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PTTP OPERATIONAL PLANS 2008-11

WCPFC-SC4-2008/ GN-IP-4

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Executive Summary

The Pacific Tuna Tagging Programme is a WPCFC endorsed project being implemented by SPC. The PTTP is a large project with a number of interest groups involved. The first half of this document outlines the project governance, reporting, monitoring mechanisms for these groups, including WCPFC, Pacific Community, Pacific Island Forum and each of the main donors. A detailed implementation schedule that identifies project milestones for the period 2008-2009 is presented.

The second half of the document details the proposed field operations for the period 2008-2009. These include:

- Western Pacific Cruise 1, a five month cruise that will undertake tagging operations in EEZ's of Micronesia, Philippines, and Indonesia as well as those of Papua New Guinea and the Solomon Islands commencing in June 2008. The warmpool of the western pacific has been restricted to this region of the WCPO in conjunction with the strong La Nina event in 2008, providing an opportunity to sample during conditions when tuna numbers are expected to be high in the region.
- Central Pacific Cruise 1, a 4 week cruise that will undertake tagging operations on NOAA TAO Oceanographic Bouys south of Hawaii along the 155°W meridian and the waters of Kiribati, Line Islands, commencing May 2008. This tagging cruise will represent the first "sub-regional" approach to improve overall spatial coverage of PTTP tag releases and will be viewed as a trial for this strategy of targeting difficult to access areas of the Central Pacific and French Polynesia. The cruise will charter the Double D, a multi-purpose pelagic handline/longline vessel which was used very successfully as a principal tagging platform during the PFRP funded Hawaii Tuna Tagging Program.
- Western Pacific Cruise 2, a five month cruise that will undertake tagging operations in EEZ's of Micronesia, Marshall Is, Kiribati, Tuvalu, Wallis & Futuna and Fiji and Solomon Islands EEZ's for conventional and electronic tagging of bigeye, yellowfin and skipjack. This cruise is scheduled to commence in February 2009 and will potentially include the use of drifting FAD's and FAD calling stations.
- Central Pacific Cruise 2, a 6 week cruise that will undertake tagging operations on Marquesas Islands, French Polynesia, schedule for the first half of 2009. French Polynesia is an important area for understanding the dynamics of tropical tuna movement biology. The area is strongly influenced by ENSO conditions and geographically suited to examine movement rates between the jurisdictional boundaries of the WCPFC and IATTC. The cruise is likely to be a joint initiative between PTTP and the IATTC.
- The location for tag seeding experiments in 2008 and a summary of the tag seeding experimental design.

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1 Background

The Conference of the Pacific Community held in Palau in 2005 strongly endorsed a new regional tuna tagging programme as a high regional priority to improve the scientific information based supporting management of the tuna fishery in the western and central Pacific Ocean (WCPO). As a result, the SPC Oceanic Fisheries Programme (SPC-OFP) began discussions with key member countries to implement a Phase 1 activity, which it was hoped would make a strong initial contribution to the new regional programme as well as stimulate donor interest in extending the programme to other regions of the WCPO). Phase 1 was initially targeted at PNG, and subsequently at Solomon Islands, both important fishing areas with strong domestic tuna fishing operations. Funding for Phase 1 in the vicinity of USD 2 million was provided by a number of agencies, including the Australian Centre for International Agricultural Research (ACIAR), the European Community (through the PROCFISH project), the French Pacific Fund, the Global Environment Facility (through the Pacific Islands Oceanic Fisheries Management Project), The New Zealand Agency for International Development (NZAID), the PNG National Fisheries Authority (NFA) and the Government of Taiwan.

The Phase 1 work was an outstanding success with more than 60,000 tuna tagged in PNG and 40,000 in Solomon Islands, greatly exceeding the initial project targets.

The SPC-OFP began planning for the Phase 2 extension of the programme in mid-2007. A detailed project document describing the concept of a Pacific Tuna Tagging Programme (PTTP) was developed and presented the 3rd session of the Western and Central Pacific Fisheries Commission (WCPFC) Scientific Committee in August 2007. The Project Document⁴ outlined the general design of the PTTP as consisting of:

- Phase 1: Pole-and-line based conventional, archival and acoustic tagging in PNG in 2006 and 2007, and subsequently in Solomon Islands in late 2007 and 2008.
- Phase 2:
 - (i) Pole-and-line based conventional, archival and acoustic tagging throughout the equatorial western Pacific, focusing on the area 10°N–10°S, 120°W–180°;
 - (ii) Handline-based conventional and archival tagging in the equatorial central Pacific (10°N–10°S, east of 180°); and
 - (iii) Affiliated national or sub-regional projects that might be coordinated with the PTTP by funded and implemented by national fisheries agencies or international organizations.

The concept of the PTTP was strongly endorsed by the WCPFC Scientific Committee at its August 2007 meeting, and subsequently by the WCPFC Annual Session in December 2007. The project document included a budget of approximately USD 9.8 million to fund the Phase 2 tag release and recovery operations and subsequent analytical work.

At around the same time, additional regional support for the programme was obtained by its inclusion as a key regional priority in the Pacific Plan, coordinated by the Pacific Islands Forum Secretariat. At the 2007 Forum Leaders meeting in Tonga, The Prime Minister of New Zealand announced that New Zealand would contribute NZD 5 million to the project. Additional funding support has been obtained through a new European Community funded project (SCIFISH), further support from the PNG NFA as well as in-kind support from the SPC-OFP. Thus far, approximately USD 6.2 (exclusive of SPC management costs) of the USD 9.8 million original Phase 2 budget has been secured.

⁴ [http://www.wcpfc.int/sc3/pdf/SC3_GN_WP_10%20\(tagging%20proposal\).pdf](http://www.wcpfc.int/sc3/pdf/SC3_GN_WP_10%20(tagging%20proposal).pdf)

The purpose of this document is to outline some of the proposed governance structures within which the project would operate, and present a detailed work plan and budget for the implementation of Phase 2 based on the funding commitments obtained to date.

2 Project Governance, Reporting and Monitoring

There are a number of interest groups involved in the project, and these need to be reflected in the project governance and reporting structures. The main governance structures and reporting mechanisms are as follows:

Interest group	Governance structure	Reporting mechanism
WCPFC	PTTP Steering Committee to provide general expert advice on operational plans, data analysis and interpretation	Project annual reports and work plans submitted to WCPFC-SC (August)
	WCPFC-SC approves annual work plans and budgets. Any direct WCPFC funding contribution will require approval of the WCPFC Annual Session.	SC recommendations re WCPFC funding support transmitted to WCPFC Annual Session (December)
	PTTP mid-term review overseen by WCPFC-SC – Jan-Feb 2009	Working papers containing scientific analysis of results submitted to WCPFC-SC
	PTTP final review end 2012	
Pacific Community	Committee of Representatives of Governments and Administrations (CRGA) approves annual work plans of OFP	OFP Annual Reports and Work Plans submitted to CRGA (October) SPC annual corporate audits
Pacific Islands Forum	Pacific Plan, Forum Leaders Meeting	Project updates incorporated into Pacific Plan reports
NZAID (Donor)	Direct contract	Project annual reports and work plans (as per WCPFC) (July) and six-monthly financial acquittal (30 June and 31 December)
SCIFISH (EC-funded)	Project Steering Committee to approve SCIFISH work plans	Six-monthly progress and financial reports Annual project audit Annual Work Plans and Cost Estimates

A logical framework matrix (Annex 1) will guide monitoring and evaluation of the project.

3 Operational Plan Phase 2 2008-2011

The current operational planning of the project is reflected in the following milestones table.

Milestone	Date	Description
1	30 Apr 2008	Key administrative tasks for 2008 activities completed (some tasks are ongoing): <ul style="list-style-type: none"> - contracts with Project Field Manager, Cruise Leader and Field Technicians finalised - Tag recovery officer recruited and in post - Tagging equipment purchased or ordered - Key vessel charter agreements signed - Tag recovery agents in place in key locations - Web-based project summary reporting system in place - Monthly newsletter implemented
2	15 Jun 2008	1 st Central Pacific handline tagging cruise (CP1, one month) completed. Targets: 1,000 yellowfin and bigeye tuna tagged with conventional tags; 50 yellowfin and bigeye tuna tagged with archival tags
3	31 Jul 2008	The following reports available for WCPFC SC4: <ul style="list-style-type: none"> - Annual report of PTTP implementation - Cruise report for Solomon Islands Country Activity - Cruise report for 1st Central Pacific handline tagging cruise - Operational plan for field activities in 2008-2009
4	30 Nov 2008	1 st Equatorial Western Pacific pole-and-line tagging cruise (WP1, five months) completed. Targets: 29,000 tuna tagged with conventional tags; 150 tuna tagged with archival tagged in an area covering Solomon Islands, FSM, Palau, Philippines, Indonesia and PNG
5	30 Nov 2008	A report on PTTP implementation and future plans provided to WCPFC 5.
6	31 Mar 2009	2 nd Central Pacific handline tagging cruise (CP2, one month) completed. Targets: 1,000 yellowfin and bigeye tuna tagged with conventional tags; 50 yellowfin and bigeye tuna tagged with archival tags
7	30 Jun 2009	2 nd Equatorial Western Pacific pole-and-line tagging cruise (WP2, five months) completed. Targets: 30,000 tuna tagged with conventional tags; 200 tuna tagged with archival tagged in an area covering FSM, Nauru, Marshall Islands, Kiribati, Tuvalu and Solomon Islands
8	15 Jul 2009	New conventional tagging data included in assessments to be done for WCPFC SC5
9	15 Jul 2009	The following reports available for WCPFC SC5: <ul style="list-style-type: none"> - Annual report of PTTP implementation - Cruise reports for WP1, WP2, CP2 - Operational plan for field activities in 2010
10	30 Nov 2009	3 rd Equatorial Western Pacific pole-and-line tagging cruise (WP3, five months) completed. Targets: 30,000 tuna tagged with conventional tags; 200 tuna tagged with archival tagged in an area to be determined
11	30 Nov 2009	A report on PTTP implementation and future plans provided to WCPFC 6.
12	31 Mar 2010	3 rd Central Pacific handline tagging cruise (CP3, one month) completed. Targets: 1,000 yellowfin and bigeye tuna tagged with conventional tags; 50 yellowfin and bigeye tuna tagged with archival tags
13	15 Jul 2010	New conventional tagging data included in assessments to be done for WCPFC SC6
14	15 Jul 2010	The following reports available for WCPFC SC6:

		<ul style="list-style-type: none"> - Overall update of PTTTP implementation - Cruise reports for WP3, CP3 - Operational plan for field activities in 2010
15	31 Aug 2010	<p>4th Equatorial Western Pacific pole-and-line tagging cruise (WP4, five months) completed – subject to additional funding support.</p> <p>Targets: 30,000 tuna tagged with conventional tags; 200 tuna tagged with archival tags in an area to be determined</p>
15	31 Oct 2010	<p>4th Central Pacific handline tagging cruise (CP4, one month) completed.</p> <p>Targets: 1,000 yellowfin and bigeye tuna tagged with conventional tags; 50 yellowfin and bigeye tuna tagged with archival tags</p>
16	15 Jul 2011	New conventional tagging data included in assessments to be done for WCPFC SC6
17	15 Jul 2011	<p>The following reports available for WCPFC SC6:</p> <ul style="list-style-type: none"> - Final report of PTTTP implementation - Cruise report for CP4 - Scientific reports presenting analyses in line with project objectives and outputs
18	Late 2011	Scientific symposium presenting the results of the project to regional and international scientists, fisheries managers and other invited participants

The area of operation of the field programme for the first two five-month pole-and-line cruises and central Pacific handline cruises is shown in Figure 1.

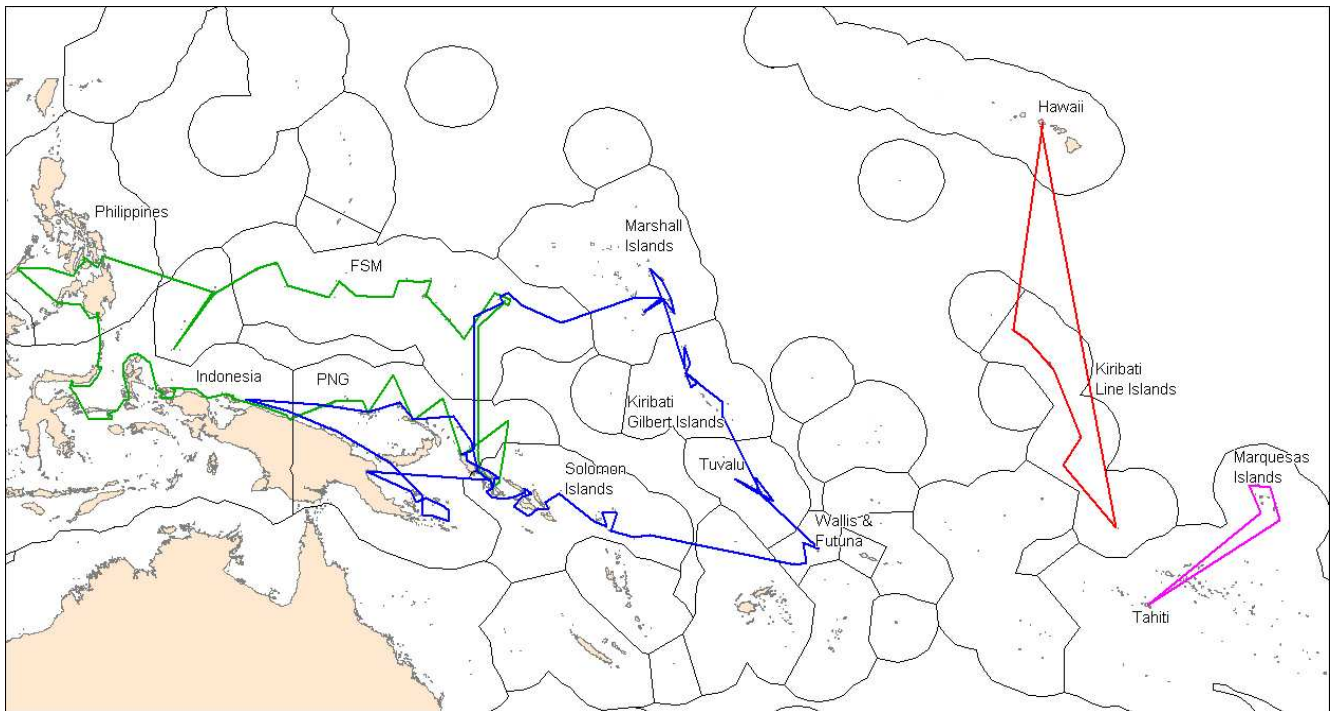


Figure 1. Proposed approximate cruise tracks for Phase 2 field operations as currently planned. Green – WP1; blue – WP2; red – CP1; pink – CP2. Cruise plans for WP3, CP3 and CP4 will be developed in early 2009.

4 Budget

The project budget⁵ is shown below as “FULL PROJECT”. An operational budget based on funding commitments received to date has also been developed. This is shown below as “CURRENT OPERATIONAL BUDGET”. This budget largely reflects the funding contributions of the two main contributors to date, the EC-funded SCIFISH project and NZAID. The consequences of no further funding support for the PTPP are:

- tagging vessel charter reduced from 20 months to 15 months;
- suspension of tagging in the central Pacific utilizing an EPO-based baitboat;
- reduced resources for equipment, tag releases and tag rewards; and
- limited support for analytical staff, tag recovery and travel in year 5 of the project (2012).

FULL PROJECT						
Item	2008	2009	2010	2011	2012	Total
Tagging vessel operations	1,005,000	1,969,000	985,000	0	0	3,959,000
Staff costs	640,000	640,000	640,000	288,000	288,000	2,496,000
Travel	78,000	138,000	78,000	18,000	9,000	321,000
Equipment	658,000	490,000	0	0	0	1,148,000
Tag recovery	57,000	87,000	79,000	79,000	50,000	352,000
Miscellaneous Costs	167,000	211,000	128,000	58,000	54,000	618,000
Sub-total project costs	2,605,000	3,535,000	1,910,000	443,000	401,000	8,894,000
Organisational overhead	261,000	354,000	191,000	44,000	40,000	889,000
TOTAL BUDGET (USD)	2,866,000	3,889,000	2,101,000	487,000	441,000	9,783,000

CURRENT OPERATIONAL BUDGET						
Item	2008	2009	2010	2011	2012	Total
Tagging vessel operations	1,012,000	1,889,000	141,000	0	0	3,042,000
Staff costs	267,000	467,000	313,000	204,000	0	1,251,000
Travel	81,000	141,000	33,000	33,000	0	288,000
Equipment	313,000	453,000	63,000	61,000	0	890,000
Tag recovery	117,000	202,000	30,000	30,000	0	379,000
Miscellaneous Costs	77,000	89,000	63,000	63,000	0	292,000
Sub-total project costs	1,867,000	3,240,000	641,000	390,000	0	6,138,000
Organisational overhead	131,000	227,000	45,000	27,000	0	430,000
TOTAL BUDGET (USD)	1,998,000	3,467,000	686,000	417,000	0	6,568,000

⁵ Regional Tuna Tagging: Phase 2 proposal. WCPFC-SC3-2007/GN WP-10.

5 Field Activities 2008-2009

The current field schedule for the project is reflected in the following milestones table.

Milestone	Date	Description
F1	30 Apr 2008	Cruise Planning Completed - 1st Equatorial Western Pacific pole-and-line tagging cruise (WP1) - 1st Central Pacific handline tagging cruise (CP1)
F2	15 Jun 2008	1st Central Pacific handline tagging cruise (CP1) completed.
F3	15 Jul 2008	Tagging Seeding design and schedule completed for 2008
F4	30 Nov 2008	1st Equatorial Western Pacific pole-and-line tagging cruise (WP1) completed.
F5	30 Nov 2008	A report on PTTP implementation and future plans provided to WCPFC 5.
F6	15 Dec 2008	Tagging Seeding design and schedule completed for 2009
F7	31 Jan 2009	Cruise Planning Completed - 2nd Equatorial Western Pacific pole-and-line tagging cruise (WP2) - 2nd Central Pacific handline tagging cruise (CP2)
F8	31 Mar 2009	2nd Central Pacific handline tagging cruise (CP2) completed.
F9	31 Mar 2009	Budget review for field activities
F10	30 April 2009	Cruise Planning Completed - 3rd Equatorial Western Pacific pole-and-line tagging cruise (WP3)
F11	30 Jun 2009	2nd Equatorial Western Pacific pole-and-line tagging cruise (WP2) completed.
F12		Cruise Planning Completed - 3rd Central Pacific handline tagging cruise (CP3)
F13	30 Nov 2009	3rd Equatorial Western Pacific pole-and-line tagging cruise (WP3) completed.
F14	15 Dec 2009	Tagging Seeding design and schedule completed for 2010

5.1 Cruise Plans

5.1.1 WP1 – Micronesia, Philippines and Indonesia.

Background: Catches of tropical tuna's are high in the EEZ's of Micronesia, Philippines, and Indonesia as well as those of Papua New Guinea and the Solomon Islands. This area is also an important region in the stock assessment models for skipjack, yellowfin and bigeye. The warmpool of the western pacific has also been restricted to this region of the WCPO in conjunction with the strong La Nina event in 2008, providing an opportunity to sample during conditions when tuna numbers are expected to be high in the region.

Objective: Broad scale sampling of the Micronesia, Palau, Philippines, Indonesia, Papua New Guinea and Solomon Islands EEZ's for conventional and electronic tagging of bigeye, yellowfin and skipjack during the 2008 La Nina conditions. Note electronic tagging of skipjack will commence when suitable and reliable archival tags can be purchased.

Duration: 5 month with a scheduled departure on June 24

Cruise Plan: Departure from Solomon Islands with the intent of tagging in the EEZ's of Micronesia, Philippines, Indonesia and Papua New Guinea before returning to Solomon Islands in November 2008.

A detailed cruise plan is outlined in “CRUISE PLAN FOR WP1” and estimated budget in “OPERATIONAL BUDGET FOR WP1”.

CRUISE PLAN FOR WP1			Overall Cruise Target			
				29,000 Conventional tag	150 Archival tags	
Exclusive Economic Zone (EEZ)	Time	Fishing Areas	Targets			
Solomon Islands Federated States of Micronesia	27 Jun – 18 Aug (52 days)	Transit to Micronesia TAO Bouys, Pohnpei, Ant, Pakin, Ngatik, Nukuoro, Kapinga, Mortlock, Satawan, Chuuk, Namanuito, Yap	BET YFT SKJ	700 2900 7000	10 31	Conventional Archival Acoustic
Palau	19 Aug – 2 Sept (16 days)	Palau, Sonsorol, Helen Reef, Palau	BET YFT SKJ	200 900 1800	10 28	
Phillipines	3- 25 Sept (23 days)	Moro Gulf, Samar, Cagayan, Palawan, General Santos	BET YFT SKJ	300 1300 2600	10 28	
Indonesia	26 Sept – 31 Oct (36 days)	Bitung, Gorontalo, Luwuk, Peleng, Bacan, Ternate, Halmahera, Morotai, Waigeo, Batanta, FakFak, Ambon, Banda, Sorong, Sorenarwa, Jayapura	BET YFT SKJ	400 2000 4200	10	
Papua New Guinea	1 – 18 Nov (18 Nov)	Vanimo, Bismarck Sea, Hermits, Manus Is, New Ireland, High Seas	BET YFT SKJ	200 1100 2000	18	
Solomon Islands	19-24 days (6 days)	Fishing Buka, High seas, Fads east of Buka	BET YFT SKJ	500 900	5	

OPERATIONAL BUDGET FOR WP1							
Item	2008 USD	EEZ (USD)					
		Solomon Is	Federated States of Micronesia	Palau	Philippines	Indonesia	Papua New Guinea
Tagging vessel operations	943,200						
Staff costs	195,000						
Travel	60,000						
Equipment	258,000						
Miscellaneous Costs	41,500						
TOTAL	1,497,900	499,992	153,844	221,150	346,148	173,074	57,691

5.1.2 CP1 – NOAA TAO Oceanographic Bouys south of Hawaii along the 155°W meridian and the waters of Kiribati, Line Islands.

Background: This tagging cruise will represent the first “sub-regional” approach to improve overall spatial coverage of PTTP tag releases and will be viewed as a trial for this strategy of targeting difficult to access areas of the Central Pacific and French Polynesia. The cruise will charter the Double D, a multi-purpose pelagic handline/longline vessel which was used very successfully as a principal tagging platform during the PFRP funded Hawaii Tuna Tagging Program. The vessel is based in Honolulu.

Objective: To target difficult to access areas of the Central Pacific to improve overall spatial coverage of tag releases.

Duration: 30 days

Cruise Plan: Departure from Honolulu with the intent of tagging on the NOAA TAO Oceanographic Bouys south of Hawaii along the 155°W meridian and the waters of Kiribati, Line Islands. A detailed cruise plan is outlined in “CRUISE PLAN FOR CP1” and estimated budget in “OPERATIONAL BUDGET FOR CP1”.

CRUISE PLAN FOR CP1		Target
		BET 1000 Conventional Tags
		YFT and SKJ not targeted
		BET & YFT 50 Archival Tags
		SKJ not targeted
Date 2008	Fishing Areas	Activity
5- 9 May	Depart Honolulu –	Steaming to TAO bouys
10 May	TAO 8N 155W	Fishing
11- 13 May	TAO 5N 155W – NE of Christmas Island	Fishing
5/14/08	Christmas Island	Customs Clearance
15 May	E of Christmas I	Steaming
16-19 May	TAO 2N 155W	Fishing
20-23 May	TAO 5N 155W	Fishing
24-25 May	TAO 2N 155W	Fishing
26 May	TAO 5N 155W	Fishing
27 May	Transit	Steaming
28-29 May	TAO 8N 155W	Fishing
30 May – 3 June	Return to Honolulu	Steaming

OPERATIONAL BUDGET FOR CP1	
Item	2008 USD
Tagging vessel operations	70,000
Staff costs	28,500
Equipment	55,000
TOTAL	153,500

5.1.3 WP2 – Micronesia, Marshall Is, Kiribati, Tuvalu, Wallis & Futuna and Fiji.

Background: This cruise will complement WP1 by sampling waters immediately to the east of WP1 where bait grounds are relatively accessible. .

Objective: Broad scale sampling of the Micronesia, Marshall Is, Kiribati, Tuvalu, Wallis & Futuna and Fiji and Solomon Islands EEZ’s for conventional and electronic tagging of bigeye, yellowfin and skipjack. Include the use of drifting FAD’s and FAD calling stations

Duration: 5 month with a scheduled departure February 2009

Cruise Plan: Departure from Solomon Islands with the intent of tagging in the EEZ’s of Micronesia, Republic of the Marshall Islands, Kiribati, Tuvalu, Wallis and Futuna, Fiji before returning to Solomon

Islands in June 2008. The proposed targets for the cruise are 30,000 tuna tagged with conventional tags and 200 tuna tagged with archival tags.

A detailed cruise plan will be prepared by 31 January 2009. This will allow more precise planning based upon the outcomes of WP1 and potential budgetary considerations (eg. consequences of escalating fuel prices).

5.1.4 CP2 – Marquesas Islands, French Polynesia.

Background: French Polynesia is an important area for understanding the dynamics of tropical tuna movement biology. The area is strongly influenced by ENSO conditions and geographically suited to examine movement rates between the jurisdictional boundaries of the WCPFC and IATTC. The cruise will either charter a multi-purpose pelagic handline/longline vessel from Hawaii or from within French Polynesia, depending upon suitability, availability and budget. Cruise is likely to be a joint initiative between PTPP and the IATTC. The French Pacific Fund is an additional financial donor for this cruise.

Objective: To target difficult to access areas of French Polynesia to improve overall spatial coverage of tag releases.

Duration: 42 days, March 2009.

Cruise Plan: 6 week cruise, down 155W visiting the 8N, 5N, 2N, 0 and maybe 2S TAO bouy's and then across to 140W just north of the Marqueses and up the 140W TAO line to 8N, then return to Hawaii.. The proposed targets are 1,000 yellowfin and bigeye tuna tagged with conventional tags; and 50 yellowfin and bigeye tuna tagged with archival tags.

A detailed cruise plan will be prepared by 31 January 2009. This will allow more precise planning based upon the outcomes of WP1 and potential budgetary considerations (eg. consequences of escalating fuel prices).

5.1.5 WP3 – Western Pacific revisits.

Background: This cruise will be a complement of WP1 and WP2 and will undertake broad scale sampling of priority sites identified by WP1 and WP2 or visit priority areas missed by these 2 cruises.

Objective: To be determined

Duration: Budget dependent but likely to be of 3 months duration with a scheduled departure in September 2009

Cruise Plan: A detailed cruise plan will be prepared by 30 April 2009. This will allow more precise planning based upon the outcomes of WP1 and potential budgetary considerations (eg. consequences of escalating fuel prices).

6 Tag Seeding

Tag seeding will be undertaken across the western Pacific in conjunction with the implementation of Phase 2 of the PTTP. The proposed schedule of activities is outlined in “SCHEDULE OF TAG SEEDING EXPERIMENTS FOR 2008” below. The schedule of tag seeding activities for 2009 will be developed by 15 December 2008.

SCHEDULE OF TAG SEEDING EXPERIMENTS FOR 2008			
Geographic area	Fishery (PS,LL,PL)	Target (canery/port/transship)	Sample
Micronesia	PS	Ponhpei	4
Micronesia	PS	Ponhpei	4
Marshall Islands	PS	Majuro	4
Kiribati	PS	Tarawa	4
PNG	PS	Wewak	4
PNG	PS	Rabaul	4
American Samoa	PS	Pago Pago	4
American Samoa	PS	Pago Pago	4

Tag Seeding design

The locations of the tag seeding experiments are to be associated with the main unloading areas in the WCPO. Seeding of tags will be undertaken by observers whilst on board vessels and in secret (i.e. without crew or vessel owner/administrator knowledge). Trained observers will be paid USD50 for the first deployment of their first kit. If the observer deploys the kit correctly and returns all the required release data to SPC, the observer will be paid USD100 for each subsequent kit they deploy correctly. A kit comprises 25 tags, with the instructions for 15 fish to receive a single tag per fish and 5 to receive two tags. A minimum target of 100 kits per year is required. Only a small number of observers are currently trained and consequently the target for 2008 has been set to 32 kits. The priority activity for 2008 is the training of observers in tag seeding operations to allow the 100 kits per year target to be obtained for the duration of the PTTP beyond 2008.

7 ANNEX 1: LOGICAL FRAMEWORK MATRIX

	Indicators	Sources of verification	Assumptions (risks) (assessment in <i>italics</i>)
<p>Goal</p> <p>To improve stock assessment and management of skipjack, yellowfin and bigeye tuna in the Pacific Ocean</p>	<p>Tagging data and/or assumptions or parameter estimates included in the assessments and are influential regarding stock status estimates and their uncertainty</p> <p>Conservation and management measures agreed by WCPFC and individual members based on improved assessments and scientific information</p>	<p>Stock assessment documents produced by SPC and submitted annually (August) to the WCPFC Scientific Committee</p> <p>WCPFC annual session reports</p> <p>WCPFC performance reviews</p> <p>National Tuna Management Plan reviews</p>	
<p>Objectives</p> <p>1. To obtain better estimates of regional-level fishery impacts on skipjack, yellowfin, and bigeye tuna</p> <p>2. To estimate the rates of movement and mixing of tuna in the equatorial WCPO, between this region and other adjacent regions of the Pacific basin, and the impact of FADs on movement at all spatial scales</p> <p>3. To estimate species-specific vertical habitat utilisation by tunas in the tropical WCPO, and the impacts of FADs on vertical behaviour</p>	<p>Tagging data included in the assessments and are influential regarding estimates of region-level fishing impacts and their uncertainty</p> <p>Scientific papers published documenting the analyses of tuna movement and FAD impacts</p> <p>Scientific papers published documenting the analyses of vertical habitat utilization and FAD impacts</p>	<p>Stock assessment documents produced by SPC and submitted annually (August) to the WCPFC Scientific Committee</p> <p>Project annual reports</p> <p>Journal publications</p> <p>WCPFC SC Working papers</p> <p>Project annual reports</p> <p>Journal publications</p> <p>WCPFC SC Working papers</p>	<p>Suitable tagging vessel(s) can be chartered</p> <p><i>Experience gained in Phase 1 indicates that a suitable Soltai pole-and-line vessel will be available for the project at a reasonable price. We have also identified a Hawaii-based handline vessel suitable for the central Pacific work.</i></p> <p>Fishing success is similar to previous large-scale tagging projects</p> <p><i>Unprecedented fishing and</i></p>

4. To estimate local exploitation rates and productivity of tuna in various parts of the WCPO	Analyses of local exploitation rates incorporated into National Tuna Fisheries Status Reports	Project annual reports SPC-OFP annual reports	<p><i>tagging success has been achieved during Phase 1 in PNG and Solomon Islands. While continuation of this success into Phase 2 cannot be guaranteed, the project is in a position to minimize this risk to the greatest extent possible.</i></p> <p>Industry and Governments cooperate in the return of tags <i>Cooperation has been outstanding during Phase 1. Phase 2 will build on the awareness raising and publicity already achieved.</i></p> <p>Accurate recapture information is provided with tags that are returned</p> <p><i>This has been an issue in Phase 1 for tags returned from canneries. SPC-OFP is currently utilizing other data sources, such as logsheets and VMS data, to validate and correct tag recapture data where possible.</i></p> <p>Regional/national observer programmes can be used to conduct tag seeding on purse seiners</p> <p><i>Observer programmes are currently cooperating in tag seeding and will continue to</i></p>
Outputs			
1.1 Conventional tag release and recapture data and estimates of tag-reporting rates provided for stock assessment models	Conventional tag release targets are met; Tag-reporting rates estimated	Tag release/recapture tables published on web site Project monthly summaries Project annual reports	
1.2 Estimates of growth rates and their regional variability	Scientific paper published documenting the analyses of tuna growth	Project annual reports SPC-OFP annual reports	
2.1 Estimates of movement rates and the impacts of FADs on movement	Scientific paper published documenting the analyses of tuna movement and FAD impacts	Project annual reports SPC-OFP annual reports	
3.1 Estimates of species-specific depth distributions for FAD and non-FAD associated tunas	Scientific paper published documenting the analyses of tuna depth distributions and FAD impacts	Project annual reports SPC-OFP annual reports	
3.2 Estimates of ambient temperature impacts on depth distributions	Scientific paper published documenting the analyses of ambient temperature impacts on depth distributions	Project annual reports SPC-OFP annual reports	
3.3 Estimates of ontogenic changes in depth distribution	Scientific paper published documenting the estimation of ontogenic changes in depth distribution	Project annual reports SPC-OFP annual reports	
4.1 Conventional tag release & recapture data, estimates of tag-reporting rates provided for fine-scale spatial models (such as SEAPODYM)	Conventional tag release targets are met; Tag-reporting rates estimated	Tag release/recapture tables published on web site Project monthly summaries	

4.2 Estimates of local exploitation rates, levels of local depletion, fishery impacts	Analyses of local exploitation rates incorporated into National Tuna Fisheries Status Reports	Project annual reports Project annual reports SPC-OFP annual reports	<i>do so. Tag seeding now a feature of observer training.</i> Archival & acoustic tags perform to specifications <i>Some problems with one AT model during Phase 1. Tag performance will continue to be monitored and reported to manufacturers. At least 2 key suppliers of AT are now available.</i>
<p>Tasks/activities</p> <p>(i) Planning of field operations</p> <p>(ii) Conventional tuna tagging Targets: 100,000 releases (skipjack – 60,000; yellowfin – 30,000; bigeye 10,000)</p> <p>(iii) Tag seeding to estimate reporting rates by purse seiners</p> <p>(iv) Archival and acoustic tagging of skipjack, yellowfin and bigeye associated with anchored and drifting FADs and in other school types Targets: 600 archival tag releases (200 each for skipjack, yellowfin and bigeye); 150 acoustic tag releases (50 for each species)</p> <p>(v) Tag recovery, including dissemination of</p>	<p>Equipment purchased Tagging vessel charters agreed Operational plans developed Field staff contracted EEZ and baitground access agreed</p> <p>Completion of tagging cruises as per operational plans Conventional tuna tagging release numbers</p> <p>Number of observer trips with tag seeding Number of recoveries of seeded tags</p> <p>Numbers of archival and acoustic tags deployed</p> <p>Duty travel conducted by Tag</p>	<p>Project financial reporting on expenditure Signed charter agreements Signed staff contracts Access approval letters or documents</p> <p>Tagging database Tag release/recapture tables published on web site Project monthly summaries Cruise reports Project annual reports</p> <p>Tagging database; Project annual reports</p> <p>Tagging database Project monthly summaries Project annual reports</p> <p>Documentation of activities in</p>	<p><i>Regional and national tuna fisheries management authorities take appropriate actions on the basis of new information</i></p> <p><i>This risk is minimized by SPC-OFP continuing to be respected as an impartial provider of scientific advice to WCPFC, FFA and countries.</i></p>

<p>publicity materials, efficient payment of tag rewards, review of local tag recovery procedures, conduct of tag lotteries</p>	<p>Recovery Officer Tag-return data quality audits Lotteries held and prizes awarded High tag-reporting rates</p>	<p>monthly newsletter, duty travel reports Annual data quality analyses presented to WCPFC SC Annual analyses of tag-seeding data presented to WCPFC SC</p>	
<p>(vi) Data analysis and modelling</p>	<p>Employment of data analyst (late 2008) Data analysis workshops (early 2009; late 2010)</p>	<p>SPC-OFP annual reports and work plans Workshop reports</p>	
<p>(vii) Reporting</p>	<p>Monthly tagging newsletter Information dissemination via web site Steering Committee reports Annual reports to WPPFC SC Specific scientific Working Papers to WCPFC SC Scientific publications Annual reports to donors</p>	<p>All reports will be made available via www.spc.int/tagging</p>	