

PACIFIC TUNA TAGGING PROJECT WP 2

CRUISE REPORT No. 3

11th – 24th April 2009

INTRODUCTION

This report summarizes activities of the third cruise of the Pacific Tuna Tagging Project (PTTP) WP2 during a 14 day period following the full moon break in Majuro to arrival in Tarawa, Kiribati on April 24th. Personnel onboard during Cruise 3 are listed in Table 1.

Table 1. SPC and In-Country personal onboard during cruise 4

Name	Title	Affiliation	Period
Antony Lewis	Cruise leader	SPC contractor	11/4/09 – 21/4/09
David Itano	Cruise leader	SPC contractor	11/4/09 – 24/4/09
Cynthia Wickham	Tagging tech	SPC contractor	11/4/09 – 21/4/09
Thomas Usu	Tagging tech	SPC contractor	11/4/09 – 24/4/09
Shelton Harley	Scientist	SPC	21/4/09 – 24/4/09
Berry Muller	Observer	MIMRA	11/4/09 – 13/4/09
Charles Charley	Observer	MIMRA	15/4/09 – 21/4/09

GENERAL DESCRIPTION OF FISHING ACTIVITY

After baiting in Majuro the evening of 11 April the vessel steamed NE and SE to two deep seamount locations. Finding nothing in the vicinity of these features the vessel proceeded to Arno Atoll, locating some mixed schools on the SE and E side for 87 releases, with the highest yellowfin percentage of the cruise (78%). Returned to Majuro to pick up meds, water and light provisioning and headed for Jaluit on 15 April. Strong easterly tradewinds and seas made searching and fishing very difficult during much of the cruise. Biting schools of skipjack were located off the east, south and southwest coasts of Jaluit and close to Kili Atoll which was visited on 16 April. Strong winds and seas hampered searching and fishing off the east side of Jaluit on 18 April but schools were located on the lee side and a fast biting school of skipjack on the north end for almost 296 skipjack. Departed from the north end of Jaluit on the evening of 18 April headed straight for Mili Atoll. A large area of birds located 20 nm west of Mili produced 334 skipjack releases before bait supplies were exhausted prompting an early entry into the lagoon. Transited from Mili to Majuro on 20 April, finding skipjack schools close to the Majuro pass that accounted for 240 skipjack releases before entering Majuro lagoon to bait close to the town. April 21 was spent in Majuro where CL Lewis and Cynthia Wickham disembarked and Shelton Harley joined the vessel. Provisions, fuel and water were loaded and after baiting in Majuro the vessel steamed southeast towards Keats Bank. Only one free school was encountered for a single skipjack release and nothing of note was found on Keats Bank that evening. The vessel steamed SSW all night, crossing into Kiribati waters overnight. Several skipjack schools were located 25 – 45 miles north of Butaritari that were fished until bait supplies were exhausted for 628 skipjack releases.

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 . 2**.

A compilation of the daily log extracts, detailing daily activities, is provided as **Appendix 1**.

TAG RELEASES

Of the 12 of the 14 days of charter were spent in the Marshall Islands and two in the Kiribati EEZ. Ten days were spent searching and fishing, often in very rough and difficult conditions created by easterly tradewinds in excess of 20 kts. Four days were spent in port, one at the end of the April full moon break in Majuro, two in Majuro for provisioning, crew changes or clearances and one in Tarawa for customs/immigration clearance. Two fishing days produced essentially zero catch with tag releases on successful days ranging from 51 – 628 fish per day. A total of 1915 tuna were tagged and releases most of which were medium or large-sized skipjack (88.5% skipjack for the cruise). Twelve skipjack were also tagged and released with orange conventional tags and LOTEK LAT2510 archival tags bringing the cruise total releases to 1706 skipjack and 221 yellowfin, or 1927 total releases.

The Cruise 3 releases are summarized by school in **Table 4**, 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 3, 11 - 24 April 2009, showing 1800 hrs position and the positions of schools fished

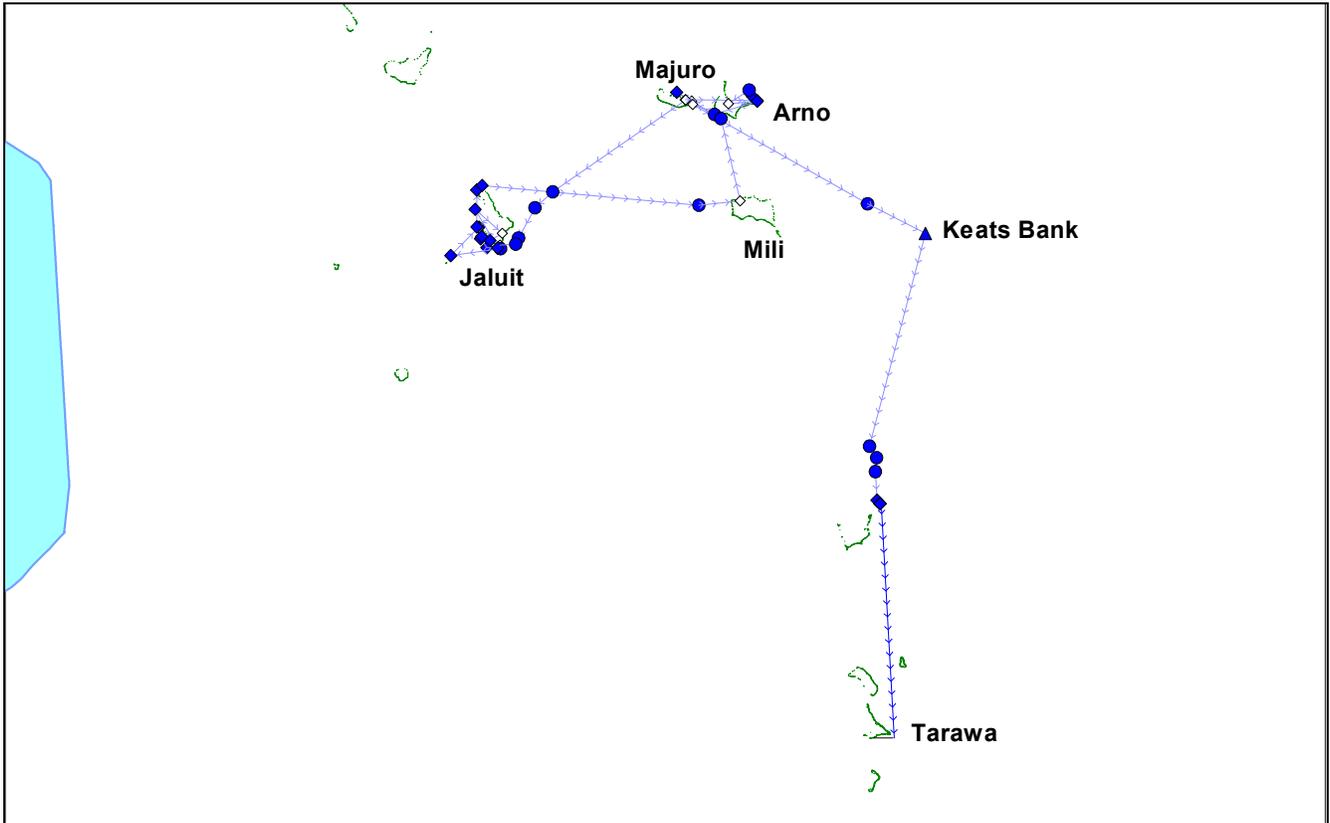
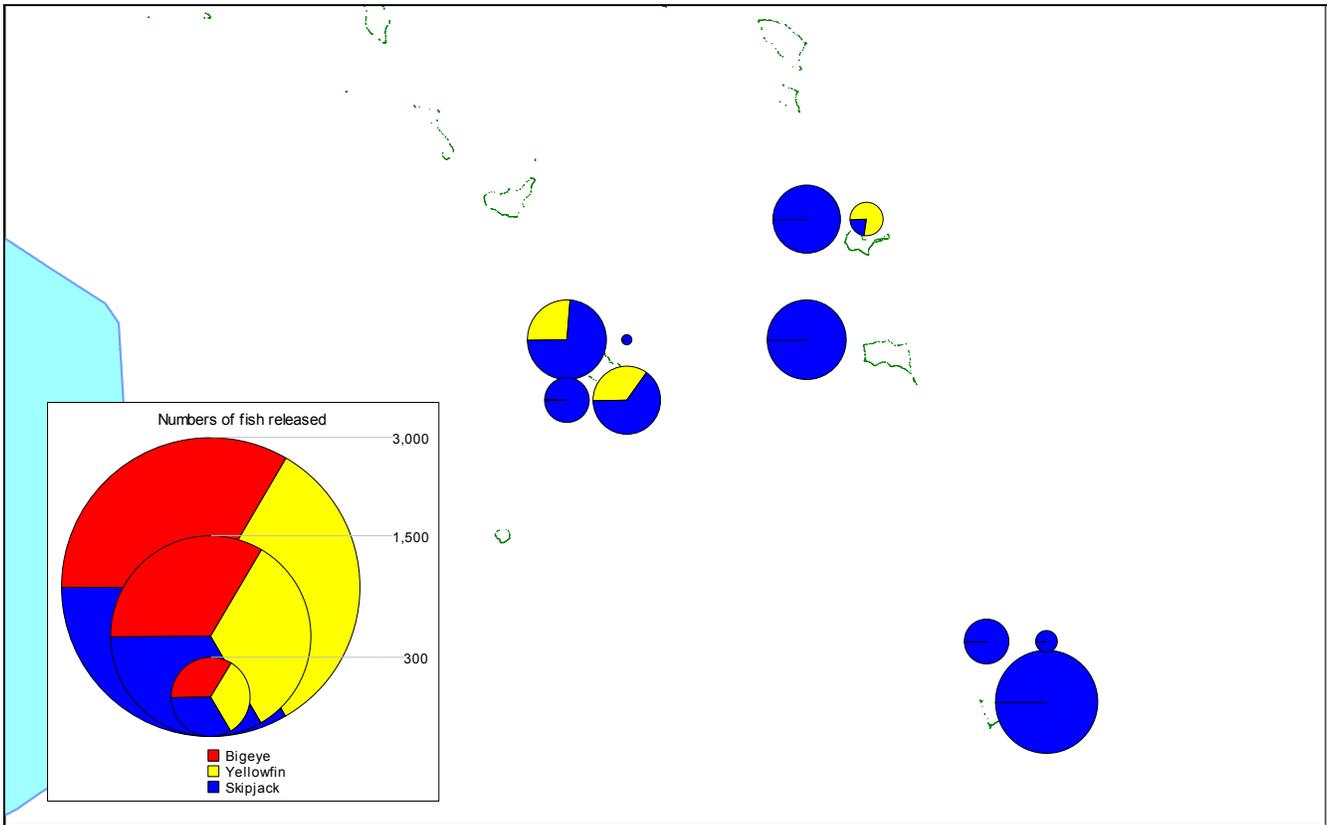


Table 2. Summary of Cruise 3 activity, with number of conventional and archival tag releases per day

Dates	Activity	Conv releases			Total
		SJ	YF	BE	
April 11 th	Depart Majuro for baiting Majuro lagoon	n/f	-	-	-
April 12 th	Fishing seamounts east of Arno; baiting Arno	19	68	0	87
April 13 th	Fishing around Arno; baiting Majuro lagoon	0	0	0	0
April 14 th	In port; baiting Majuro lagoon	n/f	0	0	-
April 15 th	Fishing towards Jaluit; baiting Jaluit	84	20	0	104
April 16 th	Fishing Kili Island and western Jaluit; baiting Jaluit	43	8	0	51
April 17 th	Fishing lee side Jaluit; baiting Jabor	39	42	0	81
April 18 th	Fish both sides Jaluit; steaming towards Mili	306	83	0	389
April 19 th	Fishing towards Mili; baiting Mili	334	0	0	334
April 20 th	Fishing from Mili to Majuro	240	0	0	242
April 21 st	In port for provisioning and outwards clearance	n/f	-	-	-
April 22 nd	Depart Majuro for Tarawa; fishing to Keats Bank	1	0	0	1
April 23 rd	Running SSWi, fishing north Kiribati EEZ	628	0	0	628
April 24 th	Arrive Tarawa, clear in to Kiribati, check milkfish	n/f	-	-	-
	Conventional Tag Release Total	1694	221	0	1915
	Archival Tag Release Total	12	0	0	12
	COMBINED TAG RELEASE TOTALS	1706	221	0	1927
		88.5%	11.5%	0%	-

Figure 2. Distribution of releases by half degree square, by species, for WP2 Cruise 3 (11 – 24 April 2009) Blue = skipjack, Yellow = yellowfin



Two thirds (67.6%) of Cruise 3 tag releases came from schools designated as “island or reef associated”. The rest of the schools were free schools found between the atolls. No FADs, natural logs or floating objects with associated tuna schools were encountered during the cruise. Most of the schools encountered were pure skipjack and often of good size over 55 cm. Only two skipjack were tagged with Y11 “Z” size conventional tags.

ARCHIVAL TAG SUMMARY

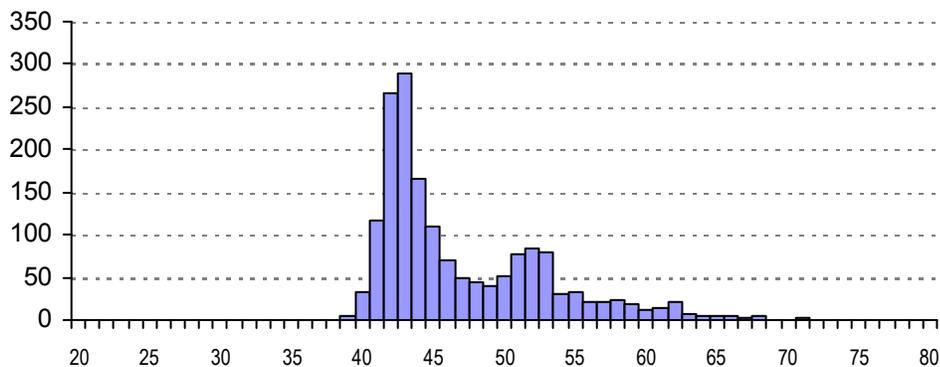
During Cruise 3, 12 skipjack were tagged and released with LOTEK LAT 2510 archival tags. The releases ranged from 44 – 63 cm in FL. The insertion point was closed with two or three surgical staples applied with a 3M Precise PGX-35W Disposable Skin Stapler. Skipjack in the size range of 48 – 52 cm appeared ideal to receive the LAT 2510 tags and the skin stapler appeared to do a good job of closing the wound quickly and efficiently. However, several skipjack were rejected before suitably calm individuals were tagged and chosen for release.

SIZE DISTRIBUTION OF TAGGED FISH

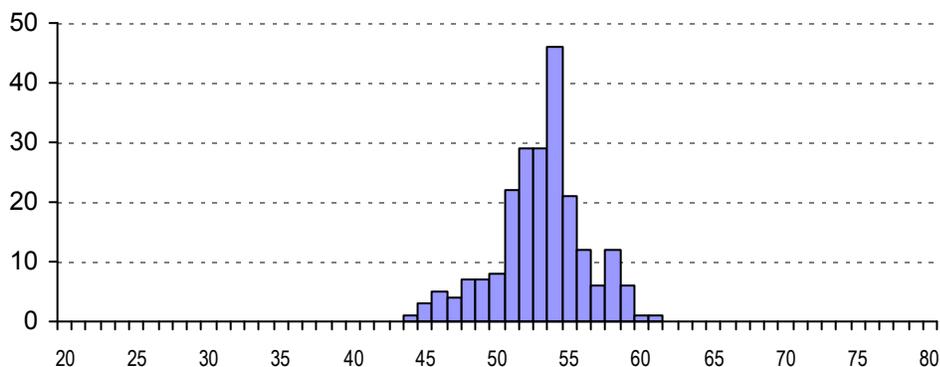
Figure 3 shows the size distribution of fish tagged during the cruise leg. Skipjack releases are dominated by a large mode at 43 cm that was caused by the 628 releases made in Kiribati on 23 April, and somewhat skews the typical pattern seen in the Marshall Islands. Several of the skipjack schools encountered in the Marshalls were composed of relatively large skipjack over 50 cm in length and some skipjack over 65 cm were tagged and released. Most yellowfin tagged were found close to the atolls and ranged from 50 – 55 cm. No bigeye tuna were poled or tagged during the entire cruise but it should be noted that no floating objects were fished.

Figure 3. Size distribution of fish tagged during Cruise 3 (11/4 to 24/4/2009)

SKIPJACK n = 1705



YELLOWFIN n = 220



BIOLOGICAL SAMPLING

Biological sampling has been conducted to collect stomachs, muscle and liver samples for trophic studies. A total of 70 fish were sampled during cruise 3: mainly skipjack (60), but also some yellowfin (10). They all have been collected from free schools. Skipjack sampled measured between 43 and 68 cm long and yellowfin between 20 and 105 cm. All 70 fish were tested for fat content using the fatmeter.

BAITING

Baiting was difficult during Cruise 3 as expected with a few positive surprises. Each atoll proved to be quite different in bait species and abundance. Majuro produced reasonable quantities of large gold spot herring (Hq) but no blue sprat as had been encountered during previous SPC surveys later in the year. In general, the herring were too large for most of the skipjack encountered. Most of the baiting took place in the shelter of the “picnic” island in the central north lagoon. However, the last two night of baiting found productive baithauls in the far northeast corner of the lagoon directly off the Majuro High School in Rita. Arno was completely unproductive while blue sprats were found in Jaluit. Mili Atoll produced good hauls of a medium sized sardine (possibly *Clupeoides* sp.) and blue sprats. Baiting operations are summarized in Table 3.

A total of 557 buckets of bait were loaded in 32 hauls for a poor average of 17.4 buckets per haul.

Table 3. Summary of baitfishing activity during WP2 Cruise 3

Date	Location	Catch (bkts loaded, hauls)	Species
April 11 th	Majuro	66 (3)	<i>Herklotstichthys quadrimaculatus</i>
April 12 th	Arno	3 (3)	Blue sprat, hardyhead
April 13 th	Majuro	40 (4)	Hq
April 14 th	Majuro	21 (1)	Hq
April 15 th	South Jaluit	78 (4)	Blue sprat, Hq, h/h
April 16 th	South Jaluit	25 (4)	Blue sprat
April 17 th	SE Jaluit (Jabor)	53 (4)	Blue sprat
April 19 th	Mili	65 (4)	Sardines, blue sprat
April 20 th	Majuro	145 (4)	Hq, Selar
April 21 st	Majuro	61 (1)	Hq
		557 (32) of 17.4/haul	

CONCLUSIONS

It was expected that the Marshall Island region would be difficult due to inconsistency of baitfish supplies and relatively low tuna abundance. This proved to be true and the cruise was made even more difficult by rough seas, frequent rain squalls and a debilitating flu/cold sickness that afflicted the cruise leaders and a good portion of the crew. However, enough bait was scraped together during the cruise and the general strategy of looking for schools close to atolls generally proved to be productive. Tuna were located and tagged on nine of the ten days spent searching and fishing. Most of the schools were island associated or fast free schools of skipjack that were difficult to stop and catch with the large herring baitfish often onboard. However, almost 2000 tuna were tagged during the cruise, albeit over 600 on the last day inside the Kiribati EEZ. Having four SPC staff onboard proved useful for the deployment of archival tags that could take place during the fast biting skipjack schools without loss of conventional tagging rates. It is expected that archival tagging may take second shelf during much of Cruise 4 when only 3 SPC staff will be onboard. However, full tagging assistance from the Soltai 105 engineers will facilitate archival tagging efforts once all SPC staff are up to speed on regular tagging durits.

Thanks to RMI/MIMRA observer Charles Charley and Berry Muller who joined the vessel during segments of Cruise 3. Special thanks are due to Glenn Joseph, Berry Muller, Dike and Manasseh for assisting with provisioning and general in port coordination.

TABLE 4. Tag releases (all tags) by school during PTPP WP2 Cruise 3

Project Western Pacific #2 - PTPP Phase 2		Cruise		3 To		3		Vessel Soltai 105		TAG TOTALS			
EventTagged	Sch	Date	Lat	Lon	type	Assoc.	Start	Stop	YFT	BET	SKJ	OTH	Total
1	1	12-Apr-2009	0707.164N	17157.288E	2	9	1203	1245	68	0	19	0	87
7	2	15-Apr-2009	0608.751N	16955.593E	2	1	1027	1030	0	0	3	0	3
8	3	15-Apr-2009	0552.300N	16946.600E	3	1	1258	1329	11	0	55	0	66
9	4	15-Apr-2009	0548.940N	16945.031E	1	1	1402	1410	9	0	28	0	37
10	5	16-Apr-2009	0546.455N	16936.755E	1	1	0747	0803	7	0	9	0	16
11	6	16-Apr-2009	0542.693N	16909.475E	4	9	1100	1128	1	0	36	0	37
15	7	17-Apr-2009	0546.870N	16935.234E	1	9	0726	0742	42	0	39	0	81
18	8	18-Apr-2009	0553.081N	16926.493E	2	9	1149	1205	0	0	74	0	74
20	9	18-Apr-2009	0618.426N	16923.652E	2	9	1506	1550	82	0	214	0	296
3													
21	10	18-Apr-2009	0620.919N	16926.681E	5	0	1640	1702	1	0	22	0	23
22	11	19-Apr-2009	0610.175N	17125.367E	2	1	0820	0910	0	0	336	0	336
1													
24	12	20-Apr-2009	0711.798N	17113.221E	1	9	1443	1540	0	0	242	0	242
2													
25	13	22-Apr-2009	0610.909N	17257.734E	1	1	1255	1324	0	0	1	0	1
27	14	23-Apr-2009	0358.746N	17258.808E	1	1	0752	0830	0	0	104	0	104
0													
29	15	23-Apr-2009	0344.890N	17302.034E	1	1	1114	1130	0	0	39	0	39
30	16	23-Apr-2009	0329.244N	17302.923E	1	9	1322	1432	0	0	402	0	402
2													
32	17	23-Apr-2009	0327.448N	17304.571E	1	9	1331	1351	0	0	83	0	83
CRUISE 3 TOTALS									221	0	1706	0	1927

APPENDIX 1

DAILY LOG EXTRACTS

April 11th

Took fuel in morning, final preparations, then cast off 1630 hrs to move to baitground; anchored 1720 hrs in 53m off Picnic Island; first net 2000 hrs for 39 bkts, mostly Hq; moon up with little cloud for second set on light boat 2045 hrs for just 11 bkts; set lights again in hope and cloud came over - 3rd set 1115 hrs for 16 very full bkts, now 66 bkts plus possibly 20 left-overs, for close to 90. Up anchor midnight and heading east out of pass towards seamounts off Arno.

April 12th

After baiting in Majuro Atoll off the picnic island ran out after midnight working NE all morning toward deep seamount north of Arno. Diverted SE at 0630 to check another seamount with no result. Rough seas and stiff NE Trades made searching difficult. Turned downhill towards Arno Atoll at 0930 locating several bird schools with a mix of skipjack, yellowfin, rainbow runner, kawakawa and some large yellowfin schools close to the SE and E side of atoll. Fished one school for 87 releases with pleasing 78% YF (19 SJ, 68 YF) . Most fish between 45 and 55 cm with a few yellowfin to 60 cm. Seven YF on deck sampled for otoliths. Two other schools or areas of birds chummed but nothing caught with second school consisting of large yellowfin. Ran in to Arno Lagoon at Dodo Pass at 1520 and searched out a baiting location off Chiran Island, north of Dodo pass. Set light boat and anchored off a small village in 28m at 0705.5N, 17141.5E. We ran a shore party in with Berry Muller to explain our presence, pass out posters and a basket of fish. All received very well in idyllic village powered with Taiwanese aid solar panels. First haul 2040 at boat only two buckets of mixed sprats and junk. Second haul 2130 for 1.5 buckets of blue sprat and junk. Moved 2 nm inside lagoon and set up. Haul at 0340 for zero.

April 13th

Nothing in third baithaul at Arno, no attempt at light boat. Steaming out of bg 0435. Worked around Arno Atoll in a clockwise direction from Dodo Pass. Located same bird school from yesterday off eastern end of Arno but only RR present. Chummed and chased school of large skipjack feeding off west end but none caught. Continued searching west to Majuro all the way to NW tip of Atoll but no schools sighted. Set up for baiting off picnic island. Glen Joseph arranged MIMRA vessel and personally escorted ailing CL to search meds and accommodation to battle stubborn chest cough and congestion. Baiting off picnic island: 2200 for 25 Hq; 2235 at light boat for 15 buckets Hq; morning set at 0400 at boat only quarter scoop of tiny blue sprat. Same catch at 0440 at light boat in 43m for haul 4.

April 14th

Only 36 buckets of Hq in four sets last night. Remained in BG till morning and ran in to Majuro to take water and small provisioning. Picked up ADL in much better health and spirits. Caught up with the observer trainers including Tim Park and Sifa. Berry Muller disembarked to coordinate our short shore tasks and Charles boarded as MIMRA observer. Took 3 ton fresh water and shoved off for baiting at 1745. Unfortunate power shutoff issue stressed bait and much of it perished at the dock. Only one haul at picnic island in 37m at 2115 for 21 full buckets of large Hq. Depart anchorage at 2155 for Jaluit.

April 15th

Comfortable steam (relatively) overnight downwind towards Jaluit; still about 45 nm short at 0630 hrs. Started to pick up skipjack schools mixed with nice yellowfin at 14 miles off the reef. Four schools chummed on the ESE side of atoll and tags released on three for 86 SKJ, 20 YFT (106 total) including two skipjack implanted with LOTEK 2510. One 86 cm YFT tagged with conventional on the stern and another fish >100 trolled and kept after destroying the 14/0 (user error). Ran in the SW pass at 1615 and anchored for baiting in SE corner of the lagoon in 42m at 1730 hrs; little shelter with wind direction ~ 60 and still close to 20 kts, so will need to drop for baiting later tonight; encouraging signs of fish today, even if weather remains abysmal; two crew fully down with the Majuro Whammy now and others showing symptoms - fingers are crossed; first haul 2200 hrs for 41 bkts of mostly blue sprats; next on light boat 2300 hrs for 14 large buckets;

April 16th

Third net at 0400 hrs for 8 bkts, and final net on lightboat 0500hrs for 15 bkts; up anchor 0600 hrs and headed out SW Pass, fishing initially back to south point; a large area of birds working on current rip but steep waves and hard to fish - 16 tagged; then headed for Kili Is, 30 nm downwind; two schools near the island - one fished for 34 (1 YF) and 2 ATs; other closer in mostly RR - headed back at noon to west end of Jaluit and worked off the SW coast. Several bird schools chummed, mostly skipjack but one of large YF. No response and ran into the lagoon at 1800 to bait. Daily total 53 releases, 45 SJ (with two AT2510) and 8 YF. Winds possibly easing slightly - first net 2330 hrs for 14 bkts.

April 17th

Second net 0030 hrs for 5 bkts; third net 0415 for three buckets; fourth net 0510 for 3 buckets all blue sprat; outside the pass at 0645 hrs; weather much improved (temporarily) so headed back to south point initially; point guard school in place and bit briefly, for 81 fish (42 YF); fishing north along the lee side of the atoll but just a few patches of large YF; inside SW pass before 1400 hrs and alongside Jabor wharf 1500 hrs for brief visit - Mayor had just left for Majuro; reconnoitred baitground just south of Jabor; anchored 1630 hrs in 37 m WSW of Jabor; wind easing; first net 2115 hrs for 30 bkts of mostly blue sprats; second net on lightboat 2215 hrs for 14 bkts

April 18th

Third haul 0400 hrs for 5 bkts of very small sprats and final net 0500 hrs for 4 bkts; out through SE pass for the first time 0630 hrs; headed east with wind rising, then headed direct for south point; no sightings but possibly too far inshore from last track on arrival in Jaluit when several good schools seen; one running school just around the corner but did not bite; more success with a second, with 73 SJ plus one AT; essentially dry run up the west coast until a mixed school was located on the north end of Jaluit that resulted in a fast biting school for 296 releases. Shortly after a mixed school was located feeding on a small dense meatball of *S. punctifer* for 23 more including some jumbo skipjack. Late pull for the best day in MI, 393 releases with 83 YF (21%) but no bigeye. Release total included four skipjack released with Lotek 2510 archival. Headed east at 1700, running for Mili all night.

April 19th

Rolling thumping ride overnight, but wind had dropped slightly by morning; nice pair of wahoo trolled 0700 hrs; a large area of birds 20nm w of Mili NW tip produced 334 SJ and 2 ATs before bait ran out; large YF also in what was a big area of fish; inside NW pass at Mili at 1215 hrs and finally anchored 1245 hrs in 32m after reconnaissance; best

day for the last 16, weather-wise; Cynthia off to visit great grandmother's island of origin; cheerful visitors from nearest island; wind gradually picking up during the afternoon of rest; few signs early and first net not until 2340 hrs - 38 bkts of medium-sized sardine, a pleasant surprise.

April 20th

Second net 0040 hrs on lightboat for 1.5 bkts - sardines present but escaped; third net 0400 hrs for 2 bkts - again difficult conditions, with wind; last haul at 0500hrs - 24 bkts; out through pass just after 0600 hrs - one DTT trolled on exit; little sighted all morning in moderate seas; in lee of Arno 1130 hrs - one school large YF not chummed and little else; birds near Majuro entrance pursued vigorously and 240 SJ (plus 2 ATs) tagged in several passes - good end to the day; anchored 1730 hrs in 49m closer to town; will bait tonight to top up the remaining 35 bkts, and again tomorrow night before heading for Kiribati; first net 2215 hrs for 22 bkts of Hq with some Selar; second on lightboat 2315 hrs for 26 bkts Hq;

April 21st

Third net 0415 hrs for a good 69 bkts of Hq; last net 0500 hrs for 28 bkts, total 145 bkts - excellent ! Steamed to main wharf after baiting and some delay; alongside 0730 hrs. Cynthia W and CL ADL disembarked; Shelton Harley joined vessel. CL ADL assisted provisioning all day ably coordinated by MIMRA (Berry, Glenn, Dike, Charles, Manasseh). Loaded 17 KI diesel and 6K water, food, provisions. Depart Majuro wharf at 1745 for baiting in eastern lagoon in 42 m. One haul at 2015 for 61 buckets of Hq. Light boat malfunction lost light so picked up and started running south for Keats Bank and Kiribati.

April 22nd

Shot between Majuro and Arno last night and angling southeast all day towards Keats Bank in sloppy easterly wind and seas with intermittent rain squalls. One free school of small skipjack chased for only one release. Found Keats Bank at 1700, taking one on trolling. Chummed some yellowfin but no bite and poled half dozen rainbow runner for kaikai. Found 13 m high spot at 1800 position. Turned south to Butaritari at 1810.

April 23rd

Ran SSW all night from Keats Bank towards Butaritari, encountering numerous skipjack schools to the north of the atoll. Several schools were chased and chummed with four responding for 628 skipjack releases, mostly of 42 - 45 cm fish. All of our bait supplies were used up on these schools by 1600. Running south all night towards Tarawa.

April 24th

In port of Tarawa for customs/immigration clearance and check milkfish situation. Public holiday prevented taking care of banking matters. Finally cleared at 10 am. Met at the dock by Kintoba Tearo from MFMRD and introduced to our agent with Central Pacific Producers, Ltd. Masa Okamoto of Temaiku Eco Farms drove CL to the farm in north Tarawa to inspect milkfish situation which appears suitable for one full load of all baitwells. Made arrangements to return next week when wharf was clear to load bait, water and take care of banking. Too late to get to Abaiang for baiting so set up in 35 m outside Tarawa entrance channel where we baited with the Te Tautai at 1 24.5N 17254.4E. First haul 2115; too many barracuda, 9 buckets mixed; second haul at light

boat at 1010 for a single scoop of mixed rubbish species. Aborted further attempts and started running north for Butaritari.