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Tuna fisheries monitoring: National observer programme capacity support, E-reporting, and E-monitoring

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National observer programme capacity support (ROCR)

Introduction

1. From 2009, the PNA 3rd IA and WCPFC's CMM2008-01 required 100% observer coverage on purse seiner vessels and 5 % on longliners. This required a 3-4X increase in observer numbers from 181 in 2009 to at least 635 by 2012, with over 800 observers active by 2016. AusAid, JPF, NZAid donor funding provided the support for SPC and FFA to meet the training requirements.
2. The substantial donor funding ended around 2016-17. The idea was that by then national observer programmes (NOPs) would have national cost-recovery structures in place to pay for their training and infrastructure support. However, only the US Multilateral Treaty (US MLT) (American Tunaboat Association) purse seine fleet was fully cost recovered by July 2015. This did support some training, but the other fleets were not contributing to NOP capacity development despite their need for observer coverage. So, as the funds available decreased, a funding crisis was anticipated, and regional agency support in training, establishing standards, coordination of NOPs through regional meetings etc., would cease unless another source was found.
3. The Regional Observer Cost Recovery fund (ROCR) was endorsed by FFC94 to provide regional support services to provide development and infrastructure support to members individually and collectively. The ROCR mechanism is a fee applied through the FFA vessel regional register on behalf of FFA Members since 2017. The uses of the fund were very specifically listed in the FFC94 decision and could only be changed by the FFC. SPC and FFA developed a Service Agreement (SA) for accessing ROCR funds for these specific purposes, the intention was to ensure transparency and collaboration, budgeted in three-year cycles.
4. These areas of ROCR use are:
 - a. Observer training quality assurance and certification
 - b. Debriefing training quality assurance and certification
 - c. Regional coordination of observer programme activities and capacity development
 - d. National infrastructure support
5. The 2022-2023 period coincided with the post-COVID return to observer coverage and a large influx of requests from members for their refresher and training needs. Observer programme attrition was due to observers leaving their programmes during the COVID-19 WCPFC ROP moratorium of observer coverage. The training delivery and programme support continued to be provided by SPC to meet those requests. In 2023, the ROCR fund supported 17 regional activities, involving 270 participants from NOPs (Table 2.).
6. In June 2022 the latest (third) Service Agreement was provided by SPC to FFA but remains unsigned by FFA. Over this key period of capacity rebuilding, an evergreen clause within the previous 2019 SA allowed SPC to continue supporting requests from Members. However, a lack of SA led to SPC bearing these costs over the 2 years in providing that support. SPC were not reimbursed for their costs from the ROCR until direction was given by FFC130 in late 2023. This financial burden almost led to the shutdown of all SPC's national observer programme training

and support services. A new agreement is pending and needs to be progressed as a matter of urgency, as directed by FFC130, to ensure member support remains ongoing.

7. This key period also coincided with FFA's principal source of funding, the US MLT fleet, sought a new service provider, which has raised issues for FFA. Now FFA is seeking to have a review of its regional role.

Issues

8. The ROCW24 and the Monitoring Control and Surveillance Working Group (MCSWG) endorsed the training schedule for 2024. However, without a new Service Agreement with clear financial guidelines or direct access to the ROCR funds, SPC's ongoing support for observer programmes exposes SPC to financial risk.

Approach

- a. SPC and FFA to review and amend the ROCR Service Agreement to ensure functionality, transparency, financial security, and activity reporting between agencies, and to their governing bodies HoF and FFC.
- b. SPC and FFA to collaborate to develop a workplan for the ROCR fund to support members needs throughout 2024.
- c. SPC and FFA to collaborate with NOPs at ROCW24 to plan a training schedule and continue with providing training and programme support to NOPs.
- d. SPC to report the ROCR annual workplan and budget to FFC and HoF, through the ROCW and MCSWG.
- e. FFA proceed with a review of its observer programme to determine scope and scale of FFA observer related needs.

Electronic reporting: strategy and implementation

Introduction

Electronic reporting (logsheets and observer monitoring) is well established in the purse seine fishery; a need for progress remains in longline fisheries.

Electronic reporting applications, 'OnBoard' (e-logsheets reporting), 'OnShore' (e-Port Sampling) and 'OLLO' (e-observer monitoring) are being implemented at countries' requests and the number of users is gradually increasing. All applications are integrated in Tufman2 for cross-validation.

- f. OnBoard: To date, 201 vessels have reported catch e-logs from 4740 trips across six countries and two territories since the application was released in 2017.
- g. OLLO: 65 observer trips have been reported using OLLO since 2021, from Cook Islands, Fiji, New Caledonia, French Polynesia, Papua New Guinea, Solomon Islands and Tonga. An e-debriefing module has been developed in Tufman2 to support the debriefing process and facilitate implementation (See next section).

- h. OnShore has been in use for port sampling and biological sampling since 2018. In 2023, Onshore was used across 19 different ports submitting data from over 800 sampling events.

There are instances where the fishing industry use other ER tools for reporting of catch data. To facilitate this, SPC has developed a standard for transmission of longline logsheet data from other sources. <https://pacificcommunity.github.io/tufman2-json-standard/longline-logsheet/>

9. Funding for the purchase of tablets has recently been provided through the FFA.

Approach

10. Transition from paper to e-reporting can be progressed through:
 - a. Initial planning with members to discuss the use of applications, training, and coverage.
 - b. Training on ER applications and Tufman2 modules can be done online or in person by SPC, supported at the national agency through experienced staff.
 - c. Sustainable and long-term funding is necessary to support work in this area.

E-debriefing Module in TUFMAN2

Introduction

A new e-debriefing module is available in the Tufman2 online regional database system. The e-debriefing module can be used for debriefing longline observer data uploaded from the OLLO application.

Approach

The development of the e-debriefing module in Tufman2 is designed to ensure that debriefing of OLLO data is conducted in a robust and transparent manner.

The observer data submission protocols are:

- I. At the end of the trip the observer submits his data via Wi-Fi or 4G directly to Tufman2. The data is no longer accessible on the tablet. Reducing the likelihood of security breaches.
- II. The observer can view and edit their data in T2, with records of the changes. When they are ready to be debriefed, the trip status' is changed by the observer to "Ready for Debriefing,".
- III. The debriefer will click the "Start e-debriefing of trip" button open the debriefing module, preferably on two screens.
- IV. The debriefer follows the existing PIRFO debriefing protocols for checking the data but in the module rather than on paper. They are required to examine all the data. Data quality checks (DQCs) highlight fields where there appears to be outliers or potential errors which can facilitate the debriefing.
- V. Only when the debriefing has finished and results submitted can the debriefing scores be seen, reducing the likelihood of high scoring bias.
- VI. A debriefing report is produced.

11. Data Quality Checks (DQCs) play a crucial role. DQCs are built into OLLO to show potential errors in real time as the original data are entered. DQCs can be activated in T2 during data upload, and fields with potential outliers are shown during the debriefing process.

EM implementation in monitoring programmes

Introduction

Standards, specifications, and procedures (SSPs) for EM in longline fisheries were adopted by FFC in 2022. The Data Collection Committee Strategic Plan and workplan were adopted by FFC in 2023. The DCC strategic plan prioritizes the areas of EM LL to be progressed (Table 3).

Implementation of Electronic Monitoring (EM) continues to progress in the region. It is important to note that members are at different levels of EM implementation.

SPC has:

- Supported EM trials since 2014 (8 member countries have trialled EM)
- Progressed the development of EM data fields and standards;
 - a. minimum data fields were developed through process standard workshops in 2016 and 2017,
 - b. JSON standard for transmission of EM data (data transfer format) have been developed (2022), and
 - c. developed an EM module in the regional tuna database Tufman2 (2023)
- supported FFA processes in development of the FFA EM Policy (2020) and Standards, specifications and Procedures for EM (2022)
- launched a project to allow members to consider the development of a regional image database to support AI development for EM.

SPC will continue to

- support EM trials testing current EM technology
- support the uptake or use of data standards by EM service providers
- progress development of regional standards and guidelines for EM through the DCC Workplan, and
- examine advances in technology that may advance EM, e.g. wireless transmission and AI.

Approach

12. Scaling up from trials to implementation at the national level requires:
 - a. Institutional/ organizational support, funding and preparedness;
 - b. Adopted regional standards, specifications and procedures;
 - c. Engagement with service providers to convey understanding of SSPs to be met;
 - d. Fishing industry buy in and or partnership.

13. Some suggested areas where SPC support could be provided to strengthen understanding and development of EM if needed are (but not limited to):
 - a. Review of EM programme scope, structure and specifications;
 - b. Review of EM LL data fields, data generation protocols and transmission procedures;
 - c. Access to Tufman2 and training on using EM module;
 - d. Supporting the planning of EM trials and/or program development;
 - e. Facilitating meetings between countries, service providers and industry;
 - f. Assisting in developing national documentation (implementation plans, policy development);
 - g. Assisting in developing funding proposals.

DCC Outcomes

Introduction

DCC12 was held online 12-13 December 2022. It focused on technical aspects of fisheries monitoring, including:

- a. **DCC Strategy** – an updated DCC Strategic Plan 2023-2027 and Workplan were endorsed.
 - b. **Longline Transshipment** observer data alignment – DCC reviewed the TCC18 (WCPFC19) interim MSDF for longline-carrier high seas transshipments monitoring.
 - c. **EM longline data field standards** – A review of EM data provided by countries through a single EM service provider against the draft fields recommended by DCC11 in 2020 was presented.
 - d. **EM Longline Data Quality standards** – A proposal for a JSON formatted DCC Longline EM Minimum Data Fields Standard was reviewed.
14. The DCC Strategic Plan 2023-2027, included the 2023-2027 Work Plan. The work of the DCC is anticipated to be in response to developing data needs for science and management as well as in response to the evolving collection processes of fishery data. The work plan was meant to be a living document. The DCC Strategic Plan identified that the DCC would respond to evolving needs but its purpose was to respond to:
 - Regional data requirements as determined by WCPFC SC, TCC, and subsidiary bodies.
 - SPC HoF, FFC and PNA Annual meetings; and
 - Requests of subsidiary bodies of SPC, FFA and PNA, e.g. PSM, CDS working groups.

Approach

15. The Work Plan identified work areas with reference in original numbering to the FFA EM longline SSPs.

2023-2027 DCC Workplan High Priority areas

16. The status of the work areas given a high priority in the 2023-2027 Workplan are in Table 3.

3.1 EM Records Analysis and Development of EM Data

Draft Minimum EM LL data fields were established at DCC 2020. Based on the review of EM data provided, a JSON formatted DCC Longline EM Minimum Data Fields Standard has been drafted.

3.2. EM Quality Assurance Processes

An EM module is now available in Tufman2. Data Quality Checks are used as one facet of the Quality Assurance process. The protocols for the verification and validation are not yet done.

4 a) A review of longline transshipments monitoring standards.

There are interim minimum data standards for transshipment observers in place, and monitoring using them began from April 2023. They are due to be reviewed by the IWG-ROP in late 2024.

4 e) Revision and rationalisation of observer data fields,

SPC has worked with WCPFC to revise the ROP data fields; these were tabled at the WCPFC19 annual meeting in 2024. They will be reviewed presumably at the ROP-IWG in 2024.

4.2 Electronic Reporting (ER) protocols

17. SPC has developed three ER applications, OnBoard – elog, OnShore – e-port sampling and OLLO – longline observer. An e-debriefing module is now available in Tufman2.

4. Longline Monitoring Coverage Levels

18. The new CMM2023-01 is an incentive for longline fleets to increase their monitoring coverage above 5% using a combination of observers and EM.

6.1 Validation

TUFMAN2 integrates multiple sources of data, such as observers, logsheets and unloadings and can facilitate cross-validation for Quality Assurance.

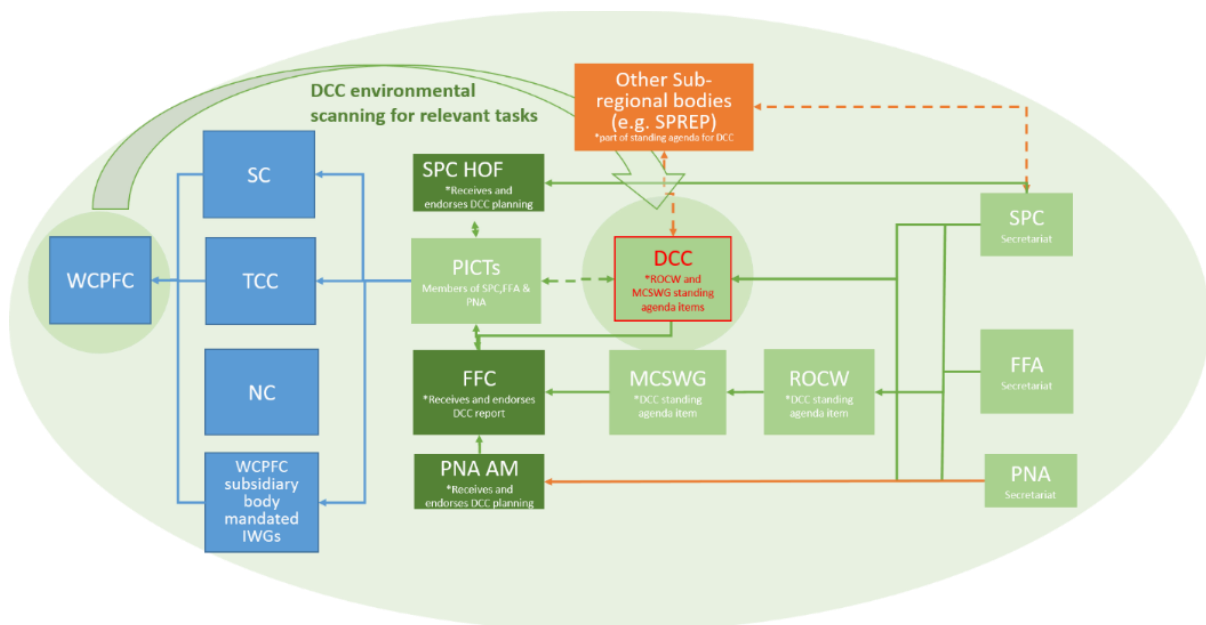


Figure 1. Schematic diagram of the relationship of DCC within the regional fisheries work programme.
Legend: **Blue** - WCPFC processes; **Green** - FFA/SPC processes; **Orange** - sub-regional processes; Dashed (- - -) lines informal links; Solid (—) lines formal links



Table 2. 2024 PIRFO Training Calendar

PIRFO Activity	Location	Programmes	Date	Leads	Type
24 th Regional Observer Coordinators Conference	Majuro, RMI	Regional: CK, FJ, FM, KI, MH, NR, PW, PG, SB, TO, TV, VU, WS, FFA, SPC	27 Feb-1 Mar	TP	W
Sub Debriefers Part C	Port Moresby	PG & SB	April	SF	D
Sub regional Debriefers Part C	Pohnpei	FM, KI & NR	8-20 April	SF, TP	D
Samoa Observer (National)	Apia	WS	April - May	SF/TP	O
Nauru (National)	Nauru	NR	May	SF, EC, TP	O
Sub regional Observer	VMC, Santo	FJ, WS, TV, TO, NR, VU, CK	6 May – 21 June	SF, TP	O
Kiribati (National)	Tarawa	KI	June - July	SF, TP	O
Vanuatu (National)	VMC, Santo	VU	August - Sept	SF, TP	O
FM Observer (National) LL and PS	Yap, FSM	FM	July - Aug	TJ/SF/TP/FS/SP	O
FJ Observer (National)	Suva, Fiji	FJ	Aug	SF/TP/AS	O
MH Observer LL and PS (National)	Majuro	MH	Sep - Nov	JSV/SF/IB/TP	O
VU Observer PS & LL (Refresher)	Port Vila	VU	Sep - Oct	SF/TP	O
TV Observer LL & PS (Transshipment)	Funafuti	TV	Oct - Nov	TV, SF, TP	O
Sub regional Debriefers Part A	Pohnpei, FSM	Subregional: FM, KI NR	Nov	SF/TP/TIJ	D
Sub regional Debriefers (Assessor)	Nadi, Fiji	Regional: FJ, KI, NR, SB, TO, TV, VU, PG	Nov – Dec	SF	D
PIRFO Trainers' Workshop (New)	Nadi, Fiji	Regional: KI, NR, SB, TO, TV, FFA, FJ, FFA	Dec	SF/TP	W

Key

Observer LL & PS - Certificate 3 in Observer Operations, not including the Sea Safety, First Aid.	Debriefers - Certificate 4 in Debriefers Operations
Debriefers Assessor - Certificate 4 Mentor and Assessing a Trainee Debriefers	Type O=Observer, D = Debriefers, B=Biological Sampling, W=workshop
Leads: SF-Siosifa Fukofuka, TP-Tim Park, JSV-John Still Villi, MK-Manoi Kutan, AS-Apenisa Sauturaga, TIJ-Tosuo Irons Jnr, LT- Lopeti Tukuafu, EC-Elton Clodumar	

Table 3. DRAFT DCC Elements and activities required prioritised with approximate milestones for their development or implementation with respect to EM monitoring of the longline fishery.

Categories	Elements with reference numbers from the source document	Priority	Milestone	Source/request	
3. Implementing Operational EM Specifications, Standards and Procedures (SSPs)	3.1. EM Records Analysis and Development of EM Data	High	mid 2024	SSP support	
	3.1.1. EM records compatibility	Medium	2025	SSP support	
	3.2. EM Quality Assurance Processes	High	mid 2024	SSP support	
	a) EM Data Quality Review (verification) protocols	High	mid 2024	SSP support	
	b) EM Data Quality Validation	Medium	2024	SSP support	
	c) EM data quality reviews and audits	Low	2027	SSP support	
	3.3. EM transmission, traceability and interoperability standards	Medium	2024	SSP support	
	a) Standard codes, formats, and ontologies	Medium	2025	SSP support	
	b) DCC minimum standards for EM Data transmission and storage in a machine-readable format (i.e. JSON, XML, or CSV).	Medium	2025	SSP support	
	c) EM records metadata standards for storage, filing and retrieval	Medium	2025	SSP support	
	d) Metadata standards for evidential Integrity and Chain of Custody procedures of EM records and EM data are regionally harmonised.	Medium	2025	SSP support	
	4. DCC's role in other monitoring data standards.	a) A review of longline transshipment monitoring standards	High	mid 2024	TS-IWG
		b) An assessment of the collection of the EM longline draft minimum data fields	Medium	2025	SPC



	c) Adjustments to e-logs for purse seine operations	Medium	2025	DCC Planning
	d) FAD log standards	Medium	2025	DCC Planning
	e) Revision and rationalisation of observer data fields, which should consider those required fields that can either be: i) assessed or verified through EM, or ii) accurately recorded by fishers.	High	2023	SPC
	f) Port sampling standards	Medium	2024	FFA- PMS/SPC
	g) Biological sampling	Low	2024	SPC
	4.1. EM LL beyond cameras (sensors, measuring fish, calibrating)	Low	2026	SSP support
	4.2 Electronic Reporting (ER) protocols	High	2023	DCC 2020
	4.2 ER Debriefing processes	Low	2025	DCC 2020
		Low	2023	
5. Longline Monitoring Coverage Levels		High	2024	SC17
6. Integrated Monitoring Systems Quality Assurance	6.1 Validation	High	2024+	DCC 2020
	6.1 Catch Documentation Schemes	Low	2024	FFA-CDS scanning
	6.2 Access to, and dissemination of data.	Low		SSP support