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TRENDS IN THE SOUTH PACIFIC ALBACORE LONGLINE AND TROLL FISHERIES

WCPFC-SC13-2017/SA-WP-08

Stephen Brouwer[1], Graham Pilling[1], Peter Williams[1] and the WCPFC Secretariat

[1] **Oceanic Fisheries Programme, The Pacific Community (SPC)**

Contents

1 Executive Summary

This paper presents a compendium of fishery indicators for south Pacific albacore tuna, as requested at previous WCPFC-related meetings. These indicators include: total catch; catch by gear; and longline effort and nominal troll and longline CPUE trends, along with their spatial patterns. Commentary provided includes comparisons of 2016 values to 2015 and to the average over 2011-2015. Information provided includes data loaded into databases as of 5^{th} June 2017. Note that catch levels and their distribution amongst areas may change as more data become available. This paper complements the information provided by Pilling et al. (2017) that summarises the latest trends for the main target species for the fisheries of the Western and Central Pacific Fisheries Commmission (WCPFC).

Transshipment data are available over the period from the inception of transshipment reporting (July 2010) to March 2017. Data presented represent high seas transshipments only; they do not include in-port or in-zone transshipments. Monthly reported transshipment levels fluctuate notably, and may reflect logistical/operational factors rather than fishing activity. There is a notable peak in transshipment activity in August 2016 (3,668 mt) of which 56% was reported by China (2,046 mt), and 26% by Vanuatu (937 mt) fleets. It should be noted that transshipment levels are unlikely to be fully reported for the most recent 18 months.

Due to the complex interactions between the major species-specific fisheries, it is difficult to correctly interpret the stock status-related implications from the trends in any indicators in isolation from other data sets and a population dynamics model. Therefore we summarise the stock status from the most recent assessment (2015), and update an analysis of the potential long-term stock consequences of recent fishing patterns on the south Pacific albacore stock relative to the agreed biomass limit reference point assuming 2014 status quo effort. This analysis uses stochastic stock projections and incorporates the recommendations on inclusion of uncertainty from WCPFC-SC9. Based upon the 2015 stock assessment, assuming 2015 effort levels through 2015-2033, the main difference from previous reports is that, as provisional effort in 2015 was lower than levels seen in 2013 and 2014. The projected stock status is estimated to have improved slightly where the stock still declines from the 2013 level ($SB_{latest}/SB_{F=0} = 0.40$) to approximately $SB_{2033}/SB_{F=0} = 0.35$ but when compared to the biomass Limit Reference Point (SB_{LRP}) risk $SB_{2033}/SB_{F=0} < SB_{LRP} = 7\%$ rather than 20% seen in previous projections. Overall vulnerable biomass (a CPUE proxy) in longline fisheries is also estimated to decrease by 7% over that period.

2 Introduction

At the 7^{th} Technical and Compliance Committee, some members requested a paper on south Pacific albacore be prepared by the Western and Central Pacific Fisheries Commission (WCPFC) Secretariat. That request indicated the paper should contain all available catch and transshipment data available, and should highlight trends. The paper was first prepared by the Secretariat for WCPFC8 in March 2012. It has since been updated frequently, taking into consideration further requests from members.

This paper presents trends in catch, effort and Catch per Unit Effort (CPUE) both spatially and temporally for the south Pacific albacore fishery. In addition, information on transshipment patterns are presented, consistent with WCPFC and SPC-OFP (2013). Following the request for further information to assist in the interpretation of key observations, and noting that it is difficult to correctly interpret the stock status-related implications of trends in any indicators in isolation of other data sets, and population dynamics models, the potential consequences of recent fishing levels for future south Pacific albacore stock status are evaluated using stochastic projections.

The analyses presented are based on data available to SPC as of 5^{th} June 2017. The overall catch and its distribution amongst spatial areas may change as more data become available. Catch and Vessel Monitoring System (VMS) effort in archipelagic waters have been excluded from analyses for the southern WCPFC Convention Area (WCP-CA) specifically (this represents approximately 2% of the effort). Please note that the figures may include or exclude specific fleets that are included in summaries made for other purposes (e.g. CMM tables) and therefore the reported values (catch, effort, CPUE, etc.) may not be identical to those presented in other documents. Additional information by latitudinal zone,

requested at WCPFC9, are posted as Microsoft Excel files annexed to this paper (SC13-SA-WP-08a and SC13-SA-WP-08b). The vessel number data are for south of 20°S and excludes archipelagic waters.

3 Patterns of longline and troll fishing

Two groups of fleets exploit south Pacific albacore, longline and troll vessels. In this section we examine trends in their catch, effort and catch rate (CPUE). Catch and effort information come primarily from logsheet returns, or for the high seas from the provision of aggregate data from distant water fishing nations.

3.1 Catch

Annual catch estimates for albacore in the south Pacific (south of the equator) as a whole peaked in 2010 at 91,984 mt (all gears). The 2016 total south Pacific catch was 71,407 mt, a decrease from the previous few years (Figure 1). Catch by longliners represented 97% of the catch weight in 2016 at 69,195 mt. The 2016 longline catch was 12% lower than 2015. Provisional other catch (2,212 mt; the majority (2,208 mt) being by troll catch) was 16% lower than 2015.

By comparison, the 2016 total albacore catch in the south Pacific was 57,238 mt and the longline catch within the southern part of the WCP-CA [1] (excluding archipelagic waters; Table 1) was 55,114 mt, the lowest since 2007. High seas longline catch estimates represent 26% of the total, and have ranged from 26-51% of the total over the last 10 years. By flag (or attributed nationality based on charter agreements), China and Chinese Taipei had the highest catch estimates of south Pacific albacore in 2016 (13,996 mt and 11,382 mt respectively), the combined total representing 46% of the total catch Table A1-1, 43% of their catch was taken on the high seas (Table A1-2).

Four flag states reported troll catch during the period 2000 to 2016 within the WCP-CA, namely Canada, the Cook Islands, USA and New Zealand (Table A1-3) totalling 2,124 mt. Troll activity has been reported only in the New Zealand EEZ and on the high seas in 2016 (Table 2). Catch estimates for 2016 were 172 mt for the high seas and 1,952 mt for the New Zealand EEZ. The total troll catch in 2016 was 18% lower than the 2015 catch.

The spatial pattern of south Pacific albacore catch over the long-term (1950-2016), the last 5 years (2011-2016) and 2016 alone, are shown in Figure 2. In recent years, catch has been concentrated in the 10-20°S latitudinal band. Note that while 2016 estimates remain provisional, the geographic distribution of catch is generally consistent with that seen in recent years.

3.2 Effort

It is challenging to identify the specific species being targeted by longline vessels, particularly within the aggregate data received from particular fleets fishing on the high seas. To more directly relate the patterns seen in effort to the declared south Pacific albacore catch, we have evaluated fishing effort south of 10°S to approximate south Pacific albacore targeting (noting that this will include longline effort targeting swordfish) and to attempt to exclude 'tropical' longline fishery effort.

Raised effort data for the southern WCP-CA south of 10°S (excluding archipelagic waters) were available up to 2016 (Figure 3). We note there is considerable uncertainty in 2016 effort estimates. The number of deployed hooks in 2016 within the WCP-CA south of 10°S was 13% lower than in 2015, and 33% lower than the high seen in 2012. The estimated longline effort in this region was estimated at 213 million hooks in 2016.

Effort data from VMS provides the most 'up to date' information available, given that logsheet effort for recent years may be incomplete, and hence the uncertainty in raised annual logsheet effort estimates is increased. VMS data analysed represents days-at-sea and includes fishing and transit activity, but excludes data close to port. As for the aggregate longline data, it does not allow information on the

[1] Note that these annual catch estimate-based tables approximate the southern area of the WCP-CA as far as possible, given that some EEZs and high seas area span the equator.

species targeted by vessels during fishing to be assessed. In turn, some trends over time may be influenced by increased coverage of VMS across longline vessels in the south Pacific, while data for certain EEZs may be incomplete or non-existent. A list of notes on the VMS data and a table of effort by high seas area are provided in Appendix 2. To overcome the absence of VMS data for some EEZs, data were augmented with logsheet information in these locations.

Effort south of 10^{o}S (VMS days-at-sea, augmented by logsheet days) both within EEZs and on the high seas generally increased through to 2013 but has declined slightly since then. Around 23% of the VMS days occurred within the high seas in 2016 (Table 3). Overall effort has increased in the EEZs and decreased on the high seas (Table 2). Of the VMS effort in 2016 within the international waters 37% was in region I5 east of the Line Islands and French Polynesia, and 39% from region north and northeast of New Zealand (I7) (Figure 4; Figure A2-1; Table A2-1).

3.3 Catch per unit effort

Figure 5 presents nominal longline south Pacific albacore CPUE series by key distant water fleets:

- Japanese longline CPUE in 2016 (1.05 fish per 100 hooks) was a 4% decrease on 2015, the 2011-2015 average was 0.95 fish per 100 hooks;
- Korean longline CPUE in 2016 (0.16 fish per 100 hooks) was a 37.5% increase on 2015 the 2011-2015 average was 0.09 fish per 100 hooks;
- Chinese longline CPUE in 2016 (1.14 fish per 100 hooks) was a 34% increase on 2015 the 2011-2015 average was 0.81 fish per 100 hooks;
- Chinese Taipei longline CPUE in 2016 (0.55 fish per 100 hooks) was a 9% increase on 22015 the 2011-2015 average was 0.5 fish per 100 hooks.

Examining longer term trends, the average nominal CPUE for the Korean fleet was 0.15 between 1991 and 2000, while that for the Chinese Taipei fleet was 1.04. In contrast, the Japanese fleet averaged 1.93 over that time.

The relative spatial pattern of CPUE is presented in Figure 6 for two time periods, and for 2016. In the period 1950-2000, catch rates were relatively high across much of the southern WCP-CA, in particular within high seas areas and the EEZs of New Caledonia, Vanuatu and Tonga. Catch rates in the recent period (2001-2016) are generally lower across the region, with northern Tonga, American Samoa and the Cook Islands latitudinal band of 15^{o}S, as well as some high seas areas, showing relatively high catch rates for that period. It is notable that increases in effort within particular 5^{o}x5^o squares are generally matched by declines in CPUE.

Figure 7 presents nominal south Pacific albacore CPUE series for two troll fleets. The CPUE of the US fleet generally declined over the period 1987 to 2006, with catch rates in the most recent years of activity being comparable to that in the mid-2000s. By comparison, the nominal CPUE of the New Zealand fleet has generally been lower, but relatively stable.

4 Transshipment information

High seas transshipment data are available from July 2010 to March 2017; no in-port or in-zone transshipment data are presented. Fluctuations in reported transshipments may reflect logistical/operational factors rather than fishing activity. It is noted that historically south Pacific albacore would have been offloaded directly to canneries (e.g. Pago Pago, American Samoa, or Levuka, Fiji) rather than being transshipped on the high seas. There is a notable peak in transshipment activity in September of each year while Vanuatu has had the highest transhipment volumes in the past, and the highest peak in the time series in September 2015 (2,194 mt) (Figure 8), of which 964 mt was by China and 642 mt Vanuatu. Further transshipment information by flag and month is presented in Appendix 3. It should be noted that transshipment levels are unlikely to be fully reported for the most recent 18 months. Transshipment data for 2016 to 2017 should, therefore, be considered preliminary and subject to change.

5 Albacore stock status

The last assessment for South Pacific albacore was performed in 2015 (Harley et al., 2015) and estimated the stock status averaged over the period 2009-2012 ('current') and 2013 ('latest'), relative to agreed reference points. This assessment contained significant improvements to the previous (2012) assessment including: improvements to the MULTIFAN-CL modelling framework, a regional disaggregated spatial structure, access to operational data for construction of CPUE indices and regional weights, age-length data to improve growth estimation, and additional tagging data. Further, the regional structure of the model was changed to cover the southern Convention area only, and therefore was better aligned with the other tuna assessments. Natural mortality was set at 0.3 in the reference case for consistency with the value used in assessments performed in other RFMOs.

SC11 provided advice to the Commission based upon the reference case assessment model, and the structural sensitivity grid was used to characterize uncertainty in the assessment. This included different levels of natural mortality, stock recruitment relationship steepness, and weighting of the input length data. Estimates are presented in Table 5, and the Majuro plot in Figure 9.

As noted in previous papers (e.g. Harley and Williams 2013), it is difficult to correctly interpret the stock status-related implications of trends in any indicators in isolation of other data sets and a population dynamics model. To examine the potential consequences of recent fishing levels relative to the agreed biomass limit reference point for south Pacific albacore (20% $SB_{current}/SB_{F=0}$), stochastic 20-year effort-based projections were performed under different assumptions of population dynamics (defined by nine stock assessment runs from the 2015 Multifan-CL stock assessment, a subset of those selected by SC11 to present key uncertainties within SC11 advice and capturing uncertainty in stock recruitment steepness and natural mortality), and future conditions (variability in future recruitment around the stock-recruitment relationship), consistent with the recommendations on inclusion of uncertainty within projections from WCPFC-SC9 and in Berger et al. (2013).

There had been some small reductions in southern longline effort in 2015 compared to 2014 (Figure 3). We therefore update the status quo projection analysis presented in SPC-OFP and WCPFC (2015), assuming future southern longline and troll fishery effort would continue into the future at levels equal to those seen in 2015 (based on the information available to SPC as at 30^{th} June 2017). Potential future adult (spawning) biomass levels relative to unfished levels were examined, and the probability that the south Pacific albacore stock may fall below the biomass Limit Reference Point (SB_{LRP}) was calculated (Figure 10).

Across the nine stock assessment models used within the analysis, the average stock status in 2013 (the last year of the assessment) was $SB_{current}/SB_{F=0} = 0.41$. If 2015 fishing effort levels continue into the future, however, the stock is predicted to continue to decline on average, falling to $SB_{current}/SB_{F=0} = 0.35$ in 2033, this is a slight improvement on previous estimates. The main difference from previous reports is that, as provisional effort in 2015 was lower than levels seen in 2013 and 2014. The projected stock status is estimated to have improved slightly where the stock still declines from the 2013 level to $SB_{2033}/SB_{F=0} = 0.35$, but risk $SB_{2033}/SB_{F=0} < SB_{LRP} = 7\%$ rather than about 20% seen in previous projections. Overall vulnerable biomass (a CPUE proxy) in longline fisheries also is estimated to decrease by 7% over that period.

Acknowledgments

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Tables

Table 1: Annual southern WCP-CA albacore longline catch estimates (excluding archipelagic waters) by EEZ and High Seas, for the most recent 10 years. Note: Available operational and aggregate logsheet data raised to annual catch estimates. EEZ are approximate 200-mile boundaries; High seas is the high seas in the WCPFC Convention Area, south of the equator. Allocation of flag catch to EEZ is approximate due to the lack of operational logsheet data in some cases.

EEZ	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
American Samoa	4,667	2,963	3,299	3,065	2,053	2,691	1,882	1,376	1,601	1,593
Australia	1,867	1,256	1,471	706	627	529	592	515	742	837
Cook Islands	2,999	2,351	4,528	4,611	5,311	10,235	6,174	4,581	3,525	5,364
Fiji	3,998	4,520	5,609	5,744	4,159	4,275	3,956	3,927	5,998	4,935
High seas	16,818	23,664	30,717	37,006	23,267	29,686	28,629	20,184	20,596	15,454
Jarvis (USA)	0	0	0	0	0	0	0	0	0	0
Kiribati	675	360	1,125	1,270	598	1,240	841	1,253	2,529	2,691
Non-attributed non-high seas area	6	2	24	15	7	10	0	0	2	1
New Caledonia	1,312	1,484	1,611	1,923	1,732	1,700	1,712	1,624	1,569	1,815
Niue	216	337	241	196	0	0	362	208	206	92
New Zealand	277	382	422	460	418	266	302	311	223	233
French Polynesia	3,924	3,060	3,560	3,482	3,223	3,591	3,495	3,743	3,392	3,293
PNG	1,919	507	864	795	294	801	237	308	371	110
Solomon Islands	5,035	6,637	10,112	7,284	6,503	8,120	9,855	14,159	10,800	5,165
Tokelau	0	121	0	0	108	254	0	8	1,852	2,456
Tonga	354	220	124	57	36	760	1,439	264	710	1,239
Tuvalu	459	159	351	674	459	917	1,508	489	451	1,531
Vanuatu	5,065	5,474	5,493	2,934	6,149	4,320	6,983	5,475	4,490	5,195
Wallis and Futuna	0	0	0	0	3	0	0	0	0	0
Samoa	3,113	2,342	2,816	2,529	1,415	2,037	1,640	800	840	947
Total	52,704	55,839	72,367	72,751	56,362	71,432	69,607	59,225	59,897	52,951
EEZ Percent	68	58	58	49	59	58	59	66	66	71
HS percent	32	42	42	51	41	42	41	34	34	29

Table 2: Annual southern WCP-CA albacore troll catch estimates by EEZ and High Seas, for the most recent 10 years. Note: Available operational and aggregate logsheet data raised to annual catch estimates. EEZ are approximate 200-mile boundaries (excluding archipelagic waters); High seas is the high seas in the WCPFC Convention Area, south of the equator.

EEZ	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
High seas	352	151	237	307	472	235	390	466	172	172
New Zealand	1,736	3,352	1,794	1,832	2,787	2,727	2,836	1,937	2,425	1,952
Total	2,088	3,503	2,031	2,139	3,259	2,962	3,226	2,403	2,597	2,124
EEZ Percent	83	96	88	86	86	92	88	81	93	92
HS percent	17	4	12	14	14	8	12	19	7	8

Table 3: Total VMS days-at-sea (augmented by logsheet information) by year and geographic area in the WCP-CA south of 10^{o}S (excluding effort in archipelagic waters).

	2010	2011	2012	2013	2014	2015	2016
EEZ	70,435	73,095	75,661	78,485	64,471	65,308	72,627
High seas	21,379	23,803	24,038	32,500	28,141	23,956	21,627
Total	91,814	96,898	99,699	110,985	92,612	89,264	94,254
Percent EEZ	77	75	76	71	70	73	77
Percent High seas	23	25	24	29	30	27	23

Table 4: Annual total and monthly average transshipment in mt (July 2010 to March 2017).

Year	Annual total	Monthly average
2010	4,091	682
2011	9,454	788
2012	5,487	457
2013	9,321	777
2014	9,583	799
2015	9,756	813
2016	18,135	1,511
2017	3,953	329

Table 5: Estimates of reference points and stock status from the last (2015) south Pacific albacore tuna stock assessment (southern WCPFC region only), based upon the single reference case run, and the 18 runs used to capture uncertainty (5^{th} percentile, median and 95^{th} percentile).

Management quantity	2015 reference case	5^{th} percentile	Grid median	95^{th} percentile
MSY (mt)	76,800	62,260	84,980	129,814
$SB_{latest}/SB_{F=0}$	0.40	0.30	0.44	0.60
$F_{current}/F_{MSY}$	0.39	0.13	0.34	0.62
SB_{latest}/SB_{MSY}	2.86	1.74	3.2	7.03
SB_{MSY}	57,430	35,762	59,180	90,778
$SB_{F=0}$	408,361	392,358	442,163	486,146

Figures

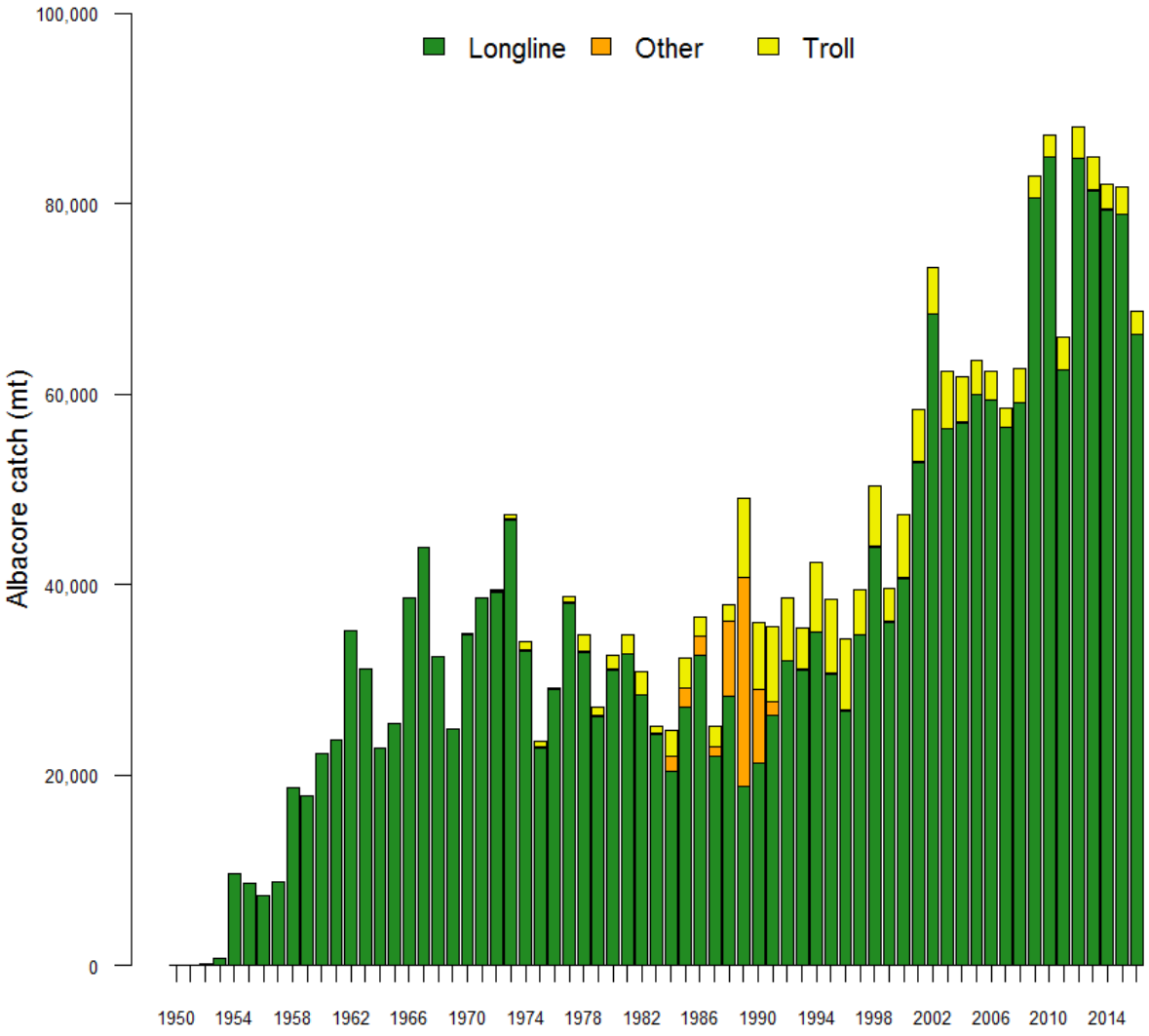

Figure 1: South Pacific albacore catch by gear (total south Pacific Ocean, including archipelagic waters).

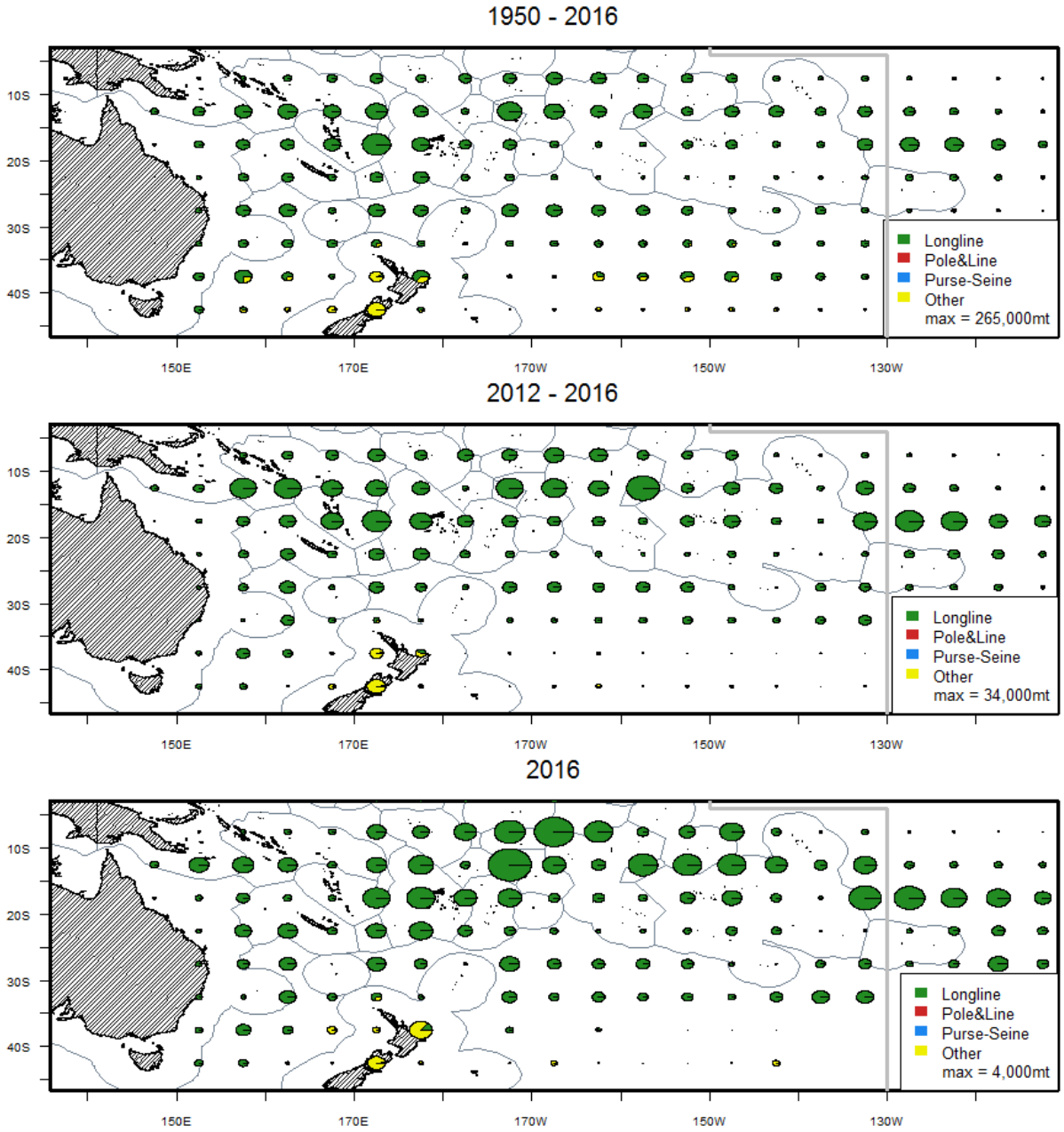

Figure 2: Albacore tuna catch distribution by gear type and 5x5 degree region in the south Pacific ocean for the period 1950-2016 (top), 2012 -2016 (middle) and 2016 (bottom). Circle size represents total catch volume with maximum circle size presented in the legends.

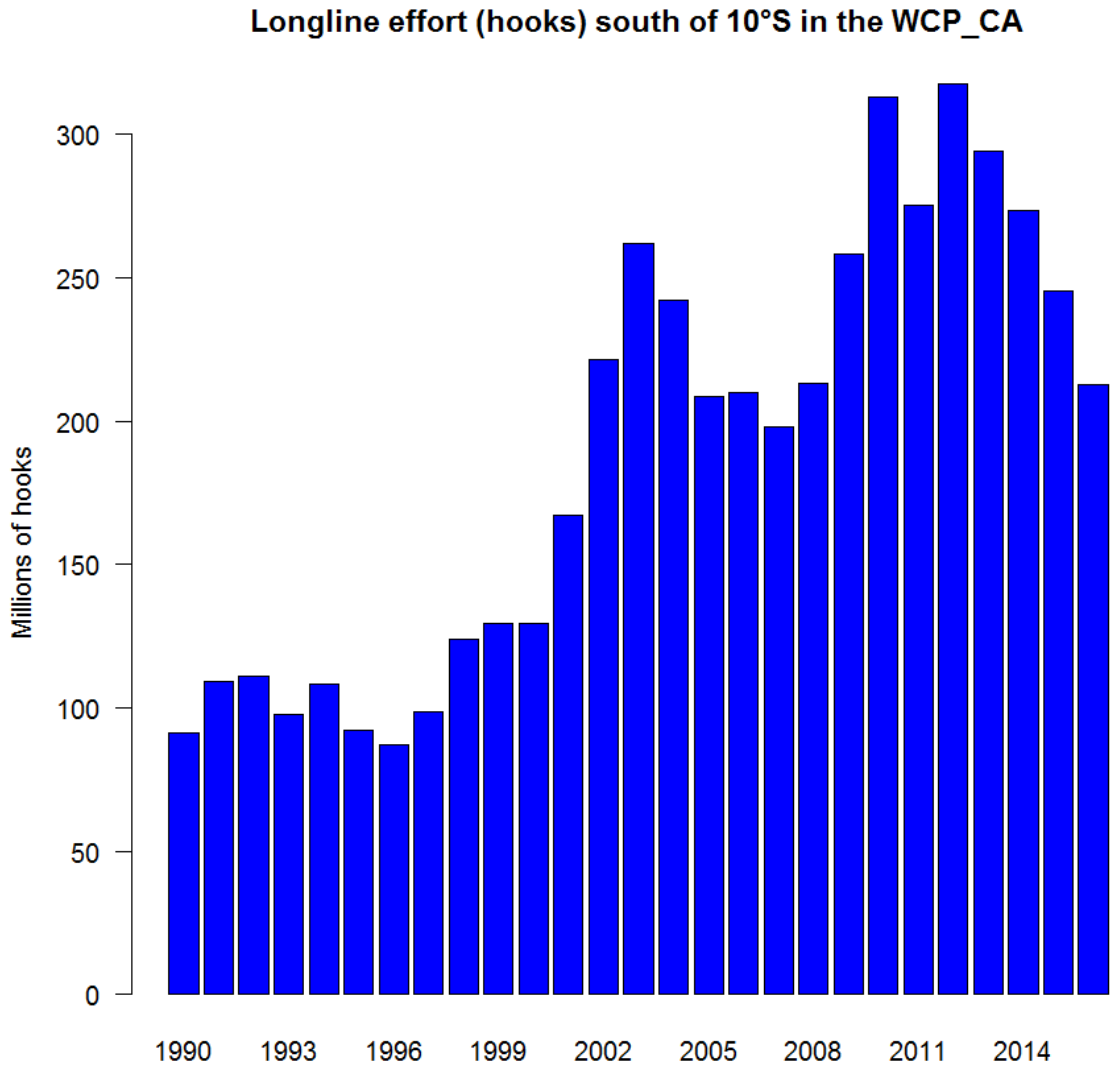

Figure 3: Temporal trends in effort (millions of hooks) in the southern longline fishery (WCP-CA south of 10°S; excluding effort in archipelagic waters).

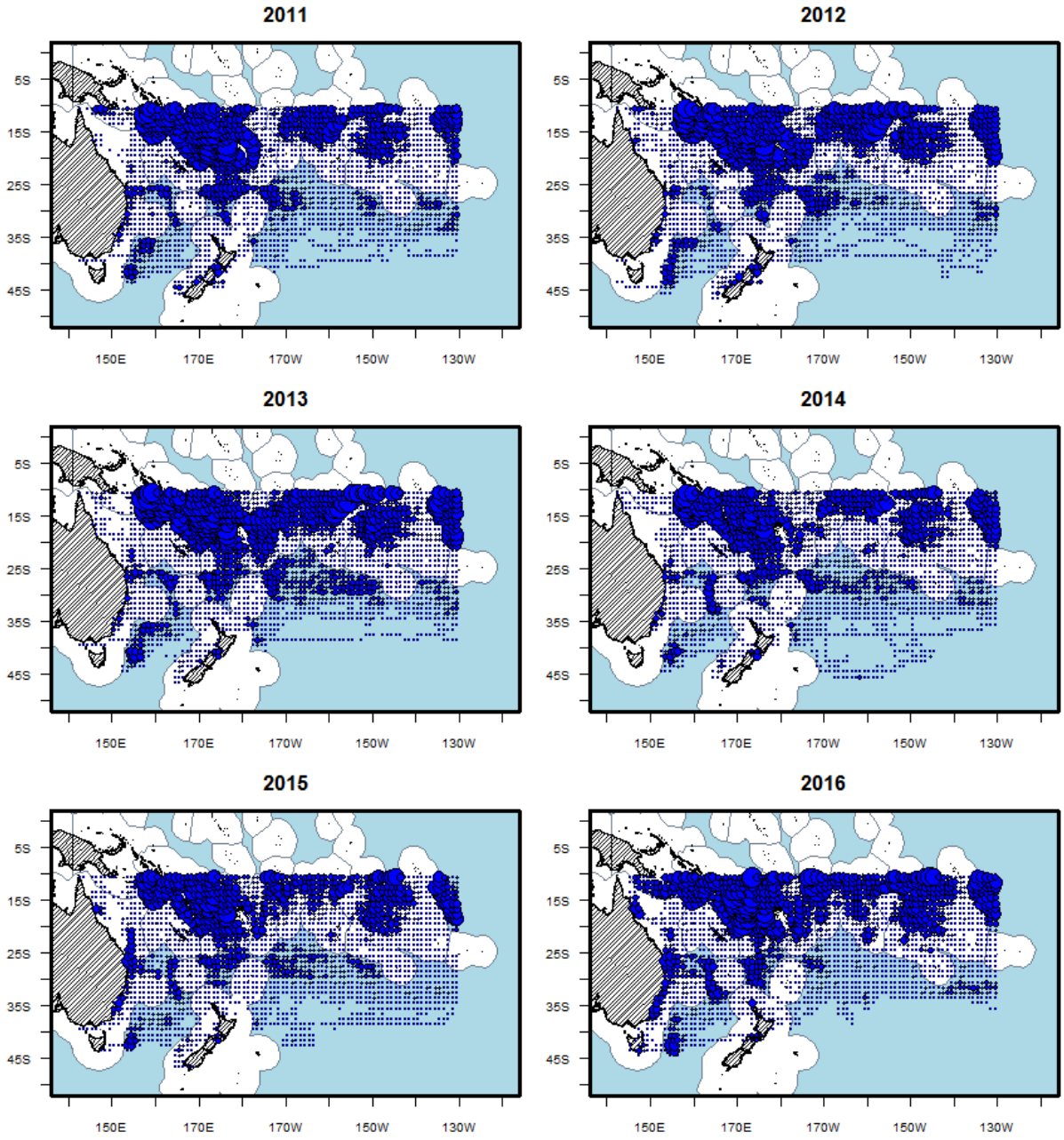

Figure 4: Longline VMS days-at-sea (augmented by logsheets) within the southern WCP-CA at 1°x1° (excluding archipelagic waters), south of 10°S. Maximum circle size = 965 days.

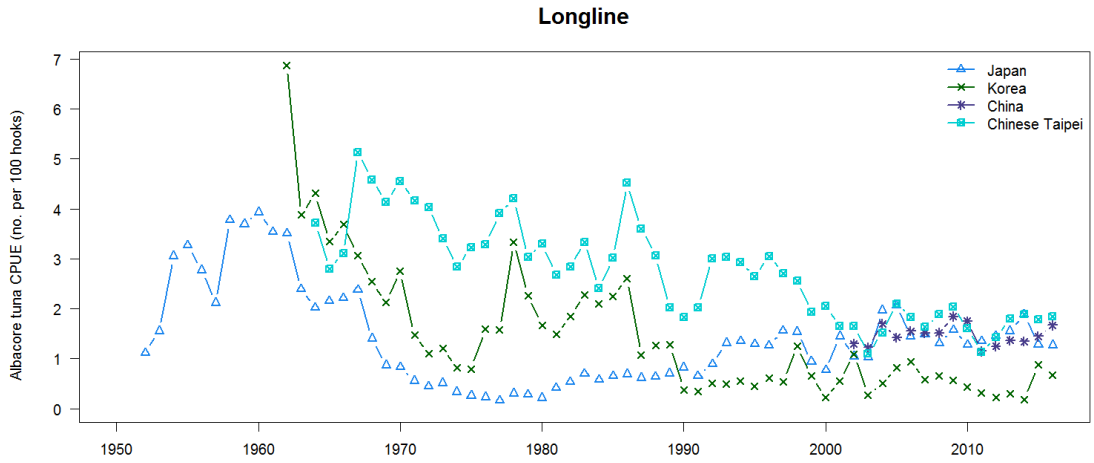

Figure 5: Trends in the nominal CPUE (number of fish per 100 hooks) over time for key distant water fleets in the southern WCP-CA south of 10°S.

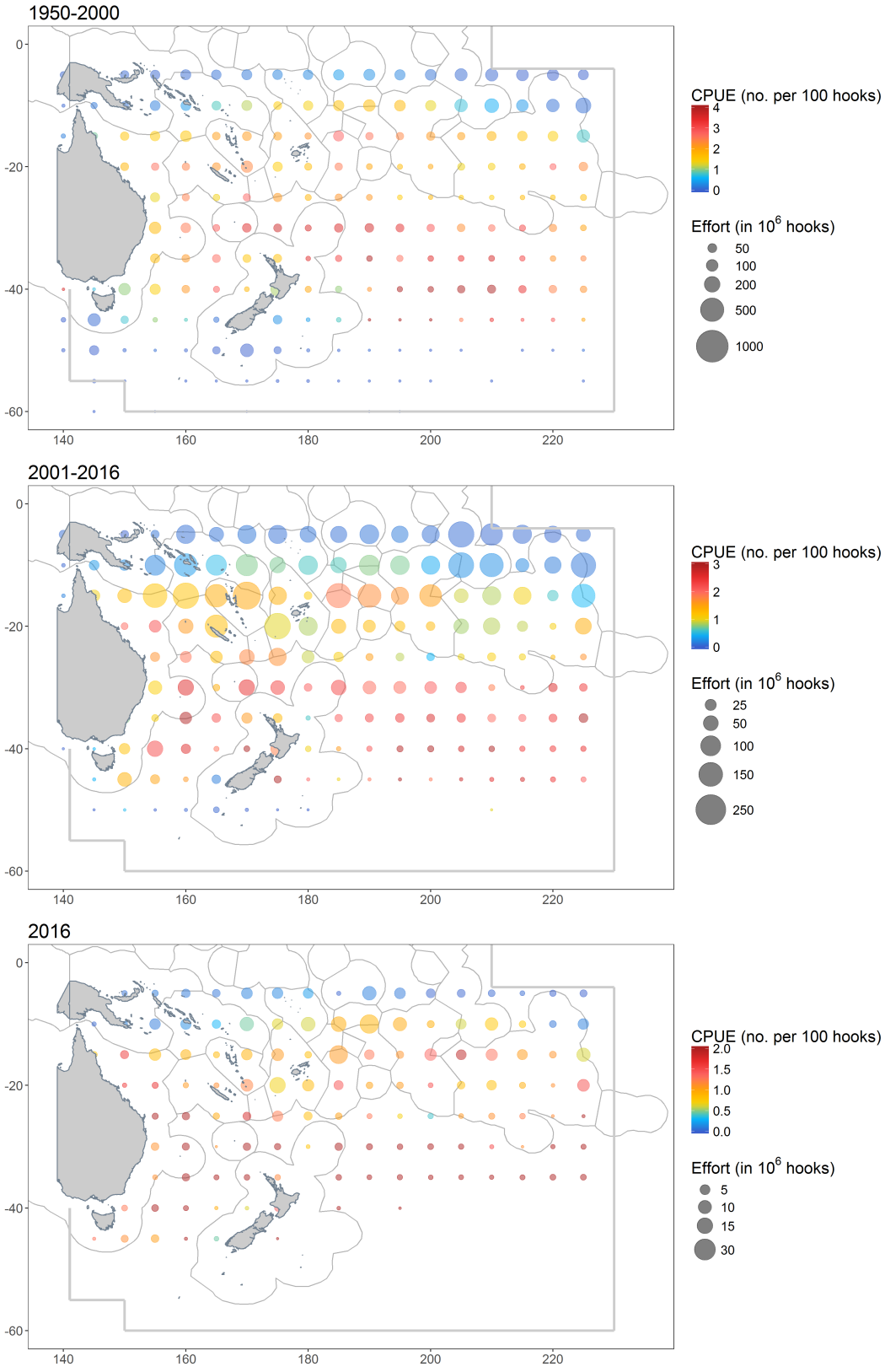

Figure 6: Albacore tuna longline CPUE distribution for the period 1950-2000 (top), 2001-2016 (middle) and 2016 (bottom). CPUE (kg/100 hooks) for a given 5^ox5^o square is indicated by the colour of the circle, while the relative size of the circle give an indication of the underlying effort over the period (millions of hooks). Note the change in scales between plots.

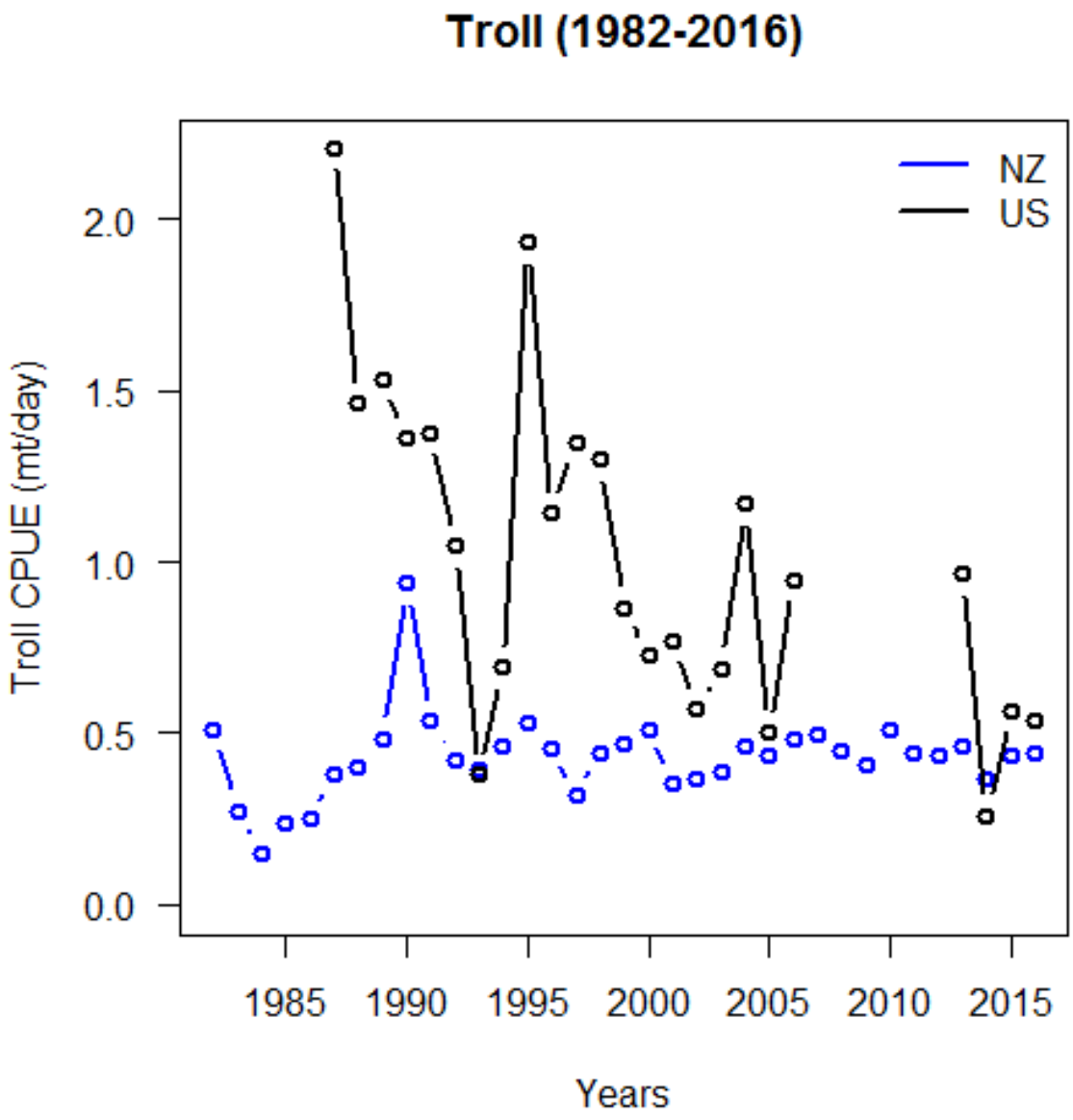

Figure 7: Trends in troll CPUE (albacore mt/day) over time for two troll fleets.

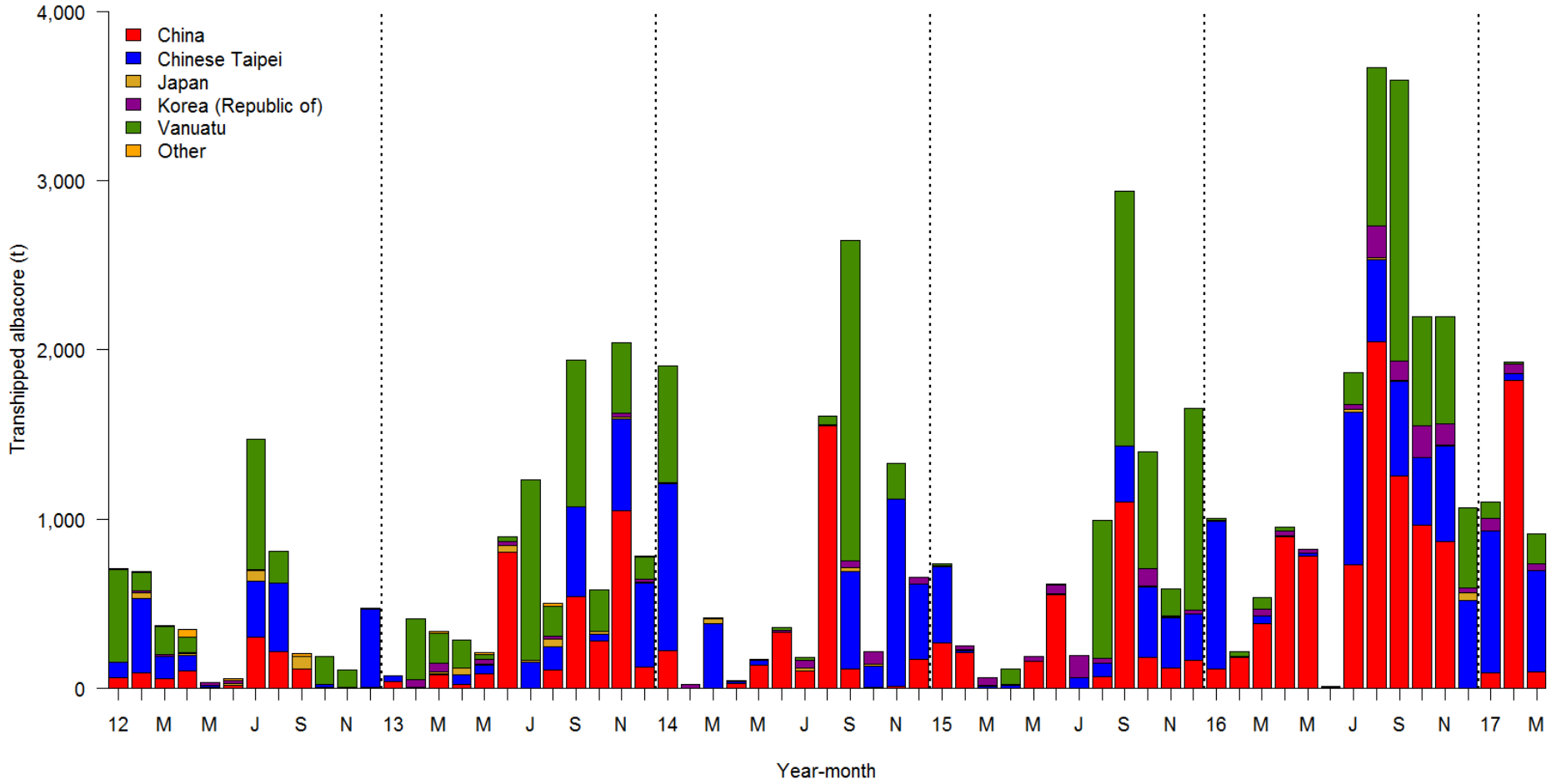

Figure 8: Reported transshipment (mt) by flag and month (2012 to March 2017). Source: WCPFC Transshipment Events Database (29 June 2016). 'Other' includes Belize, Indonesia, Philippines and Solomon Islands.

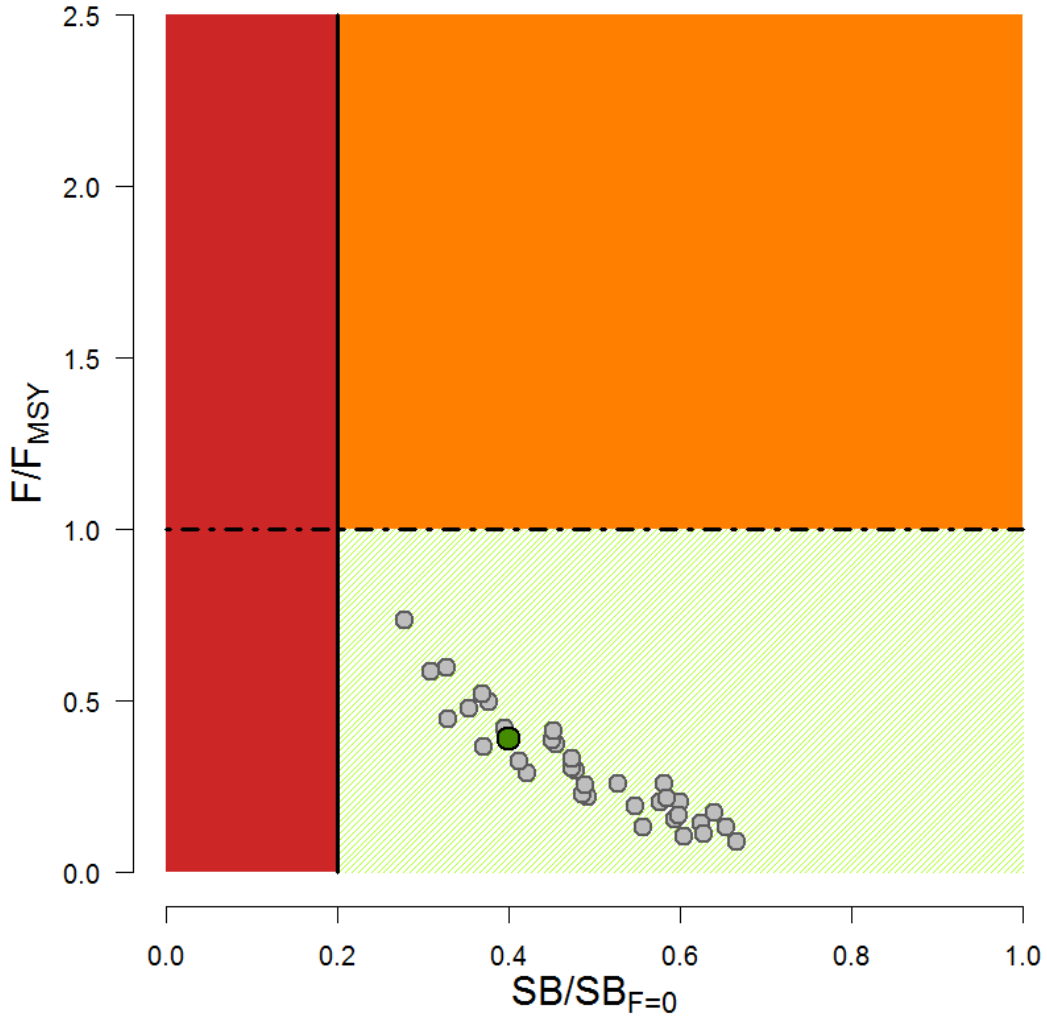

Figure 9: Temporal trend for the reference case model in stock status relative to $SB_{F=0}$ (x-axis) and F_{MSY} (y-axis). The red zone represents spawning potential levels lower than the agreed LRP which is marked with the solid black line ($0.2SB_{F=0}$). The orange region is for fishing mortality greater than F_{MSY} ($F=F_{MSY}$; marked with the black dashed line). The green point is the stock status in the terminal year (2013) for the reference case run and the grey points indicate the stock status from runs in the sensitivity grid.

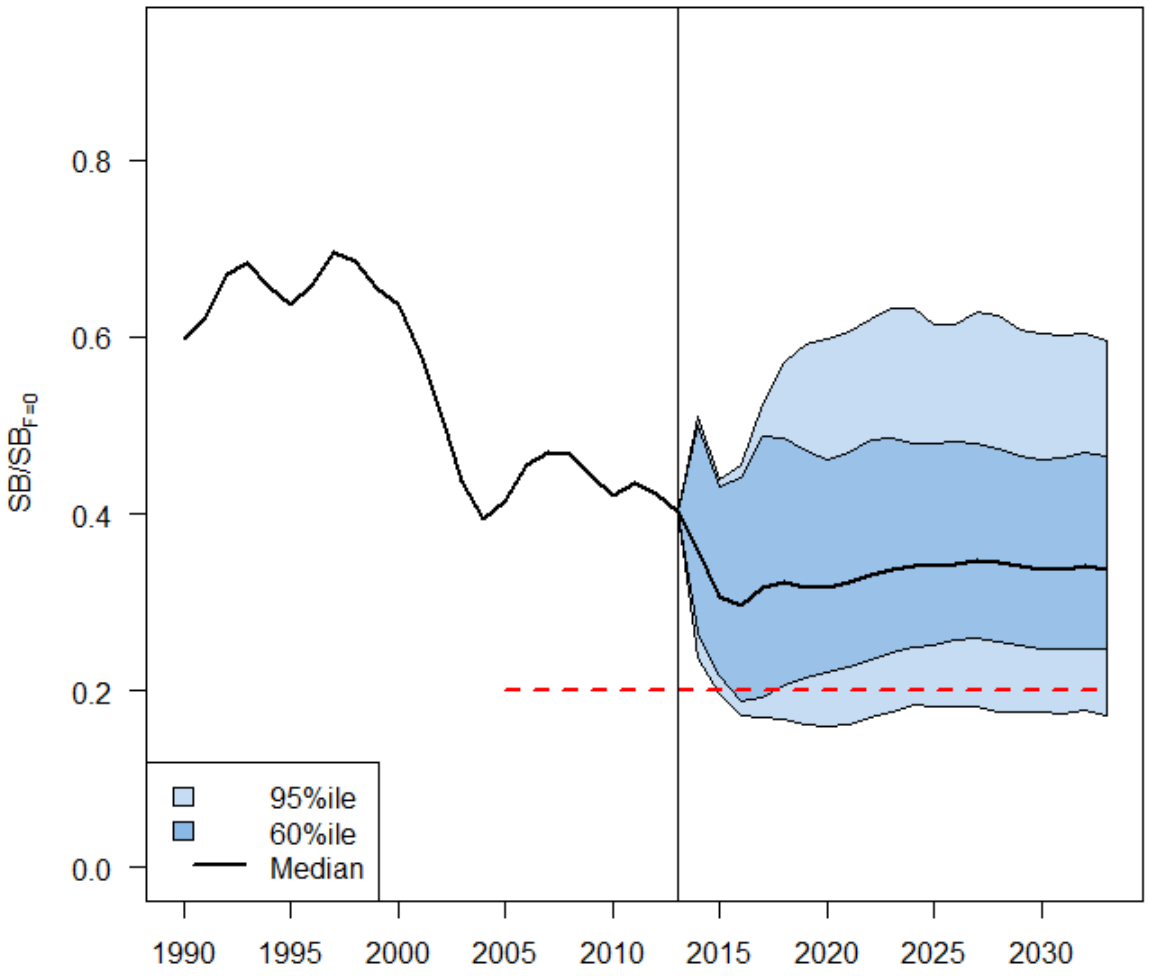

Figure 10: Stochastic projections of adult stock status under 2014 longline and troll effort levels. The limit reference point (20% SBF=0) is indicated by horizontal dashed red line. Note: from 1960 up to 2013 inclusive the line represents the median across the 9 assessment model runs (structural uncertainty only); uncertainty after 2013 represents both structural uncertainty and stochastic recruitment (1800 simulation runs).

Appendix 1: Summaries of south Pacific albacore longline and troll catch, by flag/geographic region

Table A1-1: Annual southern WCP-CA albacore longline catch estimates by Vessel Nation, 2000 - 2016. Note: Available operational and aggregate logsheet data raised to annual catch estimates (ACE). Differences in annual totals between this table and Table 1 result from rounding errors. Southern WCP-CA approximated - some EEZ and high seas areas span the equator.

Flag	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Australia	381	591	553	490	667	743	2,591	1,925	1,277	1,523	745	653	572	647	579	773	916
Belize	191	4,050	1,467	885	353	7	0	164	7	26	10	105	32	0	0	0	0
Cook Islands	0	2	490	1,358	1,869	2,371	2,223	2,644	2,224	1,551	2,423	2,182	2,757	1,354	1,186	1,167	1,180
China	2,030	2,495	2,704	6,002	5,828	4,026	7,111	5,416	15,058	20,093	12,926	11,847	24,523	23,788	14,476	14,486	13,868
Spain (EC)	0	0	0	0	2	2	0	0	33	35	6	3	2	2	1	0	1
Fiji	5,398	7,256	7,282	6,310	10,867	11,077	11,481	6,930	9,262	12,098	8,604	9,948	9,370	8,702	7,014	6,974	7,258
FSM	0	0	0	0	0	0	0	0	0	0	1	1	173	664	294	177	1,933
Japan	2,239	3,336	2,638	3,148	4,005	4,654	3,290	2,990	2,371	2,824	2,638	2,170	2,085	1,819	1,269	780	687
Kiribati	0	0	0	0	0	0	0	0	0	0	66	200	401	40	7	358	510
Republic of Korea	590	1,728	2,850	1,394	743	2,167	790	1,080	1,143	1,208	1,027	488	892	767	765	1,325	1,352
New Caledonia	895	1,020	1,165	1,111	1,468	1,590	1,358	1,324	1,506	1,649	1,939	1,736	1,715	1,714	1,630	1,583	1,828
Niue	0	0	0	0	0	55	213	216	337	154	97	0	0	0	0	0	0
New Zealand	1,344	2,614	2,545	2,971	1,248	602	496	357	382	422	460	418	266	302	311	223	233
French Polynesia	3,473	4,261	4,557	3,846	2,218	2,426	2,918	3,957	3,068	3,560	3,483	3,225	3,594	3,512	3,744	3,392	3,295
PNG	105	72	82	645	1,529	2,181	1,741	1,556	437	807	791	245	693	235	308	336	35
Portugal (EC)	0	0	0	0	0	0	0	0	0	0	0	4	1	67	1	0	0
Solomon Islands	224	54	121	95	207	0	0	0	0	0	7,708	899	0	0	14,241	11,216	1,701
Senegal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tonga	862	1,268	1,189	611	182	283	414	390	220	124	57	34	20	13	25	29	92
Tuvalu	0	0	0	0	0	0	0	0	0	0	0	184	432	169	78	97	24
Chinese Taipei	9,964	12,900	16,164	12,421	8,778	8,704	8,778	9,225	7,680	11,558	13,120	13,353	11,757	13,574	7,450	7,945	11,382
USA	1,080	3,861	6,105	4,232	2,620	3,060	4,146	5,298	3,686	3,937	4,082	2,555	3,461	2,213	1,543	1,793	1,730
Vanuatu	0	655	5,275	3,182	6,261	7,684	7,949	6,119	4,805	7,979	10,039	4,694	6,699	8,384	3,554	6,723	6,144
Wallis and Futuna	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Samoa	4,067	4,820	4,223	2,253	1,233	1,263	2,113	3,113	2,342	2,816	2,529	1,415	2,038	1,642	800	840	947
Total	32,843	50,983	59,410	50,954	50,078	52,895	57,612	52,704	55,838	72,364	72,751	56,362	71,483	69,608	59,276	60,217	55,116

Table A1-2: Annual southern WCP-CA albacore longline catch estimates by Vessel Nation, 2000 - 2016. Note: Available operational and aggregate logsheet data raised to annual catch estimates (ACE). Differences in annual totals between this table and Table 1 result from rounding errors. Southern WCP-CA approximated - some EEZ and high seas areas span the equator.

EEZ	Flag	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AS	US	626	3,217	5,334	3,204	2,019	2,880	4,078	4,667	2,963	3,299	3,065	2,053	2,691	1,882	1,376	1,601	1,593
AU	AU	359	554	505	391	587	619	2,526	1,867	1,256	1,471	706	627	529	592	515	742	837
CK	BZ	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0
	CK	0	2	490	1,344	1,866	2,276	1,993	2,385	1,918	1,357	2,229	2,178	2,726	1,223	1,073	1,039	1,039
	CN	0	0	0	0	0	0	0	0	0	0	0	148	2,970	2,223	3,186	2,240	2,125
	FJ	0	0	0	0	0	0	0	0	0	0	139	395	329	80	0	0	0
	FM	0	0	0	0	0	0	0	0	0	0	0	0	156	650	198	173	1,917
	KI	0	0	0	0	0	0	0	0	0	0	0	0	283	29	0	0	0
	KR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
	PF	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0
	TW	0	0	11	12	0	0	0	311	64	972	192	163	311	0	0	0	0
	US	0	7	617	420	297	16	0	304	370	476	729	309	355	145	41	68	0
	VU	0	0	0	15	9	0	0	0	0	1,723	1,322	2,119	3,144	1,824	10	4	1
	WS	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FJ	CK	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
	CN	0	0	77	63	151	151	131	400	135	375	152	295	430	302	202	639	931
	FJ	4,212	6,566	5,528	3,755	5,847	5,439	5,334	3,512	4,376	5,228	5,580	3,760	3,844	3,259	3,725	5,190	4,035
	KR	0	0	0	0	0	0	0	0	0	0	11	69	0	38	0	0	0
	NZ	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0
	TV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TW	292	541	374	116	36	2	2	6	7	6	1	5	0	3	1	1	0
	VU	0	187	304	119	33	1	5	0	2	0	1	30	1	355	0	168	0
HS	AU	22	37	48	99	80	124	65	58	21	52	39	26	43	55	64	31	79
	BZ	31	2,800	1,467	805	2	7	0	19	0	2	0	0	0	0	0	0	0
	CK	0	0	0	14	3	5	75	156	180	31	50	4	23	28	0	1	8
	CN	2,029	2,413	2,494	5,588	5,271	2,465	4,480	2,857	12,409	14,932	11,460	7,763	16,244	12,889	5,888	5,837	1,966
	ES	0	0	0	0	2	2	0	0	33	35	6	3	2	2	1	0	1
	FJ	345	214	709	1,294	2,173	2,210	2,012	1,042	1,337	2,133	1,357	2,476	2,466	1,885	1,781	1,077	1,134
	FM	0	0	0	0	0	0	0	0	0	0	1	1	16	14	96	4	16
	JP	2,072	3,176	2,466	2,909	3,978	4,533	1,909	1,690	1,382	1,563	907	1,645	1,127	1,248	1,208	732	684
	KI	0	0	0	0	0	0	0	0	0	0	0	145	0	3	1	12	37
	KR	284	1,070	1,837	1,095	444	1,787	307	408	410	521	421	226	427	425	149	293	407
	NC	8	1	4	23	94	10	8	12	22	38	16	4	14	2	6	12	13
	NU	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	NZ	10	21	23	35	2	0	0	0	0	0	0	0	0	0	0	0	0
	PF	37	0	2	19	7	134	72	33	8	0	1	2	3	17	1	0	2
	PT	0	0	0	0	0	0	0	0	0	0	0	4	1	67	1	0	0
	SB	3	0	0	0	0	0	0	0	0	0	2,494	74	0	0	1,058	478	187
	SN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TO	4	194	344	293	3	27	9	36	0	0	0	0	0	0	1	0	0

Table A1-2: ***(continued)***

EEZ	Flag	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	TV	0	0	0	0	0	0	0	0	0	0	0	12	16	12	1	1	0
	TW	7,527	11,336	14,434	11,369	6,683	5,980	4,989	5,723	4,370	5,978	11,976	9,004	6,669	9,096	6,674	7,095	8,961
	US	454	636	155	555	304	164	68	327	265	162	289	193	415	185	126	124	137
	VU	0	276	4,058	1,560	4,778	5,866	5,168	4,455	3,226	5,268	7,989	1,685	2,203	2,697	3,178	4,936	566
	WS	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0
JV	US	0	0	0	53	0	0	0	0	0	0	0	0	0	0	0	0	0
KI	BZ	0	0	0	0	351	0	0	0	0	0	0	0	32	0	0	0	0
	CN	1	82	0	48	9	0	0	0	1	157	398	208	292	221	308	1,349	1,956
	FJ	0	0	0	0	0	0	0	0	0	0	0	16	41	29	176	152	148
	FM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	JP	42	69	43	40	27	11	2	0	9	38	19	13	45	8	6	0	0
	KI	0	0	0	0	0	0	0	0	0	0	66	55	49	3	1	0	89
	KR	224	576	692	262	234	134	131	189	140	261	358	99	335	186	423	862	697
	TV	0	0	0	0	0	0	0	0	0	0	0	3	48	0	0	0	0
	TW	2	0	23	94	116	28	14	263	98	266	48	130	327	350	263	210	3
	US	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	VU	0	0	0	230	96	68	152	223	112	403	381	73	74	44	150	206	51
MA	FJ	2	0	0	17	4	9	2	4	2	10	14	7	8	0	0	1	1
	NC	2	4	1	1	7	0	2	0	0	0	0	0	1	0	0	1	0
	VU	0	0	0	1	0	2	0	2	0	14	1	0	0	0	0	0	0
NC	NC	885	1,015	1,160	1,087	1,367	1,579	1,348	1,312	1,484	1,611	1,923	1,732	1,700	1,712	1,624	1,569	1,815
NU	CK	0	0	0	0	0	0	47	0	0	87	99	0	0	85	33	0	0
	FJ	0	0	0	0	0	0	0	0	0	0	0	0	0	277	157	203	92
	NU	0	0	0	0	0	55	211	216	337	154	97	0	0	0	0	0	0
	PF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TW	0	0	34	0	0	0	0	0	0	0	0	0	0	0	18	3	0
NZ	NZ	1,334	2,593	2,522	2,936	1,246	602	496	277	382	422	460	418	266	302	311	223	233
PG	JP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	3
	PG	105	72	82	645	1,529	2,181	1,741	1,556	437	807	791	245	693	235	308	336	35
	TW	0	0	0	0	0	0	49	363	71	57	4	49	108	2	0	19	0
SB	BZ	0	0	0	10	0	0	0	145	7	24	10	105	0	0	0	0	0
	CK	0	0	0	0	0	0	45	0	12	16	0	0	5	18	79	0	0
	CN	0	0	17	102	157	426	1,035	896	1,315	2,400	68	976	1,734	2,898	238	0	2,000
	FJ	10	2	162	59	400	242	831	554	1,270	2,707	91	1,121	1,306	1,773	131	0	587
	JP	85	69	128	196	0	110	1,372	1,300	980	1,223	1,471	506	855	563	55	32	0
	KI	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
	KR	0	0	76	16	24	83	324	313	463	299	33	43	111	96	55	61	0
	PG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SB	221	54	121	95	207	0	0	0	0	0	5,214	825	0	0	13,183	10,738	1,514
	TV	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0

Table A1-2: ***(continued)***

EEZ	Flag	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	TW	88	63	274	196	906	1,394	1,831	1,443	2,032	3,118	378	2,727	3,240	2,424	278	0	1,274
	VU	0	0	307	305	756	487	1,036	385	558	325	17	187	869	2,077	138	0	0
TK	CK	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	127	133
	FJ	0	0	0	0	0	0	0	0	0	0	0	75	93	0	2	1	0
	KI	0	0	0	0	0	0	0	0	0	0	0	0	50	0	5	346	384
	TV	0	0	0	0	0	0	0	0	0	0	0	16	134	0	0	0	0
	TW	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0
	US	0	0	0	0	0	0	0	0	88	0	0	0	0	0	0	0	0
	VU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,378	5,525
TO	CN	0	0	0	0	0	0	0	0	0	0	0	0	11	155	106	61	1
	FJ	0	0	0	0	27	0	0	0	0	0	0	0	29	123	0	3	1
	TO	858	1,074	845	318	179	256	405	354	220	124	57	34	20	13	24	29	92
	TW	0	0	0	0	0	0	0	0	0	0	0	2	700	1,149	133	618	1,145
TV	CK	0	0	0	0	0	0	0	49	20	56	35	0	3	0	0	0	0
	CN	0	0	0	0	0	0	0	1	0	0	0	77	0	0	128	149	287
	FJ	0	0	0	31	180	119	1	152	15	124	182	159	539	191	148	69	704
	JP	41	22	2	3	0	0	0	0	0	0	241	5	57	0	0	0	0
	KI	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0
	KR	55	81	184	18	41	162	6	171	123	127	204	51	19	22	139	108	246
	TV	0	0	0	0	0	0	0	0	0	0	0	142	234	157	77	95	23
	TW	145	0	0	0	4	15	0	0	1	0	12	3	0	88	1	0	0
	US	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	VU	0	0	0	0	0	0	0	86	0	45	1	22	48	1,051	0	30	1
VU	BZ	160	1,251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CK	0	0	0	0	0	85	63	54	62	3	10	0	0	0	0	0	0
	CN	0	0	115	202	241	985	1,465	1,262	1,197	2,230	847	2,378	2,843	5,101	4,421	4,211	4,603
	FJ	830	473	883	1,155	2,237	3,057	3,300	1,666	2,263	1,896	1,241	1,938	714	1,085	893	279	556
	JP	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0
	KR	0	0	62	4	0	0	21	0	7	0	0	0	0	0	0	0	0
	TW	1,911	960	1,015	635	1,034	1,286	1,892	1,116	1,038	1,162	508	1,253	403	462	83	1	0
	VU	0	192	605	951	588	1,261	1,587	966	907	202	328	579	360	335	78	0	0
WF	PF	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0
	WF	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
WS	WS	4,067	4,820	4,205	2,253	1,233	1,263	2,113	3,113	2,342	2,816	2,529	1,415	2,037	1,640	800	840	947

Table A1-3: Annual south Pacific albacore troll catch estimates by flag, 2000 - 2016.

Year	Canada	Cook Islands	New Zealand	USA	Total
2000	351	335	3,336	2,433	6,455
2001	206	202	2,736	2,107	5,251
2002	144	166	3,012	1,337	4,659
2003	0	688	3,721	1,574	5,983
2004	63	376	3,212	960	4,611
2005	72	89	2,855	576	3,592
2006	135	121	2,043	587	2,886
2007	27	53	1,736	272	2,088
2008	0	0	3,352	151	3,503
2009	0	0	1,794	237	2,031
2010	0	0	1,832	307	2,139
2011	1	0	2,787	471	3,259
2012	0	0	2,727	235	2,962
2013	0	0	2,836	390	3,226
2014	0	21	1,937	445	2,403
2015	0	21	2,425	151	2,597
2016	0	21	1,952	151	2,124

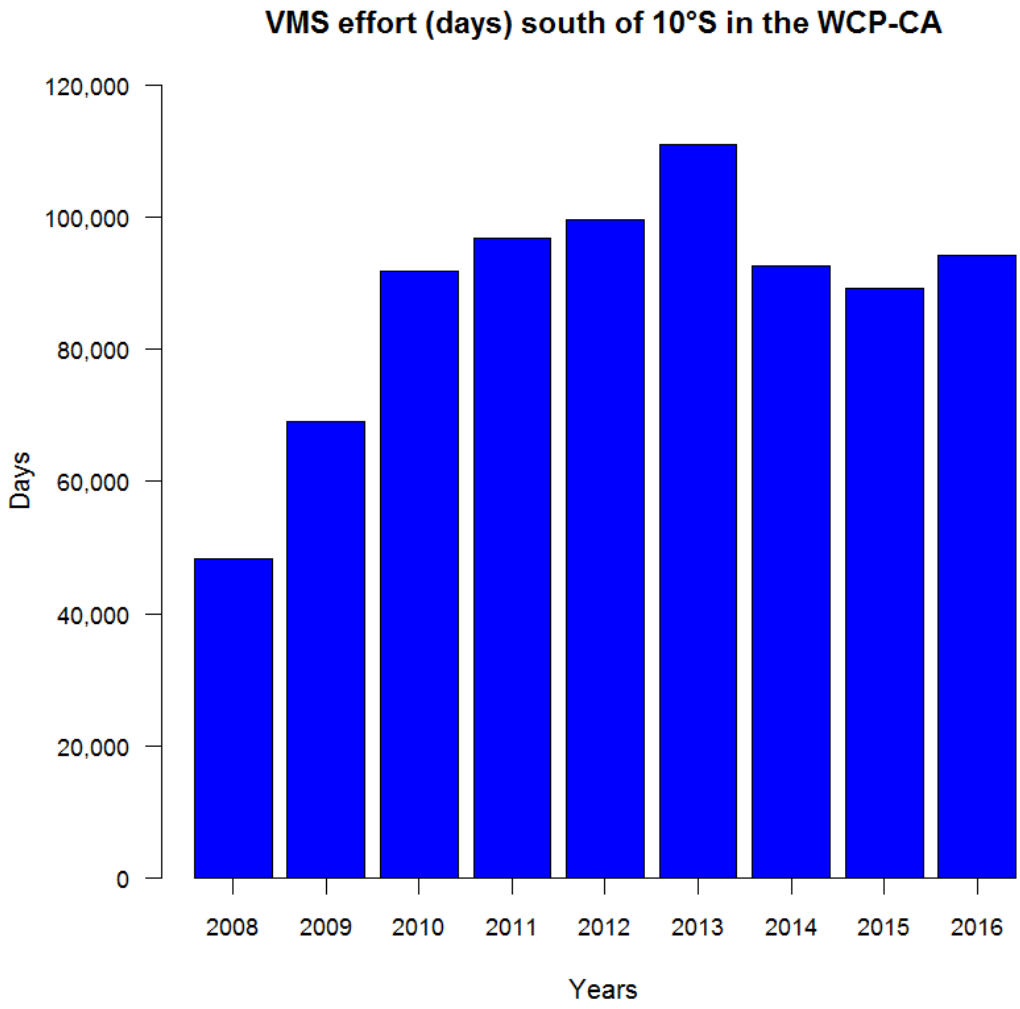

Figure A1-2: Longline VMS days-at-sea (augmented by logsheets for French Polynesia) within the southern WCP-CA at 1^{o}x1^{o} (excluding archipelagic waters), south of 10^{o}S.

Appendix 2: Notes on the time series of longline VMS information in the South Pacific

The analysis summarises the longline VMS information available to SPC through the FFA and WCPFC over the period 2010-2015, by geographic region of the southern WCPFC-CA. Effort in that database corresponds to days-at-sea (i.e. includes fishing and transiting). Please note:

- This analysis uses annual VMS data available up to and including December 2015;
- Effort represents total longline effort, not just that targeted at South Pacific albacore;
- VMS effort presented for EEZs includes that in archipelagic waters;
- Effort data for some countries (e.g. those with domestic longliners not on FFA VMS) will not be included within EEZ patterns;
- Effort for some countries (e.g. New Caledonia; French Polynesia) may be incomplete;
- Some trends may result from improved VMS coverage of vessels over time;
- EEZ effort excludes the Indonesian EEZ.

Table A2-1: Total VMS days at sea by year in International Waters, south of 10°S (Figure A2-1).

International waters code	2008	2009	2010	2011	2012	2013	2014	2015	2016
I2	236	205	175	196	251	307	264	384	644
I5	455	1,593	5,887	4,902	5,296	11,061	8,448	7,097	7,948
I7	5,299	7,823	10,673	12,666	10,816	13,682	13,465	11,653	8,444
I8	2,158	1,814	2,856	3,427	2,384	2,968	2,774	3,100	3,460
I9	279	1,158	1,788	2,612	5,291	4,484	3,189	1,721	1,131
Total	8,427	12,593	21,379	23,803	24,038	32,502	28,140	23,955	21,627

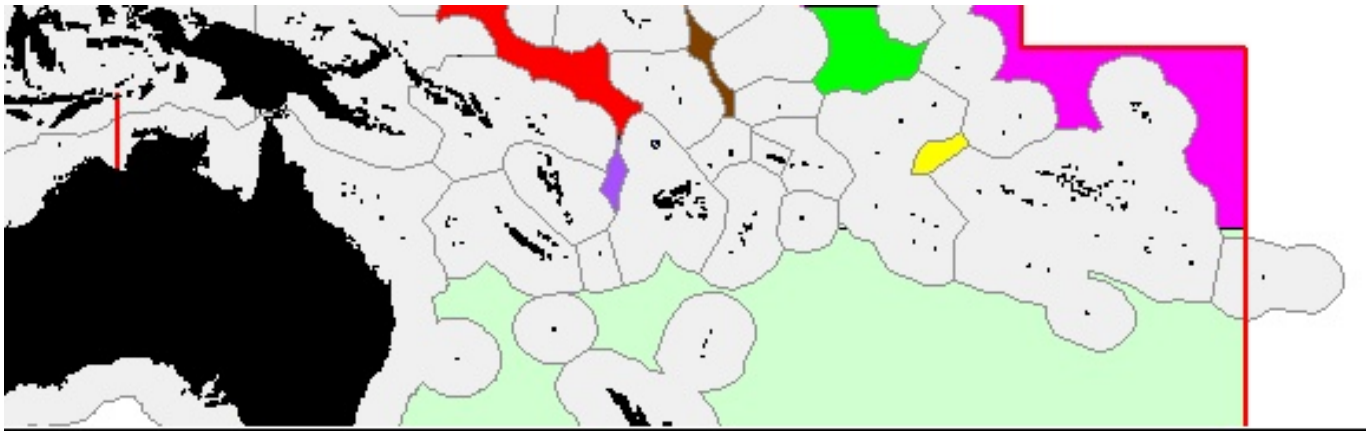

Figure A2-1: Map of International Waters in the southerly WCPFC-CA.

Table A2-2: Map key (Figure A2-1).

Code	Area	Color
H4	International waters between Tuvalu, Phoenix and Tokelau	Brown
H5	International waters between Phoenix and Line groups	Bright green
I2	Doughnut hole between FSM, Solomon Islands, Kiribati, RMI, Nauru and Tuvalu	Red
I5	International waters between Phoenix and Line groups and east of Line group	Pink
I7	High seas area to the east of Australia and New Zealand	Light green
I8	High seas pocket between Fiji and Vanuatu	Purple
I9	High seas pocket between the Cook Islands and French Polynesia	Yellow

Appendix 3: High Seas transshipment data for albacore based on CMM 2009-06 reporting

The tables below show high Seas transshipment data for albacore, by flag, year and month from July 2010 - March 2017 Notes:

1. The requirement to report (within 15 days of transshipment) high seas transshipment activities commenced in July 2010.
2. The data refer to high seas transshipments inside and outside the WCPFC Convention Area, and it should be noted that a proportion of the catch will likely have been caught within EEZs in the Convention Area and the IATTC Convention area.
3. Weights are in kg.

Table A3-1: 2010.

CCM responsible for reporting for the Fishing Vessel	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	2,837	0
China	0	0	166,000	210,668	247,192	17,091
Chinese Taipei	0	115,000	165,552	125,298	147,809	20,582
Indonesia	0	0	0	0	44,170	869
Japan	0	900	0	53,543	35,437	30,000
Korea (Republic of)	16,984	0	22,303	41,890	0	6,389
Philippines	0	0	0	7,500	0	4,848
Solomon Islands	0	0	0	0	0	0
Vanuatu	0	1,435,000	270,600	232,293	521,630	148,835
Total	16,984	1,550,900	624,455	671,192	999,075	228,614

Table A3-2: 2011.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	2,015	0	0	36,000	0	0	710	0	0	0	0	0
China	5,073	101,989	24,854	31,588	31,987	29,524	61,905	748,608	34,656	82,198	63,458	28,013
Indonesia	0	0	0	794	8,277	0	0	0	8,322	29,668	0	7,220
Japan	10,850	79,731	22,475	0	1,850	5,777	822	2,900	0	32,364	57,286	4,687
Korea (Republic of)	42,584	3,017	45,988	33,941	5,622	16,595	3,678	0	1,225	13,768	98,599	6,360
Philippines	0	0	0	400	0	500	17,303	2,284	0	10,346	0	6,723
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	100,000	110,000	1,020,165	290,970	597	13,700	816,794	313,038	62,000	12,857	0	341,175
Total	978,878	477,595	2,012,132	408,499	100,393	259,750	1,613,952	1,532,525	452,848	276,160	540,194	801,118

Table A3-3: 2012.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	0	0	841	0	0	0	0	0
China	67,701	95,807	61,927	103,977	8,055	20,149	305,884	216,568	118,390	6,507	0	11,276
Chinese Taipei	87,183	438,492	127,178	91,510	12,089	0	326,644	406,037	0	18,305	0	457,106
Indonesia	1,894	4,820	1,900	0	0	11,505	0	0	0	0	0	4,656
Japan	0	31,016	1,774	12,999	1,575	13,449	66,858	2,597	72,544	0	3,281	0
Korea (Republic of)	3,777	13,163	14,234	5,454	12,710	16,829	6,312	0	0	0	4,920	0
Philippines	1,500	0	4,684	0	0	0	0	0	19,278	0	0	0
Solomon Islands	0	0	0	45,500	0	0	0	0	0	0	0	0
Vanuatu	544,933	108,000	161,242	90,280	1,657	0	764,900	185,000	0	165,000	105,000	0
Total	706,988	691,298	372,939	349,720	36,086	61,932	1,471,439	810,202	210,212	189,812	113,201	473,038

Table A3-4: 2013.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	0	0	0	0	0	0	0	0
China	42,364	7,376	84,590	24,498	90,383	805,828	0	110,513	542,675	282,996	1,048,906	127,757
Chinese Taipei	33,541	0	5,000	59,423	50,711	0	157,174	140,100	532,164	39,331	543,864	498,889
Indonesia	0	0	6,891	286	5,800	0	0	0	0	0	0	2,403
Japan	0	0	9,481	38,422	3,100	39,089	13,602	42,460	147	14,639	10,539	2,765
Korea (Republic of)	0	45,342	53,797	0	29,523	26,676	0	20,268	0	0	24,377	18,848
Philippines	0	0	4,959	0	7,982	0	0	15,527	0	0	2,798	0
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	0	361,951	175,489	165,000	28,228	28,496	1,062,757	174,754	864,995	249,017	412,360	130,000
Total	75,905	414,669	340,207	287,629	215,727	900,089	1,233,533	503,622	1,939,981	585,983	2,042,844	780,662

Table A3-5: 2014.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	0	0	0	0	0	0	0	0
China	224,998	875	26	31,578	138,573	331,788	102,822	1,551,373	115,965	6,825	12,505	171,219
Chinese Taipei	985,503	636	386,115	8,688	31,399	529	0	0	576,390	129,558	1,109,509	449,172
Indonesia	0	0	0	0	0	3,728	0	0	0	0	0	0
Japan	3,626	0	27,308	0	2,000	200	20,533	0	23,693	8,005	0	0
Korea (Republic of)	0	22,285	0	8,844	3,393	13,958	46,724	6,004	37,687	74,214	0	37,621
Philippines	0	1,162	0	0	0	0	0	0	0	0	0	0
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	691,021	0	2,620	0	0	12,639	17,935	49,549	1,895,708	578	205,667	0
Total	1,905,148	24,958	416,069	49,110	175,365	362,842	188,014	1,606,926	2,649,443	219,180	1,327,681	658,012

Table A3-6: 2015.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	0	0	0	0	0	0	0	0
China	273,169	215,527	3,889	16	162,704	557,865	5,512	70,724	1,102,161	182,897	122,120	168,717
Chinese Taipei	449,399	7,915	12,663	17,320	0	3,572	61,526	80,938	329,500	419,241	294,284	274,693
Indonesia	0	0	0	0	0	0	0	0	0	0	0	0
Japan	1,515	5,101	5,645	2,221	119	0	647	1,466	0	5,587	6,566	0
Korea (Republic of)	2,444	22,212	43,063	3,759	25,975	50,251	127,526	26,143	0	100,741	4,395	21,934
Philippines	0	0	0	0	0	0	0	0	0	0	0	0
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	9,294	5,049	409	90,697	2,505	4,601	0	817,041	1,508,373	693,072	160,944	1,190,359
Total	735,821	255,804	65,669	114,013	191,303	616,289	195,211	996,312	2,940,034	1,401,538	588,309	1,655,703

Table A3-7: 2016.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	0	0	0	0	0	0	0	0
China	115,400	187,463	383,130	898,315	783,017	370	733,401	2,046,259	1,258,269	964,418	869,370	0
Chinese Taipei	873,578	407	47,290	6,081	17,946	0	901,867	484,572	555,906	399,841	561,586	521,253
Indonesia	0	0	0	0	0	0	0	0	0	0	0	0
Japan	2,560	0	331	0	134	1,988	13,900	12,000	4,830	0	9,639	46,529
Korea (Republic of)	2,821	3,631	37,070	29,140	20,184	7,152	26,756	188,441	118,212	187,865	122,317	29,322
Philippines	0	0	0	0	0	0	0	0	0	0	0	0
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	9,871	28,238	71,941	20,172	352	3,084	188,895	937,255	1,654,204	642,294	635,085	469,531
Total	1,004,230	219,739	539,762	953,708	821,633	12,594	1,864,819	3,668,527	3,591,421	2,194,418	2,197,997	1,066,635

Table A3-8: 2017.

CCM responsible for reporting for the Fishing Vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Belize	0	0	0	0	0	0	0	0	0	0	0	0
China	91,280	1,822,209	98,079	0	0	0	0	0	0	0	0	0
Chinese Taipei	840,512	39,726	601,722	0	0	0	0	0	0	0	0	0
Indonesia	0	0	0	0	0	0	0	0	0	0	0	0
Japan	0	0	0	0	0	0	0	0	0	0	0	0
Korea (Republic of)	72,225	56,070	38,169	0	0	0	0	0	0	0	0	0
Philippines	0	0	0	0	0	0	0	0	0	0	0	0
Solomon Islands	0	0	0	0	0	0	0	0	0	0	0	0
Vanuatu	101,369	13,198	178,822	0	0	0	0	0	0	0	0	0
Total	1,105,386	1,931,203	916,792	0	0	0	0	0	0	0	0	0