



**SCIENTIFIC COMMITTEE
TWENTY FIRST REGULAR SESSION**

Tonga
13 – 21 August 2025

PROJECT 42: PACIFIC TUNA TAGGING PROJECT REPORT AND WORK-PLAN FOR 2025-2028

SPC-OFP

WCPFC-SC21-2025/RP-PTTP-01

2025-06-12

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INTRODUCTION

This Pacific Tuna Tagging Programme (PTPP) report provides information on the PTPP to date with a focus on the tagging activities undertaken in 2024-2025 including research voyages, tag recoveries, tag recovery and seeding activities. Issues arising in 2025 for consideration by the PTPP Steering Committee are highlighted and the PTPP work planned for 2025-2028 is outlined.

1. Programme objectives

The PTPP is a joint research project, implemented by the Oceanic Fisheries Programme (OFP) of the Pacific Community (SPC). The goal of the Pacific Tuna Tagging Programme is to provide data and knowledge for stock assessment and management of skipjack, yellowfin and bigeye tuna in the Pacific Ocean. The objectives of the PTPP, originally specified in WCPFC-SC6-2010/GN-IP-04, and revised in 2016 (PTPP Steering Committee, 2016), are:

1. To obtain data that will contribute to, and reduce uncertainty in, WCPO tuna stock assessments including estimation of overall and local exploitation rates, extent of mixing and appropriate spatial strata for use in assessments.
2. To obtain information to better understand the interactions between tropical tuna species and major fishing gears to support development of mitigation measures (where appropriate) and better interpret fisheries data (e.g., CPUE).

Under these objectives, information collected includes age-specific rates of movement and mixing, movement between a region and other adjacent regions of the Pacific basin, species-specific vertical habitat utilisation by tunas, and the impacts of FADs on behaviour.

2. Programme funding

Since its commencement in 2006, funding support for the PTPP has been provided by the

- PNG National Fisheries Authority;
- New Zealand Aid Agency;
- the Government of the Republic of Korea;
- Australian Centre for International Agricultural Research;
- European Community 8th European Development Fund;
- European Community 9th European Development Fund;
- European Community 10th European Development Fund;
- the French Pacific Fund;
- the Government of Taiwan;
- Heinz Australia;
- the Global Environment Facility;
- the International Seafood Sustainability Foundation;
- the European Union (through voluntary contributions to WCPFC);
- and the WCPFC itself.

In 2011, SPC and the PNG National Fisheries Authority (NFA) also began a three-year tag release programme in the PNG EEZ, funded by NFA. This project, referred to here as the PNG Tagging Project (PNGTP) is considered under the umbrella of the PTPP and where relevant is reported on in this report.

In 2016 the PTPP steering committee recommended that SC normalise the tagging programme as part of the ongoing work of the SC (WCPFC-SC 2016). Ideally this would include research voyages every year alternating between skipjack-focused voyages via pole and line in one year and bigeye-focused voyages via handline and dangler fishing in the next, starting with skipjack in 2017 (noting that yellowfin would be adequately covered by both surveys).

3. Operational structure

The overall operational structure of the PTPP to date is given in Table 1, with the work completed since the last PTPP reported highlighted and the scheduled work for 2025 also shown. The spatial distribution of these research voyages in the Western and Central Pacific Ocean is shown in Figure 1.

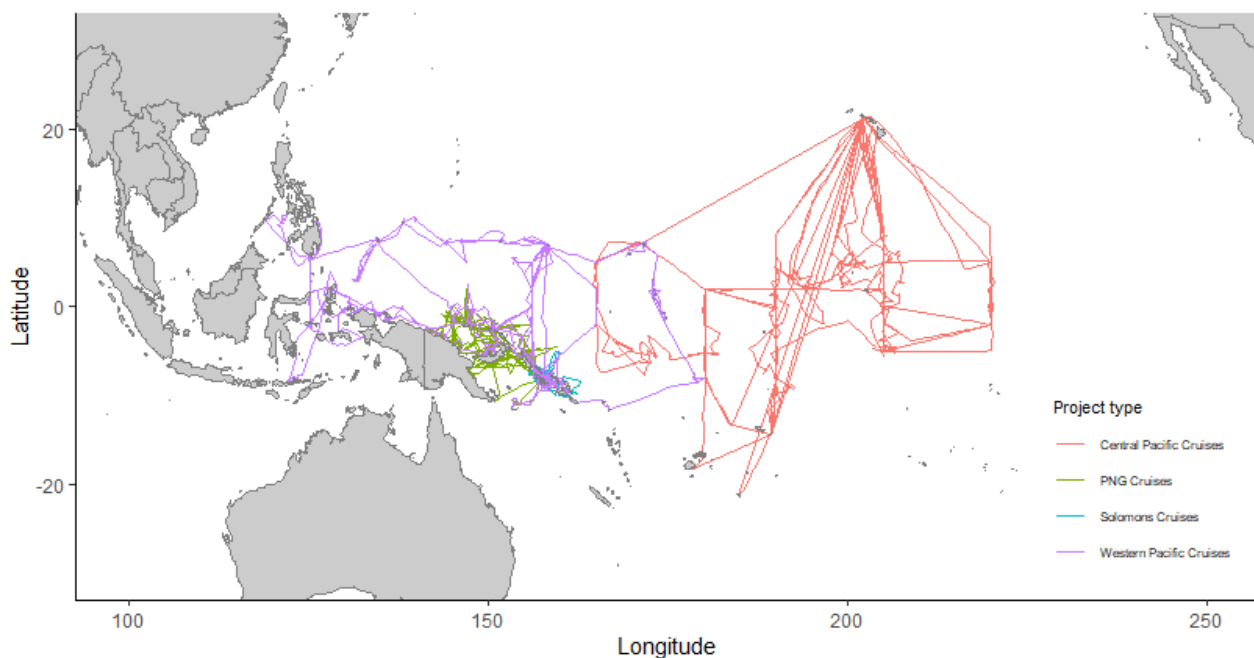


Figure 1: Tagging vessel tracks for all PTPP research voyages. Legend relates to the groups of operational areas described in Table 1.

Phase	Time Period	Operational Area	Tagging Vessel
PNGTP	Apr - Jul 2011	New Guinea 2011	SOLTAI 105
	Jan - Mar 2012	New Guinea 2012	SOLTAI 105
	Aug - Aug 2012	PNG TAO 2012	FTV Pokajam
	Apr - Jun 2013	New Guinea 2013	SOLTAI 101
	Jul - Jul 2016	PNG TAO 2016	Pokajam
Phase 1	Aug - Nov 2006	Papua New Guinea	SOLTAI 6
	Feb - May 2007	Papua New Guinea	SOLTAI 6
	Oct - Nov 2007	Solomon Islands	SOLTAI 6
	Feb - Mar 2008	Solomon Islands	SOLTAI 6
	Mar - Apr 2008	Solomon Islands	SOLTAI 105
Phase 2	May - Jun 2008	Central Pacific #1	Double D
	Jun - Nov 2008	Western Pacific #1	SOLTAI 105
	Mar - Jun 2009	Western Pacific #2	SOLTAI 105
	May - Jun 2009	Central Pacific #2	DOUBLE D
	Jul - Oct 2009	Western Pacific #3	SOLTAI 105
	Oct - Nov 2009	Central Pacific #3	AO SHIBI GO
	May - Jun 2010	Central Pacific #4	AO SHIBI GO
	Nov - Dec 2010	Central Pacific #5	PACIFIC SUNRISE
	Oct - Oct 2011	Central Pacific #6	PACIFIC SUNRISE
	Nov - Dec 2011	Central Pacific #7	AO SHIBI GO
	Sep - Oct 2012	Central Pacific #8	PACIFIC SUNRISE
	Nov - Dec 2013	Central Pacific #9	PACIFIC SUNRISE
	Aug - Aug 2014	Central Pacific #10	PACIFIC SUNRISE
	Sep - Nov 2015	Central Pacific #11	GUTSY LADY 4
	Sep - Oct 2016	Central Pacific #12	GUTSY LADY 4
	Sep - Nov 2017	Western Pacific #4	SOLTAI 105
	Jul - Aug 2018	Central Pacific #13	GUTSY LADY 4
	Jul - Sep 2019	Western Pacific #5	SOLTAI 105
	Aug - Oct 2020	Central Pacific #14	GUTSY LADY 4
	Jul - Aug 2021	Central Pacific #15	GUTSY LADY 4
	Sep - Oct 2022	Western Pacific #6	SOLTAI 105
	Aug - Sep 2023	Central Pacific #16	GUTSY LADY 4
	<i>Jun - Aug 2025</i>	<i>Central Pacific #17</i>	<i>GUTSY LADY 4</i>

Table 1: Period, area and vessel used in PTPP tagging research voyages since the inception of the programme. Work scheduled for 2025 shown in italics.

Summary Of PTP Activities In 2024-2025

4. Upcoming tagging cruises

The Seventeenth Central Pacific tagging cruise (CP-17) will be implemented from the 25th June to the 9th August 2025 on the F/V Gutsy Lady 4, originating in Honolulu, Hawaii. The scientific team consists of three SPC staff and one contracted technician. The vessel crew consists of 6 crew members and Tim Jones, master of the Gutsy Lady 4. This is the 7th such PTP cruise utilizing this vessel (Table 1). Bigeye, yellowfin and skipjack tuna will be tagged on mixed aggregations primarily around drifting FADs. Due to lack of funding and reliable products on the market, no archival tagging will be conducted during CP17, only conventional tagging. A small number of satellite tag releases are planned for bigeye tuna, as part of a collaboration with Shanghai Ocean University.

The provisional cruise track utilizes the Line Islands (KI), Palmyra, Jarvis (US), and International Waters in the equatorial region south of Hawaii Figure 2. Industry partners Calvopesca, Bolton Trimarine, and the American Tuna Boat Association have signed Letters of Agreement with SPC to provide real-time access to their drifting FADs during the research cruise period. The Tropical Atmosphere Ocean or TAO array will also be checked along the 155°W line and perhaps the 170°W, but it has been several CP cruises (CP10) since the last large aggregation was detected or tagged on a TAO mooring. Because the CP cruises are now heavily reliant on dFADs, and it is impossible to predict their position and densities prior to the tagging cruise, the actual cruise track of CP17 will likely vary from that depicted in Figure 2.

An ambitious biological sampling plan has also been developed to maximize the efficiency and value of the charter. This is detailed in Section 2.3.

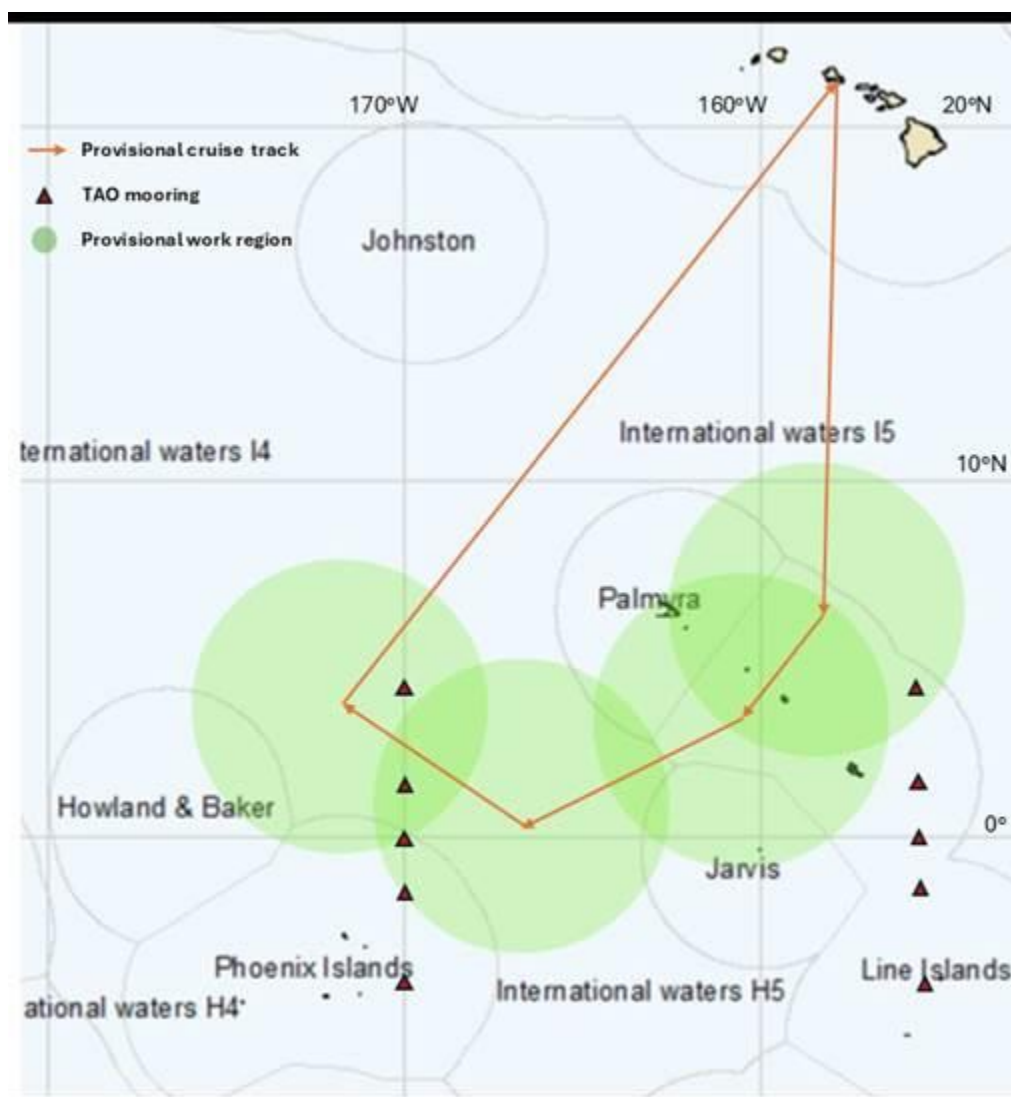


Figure 2: Provisional cruise track of CP17

5. Tag Seeding

Uncertainty in estimated tag reporting rates continues to be a highly influential component of stock assessment and related tagging analyses of WCPO tuna species. Informative priors placed on these parameters can help constrain model estimation and reduce the occurrence of boundary limits being hit during the likelihood minimisation.

With the lack of a tagging cruise in 2024 due to no suitable tagging platforms being available, the decision was made to focus on the expansion of tag seeding (SC20-RP-PTTP-02), which had fallen to levels far below those required to identify temporal changes in reporting rate (SC15-SA-IP-06). Seeding kits were distributed to observers in ports where departing vessels are most likely to fish in areas where PTTP tagging cruises typically release tags in wild fish, as well as onboard vessels that have catch that is more likely to end up in processing plants of interest (Figure 3). A uniform approach was determined to be too difficult to complete because of the difficulties of deploying large quantities of seeding kits in some of the smaller ports (with less observer support). A small quantity of seeding kits was sent to as many ports as possible to have spatial coverage as well as to keep the tag recovery network active with seeding activity. This included deployment of seeding kits on vessels departing from ports outside of WCPO purse seine fishing grounds, but that nevertheless land tuna from fishing grounds that currently or historically experience tagging effort. This includes ports in Japan, and central and south America. A summary of seeding kit deployment by observer programme and vessel flag are provided in Figures 4 and 5, respectively.

This expansion in tag seeding effort began with the development of a new tag seeding protocol to simplify the seeding process for observer programmes who implement them. In the past all seeding was done secretly, that is with the observer

attempting to discretely tag dead fish without being seen by the crew and then placing them alongside other fish before they are put into wells. Feedback from observers and coordinators highlighted this as one reason why promoting seeding kit deployment proved difficult. A new protocol was developed to allow for non-secret tag seeding, in which the observer places a tagged fish directly into a well to avoid immediate recoveries by crew, but therefore not informing reporting rate during fishing itself. There are now a mix of secret and non-secret tag seeding deployments, with the observer recording which protocol was followed. To demonstrate the non-secret process, a new manual was developed and distributed with seeding kits at the Heads of Fisheries 2024. 120 kits were distributed during this event. 60 more kits were distributed opportunistically throughout the year at ports targeted depending on fishing activity. To reinvigorate the seeding program, a new reward system was implemented that provides payment to the seeding briefer and debriefer, in addition to the observer.

Collaborating with colleagues at Japan Fisheries (FRA), they provided 300 yellow spaghetti tags from their tagging program that we incorporated into 10 tag seeding kits and distributed to observers departing on vessels that typically fish in areas where historical Japanese tagging has occurred in the equatorial area. As Japanese tagging programme tags are treated separately in WCPO stock assessments, with their own reporting rate parameters, these data will support the estimation of priors for these release groups.

During an outreach trip to IATTC ports, SPC staff worked with IATTC management to deliver 20 SPC tagging kits to be deployed by IATTC observers. 10 hybrid kits of IATTC tags and SPC tags were also distributed to establish if there is a difference in reporting rates between the tags of the two programmes. These tagging experiments will help to maintain recovery awareness in these important IATTC ports and allow the team to continue to improve the cannery recovery network in Central and South America.

Members of the PTPP team were also able to attend the Regional Observer Coordinator Workshop (ROCW) in February 2025. This workshop provided a chance to meet observer coordinators to discuss tag seeding expansion and tag recovery in their ports. 100 tag seeding experiments were distributed during this event to the various coordinators in attendance.

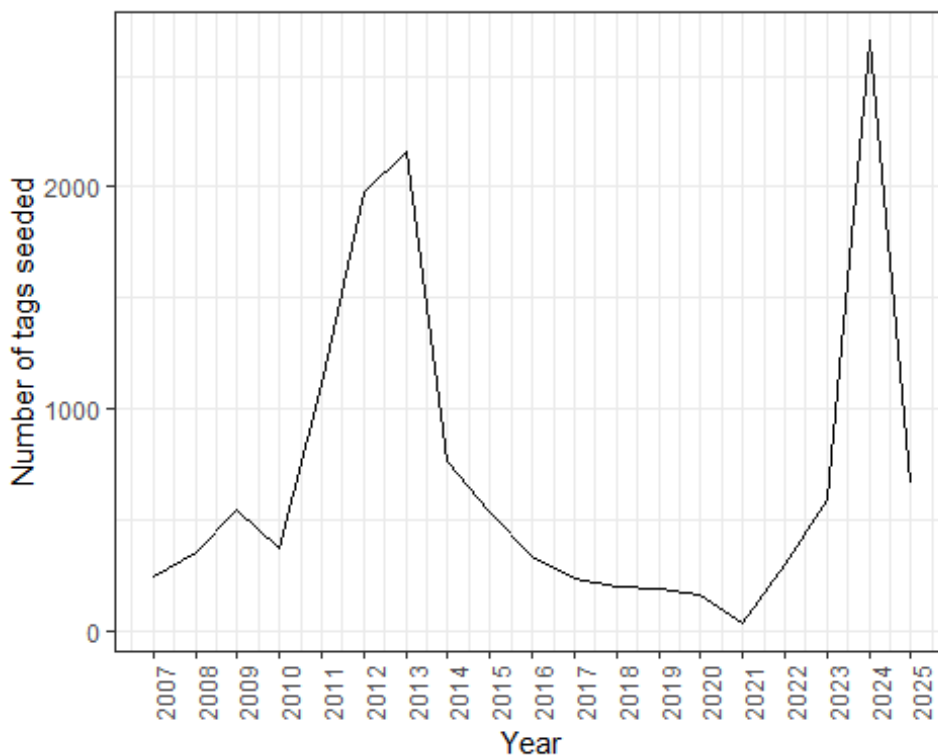


Figure 3. Number of seeded tags deployed per year since the beginning of PTPP.

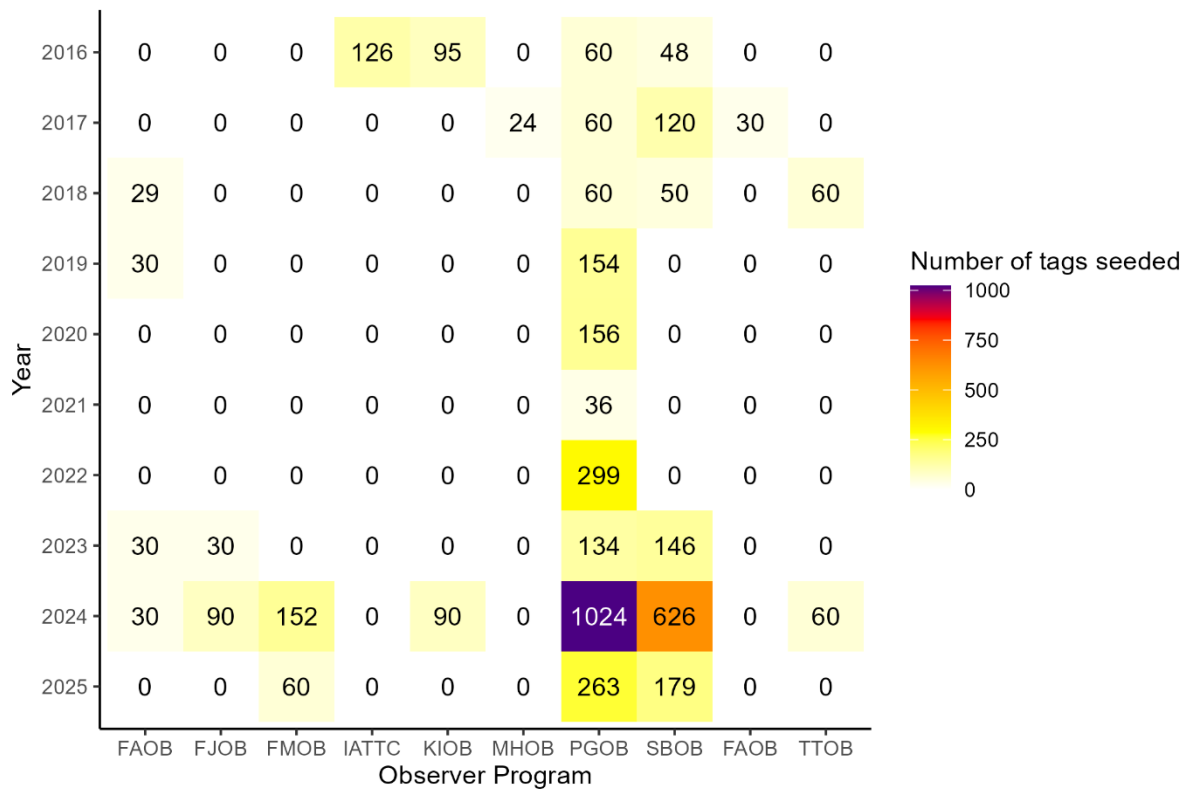


Figure 4 Number of seeded tags deployed per observer program per year in the last 10 years

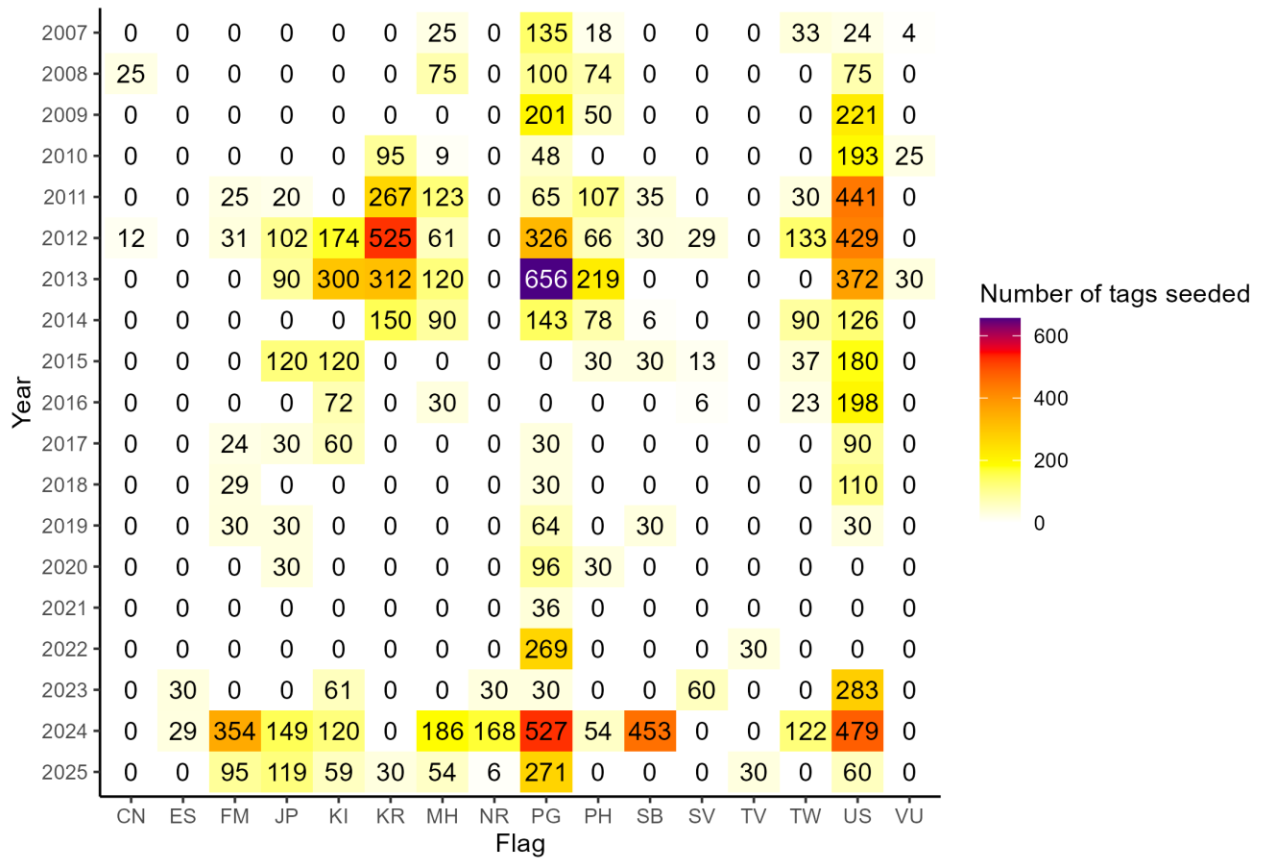


Figure 5 Number of seeded tags deployed per flag per year since 2007

6. Biological sampling

To support other WCPFC and regional projects, the CP17 research cruise will undertake the biological sampling plan detailed in table 2.

Sample Type	Details and Project	Species	Collaborator
PMSB Routine Sampling	Routine entry into the Pacific Marine Specimen Bank (WCPFC Project 35b)	BET, YFT, SKJ, DOL, WAH, BUM, RRU	SPC
Tissue-specific epigenetic calibration	Testing need for a tissue-specific calibration for epigenetic clock analyses, including those used in CKMR analyses (CSEPTA)	BET	SPC, CSIRO
Tuna blood samples	Testing potential for identifying onset of maturity through blood hormone levels (WCPFC Project 120)	YFT	SPC, University of Otago
YFT gonad samples	Boost samples in central Pacific region for YFT Reproductive Biology (WCPFC Project 120)	YFT	SPC, CSIRO
Tuna and billfish mercury	Monitoring of mercury for comparison with other locations and tests in the different organs to identify detoxifying process (WCPFC Project 35b)	SKJ, YFT, BET, all billfish	SPC, IRD
Genetic material quality comparison	Sequence tuna species in the Pacific region (CSEPTA)	YFT, BET, SKJ	SPC, CSIRO
Stomach subsampling (marlin and large tuna)	Evaluate potential for collecting natal range genetic material from small tunas in large predator stomachs (WCPFC Project 35b)	Marlin and YFT	SPC, CSIRO

Table 2: Biological sampling protocols for CP17.

PTTP RESULTS

The Pacific areas covered by the different tagging voyages implemented since 2006 are shown in Figure 1. While there are noticeable gaps in coverage in the extreme east, west and southern latitudes, these are a direct result of the PTTP focus on the tropical tunas and undertaking research voyages in areas and with methods allowing maximal catch rates for tagging. The release numbers and recovery percentages to date of conventional and archival tags made during the 16 Central Pacific (CP) voyages, the PNGTP and PTTP Phase 1 voyages, and the ongoing PTTP Phase 2 voyages, are detailed in Table 3.

		Release numbers				Recapture rate (%)			
project	Tag type	SKJ	YFT	BET	Total	SKJ	YFT	BET	Total
CP	ARC	32	368	992	1,392	0.0	8.7	17.9	15.1
	CON	2,083	10,768	56,653	69,599	3.7	9.2	24.8	21.7
PTTP Phase 1	ARC	2	328	68	398	50.0	17.4	26.5	19.1
	CON	143,691	65,770	4,173	213,634	17.7	18.1	23.0	17.9
WP Phase 2	ARC	174	91	123	388	2.9	3.3	8.9	4.9
	CON	160,323	42,693	5,515	208,533	20.6	15.5	19.6	19.5
Total PTTP	ARC	208	787	1,183	2,178	2.9	11.7	17.5	14.0
	CON	306,097	119,231	66,341	491,766	19.1	16.4	24.2	19.1

Table 3: Central Pacific, PTTP Phase 1 (PNG and Solomon Islands-based), Phase 2 Western Pacific, and total PTTP (including all other cruises) tag release numbers, and % of recoveries to date of conventional (CON) and archival (ARC) tags.

7. Tag recoveries

As of the 1st of June 2025, tag recoveries from the PTTP now number over 94,000 for the three main species of tropical tunas. Over the last 12 months, recaptures of bigeye tuna tagged during CP15 (2021) and CP16 (2023) continue to be reported, providing useful, long time-at-liberty data. CP15 stands out as a central Pacific cruise with a particularly high recapture rate, with many recoveries coming from central and south American ports.

Release and recapture rates for all central Pacific and western Pacific campaigns and separated by gear/cruise type are presented in Tables 4, 5 and 6, respectively.

		Release				Recaptures			
Project	Cruise dates	SKJ	YFT	BET	Total	SKJ	YFT	BET	Totals
CP1	May - Jun 2008	57	116	1,736	1,909	4 (7%)	25 (21.6%)	580 (33.4%)	609 (31.9%)
CP2	May - Jun 2009	169	205	2,309	2,683	5 (3%)	26 (12.7%)	578 (25%)	609 (22.7%)
CP3	Oct - Nov 2009	66	237	4,802	5,105	2 (3%)	64 (27%)	1791 (37.3%)	1857 (36.4%)
CP4	May - Jun 2010	7	120	2,284	2,411	1 (14.3%)	13 (10.8%)	519 (22.7%)	533 (22.1%)
CP5	Nov - Dec 2010	40	228	6,090	6,358	7 (17.5%)	46 (20.2%)	1972 (32.4%)	2025 (31.8%)
CP6	Oct - Oct 2011	2	123	3,804	3,929	0 (0%)	29 (23.6%)	1043 (27.4%)	1072 (27.3%)
CP7	Nov - Dec 2011	52	245	4,212	4,509	1 (1.9%)	21 (8.6%)	1468 (34.9%)	1490 (33%)
CP8	Sep - Oct 2012	20	140	6,014	6,174	2 (10%)	32 (22.9%)	2327 (38.7%)	2361 (38.2%)
CP9	Nov - Dec 2013	29	135	4,296	4,460	2 (6.9%)	11 (8.1%)	637 (14.8%)	650 (14.6%)
CP10	Aug - Aug 2014	12	98	195	339	0 (0%)	6 (6.1%)	4 (2.1%)	10 (2.9%)
CP11	Sep - Nov 2015	231	775	1,966	2,977	6 (2.6%)	33 (4.3%)	219 (11.1%)	258 (8.7%)
CP12	Sep - Oct 2016	109	371	1,575	2,110	3 (2.8%)	84 (22.6%)	273 (17.3%)	360 (17.1%)
CP13	Jul - Aug 2018	79	443	611	1,134	4 (5.1%)	32 (7.2%)	44 (7.2%)	80 (7.1%)
CP14	Aug - Oct 2020	318	1,751	4,318	6,387	8 (2.5%)	101 (5.8%)	513 (11.9%)	622 (9.7%)
CP15	Jul - Aug 2021	98	1,344	6,445	7,887	1 (1%)	137 (10.2%)	1614 (25%)	1752 (22.2%)
CP16	Aug - Sep 2023	815	4,485	5,996	11,296	32 (3.9%)	330 (7.4%)	445 (7.4%)	807 (7.1%)
Totals	Totals	2,104	10,816	56,653	69,668	78 (3.7%)	990 (9.2%)	14027 (24.8%)	15095 (21.7%)

Table 4: Tag releases and recaptures for PTPP Central Pacific cruises to date.

		Release				Recaptures			
Project	Cruise dates	SKJ	YFT	BET	Total	SKJ	YFT	BET	Totals
PG1	Aug - Nov 2006	13,948	7,806	562	22,316	2652 (19%)	1810 (23.2%)	230 (40.9%)	4692 (21%)
	Feb - May 2007	26,493	12,845	129	39,467	2513 (9.5%)	1730 (13.5%)	8 (6.2%)	4251 (10.8%)
PG2	Apr - Jul 2011	28,730	11,571	355	40,656	5800 (20.2%)	2496 (21.6%)	60 (16.9%)	8356 (20.6%)
PG3	Jan - Mar 2012	28,312	9,607	2,008	39,927	7346 (25.9%)	1736 (18.1%)	533 (26.5%)	9615 (24.1%)
PG5	Apr - Jun 2013	23,402	5,955	564	29,921	3386 (14.5%)	900 (15.1%)	47 (8.3%)	4333 (14.5%)
SB1	Oct - Nov 2007	7,479	3,565	139	11,183	1981 (26.5%)	786 (22%)	18 (12.9%)	2785 (24.9%)
	Feb - Apr 2008	15,327	14,405	414	30,146	1800 (11.7%)	2434 (16.9%)	62 (15%)	4296 (14.3%)
WP1	Jun - Nov 2008	37,691	17,647	1,467	56,805	6632 (17.6%)	2147 (12.2%)	372 (25.4%)	9151 (16.1%)
WP2	Mar - Jun 2009	34,207	13,919	3,145	51,271	4628 (13.5%)	2361 (17%)	491 (15.6%)	7480 (14.6%)
WP3	Jul - Oct 2009	30,724	7,340	735	38,799	6870 (22.4%)	1452 (19.8%)	199 (27.1%)	8521 (22%)
WP4	Sep - Nov 2017	25,457	2,376	20	27,853	6171 (24.2%)	470 (19.8%)	1 (5%)	6642 (23.8%)
WP5	Jul - Sep 2019	15,595	1,077	146	16,818	1414 (9.1%)	66 (6.1%)	17 (11.6%)	1497 (8.9%)
WP6	Sep - Oct 2022	16,649	334	2	16,987	7291 (43.8%)	130 (38.9%)	0 (0%)	7421 (43.7%)
Totals	Totals	304,014	108,464	9,688	422,168	58488 (19.2%)	18523 (17.1%)	2038 (21%)	79049 (18.7%)

Table 5: Tag releases and recaptures for PTP Pole & Line cruises to date.

				Recaptures (%)			
Gear	Cruise Type	Tag type	Releases	SKJ	YFT	BET	Total
WP Pole&Line	Archipelagic (Sol+PNG) 2016+	ARC	93	2.5	0.0	0.0	2.2
		CON	61,675	25.8	17.6	10.6	25.2
	Archipelagic (Sol+PNG) pre2016	CON	319,161	17.8	16.9	21.6	17.7
		SON	222	4.3	9.6	38.9	10.4
		ARC	658	4.1	14.4	16.3	13.4
CP Mixed	dFad Access 2013+	ARC	680	0.0	8.7	12.8	11.5
		CON	31,966	3.3	7.8	14.7	12.2
		SON	461	0.0	4.0	5.1	3.7
	Pre-dFad 2008-2013	CON	37,538	5.4	17.2	30.7	29.9
		ARC	712	0.0	8.7	22.4	18.5

Table 6: Recapture rate by gear, tag, and selected cruise-focus types. Equatorial releases consist of tags released in the EEZs of Palau, Fed. States of Micronesia, the Marshall Islands, Nauru, Kiribati and Tuvalu.

8. Tag Recovery Network

Targeted trips by SPC staff were made to Pago Pago, American Samoa (June 2024), Funafuti, Tuvalu (July 2024), Manta and Playas, Ecuador (July 2024), Nadi, Fiji (September 2024), Port Moresby and Lae, Papua New Guinea (November 2024), Pohnpei, FSM (November 2024), Mazatlán, Mexico (December 2024), Lae, Rabaul, Madang, Wewak, Papua New Guinea (April-May 2025), Bangkok, Thailand (May 2025). These trips were conducted to provide training, industry outreach, and to work with tag recovery officers (TROs) and industry to understand fish port specific fish processing networks and to improve tag recovery processes. A new TRO is being trained in Pago Pago to continue improving the recoveries in this major port. This included a new Letter of Agreement with DMRW/Starkist. This will be a tag recovery hot spot in the months following the CP17 tagging cruise and a 2-week trip is planned for this July to prepare industry and fisheries officers for the likely inflow of recaptured tags. New TROs are being trained or have started tag recovery work in Lae, Noro, and Bangkok. As part of the outreach in these locations, tag recovery posters were distributed targeting the workers unloading vessels and processing fish. These posters are specific to longliners, purse seiners, or canneries and four new languages have been translated or will be completed soon. Samoan, Tok Pisin (PNG), Burmese (stevedores in Thailand), and Bahasa (Indonesia) bringing the total languages to 11. New tag reward merchandise was produced to update and replace old stock. These hats and T-shirts will be provided as tag recovery rewards and distributed during port visits to increase visibility of the tag recovery program.

9. Training

All observer training for tag recovery and tag seeding were updated this year. These training courses were migrated to an online training platform called Moodle. This allows trainees to access the material after their courses for review. The training has been developed into stand-alone courses that can also be delivered during national observer training if needed.

Monthly online tagging and tag seeding training was implemented beginning in August 2024 to deliver information on tag recovery and tag seeding protocols. With the expansion of tag seeding and the associated new protocol and manual, many observers requested training in this new process. These have been well attended and even allow observers at sea to participate.

Tag seeding debriefing training was updated and further developed to include this new protocol. These training courses have been conducted in-country and online as requested, with debriefers mentored throughout the year. There has also been a focus on training new trainers to deliver tag recovery and tag seeding training in person, one-on-one. Fourteen new

trainers have been trained in the last 12 months. To ensure their success, SPC staff work closely with these trainers and provide mentoring as they begin delivering training on their own. The previous 12 months of training, by country, is summarised in table 7.

Country	PG	TV	KI	FJ	SB	NR	FM	MH	VU	CK	TO	WS	Total
Observers	79	27	13	10	9	14	3	9	3	1		1	169
Debriefers	17		3	6	5	1	6		4				42
Trainers	1	2	2	2	3	1			2		1		14
Total	97	29	18	18	17	16	9	9	9	1	1	1	225

Table 7: Number of observer programme staff trained in tag recovery and new seeding protocols during the period 2024-2025

10. RFID Tag Recovery Feasibility

To examine the potential to reduce shortcomings with traditional tag recovery and unavoidable data quality issues, a feasibility survey for passive tag detection was conducted during 2024. Several scoping meetings were held with specialists in Passive integrated transponder (PIT) and Radio Frequency Identification (RFID) tagging to better understand how tag detection systems could be installed on purse seine vessels to improve tag recapture date and position. Currently, SPC uses fishery-dependent reporting that has significant reliability issues with reporting and quality of data, but an RFID system would automatically detect the recapture of fish tagged with this technology, removing all reporting-related uncertainty from equipped fleets.

A port visit was necessary to take measurements and document potential installation sites which will inform a technical proposal for SPC to evaluate and hopefully trial during 2025. Hinchinbrook, Inc., a Washington USA based company, was selected as the technical advisor for this work based on their experience in this field. Mazatlán, Mexico was selected as the most appropriate site and a survey was conducted in December 2024 to evaluate technical compatibility of a modern tag detection system onboard tuna purse seine vessels. Mazatlán was chosen because the Mexican tuna purse seine fleet is generally representative of many boats fishing in the WCPO that consistently return to the same port. The IATTC implements a closure period, “veda” in which vessels are required to tie up for 45 days at least once per year. This means that in a predetermined period, there is a guaranteed number of vessels in port. SPC has an excellent working relationship with IATTC field office staff as the PTPP co-funds the Tag Recovery Specialists (TRSs) in Mexico and Ecuador, with many central Pacific tags ending up in Ecuador and Mexico, and they were happy to host and assist SPC for this work. In total, there were 28 PS vessels in port in Mazatlán during the survey, of which 17 were surveyed.

PIT tagging has been used in many other applications to successfully monitor fish behavior and movement. This technology is not novel or obscure, it has been widely used in hydroelectric dam fish passage systems to monitor salmonids since the mid 1980’s. ID tags (transponders) are cost effective and do not require internal implantation as they can now be integrated into an external conventional tag. The PIT tag does not have its own power source. Instead, it relies on an external reader to “wake it up” and read the information. The PIT tag contains a tiny coil that, when exposed to an electromagnetic field generated by a reader, activates the chip. This allows the tag to transmit its unique identification number.

Specialized PIT tag readers, often placed at strategic locations such as wildlife monitoring stations, streams, or feeding areas, send out radio waves that activate the tags. When an animal passes by or comes into range of the reader, the tag transmits its ID number. The reader picks up this signal and records the data, which can include the time of passing, the specific location, and the animal’s unique ID number. The data is stored in a database which can be utilized to understand behavior of the animal related to the site.

Following the survey, a technical proposal was delivered to SPC for evaluation. As a proposed pilot study, Hinchinbrook provided a three-vessel scale-up plan in which they fabricate and install three tag detection systems onboard purse seine vessels (with the guidance of SPC to select vessels). This system would utilize RFID tags which maximizes range reliability (compared with traditional PIT tags). Due to the novelty of the system and complexity and uniqueness of tuna purse seine vessels, the development and fabrication cost will be relatively high (\$106,000USD). However, the potential benefits of

phasing in passive detection systems onboard tuna purse seine vessels (and perhaps unloading/processing sites) are numerous, and it is likely that the unit cost of each detection system installation would be lower in subsequent trials. A shift towards passive detection could completely change the way conventional tagging data from key, participating fleets is incorporated into stock assessments with improved precision in critical recapture data such as vessel, position and date. Physical tag recovery offices would still be required further down the supply chain, and for the measurement and sampling of recaptured fish. The proposal will be considered for late 2025 or early 2026.

PTTP RESEARCH CRUISE PLATFORMS

The PTTP is reliant on suitable platforms with which to undertake research cruises, and here we detail relevant updates on those vessels which provide options for the implementation of the project.

Soltai 105 pole and line refurbishment plan

Since 2006, the PTTP has chartered pole and line vessels operated by National Fisheries Development Pty Ltd in the Solomon Islands. These are the only pole and line vessels available in the equatorial Pacific region for this activity. FV Soltai 105 has been the most valuable vessel due to its long-range capacity which allows for tagging to occur in the high seas and other Pacific Island Exclusive Economic Zones. In the past 10 years the business operations have made it difficult to maintain pole and line fishing vessel activity for profitability in comparison with purse seine fishing gear. NFD halted pole and line fishing activities in early 2024 and the vessels are no longer suitable for implementing tagging experiments. Without an appropriate vessel to continue the PTTP, the skipjack tagging data that underpins stock assessment and related analyses in the WCPO is impossible to obtain.

A longer-term solution is available by way of a dedicated research vessel for the Pacific; however, the Pacific Research Vessel (PRV) will not be available for tagging before 2028 at the earliest. A solution is needed to bridge this temporal gap and ensure the fishery continues to be managed sustainably. The most practical solution would be achieved by refurbishing the Soltai 105 to meet modern standards, and using the vessel to continue the tagging programme until the PRV is available and likely complement the PRV thereafter. A collaboration agreement will be signed between SPC and NFD with each party making financial contributions to maintaining the tagging programme.

The refurbishment work will be conducted in by Aimex Ltd, based in Nelson, New Zealand. The proposal would see this work commence before the end of 2025.

Regional fisheries research vessel project

The design and construction of a regional fisheries research vessel, which will in part be mandated to support PTTP research cruises, continues. Through a Request for Proposal (RFP) process, a naval architect (NA) has been recruited at the end of April 2023. This permitted the development of a vessel Functionality Study, the assessment of relevant SPC Divisions (FAME, GEM), and Pacific countries' requirements.

The functionality study provided the Terms of Reference included in a Call for Interest to shipyards that was published in September 2023, concluding in December of that year, with the assistance of the NA. This call for interest resulted in a selection of five suitable shipyards, allowing these to be part of an RFP that was to be launched in mid-2024.

Following this, and acknowledging the success of its technical support services, SPC has recruited the NA for the whole project duration. The tasks cover the basic vessel design, the shipyard selection and vessel construction follow-up work. In early 2024 the NA began, in consultation with SPC, to work on vessel design, technical documentation and blueprints that will be part of a two-phase RFP process to select the best boat builder for the project. The 1st phase RFP technical documentation has been completed. Due to civil unrest in New Caledonia during 2024, a shortage of SPC procurement and legal staff resources delayed the RFP publication for about a year.

SPC does not have the resources nor expertise to manage the maintenance, the crew and the operational logistics of an offshore research vessel. The appointment of a Vessel Management Company is critical to project success. Through an RFP, Genavir was recruited in early April 2025. Genavir, operating research vessels (RVs) since 1976, is the main operator for the

French Oceanographic Fleet. Genavir manages, operates, and maintains 10 RVs, including three all ocean class vessels and one RV based in the Pacific for the last 40 years. Their role at this stage of the PRV project is to:

- Support the finalization of the PRV design with the naval architect
- Support the RFP process to recruit the best shipyard for the PRV
- Support the vessel construction supervision onsite.

The shipyard RFP will be published in July 2025 with the goal of contracting the vessel builder by the end of 2025, to start the construction early 2026 for an estimated date of delivery of approximately two years later. To support the implementation of this complex project, an experienced Project Coordinator has been recruited, Rob Christie, who has successfully managed the procurement of a new RV for NIWA/New Zealand in recent years.

Project updates have been presented and acknowledged during the annual Heads of Fisheries Meeting 2025, and the decision adopted for the boat to be named “RV Pasifika”.

PTTP 2025-2028 WORK-PLAN

		2025	2026	2027	2028	Key
Tagging	Skipjack-focused cruise		Skipjack-focused cruise		Pacific Research Vessel Cruise	Planned activity
	Bigeye-focused research cruise	Bigeye-focused cruise		Bigeye-focused cruise		Potential activity
	Tag Seeding through Regional Observer Programmes	Continued upscale in tag seeding effort and coverage	Continued tag seeding			
Tag Recovery	Support and development of tag recovery network	Increased engagement from east and south-east Asian canneries				
	Support and develop tag recovery and validation	Development of automatic validation tools				
		Consolidation of historical tag validation				
	Implementation and revision of tag reward schemes	Implement cannery lotteries to support new engagement				
Data	Tagging data validation using VMS, logbook, and cannery data	Ongoing				
	Maintain and develop PTTP databases and related tools	Trial decentralised TUFMAN2 data entry by TROs				
Data Analyses	Provide tagging data for inclusion in stock assessment and related analyses	Skipjack tagging data provision	Yellowfin and bigeye data provision	Development of external spatiotemporal tagging models		
	Reduce uncertainty in WCPO stock assessments	Updated tagging effects, reporting rates and mixing analyses	Updated tagging effects, reporting rates			
	Increase understanding of tuna-fishing gear interactions and interpretation of fisheries data	Exploration of archival tagging for external validation of SEAPODYM habitat preferences				

RECOMMENDATIONS

SC21 is invited to note the report of ongoing progress in implementation of the PTPP. In particular we recommend that SC:

- Note the critical importance of effective tag seeding for informing stock assessment, and support the increased deployment and fleet coverage of tag seeding experiments through regional and national observer programmes.
- Note the need for member participation and support in tag reporting as both wild and seeded tags continue to be found throughout the fishery.
- Note the plans for refurbishment of the Soltai 105 for the purposes of continued skipjack tagging, critical for stock assessment input
- Note the ongoing regional fisheries research vessel project
- Consider and support the PTPP work-plan for 2025- 2028

ACKNOWLEDGMENTS

We gratefully acknowledge the voluntary contributions from all the entities listed in Programme Funding. We acknowledge the support of national fisheries administrations, observer programmes and the tuna fishing industry in assisting with the project, in particular the recovery of recaptured tags. The contribution of both vessel and scientific crew to the successful implementation of the PTPP is gratefully acknowledged.

This report was provided by J. Scutt Phillips, M. Cunningham, J. Muir, S. Gislard, C. Sanchez, and B. Leroy.

APPENDIX A. REPORT OF THE PTTP 2025 ADVISORY COMMITTEE MEETING

PTTP 2025 Advisory Committee Meeting

19th March 2025

11:00-12:00 (UTC+11)

Hybrid Meeting: Nouméa and Microsoft Teams

Participation list is given in Annex 2.

Executive Summary

- Scaling up of tag seeding was a major accomplishment of the PTTP for 2024.
- 10-fold increase in tag seeding effort targeted in 2024-2025, with experimental design based on maximum coverage across ports and vessel flags, and the intention to keep this level of tag seeding moving forward
- Good uptake amongst ports and observer programs, alongside some identified bottlenecks
- A 45-day Central Pacific 17 (CP17) tagging cruise is planned for 25th June to 9th August 2025 in the Line and Phoenix Islands, utilizing drifting FADs shared by industry to deploy conventional tags and conduct biological sampling
- Tag recovery efforts continue to produce quality data from TRO network, as well as with participating fleets with incentives to find tags onboard during fishing
- IATTC tag recovery network continues to be beneficial to both SPC and IATTC but funding strategy needs to be addressed
- No other relevant regional tuna tagging undertaken in 2024
- The Regional Tagging Vessel project continues to move forward with implementation work planned in 2025
- A quotation for the Soltai 105 refurbishment to support WCPO skipjack tuna tagging has now been attained, following a visit by SPC staff to Noro, Solomon Islands in February 2025

Welcome and Preliminaries

Joe Scutt Phillips (SPC) acted as chair and welcomed all participants and presented the draft Agenda (Annex 1). No additions or alterations to the agenda were requested and so was adopted.

2024 Tag Seeding Scale up Summary

Joe Scutt Phillips briefly summarised the activities of the PTTP during the final half of 2024. Given the current lack of a suitable platform for tagging SKJ in the region, a large scale-up in tag seeding experiments by observer programmes was supported for implementation during 2024. These experiments support the estimation of penalty distributions for reporting rate parameters for WCPO stock assessments, an influential parameter that impacts the effect of tagging data on estimated demographics. Building on the existing protocols for tag seeding,

the experimental design was based on port departures and vessel flags, with consideration given to even coverage of all ports, and special consideration to areas of interest, i.e. those with low tag recovery rates or spatially important for wild tagging.

A few challenges have been encountered with the increase in tag seeding; training of observers and debriefers had to be augmented to meet the demand of the increase in seeding activity. Additionally, some ports have seen a fall in fishing activity and subsequently it has proved more difficult for these observer programmes to deploy tag seeding kits on vessels in affected areas.

Since May 2024, the number of seeded tags has increased by almost 10 times, and it is envisaged to keep this level of tag seeding effort maintained in 2025 and beyond.

2025 Central Pacific Tagging Cruise Plan

Jeff Muir (SPC) outlined the upcoming central Pacific, mixed aggregation tagging cruise being planned for mid-2025. Utilizing the Gutsy Lady 4 based in Honolulu, Hawaii, CP17, a 45-day cruise will target the Line and Phoenix Islands 25 June-9 August. The vessel will target aggregations around industry provided dFADs and around TAO moorings in the area. Due to the changing nature of dFAD deployment strategies and drift, the cruise track is not predictable and will follow the most productive groups of shared dFADs to make the best use of the 45 days of vessel charter time.

As a result of increased collaboration from industry partners, there have been more dFADs shared with PTTP tagging cruises in recent years. This allows for a much more efficient cruise strategy and minimizes the number of steaming days. CP17 will target 37-39 fishing days which ensures ample opportunities to encounter suitable aggregations of tuna for tagging and sampling.

The CP17 campaign will target 5000 conventional tags with no priority in BET, YTF and SKJ. Recent campaigns (CP14, CP15 and CP16) in this region have demonstrated an increasing component of YFT in releases (40% for CP16) and a small but noteworthy amount of SKJ (7% in CP16). Additionally, there is a greater spatial distribution of releases with each fishing gear type (dangling/trolling or jigging) with no noticeable difference in survivorship reflected in recapture rate.

A variety bio-sampling protocols are being evaluated for incorporation into the tagging cruise plan. Strontium Chloride marking of BET and YFT will not be conducted on CP17 but will likely resume for SKJ during the next pole & line tagging cruise scheduled for 2026.

2025 Central Pacific Tagging Cruise: Formalities, Permitting, and dFAD Access

Jeff Muir continued, detailing how central Pacific research cruises are nearly entirely reliant on dFADs. Noting this, existing partnerships with industry partners Bolton/Trimarine, the American Tunaboat Association and Calvopesca as well as Satlink and Marine Instruments will be leveraged for CP17. Future collaborations with EU and other distant water fleet should be explored for future campaigns.

A permit for the U.S. Monument EEZs including Palmyra, Jarvis, and Howland & Baker has been granted. A permit application for the Line and Phoenix Islands has been submitted to the Kiribati government and is in process.

Tag Recovery: Current and Planned Activities

Joe Scutt Phillips outlined some of the routine tag recovery efforts in conjunction with MRAG that have continued through the reporting period. New Tag Recovery Officers (TROs) have been installed in Lae, PNG, and new TROs are planned for Noro and Pago Pago. Online training for tag recovery and tag seeding has been run for observers and coordinators monthly. Following the upcoming CP17 campaign, anticipating continued recaptures in IATTC ports, Pago Pago, Kiritimati and potentially Funafuti which may require some further outreach and training to ensure that they are ready for the uptick in recaptures.

The IATTC tag recovery network continues to be beneficial to both SPC and IATTC but the funding strategy needs to be addressed.

Recent (since 2019) tagging cruise recapture rates have shown significant variability, with noteworthy outliers during WP6 (2022, 44%) and CP16 (2023, 6.5%). Many recaptures with longer times at liberty (>1yr) are noted for CP16 releases.

Other Regional Tagging

No other relevant regional tagging was reported by other agencies in the region.

Any other business/Vessel Update

Bruno Leroy provided an update on the Pacific Research Vessel project. Currently the project is in its implementation phase. The project is considered critical because of the growing needs for more suitable research platforms considering the loss of pole and line fishing vessels for tagging, and the scarcity of research vessels in the region. The vessel will enter construction phase likely in 2026 and a two-year build period is expected, making the vessel available sometime in 2028.

In the interim, the PTPP requires a tagging platform suitable to release large numbers of SKJ for the continued time-series of tagging data for integration into stock assessment models and related analyses. Recently, a trip to Noro by SPC staff was conducted to discuss refurbishment of the Soltai 105 for medium-long term charter work similar to recent (2017, 2019, 2022) work done in the western Pacific and archipelagic area. Pending negotiations between SPC, the vessel owner NFD and Aimex shipyards, SPC is optimistic that the S105 will be ready in time for a 2026 SKJ focused charter.

Other questions/comments:

1. Mike Batty (TV) asked if there was a marine surveyor hired for oversight of the Pacific research vessel construction. Bruno answered that yes, a Bureau Veritas surveyor would follow construction.
2. Fan Zhang (CN) asked if there was any ongoing PTTP project conducting satellite tagging, and if he could collaborate with CP17 to deploy satellite tags in yellowfin tuna to examine movement rates in the central Pacific. Joe and Jeff answered that no, there is no current satellite tagging because of many technical reasons with the tags, and they typically underperform. A side discussion should be held to determine whether this would be a useful collaboration.

Closing statement: There were no other questions or concerns brought up by participants; this summary of the meeting was shared with participants for comment or follow-up questions.

Next meeting: The next meeting will be the standing PTTP Steering Committee, to be held prior to the WCPFC Scientific Committee in early August 2025.

Annex 1. Standing Agenda

PACIFIC TUNA TAGGING PROJECT PLANNING ADVISORY COMMITTEE MEETING

19th March 2025 11am to 12am Solomon Islands time (UTC+11)

Virtual Meeting, MS Teams ([Meeting Link](#))

Agenda

1. Welcome, preliminaries
2. 2024-25 Tag Seeding Scale Up
3. 2025 Bigeye-focused tagging cruise: Cruise plan
4. 2025 Bigeye-focused tagging cruise: Formalities, permitting, and drifting FAD access
5. Tag Recovery: current and planned activities
6. Other regional tagging
7. Any other business

Annex 2. Attendance Report

<i>Name</i>	<i>Affiliation</i>
<i>Bruno Leroy</i>	SPC
<i>Charity Puloka</i>	New Zealand
<i>Dan Fuller</i>	IATTC
<i>Elaine G. Garvilles</i>	WCPFC
<i>Fan Zhang</i>	Shanghai Ocean University
<i>Heewon Park</i>	Korea
<i>Jeff Muir</i>	SPC
<i>Joe Scutt Phillips</i>	SPC
<i>Mi Kyung Lee</i>	Korea
<i>Mikyung Lee</i>	Korea
<i>Lara Manarangi-Trott</i>	WCPFC
<i>Leyla Knittweis</i>	New Zealand
<i>MATSUBARA Naoto</i>	Japan - FRA
<i>Matthew Cunningham</i>	SPC
<i>Michael Batty</i>	Tuvalu Fisheries
<i>Sunon Soh (External)</i>	WCPFC
<i>MATSUMOTO Takayuki</i>	Japan - FRA