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

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PAPUA NEW GUINEA

Scientific Committee
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ANNUAL REPORT TO THE COMMISSION

PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS 2010

PAPUA NEW GUINEA

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Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the commission by the 30th April 2011	**YES**

Summary

The Papua New Guinea (PNG) tuna fishery is made up of both the purse-seine and longline sectors with a small, but important handline sector. The longline and handline sector is a citizen-only activity and all vessels fish exclusively in the waters under PNG national jurisdiction. The purse-seine sector is a mix of both domestic and foreign access vessels. The domestic sector comprises the PNG flag vessels and PNG chartered vessels which support processing facilities onshore in PNG. While the PNG flagged vessels fish primarily in PNG waters, but occasionally in the adjacent high seas, the chartered vessels fish both in PNG waters and waters outside of PNG. Foreign vessels under access arrangements fish in PNG EEZ waters (but not territorial or archipelagic waters) whenever there is fish to catch.

Total catch in 2010 within PNG waters was 702,969 mt, a 55 % increase from the 2009 catch of 453,129 mt. The increase in total catch is attributed to the increase in total fishing effort relative to the increase in number of fishing vessels, mainly purse seiners. The catch contribution was 78.7% by foreign vessels that fish under access arrangements, 16.7% from PNG chartered vessels (locally based foreign (LBF)) and 4.1% from the PNG flag vessels. Small amount ≈0.5% (3120 mt) is from the longline sector. Almost all the catch from PNG Flag vessels was caught inside PNG waters as result of closure of the neighboring high sea pockets. The catch by PNG chartered vessels outside of PNG waters was 63,397 mt and was taken mainly in the waters of the other PNA member countries.

A total of 256 vessels was active in the PNG waters in 2010. Thirty-two (32) were longline and handline vessels and 224 were purse-seine vessels. Nine (9) of the 224 vessels were PNG flagged, 39 were PNG chartered and 176 were foreign vessels fishing under access arrangements. The total purse-seine effort in 2010 by foreign vessels was 15,796 days fishing and searching inside national waters, an 18% increase from 13,348 days in 2009. Longline effort also increased from 36, 574 hundreds of hooks in 2009 to 62,605 hundred hooks in 2010. Catch by purse-seine vessels in PNG were mainly on free schools which accounted for about 72% of the total catch. The remaining 28% was associated with FADs (drifting = 11.9%, anchored = 8.2%), logs (7.8%) and mammals (0.5%). About 82% of the free school catch was by foreign vessels and the other 28% by PNG flagged and PNG chartered vessels.

Data collection in PNG is comprehensive with above 80% catch & effort data coverage for all fleets. For size and species composition data, PNG runs a port sampling program as well as an observer program that covers the vessels based out of PNG and foreign vessels fishing the PNG fisheries Zone. The PNG observer program runs program involving over 200 man/women with the aim to beef up this strength to 400 observers over the next 3-4 years. Observer coverage on vessels fishing in PNG waters on average (2004 - 2010) ranges from 30% on foreign vessels to 83% on PNG flag vessels. PNG chartered vessels have a 58% observer coverage on average.

PNG is striving towards building its fishing industry; therefore fishing licenses are linked to onshore investment. At full capacity PNG is looking to processing all fish caught in PNG waters, back in PNG. The rights to fish in PNG will also be linked to onshore investment in the near future.

1. Background

Tuna in the areas under Papua New Guinea (PNG) jurisdiction are caught by two main fishing methods, namely purse-seine and longline. The total annual catches have averaged around 475,000 mt per year between 2007 and 2009. This represents about 19% of the WCPO catch and about 11% of the global catch. Most of the catch (99%) is attributed to the purse-seine fishery. Purse-seining started in PNG waters in the early 1980s and has since intensified, with the current catch being the highest on record (702,969 mt). The longline fishery started even earlier than the purse-seine fishery, originally only as access by foreign fleets. But in the mid 1990s a policy on domestication enabled the fishery to be a national activity only, hence doing away with access by foreign fleets.

The tuna fishery in PNG represents a balance of both domestic industry development and foreign distant water fishing nations (DWFN) access agreements. Domestic industry development is pursued by using a model whereby a fishing licence is granted on the condition that the vessels catch fish for processing facilities in-country. Vessels under this scheme are either re-flagged to PNG or are given incentives by way of reduced licence fees and allowing them to fish within archipelagic waters or sponsoring them to fish under the Federated States of Micronesia Arrangement (FSMA). So far only the Philippine and Vanuatu flagged vessels are under this scheme apart from the PNG flagged vessels. The mode of operation by the Philippine and Vanuatu flagged vessels differ in that the Philippine flagged vessels fish exclusively in PNG waters, including the archipelagic waters whilst the Vanuatu flag vessels fish widely including the waters of the other Parties to the Nauru Agreement (PNA).

The fishery is guided by the National Tuna Fishery Management Plan which establishes an overall management structure, and an application framework for all tuna fisheries, including licence limits and total allowable catches (TAC), gear restrictions and the use, deployment and limits to the number of Fish Aggregating Devices (FAD).

The purse-seine fishery operates within the guidelines of important regional and sub-regional arrangements such as the Parties to the Nauru Agreement (PNA), whose requirements are incorporated in the National Tuna Management Plan**.**

2. Flag State Reporting

This section reports activities by the national fleet in Western and Central Pacific Fisheries Commission (WCPFC) convention area including PNG EEZ. The national fleet comprises domestic longline and purse seine vessels as well as purse seine vessels under charter arrangements.

2.1 Domestic Longline

Activities by the domestic longline vessels are reported under Coastal State Reporting, section 3.1 as the activities by these vessels are entirely inside waters under national jurisdiction. Section

3.1 also includes activities by a distinct shark longline fishery and a very small tuna handline fleet. Although catch by the longline fleet is not reported in this section, it is still considered as part of the essential information required by the Commission.

2.2 Purse Seine

PNG manages a purse seine fleet made up of two categories; domestic vessels which fly PNG flag and Locally Based Foreign (LBF) vessels which are foreign flagged and whose activities is governed by charter arrangements with locally based companies. These vessels unload their catch to processing plants in the country and are supported with some form of incentives by the government.

The PNG Flag and half of the Chartered vessels, mainly Philippine flagged (except one which also fish in Solomon Islands), have been fishing primarily in the PNG EEZ. The other half of the Charted vessels mainly Vanuatu flagged fish throughout the PNA region under the FSMA licensing arrangements. A total of 47 purse seiners (8 PNG Flag and 39 Chartered) were actively fishing in the year 2010.

2.2.1 PNG Domestic Vessels – PNG Flag

Catch

The overall catch estimate for 2010 by PNG flagged domestic vessels was 27,972.30 mt with almost all the catch taken in the PNG EEZ. SKJ remains dominant comprising almost 60% of the catch, followed by yellowfin 40% while bigeye and other species (non-primary species associated with purse seine gear) barely making 1% of the catch. Although catches steadily increased from 2006-2009, the 2010 estimates for all primary species, SKJ (15,305.95 mt), YFT (12,499.06 mt) and BET (97.32 mt) were lower than 2009 estimates. (See Table 1)

Table 1: Catch estimates for domestic purse seine vessels (PNG Flag) in the WCPFC convention area including PNG EEZ. Source: NFA database.

Year	SKJ		YFT		BET		OTH		TOTAL		WCPO Total
	In EEZ	Out EEZ	In EEZ	Out EEZ	In EEZ	Out EEZ	In EEZ	Out EEZ	In EEZ	Out EEZ	
2006	12,549.79	174.96	5,833.53	3.36	52.83	122.96	44.73		18,480.88	178.32	18,659.20
2007	11,973.39	349.74	8,064.76	162.96	106.08		171.67	0.36	20,315.90	513.06	20,828.96
2008	17,724.86	4.47	13,226.06		70.80		80.00		31,101.72	4.47	31,106.19
2009	20,755.17	483.21	13,123.97	56.37	212.52		56.77	0.24	34,148.43	539.82	34,688.25
2010	15,305.38	0.57	12,498.85	0.21	97.32		69.91	0.06	27,971.46	0.84	27,972.30

Most catches in 2010 were taken from free schools or unassociated sets - SKJ (72% of total), YFT (89%), BET (45%) and other species (42%). Anchored FADs had a big influence on BET catch composition (38%) and a considerable amount also on SKJ (11%) while YFT was only 2%. SKJ catches on drifting log or debris associated catches constitute 11% of the total, while BET, YFT and other species had all their catches less than 10%. A reasonable proportion of BET (13%) was caught on sets associated with drifting FADs while SKJ and YFT were 6% and 2% respectively. Drifting FADs made half of the other non-primary species caught by PNG flagged purse seine vessels. See Figure 1.

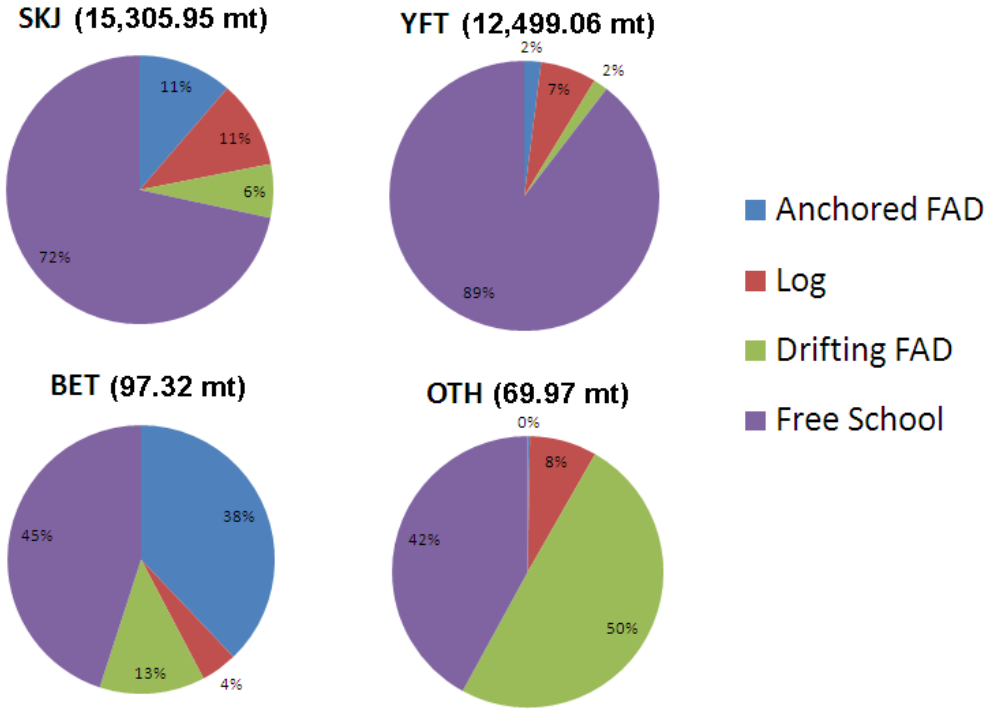

Figure 1: Comparison of catch by school association for PNG flagged purse seine vessels in the WCPFC convention area including PNG waters in 2010. Source: NFA database.

Effort

A total of 9 PNG flag vessels was actively fishing in national waters in 2010. The total number of days spent by these vessels fishing and searching was estimated at 2,999, a 2% drop from year 2009. However, effort by these vessels has been steadily increasing since 2006 from 1574 estimated fishing days to 3045 days in 2009. Most of effort concentrated in the PNG EEZ (Figure 2) and catches outside were mainly from the high seas pocket north of PNG. Currently almost all the fishing activity is occurring in national waters (Figure 2 & 3) as a result of the high seas pocket closure.

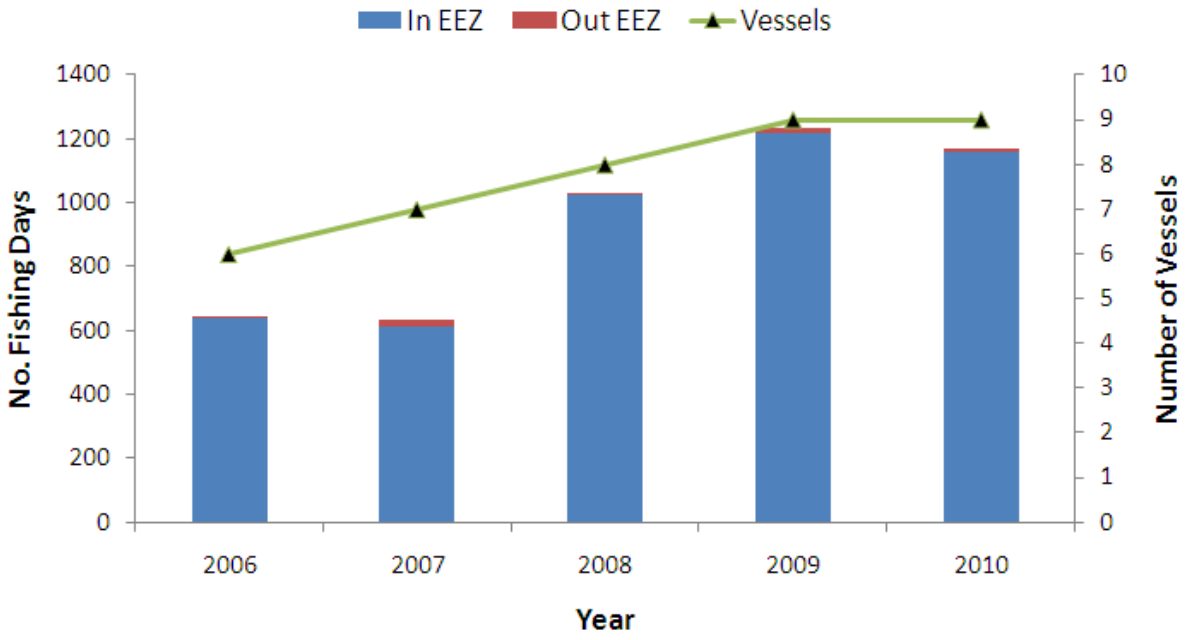

Figure 2: Distribution of fishing effort (number of fishing days) inside and outside of PNG EEZ by domestic purse seine vessels (PNG Flag) and the number of active vessels from 2006 – 2010. Source: NFA database.

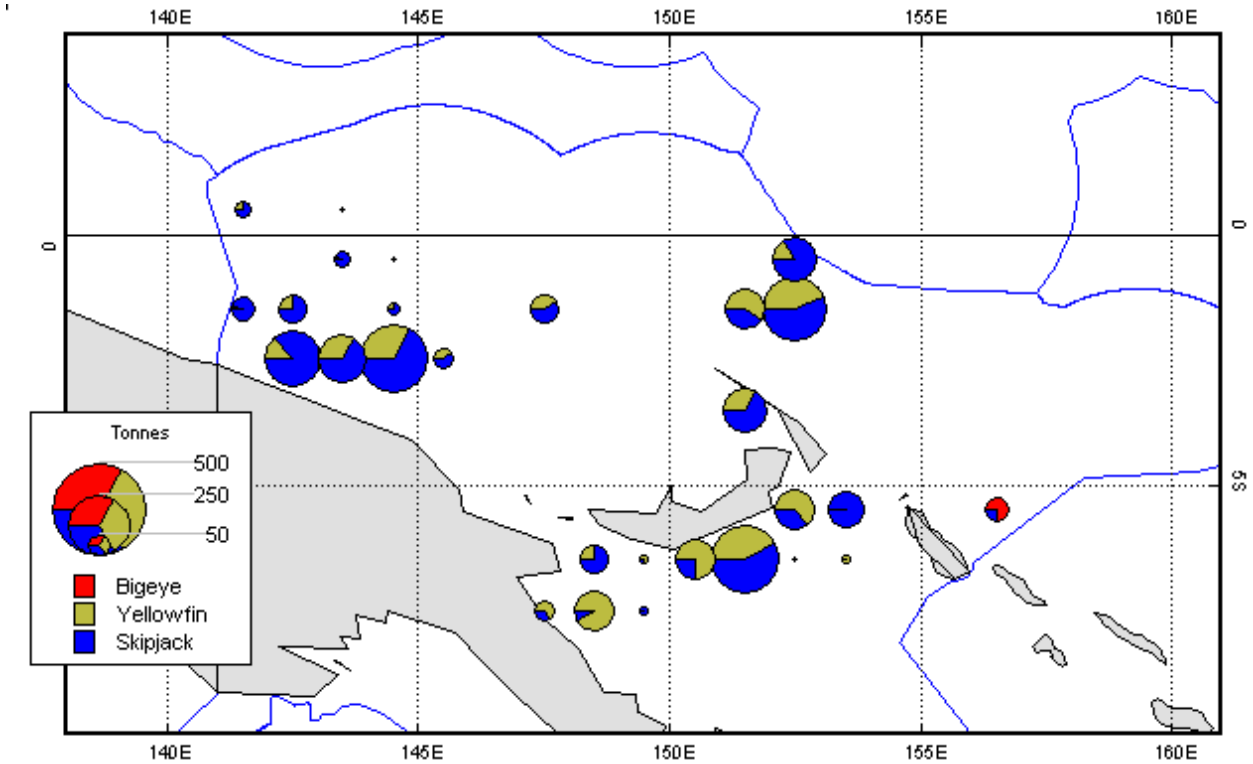

Figure 3: Catch distribution of primary species caught by domestic purse seine vessels (PNG Flag) in 2010. Source: SPC database (CES*).

2.2.2 PNG Chartered Vessels – Foreign Flag

Catch

The recent overall catch estimates by locally-based foreign (LBF) vessels in the entire WCPFC convention area was 177,865.17 mt. This was a slight increase from 2009 (167,923.13 mt) but still below 2006 and 2007 estimates which were greater than 200,000 mt. Estimates by species were also higher than 2009 for all primary species as well as other species (Table 2). Most of the catch, around 64%, was taken inside the PNG EEZ whereas 36% was in other EEZs in the WCPFC convention area in 2010, mainly waters of the PNA member countries (Figure 4). Thus, catches by LBFs for all primary and other non-primary species were higher in the national waters than fish caught outside. Please see Table 2 for figures. Due to the high seas closure, no catches were taken from the pockets north and east of the PNG EEZ.

Table 2: Catch estimates for locally based foreign vessels (Foreign Flag) in the WCPFC convention area including PNG EEZ. Source: NFA database.

Year	SKJ		YFT		BET		OTH		TOTAL		WCPO Total
	In EEZ	Out EEZ	In EEZ	Out EEZ	In EEZ	Out EEZ	In EEZ	Out EEZ	In EEZ	Out EEZ	
2005	59,833.75	91,523.54	28,806.65	12,440.10	650.16	257.77	231.34	180.35	**89,521.90**	**104,401.76**	**193,923.66**
2006	101,165.55	65,720.20	24,627.89	13,154.80	149.00	330.00	553.55	16.14	**126,495.99**	**79,221.14**	**205,717.12**
2007	98,359.40	69,180.00	26,019.78	10,195.15	130.32	124.55	63.43	16.39	**124,572.92**	**79,516.08**	**204,089.00**
2008	85,672.52	48,556.47	26,259.35	18,348.49	173.30	172.32	181.45	24.12	**112,286.62**	**67,101.40**	**179,388.02**
2009	69,606.64	64,467.80	25,432.53	8,045.00	200.26	67.00	71.34	32.56	**95,310.77**	**72,612.36**	**167,923.13**
2010	84,198.79	52,793.80	29,337.94	10,414.40	351.64	185.20	579.77	3.63	**114,468.14**	**63,397.03**	**177,865.17**

The majority of SKJ and YFT catches in PNG waters were from free or unassociated schools with almost 60% each respectively of the total catch. This was similar in waters of other PNA countries where most catches of SKJ (54%) and YFT (85%) were on free schools. Due to the high density of anchored FADs in PNG waters, schools associated with anchored FADs were also a significant contributor to catch composition of SKJ (25%), YFT (32%), BET (29%) and other non-primary species (56%) but not outside PNG EEZ. Log and drifting FAD schools were elemental in SKJ and YFT catches in other PNA countries and most of the catches for BET (56%) and other non-primary species (85%) were on drifting FADs alone. A major proportion of BET catches within national waters was also associated with log and drifting FADs while 33% of other non-primary species were caught on log schools. (Figure 5)

Effort

The number of active Chartered vessels increased from 32 in 2009 to 39 vessels in 2010. An estimated 5,544 fishing days overall was spent fishing and searching in the WCPO by these vessels in 2010. This was a significant increase in effort after a decline from 4,678 days in 2006

to 3,510 days in 2009. More effort was spent in PNG waters (over 69%) than waters in other countries in the past 4 years. In 2010 3,878 fishing days were spent in PNG waters (70%) while the rest (30%) was distributed in other EEZs of PNA member countries. (Figure 6).

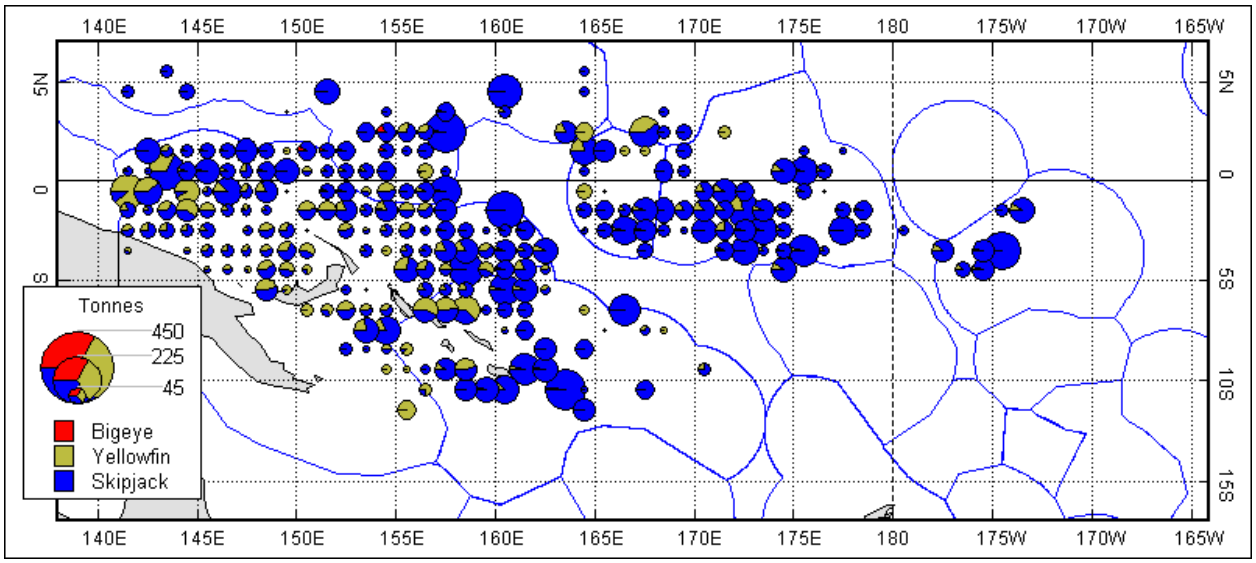

Figure 4: Distribution of catch per unit of effort by PNG chartered vessels in the WCPFC convention area including PNG EEZ. Source: SPC (CES)

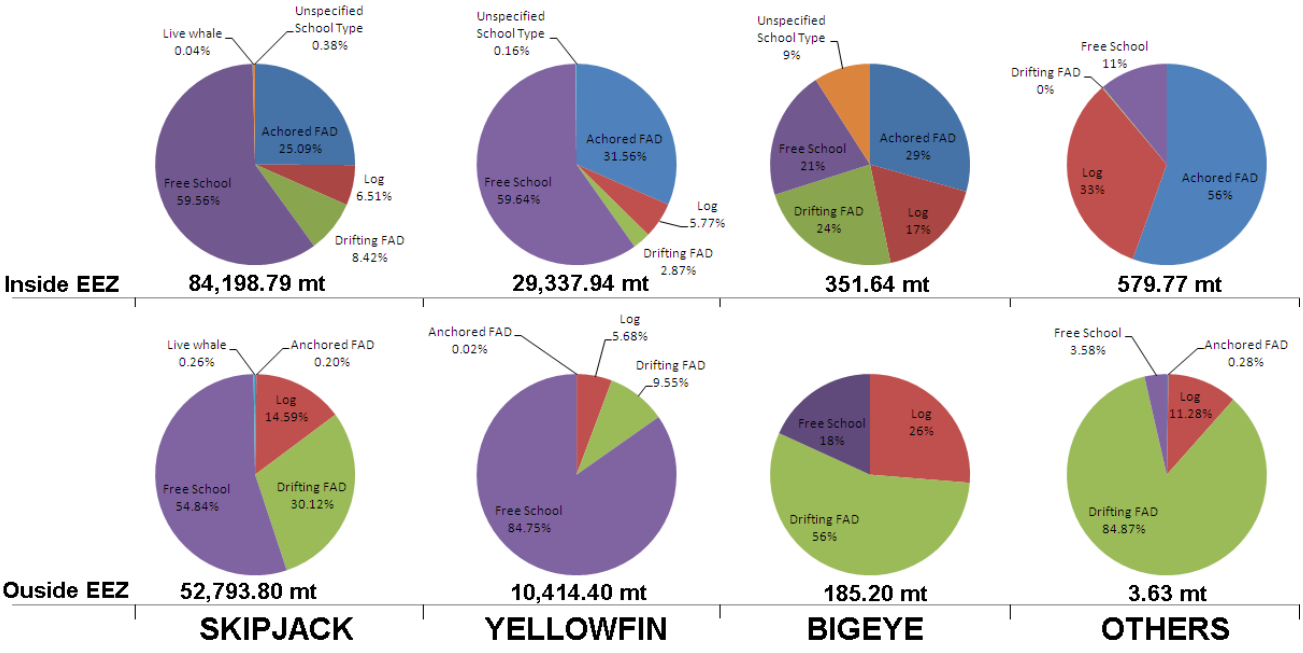

Figure 5: Comparison of catch of primary species by school type for locally based foreign vessels inside and outside of PNG waters in 2010. Source: NFA database.

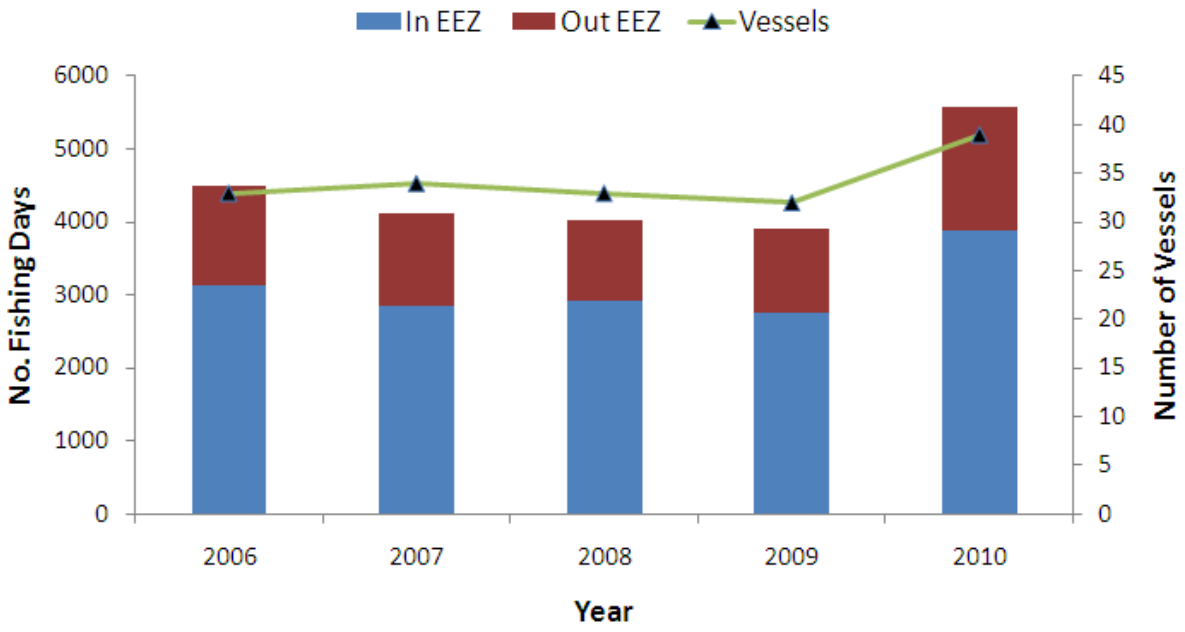

Figure 6: Distribution of fishing effort inside and outside the PNG EEZ by locally based foreign vessels from 2006-2010. Source: NFA database (unraised VMS).

3. Coastal State Reporting

This section reports activities in waters under national jurisdiction by foreign fleets which comprise of tuna purse seine vessels. Domestic longline and a very small handline fishery is also reported in this section since all their activities are inside PNG waters.

3.1 Domestic Longline and Handline

PNG still manages an exclusive domestic tuna longline fleet under the current management plan which limits effort to 100 vessels setting 1200 hooks per set per day and catch to 10,000 mt per year based on the combined catch of yellowfin and bigeye tuna. All vessels fish entirely in PNG waters and do not fish waters beyond areas under national jurisdiction. All catch by these vessels is unloaded in the PNG and exported as frozen products. The domestic shark longline fishery is managed under a separate management plan and the very small tuna handline is managed under set of guidelines.

3.1.1 Tuna Longline

Catch

Catch by tuna longline vessels for 2010 in PNG waters was dominated by yellowfin (2,006 mt) and albacore (881 mt). Bigeye tuna made up 1% of the catch (35 mt) while billfishes, sharks and other species made up 5%, 4 % and 6% respectively. Billfishes that are caught by this fishery as bycatch are mainly black marlin, blue marlin, striped marlin and swordfish. The overall

estimated catch in 2010 was 3,427 mt, a 55% increase from the 2009 estimate which was 2,217 mt (Table 3). Catches of albacore, billfishes and other species increased by over 30% while yellowfin and shark increased by around 15%. Bigeye however decreased by almost 27% from 2009 adding to the declining trend for bigeye from 2008.

Table 3: Annual catch and effort estimate of primary species in metric tonnes for PNG domestic tuna longline fleet in waters under national jurisdiction. Source: NFA Database.

YEAR	EFFORT	Catch (metric tonnes)									
	(HHooks)	ALB	BET	YFT	BLM	BUM	MLS	SWO	SHK	OTH	TOTAL
2006	64,344	1728	215	1993	22	39	14	10	42	110	**4,173**
2007	59,681	1567	109	1511	24	55	13	12	43	37	**3,371**
2008	42,805	284	197	2254	13	39	4	17	96	37	**2,941**
2009	36,574	432	62	1466	14	43	6	24	99	71	**2,217**
2010	62,605	881	35	2,006	25	97	10	44	134	195	**3,427**

Effort

The number of hooks deployed by tuna longline vessels declined from 64,344 hundred hooks in 2006 to 36,574 hundred hooks in 2009 (Figure7). This decline was related to the decline in the number of tuna longline vessels from 31 vessels in 2006 to 19 vessels in 2008, and 20 vessels in 2009. However, in 2010 a total of 19 tuna longline vessels operated by 3 local companies were actively fishing in PNG waters deploying a total of 62,605 hundred hooks. This is a 71% increase in the number of hooks from 2009 estimates almost reaching the effort level for 2006.

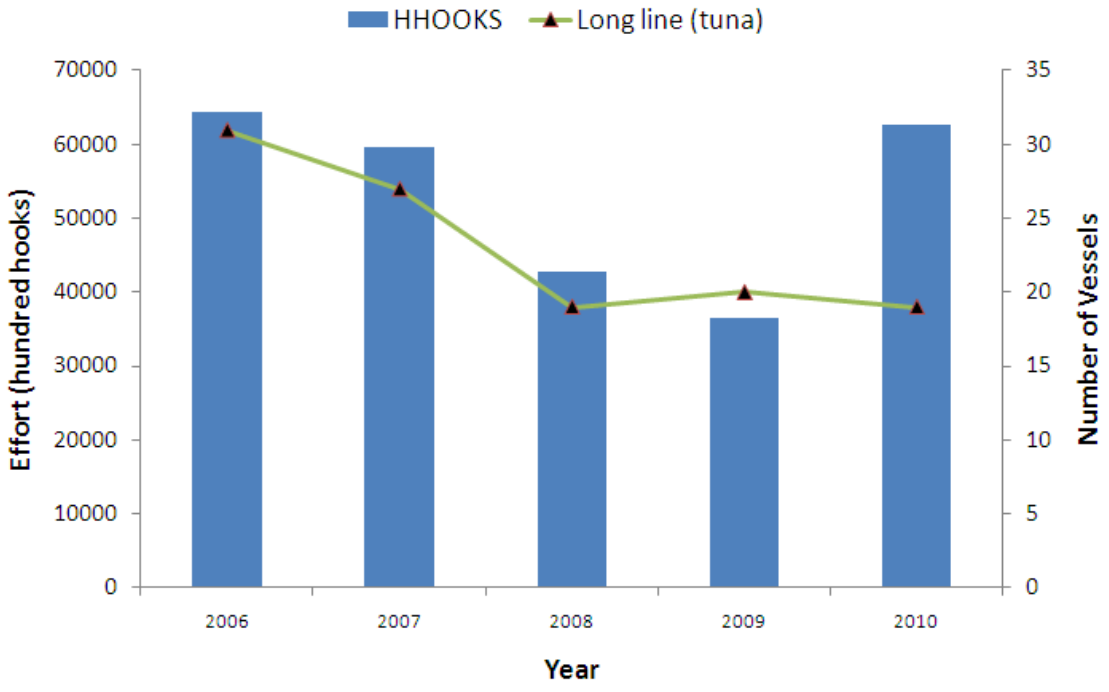

Figure 7: Shows the number of hooks deployed by domestic tuna longline vessels and the number of active vessels fishing in PNG waters from 2006-2010. Source: NFA database.

The main fishing area stretches from the Solomon Sea down to the Coral Sea and east of the Gulf of Papua, all inside areas under national jurisdiction as shown by the catch distribution plot in (Figure 8). These areas have been exempted from FAD deployment mainly to avoid gear conflicts between longliners and purse seiners.

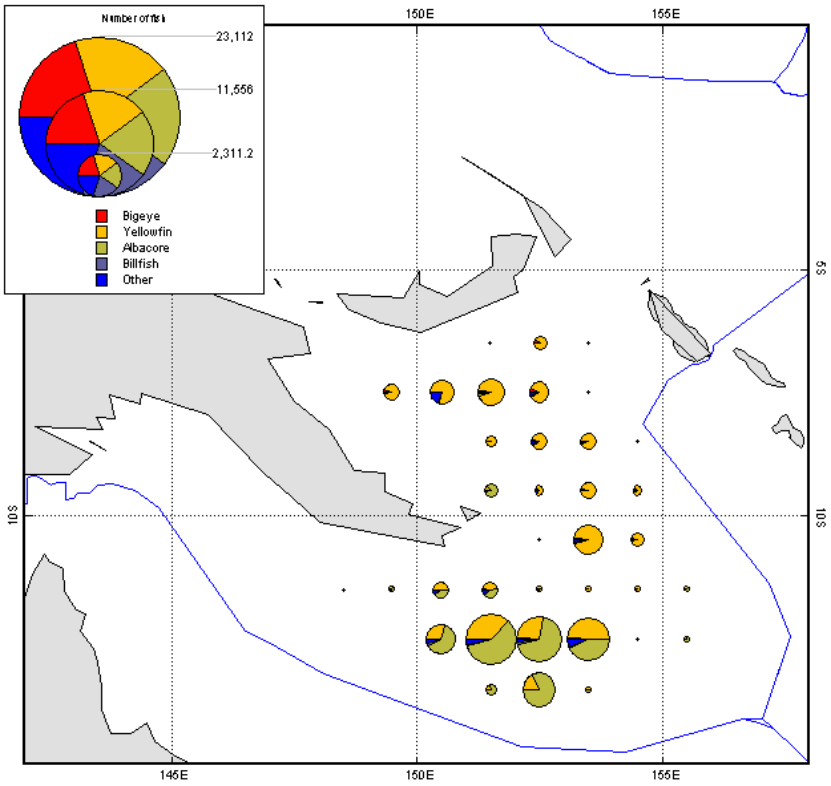

Figure 8: Domestic tuna longline catch distribution and composition of primary species in PNG waters. Source: SPC (CES).

3.1.2 Shark Longline

The shark longline fishery is managed under a separate management plan from the tuna longline fishery. The fishery is limited to 9 vessels, setting 1,200 hooks per day with a total allowable catch of 2,000 mt dressed weight per year. All vessels in this fishery fish only in PNG waters. The number of shark longline vessels increased from 1 active vessel in 2000 to 9 active vessels in 2003. These were mainly tuna targeting boats that were converted into shark targeting boats. The number of sharks caught also increased from 154 (2000) to 50,229 (2009) respectively. In the last 4 years, an average of 7 vessels was actively fishing with an average catch of 56,528 sharks. A total of 8 vessels was active in 2010 with a catch of 64,924 sharks. This was higher than the 2006-2009 average but below the highest catch which was more than 68,000 sharks in 2006. (Figure 9)

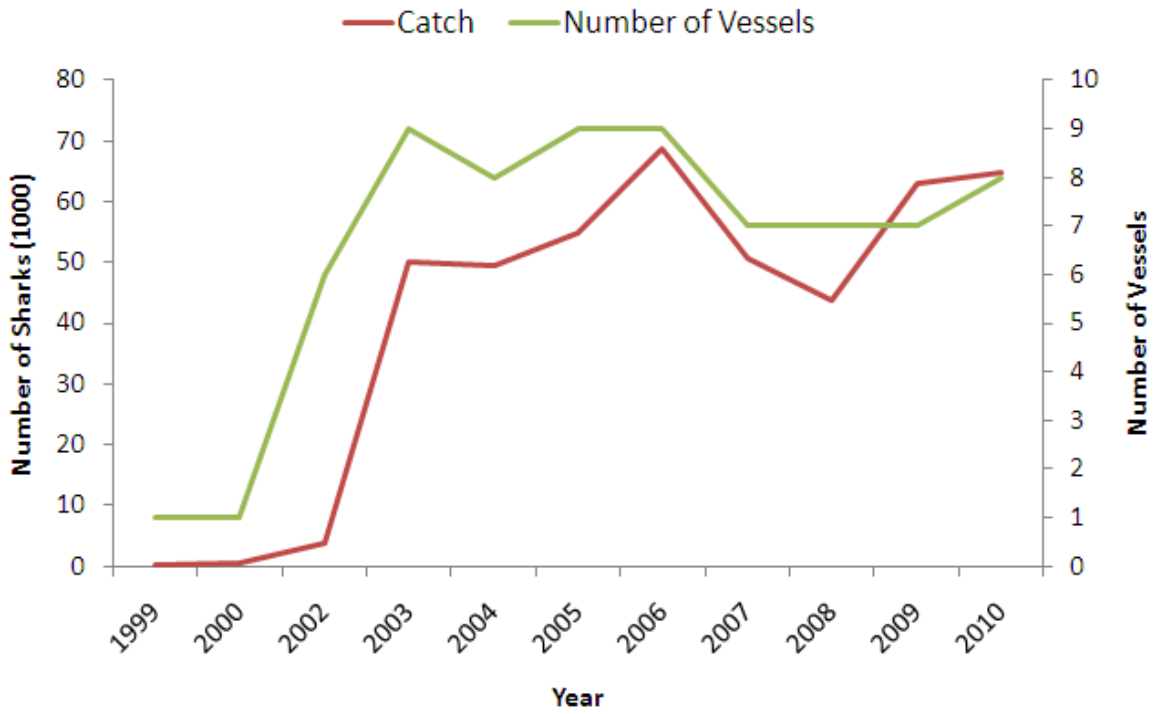

Figure 9: Catch estimate of sharks and the number of shark longline vessels from 1999 – 2010. Source: NFA Database.

Silky shark is the dominant species in this fishery with 71.52% of the catch by number, followed by blue shark, 11.30% 12.1% were other shark species which include black-tipped reef shark, black-tip shark, galapagos shark, grey reef shark, hammerhead shark, oceanic white tip, silver tip and tiger shark, all with catch compositions below 3% (Figure 10).

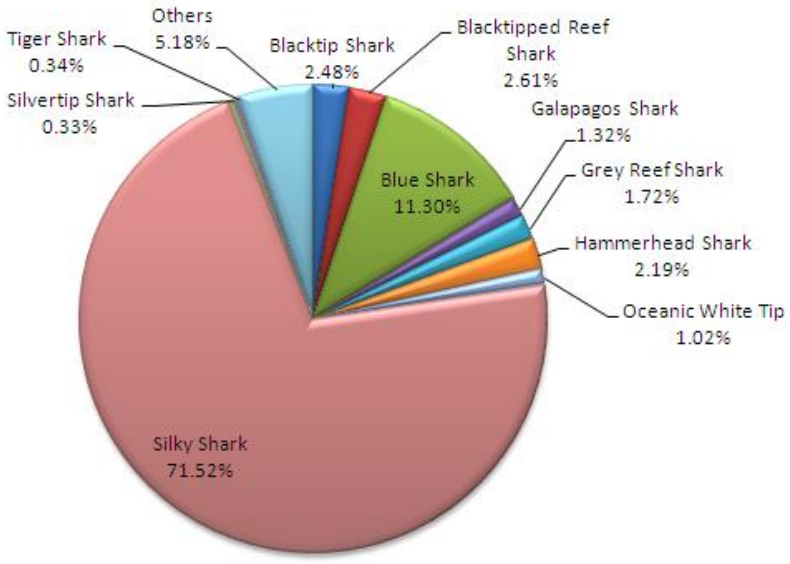

Figure 10: Species composition of shark catches from average of 2006-2010 shark longline catch estimates (n = 58,207 number of sharks). Source: NFA database.

Around 5% of catches by shark longliners were species other than sharks which include tuna especially yellowfin, bigeye and albacore, billfishes and other unspecified species. Yellowfin alone made up 41% of this catch based on 2010 estimates (Figure 11), followed by blue marlin (15.92%), swordfish (14.54%) and sailfish (12.82%). Black marlin, bigeye tuna, albacore and striped marlin made up almost 5% while 10.73% were unidentified fish species.

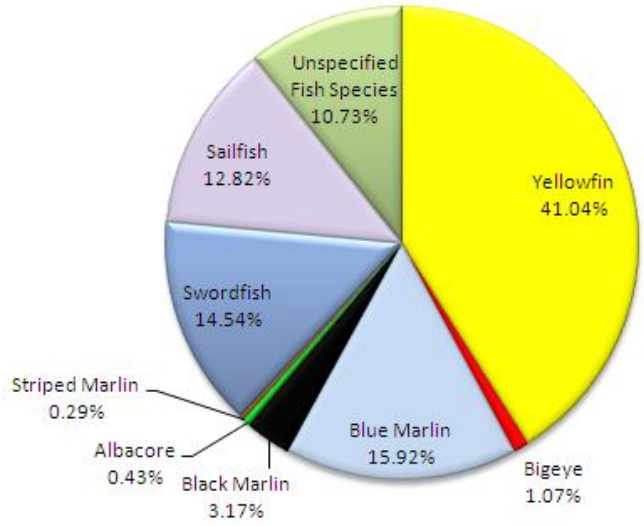

Figure 11: Species composition of other species from 2010 shark longline catch estimates (n = 342.53 mt). Source: NFA database.

3.1.3 Tuna Handline

Since the trial of handline fishery in 2005, the number of pumpboats reduced from 10 to 5 vessels in 2009 (Kumoru, 2010). Although there is some growth potential for this fishery, most of the vessels failed to continue fishing mainly due to lack of proper business management, and the high operational cost for artisanal operators during its inception. Currently, the small handline fleet of about 5 vessels is operating in waters around Madang and Morobe provinces. The vessels are solely owned and operated by local fishermen. Catch by these vessels, which do not normally exceed 10 mt (estimate) per year, is sold to processing companies as well as local supermarkets.

3.2 Purse Seine - Foreign Vessels

Foreign vessels that fish in PNG waters are mainly purse-seine gear and are licensed under the conditions of access agreements between PNG and either their company, fishing association or home party state and also include vessels fishing under the terms of the US Treaty and FSMA.

Catch

Estimated catch from logsheets by foreign purse seine vessels in 2010 was a record high of 560,530.39 mt inside the PNG EEZ. Catches of all primary species SKJ (417,035.90 mt), YFT (135,979.36 mt) and BET (7,365.61 mt) doubled those of 2009 (Table 4).

Table 4: Catch estimates for foreign purse seiners fishing in PNG waters. Source: NFA Database (unraised logsheet).

Year	SKJ	YFT	BET	OTH	Total
2006	233,696.72	36,454.78	1,147.34	2,628.09	**273,926.93**
2007	265,527.07	49,612.73	2,297.69	402.30	**317,839.79**
2008	254,503.34	70,908.28	3,441.30	307.93	**329,160.85**
2009	213,817.67	44,936.72	3,374.79	321.11	**262,450.29**
2010	417,035.90	135,979.36	7,365.61	149.52	**560,530.39**

Most catches were on unassociated sets with 71% and 86% of the total catch for SKJ and YFT respectively. Almost an equal amount of BET was fished on unassociated schools and drifting FADs with 35% and 32% respectively. A considerable amount of SKJ (15%) was also caught on drifting FADs but only 6% for YFT. Fishing on schools associated with anchored FAD and drifting log for all species were less than 10% except for BET which had 14% of the catch on drifting log and 16% on anchored FAD. See figure 12.

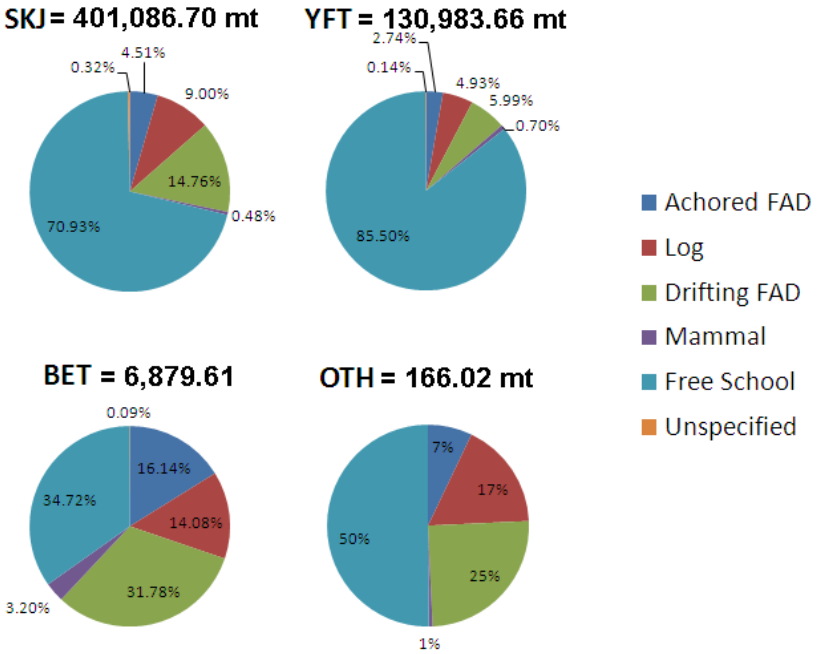

Figure 12: Comparison of catch of primary species by school for foreign vessels fishing in PNG waters in 2010. Source: NFA database.

Effort

The current high catch level is a result of an increase in effort directly related to the increase in foreign purse seiners actively fishing in PNG waters (Figure 13). In 2010, a total of 176 purse seiners spent a total of 15,796 days fishing and searching inside the PNG EEZ - the number of vessels increased by 30 from 146 and the number of fishing days by 69% from 9,373 in 2009.

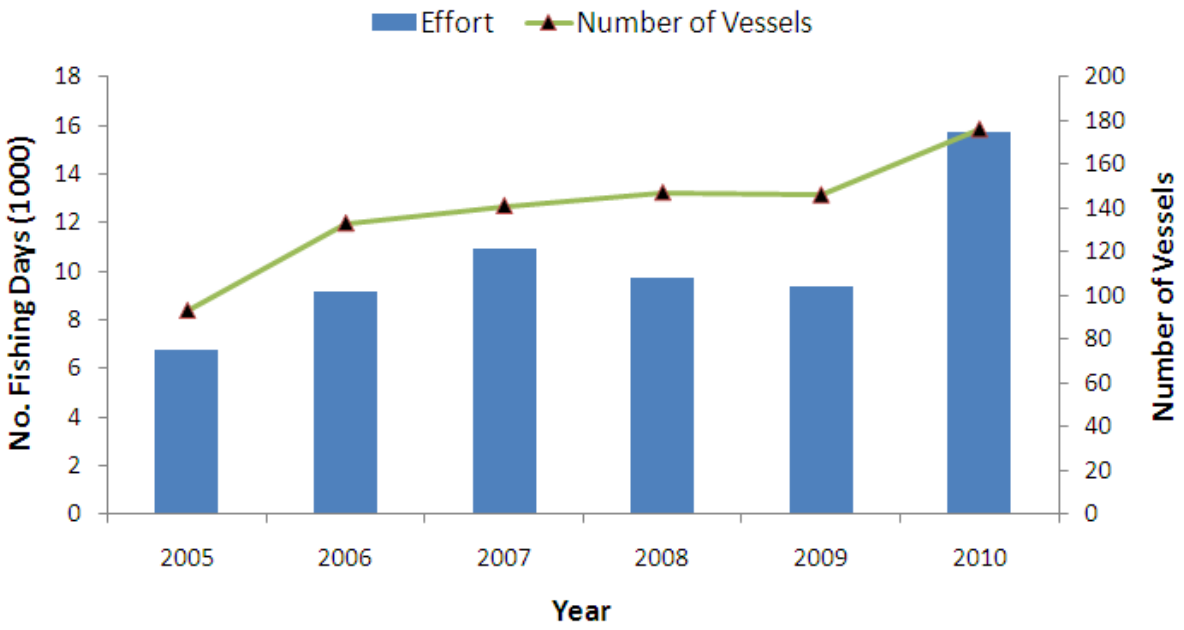

Figure 13: Number of fishing days and vessels for foreign purse seine vessels actively fishing in PNG waters in 2005-2010. Source: NFA database.

Philippines, Japan, Korea and Taiwan were the fleets with fishing effort > 2,000 days and catches higher than 80,000 mt. Effort by China and US Treaty fleet were <2,000 and >1,500 days respectively, with catches between 30,000 mt and 50,000 mt. The smaller fleet fishing under the FSM arrangement and with Vanuatu flag spent less than 500 days in the PNG EEZ, with catches less than 15,000 mt (Figure 14). Good fishing (catch per fishing day) was experienced by Japan and Korea and the small Vanuatu fleet maximizing their catches with the given effort. The Philippines fleet was the most active with highest effort, followed by Japan, Taiwan, China, US Treaty vessels and the smaller FSMA and Vanuatu fleet (Figure 14). Catches distribution by these fleets throughout the PNG EEZ is shown in figure 15.

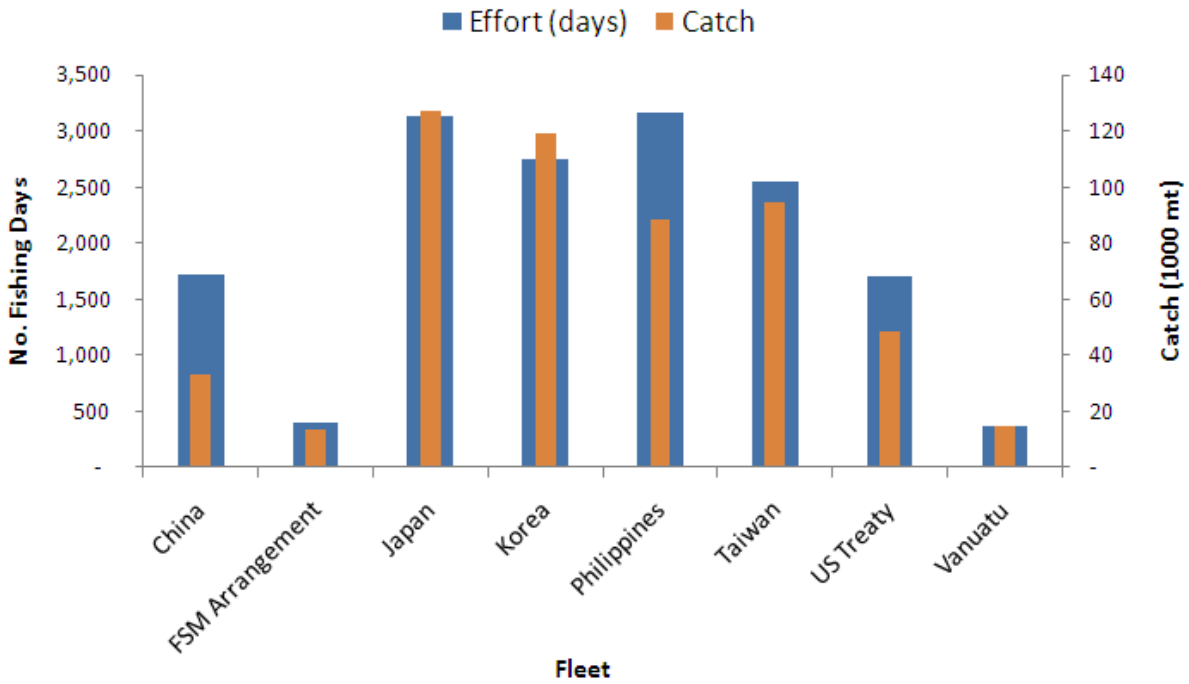

Figure 14: Comparison of catch and effort distribution between foreign fleet fishing inside PNG waters in 2010. Source: NFA database.

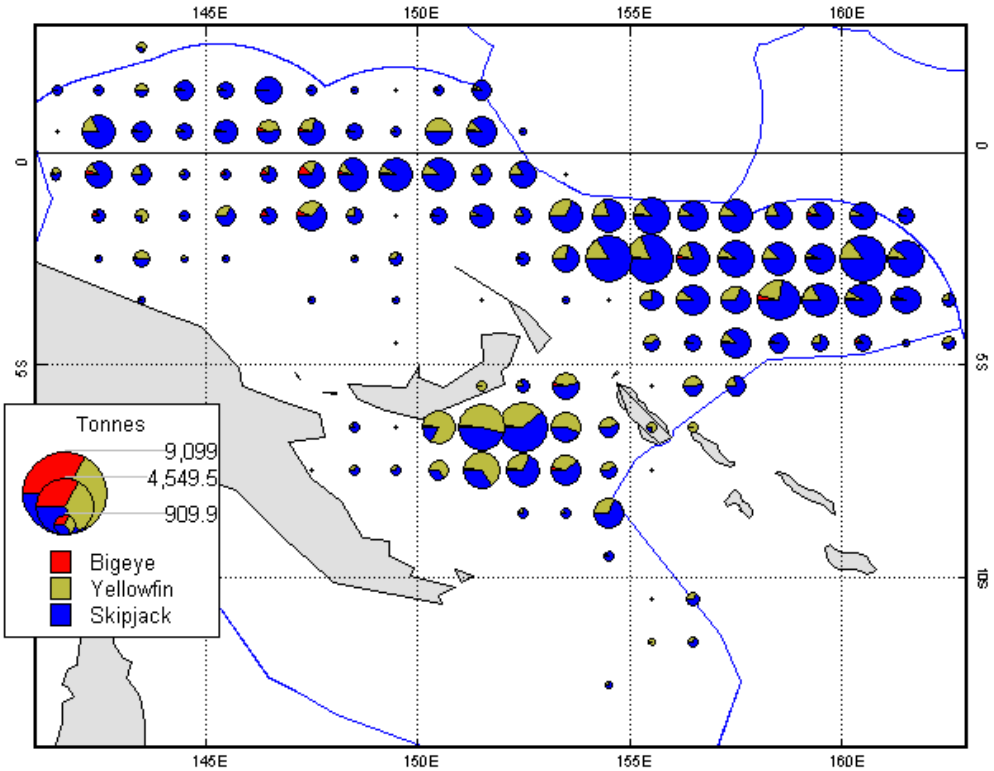

Figure 15: Catch distribution by foreign purse seine vessels in the PNG EEZ in 2010. Source: SPC (CES)

4. Socio – Economic Factors

Papua New Guinea is focused on building its domestic tuna industry to an extent where the generated revenue can offset that currently obtained from bilateral access fees. The government's main objective is to maximize the benefits from tuna resource to citizens and promote the involvement of nationals in the industry. A growth in the industry would provide an increase in employment opportunities, increased foreign exchange earnings for the country and direct and indirect spin-off benefits among other benefits of value-adding the tuna resources. Currently, the industry supports almost 7,000 people in direct employment and almost 2,000 indirect employments in the country of over 6 million people. New commitments and investments would triple these figures (See Section 7 on onshore developments).

5. Exports

The value of tuna exports have steadily been increasing together with quantity in the last 6 years peaking at USD 149 million in 2008 (Kumoru, 2010). This growth is in line with the country's industry development aspirations. The overall estimated value of processed exports for tuna and other associated species in 2010 was USD 80.4 million.

Table 5 shows the value and quantity of each processed product by species associated with catches in the tuna fishery in 2010. The highest value was from canned products, at USD 42.2 million of mainly SKJ tuna (13,390.21 mt, 96%). Export of frozen products were valued at USD 33.8 million, with almost equal amounts of low priced SKJ (12,654.03 mt) and higher priced YFT (11,592.01 mt). Substantial earnings were also generated from high priced frozen albacore, bigeye and billfishes. Fresh chilled exports were basically yellowfin, bigeye and billfishes products while cooked and dried products were from unspecified sources.

Table 5: Shows the quantity and value of processed and frozen tuna and other species which were exported in 2010. Source: NFA database.

Species	Canned		Cooked		Dried		Fresh Chilled		Frozen		Total	
	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)	Qty (1000 mt)	Value (million USD)
Albacore	-	-	-	-	-	-	-	-	0.40	0.43	0.40	0.43
Bigeye	-	-	-	-	-	-	0.07	0.34	0.18	0.17	0.25	0.50
Skipjack	13.39	40.67	-	-	-	-	-	-	12.65	9.96	26.04	50.62
Yellowfin	0.28	1.03	-	-	-	-	0.21	1.05	11.59	22.57	12.08	24.66
Yellowfin/Bigeye	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01
Billfishes	-	-	-	-	-	-	0.01	0.04	0.46	0.33	0.46	0.37
Others	-	-	-	-	-	-	-	-	0.07	0.04	0.07	0.04
Unspecified	0.23	0.48	0.20	0.15	3.78	2.77	-	-	0.46	0.33	4.67	3.72
Total	**13.89**	**42.18**	**0.20**	**0.15**	**3.78**	**2.77**	**0.29**	**1.43**	**25.81**	**33.83**	**43.98**	**80.35**

A huge majority (98%) of canned products was exported to markets in the European Union in 2010. The remaining 2% went to Australia, Indonesia, Solomon Islands and Vanuatu. Most of the frozen exports (44%), mainly SKJ and YFT, supported canneries in the Philippines. Some were also exported to support canneries in, Thailand, Taiwan, Singapore, American Samoa and

the US. Frozen products together with fresh chilled products to Japan were mainly to satisfy the sashimi market demand. Dried products in 2010 were mostly imported by Australian markets with small portion by Sri Lanka (Figure 16).

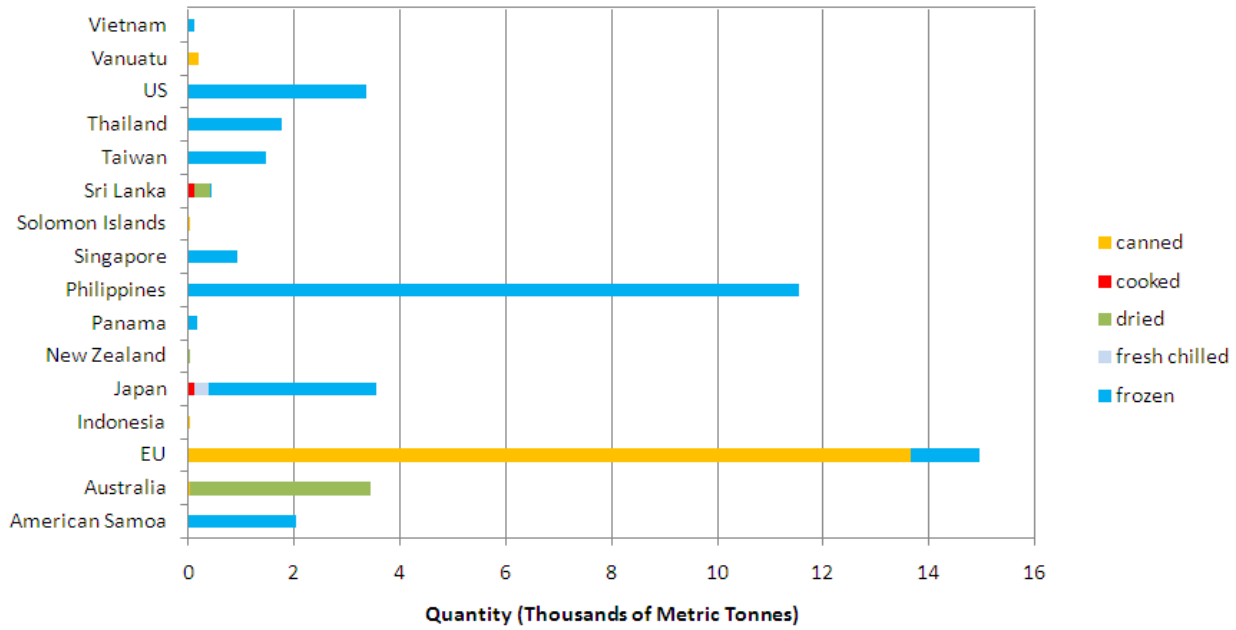

Figure 16: Shows the quantity of processed and frozen products to export destinations in 2010. Source: NFA database.

6. Onshore Developments

Currently there are two major canning facilities in Madang (RD Tuna Canners) and Lae (Frabelle PNG Ltd) respectively, and one loining plant in Wewak (South Sea Tuna Corporation) with a total production capacity of 440 mt per day and providing employment for more than 6000 Papua New Guineans (Table 7a). These facilities are supported by their own cold storages with RD having a private wharf for unloading while Frabelle is at the stage of constructing own wharf as well.

There is also a mackerel canning facility (IFC) which is now venturing into tuna canning, an investment valued around USD 10 million; once setup is fully completed, it should be capable of producing at 150 mt per day capacity and adding over 1000 more employment opportunities for nationals. Three other investment projects are currently in progress - a joint venture between Thai Union, Century Canning and Frabelle; another by a joint venture between RD and Fairwell; and proposed Chinese investments adding to onshore development. With a cumulative estimated investment value of USD 192.5 million, and once completed, these facilities would be producing at a capacity of 1,115 mt per day and providing more than 16,000 employment opportunities for nationals (Table 7b). These investments are in line with the country's development aspirations and aiming at processing all catches in PNG waters back on PNG shores.

Table 7a: Existing Facilities

Investors	Product type	Production Capacity (mt/day)	Employment (est.)	
			Direct	Indirect
RD Tuna Canners	Canned tuna	200	3,500	500
Frabelle(PNG) Ltd	Canned tuna	140	1,000	500
Frabelle Frescomar	Raw tuna	40	200	100
South Seas Tuna Corporation	Cooked loins,canned tuna	100	1,000	200
International Food Corporation	Canned mackerel	100	1,000	500
Total		580	6,700	1,800

Table7b: Future facilities

Investors	Product Type	Production Capacity (mt/day)	Estimated Investment Value (USD'm)	Local Employment (est.)	
				Direct	Indirect
Thai Union/Century Canning and Frabelle	Canned tuna	350	80	4,500	1,500
RD/Fairwell	Canned tuna	200	27.5	2,000	500
Chinese Investments	Canned tuna/cooked loins	600	85	6500	1500
International Food Corporation	Canned tuna	150	10	1,000	500
Total		1,300	203	14,000	4,000

7. Future Prospects of the Fishery

7.1 Longline

Longline fishery has declined over the years and is not likely to expand in the near future unless there some major change in the current policy controlling this particular fishery. The main reason for the decline is the high operational cost.

7.2 Handline

Although very minimal at this stage, this fishery has some potential for expansion in the not to distant future. The processing plants are supporting this sector through the supply of ice and buying of the fish.

7.3 Purse-seine

Effort in terms of fishing days is capped as per the commission measure 2008-01. However in PNG there would be a re-alignment or shift in the vessels fishing as those vessels not associated with any onshore facility are given less priority over those associated with onshore development. This may mean new vessels into PNG waters provided they are associated with onshore

development. If this happens than, some vessels currently licensed but not associated with onshore facilities will no longer be licensed to fish within the waters of PNG.

8. Tuna Fishery Data Collection System and Research Activities

8.1 Log sheet data collection and verification

8.1.1 Catch, Effort and Size Data Coverage

Fleets have been very cooperative in submitting catch and effort data as per the catch logsheet. As a result there has been very high coverage of the catch and effort data (Table 8). For size data, PNG runs a port sampling programme through which size data by species are collected in addition to those data collected by observers at sea. However the port sampling covers mostly vessels fishing in PNG waters and unloading or transhipping through PNG ports. For vessels not unloading or transhipping through PNG ports, size data is collected through the observer programme. As of 2010, size data are collected from all purse-seine vessels active in the fishery.

For coverage explanations see attachment A.

Table 8a: Estimated annual coverage of catch, effort and size data for Papua New Guinea fishing fleets in the WCPFC Convention Area, 2005–2009

Gear	Fleet	Year	Catch/Effort data coverage	% coverage	Size data coverage	% coverage
LONGLINE	PNG - Domestic	2006	HIGH	>80	MEDIUM	5-15
		2007	HIGH	>80	MEDIUM	5-15
		2008	HIGH	>80	MEDIUM	5-15
		2009	HIGH	>80	MEDIUM	5-15
		2010	HIGH	>80	MEDIUM	5-15
PURSE SEINE	PNG - Domestic	2006	HIGH	>80	MEDIUM	5-15
		2007	HIGH	>80	MEDIUM	5-15
		2008	HIGH	>80	HIGH	>15
		2009	HIGH	>80	HIGH	>15
		2010	HIGH	>80	HIGH	>15
	PNG - Locally Based Foreign	2006	HIGH	>80	MEDIUM	>15
		2007	HIGH	>80	MEDIUM	>15
		2008	HIGH	>80	HIGH	>15
		2009	HIGH	>80	HIGH	>15
		2010	HIGH	>80	HIGH	>15

Table 8b: Estimated coverage of catch, effort and size data for bilateral-arrangement, foreign fleets fishing in Papua New Guinea's EEZ.

Gear	Fleet	Year	Catch/Effort data coverage	% coverage	Size data coverage	% coverage
PURSE-SEINE	CHINA	2006	HIGH	>80	MEDIUM	5-15
		2007	HIGH	>80	MEDIUM	5-15
		2008	HIGH	>80	MEDIUM	5-15
		2009	HIGH	>80	HIGH	>15
		2010	HIGH	>80	HIGH	>15
	KOREA	2006	HIGH	>80	MEDIUM	5-15
		2007	HIGH	>80	MEDIUM	5-15
		2008	HIGH	>80	MEDIUM	5-15
		2009	HIGH	>80	HIGH	>15
		2010	HIGH	>80	HIGH	>15
	CHINESE TAIPEI	2006	HIGH	>80	MEDIUM	5-15
		2007	HIGH	>80	MEDIUM	5-15
		2008	HIGH	>80	MEDIUM	5-15
		2009	HIGH	>80	HIGH	>15
		2010	HIGH	>80	HIGH	>15
	VANUATU	2006	HIGH	>80	MEDIUM	5-15
		2007	HIGH	>80	MEDIUM	5-15
		2008	HIGH	>80	MEDIUM	5-15
		2009	HIGH	>80	HIGH	>15
		2010	HIGH	>80	HIGH	>15
	JAPAN	2005	HIGH	>80	-	-
		2006	HIGH	>80	-	-

8.1.2 Electronic Data Reporting

PNG is currently in the process of completing its electronic data reporting system. This system is a web-based application that allows vessels to send their logsheets and other catch information electronically. As soon as the data are received, the database is updated automatically. This system will help data reporting to be on time and enables us to work with real time data for management and scientific purposes.

8.1.3 Estimates of Size and School Composition by Echo sounder Buoys

The need to estimate abundance and verify catch estimates is very important to PNG's fishery management objectives. Therefore, use of echo-sounder buoys to estimate school size and composition before capture is under investigation. Trials are currently being carried out and if successful, more devices will be deployed on anchored FADs throughout the PNG EEZ.

8.2 Observer Program

The number of observers in PNG was over 200 in 2010. The program aims to train up to 400 observers by the next 3-4 years. The observer training is now a component of the training run by the PNG National Fisheries College. The training courses run four times a year for two months each session. On average (2004 - 2009), observer coverage level for PNG flag vessels is about 83% (72% in 2009), PNG charter vessels about 58% (37% in 2009) and foreign vessels just under 30% (36% in 2009). Observers also cover trips on tuna longline vessels and FAD deployment trips (not included in table). There was a general decline in the observer coverage for PNG flagged and PNG chartered vessels, despite increase in observer days in the case of PNG flagged vessels. The decline in observer coverage is attributed to increased vessels days at sea and a decline in observer days for PNG chartered vessels. There was however an increase in observer coverage for foreign vessels fishing in PNG waters in 2009 (36%). On average observer coverage for foreign vessels in the last six years is about 30% (36% in 2009). Coverage for 2010 is not presented as the data was not available at the time this report was written.

Table 9: Observer coverage by PNG observers on fleets fishing in waters under PNG national jurisdiction (source: NFA data base)

	PNG FLAG VESSELS			PNG CHARTERED VESSELS			FOREIGN FLAG VESSELS		
Year	Est. vessel days at sea	Observer Days	% Coverage	Est. vessel days at sea	Observer Days	% Coverage	Est. vessel days at sea	Observer Days	% Coverage
2004	1080	1061	98.3	3,725	1989	53.4	8,769	2709	30.9
2005	1802	1329	73.8	4,013	2802	69.8	8,781	2079	23.7
2006	1531	1354	88.4	4,689	2924	62.4	11,882	3677	30.9
2007	1363	1125	82.5	4,287	2520	58.8	14,252	2769	19.4
2008	1712	1615	94.3	4,484	3253	72.5	12,487	3952	31.6
2009	2,157	1816	84.2	4,717	2356	50	11,052	4017	36.4
AVG	**1,608**	**1,383**	**86**	**4,319**	**2,641**	**61.2**	**11,204**	**3,201**	**28.6**

8.3 Port Sampling Program

PNG port sampling program on purse seine catches is still being conducted in the main unloading and transhipment ports around the county. With the aim of covering an estimated 20-25% of the catch weight unloaded or transhipped, a well is stratified into layers and a number of nets are being sampled based on the gross weight of the catch in the well. Fork lengths of all fish in the net are measured and fish indentified to species level by trained port samplers. Various reports of the program were presented in SC 6 session in 2010 for the previous year's results. During the last quarter of 2010 to date, a total 21 carriers and 32 catchers making 81 port visits to either unload or tranship their catch were sampled and results will be presented in SC 8 in 2012. Funding of this project is also supported by the Japanese Trust Fund (JTF) programme.

8.4 Tuna Tagging Project

A PNG Tuna Tagging Project is currently being conducted in the PNG waters in collaboration with the Secretariat of the Pacific Community (SPC) under the umbrella of SPC's Pacific Tuna

Tagging Program (PTTP). This initiative is aimed to improve monitoring of tuna stocks and their exploitation, and obtaining additional data over a longer time frame to be used in regular tuna stock assessments in which specific estimates for PNG EEZ can be obtained.

The project is planned for three years from 2011 to 2013 in which 3 months of tag release cruises in PNG waters will be conducted per year. Other key areas of the project includes the implementation of tag recovery procedures in major PNG and other unloading sites; data quality checking and integration of the data into the SPC tagging database; analysis of the data to generate scientific advice for the management of tuna fisheries in PNG; and capacity building within the NFA in the above areas.

9. References

Kumoru, L.2010. Annual Report to the Commission, Part 1: Information of Fisheries, Research and Statistics, WCPFC-SC6-AR/CCM18.

Attachment A.

Coverage of catch, effort and size data can now be categorized into three categories. They can either be high, medium or low. Where there is no data, it would be stated as "no data". For the catch/effort data coverage "high" represents coverage of greater than 80%, "medium" between 50-80% while "low"0-50%. For the size data coverage "high" is represented greater than15%, "medium" 5-15% and "low" 0-15% (see Table 18).

The percentage representation of the latter data coverage is so because the actual size data collection is not extensive (i.e. a sample representation is required only) and in many cases can only be partially carried out.

Table 21. Categories of coverage for catch, effort and size data.

Category	Catch/Effort data coverage	Size data coverage
HIGH	> 80%	> 15%
MEDIUM	50-80%	5-15%
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.