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**ANNUAL REPORT TO THE COMMISSION
PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS**

WCPFC-SC7-AR/CCM-27

VANUATU

VANUATU
The Vanuatu Fisheries Department

National Tuna Fishery Report



VANUATU

09/08/11

1 . Abstract

Vanuatu is a member of the regional fisheries management organizations (RFMOs) such as IATTC, ICCAT, IOTC and the WCPFC. The membership of Vanuatu in these RFMOs has enabled Vanuatu's fishing fleet to fish these RFMO's waters for tuna and other highly migratory fish species. Vanuatu fleet is comprised of 19 purse seiners and 65 long-liner fishing vessels. Catch and Effort coverages for the Vanuatu fleet have been high but the size data coverage is uncertain due to lack of observers on board the vessels, particularly the distant long-liners, and also due to lack of unloading data sought from the distant landing ports.

In the Vanuatu EEZ the only foreign fleet with high catch and effort data coverage is the Fiji fleet. In the period 2006 – 2010 the annual catch estimates of the Vanuatu longline fleet in the WCPO have generally increased as did the fishing effort (sets) and number of fish per 100 hooks, where as for the purse seiners catch estimates were reduced. For Purse seine, there were more sets on unassociated than associated schools. The purse seine fleet's that fished under the bilateral total catches were reduced from 61,415mt to 24,097mt. This recent catch comprises 88% skipjack, 11% 0.31% bigeye. Unraised and provisional 2010 data shows that catches of all major tuna species have reduced from 54,750mt of skipjack in 2006 to 21,360 in 2010. Yellowfin catch also reduced from 5,769mt in 2006 to 2,662mt in 2010 as well as Bigeye from 434mt in 2006 to 75mt in 2010. Out of the 19 purse seine vessels that fished within the WCPO, 6 vessels fished under Bilateral with PNG while 13 vessels fished under the FSM arrangement. The total catches reported are from the 6 purseseine vessels with home party criteria as Papua New Guinea therefore exclude catches from vessels fishing under the FSM arrangement which was about 129,529.20mt, 105,706.50mt skipjack, 23,259.30 yellowfin and 563.40 bigeye.

The major tuna species from the Vanuatu longline fleet catch was dominated by albacore 70% then bigeye (13%) and lastly yellowfin (17%). Unraised and provisional estimates for the longline fleet in 2010 were 12,298mt, 2,060mt, 788mt for albacore, bigeye and yellowfin respectively but if raised could be higher.

Data for the Vanuatu EEZ were based on unraised logsheet data. Fishing in the Vanuatu EEZ was by foreign fleets from China, Fiji, Taiwan. The fleets; Taiwanese, Chinese and Fijian have increased in 2008-2010. Since, 2009 Vanuatu accomplished 100% Observer coverage for the locally based foreign fishing vessels and 100% port sampling on all 110 unloading of fresh fish including the 22 transshipment in port. Fresh fish is exported to Japan while frozen fish are shipped to the canneries in Fiji.

Introduction

This report was prepared by Tony Taleo (Principal Data Manager) and Lucy Andrea Joy (Senior Data Officer) of the Fisheries Compliance Division within the Vanuatu Fisheries Department.

The report covers the fishing operations of the Vanuatu flag vessels operating in the WCPFC area during the period 2006 to 2010, as well as report on the fishing operations of foreign fishing vessels operating within the Vanuatu Exclusive Economic Zone (EEZ)-

The report mainly focuses on the *fleet structures, annual catch estimates, and catch/effort distributions*. The report also raises areas where new and further effort is required on the part of Vanuatu to enhance its role in contributing to the overall conservation and management of highly migratory stocks in the WCPFC area.

1.2 Information on Flag-state reporting

The Vanuatu fishing fleet is comprised of purse seiners, longliners vessels which fish between the Pacific, Indian and Atlantic Oceans. Fishing inside the Exclusive Economic Zones (EEZ) of coastal states had been possible by way of bilateral fishing access agreements particularly for long liners and sub-regional arrangements (FSM Arrangement) for purse seiners.

Table 1. Number of fishing vessels active in tuna fisheries in WCPFC Convention Area by gear and size class.

Gear	LONGLINE
Fleet	<i>Distant-water and offshore</i>

Size class (GRT)	2006	2007	2008	2009	2010
0-10					
10-50					
50-200	12	12	12	12	18
200-500	27	27	26	23	23
500+	25	25	23	24	24

Gear	PURSE SEINE
Fleet	<i>Bilateral access – Vanuatu flagged</i>

Size class (GRT)	2006	2007	2008	2009	2010
0-500	3	3	3	3	3
500-1,000					
1,000-1,500	14	14	10	11	11
1,500+	6	6	5	5	5

1.2 Data coverage

Data regarding the fishing operations of the Vanuatu fleet have been provided by the various members in whose jurisdictions the vessels may have operated, and also by Vanuatu Flag Management Authority. The catch and effort data coverage for the Vanuatu fleet are high, but the size data coverages are uncertain as most of these vessels are landing their catch elsewhere and this would mostly be corroborated by the observers and port samplers in whose jurisdictions catch may have been landed or transhipped in table 2. The inferences for high, medium, and low scores for the catch/effort, and size data coverage, are provided

in annex 1. A high score for catch or effort implies that more than 80% of the data had been covered and question marks indicate that there was no data coverage.

Table 2: Estimated annual coverage of catch, effort and size data for VANUATU fishing fleets in the WCPFC Convention Area, 2005-2010.

Gear	Fleet	Year	Catch/Effort data coverage	Size data coverage
LONGLINE	VANUATU	2005-2006	HIGH	??
		2007-2008	HIGH	??
		2009-2010	HIGH	
PURSE SEINE	VANUATU – Bilateral	2005-2006	HIGH	??
		2007-2008	HIGH	??
		2009-2010	HIGH	
PURSE SEINE	VANUATU-flagged (FSM Arrangement)	2005-2006	HIGH	??
		2007-2008	HIGH	??
		2009-2010	HIGH	

1.3 Annual Catch and Effort Estimates for the period 2006 – 2010

The annual catch and effort estimates have been estimated for the Vanuatu fleet operating under bilateral arrangements, the FSM Arrangement, and the longline vessels operating in the wider WCPFC Area. The general observation was that annual catch and effort estimates have increased continuously for the purse seine and the longline fleets.

The purse seine fleet that operated under bilateral arrangements recorded a decrease in effort in the number of days vessels spent fishing and searching from 868 days to 724 days in 2010 (Table 3). The effort in the total number of sets had also decreased with the most seen in associated sets. The total annual estimated catches decreased from 60,953mt in 2006 to 24,097mt in 2010 which is about 36,856mt reduction. During this period, all main tuna species in the catch of decreased. Skipjack catches decreased by 33,390mt and also yellowfin (3,107mt) and bigeye (359mt) catches have dropped by 2010 from 2006 levels. Noticeably, the “other” fish category caught by this fleet was 14mt in 2005 and decreased in 2006 to more than 9 mt. For this fishery, skipjack is the dominant species (88%) followed by yellowfin (11%) and then bigeye (0.3%).

During this period 2006-2010, the longline fleet recorded its highest total annual catch estimate as 12,293mt in 2010 with a total effort of 224,579 hooks (Table 4). This effort was the highest effort recorded for this period, and since 2002 declined to 91,223 hooks in 2005. The longline fishery recorded the highest catches for albacore in 2010 being 12,293mt which is an increase from the 5,582mt in 2008 and 7,992mt in 2009. The highest catch for bigeye was in 2010 also which was an increase from the 1,651mt in 2006 to 2,060mt in 2010. Yellowfin catches also showed an increase in catch from 2008 (539mt) and 2009 (514mt) and then on to 788mt in 2010. Albacore was the dominant species in the catch followed by bigeye and yellowfin and then on to blue fin and other marlin species.

1.4 Catch distribution

The purse seine fleets were mainly operating within the 10 degrees N and 10 degrees S and between 130 degrees E and 150 degrees W. The effort in the purse seine fishery is measured as days fishing and searching. Figures 1a, 1b show the effort distributions of purse seine vessels that operated under the FSM Arrangement and under bilateral agreements.

The longline effort is given as 100s of hooks. The efforts are distributed between 40 degrees North and 40 degrees south. This implies that both the southern and northern albacore stocks were targeted. However,

there was more effort in south i.e between 10 degrees S and 40 degrees S with a strong concentration in the Vanuatu EEZ in 2006 and also in the Cook Islands EEZ in 2009 and 2010 with little effort in the EEZs of other coastal states particularly in 2006.

Table 3. Annual catch (mt) in the WCPFC Convention Area by species for the VANUATU Offshore LONGLINE fishery.

Gear	LONGLINE
Fleet	<i>Distant-water and Offshore</i>

Species	2006	2007	2008	2009	2010
YELLOWFIN	799	967	539	514	788
BIGEYE	1,651	2,122	860	1,300	2,060
BLUE MARLIN	75	122	68	102	173
BLACK MARLIN	26	31	21	28	56
SKIPJACK	1	0	0	0	0
ALBACORE	8,804	8,388	5,582	7,992	12,293
PACIFIC BLUEFIN	0	0	0	0	0
STRIPED MARLIN	83	111	75	57	77
SWORDFISH	188	222	125	130	281

Notes

2006–2010 catch estimates were taken from TUFMAN database system – coverage of logsheets is not known but expected to be high.

Catch estimates prior to 2006 include areas outside the WCPFC Convention Area.

Billfish estimates for 2006-2010 come from logsheets .

Table 4. Annual catch (mt) in the WCPFC Convention Area by species for the VANUATU PURSE SEINE fishery.

Gear	PURSE SEINE
Fleet	<i>Bilateral access – Vanuatu flagged</i>

Species	2006	2007	2008	2009	2010
SKIPJACK	54750	59589	93,374	129,593	21,360
YELLOWFIN	5769	7030	23,423	15,126	2,662
BIGEYE	434	391	370	174	75

Notes

These catch estimates also apply to the WCPO Area (the Pacific Ocean west of 150°W)

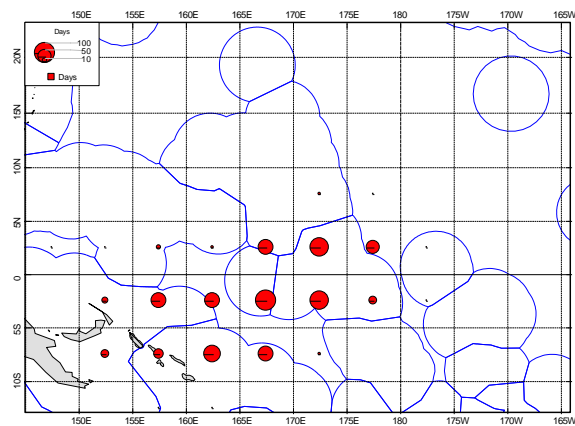
Catches do not include Vanuatu-flagged vessels that fish the FSM Arrangement vessels with HOME PARTY = PNG

Catch estimates were determined from logsheet data raised using information on actual vessel activity (e.g. VMS data).

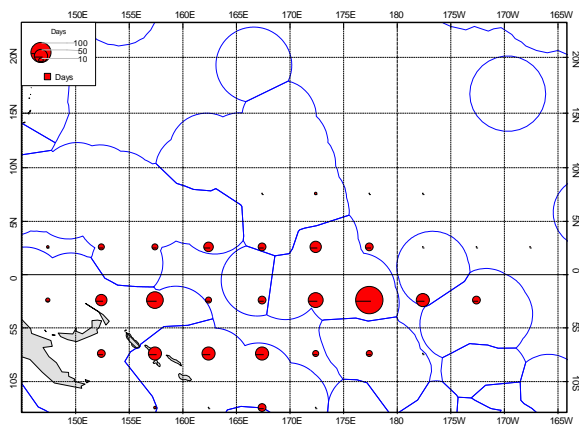
Vessels included are FONG SEONG 666, FONG SEONG 696, FONG SEONG 668, YUH FA 2, YUH FA 3, YUH FA 6.

Figure 1 (a) Annual distribution of EFFORT (days fishing and searching) for the VANUATU (Bilateral) PURSE SEINE fleet throughout the WCPFC Convention Area for 2008-2010

PS Effort 2008



PS Effort 2009



PS Effort 2010

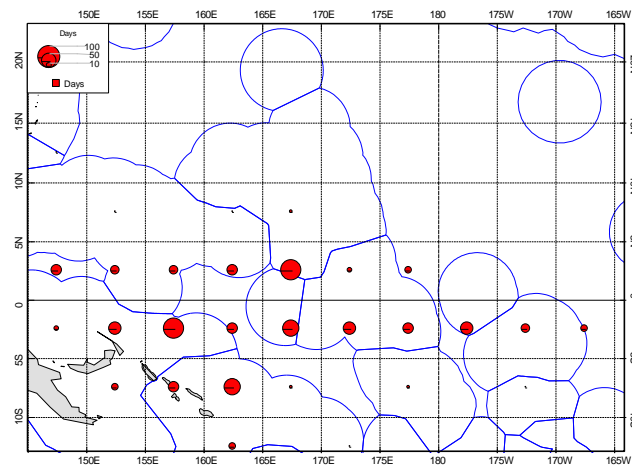
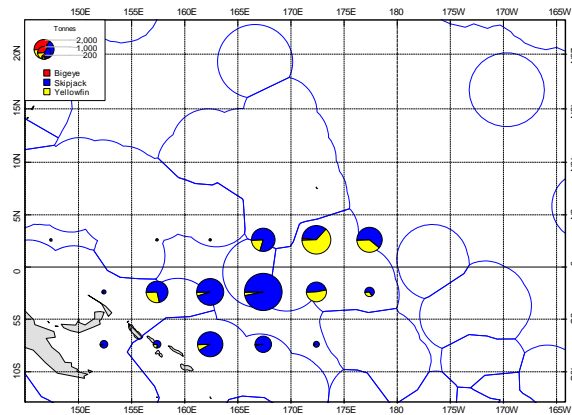
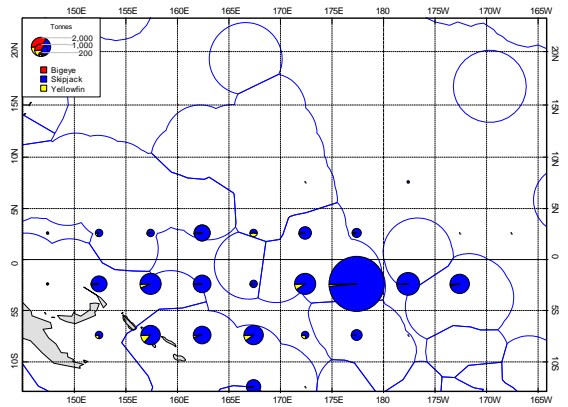


Figure 1 (b) Annual distribution of CATCH (days fishing and searching) for the VANUATU (Bilateral) PURSE SEINE fleet throughout the WCPFC Convention Area for 2008-2010

PS Catch 2008



PS Catch 2009



PS Catch 2010

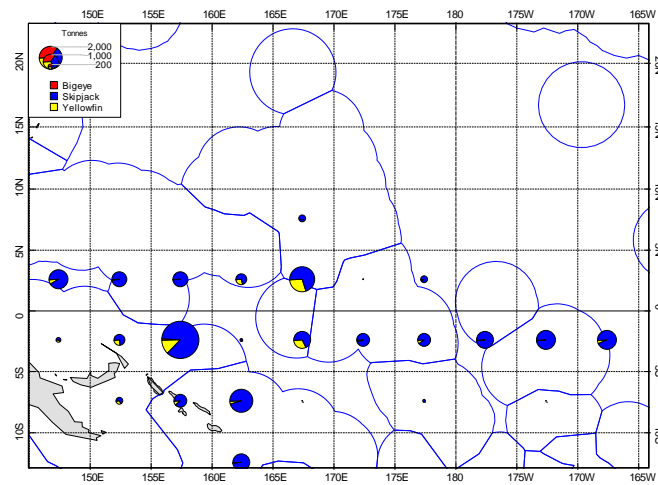
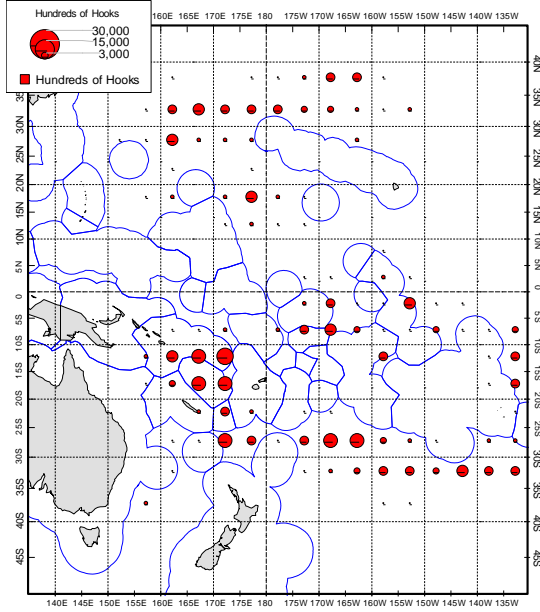
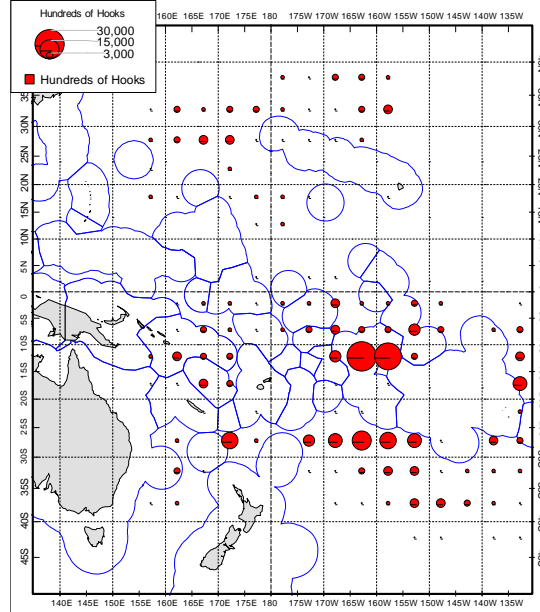


Figure 2 (a) Annual distribution of effort for the VANUATU-flagged LONGLINE fleet throughout the WCPFC Convention Area for 2008-2010

LL Effort 2008



LL Effort 2009



LL Effort 2010

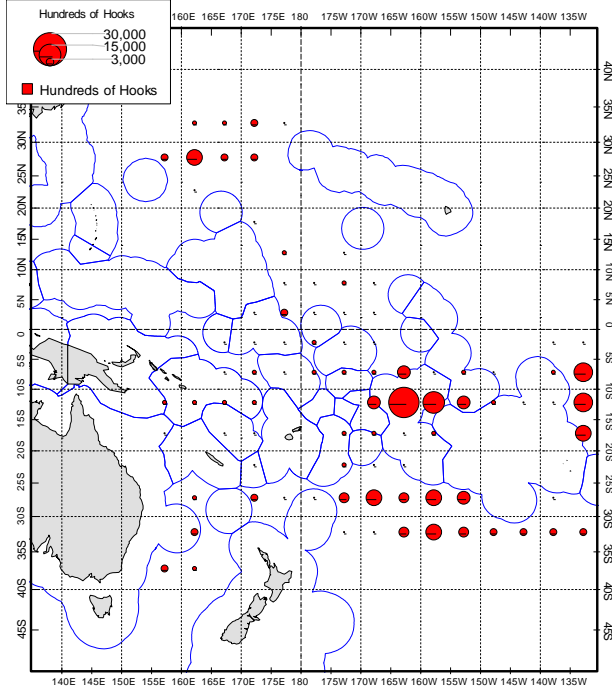
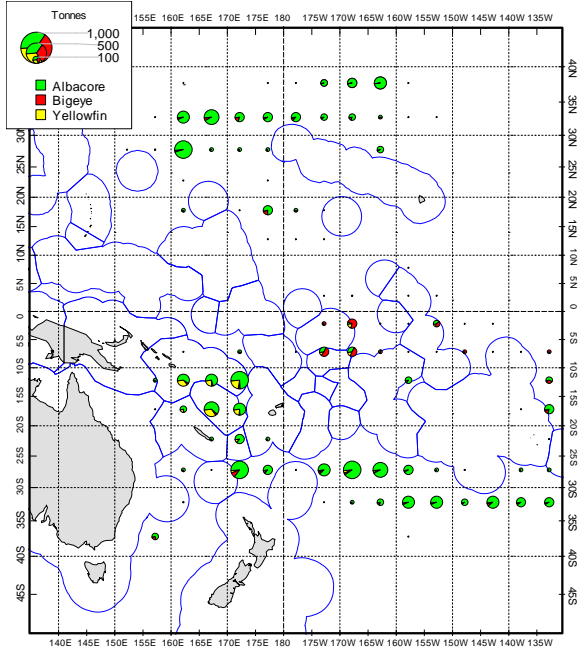
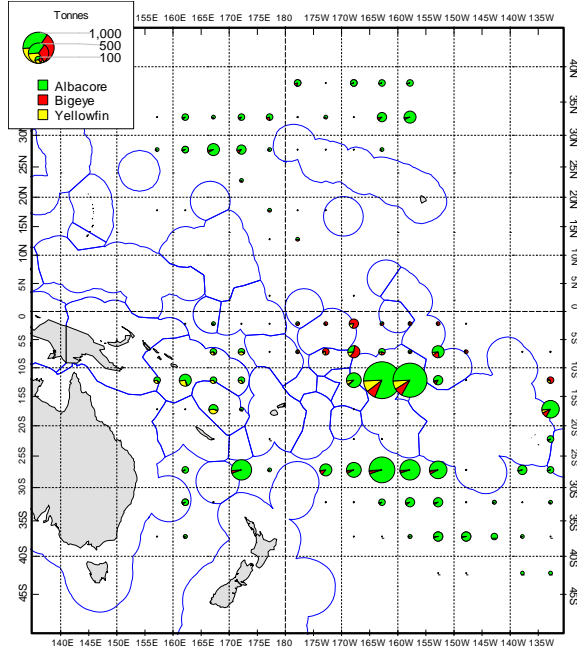


Figure 2 (b) Annual distribution of CATCH for the VANUATU-flagged LONGLINE fleet throughout the WCPFC Convention Area for 2008-2010

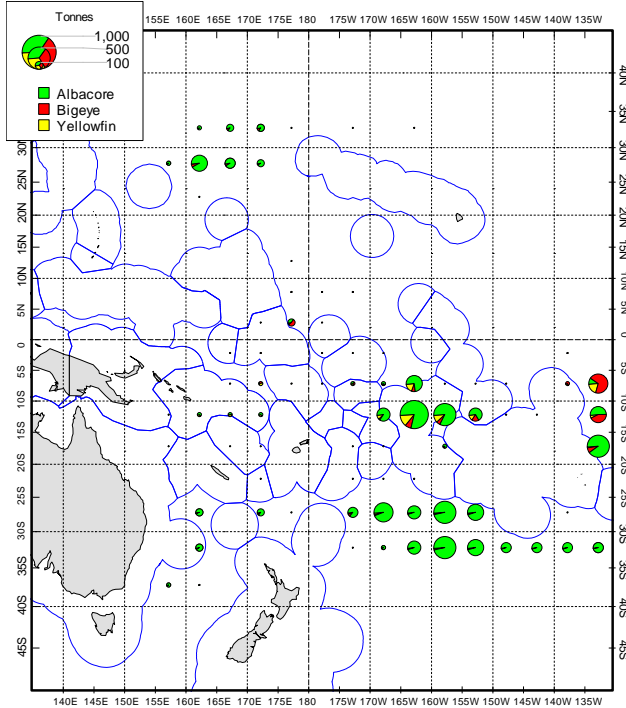
LL Catch 2008



LL Catch 2009



LL Catch 2010



1.5 Estimated Annual total catches of non-target, associated and dependent species by VANUATU purse seine fleets and long-line fleets, 2006-2010.

It is not known what the estimated annual total catches of non-target, associated and dependant species by the Vanuatu purse seine fleets for the period 2006-2010, as most of the Observer records have been collected by PNG and FSM observers however Vanuatu in collaboration with PNG have been successful in meeting a required observer coverage on its purse seine vessels that are fishing under the FSM Arrangement.. It is not known whether or not this information collected by observers in the other jurisdictions on vessels that were operating in their waters has been submitted to the WCPFC, SPC or FFA.

2. Coastal-state reporting

Vanuatu has had a long history of longline fishing in the vicinity of the EEZ since the early 1950s and was dominated by fleets from the distant water fishing nations namely, the Chinese Taipei and Korea, up to the mid-1990s Commercial tuna fishing within the Vanuatu EEZ consists of longline fishing with minimal domestic activity in local waters. Since then there has been a rapid expansion of the domestic fleet. Foreign fleets from Fiji, China, Chinese Taipei, and Cook Islands still fish in Vanuatu waters for tuna & tuna like species under bilateral access agreements. Most of these vessels operate out of American Samoa and Fiji and primarily target albacore tuna for the canneries in American Samoa and Fiji. In 2010, Vanuatu licensed 158 longline fishing vessels to fish for tuna & tuna-like fish species. Fishing fleets from Fiji and Taiwan have increased their fleet over the past year from 2009 to 2010, however, the Chinese fleet has decreased from 71 vessels in 2009 to 65 vessels in 2010. Cook Islands still remains with 2 vessels. The Chinese fleet was the dominant fleet operating in the Vanuatu EEZ, both in terms of vessel numbers and capacity, followed by Taiwan, then Fiji. Most of the vessels that have been licensed to fish in Vanuatu waters were greater than 100 GRT.

Figure 3(a): 2006-2010 Total Catch by Species/Number and Effort for Longline Fleets in the WCPFC Convention area

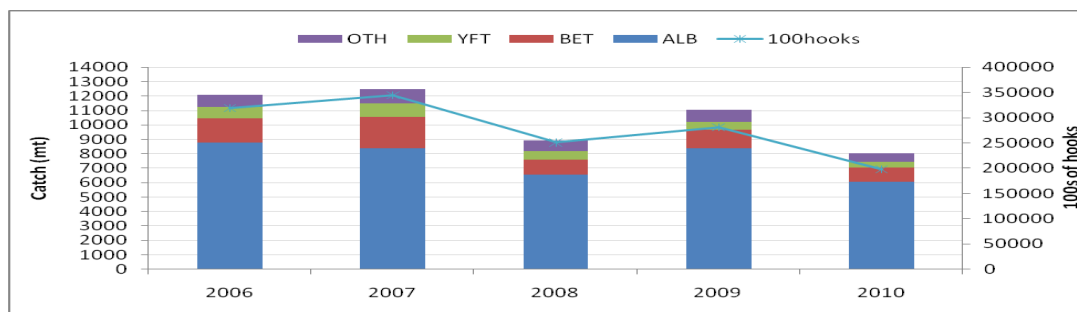
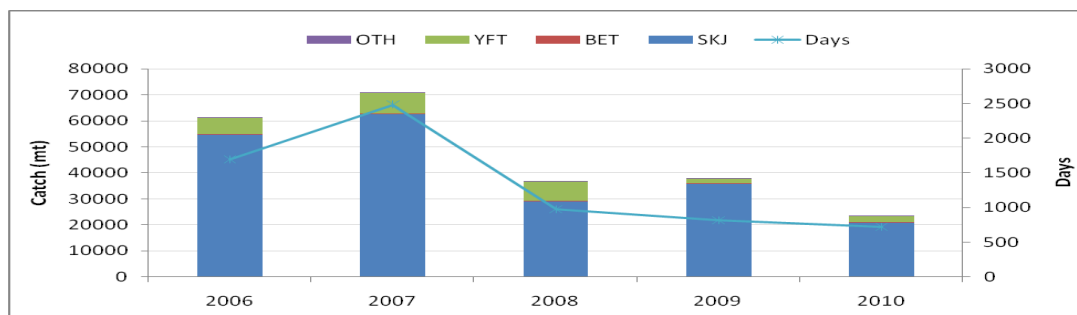


Figure 3(b): 2006-2010 Total Catch by Species/Number and Effort for Vanuatu flagged Purse Seiners in the WCPFC Convention area



2.1 Estimated data coverage

Coverage of logsheets from foreign fleets fishing in the Vanuatu EEZ extends back as far as the 1970s and has been low and variable among years. The only recent high coverage catch and effort rates are those from the Vanuatu and Fiji fleet. There have also been significant missing data thus it hasn't been possible to estimating coverage rates for some years. Because of the uncertainty of the estimated catch, effort, and size data coverage amongst the fleets that operate in Vanuatu, the catch and effort levels for Vanuatu have been difficult to estimate. It is understood however, that most of these fleets have been unloading their catch in the ports of Levuka, Pagopago, and Suva.

Vanuatu is now looking into strict measures in terms of estimated catch and effort data, since most of our licensed vessels are currently offloading all or part of their catches, either to the factory or on the carrier vessel in port.

However the newly build processing plant in Port Vila harbor has already been receiving fresh Tuna for Sashimi export to Taiwan and New Zealand. So far Vanuatu had just completed its 22nd Transshipment operation in Port Vila Harbor with 100% Port Sampling coverage.

Most of the current presented data were obtained from the OFP/SPC database, and were originally collected and supplied by Vanuatu and Fiji. It should be noted that data provided for Vanuatu in this report and also from the past reports to the commission are from unraised log sheet data.

Table 5. Estimated coverage of catch, effort and size data for bilateral-arrangement, foreign fleets fishing in VANUATU's EEZ

Gear	Fleet	Year	Catch/Effort data coverage	Size data coverage
LONGLINE	China	2005-2006	??Low	??
		2007-2008	??Low	??
		2009-2010	Medium	??
LONGLINE	Chinese Taipei	2005-2006	??High	??
		2007-2008	??High	??
		2009-2010	Medium	99%
LONGLINE	Fiji	2005-2006	LOW	??
		2007-2008	LOW	??
		2009-2010	Medium	??
LONGLINE	Locally Based Foreign	2005-2006	LOW	??
		2007-2008	LOW	??
		2009-2010	HIGH	100%

Annual catches in the Vanuatu EEZ

In the period 2006 to 2010, the total annual catch for all the fleets that were undertaking fishing operations in Vanuatu had decreased from 7863.952mt to 3997.783mt. This catch reduction was a result of the effort decline that took place also for this period of years both for the Purse seine and Longline vessels in the Vanuatu EEZ (Figure 3(a) and 3(b)). The catch was largely attributed to the Chinese and Fiji fleet which recorded over 80% of the total catch for the 2006-2010 periods, and with the Taiwanese fleet contributing only 11%. In fact, catches for the Taiwanese fleet have declined in comparison to other fleets since 2006 and slowly picking up pace in 2007. On the other hand, catches for the Chinese fleet have steadily increased during this period.

The annual estimated tuna catch composition by weight for 2010, was again dominated by albacore (69%), significant yellowfin (16%), and minor bigeye (2%). These catch proportions were similar to the historical tuna catch compositions.

It has been estimated that the total catch of albacore in 2006 exceeded 6,000 mt based on unraised data but it is likely that the best estimate may have approached 10,000 mt if the data were raised.

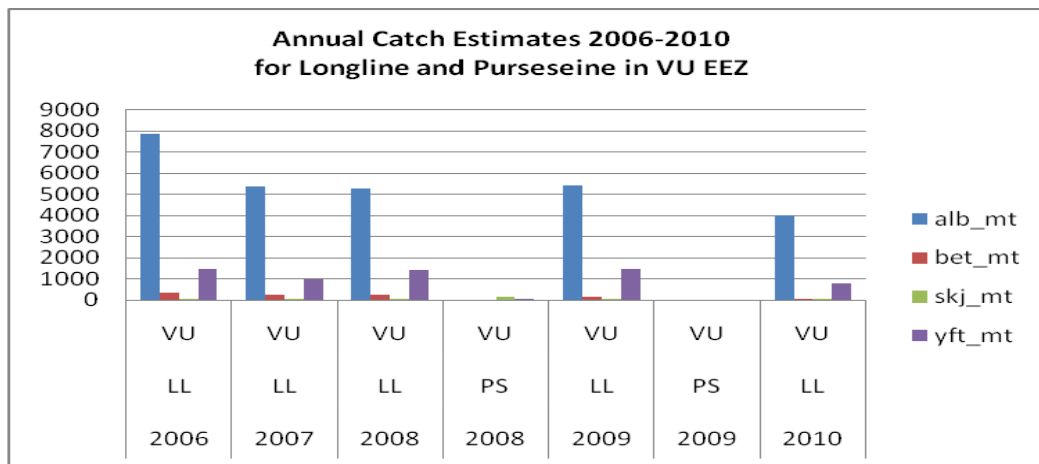
This also applies to the 2010 albacore catch which is estimated to exceed 4,000mt based on unraised data but is likely to have approached 8,000mt if it were raised.

The recent tuna fishery in Vanuatu has generally seen a rapid expansion of fishing effort. It is estimated that this recent effort exceeded 25 million hooks per year based on unraised data but it is likely that the actual estimate may exceed 40 million hooks per year if the data were raised. It is noted that high catches were usually obtained with high effort.

Annual catch in Vanuatu EEZ, were sought from Vanuatu and Taiwanese flag vessels, fishing under the Kaoshiung Bilateral Agreement whom are obliged to report their catches annually. SPC also provided estimates based on raised logsheet data that have been submitted by Fiji and Pagpago for the Fiji based fleet.

Figure 4 shows a steady but declining catch of albacore tuna by the long line fleet otherwise one of the US treaty purseine vessel fished in 2008 taking just over 150mt of tuna like species, which was more of skipjack than yellowfin and bigeye.

Figure 4. Annual Catch Estimates by the main foreign LONGLINE/Purseine fleets active in the VANUATU EEZ for 2006 -2010



2.2 Annual distribution of fishing effort

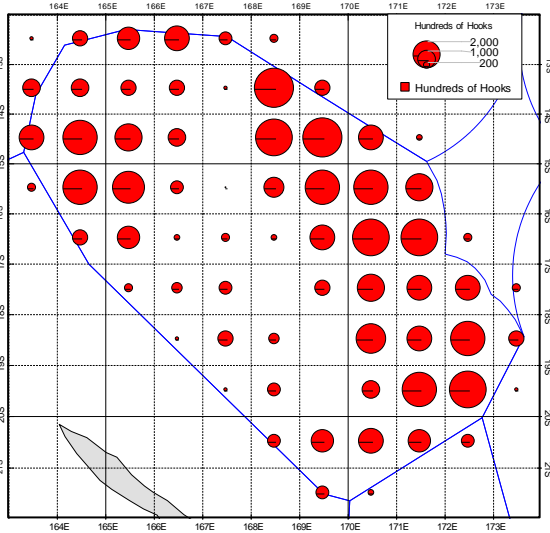
The fishing effort for the tuna fishery in Vanuatu occurred more in the eastern area of the EEZ which borders Fiji, Solomon Islands and the high seas enclave. This is probably due to economic reasons such as the closer proximity to canneries in American Samoa and Fiji.

The graphical representation of the distribution of fishing from the various fleets namely, Chinese, Chinese Taipei and Fiji, active in the Vanuatu EEZ during 2009 to 2010 is shown in Figure 4. From this effort distribution map, it can be seen that fishing was dominant within the latitudes 20N, 20S and 164E, 164W in this period.

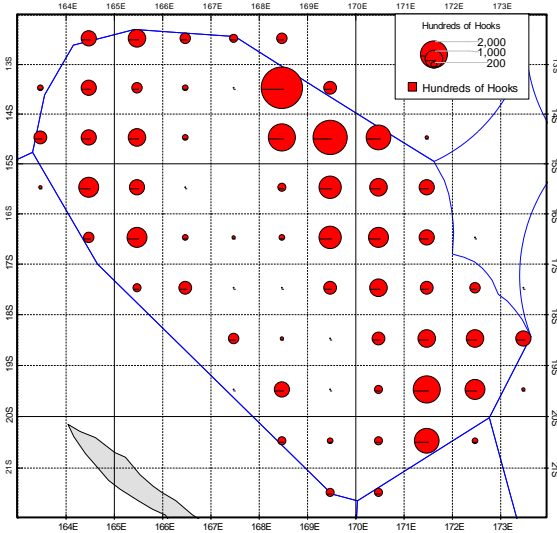
Figure 5. Annual distribution of EFFORT by the main foreign LONGLINE fleets active in the VANUATU EEZ for 2006 -2010

CHINESE FLEET

PS Effort 2009

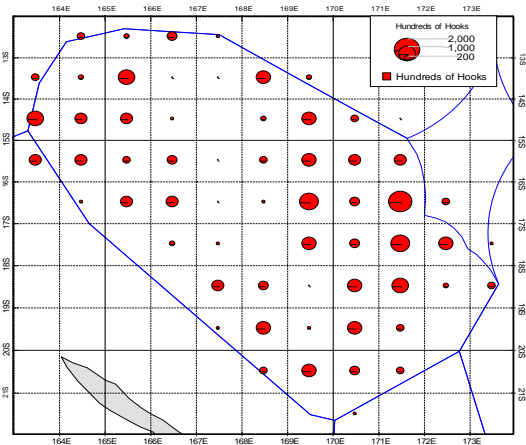


PS Effort 2010

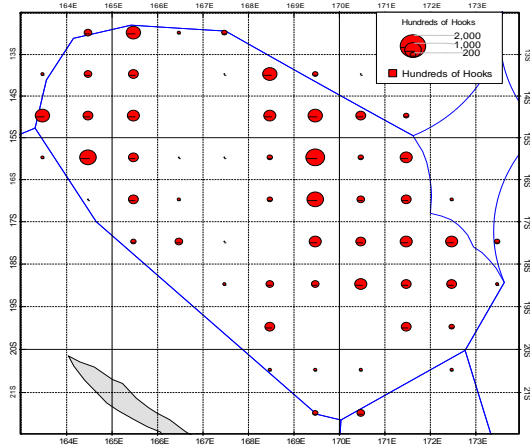


CHINESE TAIPEI FLEET

PS Effort 2009

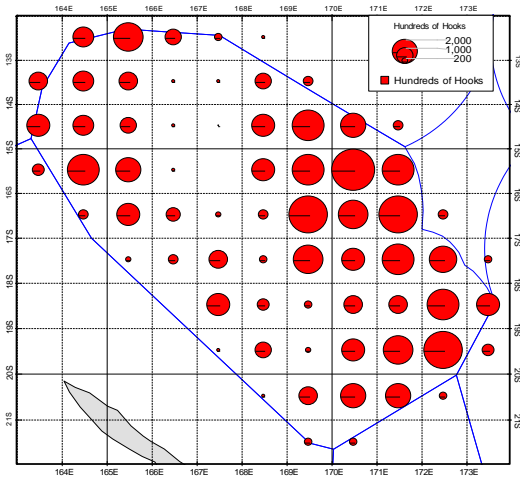


PS Effort 2010

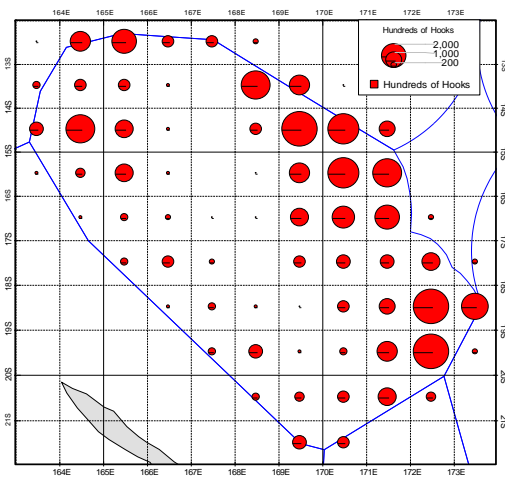


FIJI FLEET

PS Effort 2009



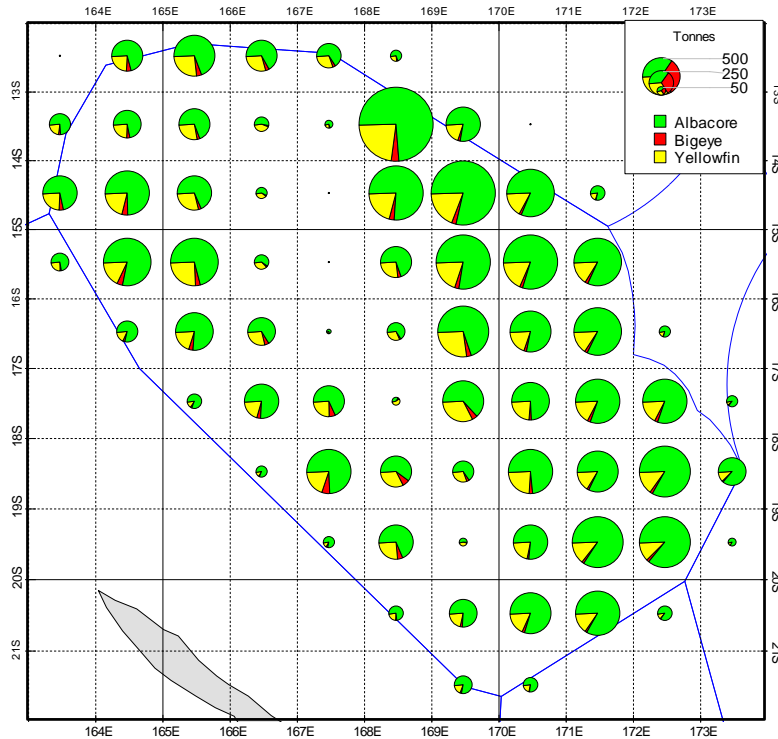
PS Effort 2010



2.3 Distribution of Catch by Species

The distribution of catch by species was similar to the distribution of effort for the same period, i.e. distributed more to the eastern part of the Vanuatu EEZ bordering the western and eastern EEZ boundaries of the Fiji and Solomon Islands including the high seas enclave between these EEZs (Figure 4). Catches were high in this area with albacore being the dominant species. Increased catches of bigeye tuna were observed in the western part of the Vanuatu EEZ compared to those on the eastern part. It is likely that the vicinity of the New Hebrides trench in the western EEZ may have some influence on the catchability of bigeye.

Figure 4 . Distribution of catch by species by all longline fleets combined in the VANUATU EEZ, 2006–



2010

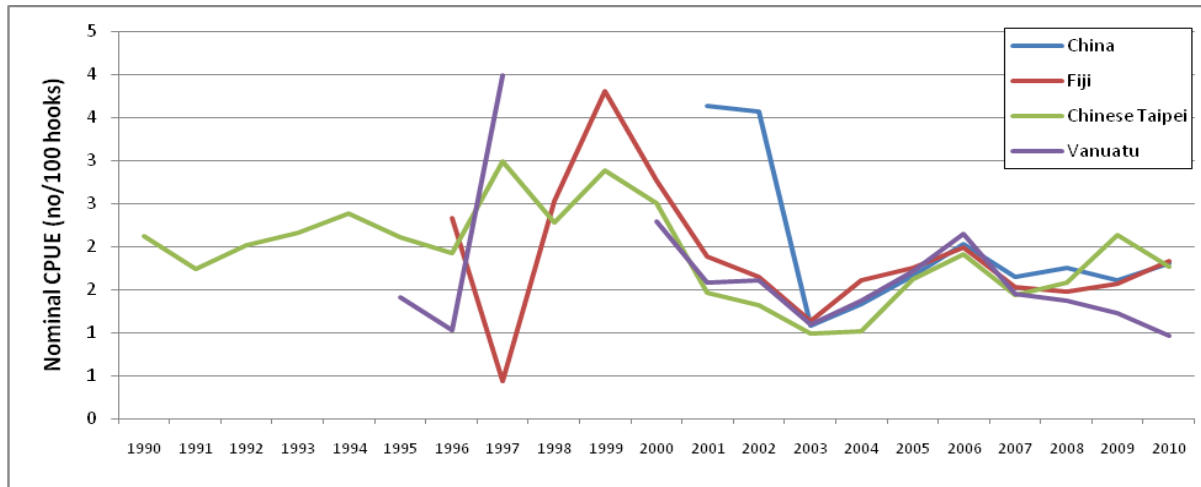
Historically, the Taiwanese fleet fished within the EEZ during the spring (October – December) and summer (January – March), with most of the effort occurring in spring. Albacore catch rates were moderate during spring and summer and lowest during fall. Yellowfin catch rates were highest at the advent of winter (July), but declined thereafter and remained low until fall.

2.4 Fishing Effort - Catch Per Unit Effort (cpue)

The cpue is measured as nominal cpue, which is numbers of fish per hundred hooks (no. / 100 hook). Recent cpue had been dominated by albacore and yellowfin. The Taiwanese fleet was the only fleet that showed a longer nominal cpue trend going back to 1991.

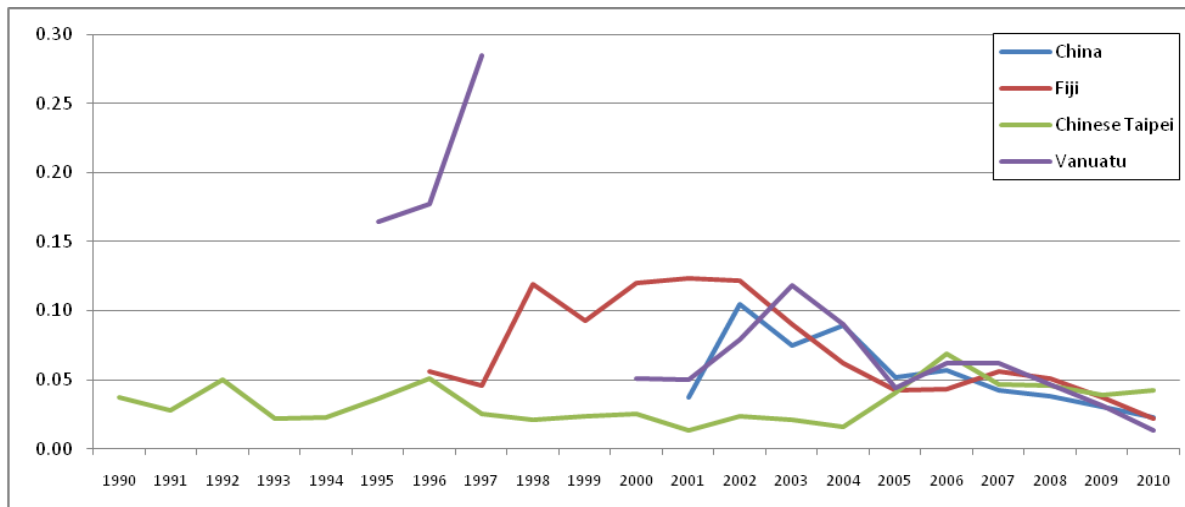
During late 1990s cpue for albacore as observed by the Taiwanese fleet, was around 2 fish / 100 hooks. However since 1999 the cpue had fallen to 1 fish / 100 hooks in 2003, but has recovered since late 2004 for all fleets with 1.6 - 1.8 fish/100 hooks being obtained in 2005.

2) Trends in nominal catch rates of ALBACORE TUNA taken by longline fleets operating in the VANUATU EEZ, 1990-2010



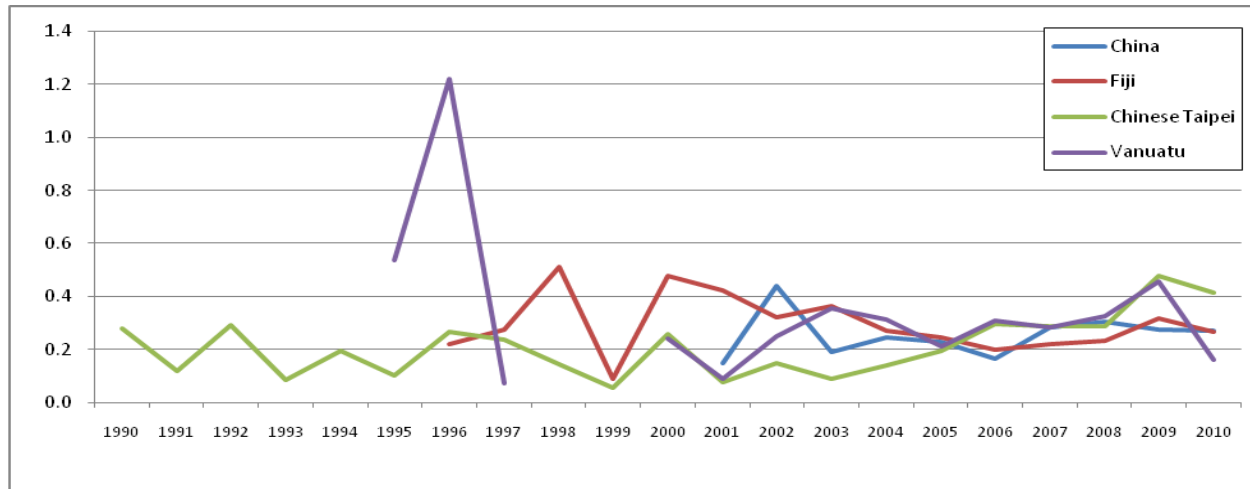
The highest recorded nominal cpue for Albacore was 4 fish per 100 hooks in 1996. Recent nominal cpues have been variably low after that since since 2003 onwards which showed a convergence trend among the fleets with cpues ranging from 1 to just over fish per 100 hooks being achieved 2006 and 2009. This level of effort was similar to the 2000 level, but was still lower than the late 1990s.

3) Trends in nominal catch rates of BIGEYE TUNA taken by longline fleets operating in the VANUATU EEZ, 1990-2010



With the exception of the Taiwanese fleet, nominal cpue rates for Bigeye in 2001 were highly variable between 0.01 to 0.13 fish per 100 hooks. Since then all fleets recorded between 0.03 to 0.05 fish per 100 hooks in 2005 with the Taiwanese displaying an increase in cpue from 2006. The Taiwanese cpue was flexible in the years 1997 to 2004 but increased to 0.06 fish per 100 hooks in 2006 and has then reduced again over the years 2007 to 2010.

4) Trends in nominal catch rates of YELLOWFIN TUNA taken by longline fleets operating in the VANUATU EEZ, 1990-2010



The Yellowfin cpue shows a slightly flexible trend from the years 1996 to 2010 with the highest cpue recorded to be around 0.5 fish per 100 hooks in 1998 and 2000 by the Fiji fleet. Excluding other fleets the Chinese Taipei yellowfin cpue data was recorded way back as far as 1990 and has slowly increased from 0.3 fish per 100 hooks in 2008 to 0.5 fish per 100 hooks in 2009.

Research and Statistics

3.1 observer program and Port sampling 2004-2010

Vanuatu recently established the National Observer and Port Sampling Program. During the late 2008 and early 2009 to date, port activities in Vanuatu slowly began to gain pace; at the moment it is fully established with 100% coverage on Locally Based Foreign Vessels and also during transshipment and unloading but is still with a very limited observer coverage in the Vanuatu fishery during this period for the Fiji based fleet operating in the Vanuatu EEZ.

Hence, Vanuatu recognizes that there are critical data 'gaps' that need more attention and focus on. Therefore, even with the limited staffs and limited funds available at the moment we will work more closely with SPC, FFA and Fiji to collect as much information and data as possible to enable us to fill in the Gaps.

Vanuatu urges and at the same time welcomes SPC, FFA, WCPFC and other fisheries organizations to carry out more research especially in its EEZ specifically on the Albacore stock as it is the most dominant target species as compared in the period 2006-2010. This will enable our managers to determine the status and migration patterns of albacore stocks within the vicinity of Vanuatu EEZ. The Vanuatu observer program will continue to assist in collecting relevant scientific data and as much size based data is collected during landings to support every possible research that is projected for this fishery.

ANNEX 1

Table 2 Categories of coverage for catch, effort and size data.

Category	Catch/Effort data coverage	Size data coverage
HIGH	>80%	>80%
MEDIUM	50-80%	50-80%
LOW	0-50%	0-5%
-	No data	No data

LEGEND :

“**Catch/Effort data coverage**” is determined by comparing the annual catch from operational (logsheet) data to the **total** annual catch, as determined by unloadings or other types of data/information.

“**Size data coverage**” is determined by comparing the number of trips covered by port sampling and observers (collecting size data) with the estimated number of **actual** trips undertaken by this fleet during that year.