SCIENTIFIC COMMITTEE
NINTH REGULAR SESSION

6-14 August 2013
Pohnpei, Federated States of Micronesia

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

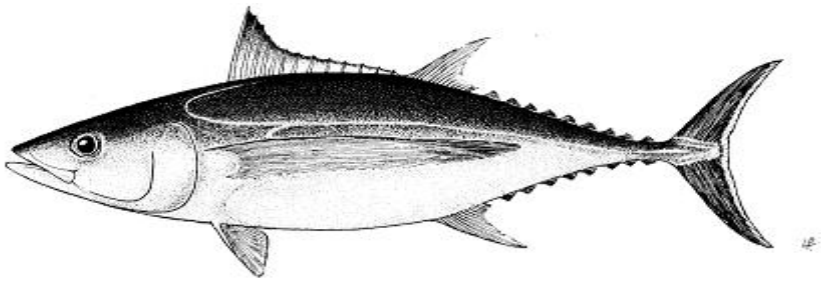
WCPFC-SC9-AR/CCM-24 (Rev 1)

TONGA

TONGA

Annual Report Part 1

Information on Fisheries, Research and Statistics



Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 30 April 2013	**YES**
If no, please indicate the reason(s) and intended actions:	

1.0 ABSTRACT

During the year 2012, four vessels described as Tonga National Fleets and it consist of 3 domestic vessels and one locally based foreign fishing vessels. Apart from the locally based foreign fishing vessels in which 100% of her catch were unloaded locally, there were six (6) more foreign fishing vessels had valid licenses to fish within the Tonga EEZ commencing 2012. These foreign fishing vessels unloaded their catch 50% overseas and 50% locally before they shipped to its respective destination. All these tuna longline fleet mainly operates within the Tonga's EEZ within the WCPFC Convention Area and sometimes extends to the high seas in the southern part of Tonga, but since 2007 no more vessels fished throughout the high seas.

The tuna fishery total catch in quantity and value for 2012 increased considerably as compared to the year 2011. The increased in the tuna production is due to the reopening of the Tongan waters to foreign fishing vessels. For the last five years, the total catch rates (CPUE) for the fishery declined since 2008 until Tonga reopened its water to locally based and foreign fishing vessels to fished in Tonga EEZ. This progress is one of the strategies that Tonga plans for the development of its fisheries.

For the National fleets, it is evident that the trend for the total CPUE was attributed to the decline in the CPUEs of the main tuna species; albacore, yellowfin and bigeye for the last 3 years with a slightly increase for yellowfin during 2010 then drops again the following year. In 2012, yellowfin tuna dominated the catch composition with 56 % followed by albacore with 8 %. Catch composition indicated that most longline vessels and the structure of the fleet targeted bigeye and yellowfin tuna for fresh fish market with high proportion of albacore tuna. Sharks and dolphinfish dominated the non-target species (bycatch) composition. According to the observer reports, Tonga tuna fishery has no impacts on species of special interest (e.g. turtle, marine mammals and birds).

Tonga Fisheries Division continued to work closely with the Offshore Fisheries Program (OFP) of SPC on issues regarding the status of tuna resources in the Tonga EEZ relative to the whole stock in the Western and Central Pacific Ocean (WCPO). The total tuna harvested by Tongan fleet in 2012 was still insignificant to pose any major impact on the whole stock in the region and the WCPO. Despite the ample room for improvement and development of tuna fleet in Tonga, high operation cost had restricted the operation of fishing vessels mainly to areas near the main fishing port, Nuku'alofa.

Tonga research program for tuna such as data collection and observer deployment continued in 2012 with satisfactory outcomes. The port sampling coverage was almost 95% as compared to 90% in 2011. At the same time, measures and resolutions of the Commission are being implemented and monitored by Tonga Fisheries.

2.0 BACKGROUND

Tongan commercial fisheries for high migratory species started in early 1970's with second hand longliner and skipjack vessels from Japan. In early 1980's the Government put into investigation the commercial viability of tuna longline using a new longliner, M.F.V.Lofa, donated by Japan. In 1991, the Government established a semi-Government company, Sea Star, to operate M.F.V.Lofa commercially. The USAid/Tonga Fisheries project in early 1990's tested the viability of medium size vessels for longlining targeting fresh fish for sashimi market. This was resulted with increase in number of domestic fleet targeting fresh tuna in late 1990's to peak in early 2000's.

Tonga has approximately 700,000km^2 of undeclared EEZ that extends from Latitude15 degrees south to 25 degrees south, offers moderate potential for exploitation. Total catches from the Tonga EEZ have displayed a similar trend to effort. The total tuna catch for Tonga National fleets from the EEZ decreased from 277 mt in 2011 to 250 mt in 2012. The domestic fleet targeted fresh tuna for sashimi market while the foreign fishing vessels concentrate to frozen markets.

A significant game-fishing sector exists in Tonga. However, interactions with the commercial longline fleet are likely to be relatively minor as the longline fleet has significantly declined since 2003.

3.0 FLAG STATE REPORTING

3.1 Status of the Fishery

3.1.1 Total annual catch, by primary species

The annual catch and effort estimate, by primary species for the national longline fleet fishing throughout the WCPF Convention Area for the years 2008 to 2012 are summarized in Table 1 with the historical estimates further provided in Figure 1. For the last 5 years since 2008, the total catches for the primary species continued declining with respect to fishing efforts. However, the new effort approaching the fishery in 2011 which was the reopening of Tonga's water for locally based and foreign fishing vessels contributed to the increased of catches. Unfortunately, in further details of catch estimates of primary species for longline fleet in 2012 was amounted to 250mt, about a 9.7% decrease from the previous year. The significant drop in catch was due to the number of domestic vessels operates throughout the year. The 2012 catches for primary species were dominated by yellowfin (56 %), followed by 8 % albacore with lesser amount for bigeye (4 %). Blue marlin occupied 18.8 % of the total catch of primary species followed by swordfish (7.6%), strip marlin (4.4%) then black marlin and skipjack was 0.8% and 0.4% respectively.

Additionally, effort (average number of hooks) also illustrated in Table 1 and figure 1. Even the number of hooks increase by 276300 hooks, about 3.9% increase from 2011, but the number of vessels operating and number of trips was decrease. In reference to the history of this fishery in Tongan waters; longline effort rapidly increased from the mid 1990s to peak at more than 10

million hooks set during 2002 before a rapid decline in both hooks and vessels in recent years. The huge reduction in fishing effort is attributed to the decline in catch rates and other various factors including economic issues and the diversion of fishing effort.

The catch for 2012 is dominated by yellowfin tuna. The annual CPUE estimate by primary species for the Tongan Longliners for the year 2008 to 2012 illustrated in Figure 2 which shows that the total CPUE continued to decline from 2009 until 2011.

Table 1. Annual catch (mt) and effort (hooks) estimates for the Tonga longline vessels, by primary species, for the WCPFC Convention Area, 2008 - 2012

YEAR	Effort	Catch (metric tonnes)								
	Average no. of hooks	Albacore	Bigeye	Yellowfin	Black Marlin	Blue Marlin	Stripe Marlin	Swordfish	Skipjack	Total
2008	*2109300*	*220*	*81*	*291*	*6*	*12*	*11*	*28*	*0*	*649*
2009	*1023900*	*124*	*38*	*109*	*3*	*8*	*8*	*22*	*0*	*312*
2010	*531100*	*57*	*24*	*47*	*2*	*6*	*4*	*26*	*0*	*166*
2011	*701100*	*34*	*18*	*171*	*2*	*22*	*7*	*22*	*1*	*277*
2012	**977400**	**20**	**10**	**140**	**2**	**47**	**11**	**19**	**1**	**250**

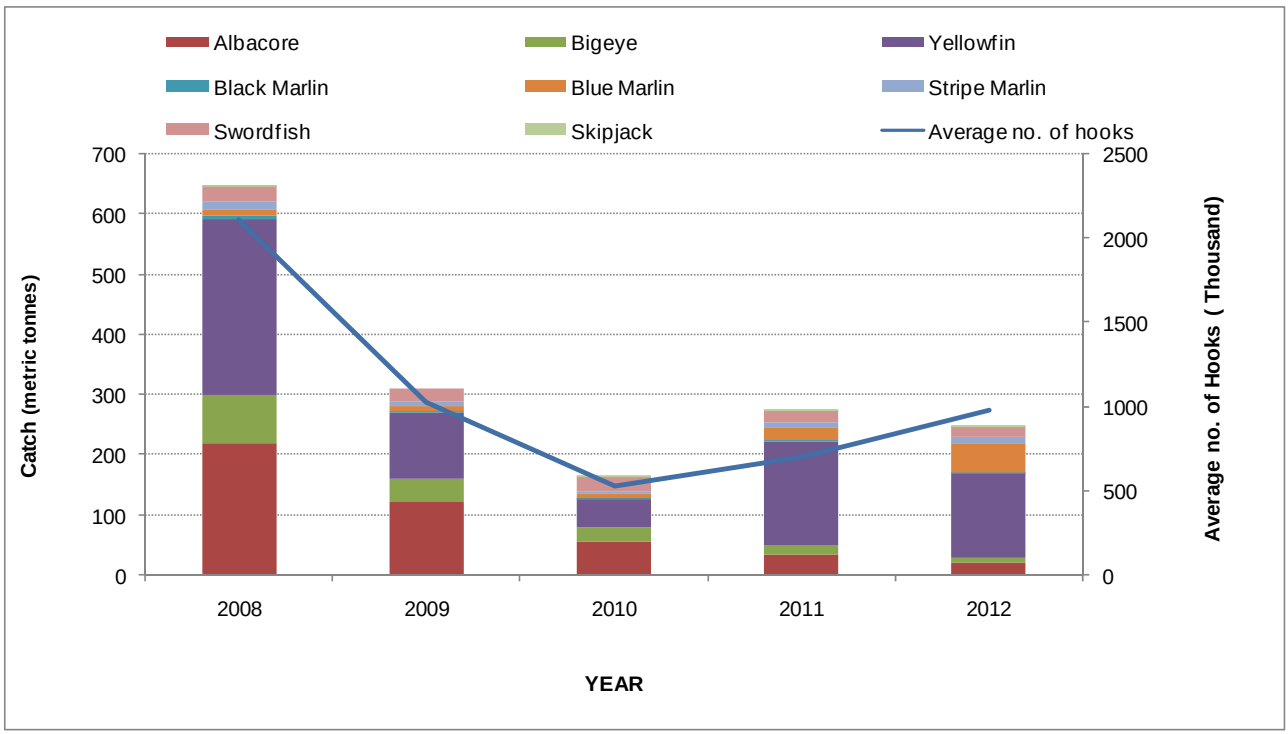


Figure 1. Historical annual Catch (mt) and Effort (no. of hooks), by primary species, for the Tongan longliners were active in the WCPFC Convention Area for the years 2008 to 2012

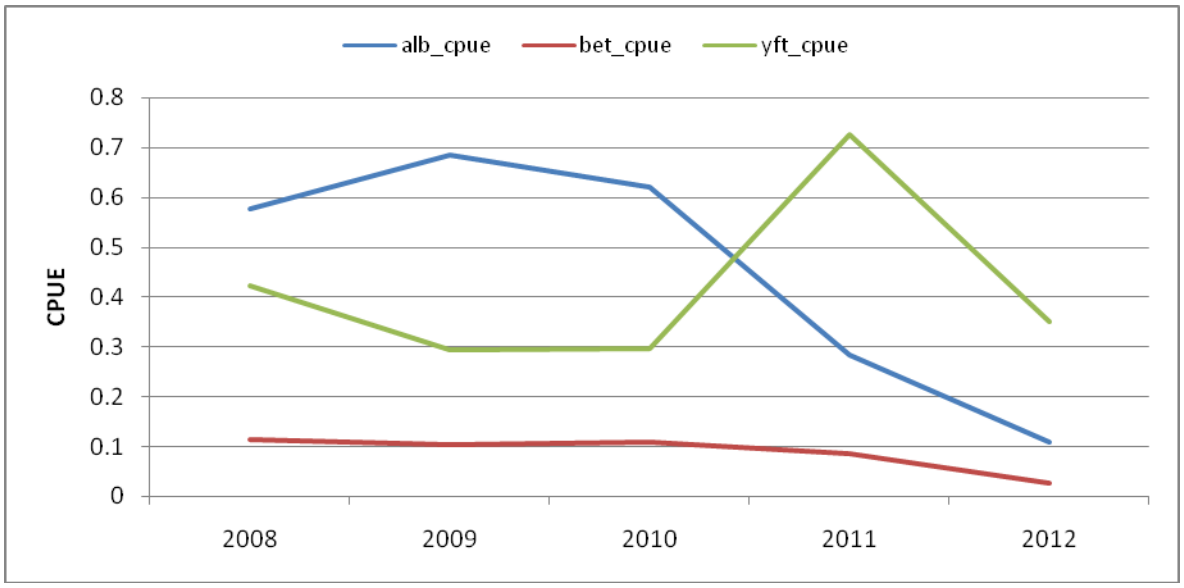


Figure 2. CPUE of main tuna species for Tonga longliners were active in the WCPFC Convention Area for the years 2008 to 2012

3.1.2 Annual catch estimates of non-target, associated and dependent species

The provisional estimated total catch of non-target, associated and dependent species are provided in Table 2 for the national longline fleet. Sharks (Unidentified) are the most common by-catch species followed by dolphin fish and yahoo. By-catches are obtained from logsheets and are also obtained from observer records as well as port sampling data. Observer records are important for estimating catches of the less valuable species that are less likely to be retained or recorded. Observers have reported high retention rates of target tunas, with most discards being due to fish being shark damaged. Wahoo, dolphinfish, moonfish and billfishes also had high retention rates as these are also valuable components for the fishery. No interactions with species of special conservation interest (e.g. turtles, marine mammals, birds) were reported by observers since the program started in 1995.

Table 2. Annual estimated catches (mt) of non-target, associated and dependent species, including sharks, by the Tongan Longliners, in the WCPFC Covention Area, for years 2008 to 2012.

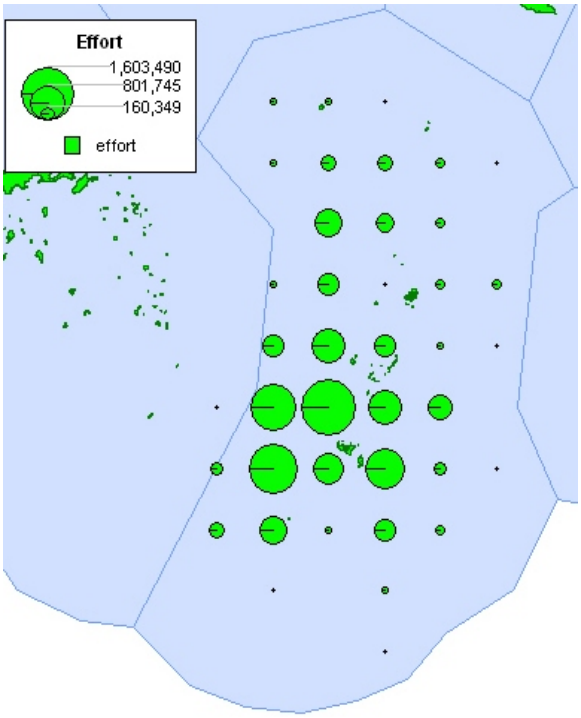
Non Target Species	2008	2009	2010	2011	2012
Wahoo	29.1	10.0	7.0	8.8	6.3
Short-Billed Spearfish	2.2	2.0	1.3	3.1	1.0
Sharks (Unidentified)	21.9	10.0	2.1	14.2	130.0
Sailfish (Indo Pacific)	1.8	2.0	0.8	2.5	0.8
Pacific Bluefin Tuna	0.0	0.0	0.0	0.0	0.0
Dolphin fish	42.9	45.0	27.1	30.9	39.0
Opah/Moonfish	16.4	13.0	11.8	3.4	0.5
Others	0.7	0.1	0.0	4.3	8.5
Total	**114.9**	**82.1**	**50.1**	**67.2**	**186.0**

3.2 Fishing Patterns

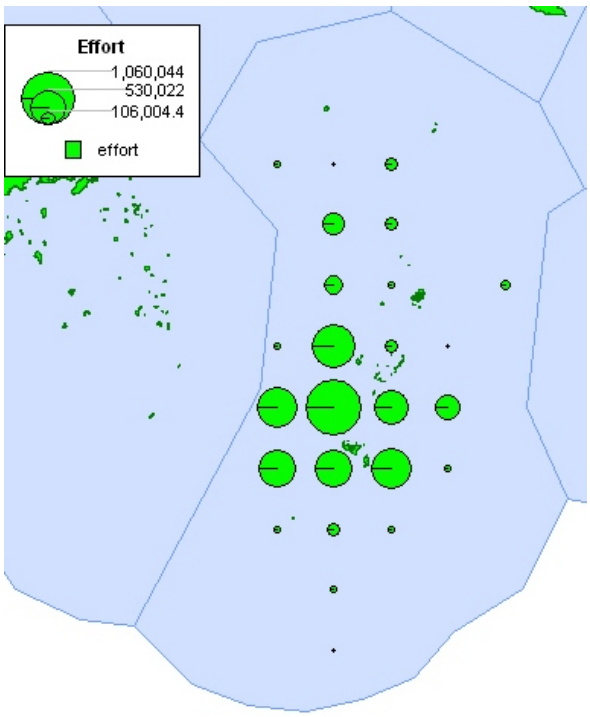
The annual distribution of effort and catch for the target species by national longliners active in the WCPFC Convention Area, for years 2008 to 2012 are given in Figure 3a-e and Figure 4a-e respectively. Catch and efforts by the national fleet are reported within the Tonga EEZ. However, there have been minor levels of effort reported in high seas areas immediately to the south of the Tonga EEZ, up until 2007. In recent years most efforts were focused in the central area of the EEZ due to high costs of operations including high prices of fuel. Since 2000, the highest levels of effort have been reported during the second and third quarters of the year. The area of operation of the fleet has been similar recent year, with the exception of a reducing range of fishing operations and reducing distances between sets. Due to less vessels operated in 2012, no fishing effort was reported from the further to northern and southern EEZ of Tonga.

The highest albacore catch rates from the Tonga EEZ are generally reported during the middle of the year where Tonga has its cool season, with a smaller peak at the end of the year. Albacore catch rates are relatively high in the central and the south of the EEZ during the second and the last quarter of the year. Yellowfin and bigeye are reported were highly reported from central to south of EEZ.

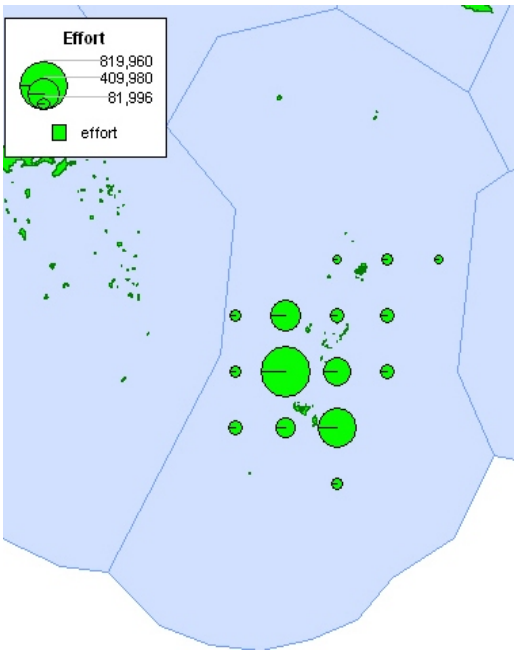
To fulfill reporting requirements stipulated under the conservation and management measures adopted by the Commission, in accordance with CMM 2006-04 (para 4), the catch levels of fishing vessels that have taken striped marlin as a bycatch, south of 15 degree south was 11mt for 2012. Further, in accordance with CMM 2010-05 (para 4), the catch level for south pacific albacore taken from south of 20 degrees south was 20.0mt in 2012.



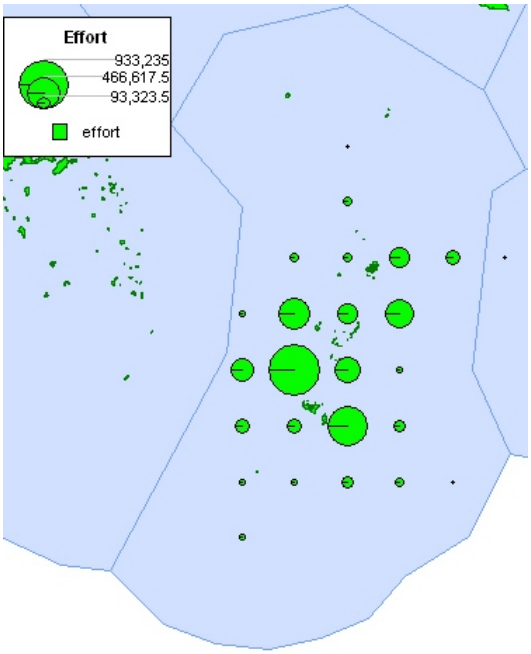
(a) 2008



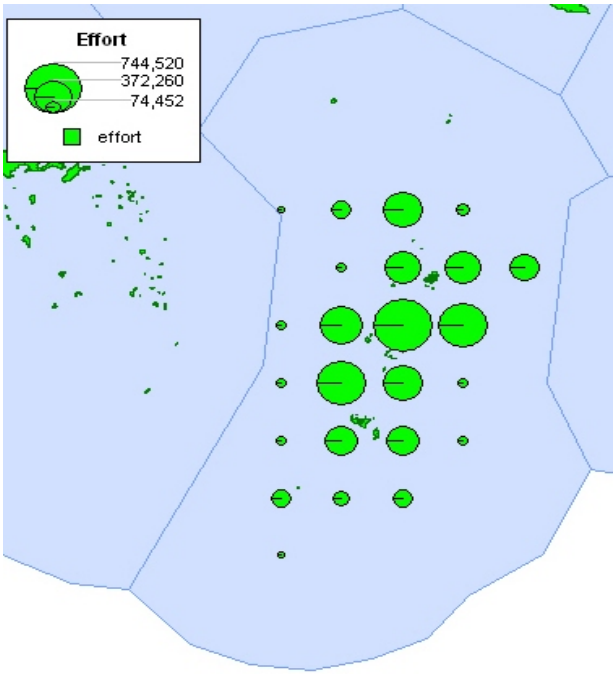
(b) 2009



(c) 2010

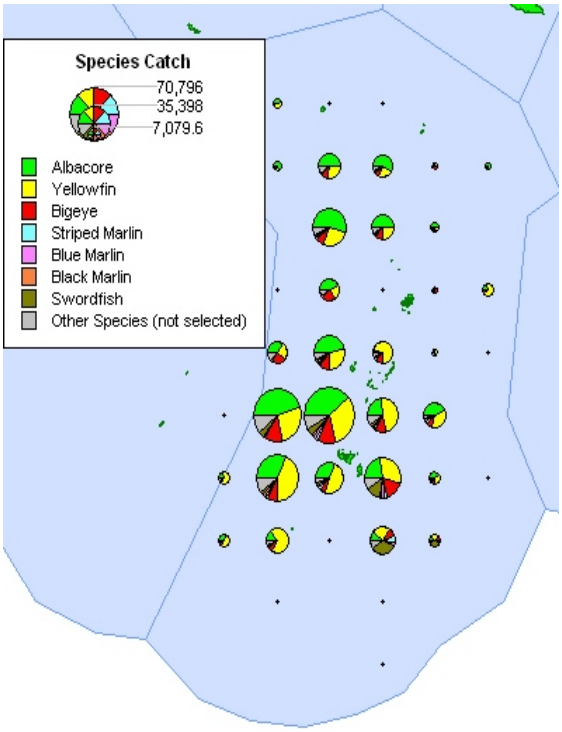


(d) 2011

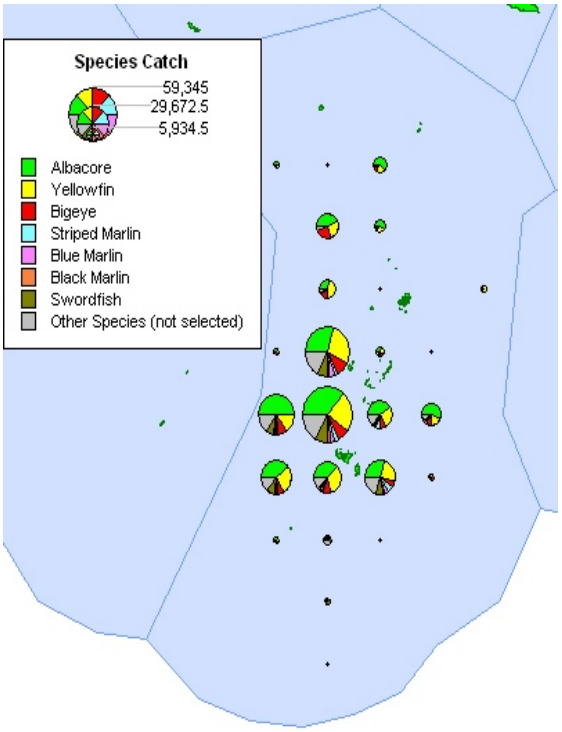


(e) 2012

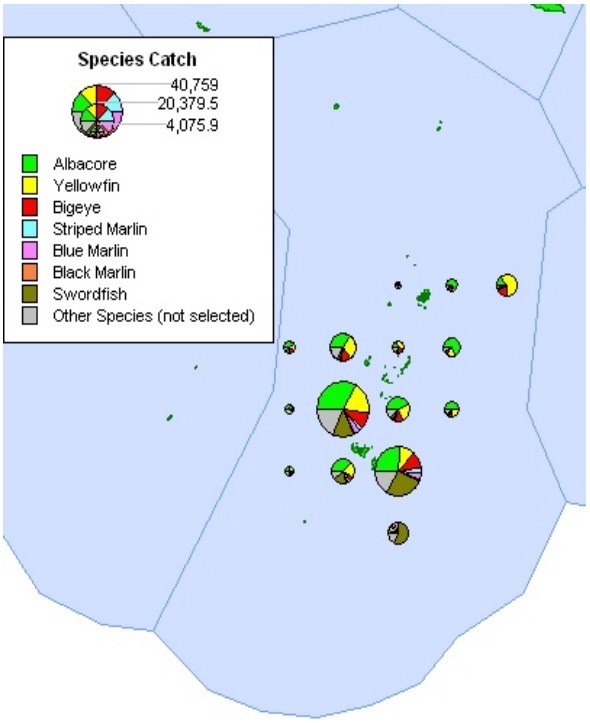
Figure 3a-e. Annual Distribution of effort (hooks) by the Tongan Longliners active in the WCPFC Convention Area, for the year 2008 to 2012.



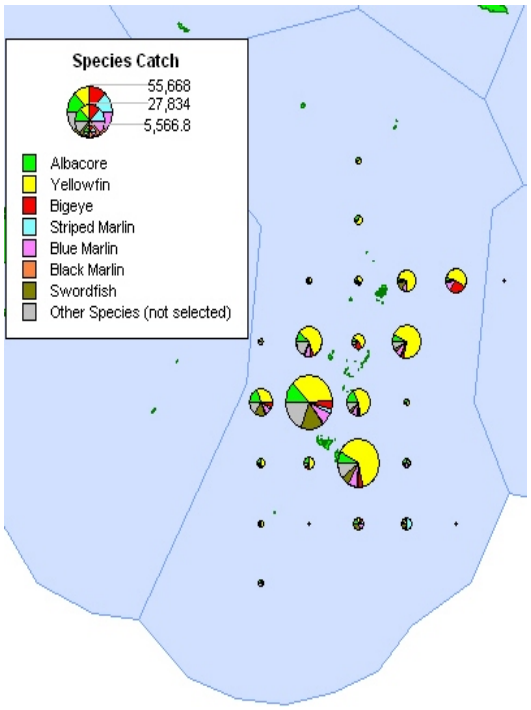
(a) 2008



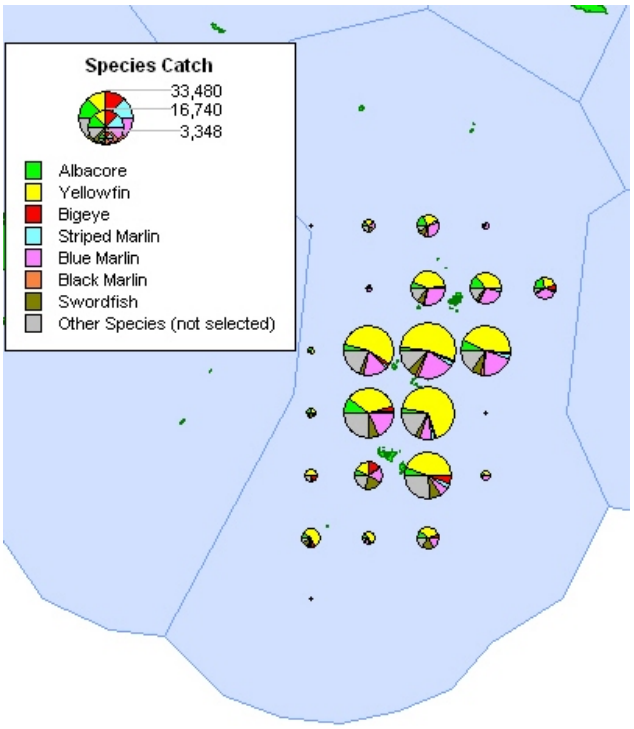
(b) 2009



(c) 2010



(d) 2011



(e) 2012

Figure 4a-e. Annual Distribution of target species catches (in kilogram) by the Tongan Longliners active in the WCPFC Convention Area, for the year 2008 to 2012.

3.3 Fleet Structure

Following the development of the domestic longlining and the opening of the fishery for the chartering vessels, Locally Based Foreign Fishing Vessel (LBFFV) in late 1990s the tuna fleet increased to peak in 2002 and 2003 but has subsequently declined due to poor catch rate and high operational costs. In 2004, a moratorium was placed on licensing Locally Based Foreign Fishing Vessels (LBFFV) causative to their relocation to other countries. However, in 2011, Tonga lifted the moratorium allowing again foreign fishing vessel as part of its programmed to develop tuna fishing production. This program started in October 2011 with one locally based vessel which includes in national fleet.

Table 3 shows the number of licensed fishing vessels licensed to fish in Tonga waters for the last 5 years. Within those four vessels; they all under 100GRT and consist of one locally based vessel and three domestic vessels. In 2012, only one domestic vessel was operate and active throughout the year, while one vessel conducted her last trip in June then the other two vessels was not active. This fishing effort contributes to the declined of the total catch for 2012.

Table 3. The number of Tongan National Fleets longline vessels, by size category, active in the WCPFC Convention Area, 2008 - 2012.

Size Category (GRT)	YEAR				
	2008	2009	2010	2011	2012
0 - 100	7	5	4	4	4
100 - 200	2	2	1	-	-
200+	-	-	-	-	-

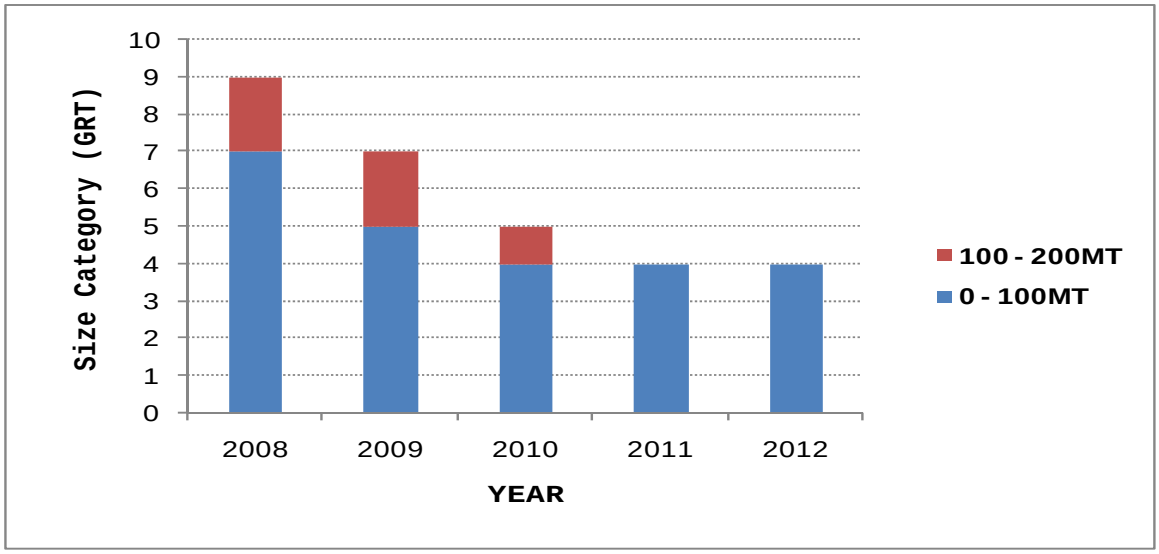


Figure 5. Historical annual vessels number for the National Fleet longline vessels, for the WCPFC Convention Area, 2008 - 2012

4.0 COASTAL STATE REPORTING

Toward the end of 2011, Tonga reopened its waters to locally based and foreign fishing vessels after 6 years moratorium. This movement is one of the strategies Tonga plans to implement to develop its fisheries. However, the fishery continued to be affected by various factors particularly economic problems faced by local fishing companies. Table 4 provides a description of foreign-flagged vessels licensed to fish in the Tonga waters since 2011. Locally based foreign longline vessels operating under a local Fishing Agent (Ngatai Marine Enterprise) fly foreign flag of registration and not necessarily the national flag of the operating and managing country which is the Kingdom of Tonga, but they do unloading 100% of their catch locally.

Table 4. Number of foreign longline vessels licensed to fish in the Tonga EEZ by year and flag.

Flag	CHINESE TAIPEI		
YEAR	LBFV	FFV %50 Unload Overseas	FFV %100 Unload Overseas
2011	1	-	-
2012	1	4	2

The locally based fishing vessel (LBFV) and vessels unloaded 50% of their catch overseas are managed and operated through a local joint venture fishing company. These foreign fishing vessels with the exception the locally based vessel mostly offloaded their catch in port of Suva and Levuka in Fiji. Table 5 provides a description of catch estimates for foreign fishing vessels fished within the Tonga EEZ for the year 2011 and 2012. Locally based foreign fishing vessel start operating in 2011 while other six more foreign vessels join in early 2012 and it shows rapid increase in catch and its dominated by albacore tuna with 43.6% of its total catch followed by yellowfin tuna with 17.8%, bigeye (6.5%) and other species with 32.1%.

Table 5. Annual catches by foreign longline fleets in Tonga EEZ, by flag and species, 2011 - 2012

			Catch (metric tonnes)				
FLAG		YEAR	ALB	BET	YFT	OTH	Total
CHINESE TAIPEI	LBFV	2011	1.86	0.77	24.26	27.11	54.00
		2012	9.34	2.87	75.15	231.97	319.33
CHINESE TAIPEI	FFV	2011	-	-	-	-	-
		2012	679.83	99.79	206.38	275.88	1261.88

4.0 SOCIO-ECONOMIC FACTOR

Exportation of catches from Tonga continued in 2012. Even though the total catch for national fleet decreased by 9.7% from previous year but overall catch reported and unloaded locally together with the revenue collected were drastically increased in response to the large increase in catches and fishing efforts throughout the year. This considerable increase in revenue is due to the inclusion of foreign fishing vessels which unloaded their catch in port Nuku'alofa and shipped to respective market destination. As in previous years, majority of the catches for 2012 were exported and the rest were sold at local markets. The total estimated FOB revenue collected from export in 2012 was TOP$ 7,559,531.00 as compared to TOP$677,085.00 collected in 2011.

The monthly exports in terms of quantity and revenue for 2012 were highest in November with 16.1 % followed by midyear months (May –June- July) with approximately 14% each month. The highest portion of the export of target species was from albacore with 27 %. Some by-catch species were also exported and it was dominated by sharks with 42% of the total export species as it shows in figure 6.

5.0 DISPOSAL OF CATCH

5.1 Marketing

Figure 6 below presents the main markets with respect to weight for the tuna export for Tonga in 2012. The biggest portion; 71.2 % of the total export volume was exported to Taiwan followed by 18.7 % to Pagopago, 7.4 % to Hongkong and around 2 % to Japan. Other important markets are Australia, Honolulu and Los Angeles but a very low portion of 0.03%, 0.36% and 0.34% respectively. A significant decline in export volume to Japan sashimi market due to only one domestic vessel actively fished for fresh tuna. The foreign vessels dominated the export of frozen fish to Taiwan, Pagopago and Hongkong. Foreign vessel provides more fish to be sold locally and it contribute to a drop in fish price.

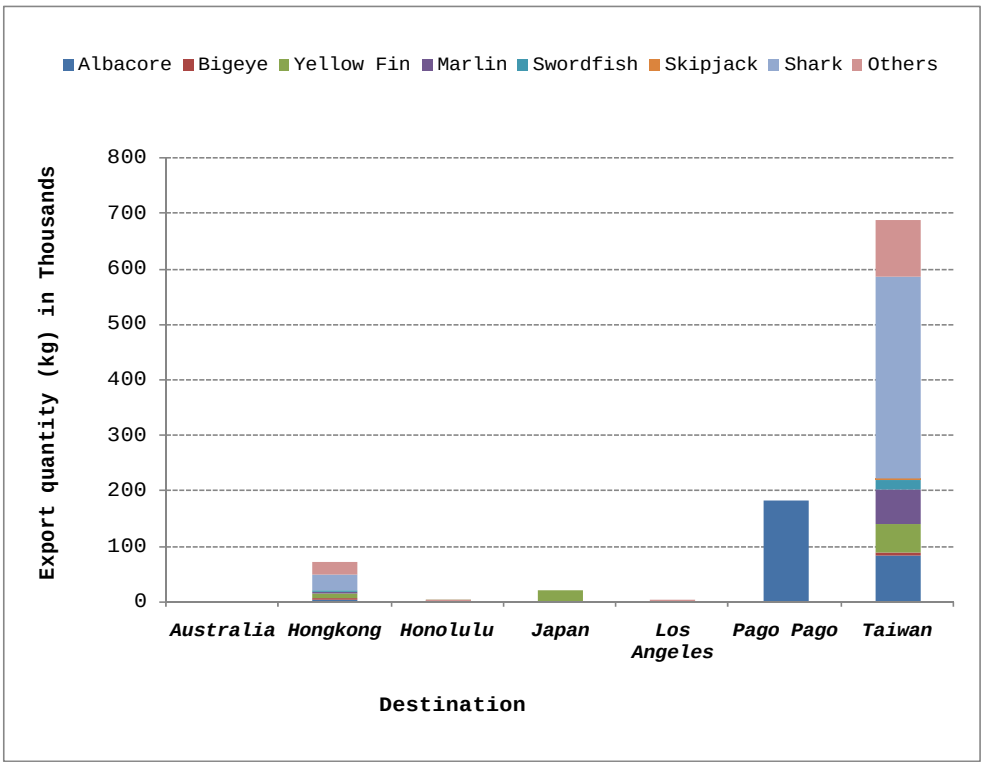


Figure 6. Tuna Export and Destinations for Tonga, 2012

6.0 ONSHORE DEVELOPMENT AND FUTURE PROSPECTS OF FISHERY

Tonga Government is making every change possible in its reform process to form conducive policies which will encourage foreign investments and local fishers to assure profitability in this fishery. Part of the development is reopening Tonga's fisheries waters to locally based and foreign fishing vessels. In addition, Tonga with the help of the FFA Secretariat have started a bareboat framework to allow fishing companies and entities to charter foreign flag vessels to fish in its waters.. Toward the end of June 2012, there was 1 LBFFV and 7 foreign vessels licensed to fish in Tonga's EEZ. For future development, it is expected that more than 20 foreign vessels are expected to have valid licenses to fish in the Tongan waters. The positive effect of this development is revealed in the total catch and export value of 2012 as compared to previous year. Overall, the export value for tuna in 2012 increased by over 100 % as compared to the export in 2010.

In 2012, Tonga continued to participate in the regional Tuna Data Workshop and the Stock Assessment Workshop which are conducted on an annual basis for SPC member countries. Data Workshop was aimed to improve member countries' scientific tuna monitoring and data management capacity, and satisfy their data reporting obligations to the Western and Central Pacific Fisheries Commission (WCPFC). The Stock Assessment Workshop was recognized as an important program in capacity building for fisheries officers and managers in the region. In this workshop, for the first time, participants were introduced to the Tuna Management Simulator (TUMAS) a new software tool developed by the OFP that allows fishery managers and advisors to evaluate the performance of different management options. TUMAS allows commission members to explore

and compare the results of different management options and assists them to make management decisions and negotiate at regional fisheries meetings.

The TUFMAN database for tuna was developed from MS Access to SQL. Since the utilization of the database in Tonga for the management, monitoring and analysis of tuna data, it was problematic. This is because the Tonga Fisheries Division's server could not accommodate the upgrading of the SQL. Hence, a request was sent to SPC for financial and technical support to address this problem. Fortunately, this problem was fixed in 2011 by SPC expert plus purchasing of a new server through fund from the Devfish project.

7.0 RESEARCH ACTIVITIES AND STATUS OF TUNA FISHERY DATA COLLECTION

7.1 Observer

The Tonga National Observer Programme (TNOP) has attempted to deploy observers' onboard domestic and foreign longline vessels operated with in Tonga EEZ, and also place observers on US purse seiner vessels under Multilateral Treaty arrangement. TNOP is aimed to collect information on fish catch, fish handling techniques, fishing technology, by-catch and discards and all other activities that the vessel conduct for the duration of the trip. All these data will analyzed and its will very useful for stock assessment and management purposes. Fishing vessels' compliance with fisheries legislation is also an integral part of this program.

7.2 Port sampling

Tonga fisheries continue employ a dedicated port samplers which covering almost 100% of the longline unloading. Collated data are also being sent to SPC/OFP on a regular basis for further analysis and also store second copy of the data through TUFMAN database system. SPC/OFP has been involved such activities as successful integration and regular updates of the TUFMAN database in Tonga. Sampling typically occurs at single port facility at Nuku'alofa.The Tonga Fisheries Division is obliged to maintain this high percentage coverage of port sampling to ensure the fulfillment of its obligation to the Commission.

Offshore Fisheries Program (OFP) of SPC continues to provide assistance to Tonga Fisheries with relevant information about tuna stock in Tongan waters relative to the whole stock in the Western and Central Pacific Ocean. The total tuna catch by Tongan fleet in 2012 still remains insignificant to have impacts on the whole stock in the WCPO. Despite the ample room for improvement and development of tuna fleet in Tonga, high operational costs such as fuel have restricted the operation of local fishing vessels mainly to areas near the main fishing port, Nuku'alofa.