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STATUS OF OBSERVER DATA MANAGEMENT

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1. Introduction

Observer data management encompasses a number of activities that ensure the data collected by observers are made available for the work of the WCPFC in a form that is both representative and of acceptable quality. The underlying activity involved in Observer Data Management is the management and entry of the observer data into a standardised database system, but it also covers the many other related activities described in Williams (2011), for example.

The SPC/OFP has been processing observer data on behalf of their member countries for more than 15 years and the Seventh Regular Session of the Commission (6–10 December 2010) approved the continuation of this work in respect of the Regional Observer Programme (ROP) data in the short-medium term (Anon., 2010a, Anon., 2010b). The Tenth Regular Session of the Commission (3–7 December 2013; Anon., 2013) reconfirmed the Commission's support for ROP data processing with its inclusion in the indicative budget for the period 2014-2016.

The Pacific Island Forum Fisheries Agency (FFA) also processes observer data for the US Multilateral Purse seine Treaty and these data are regularly incorporated into the ROP data submitted to the WCPFC. WCPFC members other than Pacific Island countries have also contributed to the ROP Database including Australia, China, Japan, New Zealand Chinese Taipei and the USA.

The majority of the observer data processed by the SPC are ROP-defined purse seine trips² which have been designated as the highest priority for processing since 2010. However, the WCPFC requirement for 5% observer coverage in the longline fishery (established in 2012) has resulted in increased submission of observer longline data in recent years and these data are now assigned equal priority for data processing as the purse seine observer.

The SPC/OFP also processes non-ROP observer data that are, *inter alia*, of importance to the scientific work of the WCPFC and so have been included in the description of observer data management and data summaries, presented in this paper.

This paper serves to provide an update on the status of ROP data management at SPC/OFP over the past twelve months, covering the following:

- Human resources involved in observer data management at SPC/OFP
- Achievements over the past 12 months
- Status of observer data entry and issues
- Future expectations

The SC is encouraged to review the information in this paper and provide suggestions for enhancements for future WCPFC meetings, as required.

² CMM 2007-01 paragraph 5

Scope of the Commission ROP

5. *The Commission ROP shall apply to the following categories of fishing vessels authorized to fish in the Convention Area in accordance with the Commission's Conservation and Management Measures 2004-01:*

- vessels fishing exclusively on the high seas in the Convention Area, and*
- vessels fishing on the high seas and in waters under the jurisdiction of one or more coastal States and vessels fishing in the waters under the national jurisdiction of two or more coastal States.*

2. Human Resources for managing observer data

The team dedicated to managing and entering observer data is fully supported under the WCPFC ROP Data Management project. The current team comprises:

- Two (2) technical staff overseeing observer data management at SPC Noumea, but also coordinating and supporting observer data entry in other countries
 - Observer Data Manager
 - Observer Data Audit Officer
- Sixteen (16) observer Data Entry staff
 - One observer data registry officer at SPC Noumea;
 - Ten (10) data entry staff at SPC Noumea;
 - Four (4) data entry staff at WCPFC Secretariat offices in Pohnpei;
 - Two (2) data entry staff based at Fiji Fisheries Offices in Suva;

The Regional E-Reporting Coordinator position was established in early 2014 with the funding support from the International Seafood Sustainability Foundation (ISSF). The duties of this position cover, *inter alia*, aspects of observer data collection and management related to E-Reporting and E-Monitoring.

Staff movements over the past year include,

- Recruitment of one data entry staff member at SPC in early 2015 to replace one staff member who resigned;
- Establishment of two data entry positions in the offices of Fiji Fisheries under an MOU to cover the entry of Fiji longline observer data; these two positions are currently covering the work of one data entry staff in Noumea (that is, the total number of data entry staff in Noumea has reduced by one). The initiative is in line with the gradual enhancement of observer data management capacity within the national observer providers, where required. Fiji was selected since (i) they manage the highest volume of longline observer data (120+ trips per year) and (ii) can be readily supported from the SPC Noumea (OFP/IT) and Suva offices (remotely and directly, as required).

In addition to the cadre of staff dedicated to observer data management, there are several other SPC/OFP staff involved in this area, including:

- Head of OFP Data Management Section, who works with the Observer data manager on strategy, priorities related to observer data management, human resources issues, preparation of ROP data for inclusion in stock assessments and related analytical work, and responding to requests for ROP data summaries from the WCPFC Secretariat;
- OFP Data Management Section database development staff (3) who are responsible for the development, maintenance and capacity development related to the new online observer reporting tool (TUBS Reporting) which facilitates the extraction of observer data for a number of ROP data clients according to the WCPFC ROP data access rules through secure login/password. This tool is now used regularly by the WCPFC Secretariat, OFP scientific staff, FFA, SPC member countries (including NZ, US) and other non-SPC member countries who are members of the Commission (e.g. Philippines).
- Fishery Monitoring Section staff in the observer support unit (3), who are regularly called on for their knowledge and expertise in resolving issues identified in the observer data during data entry, and who organize the printing and distribution of observer workbooks to SPC member observer programmes who are providers to the ROP;
- OFP Technical staff, who are involved in the provision of scanners and associated software in the offices of fisheries administrations for the electronic provision of scanned observer work books to SPC/OFP.

3. Achievements over the past twelve months

The work related to observer data management achieved over the past twelve months includes,

- SPC technical staff visited WCPFC offices in March 2015 to review progress and provide ongoing technical support/training to the NORMA/WCPFC Observer Data Entry staff housed at the offices of the WCPFC Secretariat. SPC staff also visited the offices of FFA in January 2015 to install the latest version

of the observer database system (TUBs) used to enter US Treaty purse seine observer data and provide ongoing training. Over the past six months, the TUBS MS SQLSERVER database was enhanced to support the 2014 version of the regional SPC/FFA standard forms which also covers new additions to the WCPFC ROP minimum data field standards.

- SPC technical staff undertook extensive travel over the past year related to observer data management work, including trips to Solomon Islands (January 2015), PNG (May 2015), Fiji (Nov 2014, March 2015, July 2015) and Tonga (July 2014) to install the latest version of the observer database system (TUBs) and provide training in how to use this system.
- An MOU with Fiji Fisheries was established in July 2014 to support two dedicated observer data entry staff to enter the observer data generated from their national observer programme (which is currently the largest LONGLINE observer programme of the Pacific Islands countries with 120+ trips per year). These positions will eventually be integrated into the Fiji Fisheries, and technical support will be provided by both SPC Noumea and SPC Suva. As mentioned, three trips were undertaken in the past year to Fiji to support this initiative.
- The online web-based Observer (TUBs) database reporting module is now well established and used regularly by national observer providers, the WCPFC and FFA Secretariats and several other CCMs. It has a comprehensive set of reports (currently 80+ reports) covering a wide range of observer data summaries including a set of reports specifically designed to produce some of the WCPFC CMM reporting output requirements related to observer data. This system was used heavily in preparation of the WCPFC Part 1 and Part 2 reports for submission this year (see [Figure 1](#) for an example of the available reports). This system will continue to expand over the coming years to meet the requirements of not only national observer programmes, but also SPC, the WCPFC Secretariat and FFA.
- The on-board purse seine observer data entry trials (**Observer E-Reporting**) in the Federated States of Micronesia (FSM) and the Republic of Marshall Islands (RMI) have continued over the past year with more observers and equipment being deployed. There have now been TWENTY (20) trips conducted since August 2013 and the procedures for post-trip debriefing, auditing and import into the regional observer databases are now well established. However, in the longer term, on-board purse seine observer data entry is expected to be undertaken on electronic tablets under the PNG/NFA iFIMS eCDS system (see Karis et al, 2014); in this respect, SPC/OFP has been collaborating with the iFIMS technical service providers over the past year assisting in provision of data standards, some training and familiarisation of this system.
- A collaborative project involving several stakeholders (National and Regional Fisheries Authorities/Agencies and the fishing industry) looking at the potential of **E-Monitoring** video on-board a longline vessel commenced in early 2014. Four trips have now been completed and a preliminary review of the information collected on the first two trips are available in Hosken et al. (2014) with a final report expected before the end of 2015. Another similar project has just started in New Caledonia (July 2015) in collaboration with *Direction des Affaires Maritimes de la Nouvelle-Calédonie – service de la pêche et de l'environnement marin* (DAM-SPE) where a local vessel has been fitted out with video equipment; progress with this project will be reported over the coming year.
- The observer data quality control system continues to be enhanced with a number of specific online checks added to the TUBS MS SQLSERVER database system. During the past year, this includes checks to generate alerts when species-of-special interest interactions have been recorded in unusual circumstances (for example, when a seabird usually encountered in the temperate waters is reported in the tropical fisheries; in this case, follow-up with the observer provider is necessary). Data quality summary reports continue to be provided to national observer programmes for debriefing and refresher training provided, and in the case of SPC, WCPFC & FFA, for their annual performance appraisals.
- The regional observer master list database is fundamental to both tracking the amount of data not yet provided, issues in data provided (i.e. unclear scanned data) and identifying trips where data have been rejected by the national programme; the tables showing purse seine observer data coverage presented in this paper were sourced from the regional observer master list. Currently the regional observer trip list only caters for purse seine trips but in the future we plan to extend this database to cover longline trips.

- SPC produced draft E-Reporting observer data field standards³ which were presented at the First WCPFC ER and EM workshop held in Nadi, Fiji, 8-10 July 2015. These standards are intended to facilitate the flow of ROP data generated from E-Reporting into the WCPFC in the future, but also have the potential to improve the efficiency of current ROP data submissions into the WCPFC.

The FFA-developed Observer Programme Management System (OPM) continues to be deployed throughout the region and most of their member countries are now covered; this system is designed, *inter alia*, to manage the process of observer placements from national and subregional observer programmes and centralise the base observer trip information in one area.

4. Status of Observer data entry and issues

Table 1 shows the status of observer data received and entered by SPC as at 16th July 2015 and Table 2 provides an indication of the available purse-seine observer data processed by fleet. Table 3 shows the coverage of observer longline activity for 2013 according to the metrics proposed at TCC10⁴ and agreed at WCPFC11⁵, and Table 4 shows the provisional coverage of observer longline activity for 2014.

Table 5 provides an indication of the longline observer data submitted to WCPFC/SPC by year and fleet, and the approximate coverage of the data provided.

The summaries of observer data provisions presented herein continue to be constrained by a number of factors, including:

- i. **Accurate information on the complete number of vessel trips by gear and flag in the WCPFC Convention Area.** This information is used as the 'base' with which to determine observer coverage. For purse seine, VMS data provides the best source of information to determine vessel trips by gear and flag, but there are several issues in using VMS data for the longline gear as a basis for determining coverage, the main issue being how to deal with transshipments at sea and accessibility of complete VMS data. Ideally, the full provision of operational data would be the best source of information to determine vessel trips for the purpose of determining coverage.
- ii. **Accurate information on the actual number of observer trips by observer programme, gear and flag.** At this stage, we have accurate information on the observer data received, but do not have complete information on the actual observer trips undertaken which would provide a means of better determining coverage and where we should be focussing efforts to obtain the data. Some progress has been made in the past three years, but there remains data yet to be provided.
- iii. **Assignment of an ROP trip in the unprocessed data.** The assignment of a trip as an ROP or a non-ROP trip (or part of a trip as ROP) can only be determined after the data have been processed since it depends on where the fishing activity occurred.
- iv. **Lags in the uploading of observer data received in 'non-standard' format.** The SPC/FFA member countries have collected observer data on standard data collection forms and databases for more than 15 years and this facilitates the consolidation of data into the ROP database with minimal overhead. Most other national observer programmes (excluding the Philippines which also uses the SPC/FFA standard) have developed their own standards based on both regional and national requirements; the submission of observer data from these other national observer programmes has required the development of specific data loaders which need to be reviewed each year to ensure they are consistent with the data provided. The work involved in developing and checking the data loaders each year is considerable and results in lags in loading some of the observer data (received in electronic form) into the ROP database. The advent of E-Reporting data field standards is envisaged to resolve such issues.

³ See the draft standard WCPFC E-Reporting observer data fields at <http://www.wcpfc.int/node/21569>

⁴ See the TCC10 paper at <http://www.wcpfc.int/node/19567>

⁵ See the WCPFC11 report at <http://www.wcpfc.int/node/20349>, para 477 and Attachment L, Table 1

4.1 Purse seine

Observer data for an estimated 82% (1,360 trips) of observer purse seine trips conducted (but excluding those rejected by the observer programme and trips with unknown status) during 2011 have been received at SPC at the time of writing this paper. Observer data received at SPC cover for an estimated 75% (1,384 trips) of 2012 purse seine trips, an estimated 63% (1,066 trips) of trips undertaken in 2013 and an estimated 73% (1,188 trips) of trips undertaken in 2014.

A total of 90% (1,194 trips) of the observer data received at SPC for 2011 observer activities have now been entered (excluding the trips awaiting resolution at SPC). A total of 95% (1,264 trips) of observer data received at SPC for 2012 activities have now been entered (excluding the trips awaiting resolution at SPC). All trips (1,003) received at SPC for 2013 activities have now been entered (excluding the trips awaiting resolution at SPC). For 2014 purse seine trips, 76% of those received without problems have now been processed.

It should be noted that SPC employs a strategy of processing the most recent observer data as highest priority, mainly to ensure CCMs can satisfy their Part 1 and Part 2 reporting obligations (for which compliance applies to the most recent year). This is reflected in the “% of trips received without problems” in **CATEGORY 5** of Table 1 whereby the outstanding data entry for 2013 (for example) had a higher priority than the outstanding trips to be entered in 2011/2012, and therefore a higher proportion in this column. The outstanding trips for 2011/2012 will be entered once the current priority for 2014 data entry has been achieved.

For the 2014 purse seine trips received at SPC, about 8% (65 trips) have problems awaiting to be resolved (mainly issues with scanning or incomplete data submitted).

The breakdown of processed purse-seine observer data by fleet (Table 2) shows that the coverage of 2014 observer data submitted to SPC is very low for Japan, China, Spain and Chinese Taipei.

As reported in previous years, the ‘problematic’ trip data held at SPC awaiting resolution are mainly due to (i) incomplete or poor quality scanned data submissions, or (ii) issues in the data which result in the trip being set aside pending further information/review all of which prevent the trip data being entered.

We expect further ongoing work in this area will be required until E-Reporting is implemented on a large scale; the work involved will be required to, *inter alia*, ensure best practice procedures are implemented, scanning software is updated (to support the latest models of scanners and the latest versions of the WINDOWS O/S), and old scanners are replaced (due to wear-and-tear).

It is important that the observer trip data rejected by the observer programmes still be submitted to ensure all observer trip data are available, and that the problems encountered can be reviewed and referred to in future training, debriefing and data quality control procedures.

Information on the trips “with unknown status” will require follow-up with flag and observer service providers, in the absence of any observer trip reporting obligations. **Provision of a list of ALL observer trips conducted by each observer service provider on a regular basis would enhance the summary reports presented in this paper.**

We also highlight the importance of observer service providers submitting debriefing evaluations/scores to allow the assignment of appropriate data quality indicators to the data.

4.2 Longline

The distinction between Tables 3-4 and Table 5 is important – Tables 3-4 are based on CCM submissions of longline observer coverage and Table 5 is based on observer data actually submitted to the WCPFC/SPC. The available information on longline observer data (Table 5) is provisional and continues to be constrained by the several issues, some of which are listed above. The following are some of the issues with respect to the availability of longline observer data, based on comparisons of Tables 3-4 with Table 5:

- Korea has advised of specific ROP longline observer coverage for 2013 and 2014 by their observer programme in Tables 3 and 4, but have yet to provide any data.
- Chinese Taipei provided ROP longline data for 2012, but has yet to provide any data for 2013 and 2014.
- Japan has advised of ROP longline observer coverage for 2013 by their observer programme in Table 3, but has yet to provide any data. [ROP longline data covering Japanese longline vessels for 2014 have been provided to the WCPFC Secretariat and are currently being processed].
- Data from several 2014 observer trips from the Pacific Islands observer service providers have yet to be submitted and SPC will follow-up individually with these countries.

The WCPFC decision⁴ clarifying the CCM requirements with respect to the ROP Longline coverage has resolved several issues and has now improved the presentation of observer activity in the longline fishery and now enables a better comparison between the longline observer trips conducted against the data received. This paper could consider a more in-depth review of the available longline observer data provided, and the gaps, in the future; for example, this paper should consider the broad spatial coverage of available observer coverage.

5. Future expectations

There are several observer data entry teams⁶ operating throughout the region entering data into a standardised observer database system (TUBs) and supported by the two technical positions (Observer Data Manager and Observer Data Audit Officer) based in SPC Noumea. There continues to be a lag in the provision of observer data which leads to a lag in the observer data processing, but the situation has improved as resources both at the national and regional level are now more adequate and more experienced in dealing with observer data management.

The TUBs Observer database will continue to be deployed in the offices of Pacific Island member countries in the next few years in line with available resources, with the burden for data processing at SPC and the WCPFC offices gradually reducing over time.

SPC will continue to develop data loaders for ROP data provisions that are not aligned to the standard established by SPC/FFA over the past twenty years. The development of draft WCPFC E-Reporting data field standards⁷ provides an ideal opportunity to align ROP data submissions with a standard that will be adopted for E-Reporting systems and should be pursued.

SPC will continue to expand the work in conducting observer E-Reporting and E-Monitoring trials in collaboration with their member countries in the coming years, with an expectation of larger-scale implementation, if and when national fisheries authorities are adequately resourced and prepared to venture down this path. SPC will also continue to collaborate with other E-Reporting projects involving observer data, as required; for example with the Observer E-Reporting initiatives of the Papua New Guinea National Fisheries Authority (PNG/NFA) and the Parties to the Nauru Agreement (PNA) (see Karis et al, 2014).

⁶ SPC Noumea, WCPFC Secretariat (NORMA), FFA, Philippines and Fiji Fisheries are undertaking complete observer data entry. PNG/NFA and Tonga Fisheries continue to enter observer data on a trial basis.

⁷ See the WCPFC 1st Workshop on ERandEM at <http://www.wcpfc.int/meetings/ERandEMWG1> and the draft standard WCPFC E-Reporting observer data fields at <http://www.wcpfc.int/node/21569>

The trials for observer data collection using E-Reporting and E-Monitoring are already changing the way technical support and training is provided to national observer programmes, with the proposal to establish dedicated positions (E-Reporting officers) at the national level now seen as fundamental to deal with the day-to-day management of observer and logbook E-Reporting.

SPC will continue to work closely with the WCPFC Secretariat over the coming year on the following areas:

- Where required, continue to provide technical advice and support to address the recommendations from the WCPFC E-Reporting and E-Monitoring Workshop (conducted in July 2015);
- Provide advice and technical support on the E-Reporting standardised data fields and protocols;
- Continued support for the WCPFC/NORMA observer data entry;
- Continued support (technical and training) related to the new online TUBS observer reporting tool;
- Continued provision of ROP data to the WCPFC on a regular basis;
- Continued support in responding to requests to disseminate ROP data according to the WCPFC data dissemination rules;
- Continued work in satisfying WCPFC requirements for ROP data reports mainly aligned to their requirements for CMM monitoring.

SPC will also continue to work with the Pacific Islands Forum Fisheries Agency (FFA) and the PNA office to improve efficiencies in observer data management, particularly since the TUBs system has now been adopted as the regional standard in FFA/PNA member countries and the TUBs reporting system is fully integrated into the FFA-developed national IMS portals.

6. References

- Anonymous. 2010a. Report of the Seventh Regular Session of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. 7–11 December 2010, Honolulu, Hawaii, USA. Western and Central Pacific Fisheries Commission, Pohnpei, Federated States of Micronesia.
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- Williams, P.G. 2011. Status of Observer data management. Information Paper SC7 ST IP–6. Seventh Regular Session of the WCPFC Scientific Committee (SC7), 9–17 August 2011, Pohnpei, FSM. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

FIGURES

TUBS report ▾

Last data entered 7 days ago.

TUBS Reports:

- ▼ GENERAL
 - > ADMIN /
- GENERAL
 - > **WCPFC**
 - > LONGLINE
 - > PURSE SEINE
- ▼ LOCALIZED
 - > GENERAL
 - > COMPLIANCE
- ▼ SPC Internal
 - > ECOSYSTEMS MONITOR/ASSESS
 - > FISHERIES MONITORING
 - > STOCK ASSESSMENT

1 : Part 1 (Table 3) - Catches of species of special interest (seabird, turtle & marine mammals)

2 : CMM 05-03 - North Pacific Albacore catches by NATIONAL FLEET

3 : CMM 06-04 – South-west Striped Marlin catches by National Fleet

4 : CMM 07-04 - Seabird interactions by NATIONAL FLEET

5 : CMM 08-03 - MARINE TURTLE interactions in the Longline and Purse seine fisheries

6 : CMM 09-03 – South Pacific Swordfish catch by National Fleet

7 : CMM 10-05 – South Pacific Albacore catches by National Fleet

8 : CMM 10-07 - Shark catches by NATIONAL FLEET

9 : CMM 11-03 - CETACEAN interactions in Purse seine fishery for NATIONAL FLEET

10 : CMM 11-04 - OCEANIC WHITETIP shark interactions in Purse seine & Longline fisheries

11 : CMM 12-04 - WHALE SHARK interactions in the Purse seine fishery

12 : CMM 13-01 – Discard reporting by National Fleet

13 : CMM 13-08 – Silky shark species catches by National Fleet

17 : CMR - Special of Special interest reports from the GEN-2 form

18 : PURSE SEINE - Summary Report on Incidents in GEN-3 by Flag and Year

50 : COVERAGE: Longline Observer Coverage

EXTRA : CMM 12-01 – FAD sets in the FAD Closure period

EXTRA : CMM 07-01 – Observer obstruction reports

Observed annual estimated catches of species of special interest (seabird, turtle and marine mammals) by gear for the [National Fleet] to [x-1] to the extent available.

Year

Flag

Figure 1. The WCPFC Part1 reports menu in the online TUBS observer reporting system

TABLES

Table 1. Summary of the provision and processing of Purse seine Observer data

As at July 2015															
YEAR	1. Estimated Purse seine TRIPS	2. TRIPS with unknown status	3. TRIPS available for data entry		4. TRIPS received at SPC		5. TRIPS processed at SPC				6. Problems awaiting resolution at SPC			7. TRIPS not yet sent by Obsv. Progs.	
			Trips	%	Trips	%	Trips	% of Estimated trips	% of total available trips	% of trips received without problems	Trips	% of total available trips	% of received	Trips	% of total
2011	2,137	486	1,651	77%	1,360	82%	1,194	56%	72%	90%	37	2%	3%	291	18%
2012	2,191	356	1,835	84%	1,384	75%	1,264	58%	69%	95%	60	3%	5%	451	25%
2013	2,291	599	1,692	74%	1,293	76%	1,229	54%	73%	99%	50	3%	4%	399	24%
2014	2,334	705	1,629	70%	1,188	73%	850	36%	52%	76%	65	4%	8%	441	27%

Notes

- CATEGORY 1** represents estimated trips determined from VMS data. These trips exclude the Philippines and Indonesian domestic fisheries, purse seine trips undertaken completely outside the tropical waters (20°N-20°S). In some instances, trips identified in the VMS data where no fishing actually took place (e.g. returning to home port in Asia for annual maintenance) may have been included in the "Estimated" trips.
- CATEGORY 2** represents trips of unknown status and is essentially the difference between VMS trips (**CATEGORY 1**) and those trips that SPC has a record of having taken place (**CATEGORY 3**). In some instances, trips identified in the VMS data where no fishing actually took place (e.g. returning to home port in Asia for annual maintenance) may have been included in the "Estimated" trips. This category may also include fishing trips without an observer on-board.
- CATEGORY 3** covers (i) data received at SPC and (ii) basic trip information provided by observer programmes indicating an observer trip took place, but data have yet to be provided.
- SPC employs a strategy of processing the most recent observer data as highest priority, mainly to ensure CCMs can satisfy their Part 1 and Part 2 reporting obligations (for which compliance applies to the most recent year). This is reflected in the "**% of trips received without problems**" in **CATEGORY 5** whereby the outstanding data entry for 2013/2014 has higher priority than outstanding trips data entry in 2011/2012, for example.
- CATEGORY 7** is essentially the difference between **CATEGORY 3** and **CATEGORY 4**.
- There remain some trips which do not yet have the length frequency data received/entered (PS-4 forms).

Table 2. Summary of Purse seine Observer data received at SPC, by year and flag

2011								
FLEET	1. Estimated Purse seine TRIPS	2. TRIPS with unknown status	3. TRIPS available for data entry	4. TRIPS received at SPC		5. TRIPS processed at SPC		
				Trips	%	Trips	% of total available trips	% of total trips recvd
China	101	19	82	51	62%	45	55%	88%
Ecuador	57	18	39	25	64%	18	46%	72%
Spain	35	23	12	9	75%	6	50%	67%
FSM	70	16	54	46	85%	37	69%	80%
Japan	277	82	195	163	84%	147	75%	90%
Kiribati	74	22	52	22	42%	20	38%	91%
Korea	283	63	220	173	79%	151	69%	87%
Marshall Is.	102	25	77	62	81%	58	75%	94%
New Zealand	26	15	11	9	82%	6	55%	67%
PNG / PH / Vanuatu	512	81	431	389	90%	342	79%	88%
Solomon Islands	55	43	12	12	100%	9	75%	75%
El Salvador	17	2	15	7	47%	7	47%	100%
Tuvalu	7	2	5	4	80%	4	80%	100%
Chinese Taipei	262	43	219	172	79%	132	60%	77%
USA	259	32	227	216	95%	212	93%	98%
	2137	486	1651	1360	82%	1194	72%	88%

2012								
FLEET	1. Estimated Purse seine TRIPS	2. TRIPS with unknown status	3. TRIPS available for data entry	4. TRIPS received at SPC		5. TRIPS processed at SPC		
				Trips	%	Trips	% of total available trips	% of total trips recvd
China	85	9	76	38	50%	33	43%	87%
Ecuador	46	21	25	15	60%	11	44%	73%
Spain	34	15	19	16	84%	9	47%	56%
FSM	78	38	40	39	98%	37	93%	95%
Japan	290	54	236	199	84%	195	83%	98%
Kiribati	81	20	61	44	72%	41	67%	93%
Korea	308	45	263	166	63%	137	52%	83%
Marshall Is.	99	13	86	59	69%	59	69%	100%
New Zealand	23	8	15	15	100%	15	100%	100%
PNG / PH / Vanuatu	480	41	439	336	77%	299	68%	89%
Solomon Islands	62	34	28	19	68%	19	68%	100%
El Salvador	17	3	14	6	43%	1	7%	17%
Tuvalu	10	2	8	5	63%	5	63%	100%
Chinese Taipei	286	36	250	163	65%	142	57%	87%
USA	292	17	275	264	96%	261	95%	99%
	2191	356	1835	1384	75%	1264	69%	91%

Table 2. Summary of Purse seine Observer data received at SPC, by year and flag (continued)

2013								
FLEET	1. Estimated Purse seine TRIPS	2. TRIPS with unknown status	3. TRIPS available for data entry	4. TRIPS received at SPC		5. TRIPS processed at SPC		
				Trips	%	Trips	% of total available trips	% of total trips recvd
China	127	39	88	55	63%	54	61%	98%
Ecuador	51	24	27	27	100%	22	81%	81%
Spain	32	0	32	32	100%	26	81%	81%
FSM	68	63	5	4	80%	4	80%	100%
Japan	291	82	209	81	39%	79	38%	98%
Kiribati	93	37	56	45	80%	35	63%	78%
Korea	299	71	228	202	89%	184	81%	91%
Marshall Is.	102	8	94	27	29%	27	29%	100%
New Zealand	26	15	11	13	118%	11	100%	85%
PNG / PH / Vanuatu	495	49	446	413	93%	405	91%	98%
Solomon Islands	51	43	8	5	63%	5	63%	100%
El Salvador	26	12	14	14	100%	10	71%	71%
Tuvalu	10	2	8	8	100%	7	88%	88%
Chinese Taipei	318	103	215	121	56%	120	56%	99%
USA	302	51	251	246	98%	246	98%	100%
	2291	599	1692	1293	76%	1235	73%	96%
2014								
FLEET	1. Estimated Purse seine TRIPS	2. TRIPS with unknown status	3. TRIPS available for data entry	4. TRIPS received at SPC		5. TRIPS processed at SPC		
				Trips	%	Trips	% of total available trips	% of total trips recvd
China	137	42	95	53	56%	35	37%	66%
Ecuador	46	31	15	15	100%	9	60%	60%
Spain	35	12	23	23	100%	9	39%	39%
FSM	55	9	46	42	91%	35	76%	83%
Japan	283	112	171	22	13%	15	9%	68%
Kiribati	76	0	76	76	100%	69	91%	91%
Korea	362	209	153	137	90%	94	61%	69%
Marshall Is.	95	15	80	80	100%	72	90%	90%
New Zealand	23	19	4	4	100%	4	100%	100%
PNG / PH / Vanuatu	435	7	428	324	76%	253	59%	78%
Solomon Islands	64	32	32	32	100%	32	100%	100%
El Salvador	28	13	15	15	100%	10	67%	67%
Tuvalu	8	3	5	4	80%	1	20%	25%
Chinese Taipei	359	135	224	119	53%	86	38%	72%
USA	328	66	262	242	92%	121	46%	50%
	2334	705	1629	1188	73%	845	52%	71%

Notes

- CATEGORY 1** represents estimated trips determined from VMS data. These trips exclude the Philippines and Indonesian domestic fisheries, purse seine trips undertaken completely outside the tropical waters (20°N-20°S). In some instances, trips identified in the VMS data where no fishing actually took place (e.g. returning to home port in Asia for annual maintenance) may have been included in the "Estimated" trips.
- CATEGORY 2** represents trips of unknown status and is essentially the difference between VMS trips (**CATEGORY 1**) and those trips that SPC has a record of having taken place (**CATEGORY 3**). In some instances, trips identified in the VMS data where no fishing actually took place (e.g. returning to home port in Asia for annual maintenance) may have been included in the "Estimated" trips. This category may also include fishing trips without an observer on-board.
- CATEGORY 3** covers (i) data received at SPC and (ii) basic trip information provided by observer programmes indicating an observer trip took place, but data have yet to be provided.
- "PNG / PH / Vanuatu" represent a combination of vessels chartered to PNG and flagged to Philippines and Vanuatu, but also those vessels flagged to Philippines and Vanuatu that are not chartered to PNG. The reason for combining these fleets is that VMS data used to determine coverage does NOT take into account chartering arrangements while the observer data does take into account chartering arrangements.

NOTES

1. No activity in 2013 by this fleet , or this CCM did not have flagged longline vessels on the Record of Fishing Vessels in 2013.
2. Domestic fleet with no fishing on the high seas or other EEZs and therefore no ROP trips. Observer coverage of the domestic fleet is provided nonetheless.
3. China advised their coverage is 5% according to the following explanation at TCC10:

*"We use number of fishing vessels as the basis to calculate **the 5% coverage on LL vessels**. In 2013, 379 China-flagged LL vessels fished in WCPFC, among which around 30 are ice-fresh vessels and only operates in the EEZ of coastal states, some 70 alb vessels are chartered to SIDS as their domestic fleet. Therefore, we have 279 (379-30-70) LL vessels as the basis, and the 5% coverage requires 14 observers (279x0.05=13.95). In 2013, 9 observers of Chinese national were sent to Chinese flagged LL vessels in WCPFC by Shanghai Ocean University. We also received some observers from coastal states, for example, the Cook Islands sent 6 observers on China-flagged vessels (these vessels are not chartered to the Cooks Islands). Therefore, the minimum number of total observers onboard of the 279 China-flagged LL vessels is 15, and this meets the 5% coverage."*

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.
7. The information provided for the FSM fleets EXCLUDES activities of their domestic fleet, that is, the coverage is for their ROP 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 the domestic fleet and distant-water fleet and coverage cannot be split by fleet at this stage.
12. Tuvalu advised their choice of metric for 2014 was "days at sea".

NOTES

1. No activity in 2014 by this CCMs longline fleet, or this CCM did not have flagged longline vessels on the Record of Fishing Vessels in 2014.
2. Domestic fleet with no fishing on the high seas or other EEZs and therefore no ROP trips. Observer coverage of the domestic fleet is provided in some cases nonetheless.
3. China has yet to advise on which of the four metrics they choose to measure ROP longline observer coverage.
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.
7. The information provided for the FSM fleets EXCLUDES activities of their domestic fleet, that is, the coverage is for their ROP 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 the domestic fleet and distant-water fleet and coverage cannot be split by fleet at this stage.
12. Tuvalu advised their choice of metric for 2014 was "days at sea".
13. Observer coverage information taken from the CCMs WCPFC Annual Report Part 1 prepared for SC11 (as per WCPFC11 Summary Report paragraphs 483 – 486).
14. In their WCPFC Annual Report Part 1 prepared for SC11, Kiribati advised that the required coverage for 2014 had been met but did not indicate the number of observer trips conducted.
15. In their WCPFC Annual Report Part 1 prepared for SC11, PNG advised that there were no ROP trips in 2014.
16. In their WCPFC Annual Report Part 1 prepared for SC11, Korea advised that the coverage for 2014 was 7.2% but did not indicate the number of observer days-at-sea. The total estimated days at sea and observer days at sea have been provided here based on figures reported in Annual Report Part 2
17. In their WCPFC Annual Report Part 1 prepared for SC11, Solomon Islands advised that the required coverage for 2014 had been met but did not indicate the number of observer trips conducted.
18. In their WCPFC Annual Report Part 1 prepared for SC11, Tuvalu advised they are currently finalizing the terms of a Memorandum of Agreement with the Fiji Fisheries Department to ensure a minimum of 5% observer coverage on Tuvalu's two longliners, which are based in Fiji.
19. In their WCPFC Part 1 Report, China advised that they deployed observers on six trips (477 sea days; 1,335,384 hooks) on China-flagged vessels during 2014 which is in addition to observer trips conducted by Coastal state observer programmes on China-flagged vessels.
20. Does not include observer trips conducted by Coastal state observer programmes on China Taipei-flagged STLL vessels.
21. Belize did not apply to renew Cooperating Non-Member status with WCPFC in 2015

Table 5. Summary of Longline Observer data received at SPC, by year and flag

2012 OBSERVER DATA				
Flag	Total Estimated	RECEIVED at SPC	%	See NOTES
Australia	439	0	0%	1
Belize	10	0	0%	
Cook Islands	141	7	5%	1
China	1763	8	0%	
Spain	19	0	0%	
Fiji	864	66	8%	
FSM	414	7	2%	
Indonesia	17	0	0%	4
Japan	1632	5	0%	4
Kiribati	31	0	0%	
Korea	350	8	2%	
Marshall Islands	60	0	0%	1
New Caledonia	332	22	7%	1
New Zealand	264	15	6%	1
French Polynesia	665	41	6%	1
PNG	190	10	5%	1
Philippines	9	0	0%	
Samoa	924	2	0%	1
Chinese Taipei	3025	67	2%	5
Tonga	44	2	5%	1
Tuvalu	31	0	0%	
USA	772	222	29%	
Vanuatu	388	25	6%	
Vietnam	400	0	0%	
	12,784	507	4%	

2013 OBSERVER DATA				
Flag	Total Estimated	RECEIVED at SPC	%	See NOTES
Australia	400	0	0%	1
Belize	10	1	10%	
Cook Islands	112	8	7%	1
China	1850	22	1%	5
Spain	23	0	0%	
Fiji	937	79	8%	
FSM	337	2	1%	
Indonesia	23	0	0%	4
Japan	1673	1	0%	4
Kiribati	20	1	5%	
Korea	292	13	4%	6
Marshall Islands	17	1	6%	1
New Caledonia	308	23	7%	1
New Zealand	241	15	6%	1
French Polynesia	887	39	4%	1
PNG	87	8	9%	1
Philippines	6	0	0%	
Samoa	320	3	1%	1
Chinese Taipei	2657	22	1%	6
Tonga	27	8	30%	1
Tuvalu	21	0	0%	
USA	1224	245	20%	
Vanuatu	386	49	13%	
Vietnam	400	0	0%	
	12,258	540	4%	

2014 OBSERVER DATA				
Flag	Total Estimated	RECEIVED at SPC	%	See NOTES
Australia	403	0	0%	1
Belize	4	1	25%	
Cook Islands	168	8	5%	1
China	2081	21	1%	6
Spain	17	0	0%	
Fiji	878	120	14%	
FSM	292	6	2%	
Indonesia	15	0	0%	4
Japan	1655	4	0%	4, 5
Kiribati	23	0	0%	
Korea	304	10	3%	6
Marshall Islands	0	0	-	1
New Caledonia	314	20	6%	1
New Zealand	303	16	5%	
French Polynesia	918	42	5%	1
PNG	105	10	10%	1
Philippines	2	0	0%	
Samoa	176	1	1%	1
Chinese Taipei	2799	12	0%	6
Tonga	98	3	3%	1
Tuvalu	14	0	0%	
USA	1244	254	20%	
Vanuatu	415	9	2%	
Vietnam	400	0	0%	
	12,628	537	4%	

Notes

1. Estimated trips determined from VMS and/or raised logbook data and represent the best information at hand. It assumes that a trip is defined as the time between a port departure and port return. This definition does NOT take into account transshipment at sea which would normally terminate a trip (it is not possible to determine this definition of a trip at this stage).
2. This fleet is known to have most of not all trips as non-ROP trips. These tables include non-ROP trips since it assumes that domestic fleets fish exclusively within their waters of national jurisdiction. This may not be the case in some instances and will be refined in future versions of this table.
3. Estimates of some trips (e.g. US and Vietnam trips in their waters of national jurisdiction) are currently not available. For the US, this represents ROP trips only, as provided to the WCFCPC.
4. Some domestic fleets fishing entirely in their national waters have not been listed in this table (e.g. the Japanese Coastal, the Indonesian domestic) since (i) estimates trips are not available and (ii) these trips would not be defined as ROP trips.
5. Includes data from observer trips provided by the flag state and data provided by coastal states.
6. Covers data provided by coastal states only.
7. The Total estimated trips for 2014 are provisional at this stage.