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Information and Data Requirements to Support Management Decisions for SP Albacore, Skipjack, Bigeye, and Yellowfin Tunas

WCPFC20-2023-18
27 November 2023

Prepared by the Secretariat

Purpose and Introduction

1. This paper presents information to complement the updates and proposals for WCPFC20 prepared by the Co-Chairs of the Transhipment Intersessional Working Group (TS-IWG), Chair of the IWG on the Regional Observer Programme (IWG-ROP), and Chair of the Electronic Reporting-Electronic Monitoring Working Group (ER&EM-WG) with respect to 2023 intersessional activities and planned work for 2024. The work of these three CCM-led IWGs is focused on ensuring that the Commission's data collection and monitoring tools can continue to effectively and efficiently support WCPFC Conservation and Management Measures, including harvest strategy elements.

2. The paper is structured, as follows:

    a. At-sea transhipment data collection and monitoring
    b. Strengthening monitoring
    c. Data collection and monitoring through the Western Pacific East Asia – Improved Tuna Monitoring Activity (WPEA-ITM) Project

At-sea transhipment data collection and monitoring

Existing data to support monitoring activities

3. WCPFC's complete suite of data collection and monitoring activities in support of WCPFC's conservation and management efforts is set out in Table 6 of WCPFC20-2023-14_Rev1. While related to tropical tuna and SP albacore harvest strategies, the data collection and monitoring activities are also applicable to the Commission's work on other species.

4. Review and analysis of transhipment data has revealed opportunities to strengthen the information derived from transhipment activities in support of Commission management decisions. Opportunities include enhancing support to CCMs in their efforts to monitor fleet activities, as well as inform changing trends and issues in transhipment activities for Commission consideration. The experience gained through data analytical work in 2022 and 2023 has highlighted issues around data gaps and data quality that require attention. The work undertaken in 2023 through the TS-IWG has also identified opportunities for strengthening transhipment-related data.

5. Attachment 1 provides background details on the volume of fish and number of reported transhipment events in the WCPFC Convention Area each year, as well as the locations of transhipments in relation to the level of fishing effort for albacore, bigeye, yellowfin, and swordfish. These details indicate the extent to which longline vessels are involved in high seas transhipments across the WCPO, the number of transhipments occurring in and across the boundary of the WCPFC/IATTC overlap area, the locations of transhipments relative to tuna fishing effort, and confirms that a significant proportion of total WCPO longline catches are reported to be transhipped in the high seas of the Convention Area and in waters outside of the Convention Area.

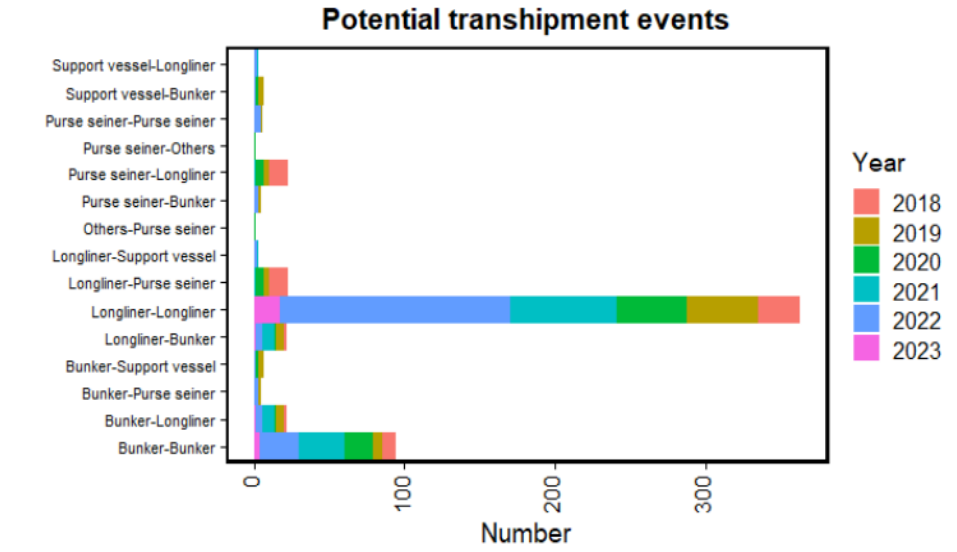
6. While there are specific requirements for observers who are monitoring transhipment activities, observer coverage on offloading longline vessels under WCPFC rules has for many years had a minimum required ROP coverage rate of 5%.[1] A Commission decision taken at WCPFC19 that established reporting of observer data by observers monitoring transhipment activities on receiving vessels[2] is in the early stages of being implemented, with some reports starting to be provided to SPC. This initial reporting from observer-monitored transhipments from carrier vessels will support potential refinement of observer protocols through the IWG-ROP, to ensure that reporting is as accurate and complete as possible. However, the minimum 5% ROP coverage rate on longline vessels means there are some limitations on the scope for observer data to be used by CCMs to identify misreporting of offloaded fish or where transhipment events have not been reported.

7. The minimum 5% ROP longline coverage rate was evaluated through the CMS by TCC annually until 2019, with the review of this obligation paused for the 2021 and 2022 reporting years due to the COVID-19 pandemic and its effect on observer placements. It is worth noting that the most recent compliance assessment completed in 2020 (covering RY 2019) found that all applicable longline fisheries[3] had achieved a minimum of 5% ROP observer coverage rate based on data submission to SSP (see SC16-2020-ST-IP-02). The most recent provisional information presented to SC19 and TCC19, indicates that based on data submission to SSP, most applicable longline fisheries are exceeding the minimum of 5% ROP observer coverage rate based on data submission to SSP (see Attachment 4). Some longline fleets in 2022 may have still been experiencing the impact of the COVID-19 pandemic on their preferred ROP observer programme, and placements appear to be lower than the coverage level that was evaluated in 2019. For some Pacific Island longline fleets, there may also be an indication of a change in the behaviour of their domestic fleets in 2022, compared to pre-COVID, with a greater proportion of non-ROP trips occurring (i.e., vessels fishing exclusively in one EEZ and occasional fishing in adjacent high seas).

[1] CMM 2018-05 Annex C 06: No later than 30 June 2012, CCMs shall achieve 5% coverage of the effort in each fishery under the jurisdiction of the Commission (except for vessels provided for in paras 9 and 10). In order to facilitate the placement of observers the logistics may dictate that this be done on the basis of trips.

[2] suppl_CMM 2009-06-3: Minimum Data Fields for Observer Transhipment Monitoring - 2023

[3] For ROP trips undertaken in 2019, by the longline flagged fleets of Cook Islands, China, European Union, Fiji, Japan, Korea, Solomon Islands, Tuvalu, Chinese Taipei, United States of America, and Vanuatu.



Category	Vessel 1	Vessel 2	2018	2019	2020	2021	2022	2023
No Record / No Past Link - Fish Carrier - BUNKER			3	3	1	4	1	
No Record / No Past Link - Fish Carrier - FISH CARRIER			2	1	1			
No Record / No Past Link - Fish Carrier - Longliner							1	1
No Record / No Past Transhipment Link / Never Received Fish	Bunker	Bunker	9	6	19	30	26	4
		Longliner	2	5	1	8	5	1
		Purse seiner		2			3	
		Support vessel		4	2		1	
	Longliner	Bunker	2	5	1	8	5	1
		Longliner	28	47	47	71	153	17
		Purse seiner	13	3	6	1		
		Support vessel				1	2	
	Others	Purse seiner			1			
	Purse seiner	Bunker		2			3	
		Longliner	13	3	6	1		
		Others			1			
		Purse seiner		1			5	
	Support vessel	Bunker		4	2		1	
		Longliner				1	2	
Past Transhipment Link			9	9	1	6	17	8
Grand Total			66	81	79	121	214	31

Figure 1. Vessels within 250m of each other for more than 4 hours based on analysis of VMS position reports from 2018-2023. (Source: WCPFC 2023)

8. Analytical tools are needed to further identify and strengthen data submitted through transhipment reports, including in identifying where potential transhipments have been incorrectly reported, or not reported at all. The analysis of VMS reports can be used as an indicator of vessel activity in close proximity to another vessel and allows for further investigation, where necessary, to understand historical transhipment patterns that may inform management decisions. **Figure 1** (above) shows the output of such analyses, which clearly identifies types of vessels involved in potential transhipment activities across a specified time series, and where relevant, CCMs may benefit through targeting of resources in respect of those activities.

9. Analysis of VMS data can also indicate whether vessels may be staying in the same place for extended periods of time, and thus potentially engaged in transhipment activities where corresponding reports would be expected. As requested at TCC19, a prototype reporting tool has been developed to identify these vessels. The report excludes:

    a. Philippines flagged vessels in HSP1 which would skew the result; and
    b. vessels involved in transhipments reported to the Commission.

10. **Figure 2** presents information based on an analysis of VMS data from carriers which could be used to identify possible transhipments when reviewing other data for offloading vessels. Further details on locations of reported transhipment events from 2021-2023 can be found at Attachment 2, which also show WCPFC VMS data coverage for each year.

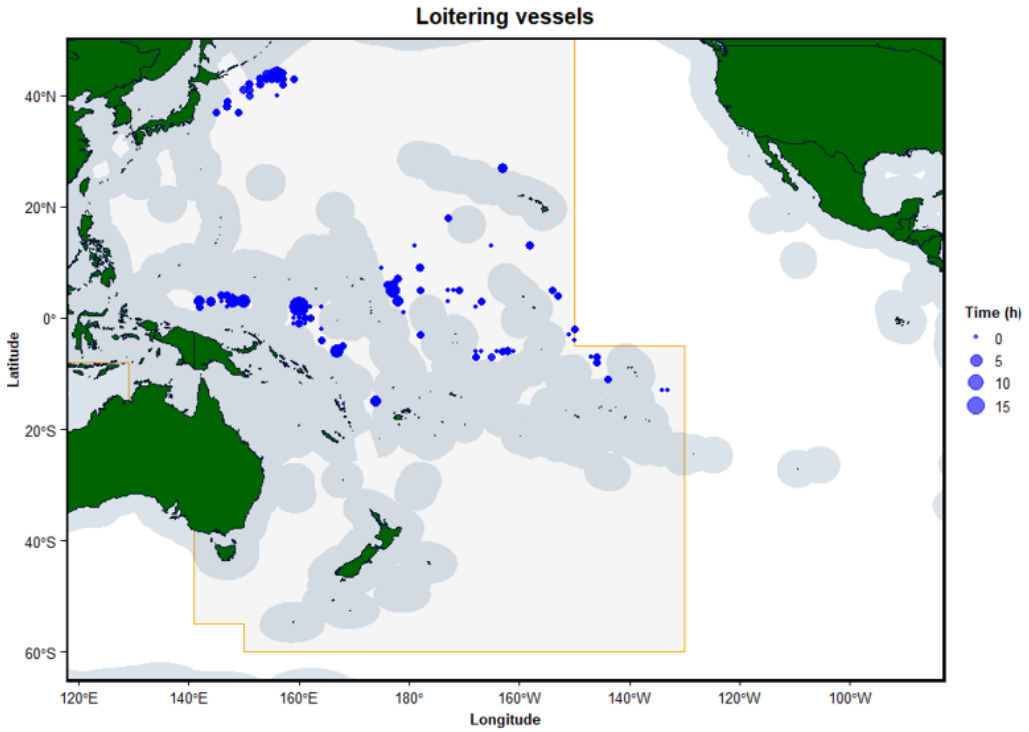


Figure 2. Carrier vessels staying in the same area for eight hours or more based on WCPFC VMS analysis (2018-2023). (Source: WCPFC. 2023)

Potential Improvements to Data Collection and Monitoring

11. The TS-IWG is tasked with assessing the effectiveness in regulating and monitoring transhipment activity in a manner consistent with the Convention and in recommending amendments or other actions, if any, related to CMM 2009-06 to improve the regulation and monitoring of transhipment activities. See TS-IWG Workplan for more information.

12. Discussion through the TS-IWG has led to a proposal to reconsider the quarantining of VMS data in the IATTC Convention Area given the original purpose of a decision taken at WCPFC9 (2012) was to avoid additional excessive VMS transmission costs. In practice, and as is illustrated in Attachment 1, the current rules governing the operation of the WCPFC VMS which results from a WCPFC9 decision, has the effect of reducing the polling rate for Inmarsat-C units to one position every 24 hours and prevents access to WCPFC VMS data transmitted from the other MTUs outside the Convention Area. The rationale for this approach at the time considered that the cost-structure for airtime from MTUs transmitting on Inmarsat std-C channel was based on the size and frequency of the data transferred. Since 2012, the proportion of MTUs reporting to WCPFC VMS via Inmarsat std-C channel has significantly reduced (currently ~24% of all vessels reporting directly to the Commission VMS is via the Inmarsat std-C channel (see Figure 3 in TCC19-2023-RP01 Annual Report on the Commission VMS),

and there is a much smaller proportion of WCPFC-activated MTUs that are authorised to tranship at-sea and that are operating in both the WCPFC and IATTC Convention Area. Consequently, there have been significant changes in VMS position reporting cost structures since the decision at WCPFC9 in 2012 which gives way for reconsideration of the WCPFC9 decision and the opportunity for WCPFC to narrow a key information gap. The TS-IWGs proposal will ensure that WCPFC VMS is available in key areas where at-sea transhipments notifications and declarations are required to be submitted to WCPFC under the Transhipment CMM. See Attachment 3 for further details on discrepancies between reported transhipments and VMS data.

13. Additional information provided through the Annual Report on Transhipment Reporting identifies incomplete, inconsistent, or other potential data quality issues for TS-IWG consideration (refer to WCPFC20-2023-IP10). Data gaps and poor-quality data affect the SSP's use of self-reported data to support scientific analyses as well as TCC's ability to carry out a robust evaluation of compliance with Conservation and Management Measures. The Secretariat has identified several practices associated with reporting by observers and vessels that if adjusted, could assist in improving data collection and the quality of reported data such as:
    a. the carrier and offloading vessel submitting copies of the same transhipment declaration to the Secretariat is effectively a single form that is submitted by both vessels, so does not assist in identifying whether observer monitoring requirements in CMM 2009-06 paragraph 13-19 are being met and that the independence of monitoring is achieved;
    b. start date and time is required however, the end date and time is not required and in some cases the date provided is incorrect (it is the end date and time) or is not completed at all;
    c. where revised declarations are submitted after an event has been completed, details on the reasons for revision would provide for more meaningful assessment of the activity;
    d. observer reporting reflects the vessel reporting as the confirmation of product transhipped rather than providing an independent observer estimation based on protocols for such an assessment (noting further work on such protocols is required but examples of similar reporting are seen in the PS-3 form);
    e. some carrier vessels will put products to be transhipped as already onboard the vessel; and
    f. incomplete reporting by vessels including noting products or fish already on board.

14. Through decisions at WCPFC19, the TS-IWG has progressed observer reporting requirements of transhipment events (Minimum Data Fields for Observer Transhipment Monitoring - 2023), with implementation currently underway in 2023. Further work to expand and refine this reporting over time is planned to include the potential development of a carrier transhipment reporting form. This form could provide valuable data to link carrier activities to daily logsheet reporting from offloading vessels and other data sources, such as port entry. The IWG-ROP is also tasked with reviewing observer data collection more generally as well as specific taskings in relation to refining observer transhipment monitoring requirements (see IWG-ROP workplan 2023 – 2025).

15. Given limitations on observer coverage of the longline fleets operating on the high seas, which is discussed later in this paper, the use of new technologies is also under discussion in WCPFC as a mechanism to provide data and verification of transhipments.

Strengthening monitoring

Addressing priority data information and data needs identified within the Scientific Committee's Tuna Assessment Research Plan

16. Data gaps affecting the science and monitoring needs of the Commission were considered at SC19 with recommendations forwarded to the Commission to strengthen activity-based reporting (including those proposed above for transhipments and through the development of a revised Tuna Assessment Research Plan (TARP)).[4]

17. Of the 54 research activities identified within the TARP working paper, the following five were identified as collection activities that may assist in reducing future model misspecification and uncertainty in assessment outcomes:

    a. improved data for WPEA fisheries;
    b. enhanced data collection, auditing and validation processes, including species identification;
    c. collection of processor (cannery) time series data for validating tuna species composition;
    d. improved accounting for discards and longline depredation losses in stock assessments;
    e. improved or enhanced collection of logbook and observer longline data including the use of EM, to improve SC analyses (CPUE standardisation focus).

    Discussions on activities identified through the TARP in relation to funding of activities are taking place through the Finance and Administration Committee.

Operational longline data fields needed for Scientific Analyses

18. SC19 discussed a proposal (WCPFC-SC19-ST-WP03) for the collection of additional longline operational characteristics fields via logbooks. These gear descriptors will have broad future utility for catch rate standardisation across WCPFC tuna and billfish species, as well as for other purposes, particularly addressing questions of targeting and catchability. The proposal is to expand the minimum reporting requirements for longline operational characteristics to include: a priori target species, light stick use, bait type, mainline length and gear settings that influence fishing depth (including branch line length, float line length, vessel speed and line setting(shooting)speed).

19. SC19 acknowledged the scientific value of the additional data fields but there were concerns from some CCMs with respect to the implementation challenges and practicality of collecting these data. Some CCMs advised SC19 that they already collected some of these data fields and would be ready to submit a historical time series of these fields, which would be of immediate benefit to the scientific work of the Commission. SC19 **recommended** that these fields be considered for inclusion in the "Scientific Data to be Provided to the Commission (SciData)" (refer to SC19 Outcomes Document paragraphs 3 – 4) and consider their implementation as voluntary reporting items. These proposals are set out in **Table 1** below.

20. TCC19 briefly reviewed these issues in general, and no additional data or advice was provided.

[4] An informal small group (ISG03) met during SC19 to review SC19-SA-WP-15 (Tuna Assessment Research Plan (TARP) for 'key' tuna species assessments in the WCPO, 2023-2026) and the ISG03 Report is in Attachment 1 of the SC19 Outcomes Document. A copy of the TARP is available at this link: here.

Table 1. Additional longline operational data fields for CPUE standardization and related analyses

DATA FIELD	Suggested PROTOCOL for data collection
Target species for the set	Record the primary target species, or group of species, for this set.
Number of lightsticks used in set	Record the total number of lightsticks used in the set.
Bait type used in set	Record the FAO code for type of bait used for the set. Example types: • Squid (class Cephalopoda) • Sardine or Pilchard (family Clupeidae) • Mackerel (family Scombridae) • Mixed Mackerel and Sardine …
Mainline length	Record the mainline length (in kilometres) used in the trip or set, as appropriate.
Length of branch line	Record the average length in metres of the branch lines in the trip or set. (The total length from the mainline to the hook).
Length of float line	Record the average length in metres of the float lines in the set. (The total length from the float to the mainline).
Vessel speed during setting	Record the average speed in knots of vessel during line setting.
Speed of the line setter	Record the speed in knots of the line setter (i.e. the line shooter speed).

Additional code for the ACTIVITY field needed for Scientific Analyses

21. SC19 also discussed (WCPFC-SC19-ST-WP03) on the collection of additional longline operational characteristics fields via logbooks, specifically to add "transhipment at sea" as an additional item to the list of ACTIVITIES that is recorded at the DAILY level in the longline operational data (Section 1.3 in the ANNEX 1 of the Scientific data to be provided to the Commission). SC19 acknowledged that the proposal for the addition of a new activity code for any day when a "transhipment at sea occurs" would allow the SSP to define 'trips' within the operational data submitted to the Commission.

22. SC19 also noted that aggregating the catch by species in the longline operational data at the trip level (when the trip is terminated by an at-sea transhipment) is fundamental for the validation processes and supports using other independent sources of data (e.g. transhipment observers and carrier declarations) to provide more certainty in the data used in assessments and other work of the Commission. SC19 **recommended** that this proposal be considered further by TCC and the Regular Session of the Commission. TCC19 briefly reviewed these issues in general and no additional data or advice was provided (refer to SC19 outcomes document, paragraphs 5 – 7).

23. This proposed activity field would address a critical data gap that currently prevents linking logsheet trip catch data to transhipment event data to verify reporting and to support resolving issues where there may be gaps in key data fields in the logsheet. Most distant water vessels usually do not provide an indication of when a transhipment took place that would define the end of a trip. The lack of this information hinders the ability to define a 'trip' for these distant-water vessels as the point from the previous transhipment (or port visit) to the start of the next transhipment event, which would then

allow a comparison of the carrier's reported transhipped catch volume by species, with the logsheet trip catch volume by species.

Increasing longline observer coverage, refining observer data, and establishing E-monitoring

24. WCPFC-TCC19-2023-09 and Figure 3 below presents a spatial comparison of the observer coverage (yellow) overlaid on fishing effort (blue) for purse seine and for longline fisheries for the period 2018 - 2021. The difference in observer coverage between the purse seine fisheries (100%) and the longline fisheries (5%) is evident, as is the impact of COVID-19 on reduced observer placements in both purse seine and longline fisheries.

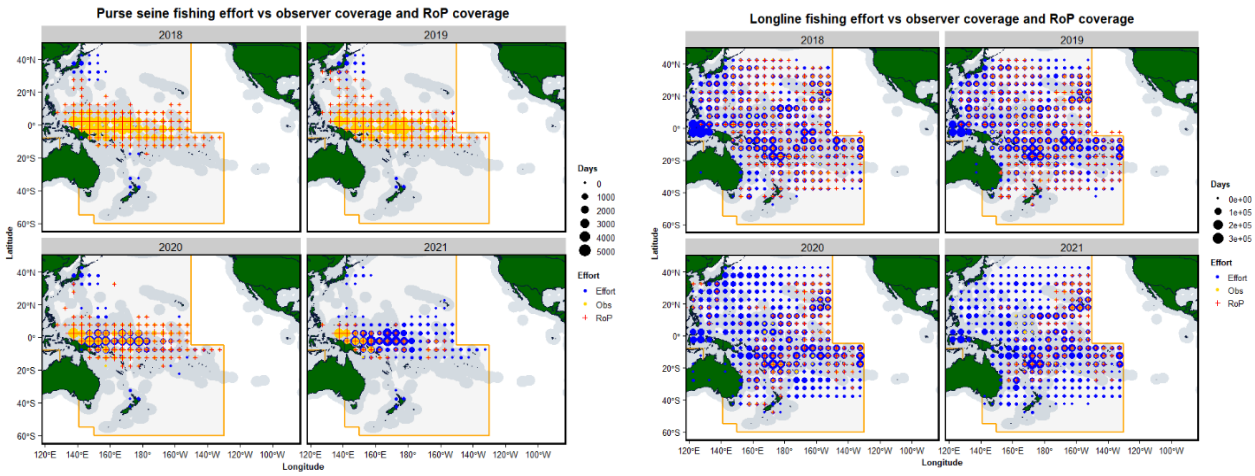


Figure 3: The distribution of purse seine fishing effort and observer effort (left) and longline fishing effort and observer effort (right) for 2018-2021. Source: WCPFC (2023)

25. TCC19 considered gaps in information to verify compliance, including in the current level of observer coverage on longline vessels, which impacts the Commission's ability to independently verify several obligations, especially catch limits. Although the Commission and its subsidiary bodies have been discussing the observer coverage levels in the longline fishery for several years, there has been no agreement to increase the minimum 5% ROP coverage rate since the adoption of the original ROP CMM 2007-01. The aim at the time of adoption in 2007 was to achieve this minimum level across most fisheries[5] no later than 30 June 2012.

26. SC19 **recommended** that the Commission explore options to expand the observer coverage on longline vessels through both human and electronic approaches in the WCPO so that the SC can provide better estimates of bycatch levels and other metrics from these fleets. Likewise, TCC19 reaffirmed the importance of increasing monitoring and observer coverage in the longline fishery, including through the implementation of electronic monitoring.

27. The information presented in Table 6 of WCPFC20-2023-14_Rev1 further supports the SC19 and TCC19 recommendations related to increasing observer coverage in the longline fishery, and the

[5] See CMM 2018-05 Annex C para 9 and 10: Except for fishing vessels used exclusively to fish for fresh fish in the area north of 20N, small vessels*, and troll and pole-and-line vessels used for fishing for skipjack tuna or albacore tuna*. (*The implementation date was deferred pending further advice from the IWG-ROP).

establishment of electronic monitoring as part of WCPFCs monitoring programmes. The information in Table 6 of WCPFC20-2023-14_Rev1 also confirms the importance of increasing observer coverage in non-purse seine fisheries to improve the Commission's data collection, particularly related to discards, species composition, and impacts of fishing activities including on bycatch and non-target species, with the aim of strengthening the Commission's management frameworks. It also confirms that for catch-based limits and other measures applying to the longline fisheries, there is limited data available from current data collection and monitoring programmes to verify compliance with CCM's catch limits.

28. The Chair's Consultative Draft for the Tropical Tuna Measure CMM (WCPFC20-2023-33_Rev01) includes proposals to establish additional MCS measures for longline fisheries, including 30% ROP longline coverage and entry/exit reporting for the high seas of the Convention Area to support verification of longline vessels that are active in the Convention Area. In the medium-term, it may also be possible through the development of catch documentation schemes to collect additional data that will support analyses and independent verification of CCM-reported information in relation to compliance with catch limits.

29. For the future, the Commission would be drawing on the advice of relevant IWGs to continue advancing the refinement of WCPFC's monitoring programmes. The work of the ERandEMWG to establish electronic monitoring (EM) as a complement to existing monitoring is especially important to the Commission's efforts to close monitoring gaps. A Commission EM programme will provide an opportunity to increase the levels and representativeness of monitoring programmes for the longline fishery, further bolstering the Commission's management frameworks. In addition, the IWG-ROP discussions on refining data fields collected by ROP observers to strengthen the Commissions data collection is expected to yield outcomes that can better support implementation of conservation and management measures by CCMs.

30. TCC19 recommended continuing work through the IWG-ROP, TS-IWG and ERandEM WG to refine and enhance the WCPFC's monitoring programmes, and supported efforts by the Secretariat to further analyze available information to promote heightened understanding and awareness of fishing impacts in the WCPFC Convention Area.[6]

Data collection and monitoring through the Western Pacific East Asia – Improved Tuna Monitoring Activity (WPEA-ITM) Project

31. The WPEA-ITM project is building capacity in Indonesia, Philippines, and Vietnam, to carry out critical data collection and monitoring of their respective tuna fisheries. A globally significant proportion of key tunas are harvested across these three countries (about 28% of the WCPFC Statistical Area in 2022), but the resources and their associated fisheries are not well understood and there are gaps in governance frameworks for stock management.

32. The WPEA-ITM contributes to:

    - strengthening national capacities in fishery monitoring and assessments;
    - improving knowledge of oceanic fish stocks and reducing uncertainties in stock assessments;
    - strengthening national capacities in oceanic fishery management, with participant countries contributing to the management of shared migratory fish stocks;

[6] See TCC19 Summary Report, paragraphs 150-153.

- strengthening national laws, policies and institutions, to implement applicable global and regional instruments through supporting the capture of operational level data on all catches for all countries and allowing catch rates to be monitored.

33. WPEA-ITM activities over several years have contributed to reduced uncertainties in the WCPO catch and stock assessments. Work continues to progress towards improving the quality and quantity of tuna data available through critical national tuna data collections programmes. Ongoing workshops are improving self-reported logsheet data collection and coverage for purse seine, ring net and hand line fisheries supported by the development of independent observer programmes and port sampling.

34. This work is also progressing towards the development and implementation of national integrated fishery monitoring programmes based on the improved national catch estimates and stock assessments that will support harvest strategy development and stock assessments.

35. Challenges remain in the development of governance frameworks, and IT systems and support to enable data collection, monitoring, data analysis and data management. For example, there is a need to continue to reduce the differences in data forms and collection protocols between WCPFC and national systems and to build and support provincial locations with better protocols and procedures for approvals for sharing of collected data. Automated electronic reporting and electronic monitoring systems are to be considered and programmes would include consideration of data collection and monitoring of observer and crew safety and labour standards.

36. More detailed information on the WPEA-ITM project, including data gaps and the progress on improving data collection and monitoring, is available in WCPFC20-2023-11.

Recommendations

37. The Commission is invited to:

    a. **Note** the gaps in WCPFC VMS data available to validate the reported location of transhipments because of the quarantine rules agreed at WCPFC9 in 2012 that apply a 200nm buffer zone around the eastern side of the Convention Area, and which were based on a desire to avoid additional excessive transmission costs, and the significant changes in VMS position reporting cost structures since the decision at WCPFC9 which reduces the necessity for these rules.

    b. **Decide** to reverse the WCPFC9 decision to remove the WCPFC VMS quarantine rules that apply to the waters to the east and south of the Convention Area given its impact on monitoring WCPFC transhipments, particularly WCPFC-caught fish that are transhipped in the IATTC Convention Area.

    c. **Support** the Secretariat's plans for the continued development of analytic tools and concurrent work with CCMs to address data gaps and data quality issues that arise from reporting and analysis of transhipment related data and information.

    d. **Explore** options to expand the observer coverage on longline vessels through both human and electronic approaches in the WCPO so that the SC can provide better estimates of bycatch levels and other metrics from these fleets. Likewise, TCC19 reaffirmed the importance of increasing monitoring and observer coverage in the longline fishery to allow for independent verification of certain key obligations, especially catch limits, and **commit** to establishing an electronic monitoring programme for the WCPFC as soon as possible.

    e. **Acknowledge** the scientific value of the additional longline operational data fields in Table 1 which are already collected from some CCMs and if expanded to more CCMs, would provide

immediate benefit to the Commission's work. Considering the concerns from some CCMs in collecting these data fields, the Commission is invited to **agree** that the additional longline operational data fields (Table 1) should be included in the "Scientific Data to be Provided to the Commission (SciData)" on a voluntary submission basis only.

f. **Request** the SSP to provide updates to the Scientific Committee and the Technical and Compliance Committee beginning in 2025 on the status of data submission in (e) and the impact on scientific analyses.

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Vessel speed during setting	Record the average speed in knots of vessel during line setting.
Speed of the line setter	Record the speed in knots of the line setter (i.e. the line shooter speed).

g. **Adopt** the addition of a new activity code for any day when a "transhipment at sea occurs" that would allow the SSP to define 'trips' within the operational data submitted to the Commission to allow aggregating of catch by species at the trip level which is fundamental to support the validation processes that provide more certainty in the data used in assessments and other work of the Commission.

h. **Note** the updates and workplans of the TS-IWG, IWG-ROP, and ERandEM WG provide further recommendations for transhipment related data collection and monitoring processes.

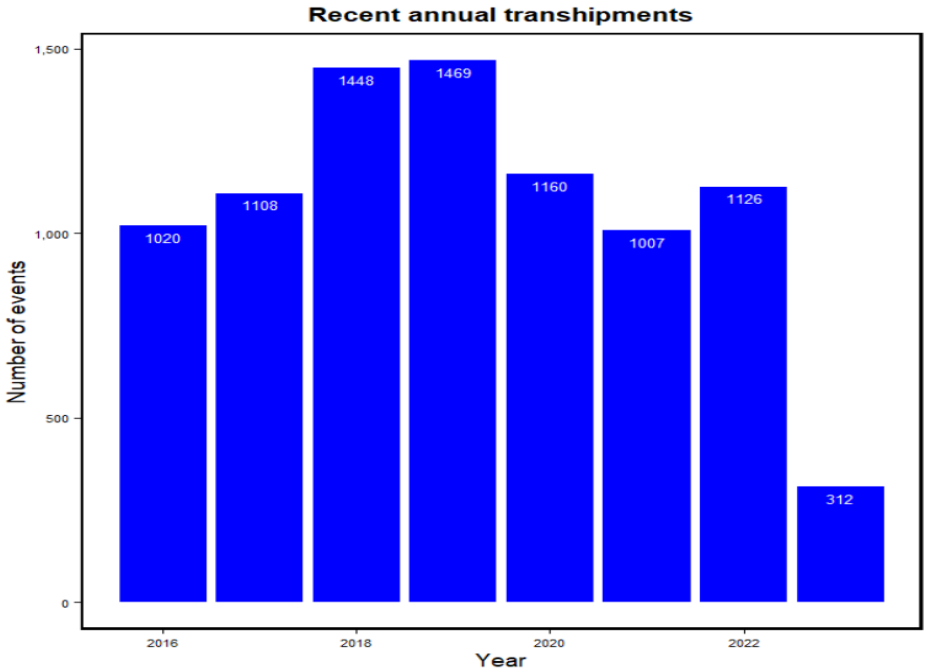
Attachment 1

The following tables and figures show the volume of fish and number of reported events each year that occur across the WCPO including the overlap area with IATTC, demonstrating the significance of high seas transhipment related data collection and monitoring.

Table 1. Reported quantities of highly migratory fish stocks reported to have been transhipped on the high seas in 2019-2021 (including events reported to WCPFC that took place in IATTC area) with the raised longline catch estimates for the WCPFC Statistical Area. (TSER data)

	Year	ALB	BET	YFT	BUM	MLS	SWO
Reported transhiped	2021	18,311.00	17,005.00	14,119.00	1,441.000	347.000	2,137.00
Raised catch estimated		56,256.40	47,963.30	68,576.71	6,645.000	2,097.000	11,529.00
Percent transhipped		32.50	35.50	20.60	21.700	16.500	18.50
Reported transhiped	2020	25,034.00	19,003.00	12,338.00	2,254.000	471.000	2,435.00
Raised catch estimated		77,698.21	58,936.63	75,260.95	8,209.887	2,887.998	13,659.86
Percent transhipped		32.20	32.20	16.40	27.500	16.300	17.80
Reported transhiped	2019	25,064.00	23,455.00	15,707.00	2,364.000	15,707.000	2,899.00
Raised catch estimated		89,312.83	70,350.49	106,698.00	12,079.424	106,698.003	14,456.30
Percent transhipped		28.10	33.30	14.70	19.600	14.700	20.10

Table 2. Number of transhipments events occurring each year between 2016 and 2022 (2023 figures are incomplete) (TSER data)



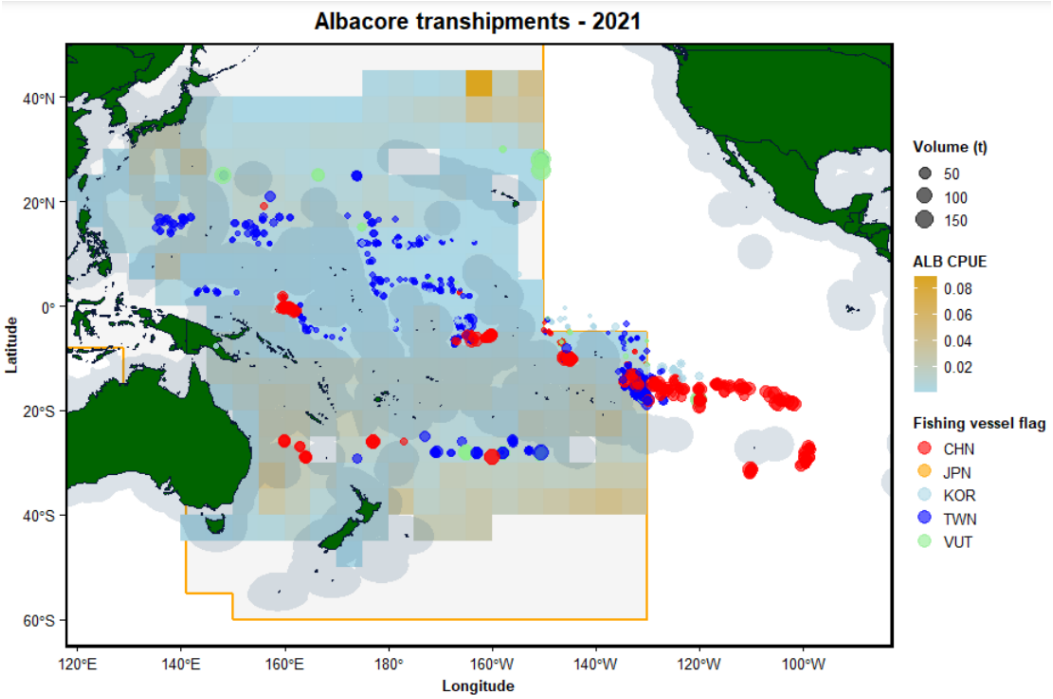


Figure a. Catch per unit effort (CPUE) of albacore tuna at a 5 x 5 degree scale for longline fishing (represented by squares) and TSER reported albacore tuna transhipments by flag in 2021. (Source: WCPFC. 2023).

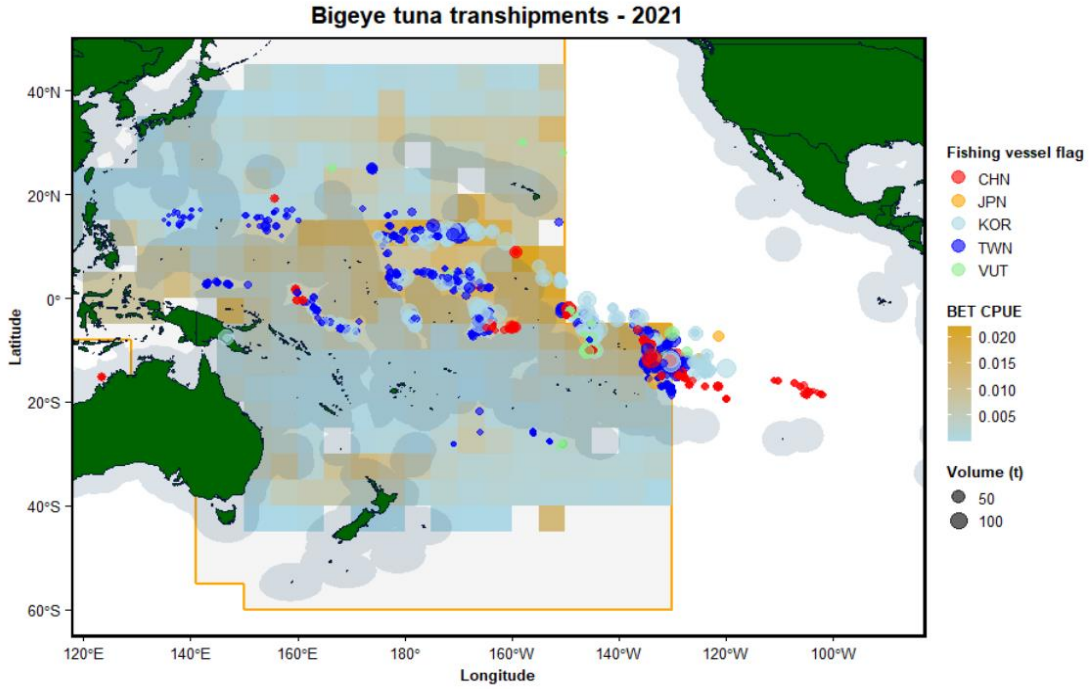


Figure b. Catch per unit effort (CPUE) of bigeye tuna at a 5 x 5 degree scale for longline fishing (represented by squares) and TSER reported bigeye tuna transhipments by flag in 2021. (Source: WCPFC. 2023).

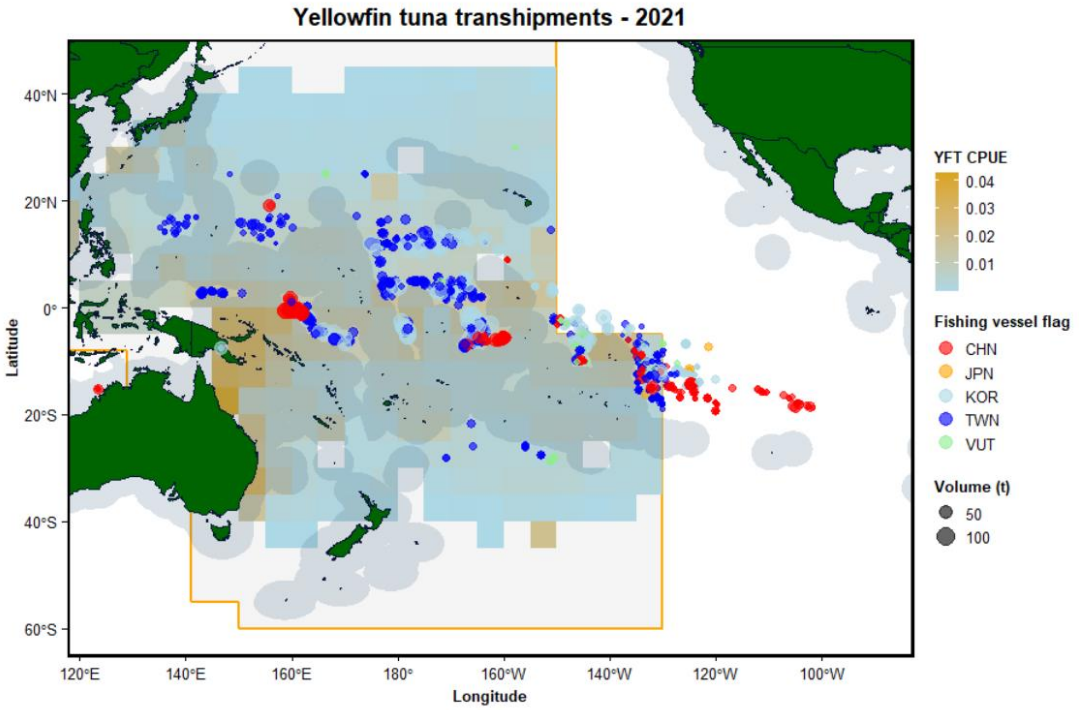


Figure c. Catch per unit effort (CPUE) of yellowfin tuna at a 5 x 5 degree scale for longline fishing (represented by squares) and TSER reported yellowfin tuna transhipments by flag in 2021. (Source: WCPFC. 2023).

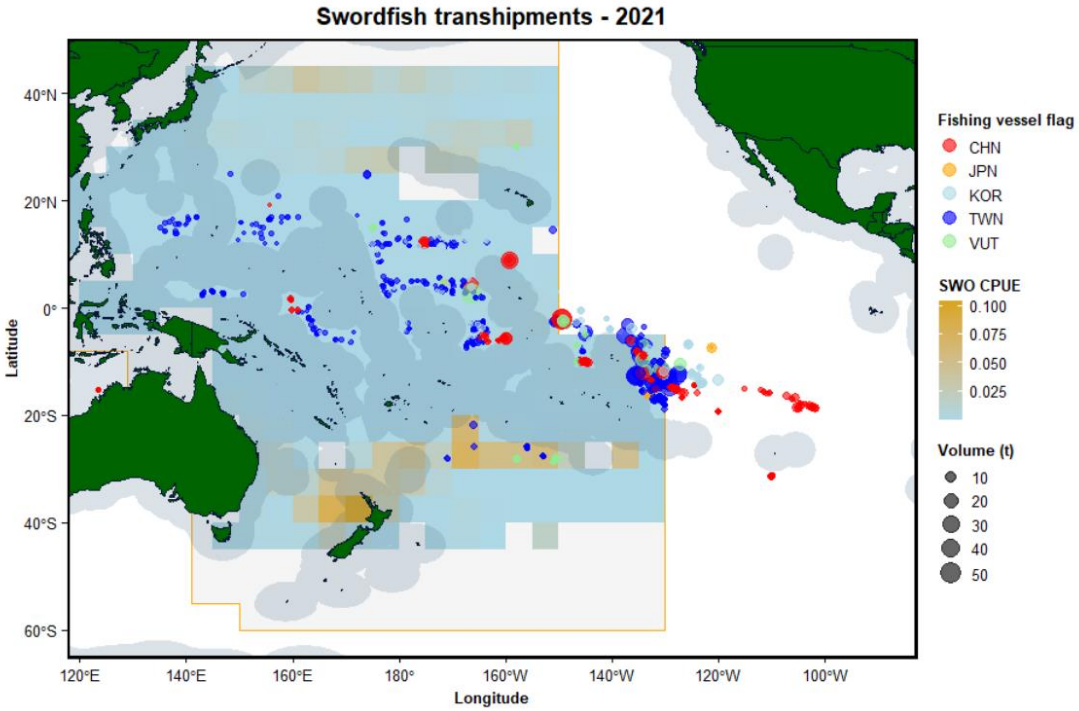


Figure d. Catch per unit effort (CPUE) of swordfish at a 5 x 5 degree scale for longline fishing (represented by squares) and TSER reported swordfish transhipments by flag in 2021. (Source: WCPFC. 2023).

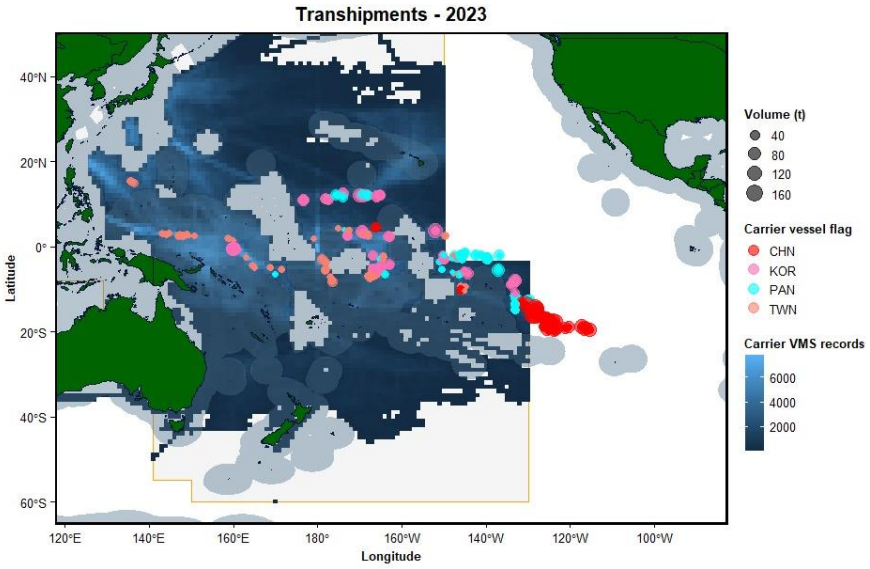


Figure e: Location of transhipment event reports by carrier vessels from 1 January – 31 October 2023 including overlap area and reports received for WCPFC caught fish transhipped at sea in IATTC Convention Area. (Source: WCPFC. 2023)

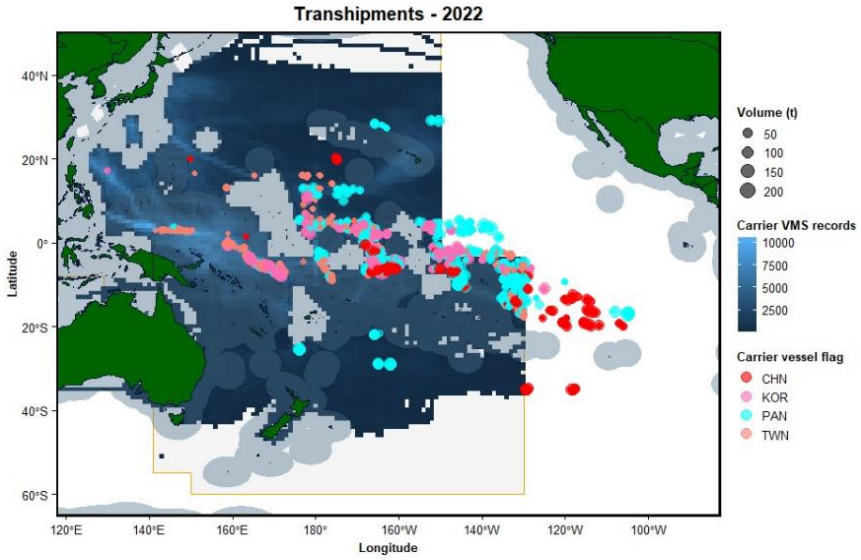


Figure f: Location of transhipment event reports by carrier vessels for 2022 including overlap area and reports received for WCPFC caught fish transhipped at sea in IATTC Convention Area. Source: WCPFC TSER data.

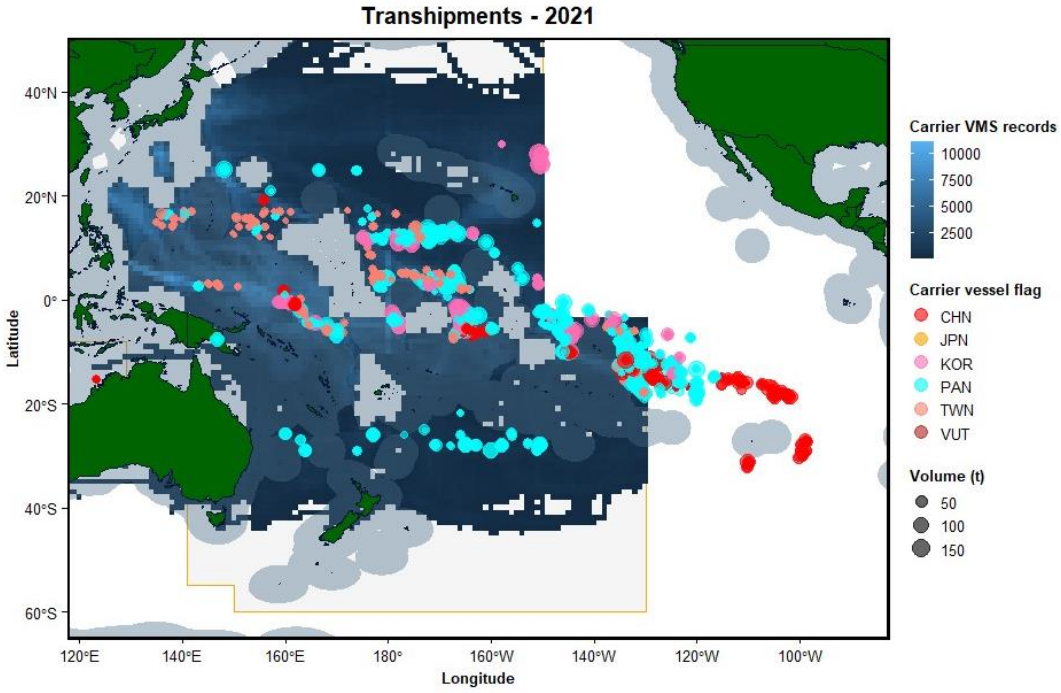


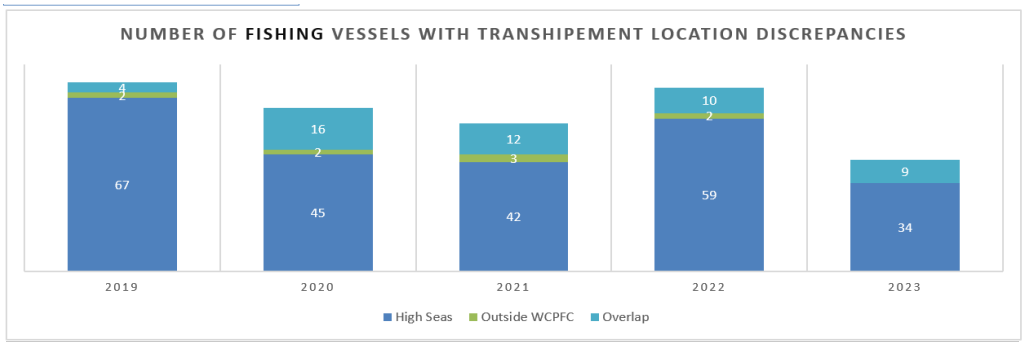
Figure g: Transhipment event reports by carrier vessel for 2021 and reports received for WCPFC caught fish transhipped at sea in IATTC Convention Area. Source: WCPFC TSER data.

Figures d – g also depicts information from the current WCPFC VMS, showing data gaps in key areas where transhipments notifications and declarations are required to be submitted to WCPFC in accordance with CMM 2009-06 to be reported to WCPFC.[7] Paragraph 2 of CMM 2009-06 requires CCMs to ensure that transhipments outside the Convention Area of highly migratory fish stocks taken in the Convention Area shall be reported to WCPFC. However, as can be clearly seen in **Figures e – g,** WCPFC VMS coverage does not include waters outside the Convention Area. This is because of a Commission decision taken at WCPFC9 which was at the time intended to reduce VMS costs. However, from the perspective of monitoring and managing at sea transhipment activities covered by CMM 2009-06, this VMS data gap is limiting the Commission's ability to validate reported location of transhipments.

[7] CMM 2009-06 para 2: The provisions of this Measure shall apply to all transhipment in the Convention Area of all highly migratory fish stocks covered by the Convention. CCMs that tranship outside the Convention Area highly migratory fish stocks covered by the Convention taken in the Convention Area shall provide the information related to those activities, as required in paragraphs 10, 11 and 12. Highly migratory fish stocks covered by the Convention shall not be transhipped at sea by purse seine vessels outside the Convention Area consistent with paragraph 25 of this measure.

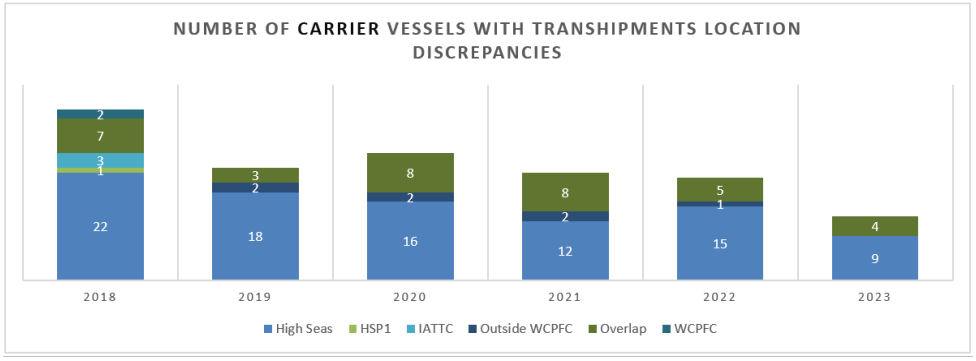
Attachment 3

The following figures show discrepancies between the reported positions of transhipments and the position of the vessel through VMS, allowing a margin of time reflecting that VMS position reports are, at their greatest, 4 hours apart. The criteria for identifying a discrepancy are where a reported transhipment is more than 100km from the VMS verified location and within 60 minutes of the transhipment location. It should be noted that the WCPFC VMS coverage and the WCPFC9 decision to create the 200nm buffer means there are gaps in the analysis shown in **Figure h** and **Figure i** which, therefore, omits many of the reported transhipment events outside the Convention Area.



	Values	<60min >100km		
	Count of TEV		Prec to Total	
Area / Fishing Vessel	Yes	No	Yes	No
High Seas	65	775	7.74%	92.26%
Outside WCPFC	2	139	1.42%	98.58%
Overlap	11	131	7.75%	92.25%
Grand Total	**78**	**1045**	**6.95%**	**93.05%**

Figure h. Fishing vessels with location discrepancies between the reported location of a transhipment event and the closest VMS position to the time of the transhipment. (Source: WCPFC, 2023)



			Values	< 60 > 100		
			Count of TEV		Perc to Total	
Area Short	CCM	Carrier	Yes	No	Yes	No
High Seas			65	775	7.74%	92.26%
Outside WCPFC			2	139	1.42%	98.58%
Overlap			11	132	7.69%	92.31%
Grand Total			**78**	**1046**	**6.94%**	**93.06%**

Figure i. Carriers with location discrepancies between the reported location of a transhipment and the closest VMS position to the time of the transhipment. (Source: WCPFC, 2023).

The information in the above two figures also indicates that ~ 8% of transhipments on the high seas could be further reviewed by CCMs using the underlying data that identifies the flag State and vessels involved in transhipment activities. It should be noted that 8% of transhipments in the WCPFC/IATTC overlap area, or in the IATTC Convention Area, does not reflect all transhipments as this analysis draws only on WCPFC VMS data.

The information reflects comparisons of existing data that can identify where there may be issues affecting the quality of self-reported transhipment data that could assist CCMs to firstly identify any issues, and where issues are raised, direct resources and efforts to resolve them.

Further refinement of the above analyses can be achieved over time and could include integrating new data sets that allow for cross-referencing with results from existing scientific and other compliance monitoring tools. The potential value of these tools to support monitoring and verification of data by CCMs and the Commission is significant.

Attachment 4

Excerpt from TCC19-2023-IP02 Status of Observer Data Management (SC19 2023-ST-IP02)

Table 4: Provisional 2022 Longline Regional Observer Programme (ROP) coverage by CCM – based on reporting from CCMs and data submissions. The fleet breakdown, metric, and reporting by CCMs is based on WCPFC11 Summary Report para 483-486, and Attachment L. Flag CCM reporting is from Annual Report Part 1.

			REGIONAL OBSERVER PROGRAMME (ROP) DATA COVERAGE (minimum required for ROP is 5%)						
CCM Fleet	Fishery	Metric selected for Coverage	Total estimated effort	As reported by flag state		Total estimated effort	As per data submission		See NOTES
				Observer	%		Observer	%	
AUSTRALIA	Domestic	No. of Hooks	–	–	–	–	–	–	2, 17
CHINA	Ice/Fresh	Days fished	42,025	2,799	6.7%	42,025	1,015	2.4%	3, 10, 11, 22
	Frozen								
COOK ISLANDS	Pacific Islands	Days at Sea	1,547	0	0.0%	1,547	0	0.0%	8
EUROPEAN UNION	Distant-water	No. of Trips	35	2	5.7%	35	2	5.7%	4, 10, 19
FSM	Pacific Islands	No. of Trips	–	–	–	–	–	–	26, 27
FIJI	Pacific Islands	No. of Trips	414	117	28.3%	414	117	28.3%	7
FRENCH POLYNESIA	Pacific Islands	Days at Sea	–	–	–	–	–	–	2
INDONESIA	Domestic	No. of Trips	–	–	–	–	–	–	2, 19, 21
JAPAN	Ice/Fresh, short-trip	Days fished	20,006	0	0.0%	20,006	0	0.0%	10, 29
	Frozen, long-trip	Days fished	5,578	0	0.0%	5,578	0	0.0%	10, 28, 29
KIRIBATI	Pacific Islands	No. of Trips	–	–	–	–	–	–	2
MARSHALL ISLANDS	Pacific Islands	No. of Trips	–	–	–	–	–	–	2, 25
NEW CALEDONIA	Pacific Islands	No. of Hooks	–	–	–	–	–	–	2
NEW ZEALAND	Domestic	No. of Hooks	–	–	–	–	–	–	2
PALAU	Pacific Islands	No. of Trips	–	–	–	–	–	–	2
PAPUA NEW GUINEA	Pacific Islands	No. of Trips	–	–	–	–	–	–	2
PHILIPPINES	Distant-water	No. of Trips	–	–	–	–	–	–	1, 16
REPUBLIC OF KOREA	Distant-water	Days at Sea	32,241	1,592	4.9%	32,241	1,592	4.9%	10, 20, 23
SAMOA	Pacific Islands	No. of Trips	–	–	–	–	–	–	2
SOLOMON ISLANDS	Pacific Islands	No. of Trips	–	–	–	–	–	–	2, 7, 9
TONGA	Pacific Islands	No. of Trips	–	–	–	–	–	–	2
TUVALU	Pacific Islands	No. of Trips	–	–	–	–	–	–	2,
CHINESE TAIPEI	Small longline – STLL	Days at Sea	76,447	5,928	7.8%	76,447	6,098	8.0%	10, 14
	Distant-water – DWLL	Days at Sea	19,540	2,685	13.7%	19,540	3,071	15.7%	10
USA	HAWAII/California-based	No. of Trips	1,224	290	23.7%	1,224	290	23.7%	6
	AMERICAN SAMOA	No. of Trips	–	–	–	–	–	–	2, 6
VANUATU	Pacific Islands and DW	No. of Trips	135	1	0.7%	135	1	0.7%	7

NOTES

1. The fleet breakdown, metric and reporting by CCMs is based on WCPFC11 Summary Report para 483-486 and Attachment L (Anon., 2010a). Flag CCM reporting includes information from Annual Reports - Part 1.
2. Domestic fleet fishing within their EEZ. There is no fishing in other EEZs but there may be very infrequent activities in adjacent high seas area. The activities of this fleet are therefore not relevant to the requirements for ROP longline coverage.
3. China has advised in their Annual Report Part 1 that their choice of metric is "days-at-sea". Total estimated effort (of days at sea) is determined from available operational logbook data, raised to account for incomplete coverage (of operational logbook data provided).
4. In a communication of 28 February 2015, EU advised that they will use "NUMBER OF TRIPS" for measuring and reporting observer coverage on its flagged LL vessels for years from 2014. For 2013, they had previously advised that "*We are currently exploring options for improving observer coverage on EU LLs. Recent amendments in the ES legislation should contribute also in improving these aspects. At TCC10, EU advised that legislation has been adopted*."
5. No information provided by the CCM for this fleet.
6. The information provided for the US fleets EXCLUDES activities in their respective EEZs, that is, the coverage rates provided are for their ROP trips only and estimated effort is for activities outside their EEZ.
7. The information provided for these fleets EXCLUDES activities of the domestic component (i.e. vessels fishing exclusively in the home EEZ and adjacent high seas only); the coverage represents the component that conduct ROP-defined trips only.
8. Most (if not all) vessel trips (and therefore most days-at-sea) would be non-ROP trips since mostly restricted to waters of national jurisdiction. Observer coverage is for all activities (ROP and non-ROP) of the domestic fleet.
9. Observer trip value represents the trip data provided to SPC in the absence of advice from this CCM on total number of observer trips conducted. This value may not represent the overall trips undertaken (i.e. it may be an under-estimate).
10. All vessel trips (and therefore days-at-sea) would be defined as ROP trips. "Distant-water" vessels have very long trips and since some fleets tranship at sea, the unit of coverage might more suitably be "days-at-sea" for these situations.
11. Covers both 'fleets' as coverage cannot be split by fleet at this stage.
12. Tuvalu advised their choice of metric was "Number of Trips".
13. Observer coverage information (as nominated from flag state) was taken from the CCMs WCPFC Annual Report Part 1 prepared for SC14 (as per WCPFC11 Summary Report paragraphs 483 – 486).
14. Includes observer trips conducted by Coastal state observer programmes on Chinese Taipei-flagged STLL vessels.
15. This CCM did not have flagged longline vessels on the Record of Fishing Vessels in 2022.
16. No longline vessels from Philippines active in 2022.
17. Australia commenced producing data from their E-Monitoring system from 2015. E-Monitoring data are not yet considered to count towards ROP coverage.
18. Japan provided trip-level details for 2022 observer activities including trip monitoring information. Some data submitted recently have yet to be loaded and may not be included in the total effort for submitted data.
19. Observer data provided does not satisfy all of the ROP minimum data field standards.
20. There is evidence that additional observer trips have been conducted by coastal states, but the data have yet to be provided.
21. The number of total trips for the Indonesian domestic longline fleet is not known but has been estimated based on the annual catch estimate and approximate catch per trip.
22. 2022 observer data provided for the China longline fleet included some activity in the Pacific Ocean beyond the WCPFC Area; these data have been excluded in the coverage rates of data submitted in this table.
23. Effort metric for Korean longline fleet in 2022 is DAYS AT SEA. Coverage of data submitted represents only activity in the WCPFC Area.
24. No activity in 2022 by this CCM's longline fleet.
25. Represents the chartered vessels in this fleet; no vessels were flagged to RMI in 2022.
26. Excludes trips/activities from chartered vessels and also non-fishing trips.
27. The information provided for these fleets EXCLUDES activities of either domestically-based (in home EEZ) or locally-based components of this fleet; that is, vessels from this fleet that fish exclusively in one Pacific Island EEZ and adjacent high seas only are not included (i.e. considered non-ROP trips); the coverage represents the component that conduct ROP-defined trips only.
28. A number of countries advised that there was no ROP longline coverage in 2022 due to the COVID-19 situation.
29. The total effort has been carried over from 2021 and is subject to change.