

# PACIFIC TUNA TAGGING PROJECT WP 3

## CRUISE REPORT No. 4

### PAPUA NEW GUINEA

18<sup>th</sup> – 28<sup>th</sup> September 2009

#### INTRODUCTION

This report summarizes activities of the fourth cruise of the Pacific Tuna Tagging Project (PTTP) Phase 2 WP3 during an eleven day period in September 2009, following the second cruise to Indonesian waters. After entry into PNG waters on September 18<sup>th</sup>, the vessel fished eastwards across the Bismarck Sea, then north to New Ireland, with departure from Kavieng on September 28<sup>th</sup>. This represented the second and final part of a strategy to release fish in the Bismarck Sea during an El Nino period, to contrast with earlier releases during a prolonged La Nina episode.

Scientific personnel onboard the Soltai 105 during Cruise 4 are listed in Table 1.

**Table 1. SPC and In-Country personnel onboard during Cruise 4**

Name	Title	Affiliation	Period
Antony Lewis	Cruise leader	SPC contractor	18/09/09 – 28/09/09
Thomas Usu	Tagging Technician	NFA PNG	18/09/09 – 26/09/09
Simon Nicol	Scientist	SPC Senior Scientist	21/09/09 – 28/09/09
Hearty Matamaru	Tagging technician	SPC contractor	21/09/09 – 28/09/09

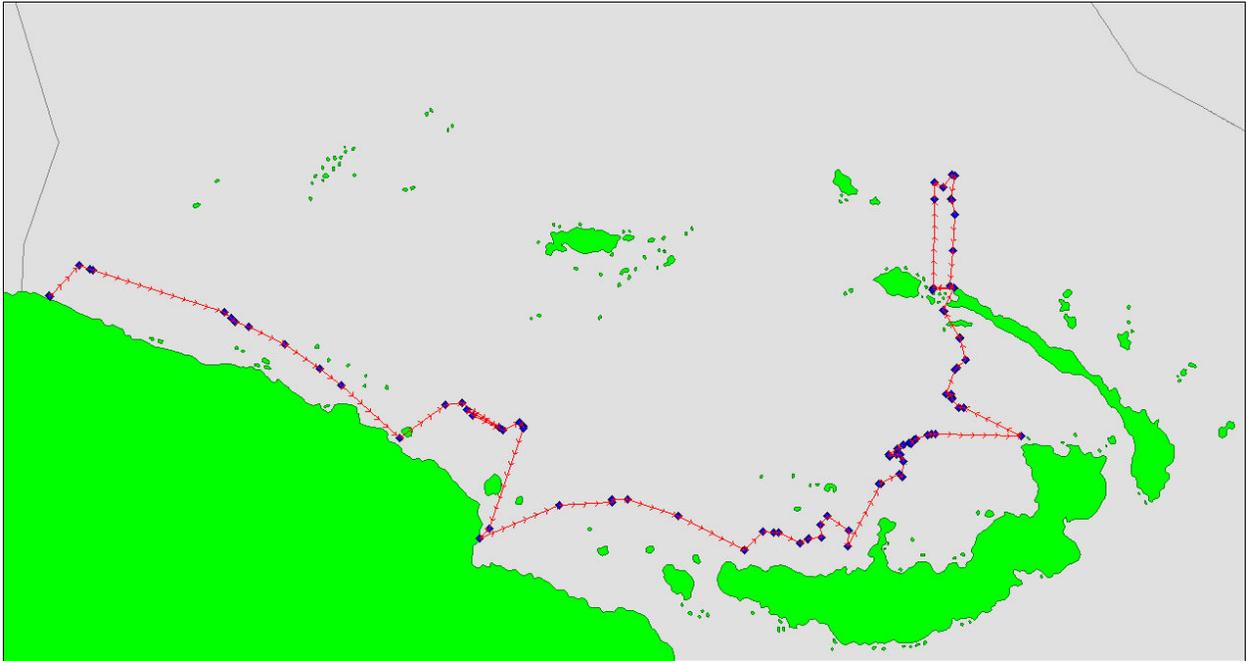
#### GENERAL DESCRIPTION OF SEARCHING and FISHING ACTIVITY

After entering PNG waters (Vanimo) on 18<sup>th</sup> August, the vessel fished eastwards across the western Bismarck Sea towards Manam Island; very little fish was seen on this traverse, other than schools of yellowfin which were being fished by domestic purse seine vessels. After baiting in Hansa Bay, the previously productive FAD array north of Manam and KarKar Islands was searched, but produced no fish; after a brief port call in Madang, the vessel crossed the Vitiaz Strait to West New Britain, finding some good fishing on FADs north of Long Island en route; little was then caught on FADs south of the Bali-Witu islands, but supplied with good bait from Borgen and Emeline Bays, good fishing was found on FADs north of the Willaumez Peninsula; the run into Kavieng via Cape Lambert produced fewer fish than previously at the Dyaul ridge and in Albatross Channel; a final side trip to Tench Island located good quantities of smaller yellowfin near the island, but not biting in the calm conditions. Two nights of baiting around the outwards clearance from Kavieng saw the vessel loaded for the next cruise to FSM waters.

The track of the cruise in the PNG EEZ, based on school and 1800 positions, is found below as **Figure 1** and a summary of general movements and tag releases follows as **Table 2**.

A compilation of the daily log extracts, detailing daily activities, is provided as **Appendix 2**.

**Figure 1: Cruise track during WP3 Cruise 4**



**Table 2 Summary of Cruise 3 activity, with the number of conventional and archival tag releases per day**

Date	Activity	Conventional releases			Archival releases			Total releases
		SJ	YF	BE	SJ	YF	BE	
Sept 18 <sup>th</sup>	Clear in Vanimo; fishing -> Sepik R mouth	0	2	0				2
Sept 19 <sup>th</sup>	Fish -> Manam; bait Hansa Bay	0	0	0				0
Sept 20 <sup>th</sup>	Fish -> Madang	0	0	0				0
Sept 21 <sup>st</sup>	In port Madang; fuel, provision							
Sept 22 <sup>nd</sup>	Fish -> West New Britain; bait Borgen Bay	1632	217	0				1849
Sept 23 <sup>rd</sup>	Fish -> S Bali-Witu Is; bait Emeline Bay	1	2					3
Sept 24 <sup>th</sup>	Fish -> N Willaumez Pen.; bait C Lambert	2542	326	2				2870
Sept 25 <sup>th</sup>	Fish -> Dyaul ridge; drift	461						461
Sept 26 <sup>th</sup>	Fish Albatross FAD; in port Kavieng	1	1					2
Sept 27 <sup>th</sup>	Fish -> Tench Is.; bait Nausen Is	76	16					92
Sept 28 <sup>th</sup>	In port Kavieng; bait Nusandaula							
	<b>CRUISE TOTAL</b>	<b>4713</b>	<b>564</b>	<b>2</b>				<b>5279</b>

## TAG RELEASES

Of the 11 days of the cruise, three days were spent in port, with 8 days (7 full days, two half days ) fishing. With fishing success highly variable, five days produced zero catch or less than five fish, whilst 3 days resulted in over a total of over 5000 fish tagged. The average number of fish tagged per day's fishing was 660, an average result relative to other cruises. Once again, few fish were tagged in the western Bismarck Sea and few in two areas where large numbers had been released on previous trips – Manam/Karkar and south of Bali/Witu Islands

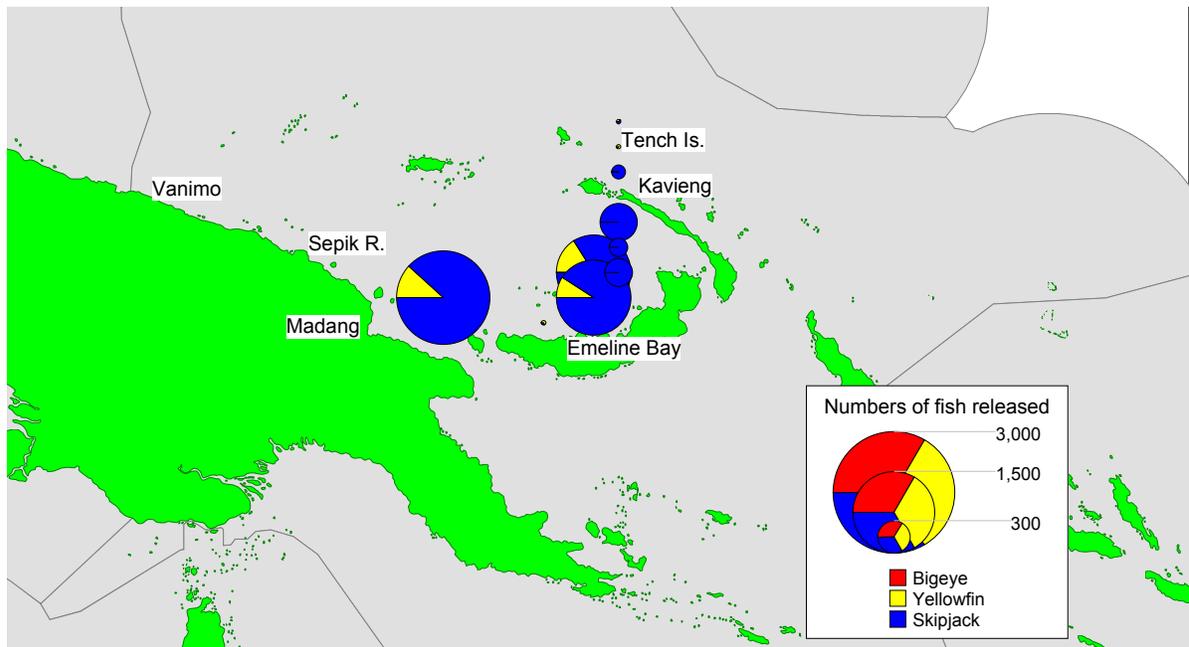
A total of 5279 fish was tagged and released with conventional tags during the cruise, comprising 4713 skipjack (89%), 564 yellowfin (11%) and 2 bigeye (< 1%) .

Nearly all the releases (5,207 – 99%) were the larger P tags (generally fish > 37 cm), with the balance (72) the smaller 11cm Z tags used on skipjack 32-37 cm, and yellowfin and bigeye 27-37 cm.

The majority of releases (61%) involved fishing in association with anchored rafts (FADs), but the proportion of free school releases (39%), mostly within 10 nm of FADs, was higher on this cruise than most.

The Cruise 3 releases are summarized by school, location, school type day and area in **Appendix Table 1**, whereas **Figure 2** shows the distribution of releases during the cruise

**Figure 2** Distribution of tag releases by species during Cruise 4

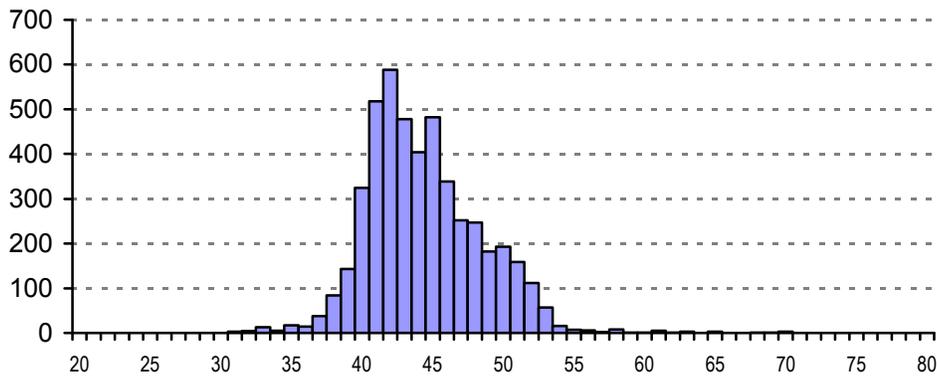


### SIZE DISTRIBUTION OF TAGGED FISH

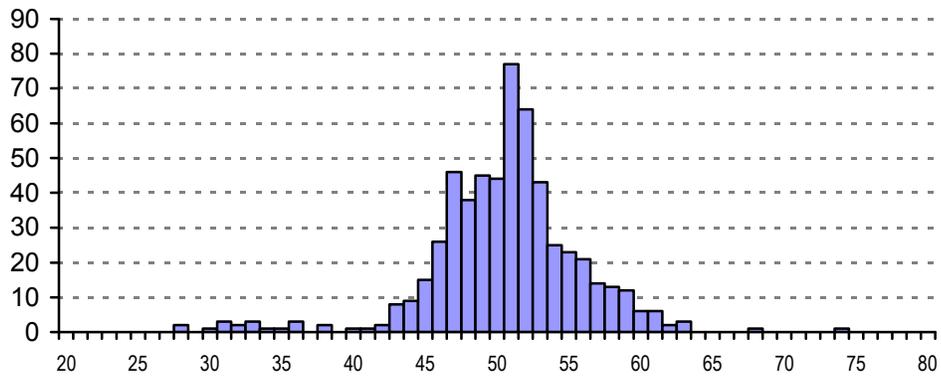
**Figure 3** shows the size distribution of fish tagged during Cruise 4. The skipjack size distribution centred on a large mode between 42 and 45cm, skewed towards larger fish. The yellowfin were slightly larger on average, with a large composite mode centred on 52cm, with a tail of larger and smaller fish. The two bigeye tagged were medium size (~50cm).

**Figure 3. Size distribution of fish tagged during Cruise 4**

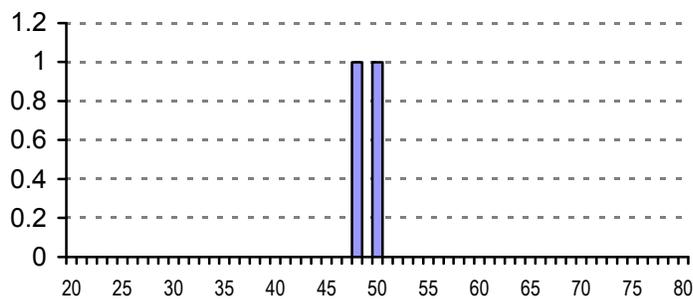
**Skipjack n = 4713**



**Yellowfin n = 564**



**Bigeye n = 2**



## BAITING

Baiting was successfully carried out at all 7 locations during the cruise, with spectacular catches (> 500 bkts) at two locations (Borgen Bay, Emeline Bay in West New Britain) that were only partially loaded. Catches were always sufficient to support fishing, with an average catch per night of 160 bkts, and 75 bkts per set. Anchovy, mostly *Encrasicolina devisi*, dominated catches at most locations. The Nusandaula Island location (south new Hanover), frequently visited due to its proximity to Kavieng, produced moderate catches of mixed species, as did Nausen Is closer to Kavieng.

**Table 4 Summary of bait fishing activity during WP3 Cruise 4**

Date	Location	Catch (bkts loaded, hauls)	Species
Sept 18 <sup>th</sup>	Vanimo	44 (1)	Decapterus, sardine
Sept 19 <sup>th</sup>	Hansa Bay	63 (2)	Sardine, Hq
Sept 22 <sup>nd</sup>	Borgen Bay	340 (1)*	Anchovy (devisi)
Sept 23 <sup>rd</sup>	Emeline Bay	140 (1)*	Anchovy (devisi),
Sept 24 <sup>th</sup>	Cape Lambert	156 (2)	Anchovy (devisi), fusiliers, Hq
Sept 26 <sup>th</sup>	Nusandaula Is	102 (2)	Anchovy, fusiliers, Hq, Pellona
Sept 27 <sup>th</sup>	Nausen Is	135 (3)	Mixed species
Sept 28 <sup>th</sup>	Nusandaula Is	145 (3)	Anchovy, Hq, h/h
Total		<b>1125 (15)</b>	

\* partial loading of a much larger catch, est. 500 and 1000 bkts respectively

## CONCLUSIONS

The cruise produced much less fish than expected, despite some good but patchy fishing. Once again fishing in the western Bismarck was unsuccessful, but also previously productive FADs near Manam/KarKar and south of the Bali Witu Islands also failed to yield fish. Most fish were tagged in the eastern Bismarck Sea.

With 5279 fish tagged, albeit with a low % yellowfin and bigeye on this second cruise in the Bismarck Sea during 2009, over 14,000 tuna were tagged and released under the revised strategy for 2009. In addition, 9243 fish were tagged in the southern Solomon Sea and 925 in eastern PNG waters, both in March 2009, making a total of over 25,000 fish released in PNG waters during 2009.

**Appendix Table 1 Releases of tagged fish by date, location, school type and species during Cruise 4**

Project Western Pacific #3- PTPP Phase 2					Cruise		4 To	4	Vessel Soltai 105				
Event no	Tagged sch no.	Date	Lat	Lon	Sch type	Assoc.	Start	Stop	YFT	BET	SKJ	OTH	TOTAL
1	1	18-Sep-2009	0221.044S	14136.643E	2	3	1619	1636	2	0	0	0	2
14	2	22-Sep-2009	0449.868S	14712.150E	1	3	1101	1125	1	0	14	0	15
15	3	22-Sep-2009	0448.047S	14722.036E	2	3	1233	1413	216	0	1618	0	1834
19	4	23-Sep-2009	0515.265S	14910.398E	1	3	1107	1125	2	0	1	0	3
25	5	24-Sep-2009	0438.458S	15000.084E	1	3	0604	0712	102	0	681	0	783
26	6	24-Sep-2009	0432.367S	15012.943E	2	1	0837	0851	0	0	523	0	523
27	7	24-Sep-2009	0433.914S	15014.901E	1	3	0908	0928	21	0	22	0	43
28	8	24-Sep-2009	0424.234S	15015.756E	2	3	1027	1047	1	0	90	0	91
29	9	24-Sep-2009	0420.013S	15013.420E	2	1	1120	1142	0	0	117	0	117
31	10	24-Sep-2009	0420.090S	15006.291E	2	1	1300	1313	139	2	131	0	272
32	11	24-Sep-2009	0416.338S	15011.932E	2	3	1356	1414	0	0	232	0	232
33	12	24-Sep-2009	0413.845S	15015.773E	2	3	1442	1454	63	0	124	0	187
34	13	24-Sep-2009	0412.287S	15019.235E	2	1	1515	1526	0	0	118	0	118
35	14	24-Sep-2009	0412.849S	15020.387E	2	1	1532	1545	0	0	260	0	260
38	15	24-Sep-2009	0407.544S	15030.584E	2	1	1702	1726	0	0	244	0	244
42	16	25-Sep-2009	0344.784S	15046.289E	2	1	1136	1205	0	0	120	0	120
45	17	25-Sep-2009	0326.763S	15047.893E	2	1	1435	1448	0	0	76	0	76
46	18	25-Sep-2009	0325.531S	15049.182E	4	1	1459	1506	0	0	21	0	21
47	19	25-Sep-2009	0320.341S	15054.542E	2	1	1551	1620	0	0	92	0	92
48	20	25-Sep-2009	0306.735S	15050.979E	4	1	1750	1809	0	0	152	0	152
49	21	26-Sep-2009	0249.817S	15041.579E	3	3	0530	0605	1	0	1	0	2
51	22	27-Sep-2009	0132.234S	15040.870E	2	1	0807	0820	3	0	0	0	3
53	23	27-Sep-2009	0124.612S	15048.285E	2	2	0952	1014	5	0	8	0	13
54	24	27-Sep-2009	0140.194S	15046.113E	2	2	1202	1209	7	0	1	0	8
56	25	27-Sep-2009	0212.304S	15047.002E	1	1	1541	1547	1	0	67	0	68
<b>CRUISE 4 TOTALS</b>									<b>564</b>	<b>2</b>	<b>4713</b>	<b>0</b>	<b>5279</b>

## APPENDIX 1

### DAILY LOG EXTRACTS - WP3 Cruise 3

#### Sept 18<sup>th</sup>

Steaming overnight from Jayapura - entered PNG waters 0048 hrs, put clocks forward one hour and anchored Vanimo Hbr 0430 hrs; lights out and some bait gathered quickly; hauled at 0530 hrs for 44 bkts of Decapterus and sardine; called alongside 0850 hrs by Ports and clearance done quickly and efficiently - only Customs slightly late; quick shopping with help of Vanimo FO Cassian Saroyan then outwards clearance delivered and dues paid (K436); cast off 1235 hrs and headed for RD 8068 25nm away thence via FAD array to Hansa Bay ~ 250 nm against wind and current; first FAD missing, YF (and scout boat Dolly 833A) around next FAD but not biting; RD 8147 at 1740 hrs but no signs; only making 7 kts so speed increased - still only 7.7 kts @ 780 rpm.

#### Sept 19<sup>th</sup>

Amidst several seiners setting at dawn; rafts for which no postions (Frabelle, TPJ etc); RD 8355 missed in the dark, then headed for RD 8218; six seiners visible at ~ 2-45S 143-10E, but not all setting; probably working the YF free schools for which this area is known; RD 8218 at 0730 hrs - YF jumping but no bite; small patches of YF throughout the day, as is normal for this area; none looked like biting and the diving Decapterus also not helpful; one good school in the dirty water 1545 hrs - came to the stern and stayed for a few minutes but no bite; finished searching soon after, since no more blue water; current strong all day with average speed just 8 kts even at 780 rpm; anchored Hansa Bay 2340 hrs behind Laing Is in 35m.

#### Sept 20<sup>th</sup>

First haul 0340 hrs with only modest showing; 53 bkts of small sardine and herring (Hq), plus a bucket (15 kgs ?) of tasty small squid ; second on lightboat 0440 hrs for 10 bkts; up anchor 0515 hrs and headed for Manam FADs; free school came up briefly 1000 hrs but not caught; RD 8255 missing, RD 8413 4 nm to east (new FAD?) and unk FAD at 1240 hrs, both with no fish; RD 8270 and 7673 missing; RD 8253 and 8109 with no signs; RD 7888 missing, then 8166 with no fish; last call at RD 8331 where birds and large YF jumping; came up quickly on the chum, and spectacular jumping all around, but no bite; tried trolling after gave up chumming - 2 hits but no takes; steaming for Madang 1745 hrs but will to see if EU FADs still there in the way in; a remarkable change from two years ago with the same area repeatedly very productive; maybe El Nino impacts ? 2.5 days now in PNG for 2 fish tagged.

#### Sept 21<sup>st</sup>

Drifting near EU2 FAD position from 0300 hrs; seems raft not there so headed in to Madang; inside harbour 0630 hrs but not alongside at main wharf until 1030 hrs; car rented, Simon met, greeted, unloaded mule cargo and off to RD Vidar to sort tags; shopping commenced with gusto; Hearty sauntered down to join the vessel; cooking gas and lube oil obtained; fuel purchased 1130 hrs (2 loads x 19.7 Kl) but through a comedy of errors by Mobil, not delivered until 1700 hrs (first load) then had to move to LuShip due to Ports restrictions (no fuel loading after 1800 hrs), to start second load 2100 hrs; finished just before 2300 hrs, overtime paid to contract tanker staff and Luship manager; with ~ 100 bkts still onboard, opted not to bait at Rasch Pass and headed for FADs east of Hangkow Reef; some lessons learned from the day - Ports procedure and personnel have changed again - maybe best to use Luship as agent next time; NFA preoccupied and unable to help much.

#### Sept 22<sup>nd</sup>

Good passage eastwards during what was left of the night; RD 8111 and RD 7779 missing; RD 8106 at 1000 hrs - slow bite, possibly not much fish - 15 tagged (one YF); RD 8115 at 1230 hrs

with birds actively working and fish jumping over a wide area; bit immediately, with SJ ~ 40cm close to the raft and patches of larger YF and SJ circling and occasionally moving closer to FAD; one pole snapped and many break-offs, with YF to 74cm and SJ to 70 cm; long bite over 1.75 hrs for 1834 tagged (216 YF); fish still biting when bait ran out (90 bkts, mostly Indonesian bait from Rumberpon) and a large rippler forming near the FAD; headed for Iboki but clear that with head current and freshening wind, would not make it before 0400 hrs so diverted to Borgen Bay - cautiously made way in, set light boat and anchored midnight in 41m.

### **Sept 23<sup>rd</sup>**

Water slightly dirty; bait gathered slowly but then amassed; hauled 0310 hrs - ~ 500 bkts, with 340 bkts of small devisi loaded; up anchor, collected light boat and headed out 0430 hrs; RD 7949 and 8041 with no signs; running free school nearby with many frigates - chased unsuccessfully for some time; RD 7938 (good catch 6 weeks ago) with no birds but mahi and AT - 3 tagged (2 YF); RD 7948, 8184,, 8042 and 8045 with no signs; last chance on RD 8137 at 1645 hrs - small free school nearby and some YF jumping on the raft, but no bite - very frustrating .. and just 3 for the day; in to Emeline Bay to top up bait then leave during the night; anchored Emeline 1915 hrs - bait gathered quickly and hauled 2100 hrs; huge catch - maybe 1000 bkts of good anchovy; loaded 140 bkts to top up, pulled anchor and headed out 2210 hrs

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

Drifting close to RD 8200 position from 0400 hrs; found just after 0600 hrs - slow to bite but then prolonged - 784 tagged (102 YF); free school ~ 2 nm from raft - bit well for 15 minutes - 523 tagged, all SJ; one SJ recapture from 12th August, same area; then to raft with scout boat RD Dolores 827B tied up; slow biting and smaller fish - just 43 tagged (21 YF); RD 8198 at 1030 hrs - 91 tagged, with just one YF; free school chased for some time before success, then 117 tagged (all SJ); RD 8307 at 1220 hrs with fish but no bite; free school nearby chased and produced 272 fish, with 50% YF and two BE; RD 8277 at 1400 hrs for 232 fish (all SJ) and RD 8188 at 1440 hrs for 187 (63 YF); then two free schools which yielded 378 fish, all SJ; last two FADs without fish, the only ones for the day, but then 244 (all SJ ) on a final free school; called it a day at 1800 hrs after the last dry FAD (RD 8312) with nearly two tanks of bait left, and headed for Cape Lambert, with ETA about midnight; 2870 for the day and now closing on 5000 (and the first bonus) for the cruise.

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

Anchored 0030 hrs in 32m Cape Lambert; moderate bait showing - first haul 0330 hrs for 120 bkts of anchovy (devisi), some small, and fusiliers; second haul on lightboat 0430 hrs 36 bkts - 156 total; anchor up and out 0520 hrs, headed for RD 8243 (~ 50 nm); nice wahoo (119 cm) trolled 0830 hrs; arrived in vicinity of FAD 1030 hrs but no signs; then a succession of small free schools until 1300 hrs - just 120 tagged (all SJ); sea oily calm and not especially conducive; headed for Dyaul ridge; started seeing schools on margins - 189 tagged from 3 stations; all but given up until FM sighted fish after sundown - 152 tagged, eventually with deck lights on; 461 for the day, all SJ; first bonus collected; a night of no baiting declared by FM, with still four full tanks; arrived at Sokimi FAD 2100 hrs and will drift until dawn; good impromptu farewell for Thomas, who departs tomorrow - a good servant of the programme and suspect we have not seen the last of him.

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

Engine started 0500 hrs and steamed to Albatross FAD; good area of rippling and jumping fish but mostly AT - 2 YF tagged; some SJ seen jumping but did not bite; chased birds towards Dyaul briefly but soon headed for Kavieng; one blue marlin (192 LJFL, ~ 80 kgs) trolled off Albatross Channel; alongside Fisheries wharf 0900 hrs with NFC staff waiting; no clearance needed; market, provisions and lunch at NIR; fuel not possible (tanker unloading) - will get Monday; cash float from NFC very helpful; sailed, farewelling Thomas, at 1615 hrs and headed for Nusandaula for baiting; Jerry Bagat and Litau Pomat onboard for the trip; anchored Nusandaula 1900 hrs in 25m; bait slow to gather - moon still up; hauled 0930 hrs for 87 bkts of mixed anchovy, Hq,

fusiliers etc; second on light boat 2240 hrs for just 15 bkts - 102 total, and ~ 200 onboard; opted to head for Tench 2315 hrs.

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

Good steam overnight to Tench - oily calm; numerous bird flocks 10- 15 nm NW and NE of the island, but lazy in the calm conditions and fish almost inactive; mostly small YF 45-55 cm; 3 fish finally from one brief bite then 13 from a small log; headed back towards Tench - one small free school fished 1540 hrs for 68 fish (one YF) - 92 for the day; inside passage 1830 hrs - dinghy took NFC observers Litau Pomat and Jerry Bagat back to wharf and drop SJN and ADL at Nusa; PGW did not make it and overnighing in Kokopo; 3 hauls west of Nausen for 135 bkts for mixed bait; HEM as cruise leader and a fine job.

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

Alongside Fisheries wharf 0510 hrs after baiting; morning provisioning, water and fuel; PGW in 0930 hrs and SJN out; outwards clearance 1500 hrs without difficulty; cast off 1615 hrs headed for Nusandaula - anchored 1850 hrs; will need ~ 150 bkts to fill up before heading for southern FSM; good showing of bait, with first net 2145 hrs for 120 bkts; second 2245 hrs for 5 bkts; final shot 0100 hrs for 21 bkts loaded - 145 for the night, and 340 onboard. END OF CRUISE 4