

PACIFIC TUNA TAGGING PROJECT WP 5

REPORT of CRUISES No. 1 & 2 PNG and Palau waters

22 July to 19 August 2019

INTRODUCTION

This report summarizes activities of the first and second cruises of the Pacific Tuna Tagging Project (PTTP) Phase 2, named hereafter WP5, during a 29-day period, following departure from Noro on 22 July, fishing in PNG waters between the 23rd and the 31st July and in International Waters (High Sea Pocket 1) for three days (August 1st to 3rd) before arriving in Palau on 5th August. After 2 days in port/Koror, 10 days were spent fishing/tagging in Palau main island waters and south to Helen Reef, before the vessel returned to Koror for full-moon break and scientist personnel change on August 16th. After clearance out of Palau on 19 August, the vessel steamed north-east exiting Palau waters to Yap where the next cruise in FSM waters will substantively start.

Scientific SPC and in-country personnel onboard the vessel Soltai 105 during the cruises are listed in Table 1.

Table 1. SPC and In-Country personal onboard during cruises 1&2

Name	Title	Affiliation	Period
Bruno Leroy	Cruise leader	SPC	22/07/19 – 17/08/19
Francois Rounsard	Tagging technician	SPC	22/07/19 – 08/08/19
Antony Lewis	Tagging advisor	SPC contractor	26/07/19 – 17/08/19
Jeff Muir	Tagging technician	SPC contractor	22/07/19 – 19/08/19
Marion Boutigny	Tagging technician	SPC contractor	22/07/19 – 19/08/19
Robert Ano	PNG observer	NFA	26/07/19 – 30/07/19

GENERAL DESCRIPTION OF SEARCHING and FISHING ACTIVITY

The vessel departed Noro on the early afternoon of July 22, and went baiting in Ropa, Choiseul Island. After disembarking a custom/quarantine officer in Taro (North tip of Choiseul), S105 headed north and fished PNG waters to the east of New Ireland. Fishing success was hampered by large periods of rain that precluded fish school observation on the way to Kavieng where the clearance formalities took place on Friday 26th July.

The vessel then baited at Ysabel Pass and fished with limited success initially north of New Hanover and then en route to Manus Island. One and a half days were spent fishing around Manus to take advantage of the Seadler Harbor baitground. After clearing out from PNG on the afternoon of the 30th, the vessel steamed during a 5 day period towards Palau, fishing in the north-west of PNG EEZ and on some of the

numerous Philippines FADs anchored in the HSP1.[This was also during the FAD closure period and no fishing vessels were observed In the area].

Clearance into Palau was made on the evening of the 4 August followed by two days spent in Koror harbor for provisioning, refueling and obtaining the permit for baiting in Koror State. One full charter day was unnecessarily lost due to this last administrative process.

After a slow fishing day on the east coast of the main islands, three days were then spent fishing with great success on the west side, resulting in over 6,500 fish tagged on hungry skipjack free-schools. Fishing toward Helen Reef on the 11 and 12 August, with limited bait, was less productive and fishing between Helen Reef and Tobi Island on the 13th and around the reef on the 14th did not provide any releases although numerous schools which contained much yellowfin and appeared to be feeding in schools of ocean anchovy, were chummed without success. The 15th and 16th August were spent fishing back to Koror and only provided fish on one early school of the second day, with the limited supply of poor bait carried.

The track of the cruise, based on school and 1800 hrs 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 WP5 Cruise 1&2

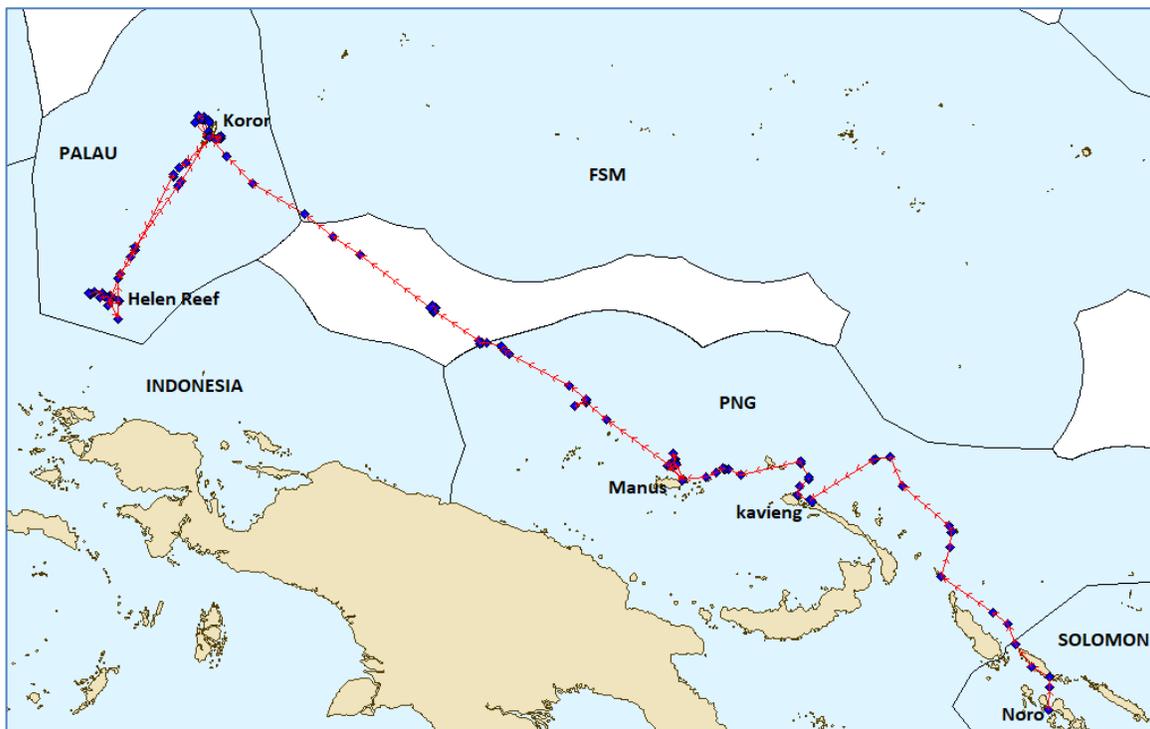


Table 2. Summary of Cruise 1&2 activity, with the number of conventional tag releases per day per species

Date	Activity	Conventional releases			Total releases
		SJ	YF	BE	
Jul 22	In port Noro; baiting Ropa	-	-	-	-
Jul 23	Searching and fishing on the way to Kavieng				0
Jul 24	S&F on the way to Kavieng	2			2
Jul 25	S&F on the way to Kavieng	208	5		213
Jul 26	Kavieng, clearance-in PNG, baiting Ysabel Pass				
Jul 27	S&F on the way to Manus				0
Jul 28	S&F on the way to Manus, bait Seeadler Hbr	234	81		315
Jul 29	S&F north Manus, bait Seeadler Hbr	308	81	4	393
Jul 30	Lorengau, clearance PNG, steam towards Palau				
Jul 31	S&F in PNG waters on the way to Palau	312			312
Aug 1	S&F in PNG and HSP1 waters	248	53		301
Aug 2	S&F anchored FADs in HSP1	356	45	79	480
Aug 3	Steaming to Palau with no bait				
Aug 4	Steaming to Palau. In port 6pm, clearance inwards				
Aug 5	Shopping-refueling; baiting authorization denied				
Aug 6	Koror State baiting access sorted - bait Urukthapel				
Aug 7	S&F east side of Palau- bait NW Urukthapel	265			265
Aug 8	S&F west side Palau – bait NW Urukthapel	1610	44		1654
Aug 9	S&F west side Palau – bait NW Urukthapel	3445	69		3514
Aug 10	S&F west side Palau – bait NW Urukthapel	1337			1337
Aug 11	S&F toward Helen Reef	99			99
Aug 12	S&F toward Helen Heef – bait Helen Reef northern tip (non-conservation area)				0
Aug 13	S&F HR towards Tobi island - bait N Helen Reef				0
Aug 14	S&F around Helen Reef - bait N Helen Reef				0
Aug 15	S&F toward Merir Island				0
Aug 16	S&F toward Koror – arrival 1600 hrs	77			77
Aug 17	In port Koror, full moon break				
Aug 18	In port Koror, full moon break, bait NW Urukthapel				
Aug 19	Clearance out of Palau				
	CRUISE TOTAL	8501	378	83	8962

TAG RELEASES

Of the 29 days of the cruise, 19 days were spent searching and fishing, 8 full or partial days in port and 2 days steaming without bait.

A total of **8,988** fish (including the 26 archival) was tagged and released during the cruise at an average of 473 fish per fishing day.

1534 fish were tagged in PNG waters, 491 fish in the HSP1 and 6963 fish in Palau. The species composition in total was 95% skipjack, 4% yellowfin with only 83 bigeye tuna tagged.

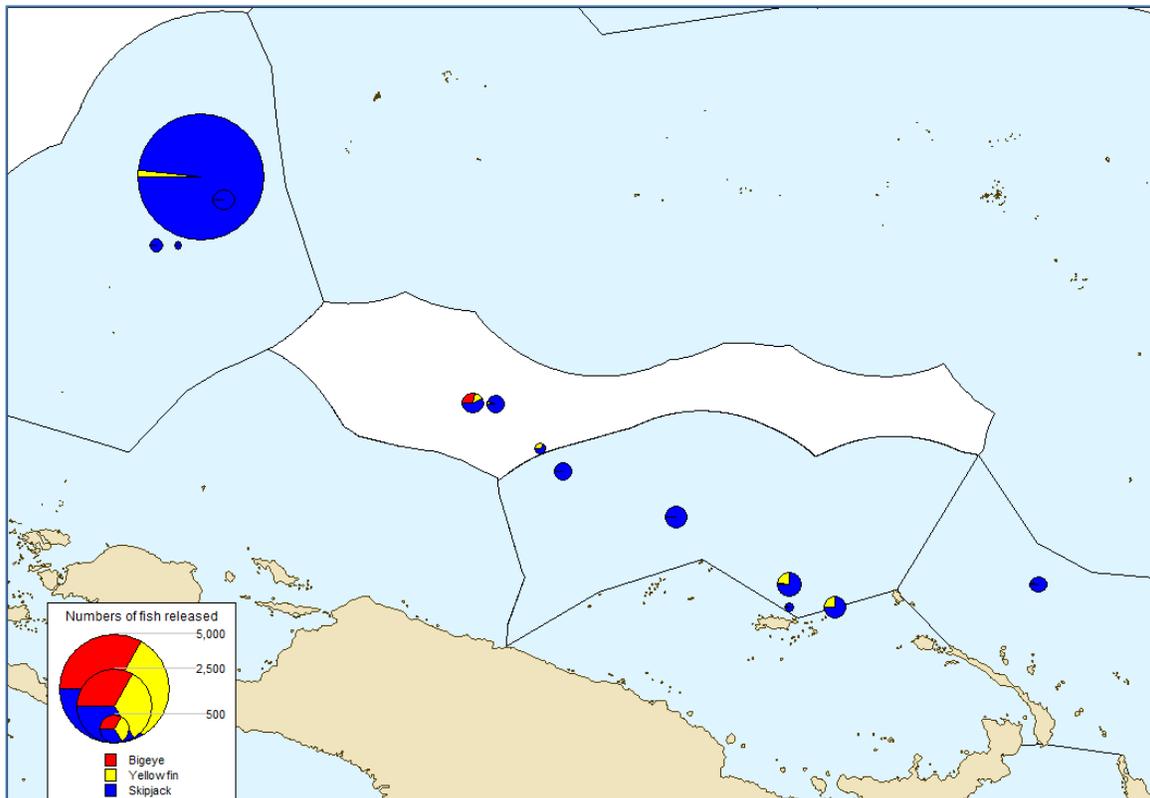
Less than 1.5% of the releases were the smaller 11 cm tags; 8% of releases were in association with anchored FADs, whereas the free school releases represented 85%. The rest of the tags were released on a few logs encountered.

172 white conventional tags (165 skipjack and 7 yellowfin) were released on strontium chloride (SrCL) injected fish for further age validation on recaptured individuals.

The size distribution of those fish are displayed in Figure 3

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

Figure 2 Distribution of tag releases by species

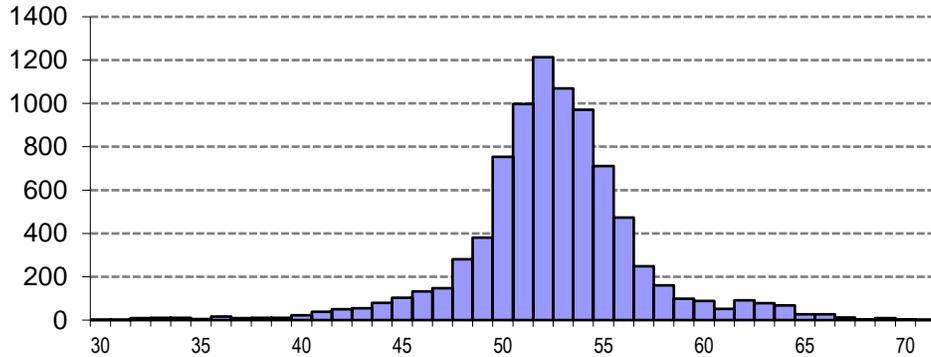


SIZE DISTRIBUTION OF TAGGED FISH

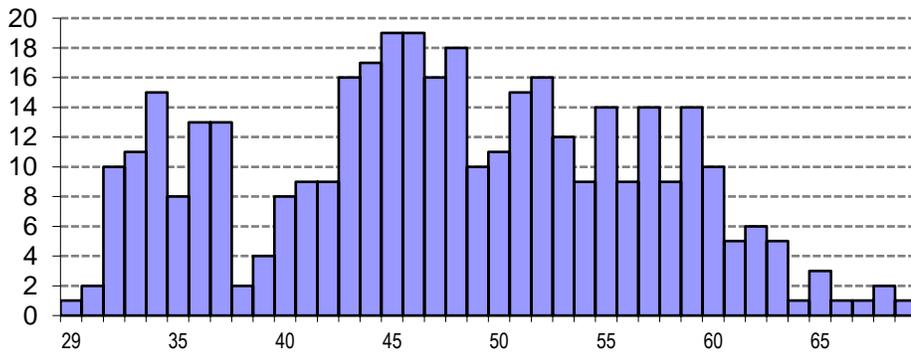
Figure 3 shows the size distribution of fish tagged during WP5-1&2. The skipjack size distribution was broadly unimodal, centred on 52cm whereas the yellowfin sizes were widespread between 30cm and 70cm, and the small number of bigeye tagged averaged ~ 58cm.

Figure 3 Size distribution of fish tagged during Cruise 1&2

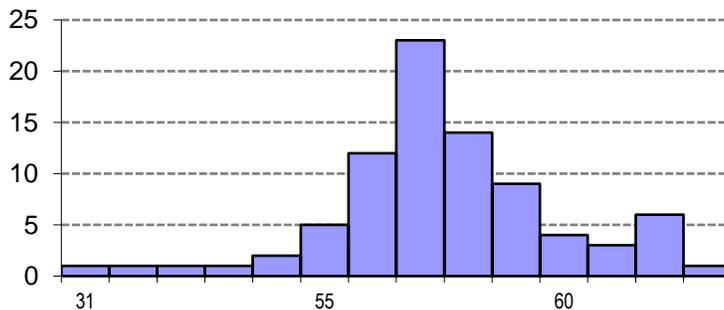
Skipjack n = 8527



Yellowfin n = 378



Bigeye n = 83



ARCHIVAL TAG SUMMARY

One of the WP5 tagging experiment objectives was to deploy archival tags in skipjack to increase our knowledge about the species behavior. 110 ARCGEO-9TS from Lotek were available for the purpose. Twenty MK9 from Wildlife Computers were also brought onboard to be opportunistically deployed in suitable size (larger) bigeye or yellowfin tuna.

All tags were configured to sample all likely depths, ambient sea and internal fish temperatures and light intensity every 30 seconds. Archival tagged tuna were externally marked with an orange 13 cm conventional tag.

Deploying archival tags in skipjack is challenging due to the rapid deficit in oxygen the animal experiences as soon as it is out of the seawater. The induced stress often prevent the fish from staying calm enough to safely undertake surgery. Suitable individuals need to be inserted with the tag and released if possible within 30 seconds. This requires a good helper to assist the tagger and the use of a staple gun to quickly close the incision. Choice of the individual is crucial, with selection of animals with minimal injury and handled with great care after their capture. Even with severe selection, only about 20 % of the animals brought to the cradle are tagged and released with success.

26 skipjack (size range 46 to 58, mode 53 cm) were tagged and released with ARCGEO-9TS tags during the cruise.

BIOLOGICAL SAMPLING

Biological sampling was conducted after tagging sessions where sufficient fish were available on deck after fishing ceased.

Table 3 summarizes the nature and number of collected biological samples

Table 3: Summary of biological samples collected during WP5-1&2

Species	Fish sampled	Muscle	Liver	Stomach	Gonad	Otolith	Spine	Genetic	Fat Meter
BET	3	3	3	3	3	3	3	3	3
BUM	1	1	0	1	0	0	0	0	0
DOL	1	1	1	1	0	0	0	0	0
RRU	10	10	10	10	0	0	0	0	0
SKJ	204	75	74	74	64	63	65	107	105
YFT	16	16	16	16	15	15	15	0	16
Total	235	106	104	105	82	81	83	110	124

BAITING

Initial baiting at Ropa/Choiseul was hampered by discoloured run-off after heavy rain and this formerly very productive site is becoming less prominent as an NFD baiting site as a result of impacts from logging. The modest catch was dominated by hardy fusiliers which were used finally 10 days after capture in the HSP1.

Ysabel Pass, New Hanover, produced the usual silver sprat/gold anchovy catch in god quantity, as did the outer Seeadler Harbour (gold anchovy), but a second night baiting undertaken closer inshore to meet requirements of traditional owners (Ndrilo) included a higher proportion of weaker yellow anchovy.

In Palau, the prescribed area NW of Urukthapel, at the northern end of the Rock Islands, produced good catches of mostly anchovy on three successive nights, as on previous visits, but with reduced catches under bright cloudless skies on two nights in the week before full moon.

Baiting in Helen Reef on three nights up to and including full moon, was restricted by regulation to a northern conservation area adjacent to Helen Island ranger station, rather than the productive area near the entrance use don previous visits. The lower catches of sprats and hardy-heads, mostly small individuals, were less than ideal bait and probably negatively impacted fishing success.

A final night baiting at NW Urukthapel, 3 nights after full moon, produced a useful catch prior to clearing out for the trip to Yap, FSM.

Overall, baiting was generally satisfactory despite restrictions applying to operations in Palau, and only two days involved steaming and no fishing without bait, with another three days fishing with limited bait supplies which were soon exhausted.

Table 4 Summary of bait fishing activity during WP5 Cruise 1&2

Date	Location	Catch (bkts loaded, hauls)	Species
22 July	Ropa	146 (3)	Fusiliers, hh, blue and turquoise sprats
26 July	Ysabel Pass	197 (3)	Mostly silver sprats with some gold anch
28 July	Seeadler Harbour	182 (1)	Gold anchovies
29 July	Seeadler Harbour	231 (2)	Gold & yellow anchovies, r/sardine
6 August	NW Urukthapel	212 (2)	Anchovies (blue), r/sard, pony fish
7 August	NW Urukthapel	215 (1)	Anchovies (blue), r/sard, pony fish
8 August	NW Urukthapel	246 (3)	Anch. (blue & gold), r/sardine
9 August	NW Urukthapel	101 (3)	Anch. (b & g), r/sard, pony fish
10 August	NW Urukthapel	44 (3)	Blue sprats, few anch, r/sard, <i>Sard. sirm</i>
12 August	North Helen Reef	101 (3)	R/sard., sprats (blue & silver), hh
13 August	North Helen Reef	101(4)	Sprats (blue & silver) r/sard., hh
14 August	North Helen Reef	58 (3)	Sprats (blue & silver), few hh
18 August	NW Urukthapel	137 (4)	Mainly anchovies
Total		1971 (35)	

CONCLUSIONS

The WP5 cruises 1&2 results were, in terms of total tag releases, within the expected target reached in Palau waters but under-achieved in PNG, mainly due to unfavorable weather condition during the first part of the voyage.

FV Soltai105, although showing some serious signs of ageing, has performed well in general and the past tagging experience of part of the crew has, no doubt, greatly facilitated to get a vessel operational from the first day of charter. We hope this effective boat status will continue to efficiently serve the WP5 voyage through FSM waters till the end of the cruise back in Noro on about the 20th September.

Additional comment regarding pole and line current charter situation

The nowadays-high charter cost impose the charterer to optimize the scientific profitability of such voyage in increasing the scientific experiments and tasks that have to be realized during the campaign. This situation is even exacerbate by the growing need to improve the ecosystem knowledge for better tuna stock management.

The tight cruise schedule and the load of the multiple data that need to be currently sampled and recorded during tuna tagging voyages are clearly presenting the limits of what could be accomplished within such commercial fishing boat charter. It is now really difficult to properly complete all the required tasks with a reduced team of 2-3 scientists like this has been done in past tagging campaigns. We are now face to a serious lack of sufficient office space (limited to 3 persons onboard S105), suitable working area (no wet-lab) and equipment storage space to accommodate the work of a team of 5 scientists, often increased to 6 with the presence of a country observer or a fisheries officer. Six is the maximum of available bunks for passengers onboard S105.

On the context of tuna research voyage implementation there is also recent changes that need to be challenged. Most of the Pacific Island countries have now adopted an administrative environment more in alignment with international rules and regulations (especially regarding the delivery of research permits, often complicated by recent implementation of conservation areas).

This “modern organizational environment” potential efficiency is most of the time compromised by the strong traditional custom and cultural rules that are still in place. These traditions are often not taken in account in the official documentation required and information provided to the research permit applicant. This situation could compromise at the last minute a cruise schedule that has been prepared multiple month in advance. . It is probably becoming necessary to have a dedicated person employed full time for the cruise preparation and implementation in-countries, independently to the field research operations. This would relieve scientist Cruise leaders from a currently overloaded charge of administrative duties and consequently allow them to better implement the proper goals of the research.

APPENDIX1. Releases of tagged fish by date, location, school type and species

REPORT 3 : TAG SCHOOL SUMMARY

16-Aug-1

Project PTPP Phase 2-Western Pacific #5

Cruise 1 To 2 Vessel Soltai 105

Event no	Tagged sch no.	Date	Lat	Lon	Sch type	Assoc.	Start	Stop	YFT	TAG TOTALS			
										BET	SKJ	OTH	TOTAL
2	1	24-Jul-2019	0325.000S	15433.600E	1	1	1555	1605	0	0	2	0	2
4	2	25-Jul-2019	0126.000S	15230.000E	2	1	1654	1720	5	0	208	0	213
8	3	28-Jul-2019	0143.000S	14825.500E	1	2	1230	1323	65	0	149	0	214
9	4	28-Jul-2019	0141.600S	14823.300E	2	2	1435	1504	16	0	85	0	101
12	5	29-Jul-2019	0138.700S	14700.800E	2	2	1000	1023	1	0	0	0	1
13	6	29-Jul-2019	0127.178S	14705.780E	4	2	1204	1320	78	4	251	0	333
16	7	29-Jul-2019	0131.400S	14705.800E	4	1	1714	1735	2	0	60	0	62
17	8	31-Jul-2019	0005.000N	14441.000E	4	1	1122	1142	0	0	91	0	91
18	9	31-Jul-2019	0008.540N	14439.900E	2	1	1232	1243	0	0	32	0	32
19	10	31-Jul-2019	0011.140N	14439.300E	4	1	1302	1326	0	0	191	0	191
20	11	01-Aug-2019	0129.700N	14227.500E	2	1	0715	0740	0	0	158	0	158
21	12	01-Aug-2019	0137.600N	14222.300E	3	1	0849	0852	0	0	3	0	3
24	13	01-Aug-2019	0141.400N	14147.400E	1	3	1708	1717	2	0	9	0	11
25	14	01-Aug-2019	0147.000N	14146.000E	2	3	1753	1834	51	0	82	0	133
27	15	02-Aug-2019	0235.000N	14033.000E	1	3	0753	0814	6	0	42	0	48
28	16	02-Aug-2019	0240.000N	14035.700E	2	3	0850	0930	2	0	152	0	154
29	17	02-Aug-2019	0244.000N	14030.400E	3	1	1030	1048	0	0	15	0	15
30	18	02-Aug-2019	0240.120N	14027.000E	1	3	1129	1212	37	79	147	0	263
CRUISE 1 TOTALS									265	83	1677	0	2025
1	1	07-Aug-2019	0716.000N	13445.700E	4	1	0833	0919	0	0	232	0	232
2	2	07-Aug-2019	0719.400N	13446.500E	4	1	1327	1350	0	0	33	0	33
4	3	08-Aug-2019	0741.780N	13428.160E	1	3	0810	0840	21	0	29	0	50
5	4	08-Aug-2019	0744.640N	13423.800E	4	1	0912	1147	23	0	1581	0	1604
6	5	09-Aug-2019	0741.400N	13428.000E	1	3	0818	0830	18	0	37	0	55
7	6	09-Aug-2019	0744.471N	13423.680E	4	1	0900	0952	1	0	829	0	830
8	7	09-Aug-2019	0745.400N	13421.500E	4	1	1014	1052	0	0	468	0	468
9	8	09-Aug-2019	0747.000N	13418.000E	4	1	1126	1150	3	0	653	0	656
10	9	09-Aug-2019	0747.600N	13417.350E	4	1	1244	1328	2	0	778	0	780
11	10	09-Aug-2019	0750.000N	13419.600E	4	1	1350	1447	45	0	690	0	735
12	11	10-Aug-2019	0740.700N	13405.000E	4	1	0939	0956	0	0	133	0	133
13	12	10-Aug-2019	0747.000N	13415.000E	4	1	1130	1208	0	0	431	0	431
14	13	10-Aug-2019	0752.400N	13410.400E	4	1	1247	1337	0	0	779	0	779
16	14	11-Aug-2019	0613.000N	13329.220E	4	1	1552	1618	0	0	99	0	99
30	15	16-Aug-2019	0605.180N	13342.800E	3	1	0654	0724	0	0	78	0	78
CRUISE 2 TOTALS									113	0	6850	0	6963
PROJECT TOTALS									378	83	8527	0	8988

DAILY LOG EXTRACTS

logdate	Activity	Notes
19/07/2019	Boat prep all day	Arrival in Munda yesterday evening with all our 8 pieces of luggage (a miracle with the small plane); welcomed by Cynthia who drives us to Noro. Today Manu installed the computer network with success, including the satellite communication with help of NFD IT technician. The rest of the team set-up the 4 CT and the archival tagging cradles (new padding on the wood block noses)
20/07/2019	Boat preparations all day	The usual running everywhere in Chinese shops to get small gears like buckets, bleach, non-slip materials, etc... Seems most of things ready on the boat.
21/07/2019	Sunday break	Went to Lola isl for lunch
22/07/2019	Last prep and shopping, start of WP5, baiting at Ropa/Choiseul	Morning market to buy a few days' worth of vegies and fruits then to Soltuna main office to pay for the accommodation. Final preparation of the boat, setting the rooms and waiting for the immigration clearance till 12am ...then problem with customs that didn't want us to bait after clearance...after 1 hour of discussion finally found an arrangement with custom officer coming with us for baiting then do the clearance and we will drop him on the north tip of Choiseul (Taro) tomorrow morning. Departure at 14:16 to Ropa bait ground, alas a bit late for the first set before the moon...hopefully the sky is cloudy. Arrival on bait ground at 19:30 under heavy rain, the moon couldn't show-up. Dropped the auxiliary light before anchoring. Good sign at echo-sounder at 8h30. First set at 0918 for 80 buckets of a mix bag, fusiliers, hh, few blue sprats. Second set on auxiliary light at 22h15 for 50 buckets. Decided to move a bit for the third set. At anchor at 23:12 by 07.21'859S and 157.13'862E. Moon light get us only 16 bkts at 01h. Started to steam toward Taro (70 nm) at 02am.
23/07/2019	Fishing tagging after baiting Ropa and stop at Taro island	Steamed along Choiseul west coast from Ropa to Taro Island. With Grey's knowledge of the area he is originated from, we follow the coastline between shallows and against strong current. Arrived at Taro's wharf at 0930 and dropped the custom officer. Left at 0945 and started to steam towards CFC dFAD + 237006 at about 40 NM in our NNW. Entered in PNG waters at about 10am. Small engine problem (fuel filters to change) at 11h22 made us stop for 1h20. Found the CFC fad at 15h and tried to chum but nothing apart RRU and some trigger fish. Stopped after 5min and start steaming toward a couple of Fads located at the north tip of Buka island between 95 and 105 nm away. Should fish them at first light tomorrow...
24/07/2019	Fishing between Green/Nissan	Satlink software couldn't be connected for some reason so decide a 04:30 am to steam toward Green/Nissan island instead visiting Fads (that are not marking anyway). At 06:30 change course toward Nuguria. Found bird piles on the radar about 13 nm ENE of Nissan

	and Nuguria island	and chased them at 07:30 to 8h30 but no success. Hard for FM to chase free school without echo sounder at fly bridge...Search around Sable Island but only found elusive schools with no surface activity. Went too close to Sable at 14:10 and get KAW...Then we fished a few quick moving schools closer to Nuguria but only tagged 2 skj. Many yf did not help to bring schools to the boat. Stopped when dark. Started steaming at 18h to Lyra reef for the night
25/07/2019	Fishing from Lyra reef towards Kvg	After a good passage overnight we arrived south of Lyra at about 2:30am and drift waiting daylight. Wind and swell increased making the drift not very comfortable after 4:30. Started to look for fish at 6am running NNW with 2 m following swell along the west side of Lyra. No birds, raining again...Found a lost fad with no buoy at 10:15 but nothing associated. Decided to visit fad +232135 about 29 nm in our north even if echo sounder show nothing. Arrived there at 13h30 to find that there was only the buoy, no more raft. After retrieved we started to steam/fish toward Kavieng. In choppy condition a school of sj was found under few birds just before 17h. 213 fish were quickly tagged. Tried to chase some other running schools but couldn't catch them. Sampling attempt on the Kvg road was aborted after two fish due to bad weather conditions
26/07/2019	Kavieng stop-Clearance in PNG	Arrival at the wharf at 0755. Kevin K. awaiting for us and brought later Tony and Benthly. Then waiting for customs-immigration until 9h. All process went smoothly. Shopping for fresh food and crew ration. A quick lunch at Nusa, then leave Provincial wharf at 14h with 2 new passengers (Tony and Robert) to be on time in Ysabel pass, as no awareness was made for Nusandalau/Analau baitgrounds that are much closer to Kavieng. Anchor in Ysabel at 17h20 after dropping the auxiliary light. First set at 21h10 for 110 bkts. Second set on the spare light at 22h15 for just 19 bkts. Third set at 3'O for 68 bkts. A good load of nice bait. Started to steam to fishing grounds at 0420
27/07/2019	Fishing north New Hanover and TENCH isl	Start looking for schools along the 1000m depth line about 15 nm north of Ysabel Pass. Flat calm waters...Nothing to be seen until 10 apart dolphins...checked 2 logs at about 1015 to 1030 but no luck. Decided to visit TENCH Isl 20 nm in the north. As each time we visited the island, large quantities of birds flying around in scattering mode. This time, mostly bobbies predated on small flying fish. No fishable school observed, started to search toward Manus at around 14h30. Found some patchy schools at 4pm and tried unsuccessfully to chum them till 1745. Very frustrating. Start steaming toward Manus east shallow basin at 6pm.
28/07/2019	Fishing toward Manus-Baiting Seaddler	After steaming till 4am the boat stop and drift closed to end of Manus east shelve. Awake in bad weather, 15-20 knots of sse wind and rain. At 0620, started to steam/search westward at 8 knt. Chase a school around 0720 but birds vanished when we arrived. Went to the seamount at (485m 1'43/148'38) but heavy rain prevent school observation....just briefly saw big yf. Found a small log (bamboo) at

		<p>11h with a bit of detection at 40 meters but only caught 1 RRU. Bad weather still making the life difficult for the spies...Finally found a small log in the rain, with a mixed school of Y and S. Slowly tagged 214 fish (30% Y) in about 50 minutes; at some quite big bait expense but this was useful for the morale. Keep going toward Seadler entrance about 60 nm away. Found another big log a few miles later and tag 101 fish (16% Y) larger sj and a few Yf. Only 2 bait tank left at 1530. Tried to chum a free school without success before steaming for good to Seadler. Arrived on bait ground at 2240. First and last set at 0130. Go out at 0245 toward seamount at about 30 nm in the NW</p>
29/07/2019	Fishing North Manus	<p>Started fishing on the seamount (104m) 30 nm NNW of Seadler entrance. Chummed a nice looking log after 7am but only juveniles YF that didn't want to come to the hooks. Found and chummed some other logs but no tag 1 except small bigeye at the stern on school#5. Then a good run on school 6 with nice size sj and yf for 333 tags including 3 AT in S. It took over 1 hour for 3 people to take all samples for 12 fish (plus 40+ for genetic), this starts to be very demanding...Chummed some more schools in the afternoon without success before tagging 62 fish, at high bait cost, on a evening moving school. Total for the day: 396 (20% Y). Entered in Seadler at 20:30. First set at midnight was postponed due to a wind direction change that put the boat from 30 to 22 m water deep. Had to roll-up quickly the net and re-position the boat. Lost probably half of the bait in the process with 73 bkts at 01'oclock. 158 bkts at 0430</p>
30/07/2019	Half day shopping Lorengau, clearance-out PNG, Steam-Fish toward Palau	<p>After the last net we came closer to the town and anchored about 1000m from shore. Discovered that our HB connective fuel hose has been stolen during the night at baitground. Went shopping with a taxi boat for fresh food and few missing items at Lorengau market. ATM (BSP) did not accepted our CC so have to use SPC cash (kina). Immigration onboard before 13h. Left Lorengau at 14h30, Seadler harbour at about 14h50 and started steaming towards Palau, COG 309... No school seen before dark...</p>
31/07/2019	Fishing on the way to Palau	<p>Wind changed by almost 180 degrees. Rainy at sunrise...and all morning...and all day. Managed to find free schools of pure SJ on the way and tagged 314 fish (included 2 archival). Archival surgery very challenging on nervous SJ caught in middle of the day (need about 5 fish to get one tagged) Tried to keep 3 bait tanks for tomorrow fads in HSP1. Unfortunately there are a good % of weak species within the bait caught during the last night in Seadler and this is causing some mortalities (likely 20 to 30%). Ceremony of Equator line crossing wit Kind Neptune making new crews catching a one Kina coin inside a bait tank. Guess who plays king Neptune..? ETA for first Fads in HSP1 about 8am tomorrow.</p>

1/08/2019	Fishing tagging in HSP1 aFads	Smooth passage over night, daylight at 0615. Speed has decreased to less than 9 knts due to some current. Still 40 nm to first Fad. Started to meet SJ free schools about 30 nm south of the HSP1. Tagged 161 fish (included 4 archival) in 2 school. Had to stop FM to keep bait for the aFADs about 29 nm away... Inside HSP1 at about 12h. First fad found at 12h40 about 2nm from the position we have. Fish associated but bad time of the day and they stayed under the surface. Checked another one about 5 nm away with birds around. To use our left bait more efficiently we drift to wait for a better time of the day (4pm). Tried the first fad at 1617 but no success. An Indo style lost payo was drifting nearby; no school seemed to be associated. Went to second Fad and tagged 144 fish before stopping to keep one tank of bait for tomorrow. Started to steam WNW at about 18h. Should meet some fads in the morning. Wind and swell increasing in addition to current decreased our speed to 8knts...
2/08/2019	fishing fads in hsp1	Weather deteriorated during the night. Couldn't find Fads with the radar. Spies finally spotted the first one at 7am. No fish. Then we fished and tagged 3 aFAD and one free schools in the rough, finishing all the baits on the last fad at about mid-day. This last school provided some unexpected, but welcomed, bigeye; unfortunately it was a bit too rough to do surgery for archival. Started steaming at 7 knots in the direction of Koror at 1220. Total of the day 450 (347 S, 41 Y, 62 B)
3/08/2019	Steaming to Palau	Weather was calm till 5am, then wind picked up, accompanied with rain...the rain stopped in the morning, wind and seas staying the same. (Out of HSP1 into FSM for a couple of hours at about 15h Palau time) Have to decrease speed to 7 knts at 18h
4/08/2019	Steaming to Palau islands	Progressed at 8 knt side wind/seas. About 2.5 m waves. 100 nm to go at 6am. Nice Sunday in paradise.... Arrived at Koror main wharf at 6pm, customs clearance went smoothly. Jeff and Alex were waiting for us.
5/08/2019	In Port Palau/Koror for provision and research permit	If the morning went smoothly with help of the agent Joel (immigration admin, crew provision shopping, fuel delivery of 10 Kl) and KB for visiting Koror State office to sort issue of getting the research permit for the Rock isl area, the end of afternoon was a big disappointment. Foe some obscure reasons and visible bad excuses, a director of the state refused to deliver the permit that day, ruining our hope of baiting tonight. We are then loosing a charter day.
6/08/2019	In port Koror/Palau to sort baiting access issues, baiting Urukthapel	Went at the Koror State dept. and at the Ranger station this morning with KB; we got the research permit and paid the different fees within an hour , this clearly showing that this was some personal issue blocking the situation yesterday. Left the main wharf at 17h to go to baitground. Dropped the small auxiliary light at the first point (07 18.300N/ 134 25.340E) at 1745. At anchor at the second point at 05:56 in 32 m. First set at 2315 for 168 bkts of mixed species. Unfortunately the auxiliary light was off (some battery pb). Had to set boat lights for second set.

		Second set at 0315 for 34 bkts, mainly R.sardines. Wait for 5h so captain could see the beacons in Malakal passage.
7/08/2019	Fishing east side of Palau main isl	Went off Malakal passage at about 0620; at 0830 found a highly mobile free schools of large sj and spent 2 tanks of bait to catch them and tag 232 fish. Tried to do SRCL injection from archival cradle and this revealed to be unsuitable. Have to do it from a CT cradle. Decided to do it from BS cradle. But no suitable fish show-up during the day. After a short 33-tagged fish (same size as the first school) we chased many schools in the afternoon without any success; visited 2 anchored fad positions that were supposed to be in place but nothing there. Stopped the day at 17h and run to Malakal passage. Inside at 1750. At the baitground at 18h30, dropped the light (0718540N/13425000E), then at anchor at 18h37. First set at 21h for 215 bkts. Enough. Pick-up the light and wait for daylight to take west passage.
8/08/2019	Fishing west coast of Palau main islands	Left baitground at 0520 and steam through West passage. Out at 0710, head to NU1 Fad position. Tagged 50 fish (42% Y) in 30 min, then headed to some birds detected by the radar about 5 nm away. Fish answered quickly to the chum and stayed with us, joined by 2 other fish groups, during 2.5 hours. We tagged 1604 fish (1% Y), including 57 injected with SRCL (55 S, 2 Y). Came back by West Pass with no more bait. Alongside main wharf at 15h30 to disembark Francois. KB was waiting for us to sort some baiting issue, relative to the maximum amount of bait we could take from the Rock Isl area. Finally authorized to continue baiting there for another 3 nights. Gave KB a truckload of fish + Francois and we steamed back to baitground. Moon quite bright and had to wait for its setting before first set at 0145 for 100 bkts, second at 245 on the small light for 71 bkts and 3rd at 4h45 for 75. Left bait ground at 05:40
9/08/2019	Fish west coast Palau	Came out west passage at 0725 and headed north toward the same killing grounds as yesterday. Some light rain-shower on the way. Arrived at aFad NU1 at 0818 and tagged 55 fish. Then from 9 to 12 we tagged 3 free schools for a total of 1954 fish, including 10 archival in skj, and 81 SRCL injected. After some breaks to re-stock the blocks...and the men, two more schools were tagged (1515 fish) in the afternoon and all baits consumed before 15h. Useful total of the day: 3524 with 2% Y. Happy boat back to Rock island baitground at 18h30. First set after moon set at 0115 for 68 bkts, second and third perturbed by predators (caranx, scomberomorus and small sharks) for 7 and 26 bkts.
10/08/2019	Fishing west coast of Palau main islands	Left bait ground at 0530 and took west passage. We then tried to prospect in the SSW direction, crossing the 2000 and 3000 meter depth lines. Didn't find anything before almost 10 and it was a small school that stopped biting after 133 tagged. We steamed back closed to the yesterday schools and tagged 2 schools between 11h30 and 13H30, spending quickly all our poor 100 bkts of bait, releasing 432 and 780 fish

		(100% SKJ), including 6 archival and 24 Srcl. Total of the day 1345 S. With bright moon phase, a difficult baiting night for getting the sufficient amount of bait for 2 day fishing toward Helen Reef; first set at 0130 for a mere 7 bkts of mostly pony fish, 2nd set at 2:30 for 29 bkts of a mixed bag. Last set at 0440 for 8 bkts of the same.
11/08/2019	Fishing on the way to Helen reef	Out of Malakal pass at about 6am. Headed south toward seamount 472m south of Angaur. Caught a small blue marlin (100 lbs) between south tip of main isl and Angaur at 0830. Passed the seamount around 1130-12h , bad time, with birds scattered all over the place. Chummed a nice looking school at 1330 but no luck. Finally caught one school after 4pm but didn't last long on the bite due to our poor quality and quantity baits. Nevertheless a useful 99 fish were tagged, all sj of a narrow LF (50 to 55). Continue to steam to be in Helen reef tomorrow afternoon
12/08/2019	Steaming to Helen reef and baiting there	Good passage overnight, passed closed to Merir around 6am. Arrived at Helen reef entrance at about 14h40. Electronic charts are about 0.2 nm North off and 0.1 off east; and at anchor at 15h15 in one of previous baiting position (0251.190N/13145.270E) by 36m of water. Alas, rangers came to told us we were in the "conservation area" and have to move 7 nm north closer to the island...Anchored for good at 17h28 in 48 m, flat sand bottom. A light cloud cover did not prevent the night to be quite clear. First set at 2h for 76 bkts of mostly rainbow sardines...not very good. Second set even worse with jelly fish forcing the crew to discard everything. Third set at 0430 for 25 bkts of blue, silver sprats and hh
13/08/2019	Fishing around Helen Reef	Out of the pass at 0615. Chummed a couple of school without succes. One free school and one log with some small fish answering the chum and some bigger one (probably yellowfin) underneath that did not want to play. Searched toward Tobi island and chummed more school that were more likely only YF (big birds, boobies, frigate) chasing flying fish. These schools became larger when arriving close to Tobi. Tried hard to attract the fish to the boat, got few splash in the boat trail but not a single catch. Started steaming back to Helen reef at 13:15; another large bird flock has been check on the way with the same result. A disappointing skunk day... Inside Helen reef pass at 16h50, arrived closed to the island at 0530. Tried to anchor closer this time, to be in shallower waters. First set at 22h for 38 bkts of sprats (b&s) plus rainbow sardines. Second set at the auxiliary light at 23h with 4 bkts of sprats. Third set got 15 bkts of pure sprats. Last set at 0515 for a useful 44 bkts of the same good sprats
14/08/2019	Fishing around Helen Reef, baiting Helen reef	Last net finished in daylight at 0550, came out of the pass at 0655 and turn left...(to the South). First school chummed at about 8am but fish stayed in the deep (60+m at echosounder). A good looking log with birds was chummed between 10 and 11 but fish never came to the hooks, more likely a too large % of YF...Another school chummed without luck

		between 1115 and 1130, ball of baits observed (probably punctifer) could explain why fish not interested by our sprats... After some more tries, finally throw the towel at 16h to save 2 tanks of bait for the long road back to Koror in case we could not catch bait tonight. Inside the pass at 1630. First set at 21h for 25 bkts of sprats. Second set at 22h for 3 bkts. Third set at 0430 for 29 bkts
15/08/2019	Fishing between Helen reef and Merir Island	Out of Helen Reef pass at 0615. Decided to not fish before being away from the "impossible to catch" schools... first school of skipjack met at about 10 am, 25 nm north of Helen reef island. Fish came to the chum, not further. Another similar school was chummed for similar results at 11h. Decision was made to wait (again) for Merir island....Wind dropped completely around 3pm, then some clouds closed to Merir. We hoped until the last minute for the "evening school" but nothing to be seen for the whole afternoon. Fourth days in a row with 0 fish.
16/08/2019	Fishing and steaming toward Koror	Good passage in calm seas overnight, slight rain at dawn. Many baits died for some reason (seems the hardy head were weak). Found a large school of actively feeding SJ just before 7 and spend all our remaining baits to tag 78 fish including 1 archival. Full time for Palau...ETA 16h with good current making S105 doing 10.6 knts