

# PACIFIC TUNA TAGGING PROJECT WP 2

## CRUISE REPORT No. 2

24<sup>th</sup> March – 9<sup>th</sup> April 2009

### INTRODUCTION

This report summarizes activities of the second cruise of the Pacific Tuna Tagging Project (PTTP) WP2 during a 16 day period in PNG, FSM and Marshall Islands waters, with departure from Noro on March 24<sup>th</sup>, fishing along the 156E line to Pohnpei, then the traverse to Majuro, arriving on April 9<sup>th</sup>.

### GENERAL DESCRIPTION OF FISHING ACTIVITY

Following departure, the vessel steamed to Ropa (Choiseul) to successfully fill bait tanks for the trip north to Pohnpei. The vessel did not fish on the first full day of the transit (25<sup>th</sup> March) but then fished successfully for four days long the 156E meridian adjacent to TAO buoys at 2S, Equator, 2N and 5N. Over 4,300 fish were tagged during this transect, with a good proportion of yellowfin and bigeye (40%), including one catch on a drifting FAD dominated by bigeye. With bait caught in the outer harbour, the vessel then enjoyed three days good fishing out of Pohnpei, south to Ngatik and near Ant Atoll, with over 2000 fish, mostly skipjack, tagged during this time. After baiting for two nights to fill the tanks as possible, the vessel left for Majuro. Despite generally unfavourable weather, a small number of fish were tagged east of Pohnpei on the first afternoon, and very successfully near the TAO buoy at 5N165E on the third afternoon, when nearly 2000 fish were tagged. The vessel arrived in Majuro for inwards clearance and the full moon break on April 9<sup>th</sup>, signaling the end of the cruise.

The track of the cruise, based on school and noon positions, is found below as **Figure 1** and a summary of general movements during the cruise and daily tag release numbers follows as **Table 1**. A compilation of the daily log extracts, detailing daily activities, is provided as **Appendix 1**.

### TAG RELEASES

Of the 17 days of charter, one was spent in Solomons waters, two in PNG waters, 12 in FSM waters and two in RMI waters on the way in to Majuro. Of these 17 days, 11.5 days were spent fishing (including two with unfavourable weather), two days steaming without fishing, and 3.5 days in port. The majority of fishing days were productive, but with two zero catch days (due primarily to bad weather), and one day with less than 20 fish. In total, **8,266** tuna were tagged with conventional tags, at an average of 719 fish per fishing day, and **30** archival tags deployed; on six days, more than 900 fish were tagged and released, with four “1000 plus” fishing days.

Releases of conventional tags comprised 6117 skipjack (74%), 1,710 yellowfin (21%) and 439 bigeye (5%). The relatively “yellowfin plus bigeye” proportion of the catch, at 26 %, was largely the result of much fishing occurring on associated schools (buoys and dFADs); one drifting FAD alone produced 248 bigeye, with yellowfin and bigeye 93% of the catch.

The Cruise 1 releases are summarized by school in **Table 3**, while **Figure 2** below shows the distribution of the releases in FSM waters by 0.5 degree square, by species.

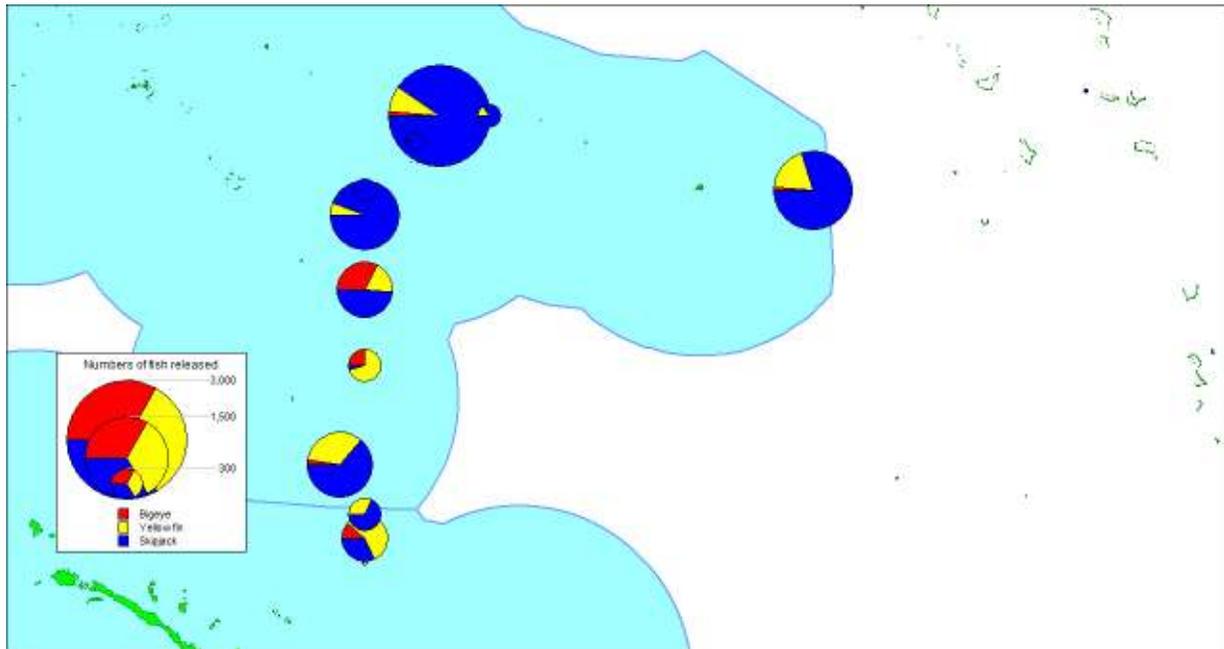
**Figure 1. Track during WP 2 Cruise 2, 24<sup>th</sup> March – 9<sup>th</sup> April 2009, showing 1800 hrs position and the positions of schools fished**



**Table 1. Summary of Cruise 2 activity, with number of tagged fish released per day**  
Shaded yellow are fish tagged in PNG waters and green, fish tagged in RMI waters

Dates	Activity	Tag releases		
		SJ	YF	BE
March 24 <sup>th</sup>	Depart Noro for Ropa baitground, Choiseul	n/f		
March 25 <sup>th</sup>	Steaming north into PNG waters - not fishing	n/f		
March 26 <sup>th</sup>	Fishing near TAO buoy at 2S 156E then towards equator	404	451	70
March 27 <sup>th</sup>	Fishing near TAO buoy at Equator 156E then towards Kapinga	625	339	21
March 28 <sup>th</sup>	Fishing near TAO buoy at 2N 156E then towards 5N	381	371	332
March 29 <sup>th</sup>	Fishing near TAO buoy at 5N 156E then heading towards Pohnpei	1264	64	1
March 30 <sup>th</sup>	Inwards clearance Pohnpei; baiting outer harbour	n/f		
March 31 <sup>st</sup>	Fishing towards Ngatik; baiting Ngatik	817		
April 1 <sup>st</sup>	Fishing towards Pohnpei; baiting outer harbour	659		
April 2 <sup>nd</sup>	Fishing around Ant Atoll	692	191	25
April 3 <sup>rd</sup>	In port Pohnpei; baiting outer harbour	n/f		
April 4 <sup>th</sup>	In port Pohnpei; baiting outer harbour	n/f		
April 5 <sup>th</sup>	Outwards clearance FSM; steaming towards Majuro	164	29	
April 6 <sup>th</sup>	Fishing past Pingelap and Kusaie	0		
April 7 <sup>th</sup>	Fishing towards TAO buoy at 5N 165E	1100	267	16
April 8 <sup>th</sup>	Fishing towards Majuro	0		
April 9 <sup>th</sup>	Fishing in to Majuro; inwards clearance, then in port for full moon	13		
	<b>TOTAL</b>	<b>6117</b>	<b>1710</b>	<b>439</b>

**Figure 2. Distribution of releases by half degree square, by species, for WP2 Cruise 2 (24/03 to 09/04/2009)**



More than half (53%) of the Cruise 2 releases were from fish aggregations adjacent to anchored installations, mostly oceanographic buoys in the TAO array, with drifting FADs, usually with radio buoys attached, contributing a further 21% of releases. Yellowfin and bigeye made up 33% and 37% of aFAD and dFAD releases respectively. Free schools accounted for 26% of releases, with skipjack comprising 95% of these releases. Logs were rarely encountered and made a negligible contribution to releases.

The cruise releases were notable for the small proportion of small fish (< 38cm) tagged with the smaller 11cm Z tags relative to previous cruises – just 561 or 6.8% of the conventional tag releases.

### ARCHIVAL TAG SUMMARY

During Cruise 2, 23 medium-sized bigeye (44 to 56 cm) were released with the small Lotek Lat 2510 model, and 2 of these tags have also been deployed into skipjack tuna (50 and 55 cm). Bigger size MK9 model tags from Wildlife Computers were deployed into 3 bigeye (55 to 61 cm) and 2 yellowfin of 62 and 70 cm

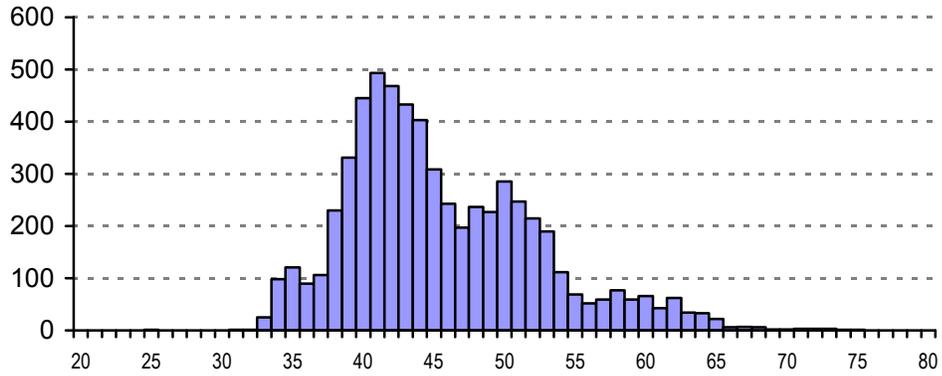
### SIZE DISTRIBUTION OF TAGGED FISH

**Figure 3** shows the size distribution of fish tagged during the cruise leg.

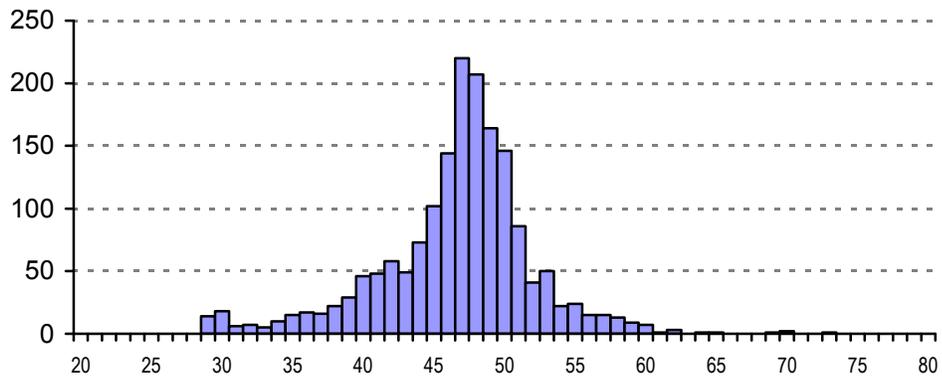
Skipjack tagged during the cruise were mostly 40-55cm fish, with sizes varying between schools and buoys; fish from free schools were generally larger (mode at 50cm), with smaller fish (mode at 42cm) from associated schools. Yellowfin size, on the other hand, was relatively constant along the 156E transect, with a primary mode at around 50cm but with numbers of smaller and larger fish. The considerable number of bigeye tagged (465) was centred on 50cm, with a minor mode of small (~34cm) fish.

**Figure 3. Size distribution of fish tagged during Cruise 2 (24/3 to 09/4/2009)**

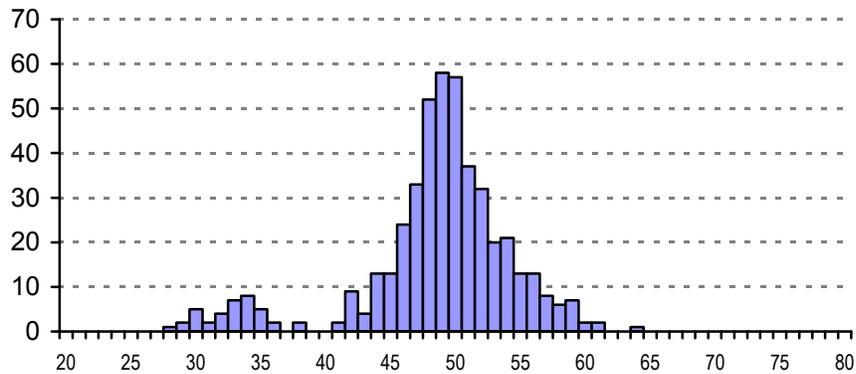
**SKIPJACK n = 6117**



**YELLOWFIN n = 1708**



**BIGEYE n = 465**



## BAITING

Bait tanks were again comfortably filled at Ropa baitground for the trip north. Despite a less than ideal mix of species – robust large silver sprats (*S. gracilis*) and blue anchovy (*S. heterolobus*) but smaller golden anchovy (*S. devisi*) and turquoise sprat (*S. lewisi*), the bait survived with less than 15% mortality until all used after 5 days.

Baiting was carried out on four nights at Pohnpei outer harbour, but less successfully than on the last visit in June/July 2008. The average catch per night, with 3 sets per night, was only about 100 buckets, dominated by blue sprats. The anchovies which provided the bulk of catches on the previous visit were largely absent – it is not clear whether this was seasonal or possibly due to competition from the presence of numerous well-lit transshipment reefers and purse seiners every night directly adjacent to the bait ground. Nonetheless, the vessel left with ~ 220 buckets of good bait for the long haul to Majuro and again very low mortality was experienced over the five days' transit in mostly moderate seas.

A single night's baiting at Ngatik/Sapuwafik atoll provided inexplicably poor catches.

**Table 2. Summary of baitfishing activity during WP2 Cruise 2**

Date	Location	Catch (bkts loaded, hauls)	Species
March 24 <sup>th</sup>	Ropa	320 (2)	Sprat (g,l,d), anchovy(h,d), Hq
March 30 <sup>th</sup>	Pohnpei OH	97 (3)	Blue sprat, Hq, hardyhead
March 31 <sup>st</sup>	Ngatik	8 (3)	Blue sprat, shrimp
April 1 <sup>st</sup>	Pohnpei OH	117 (2)	Blue sprat, Hq
April 3 <sup>rd</sup>	Pohnpei OH	127 (3)	Blue sprat, anchovy, Hq
April 4 <sup>th</sup>	Pohnpei OH	104 (4)	Blue spart, anchovy, h/h

## BIOLOGICAL SAMPLING

Biological sampling has been conducted to collect stomachs, muscle and liver samples for trophic studies. A total of 90 fish were sampled during cruise 2 with a good mix of bigeye (22), skipjack (12) and yellowfin (56). They have been collected from anchored FAD schools (15), drifting FAD schools (50) and TAO buoy schools (25). Bigeye samples measured between 33 and 56 cm long, skipjack between 48 and 60 cm and yellowfin between 40 and 100 cm. Due to other tagging operations conducted in New Zealand for albacore, the fatmeter arrived onboard Soltai 105 beginning of April 2009. From this date until the end of cruise 2, a total of 26 yellowfin were tested for fat content using the fatmeter.

## CONCLUSIONS

The strategy of fishing the 156E transect with bait carried from Solomons again proved to be a successful strategy, with good numbers of fish tagged mostly adjacent to TAO buoys, and also from free schools and drifting FADs. Tuna were also considerably more abundant closer to Pohnpei than was the case in June 2008. Despite unfavourable weather, a pleasing number of fish were tagged on the 5N165E buoy, the furthest east so far by Soltai 105 and a harbinger of good things to come for the remainder of WP2.

Thanks to RMI/MIMRA observer Charles Charley who joined the vessel at short notice for the transit to Majuro, and to WCPFC, NORMA and SPC staff in Pohnpei for their support.

**TABLE 3. Tag releases (all tags) by school during PTP Phase 2 Cruise 2**

Event no	Tagged sch no.	Date	Lat	Lon	Sch type	Assoc.	Start	Stop	YFT	TAG TOTALS				SHK bite
										BET	SKJ	OTH	TOTAL	
2	1	26-Mar-2009	0204.825S	15600.942E	1	2	1205	1211	16	2	0	0	18	0
3	2	26-Mar-2009	0159.005S	15602.057E	2	3	1257	1343	335	67	189	0	591	12
4	3	26-Mar-2009	0128.415S	15600.889E	2	1	1720	1742	0	0	140	0	140	0
5	4	26-Mar-2009	0126.752S	15602.223E	4	1	1805	1822	100	1	75	0	176	1
6	5	27-Mar-2009	0001.043S	15557.589E	2	3	0615	0646	299	21	143	0	463	15
7	6	27-Mar-2009	0001.076S	15557.735E	3	3	0724	0809	40	0	482	0	522	4
9	7	28-Mar-2009	0157.381N	15600.007E	1	3	0620	0720	221	83	16	0	320	4
10	8	28-Mar-2009	0157.296N	15600.083E	1	3	0813	0830	7	0	1	0	8	0
11	9	28-Mar-2009	0304.029N	15602.885E	1	4	1534	1615	117	248	29	0	394	13
12	10	28-Mar-2009	0307.875N	15603.158E	2	4	1640	1730	26	1	191	0	218	6
13	11	28-Mar-2009	0308.203N	15604.176E	2	1	1803	1814	0	0	100	0	100	0
14	12	28-Mar-2009	0310.295N	15605.514E	2	1	1839	1844	0	0	44	0	44	0
15	13	29-Mar-2009	0458.536N	15601.971E	3	3	0652	0752	64	1	1069	0	1134	14
17	14	29-Mar-2009	0505.675N	15612.952E	2	1	0937	0950	0	0	108	0	108	7
19	15	29-Mar-2009	0515.083N	15617.699E	2	1	1142	1149	0	0	87	0	87	1
20	16	31-Mar-2009	0638.207N	15739.011E	2	1	0753	0827	0	0	689	0	689	5
21	17	31-Mar-2009	0613.108N	15722.196E	4	1	1215	1231	0	0	128	0	128	7
25	18	01-Apr-2009	0636.036N	15756.704E	4	1	1416	1515	0	0	659	0	659	2
26	19	02-Apr-2009	0645.025N	15747.022E	2	4	0830	1020	191	25	692	0	908	21
29	20	05-Apr-2009	0634.660N	15853.544E	3	4	1833	1850	29	0	164	0	193	7
32	21	07-Apr-2009	0502.323N	16500.338E	1	3	1607	1745	267	16	1100	0	1383	50
33	22	09-Apr-2009	0702.335N	17034.256E	2	1	1019	1025	0	0	13	0	13	0
<b>CRUISE 2 TOTALS</b>									<b>1712</b>	<b>465</b>	<b>6119</b>	<b>0</b>	<b>8296</b>	<b>169</b>

## **APPENDIX 1**

### **DAILY LOG EXTRACTS**

#### **March 24<sup>th</sup>**

Final preparations in the morning and departed 1215 hrs for Ropa baitground. PNG observer installed in hostel and all arrangements made for return to PNG and carrying samples to Honiara; good steam to Ropa in slight seas, with wind abated - anchored 1730 hrs in same place as June last year; first haul 2030 hrs for approx 500 bkts - 220 loaded, much large silver sprat; second haul on light boat 2200 hrs for ~ 200 bkts, of which 110 loaded - 330 total; up anchor 2300 hrs and steamed all night along west coast of Choiseul in good conditions.

#### **March 25<sup>th</sup>**

Dawn off north Choiseul and steaming north; crossed into PNG waters ~ 0830 hrs; bait surviving well, but some mortality of small *devisi* and *S. lewisi*; no searching or fishing today; good weather.

#### **March 26<sup>th</sup>**

Good passage, with low swell and light NW wind; bait surviving well; searching and fishing from 0645 hrs Sols time; one patch of birds mid-morning but nought else; one dFAD and one log near TAO buoy - 18 small fish from log; good bite on TAO buoy - small fish around buoy and larger fish at large - 591 tagged, including 9 BE ATs; 335 YF, 58 BE; patch of small SJ late in afternoon - 140 tagged (all SJ), then on dusk, mixed school of YF/SJ for 176 tagged (100 YF); daily total 916 conv- 451 YF, 61 BE, 404 SJ, and 9 AT; bonus attained and 1.5 tanks of bait used; will steam over night and get to TAO Eq ~ 0330 hrs and drift.

#### **March 27<sup>th</sup>**

Drifting from 0345 hrs near TAO Eq - began throwing bait 0600 hrs, first fish 0615 hrs; good YF bite initially but with fewer BE than expected; 463 in the first run (299 YF and 21 BE, with 4 AT); after King Neptune rituals, resumed fishing but nearly all SJ (522 for 92% SJ); 985 for the morning (36% YF/BE); opted to move on and fish towards Kapingamarangi, in search of free schools as found last year; several bird flocks but no substance; one radio buoy with log - nothing underneath; birds nearby but skittish; and that was it for the day - no addition after the morning rush; turned for TAO 2N 90nm away at 1730 hrs ..

#### **March 28<sup>th</sup>**

Drifting near buoy from 0240 hrs; first bait thrown 0600 hrs, first fish 0620 hrs; probably never much fish around the buoy but plenty of RR, sharks and some carangids (C sex); 312 tagged, (221 YF, 76 BE) plus 8 ATs; second pass after drifting yielded only an additional 8 fish (7 YF); headed due north for TAO 5N but not with a lot of confidence; bait still a success with probably only 10-15% mortality in total after 4 days; stumbled on a flat buoy just by chance and proved to be a bonanza - BE came up immediately and dominated the catch - 394 for 248 BE, 117 YF and 29 SJ; drifted for 20 minutes before fish jumping and started fishing again, but just SJ (191) and YF (26) this time around (and one BE) - no sign of deeper BE in a search by sounder of the area; continued to head north and two areas of jumping SJ fished just before dark for 100 and 44 respectively; 1070 conv for the day (65% YF/BE) and 14 ATs (13 BE) - probably the best BE day ever for the non-CP PTPP. Will steam overnight and will be on TAO 5N just after dawn.

#### **March 29<sup>th</sup>**

Arrived at TAO 5N buoy 0650 hrs - huge area (hectares) of rippling SJ which bit fiercely - 1134 tagged (64 YF, 1 BE, 1 YF AT) before moved to buoy to check for YF/BE - no marks so opted to keep going with half tank of bait left - could have tagged fish all day; fast moving school of YF close by but no interest in bait; several schools of large SJ in the area as headed NE - 195 tagged from 2 schools before bait finished just before noon; cleaned up and headed for Pohnpei, some 160 nm distant; 1328 for the day, 4323 for the cruise, and now 13,500 in just over two weeks of good useful fishing; good weather for the run in and port arrangements seem in place; NE wind got up during the night, with driving rain.

### **March 30<sup>th</sup>**

Drifting 5 nm off passage from 0400 hrs; 3 seiners waiting to go in and another 5 t/s to 5 reefers; went inside 0700 hrs and alongside 0740 hrs at Luen Thai wharf; cleared by 0900 hrs then busy day ahead with various preparations, including travel, visits to NORMA, SPC and WCPFC; one tag return with promise of more on Friday when return; left 1700 hrs for baitground after dispensing fish (~ 800 kgs est); very brightly lit area with all the t/s activity; anchored in 52m; bait very slow to gather and first net 2200 hrs for just 33 bkts; second set on light boat for 45 bkts; opted for another set before heading south.

### **March 31<sup>st</sup>**

Third set 0200 hrs for 19 bkts - 97 total; headed out then south towards Ngatik; wahoo then mahi trolled abeam Ant 0600 hrs; first school ~ 0800 hrs - good area of running fish which bit well, first larger fish then smaller but mostly > 50cm - 689 SJ tagged; next school just after noon for 128 tagged, all SJ; several good sized splashers in the afternoon in worsening weather, but could not get to bite; headed for Ngatik with just 15 bkts left - inside 1700 hrs and anchored 1800 hrs in 32m on eastern side of lagoon; good passage but will need to go out in daylight; visited by one small sail canoe (nephew of Stevick Edwin); moonset at 2200 hrs, then first net 2300 hrs after poor signs and - just 1.5 bkts; moved to light boat midnight.

### **April 1<sup>st</sup>**

Second net 0400 hrs for 4 bkts, mostly sprat and shrimp; third net 0445 hrs for a few bkts; out of passage just after daylight with ~ 20 bkts only; one DTT in passage (10 kgs) and a wahoo of similar size soon after; running school 0830 hrs chummed but went down; conditions average, with ENE wind ~ 15 kts; spymasters stood down after 1000 hrs for several hours; good school 6 nm south of Ant - 659 SJ tagged in several passes, then headed in for baitground; another wahoo trolled (3 for the day) then anchored on lee side of Sokehs 1900 hrs; visit from one dinghy of curious fishermen; first net after moonset midnight for 47 bkts.

### **April 2<sup>nd</sup>**

Second net 0115 hrs for 70 bkts; headed out 0215 hrs bound for just south of Ant Atoll; drifting from 0530 hrs; good weather for a change; first marlin of the year trolled 0800 hrs then found flat smart buoy (Fu Fa 88) with good fish including YF - fished for 2 hours in repeated passes for 906 fish plus 2 SJ ATs - 690 SJ, 191 YF and 25 BE; several more running schools (not caught) with last of bait before current line school from which just MT and RR caught; alongside 1515 hrs at main wharf; well deserved night off for crew.

### **April 3<sup>rd</sup>**

The usual running around - provisions etc; discovered funds had not been transferred to tagging account so delays there (overnight transfer required) and no cash until Sat morning; attempted to get fuel from Luen Thai (at almost half price of Petrol Corp) but failed after audience with (and lecture from) Governor Ehsa and his AG; tried to arrange small quantity from FSMPC (2000 galls) but no luck, as it turned out next day; collected Thomas 1300 hrs; left for bait ground 1720 hrs after no show from SPC team; anchored in 50m, with light boat inside; first net midnight, with moon still up, for 66 bkts, with some anchovy.

### **April 4<sup>th</sup>**

Moonset 0148 hrs; second set 0115 hrs, inshore on lightboat, but just 11 bkts; moved back further out - 3rd set 0445 hrs for 50 bkts; back alongside 0600 hrs; further provisions then drive-through bank at 0900 hrs to get cash and bank draft for fuel (a 40 minute exercise); no fuel as ordered then FSM PC advised could not deliver anyway - will need to tear up cheque and re-deposit; will be leaving without getting any fuel but enough to get to Majuro; first net 2300 hrs for 50 bkts - moon still bright but some cloud, so a good start; second on light boat midnight for 14 bkts, now 191 total.

### **April 5<sup>th</sup>**

Third net at boat 0400 hrs for 29 bkts, and final net 0500 hrs for 11 bkts, total 221 bkts; alongside for clearance 0630 hrs; left wharf 1030 hrs; steamed down west side of Pohnpei, but conditions good; some head current so making 8.5 kts mostly; limited searching only, with agreement to leave free schools and fish any logs or dFADs; 3 good free schools seen ~ 1730 hrs but not fished; late school just on sunset - large rippler with Philippines style dFAD; just enough light and time to release 193 fish (29 YF) - a nice way to end the day; should be near Pingelap at dawn and at TAO 5N early Tuesday afternoon at current speed.

### **April 6<sup>th</sup>**

Rolling passage overnight, NE wind ~ 14 kts - uncomfortable swell partly side on; nothing all morning after passing Pingelap; search break for an hour at noon; nothing all day except a few bird flocks with larger YF but searching conditions not good.

### **April 7<sup>th</sup>**

Wind moderated slightly over night but still rolling; two schools chummed between 0800 and 0900 hrs- first feeding on punctifer and not biting, second running school mixed with larger YF; nothing then until arrived at TAO buoy 1600 hrs, 2nm north of position; no surface signs and slow to start, with mostly YF; circled to find the main area of fish which then bit well for 90 minutes in repeated passes; 1383 tagged (1100 SJ, 267 YF and 16 BE); over 17,000 for the month, and 180,000 for the PTTT; headed for Pohnpei at increased speed (780 rpm)

### **April 8<sup>th</sup>**

Speed increased over night (800 rpm) but still making just less than 9 kts; wind increased again; no sightings all day - spys stood down 1100 - 1500 hrs; seas abated slightly in the afternoon and wind dropped slightly; making good speed with possible ETA 1300 hrs if maintained; skunk half day but excusable ...

### **April 9<sup>th</sup>**

Wind up again by dawn, with intermittent rain; one free school at 0750 hrs but went down before reached; nothing else in worsening conditions until 1000 hrs when chased down a fast-moving school of very large SJ (70-74 cm), but just 13 tagged, the first in RMI waters during the PTTT. Aborted further searching and headed for Majuro with wind now 20 kts; arrived at pilot station 1520 hrs, pilot taken onboard, then escorted to anchor at 1615 hrs - end of cruise 2.