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# PACIFIC TUNA TAGGING AND PNG TAGGING PROJECT PROGRESS REPORT AND WORKPLAN FOR 2013-2014

**WCPFC-SC10-2014/RP-PTTP-02**
**Revision 1, 25 July 2014**

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# Introduction

The steering committee report for the Pacific Tuna Tagging Programme (PTTP) for 2014 reports upon the tagging activities undertaken in 2013 under the banner of the PTTP, tag recoveries, and tag seeding activities. The objectives of the PTTP are specified in SC6-GN-IP-04. Funding support for the PTTP has been provided by the PNG National Fisheries Authority, New Zealand Aid Agency, the Government of the Republic of Korea, Australian Centre for International Agricultural Research, European Community 8th European Development Fund, European Community 9th European Development Fund, European Community 10th European Development Fund, the French Pacific Fund, the Government of Taiwan, Heinz Australia and the Global Environment Facility.

In 2011, SPC and the PNG National Fisheries Authority (NFA) began a three-year tag release programme in the PNG EEZ, funded by NFA. This new project, referred to here as the PNG Tagging Project (PNGTP) is considered under the umbrella of the PTTP and is reported in this annual report. The PNGTP extended the time series of tagging in PNG since the beginning of the PTTP in mid-2006 to 7 years. The objectives of this work are consistent with those of the PTTP; however the work was primarily focused on providing the data resources to assess the status of tuna resources in PNG for national tuna fisheries management. The data also contributes to the wider WCPO assessment of tuna stocks.

The overall operational structure of the PTTP is as follows (with planned work for 2014-15 shown in red):

| | **Time period** | **Operational area** | **Tagging vessel** |
|---|---|---|---|
| Phase 1 | Aug – Nov 2006 | PNG | *Soltai 6* |
| | Feb – May 2007 | PNG | *Soltai 6* |
| | Oct – Nov 2007 | Solomon Islands | *Soltai 6* |
| | Feb – Mar 2008 | Solomon Islands | *Soltai 6* |
| | Apr 2008 | Solomon Islands | *Soltai 105* |
| Phase 2 (to date) | May – Jun 2008 | Central Pacific (CP1) | *Double D* |
| | Jun – Nov 2008 | Western Pacific (WP1) | *Soltai 105* |
| | Mar – Jun 2009 | Western Pacific (WP2) | *Soltai 105* |
| | May – Jun 2009 | Central Pacific (CP2) | *Double D* |
| | Jul – Oct 2009 | Western Pacific (WP3) | *Soltai 105* |
| | Oct – Nov 2009 | Central Pacific (CP3) | *Aoshibi Go* |
| | May – Jun 2010 | Central Pacific (CP4) | *Aoshibi Go* |
| | Oct – Nov 2010 | Central Pacific (CP5) | *Pacific Sunrise* |
| | Oct 2011 | Central Pacific (CP6) | *Pacific Sunrise* |
| | Nov – Dec 2011 | Central Pacific (CP7) | *Aoshibi Go* |
| | Sep – Oct 2012 | Central Pacific (CP8) | *Pacific Sunrise* |
| | Nov-Dec 2013 | Central Pacific (CP9) | *Pacific Sunrise* |
| | Aug 2014 | Central Pacific (CP10) | *Pacific Sunrise* |
| PNGTP | Apr – Jul 2011 | PNG (PNGTP1) | *Soltai 105* |
| | Jan – Mar 2012 | PNG (PNGTP2) | *Soltai 105* |
| | Aug 2012 | PNG (TAO trial) | *FTV Pokajam* |
| | Apr - Jun 2013 | PNG (PNGTP3) | *Soltai 101* |

The report provides a review of work undertaken in 2013-14, an update of the overall programme results to date and the proposed workplan for the PTTP for 2014-2015.

## Summary of PTTP Activities in 2013-2014

Since SC9, PTTP activities comprised one troll/handline cruise, CP9, in the tropical central Pacific, continued implementation and refinement of tag recovery processes and tag seeding, and data preparation for use in WCPO skipjack, yellowfin and bigeye tuna stock assessments.

The PNG tagging project (PNGTP) field work was completed in June 2013 and descriptive results are presented in this report.

**CP9** was a cruise of 22 days duration conducted in Nov-Dec- 2013 targeting bigeye tuna aggregations associated with the TAO oceanographic moorings (Figure 1) straddling the Equator at 170ºW and 180º. The Tonga-based multipurpose vessel *Pacific Sunrise* was chartered for the cruise. A total of 4,460 tuna (4,296 bigeye, 135 yellowfin and 29 skipjack) were tagged (Table 1). Approximately 88% of the releases were made at the 2°S and equator moorings of the 170°W. Within these releases, 41 archival tags were deployed on bigeye tuna and 1 on yellowfin tuna.

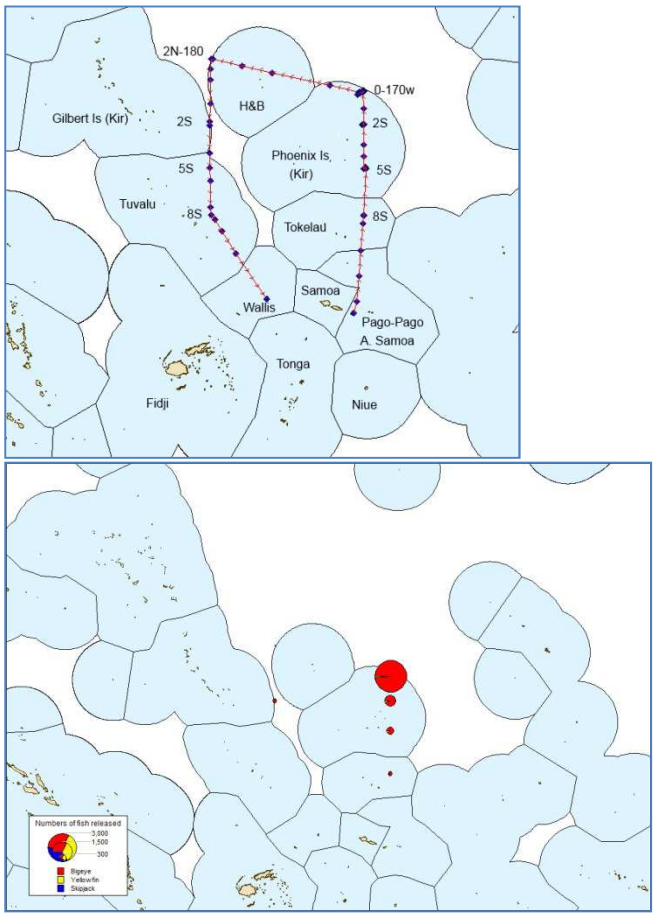


**Figure 1. Cruise tracks and distribution of tag releases during CP9 cruise.**

## PTTP Results

The release numbers and recovery percentages to date of conventional and archival tags made during the nine Central Pacific (CP) cruises, the PNGTP and Phase 1 and 2 of the PTTP are detailed in Table 1.

**Table 1. CP, PNGTP and total PTTP releases numbers and % of recoveries to date of conventional and archival tags.**

| Project | Tag type | RELEASE NUMBERS | | | | RECAPTURES PERCENTAGES | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Skipjack | Yellowfin | Bigeye | Total | Skipjack | Yellowfin | Bigeye | Total |
| CP | Conventional | 412 | 1,399 | 35,015 | **36,826** | 5.3 | 16.9 | 28.3 | **27.6** |
| | Archival | 30 | 150 | 530 | **710** | 0.0 | 5.3 | 15.3 | **12.5** |
| PNGTP | Conventional | 80,438 | 27,070 | 2,915 | **110,423** | 19.1 | 17.2 | 20 | **18.7** |
| | Archival | | 68 | 12 | **80** | | 20.6 | 58.3 | **26.3** |
| Total PTTP | Conventional | 246,620 | 105,654 | 44,347 | **396,621** | 17 | 16.5 | 26.6 | **18** |
| | Archival | 127 | 560 | 716 | **1,403** | 3.1 | 10.7 | 16.2 | **12.8** |

## Completion of the PNGTP: broad results

The PNGTP released 110,503 tagged tuna in the Papua New Guinea waters during 7 month fishing on a chartered pole and line vessel between 2011 and 2013. Table 2 details the number of tag releases by species and school association. The distribution of releases and recaptures is shown on Figure 2.

**Table 2. Releases by species and association for PNGTP**

| School association type | Bigeye | Yellowfin | Skipjack | Total |
|---|---|---|---|---|
| Free school | 101 | 6895 | 31038 | 38034 (34.4%) |
| Log | 745 | 6578 | 8221 | 15544 (14.1%) |
| Anchored FAD | 1757 | 7550 | 23951 | 33258 (30.1%) |
| Drifting FAD | 126 | 1343 | 4064 | 5533 (5.0%) |
| Marine mammal or whale shark | 139 | 617 | 1023 | 1779 (1.6%) |
| Current line | 25 | 793 | 2237 | 3055 (2.8%) |
| Seamount | 34 | 2829 | 9869 | 12732 (11.5%) |
| Island or reef | 0 | 533 | 35 | 568 (0.5%) |
| **Total** | **2927** | **27138** | **80438** | **110503** |

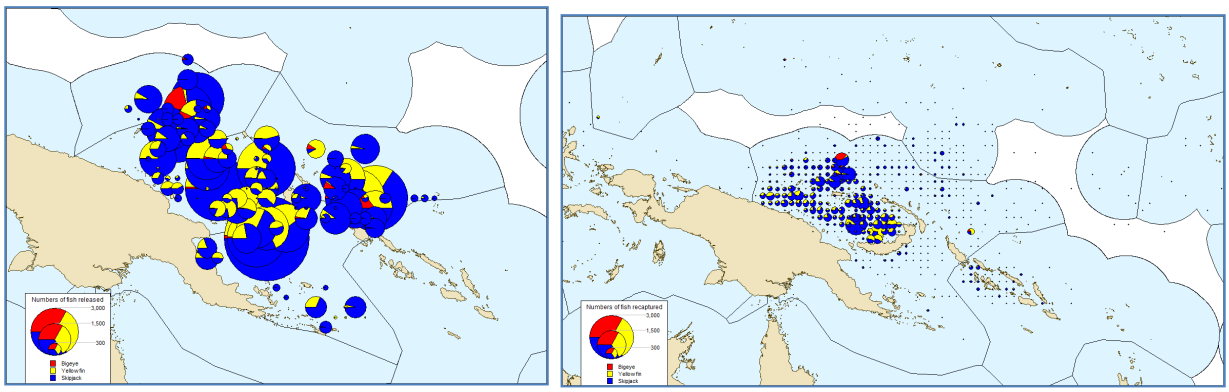

**Figure 2. Left Panel: Distribution of tag releases during PNGTP cruises. Right Panel: Distribution of recaptured PNGTP tags.**

To facilitate spatial analysis, 4 sub-areas were defined within the PNG EEZ; these PNG sub-areas are as follows:

- Northern sea
- Eastern sea
- Bismarck sea

- Solomon sea

The distribution of the releases between these sub-areas is shown in Figure 3, the release numbers per species and fishing day in each sub-area are detailed in Table 3

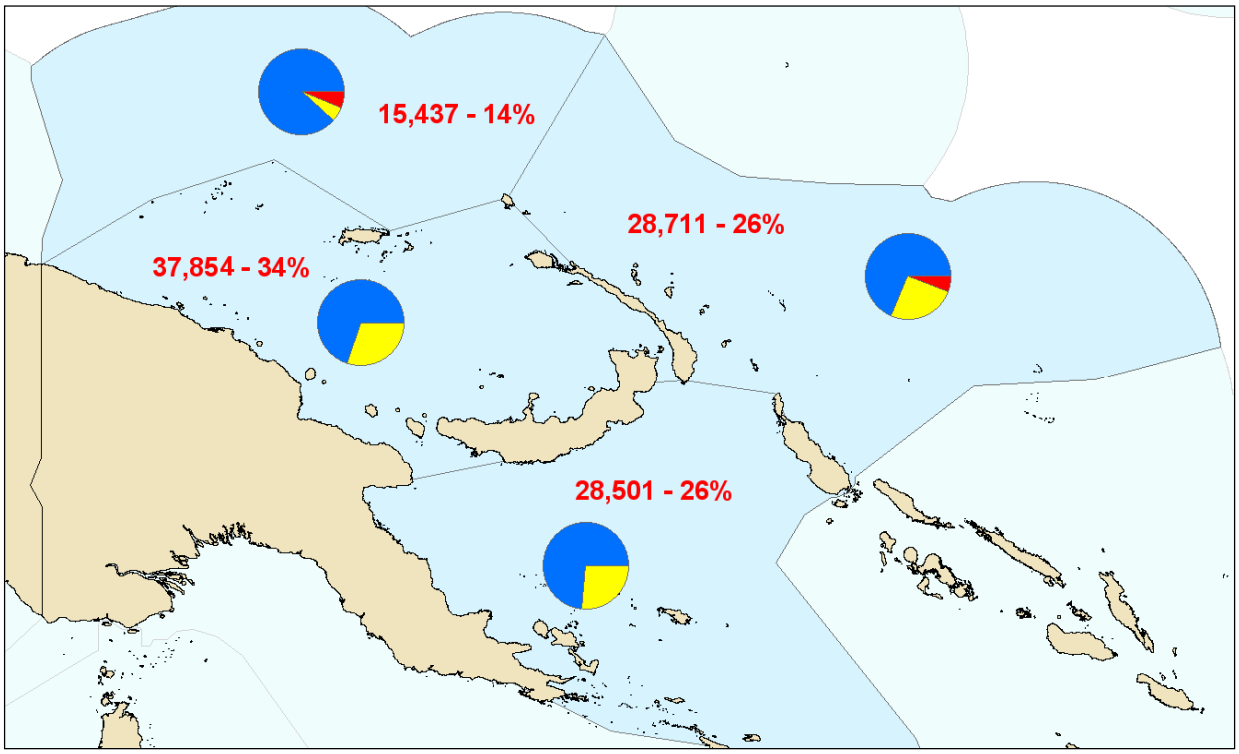


**Figure 3. Number and percentage of tag releases per PNG sub-area during the PNGTP. Proportion of release per species is also shown (skipjack in blue, yellowfin in yellow and bigeye in red)**

**Table 3. Total releases and per fishing-day by species and sub-areas for PNGTP**

| Areas | Days | SKJ | YFT | BET | Total | Tags/day |
|---|---|---|---|---|---|---|
| Northern | 20 | 13634 | 867 | 936 | 15437 | 771 |
| Bismarck | 68 | 26299 | 11362 | 193 | 37854 | 556 |
| Eastern | 35 | 19689 | 7358 | 1664 | 28711 | 820 |
| Solomon | 37 | 20816 | 7551 | 134 | 28501 | 770 |
| Total | 160 | 80438 | 27138 | 2927 | 110503 | 690 |

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## Biological sampling during tagging cruises

Since the beginning of the PTTP in 2006, 5770 stomach samples have been collected, mainly from skipjack, yellowfin, bigeye and albacore tuna (Table 4). The examination of the stomachs is an ongoing process and is conducted in the laboratory at SPC headquarters. A total of 5372 stomach, representing 93% of the samples collected, have been examined and corresponding data entered into a dedicated database (see Table 4).

**Table 4. Total number of stomach samples collected and analysed to date.**

| PREDATOR SPECIES | | COLLECTED | ANALYSED | % ANALYSED |
|---|---|---|---|---|
| SKJ | SKIPJACK | 2613 | 2374 | 91% |
| YFT | YELLOWFIN | 2091 | 1960 | 94% |
| BET | BIGEYE | 413 | 399 | 97% |
| ALB | ALBACORE | 245 | 245 | 100% |
| KAW | KAWAKAWA | 124 | 115 | 93% |
| RRU | RAINBOW RUNNER | 112 | 112 | 100% |
| FRI | FRIGATE TUNA | 95 | 90 | 95% |
| DOL | MAHI MAHI / DOLPHINFISH / DORADO | 45 | 45 | 100% |
| SWO | SWORDFISH | 6 | 6 | 100% |
| WAH | WAHOO | 6 | 6 | 100% |
| MSD | MACKEREL SCAD / SABA | 5 | 5 | 100% |
| FAL | SILKY SHARK | 4 | 4 | 100% |
| BUM | BLUE MARLIN | 3 | 3 | 100% |
| BRZ | POMFRETS AND OCEAN BREAMS | 3 | 3 | 100% |
| CFW | POMPANO DOLPHINFISH | 2 | 2 | 100% |
| NXI | GIANT TREVALLY | 1 | 1 | 100% |
| YTL | AMBERJACK (LONGFIN YELLOWTAIL) | 1 | 1 | 100% |
| PLS | PELAGIC STING-RAY | 1 | 1 | 100% |
| | **TOTAL** | **5770** | **5372** | **93%** |

## Conventional and archival tag recoveries for the PTTP

As at 08 May 2014, a total of 70,185 tagged tuna had been recaptured and the data reported to SPC. The numbers of conventional tag recoveries by species and by main tagging cruise are given in Table 5. Tag recoveries have occurred over the duration of the project, and are expected to continue for several years. Tag attrition follows the expected declining pattern (Figure 4) with the rate of decline in skipjack tag returns indicating their shorter expected lifespan and higher natural mortality when compared to yellowfin and bigeye tuna. The recovery rates of yellowfin and bigeye tagged with archival tags and conventional tags vary depending on cruise (Table 6). Initial observations of this data suggest increased tag rejection/fish mortality with archival tagging on some cruises.

The majority of recoveries have come from purse-seine vessels (91%), followed by pole and line and other gear types (2%), unknown (5%) and longline recoveries <1% (160 in total). Table 7 shows the number of recoveries by gear type for yellowfin and bigeye that have been at liberty for at least 1 year before recapture. After 1 year at liberty, the fish should be approximately 80cm-100cm in length and available to purse-seine and longline fleets. The disproportionately low number of tag returns is evident for longline vessels. The same trend is observed if the analyses is restricted to just the spatial domain of the purse-seine fleet (10°N to 10°S). It is worth noting that longline recoveries have increased in the last 12 months, particularly from Japanese flagged vessels. The recent history of Japanese longline

recoveries has been 4 in 2012, 0 in 2013 and 9 in 2014 indicating that the fish are increasingly available to this gear. All of these recoveries were in International waters

**Table 5. Tag releases and recaptures for the PTTP to date (9/05/2014)**

| Cruises | Releases | | | | Recoveries (numbers and %) | | | |
|---|---|---|---|---|---|---|---|---|
| | SKJ | YFT | BET | Total | SKJ | YFT | BET | Total |
| **PNG 1** Aug-Nov 2006 | 13,948 | 7,806 | 562 | **22,316** | 2,644 (19%) | 1,805 (23.1%) | 229 (40.7%) | **4,678** (21%) |
| **PNG 2** Feb-May 2007 | 26,493 | 12,845 | 129 | **39,467** | 2,503 (9.4%) | 1,717 (13.4%) | 8 (6.2%) | **4,228** (10.7%) |
| **SOL 1** Oct-Nov 2007 | 7,479 | 3,565 | 139 | **11,183** | 1,975 (26.4%) | 784 (22%) | 18 (12.9%) | **2,777** (24.8%) |
| **SOL 2** Feb-Apr 2008 | 15,327 | 14,405 | 414 | **30,146** | 1,762 (11.5%) | 2,417 (16.8%) | 62 (15%) | **4,241** (14.1%) |
| **WP1** Jun-Nov 2008 | 37,691 | 17,647 | 1,467 | **56,805** | 6,374 (16.9%) | 2,058 (11.7%) | 362 (24.7%) | **8,794** (15.5%) |
| **WP2** Mar-Jun 2009 | 34,207 | 13,919 | 3,145 | **51,271** | 4,607 (13.5%) | 2,353 (16.9%) | 483 (15.3%) | **7,443** (14.5%) |
| **WP3** Jul-Oct 2009 | 30,722 | 7,340 | 735 | **38,797** | 6,691 (21.8%) | 1,430 (19.5%) | 197 (26.8%) | **8,318** (21.4%) |
| **CP1** May-Jun 2008 | 57 | 116 | 1,736 | **1,909** | 4 (7%) | 25 (21.6%) | 571 (32.9%) | **600** (31.4%) |
| **CP2** May-Jun 2009 | 169 | 205 | 2,307 | **2,681** | 5 (3%) | 27 (13.2%) | 570 (24.7%) | **602** (22.5%) |
| **CP3** Oct-Nov 2009 | 66 | 237 | 4,802 | **5,105** | 2 (3%) | 63 (26.6%) | 1,766 (36.7%) | **1,831** (35.8%) |
| **CP4** May-Jun 2010 | 7 | 120 | 2284 | **2411** | 1 (14.3%) | 12 (10%) | 496 (21.7%) | **509** (21.1%) |
| **CP5** Nov-Dec 2010 | 40 | 228 | 6,090 | **6,358** | 7 (17.5%) | 44 (19.3%) | 1,913 (31.4%) | **1,964** (30.9%) |
| **PNGTP1** Apr-Jul 2011 | 28,730 | 11,571 | 355 | **40,656** | 5,736 (20.9%) | 2,426 (20.9%) | 60 (16.9%) | **8,222** (20.2%) |
| **CP6** Oct 2011 | 2 | 123 | 3,804 | **3,929** | - | 26 (21.1%) | 1,009 (26.4%) | **1,035** (26.2%) |
| **CP7** Nov-Dec 2011 | 52 | 245 | 4,212 | **4,509** | 1 (1.9%) | 19 (7.8%) | 1,429 (33.8%) | **1,449** (32%) |
| **PNGTP2** Jan-Mar 2012 | 28,312 | 9607 | 2,008 | **39,927** | 6,933 (24.4%) | 1,540 (16%) | 501 (24.9%) | **8,974** (22.4%) |
| **CP8** Sep-Oct 2012 | 20 | 140 | 6,014 | **6,174** | 2 (10%) | 30 (21.4%) | 2,164 (35.9%) | **2,196** (35.5%) |
| **PNGTP3** Apr-Jun 2013 | 23,396 | 5,960 | 564 | **29,920** | 2,572 (10.9%) | 639 (10.7%) | 27 (4.7%) | **3,238** (10.8%) |
| **CP9** Nov-Dec 2013 | 29 | 135 | 4,296 | **4,460** | 0 | 3 (2.2%) | 86 (2%) | **89** (2%) |
| **TOTAL** | **246,747** | **106,214** | **45,063** | **398,024** | **41,819 (16.9%)** | **17,418 (16.4%)** | **11,951 (26.5%)** | **71,188 (17.9%)** |

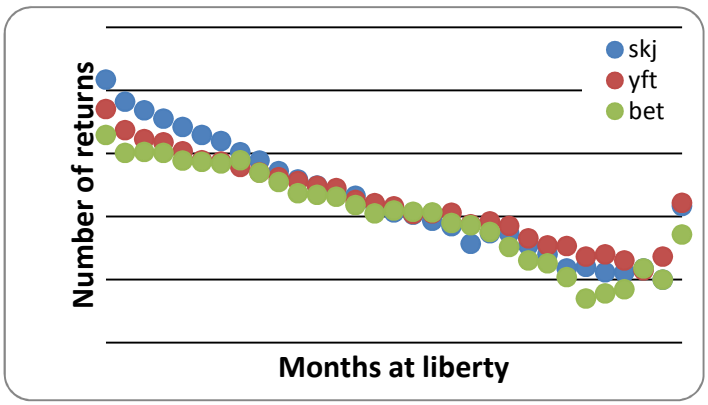



**Figure 4. Tag recoveries by time at liberty for skipjack, yellowfin and bigeye tuna.**

**Table 6. Comparison of archival and conventional tag recoveries by species and cruise.**

| Cruises | ARCHIVAL Recoveries % (number tagged) | | | | CONVENTIONAL Recoveries% (number tagged) | | | |
|---|---|---|---|---|---|---|---|---|
| | SKJ | YFT | BET | Total | SKJ | YFT | BET | Total |
| **PNG 1** Aug-Nov 2006 | 100% (1) | 37% (46) | 44% (25) | **40.3%** (72) | 18.9% (13,947) | 23.1% (7,706 ) | 40.7% (520) | **20.9%** (22,216) |
| **PNG 2** Feb-May 2007 | 0% (1) | 8.6% (187) | 0% (23) | **7.6%** (211) | 9.4% (26,492) | 13.3% (12,712) | 6.2% (123) | **10.7%** (39,284) |
| **SOL 1** Oct-Nov 2007 | | 0% (5) | 0% (7) | **0%** (12) | 26.4% (7,479) | 22% (3,568) | 12.9% (131) | **24.8%** (11,178) |
| **SOL 2** Feb-Apr 2008 | | 13.6% (22) | 0% (1) | **13%** (23) | 11.5% (15,327) | 16.8% (14,375) | 15% (414) | **14.1%** (30,116) |
| **WP1** Jun-Nov 2008 | | 0% (13) | 38.9% (36) | **28.6%** (49) | 16.9% (37,691) | 11.7% (17,634) | 24.3% (1,431) | **15.5%** (56,756) |
| **WP2** Mar-Jun 2009 | 0% (39) | 1.8% (56) | 3.7% (81) | **2.3%** (176) | 13.5% (34,168) | 17% (13,863) | 15.7% (3,064) | **14.6%** (51,095) |
| **WP3** Jul-Oct 2009 | 5.4% (56) | 7.7% (13) | 0% (1) | **5 .7%** (70) | 21.8% (30,666) | 19.5% (7,327) | 26.8% (734) | **21.5%** (38,727) |
| **CP1** May-Jun 2008 | | 40% (5) | 22% (45) | **24%** (50) | 7% (57) | 21.6% (111) | 32.8% (1,691) | **31.6%** (1,859) |
| **CP2** May-Jun 2009 | | 0% (9) | 12.7% (79) | **11.4%** (88) | 3% (169) | 13.3% (196) | 25% (2,228) | **22.6%** (2,593) |
| **CP3** Oct-Nov 2009 | | 10.7% (28) | 20.6% (107) | **18.5%** (135) | 3% (66) | 27.8% (209) | 36.8% (4,695) | **36%** (5,970) |
| **CP4** May-Jun 2010 | | 10% (20) | 5.1% (39) | **6.8%** (59) | 14.3% (7) | 10% (100) | 21.9% (2,245) | **21.4%** (2,352) |
| **CP5** Nov-Dec 2010 | | | 15.5% (58) | **15.5%** (58) | 17.5% (40) | 19.3% (228) | 31.5% (6.032) | **31%** (6,300) |
| **PNGTP1** Apr-Jul 2011 | | 15.8% (19) | 0% (3) | **13.6%** (22) | 20% (28,730) | 21.1% (11,552) | 17% (352) | **20.3%** (40,634) |
| **CP6** Oct 2011 | | 0% (2) | 13.7% (51) | **13.2%** (53) | 0% (2) | 21.5% (121) | 26.7% (3,753) | **26.5%** (3,876) |
| **CP7** Nov-Dec 2011 | 0% (30) | 0% (85) | 9.8% (92) | **4.3%** (207) | 4.5% (22) | 11.3% (160) | 34.3% (4,120) | **33.3%** (4,302) |
| **PNGTP2** Jan-Mar 2012 | | 31.6% (19) | 87.5% (8) | **48.1%** (27) | 24.7% (28,312) | 16.4% (9,588) | 24.9% (2,000) | **22.7%** (39,900) |
| **CP8** Sep-Oct 2012 | | | 44.4% (18) | **44.4%** (18) | 10% (20) | 21.4% (140) | 36% (5,996) | **35.5%** (6,156) |
| **PNGTP3** Apr-Jun 2013 | | 16.7% (30) | 0% (1) | **16.1%** (31) | 11.4% (23,396) | 11.1% (5,930) | 4.8% (563) | **11.2%** (29,889) |
| **CP9** Nov-Dec 2013 | | 100% (1) | 9.8% (41) | **11.9%** (42) | 0% 29 | 1.5% 134 | 1.9% (4,255) | **1.9%** (4418) |
| **TOTAL** | **3.1**% (127) | **10.7**% (560) | **16.2**% (716) | **12.8** % (1403) | **17%** (246,620) | **16.5%** (105,654) | **26.6%** (44,347) | **18%** (396,621) |

Tag recoveries have been received from all vessel nationalities involved in the purse seine fishery. In Table 8, we present the number of tags returned and reported as recaptured by different purse seine vessel nationalities, in relation to the catch of those vessels during the period of the PTTP (August 2006 – present). To aid interpretation, we also present the distribution of catch by vessel nationality in the WCPO and the distribution of tagged tuna at release (Figure 5). The pattern of recoveries is very similar to that reported to the steering committee at SC9 in 2013:

- The numbers of tags reported by Philippines, PNG and Solomon Islands vessels has been very high in relation to their catches.

- In the case of Philippines, this has been due to the proximity of tag releases in PNG to Philippines purse seiners fishing in PNG, and good tag recovery procedures in the main Philippines tuna unloading port of General Santos City.
- For PNG, after 3 years of tag release in the EEZ, large numbers of tags were recovered by the domestic purse seine fleet fishing in the Bismarck Sea, particularly in 2011 and 2012, and also by PNG purse seiners fishing more widely in the region but unloading their catch in Wewak – see PNG panel in Figure 5
- The large number of returns from Solomon Islands vessels reflects the highly concentrated fishing effort in the archipelagic waters of the EEZ by Solomon Islands purse seiners – see Solomon Islands panel in Figure 5 and very good cooperation in tag recovery by the two locally-based companies Trimarine and NFD. This also highlight the fish movements from the adjacent PNG EEZ.
- The good tag recovery procedures in the main unloading port of Yaizu and excellent assistance by the Japan National Research Institute of Far Seas Fisheries, resulted in a moderately high number of tags per 1,000 mt of catch.
- In the case of Vanuatu, a large number of tags have been recovered by several vessels fishing in Solomon Islands archipelagic waters.
- Chinese Taipei seiners reported a moderate level of tags per 1,000 mt from fishing in an area similar to the Japanese fleet. The lower rate of reported tags per 1,000 mt of this fleet compared to the Japanese probably reflects lower tag detection or reporting rates in transshipment operations compared to direct unloading at home port.
- United States purse seiners reported a moderate level of tags per 1,000 mt despite the fact that its main area of activity was somewhat displaced to the east of the main tag release centers in PNG. Most US recoveries came from fish that had been transshipped to Thailand, probably recaptured by vessels fishing closer to the main tag release sites.
- Korean vessels had a relatively low number of tags recovered, despite their fleet recording the highest overall catch since the start of the tagging programme. While the fishing activity of this fleet is largely to the east of the main tag release areas, it is similar to the areas fished by the United States and Vanuatu fleets.
- Some of the smaller fleets, such as Marshall Islands and New Zealand, reported a very low numbers of tags per 1000 mt, possibly due to their more easterly distribution of fishing effort.

Overall, most of the variability in numbers of tags returned in relation to the catch of the various fleets is potentially explainable due to the operational characteristics of these fleets.

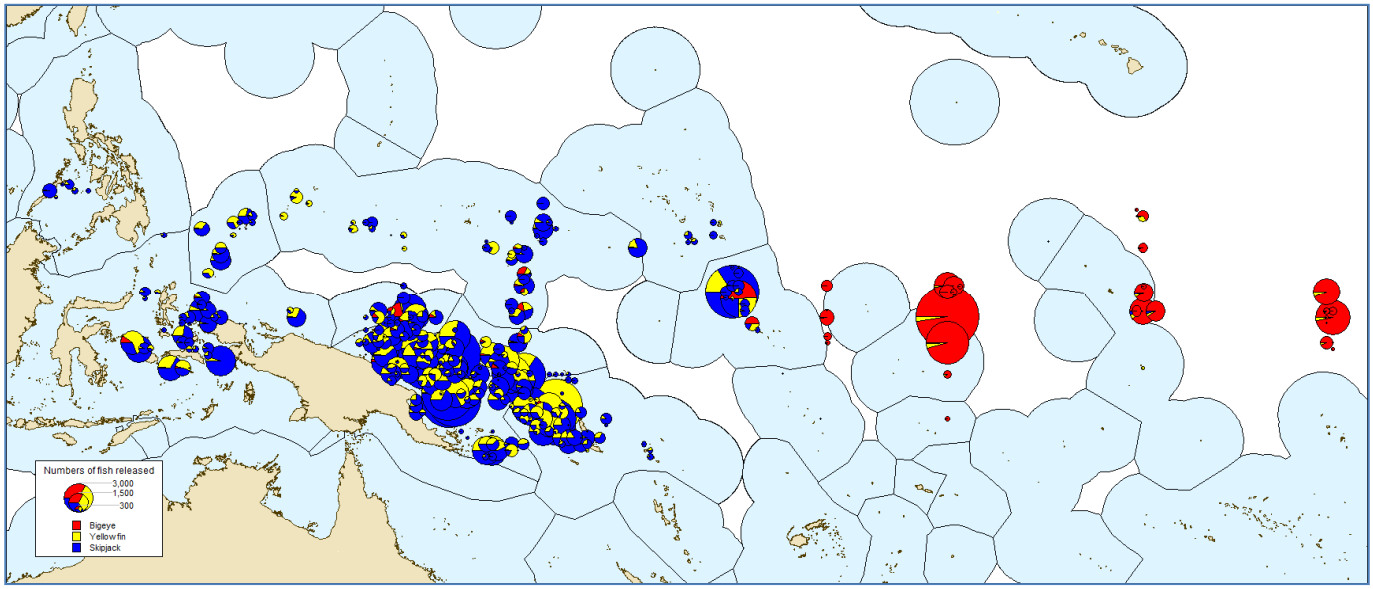
The accuracy of information returned from tags recovered on fishing vessels remains higher than that received from canneries or via transshipment (Figure 6). The information from transshipment on date and location of recovery is typically reported as unknown.

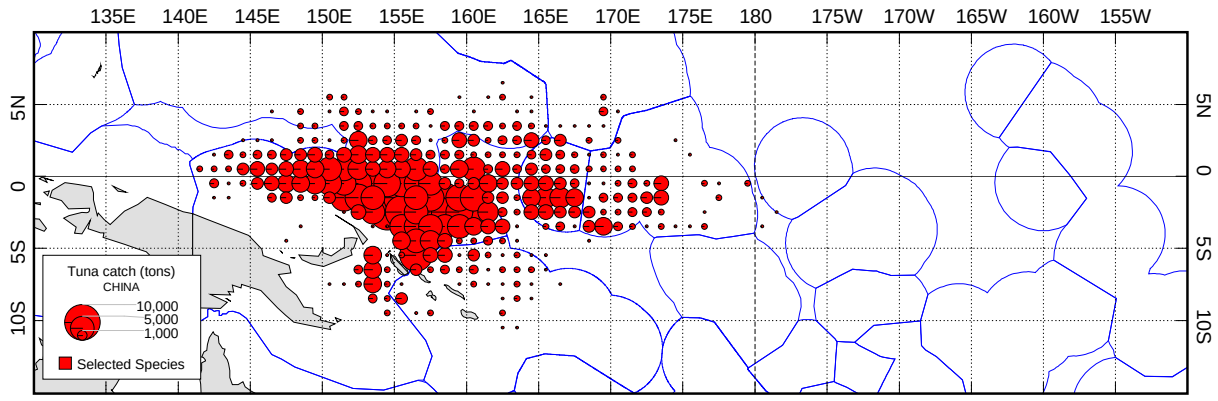
**Table 7. Tag returns by gear type and by project for fish at liberty for at least 1 year before recovery**

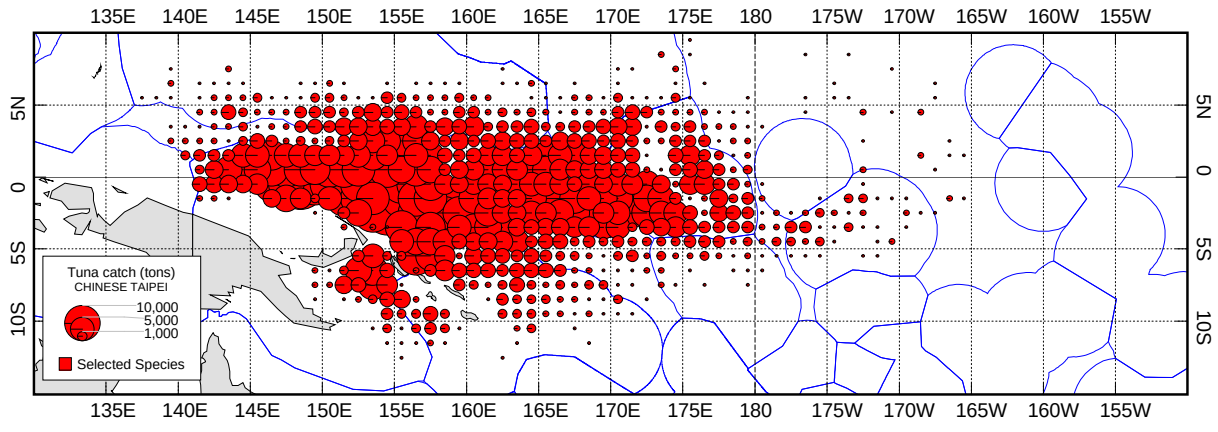
| Project | Nb. Recoveries | | Purse Seine | | Longline | | Pole & Line | | Other | | Unclassified | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | YFT | BET | YFT | BET | YFT | BET | YFT | BET | YFT | BET | YFT | BET |
| PTTP Phase 1 - Papua New Guinea tagging project | 408 | 9 | 361 | 6 | 13 | 1 | 1 | 0 | 18 | 0 | 15 | 2 |
| PTTP Phase 1 - Solomon Islands tagging project | 271 | 8 | 262 | 8 | 2 | 0 | 0 | 0 | 1 | 0 | 6 | 0 |
| PTTP Phase 2 - Central Pacific #1 | 0 | 84 | 0 | 74 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 8 |
| PTTP Phase 2 - Central Pacific #2 | 4 | 86 | 3 | 77 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 6 |
| PTTP Phase 2 - Central Pacific #3 | 2 | 194 | 1 | 176 | 0 | 5 | 0 | 0 | 0 | 1 | 1 | 12 |
| PTTP Phase 2 - Central Pacific #4 | 1 | 53 | 1 | 50 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| PTTP Phase 2 - Central Pacific #5 | 6 | 342 | 6 | 336 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| PTTP Phase 2 - Central Pacific #6 | 3 | 87 | 3 | 85 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| PTTP Phase 2 - Central Pacific #7 | 0 | 174 | 0 | 170 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| PTTP Phase 2 - Central Pacific #8 | 0 | 25 | 0 | 23 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| PTTP Phase 2 - Western Pacific #1 | 152 | 12 | 130 | 11 | 1 | 0 | 2 | 0 | 14 | 0 | 5 | 1 |
| PTTP Phase 2 - Western Pacific #2 | 263 | 41 | 241 | 21 | 9 | 13 | 0 | 0 | 3 | 4 | 10 | 3 |
| PTTP Phase 2 - Western Pacific #3 | 160 | 23 | 147 | 20 | 1 | 3 | 0 | 0 | 7 | 0 | 5 | 0 |
| PNGTP - Papua New Guinea #1 | 227 | 2 | 215 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 8 | 0 |
| PNGTP - Papua New Guinea #2 | 188 | 37 | 186 | 37 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| PNGTP - Papua New Guinea #3 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1688 | 1177 | 1559 | 1096 | 31 | 37 | 3 | 0 | 43 | 7 | 52 | 37 |

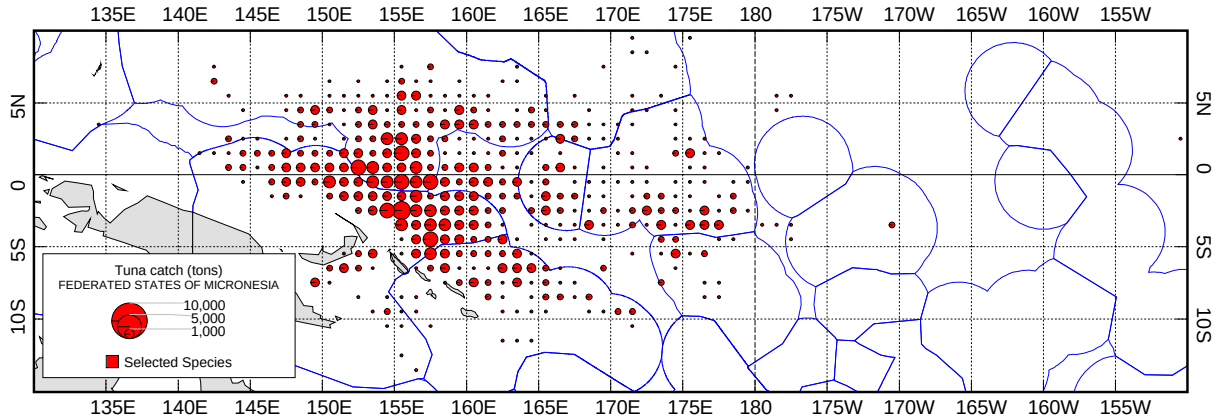
**Table 8. Tag returns by purse-seine vessel nationality per 1,000 mt of total purse-seine catch of that nationality for the period 1 August 2006 to 31 December 2013 within the boundary of 130°E to 180°E longitude and 10°N to 15°S latitude.**

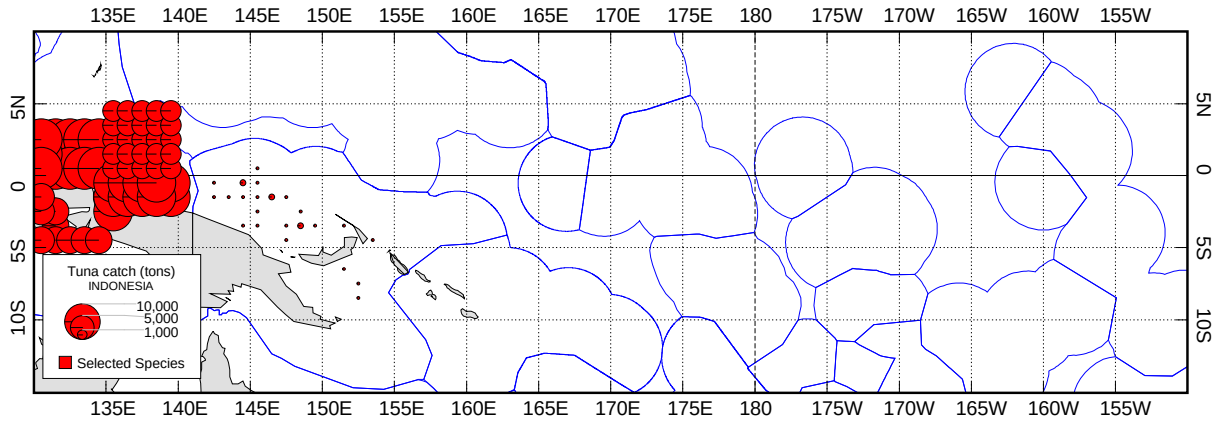
| Vessel Nationality | Number of tags returned | Tags returned/1,000 mt of catch |
|---|---|---|
| China | 32 | 0.07 |
| Spain | 120 | 0.51 |
| FSM | 294 | 1.7 |
| Indonesia | 808 | 1.7 |
| Japan | 2329 | 1.79 |
| Kiribati | 37 | 0.15 |
| Korea | 429 | 0.23 |
| Marshall Islands | 119 | 0.26 |
| New Zealand | 7 | 0.05 |
| Papua New Guinea | 9598 | 5.86 |
| Philippines | 13335 | 13.73 |
| Solomon Islands | 6115 | 35.11 |
| Chinese Taipei | 1254 | 0.84 |
| USA | 616 | 0.39 |
| Vanuatu | 1652 | 6.03 |

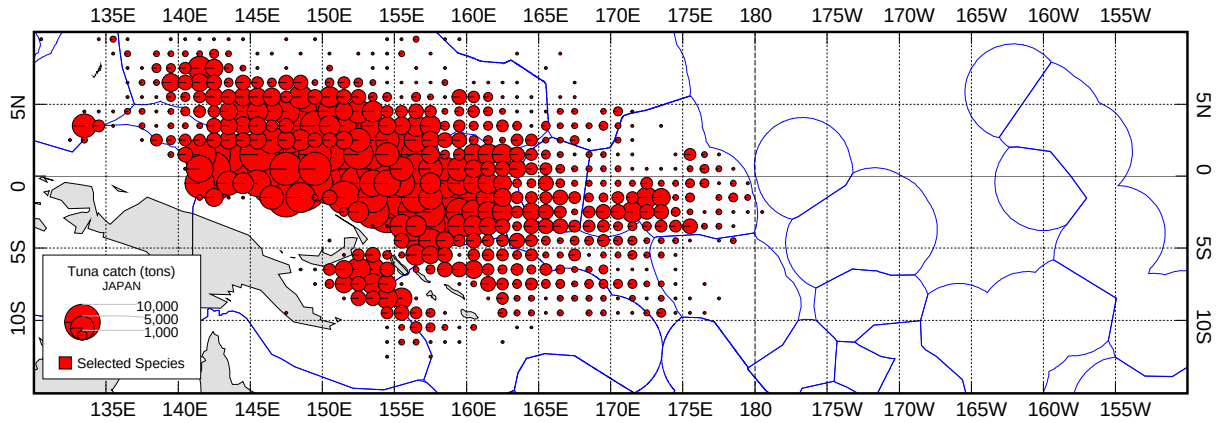

Numbers of fish released
3,000
1,500
300
Bigeye
Yellowfin
Skipjack

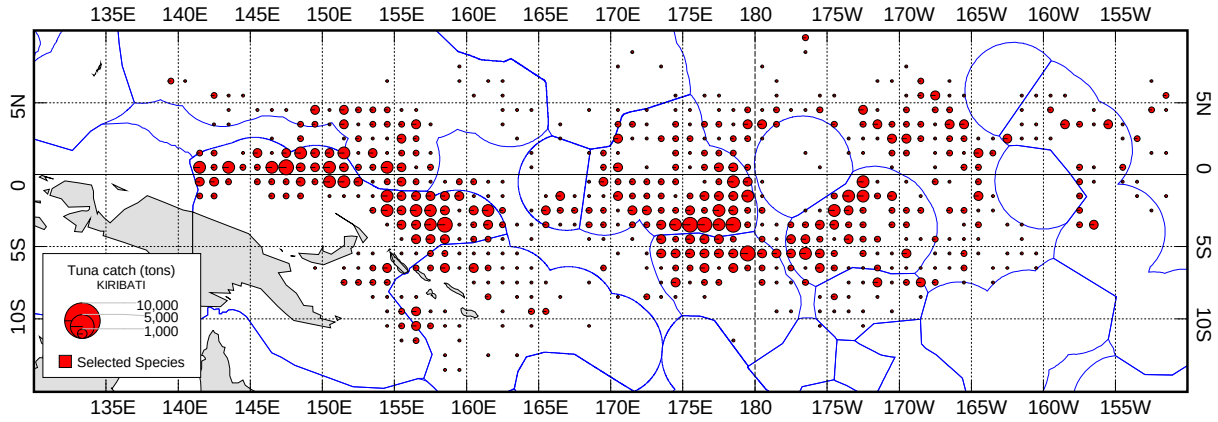

135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
CHINA
10,000
5,000
1,000
Selected Species

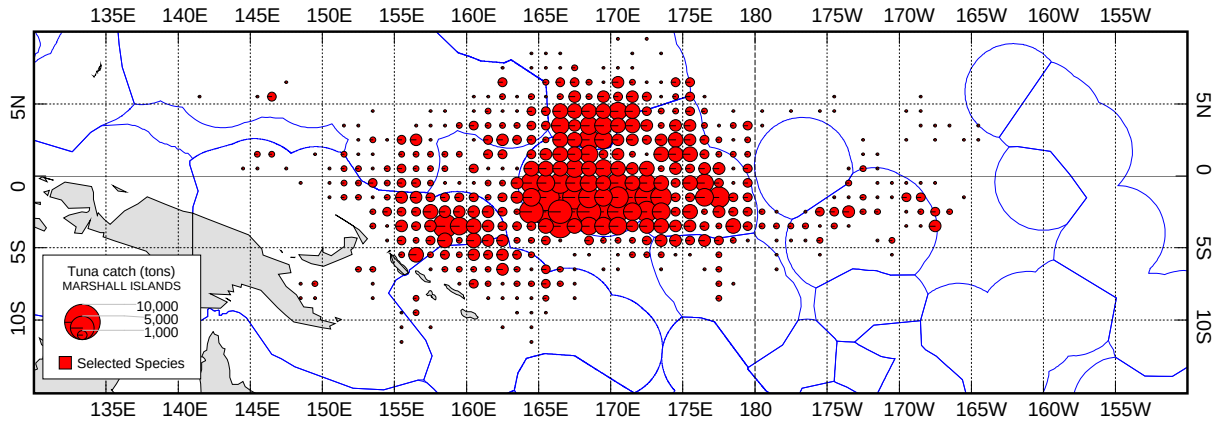

135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
CHINESE TAIPEI
10,000
5,000
1,000
Selected Species

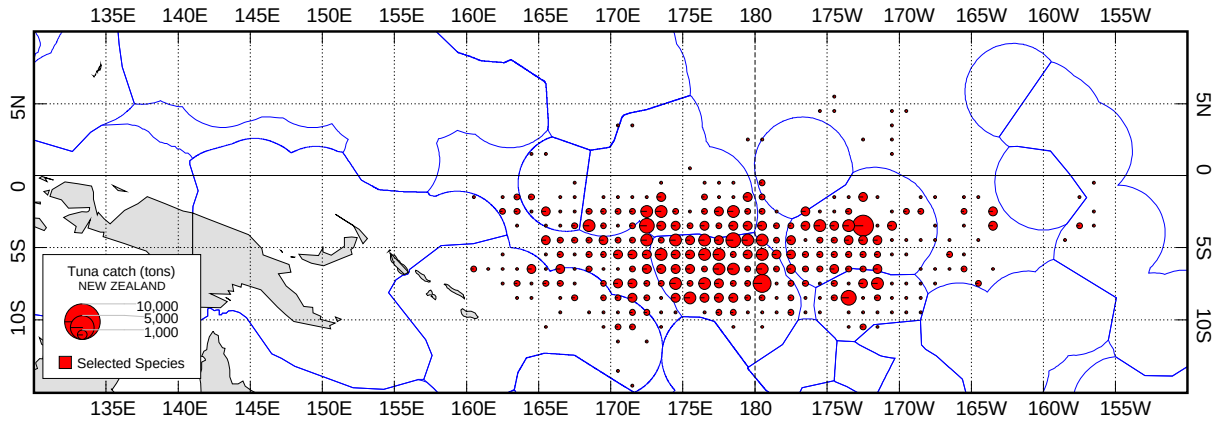

135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
FEDERATED STATES OF MICRONESIA
10,000
5,000
1,000
Selected Species

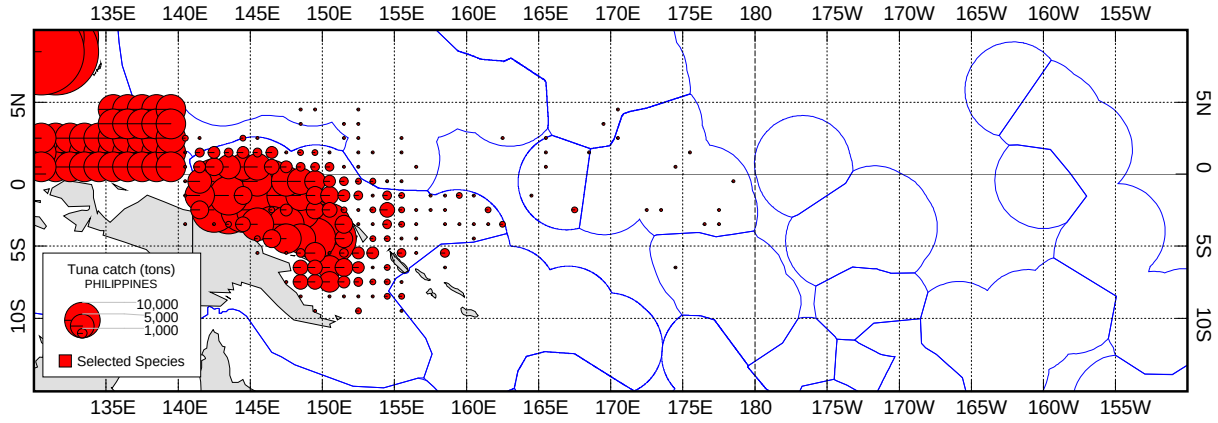

135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
INDONESIA
10,000
5,000
1,000
Selected Species

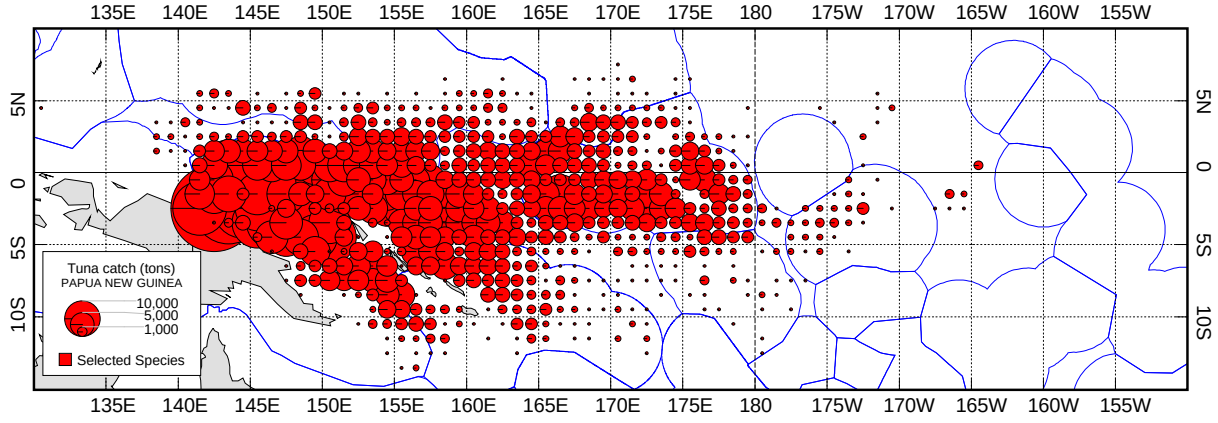

135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
JAPAN
10,000
5,000
1,000
Selected Species

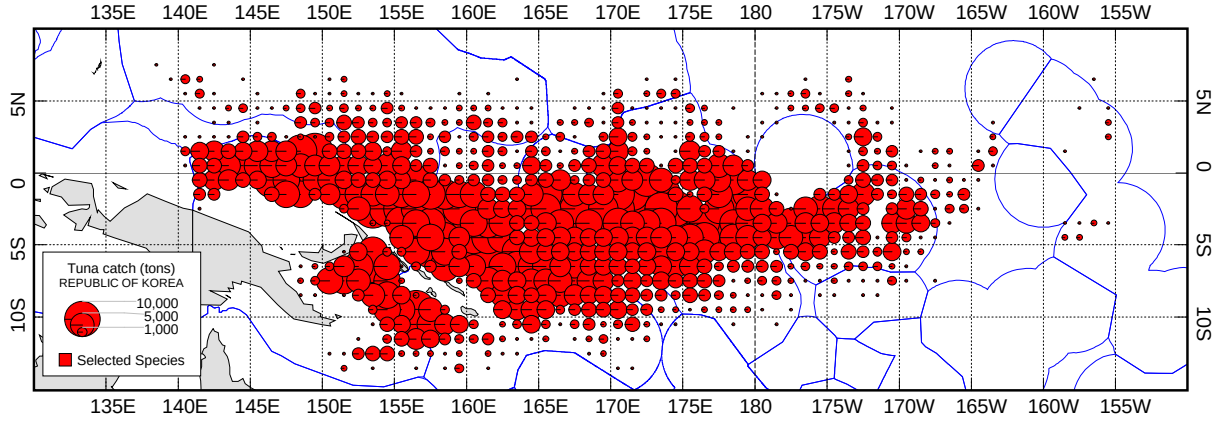

135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
KIRIBATI
10,000
5,000
1,000
Selected Species


135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
MARSHALL ISLANDS
10,000
5,000
1,000
Selected Species


135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
NEW ZEALAND
10,000
5,000
1,000
Selected Species


135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
PHILIPPINES
10,000
5,000
1,000
Selected Species


135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
PAPUA NEW GUINEA
10,000
5,000
1,000
Selected Species


135E 140E 145E 150E 155E 160E 165E 170E 175E 180 175W 170W 165W 160W 155W
5N
0
5S
10S
Tuna catch (tons)
REPUBLIC OF KOREA
10,000
5,000
1,000
Selected Species

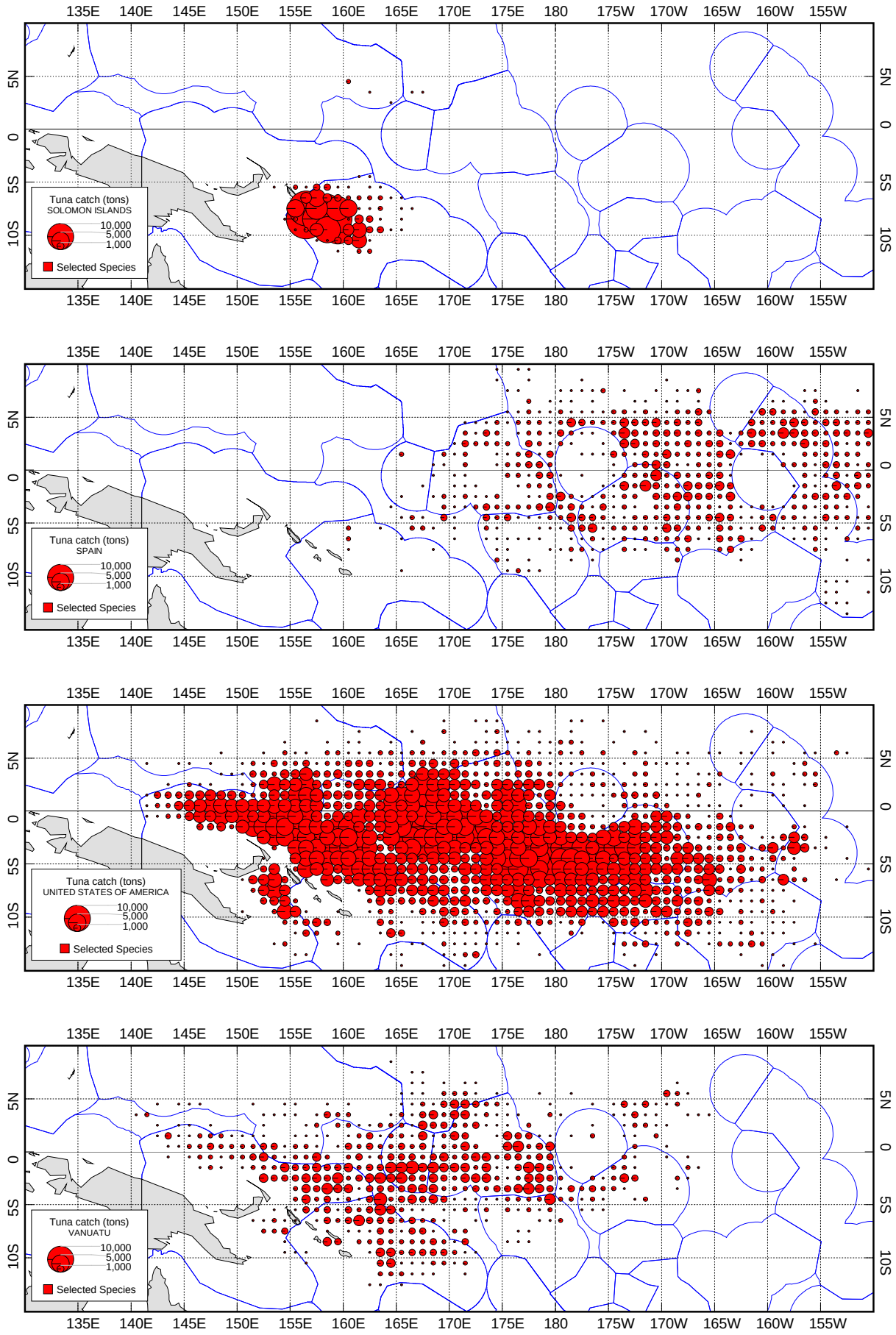



**Figure 5. Top Panel. Distribution map of tag releases from 2006-2013. Lower panels. Maps showing the distribution of total catch between 1 August 2006 and 31 December 2013 for the major purse-seine fleets operating in the WCPO.**

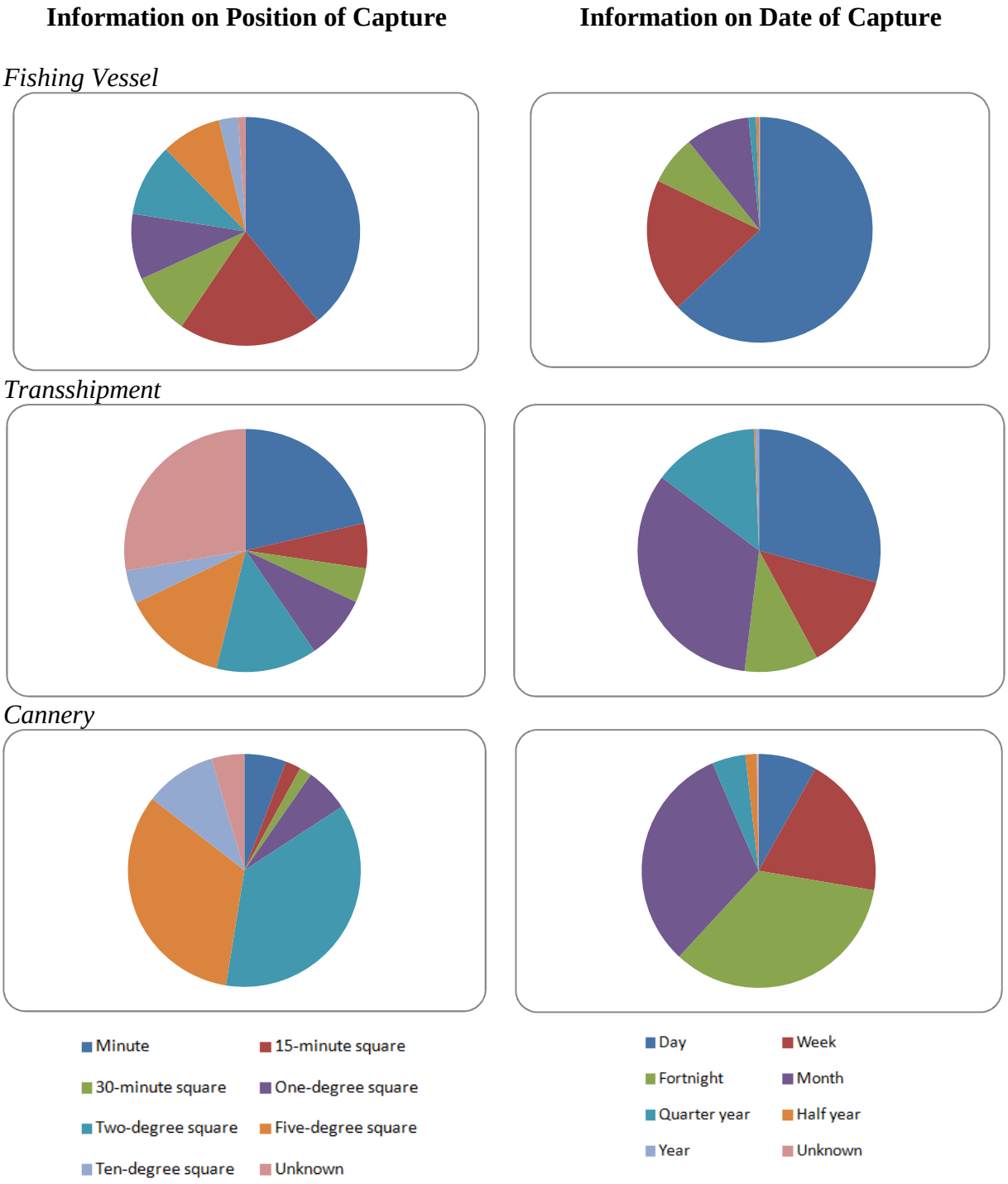



**Figure 6. Location and date of tag recovery accuracy information for recoveries on fishing vessels, during transshipment and at canneries.**

## Tag Recovery

Full-time Tag Recovery Officers continue their duty in Wewak, Madang, Lae, Honiara, Rabaul, Tarawa, Philippines and Manta. These officers are coordinated by the central TRO at SPC. All full time TRO (excepted for Rabaul) and TRO in Thailand are still entering data in a specialized database that allows importation of recovery information directly into an SPC Database. This database has been improved to incorporate more data control systems and to capture information regarding transhipment if tags are reported from carriers unloading at port and Canneries. Recovery information is received at SPC on a monthly basis. The establishment of these positions has provided greater opportunity for collection of tags during unloading, transhipments and processing in canneries with more complete and reliable

capture information. Major unloading and processing facilities as well as transshipping vessels in port have been visited by TROs over the last 12 months.

## Tag Seeding

From February 2007 to June 2014, 412 tag seeding kits (consisting of seeding tags, applicators, guide books and data forms) for a total of 8,093 tags have been given to observer coordinators and TRO in PNG, Solomon Islands, Fiji, FSM, Marshall Islands, Kiribati, New Zealand and American Samoa for deployment onboard purse seine vessels by senior observers. Since 2011, kits have been modified to contain a mix of steel head and plastic barb tags to test the effect of tag type. When a kit is not completely deployed during a trip, the kit is either kept aside or used in another kit for deployment. Table 9 details the number of seeded tags deployed per EEZ to date.

**Table 9: Number of seeded tags deployed per EEZ since the beginning of the project**

| EEZ | Nb of tag released |
|---|---|
| Not known yet | 3406 |
| American Samoa | 2 |
| Cook Islands | 20 |
| Federated states of Micronesia | 137 |
| Fiji | 7 |
| Gilbert Islands | 207 |
| Howland & Baker | 4 |
| Indonesia | 7 |
| International waters H4 | 53 |
| International waters H5 | 40 |
| International waters I2 | 109 |
| Jarvis | 5 |
| Marshall Islands | 25 |
| Nauru | 20 |
| Papua New Guinea | 928 |
| Phoenix Islands | 196 |
| Solomon Islands | 336 |
| Tokelau | 126 |
| Tuvalu | 234 |
| **Total tag deployed** | **5862** |

To aid in the implementation of tag seeding experiments, training is provided as part of the PIRFO Observer training courses. Tag Recovery Officers in the ports of Pohnpei, Honiara, Lae, Madang, Wewak and Tarawa continue to liaise closely with Observer coordinators, Observer debriefers and observers to implement tag seeding experiments and to recover the tag seeding logs for deployed kits. Tag seeding debriefing material are used by TROs.

Of the 412 kits distributed to observer coordinators, 303 have been given to observers for deployment, of which 283 tag seeding datasheets have been received for these observer trips. Currently, SPC is holding returned seeded tags from an additional 20 kits for which the datasheets have not yet been provided. It is worth noting that it can take 6 months or more for datasheets to be returned. Logsheets have not been returned for 8 tag seeding kits that have been deployed since January 2014.

Since June 2013, 52 kits have been deployed, using a total of 1,341 tags. This is a similar rate of deployment in comparison to last years (60 kits for 1597 tags)

As at 23rd June 2014, there have been 5,862 reported tags that have been seeded and 3,111 of these have been returned to SPC. In addition to allowing estimation of tag reporting rates, the tag seeding data also allow the error rate in tag return information to be determined. Tables 10 and 11 detail the reporting of vessel name by location and cannery. The accurate reporting of vessel name is particularly important for validation of location and time of recapture using VMS and log book data. Vessel name was reported incorrectly for 623 tags, was absent from the recovery information for 145 tags and was correct for 2,286 tags.

**Table 10: Vessel reported per locations of recovery**

| Recovery location | All tag recoveries | Tag seeding recoveries (TSR) | Wrong vessel reported(TSR) | No vessel reported (TSR) | Correct vessel reported (TSR) | % correct vessel |
|---|---|---|---|---|---|---|
| GENERAL SANTOS, Philippines | 8167 | 177 | 80 | 18 | 79 | 44.6% |
| HONIARA, Solomon | 653 | 439 | 12 | 2 | 425 | 96.8% |
| LAE, PNG | 4949 | 167 | 43 | 3 | 121 | 72.5% |
| MADANG, PNG | 2407 | 242 | 33 | 0 | 209 | 86.4% |
| MAJURO, Marshall | 900 | 114 | 20 | 1 | 93 | 81.6% |
| MANTA, Ecuador | 858 | 27 | 8 | 0 | 19 | 70.4% |
| NORO, Solomon | 8257 | 50 | 20 | 1 | 29 | 58.0% |
| PAGO PAGO, A. Samoa | 1353 | 412 | 37 | 22 | 353 | 85.7% |
| POHNPEI, FSM | 768 | 73 | 7 | 0 | 66 | 90.4% |
| PORT MORESBY, PNG | 421 | 76 | 15 | 0 | 61 | 80.3% |
| RABAUL, PNG | 225 | 45 | 28 | 0 | 17 | 37.8% |
| SAMUTSAKOM, Thailand | 9685 | 537 | 199 | 6 | 332 | 61.8% |
| SAN DIEGO, USA | 8031 | 167 | 39 | 70 | 58 | 34.7% |
| SHIMIZU, Japan | 2987 | 7 | 6 | 1 | 0 | 0.0% |
| TARAWA, Kiribati | 680 | 95 | 1 | 0 | 94 | 98.9% |
| VIDAR, PNG | 6959 | 192 | 14 | 0 | 178 | 92.7% |
| WEWAK, PNG | 6552 | 234 | 77 | 0 | 157 | 67.1% |

**Table 11: Vessel reported per cannery (Thailand)**

| Cannery name (Thailand only) | Tag seeding recoveries | Wrong vessel reported | No vessel reported | Correct vessel reported | % correct vessel reported |
|---|---|---|---|---|---|
| Asian Alliance International | 11 | 0 | 1 | 10 | 91% |
| CHOTIWAT | 15 | 6 | 0 | 9 | 60% |
| EKSAKHON COLD STORAGE CO., LTD | 30 | 5 | 0 | 25 | 83% |
| ISA VALUE | 6 | 1 | 0 | 5 | 83% |
| PATAYA FOOD INDUSTRIES LTD. | 127 | 91 | 0 | 36 | 28% |
| R.S. Cannery Co., Ltd. | 33 | 8 | 0 | 25 | 76% |
| SEAPAC | 27 | 5 | 0 | 22 | 81% |
| Songkla Canning PLC. | 62 | 35 | 0 | 27 | 44% |
| SOUTHEAST ASIAN PACKAGING | 22 | 3 | 0 | 19 | 86% |
| Thai Union Manufacturing Co. | 31 | 3 | 0 | 28 | 90% |
| TROPICAL CANNING (THAILAND) | 9 | 2 | 0 | 7 | 78% |
| Unicord Public Co., Ltd. | 86 | 16 | 1 | 69 | 80% |

## Analyses of Movement

Movement trends observed from both conventional and archival tags are consistent with expectations for highly migratory species with larger movements positively related to time at liberty (Figure 6). Vertical movements are reported in WCPFC-SC9-2013/RP-PTTP-03.

The steering committee is directed to the following documents which detail the analyses of movement and mixing undertaken since SC8; WCPFC-SC9-2013/SA-IP-06 and WCPFC-SC9-2013/SA-IP-11.

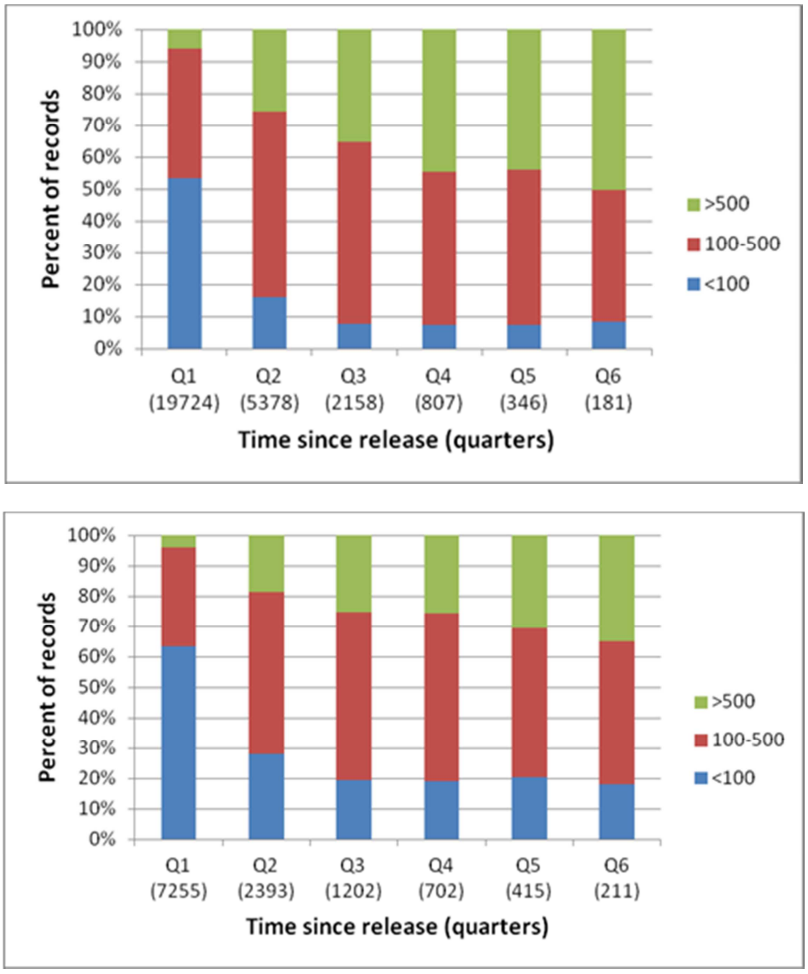



**Figure 7. Reported recoveries within 100 nm, 100-500 nm and >500 nm in the first 6 quarters (18 months) since release for skipjack (upper graph) and yellowfin (lower graph). The sample size for each quarter is provided in the parentheses below the quarter label on the x-axis.**

A number of analyses are being undertaken to use the PTTP tagging data to estimate movement and mortality rates. This includes the relatively coarse resolution (Multifan-CL), and relatively high resolution models (SEAPODYM, TAGEST). The steering committee is directed to WCPFC-SC9-2013/EB-WP-03.

## Stock Assessment Data Preparation

Verification of the large number of recoveries received (~ 71,100), mostly with good data, but all in need of corroboration from logsheets and VMS matching is an ongoing task. Approximately 50,000 recovery records have been verified with VMS. Verification of the remaining tags is expected to be completed in 2014. Table 12 documents the number verified and data quality associated with the tags by source. The incorporation of the tagging data into the stock assessments is described in WCPFC-SC10-2014/SA-IP-06.

**Table 12. Tag recoveries by source and validation.**

| Source | Recov. | % Valid | % VMS | % Logsheet | % Archival | % Buffer | % Other | % None | % No vessel name | % Vessel but no date | % Vessel but no position | % No length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| American Samoa | 1778 | 96.01 | 93.91 | 0.23 | 0.18 | 0 | 0.41 | 5.27 | 3.6 | 0.22 | 23.73 | 23.34 |
| China | 17 | 70.59 | 8.33 | 0 | 0 | 0 | 0 | 91.67 | 76.47 | 0 | 5.88 | 70.59 |
| Fishing vessel | 543 | 90.79 | 81.34 | 1.83 | 0 | 0 | 15.62 | 1.22 | 1.84 | 0.74 | 3.68 | 3.68 |
| FSM | 546 | 72.89 | 99.5 | 0.5 | 0 | 0 | 0 | 0 | 2.56 | 0.55 | 10.07 | 30.4 |
| FSM (SPC) | 180 | 40.56 | 93.15 | 2.74 | 1.37 | 0 | 0 | 2.74 | 1.11 | 0 | 5.56 | 3.33 |
| IATTC | 9015 | 21.52 | 41.86 | 5.26 | 1.6 | 0 | 13.4 | 37.89 | 22.8 | 10.73 | 15.09 | 72.35 |
| Indonesia | 5984 | 83.36 | 0.12 | 0 | 0 | 96.31 | 3.15 | 0.42 | 2.06 | 0.02 | 5.03 | 5.6 |
| IOTC | 10 | 30 | 33.33 | 0 | 0 | 0 | 0 | 66.67 | 50 | 0 | 50 | 20 |
| Japan | 3002 | 76.98 | 92.25 | 3.89 | 0 | 0 | 0.65 | 3.2 | 3.66 | 4.76 | 20.05 | 4.76 |
| Kiribati (Kiritimati) | 222 | 79.73 | 90.96 | 0 | 2.26 | 0 | 0 | 6.78 | 5.86 | 1.35 | 23.42 | 7.66 |
| Kiribati (Tarawa) | 755 | 68.61 | 81.08 | 0.19 | 0.77 | 0 | 0.77 | 17.18 | 27.68 | 1.99 | 15.5 | 6.89 |
| Korea | 610 | 68.69 | 16.47 | 1.43 | 0.24 | 0 | 0.48 | 81.38 | 82.3 | 0 | 4.1 | 9.84 |
| Marshall Islands | 841 | 90.61 | 86.75 | 10.89 | 0.39 | 0 | 0.52 | 1.44 | 1.9 | 0.95 | 10.82 | 27.82 |
| Nauru | 2 | 100 | 0 | 0 | 0 | 0 | 0 | 100 | 50 | 0 | 50 | 50 |
| Other | 206 | 58.25 | 69.17 | 2.5 | 3.33 | 0 | 6.67 | 18.33 | 16.02 | 0 | 14.08 | 28.64 |
| Philippines (direct) | 8237 | 49.64 | 66.94 | 6.48 | 0.05 | 0 | 5.75 | 20.79 | 11.97 | 4.01 | 30.69 | 66.52 |
| Philippines (Frabelle) | 327 | 43.12 | 97.16 | 0.71 | 2.13 | 0 | 0 | 0 | 3.98 | 3.67 | 1.22 | 29.05 |
| Philippines (NFRDI) | 175 | 39.43 | 75.36 | 5.8 | 0 | 0 | 5.8 | 13.04 | 10.29 | 0 | 10.29 | 13.71 |
| PNG (China Fisheries Association) | 7 | 14.29 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85.71 | 85.71 |
| PNG (Dologen ltd) | 1 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PNG (Fairwell Fishery) | 28 | 42.86 | 75 | 8.33 | 0 | 0 | 0 | 16.67 | 3.57 | 10.71 | 39.29 | 32.14 |
| PNG (Fong Seong Fishery) | 7 | 14.29 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 28.57 | 28.57 | 0 |
| PNG (Frabelle) | 6372 | 68 | 85.18 | 13.09 | 0.07 | 0 | 0.05 | 1.62 | 1.08 | 1.15 | 3.39 | 7.2 |
| PNG (Korean Overseas Association) | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 33.33 | 33.33 | 33.33 |
| PNG (Luminar Fishing) | 12 | 25 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 8.33 | 16.67 | 0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PNG (NFA) | 489 | 70.55 | 80 | 7.54 | 0.58 | 0 | 1.45 | 10.43 | 18 | 0.41 | 12.47 | 23.72 |
| PNG (other) | 1008 | 57.24 | 61.7 | 1.04 | 0 | 0 | 0.17 | 37.09 | 6.25 | 3.37 | 14.38 | 10.81 |
| PNG (Pacific Blue Sea Fishing) | 249 | 29.32 | 89.04 | 10.96 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0 |
| PNG (RBL Fishing) | 927 | 48.11 | 98.65 | 0 | 0 | 0 | 0 | 1.35 | 0 | 1.4 | 7.77 | 7.01 |
| PNG (RD) | 9297 | 93.37 | 78.49 | 18.74 | 0.06 | 0 | 0.07 | 2.64 | 0.48 | 0.43 | 2.4 | 3.9 |
| PNG (RR Fishing) | 30 | 73.33 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PNG (Sepik Coastal Agencie) | 10 | 100 | 90 | 0 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| PNG (SST) | 1421 | 53.98 | 79.27 | 15.12 | 0 | 0 | 0 | 5.61 | 4.22 | 1.06 | 58.76 | 34.62 |
| PNG (Taiwan Deep Sea Association) | 19 | 89.47 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 5.26 | 15.79 | 5.26 |
| PNG (TPJ Fishing) | 1764 | 49.89 | 90.45 | 0.11 | 0.11 | 0 | 0.68 | 8.64 | 4.37 | 1.13 | 3.29 | 5.44 |
| PNG (TSP Marine) | 443 | 47.63 | 99.05 | 0.47 | 0 | 0 | 0 | 0.47 | 0 | 1.13 | 7.45 | 0.68 |
| Solomon Islands (Global Investment) | 1075 | 91.81 | 84.09 | 13.48 | 0 | 0 | 0 | 2.43 | 8.65 | 0.74 | 1.67 | 56.19 |
| Solomon Islands (Korean Deep Sea Association) | 329 | 62.01 | 100 | 0 | 0 | 0 | 0 | 0 | 0.3 | 3.65 | 7.9 | 3.95 |
| Solomon Islands (MFMR) | 275 | 72.36 | 88.44 | 7.54 | 3.02 | 0 | 0 | 1.01 | 15.64 | 0 | 14.55 | 10.18 |
| Solomon Islands (NFD) | 3997 | 89.09 | 62.48 | 37.32 | 0.03 | 0 | 0 | 0.17 | 0.2 | 0.15 | 3.73 | 3.25 |
| Solomon Islands (other) | 165 | 85.45 | 94.33 | 1.42 | 0 | 0 | 0 | 4.26 | 11.52 | 3.03 | 12.12 | 24.24 |
| Solomon Islands (Soltai) | 3070 | 86.19 | 86.21 | 11.79 | 0 | 0 | 0.6 | 1.4 | 7.13 | 0.16 | 1.53 | 2.7 |
| Solomon Islands (Taiwan Deep Sea Association) | 559 | 95.71 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 1.79 | 1.97 | 1.07 |
| Solomon Islands (Western Solomon ventures limited) | 11 | 63.64 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 27.27 | 27.27 | 9.09 |
| Tagging vessel | 217 | 33.18 | 4.17 | 0 | 0 | 0 | 94.44 | 1.39 | 0.46 | 0 | 10.14 | 1.38 |
| Taiwan | 66 | 93.94 | 95.16 | 0 | 0 | 0 | 0 | 4.84 | 0 | 0 | 24.24 | 0 |
| Thailand | 10226 | 66.79 | 93.87 | 3.75 | 0.09 | 0 | 0.06 | 2.24 | 0.99 | 0 | 95.67 | 1.19 |
| Vanuatu | 31 | 22.58 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 3.23 | 3.23 | 3.23 |

# ALBACORE TAGGING

A description of albacore tagging activities was outlined previously in SC6 GN IP-06 and SC5 GN IP-16. Since SC9, 3 additional tag recaptures have been reported bringing the total to 23 recoveries (0.8%) for the project. Movements of fish recaptured from which we received accurate recovery position are displayed in Figure 8.

**Figure 8. Release-recovery arrow map for albacore tags reported to SPC**

# PTTP 2014-2015 work plan

| | Task | 2014 | 2015 |
|---|---|---|---|
| **TAGGING** | | | |
| 1. | **CP10**<br>*Background*: 4 week cruise focusing upon the NOAA TAO Oceanographic Buoys along the 170°W meridian (waters of Kiribati, Phoenix Islands and High Seas). This is the tenth Central Pacific cruise designed to improve overall spatial coverage of PTTP tag releases in areas difficult to access between the Date line and French Polynesia and investigate movement parameters and vertical habitat utilization of tuna in the central Pacific region. This cruise will be undertaken in collaboration with ISSF and Trimarine to study residential time of tuna and bycatch around drifting fads. The cruise will charter the *FV Pacific Sunrise*, a multi-purpose pelagic handline/longline vessel which is based in Nuku'alofa, Kingdom of Tonga.<br>*Target*: BET 1,000 conventional tags; BET & YFT 50 Archival Tags, equip 3 drifting fads with sonic listening station | | |
| 2. | Additional CP cruise(s) subject to funding | | |
| **TAG RECOVERY** | | | |
| 1. | Support of TROs in PNG, Philippines, Thailand, Indonesia, key Pacific Island locations and in Ecuador | | |
| **TAG SEEDING (continuation beyond 2014 will depend of the implementation of more tagging experiments)** | | | |
| 1. | Prioritize continued tag seeding in order to improve understanding of the processes involved in tag reporting | | |
| 2. | Support locally based tag seeding co-ordinators | | |
| 3. | Undertake Observer training in tag seeding | | |
| **DATA MANAGEMENT** | | | |
| 1. | PTTP data verification with VMS and Logbook | | |
| 2. | Consolidation of the web tagging framework | | |
| 3. | Migration of all WCPO tagging data into single database | | |
| 4. | Development of country specific PTTP web pages | | |
| **DATA ANALYSES** | | | |
| 1. | **Tag reporting and seeding**<br>*Purpose*: Critical for any estimation of fishing mortality as it is a direct scalar for fishing mortality.<br>*Tasks:* (1) Routine update of analyses performed in 2014; | | |
| 2. | **Movement (horizontal)**<br>*Purpose*: Define regional structure of stock assessment models and provide estimation of mixing rates.<br>*Tasks*: (1) Routine update of analyses performed in 2014; | | |
| 3. | **Fishing and natural mortality**<br>*Purpose*: Provide external validation to estimates from within MFCL and identify fishing mortality changes in response to expansion of the WCPO fisheries.<br>*Tasks*: (1) Routine update of analyses performed in 2014. | | |