant will be managed/coordinated through the WCPFC Secretariat and the SSP.

Note that the involvement and resources provided by the SSP to manage this project are anticipated to be covered under the WCPFC SSP contract. The SSP will be directly involved in activities under Objectives 1, 5, 6 and 7, and under other Objectives as required to most efficiently undertake the work.

A revision to the indicative budget for Year 3 (i.e., 2025) may be necessary after the first and second year activities.

OUTPUTS and SCHEDULE

The principal outputs of the assignment will be:

- Submission of a preliminary/progress report for the Project 114 to the WCPFC Secretariat (SungKwon.Soh@wcpfc.int; Elaine.Garvilles@wcpfc.int) by 19 July 2024;
- Presentation of the Project 114 to SC20 (no travel cost required for the contractors' presentation); and
- Submission of a 2024 final report for Project 114 to the WCPFC Secretariat by 31 December 2024 or earlier.
- This contract shall be renewed subject to the decision of project extension by WCPFC21.

ANNEX 2 – Tables available in the public domain from the WCPFC Project 114 gap analysis work
Table A1. The best estimate of WCPFC purse seine catch cannery receipts with available ISSF-affiliated cannery company data for 2019

Processing Country	2019						2021		
	Best Estimate of WCPFC PURSE SEINE cannery receipts (2019) ¹		ISSF company Cannery receipts for WCPFC PURSE SEINE Catch (2019)			Estimated gaps in ISSF data	Source of information / NOTES	ISSF company Cannery receipts for WCPFC PS Catch (2021)	
	MT	%	MT	% of ISSF Total	% of PEW study estimate	MT		MT	% of ISSF Total
Thailand	800,000	42%	417,415	60%	52%	382,585	includes IO catch ?	441,284	54%
Philippines	210,000	11%	65,784	9%	31%	144,216	ACE PS domestic + foreign landings fleet (see PTUNASTAT). Pew study has PH+PNG at 600,000 MT which seems excessive based on other data ???	91,239	11%
PNG	80,000	4%	19,803	3%	25%	60,197	40,000 MT yield from two canneries, including two PH companies processing around 50,000MT per year -- check notes	26,719	3%
Korea	260,000	14%	1,470	0%	1%	258,530		0	0%
Japan	170,000	9%	0	0%	0%	170,000		0	0%
China	140,000	7%	1,210	0%	1%	138,790	Increases in CH cannery receipts in recent years	35,212	4%
American Samoa	60,000	3%	80,000	11%	133%	-20,000		77,900	9%
Solomon Islands	33,000	2%	33,000	5%	100%	0		48,929	6%
Others (EPO canneries)	150,000	8%	80,000	11%	53%	70,000	ISSF data may include EPO catch - need to check	100,000	12%
Total	1,903,000		698,682					821,283	
WCPFC PS Estimates (Excl ID, VN)	1,899,558							1,665,446	

¹ Estimated in-bound PS Catch (2019) extracted from information in "**Trade Flow Analysis of Pacific Tuna Fisheries Final Report | September 7, 2023**" prepared for Pew Foundations

Table A2. Estimates of the proportion of landed purse seine catch based on carrying capacity of PS carriers by PORT/COUNTRY of return, 2019. (based on VMS trip data for carrier vessels)

Country	Port	Estimate of carrying capacity	%	Trips	Vessels
TH	BANGKOK	499,758	32%	116	65
CN	ZHOUSHAN	287,888	18%	52	27
PH	GENERAL SANTOS	223,141	14%	64	39
TH	SONGKHLA	102,783	7%	24	18
KR	BUSAN	76,872	5%	18	14
TW	KAOHSIUNG	52,059	3%	17	11
JP	MAKURAZAKI	46,964	3%	14	3
KR	TONGYEONG	36,903	2%	12	9
EC	MANTA	35,795	2%	7	6
KR	MOKPO	32,820	2%	9	7
KR	MASAN	30,970	2%	9	6
JP	SHIMIZU	28,153	2%	7	6
CN	DALIAN	23,750	2%	3	3
AS	PAGO PAGO	17,635	1%	4	4
JP	MISAKI	17,200	1%	4	4
JP	HEDA	14,216	1%	5	4
CN	QINGDAO	9,825	1%	4	4
PH	ZAMBOANGA	8,898	1%	2	2
PA	PANAMA	5,471	0%	1	1
JP	YOKOSUKA	4,902	0%	1	1
JP	SHIZUOKA	4,810	0%	2	2
PA	CRISTOBAL	4,499	0%	1	1
JP	OSAKA	4,000	0%	1	1
CN	HONG KONG	2,581	0%	1	1
TW	TUNGKANG	498	0%	1	1

Notes

1. Assumes the first port of carrier return outside the Pacific is where most of catch is offloaded.
2. Assumes all catch is WCPFC catch, which may not be the case.
3. Acknowledges that some PS fishing vessels offload direct to cannery (e.g. in America Samoa, Japan, Philippines and PNG), which are not included here.
4. Some of the estimates may include longline catches, which cannot be separated out at this stage.
5. Assumes "estimated carrying capacity" is proportional to the landed catch volume, but they are not equivalent.
6. Only considers return ports in Asian and South/Central American ports/countries.

Table A3. Estimates of the proportion of landed purse seine catch based on carrying capacity of PS carriers by COUNTRY of return, 2019. (based on VMS trip data for carrier vessels)

Country	Estimate of carrying capacity	Trips	Vessels	%
Thailand	602,541	140	69	38%
China	324,044	60	34	21%
Philippines	232,039	66	41	15%
Korea	177,565	48	26	11%
Japan	120,245	34	17	8%
Chinese Taipei	52,557	18	11	3%
Ecuador	35,795	7	6	2%
American Samoa	17,635	4	4	1%
Panama	9,970	2	2	1%

Notes

1. Assumes the first port of carrier return outside the Pacific is where most of catch is offloaded.
2. Assumes all catch is WCPFC catch, which may not be the case.
3. Acknowledges that some PS fishing vessels offload direct to cannery (e.g. in American Samoa, Japan, Philippines and PNG), which are not included here.
4. Some of the estimates may include longline catches, which cannot be separated out at this stage.
5. Assumes “estimated carrying capacity” is proportional to the landed catch volume, but they are not equivalent.
6. Only considers return ports in Asian and South/Central American ports/countries.

Table A4. Annual tuna catch landings to ISSF-affiliated companies by Country, 2018-2023. (based on ISSF data)

Country	y2018	y2019	y2020	y2021	y2022	y2023
AS	0	80,060	19,535	77,900	86,089	87,536
CI	0	0	0	0	0	0
CN	0	1,210	4,547	35,212	17,669	57,861
CO	0	0	0	4,454	0	0
EC	60,199	31,494	26,519	95,188	107,177	73,414
ES	28,861	10,527	60,761	44,972	18,343	3,333
FJ	0	240	0	0	0	0
FM	0	160	0	0	0	0
GB	0	0	0	0	0	0
GH	98	0	0	0	0	0
GT	0	0	152	19	0	0
ID	17,924	24,144	29,234	21,229	22,650	21,314
IT	0	0	0	1,384	1,609	0
JP	0	25	0	2,066	521	103
KI	0	605	0	0	0	0
KR	0	1,471	0	0	0	0
MA	0	0	395	169	0	0
MH	0	344	0	0	0	0
MU	3,366	6,603	0	0	0	0
MX	0	1,984	0	18,463	7,661	4,014
NZ	0	0	0	0	0	0
PE	0	1,205	0	5,881	5,385	5,877
PG	29,361	19,804	23,095	26,720	25,910	17,013
PH	57,999	65,784	68,896	91,239	72,822	54,045
PT	794	124	85	50	0	0
SB	58,182	32,923	27,051	48,929	26,882	31,400
SC	3,755	1,330	7,479	1,872	4,213	2,404
SN	0	130	0	0	0	0
TH	402,478	417,415	438,247	441,284	432,622	431,079
TV	0	0	0	0	0	0
TW	0	124	0	0	0	0
US	92,817	0	72,300	6,260	943	3,893
VN	8,235	8,053	4,789	3,147	5,557	10,141
XX	0	270	12,706	12,694	5,339	0
Grand Total	764,070	706,030	795,791	939,132	841,390	803,429