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

WCPFC-SC5-AR/CCM-24

TONGA

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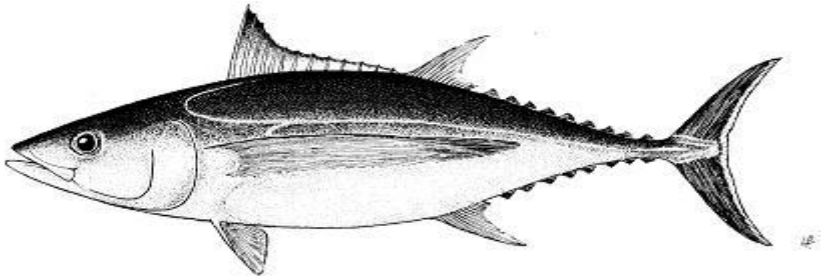
Annual report Part 1

Information on Fisheries, Research and Statistics



Fisheries Division
Ministry of Agriculture & Foods, Forests and Fisheries

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 2009	**YES**
If no, please indicate the reason(s) and intended actions:	

1.0 ABSTRACT

The operation of tuna longline fleet in Tonga continued in 2008 in similar manner as in 2007, as but with lesser number of fishing vessels than those reported to Scientific Committee 4th Meeting in 2007. Tonga continued to operate its tuna fishery with full domestic longline fleet only and mainly operate within Tonga's EEZ.

Tuna fishery total catch in quantity and value for 2008 declined after it has increased since 2004. This is a result of reduction in effort and consistent with the decline in number of active fishing vessels. However, the total annual fishery catch rate (CPUE) continued to increase in 2008 since 2004 consistent with continue increasing in the CPUE of yellowfin even though the CPUEs for albacore and bigeye decline respectively. Yellowfin became the highest percentage of tuna composition in the total catch for 2008 with high percentage of albacore and bigeye. Catch composition of tuna indicated that most of longline vessels and the structure of the fleet are targeting bigeye and yellowfin tuna for fresh fish market with high proportion of albacore tuna. Dolphinfish and sharks dominated the bycatch composition. From observer reports, Tonga tuna fishery has no impacts on species of special conservation interest (e.g turtle, marine mammals and birds).

Offshore Fisheries Program (OFP) of SPC continued to provide assistance in providing Tonga Fisheries with relevant information about tuna stock in Tongan water relative to the whole stock in the Western and Central Pacific Ocean. The total tuna catch by Tonga fleet in 2008 still remain insignificant to have any major impact on the whole stock in the region and WCPO. Despite the ample room for improvement and development of tuna fleet in Tonga, high fuel cost had restricted the operation of fishing vessels mainly to areas near the main fishing port, Nuku'alofa.

Tonga Fisheries continue improving the tuna data collection established few years ago with assistance of SPC and FFA, and recently by the Commission. This includes the increasing of port sampling and observer coverage on domestic vessels using regional observer program with the same standard data collection and compulsory domestic VMS program. At the same time, measures and resolutions of the Commission are being implemented and monitored by Tonga Fisheries.

2.0 BACKGROUND

Tuna Fishery started in early 1970's with second hand longliner and skipjack vessels from Japan. In early 1980's the Government put into test the commercial viability of tuna longlinig 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. This was let to increase in number of domestic fleet targeting fresh tuna in late 1990's to peak in early 2000's.

Tonga has approximately 700,000 km2 of undeclared EEZ that extends from Latitude13 to 25 degrees offers moderate potential for exploitation. Total catches from the Tonga EEZ have displayed a similar trend to effort, dominated by albacore. In 2008, the total tuna catch from the EEZ was estimated at 763.6 mt, but dominated by yellowfin (38.1 %), with lesser amounts of albacore (28.8 %) and bigeye (10.6 %). Since 2003, longline vessels have shifted targeting from albacore to yellowfin and bigeye to export as fresh fish.

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 Tongan longliners in the WCPF Convention Area for the years 2004 to 2008 are summarized in Table 1 and also given in Figure 1. The annual catch for the tuna primary species continued to increase from 2005 after a steady decline from the peak in 2001 to the lowest in 2004. However, the catches in 2008 dropped down by 31.2 % as compared to the catches in 2007. This is mainly a result of the reduction in effort by 35.8 % (21093 hooks) as compared to the effort (32856 hooks) in 2007. Longline effort rapidly increased from the mid 1990s to peak at more than 10 million hooks set during 2002 before a rapid decline in hooks (and vessels).

The main target species for the longline fishery are bigeye, yellowfin and albacore. Albacore tuna dominated the annual catches since the fishery started in Tonga, however, catches of albacore tuna decreased by 43.5 % in 2008 as compared to 2007. This is a result of fishing vessels switching from targeted albacore tuna fishing to yellowfin and bigeye tuna, mainly due to market forces. Yellowfin tuna dominated the catches for 2008 for the first time in the history of this fishery in Tonga, however, catches of yellowfin still below by 14.8 % as that landed in 2007. This is mainly a result of continue increasing in catch per unit effort (CPUE) for yellowfin fishery as given in Figure 2. Catches of bigeye tuna for 2008 decreased by 37 % as that in 2007. Catches for swordfish is remain constant and very low as compared to the target species. This is due mainly to only one vessel is targeting swordfish in the Tongan waters.

The annual CPUE estimate, by primary species for the Tongan Longliners for the year 2004 to 2008 is given in Figure 2. The total CPUE continued to increase from 2005 up to 2008 even the CPUEs for albacore and bigeye decreased in 2008. This is mainly a result of increasing in the CPUE of yellowfin.

Overall landings of the longline caught species have declined in 2008 consistent with the decline in efforts and decline in number of active vessels operating in this fishery.

Table 1. Annual Catch and Effort Estimate, by primary species, for the Tongan longliners were active in the WCPFC Convention Area for the years 2004 to 2008.

Year	Effort No. of hooks	Primary species catch (mt)						
		Albacore	Bigeye	Yellowfin	Skip jack	Swordfish	Marlins	**TOTAL**
2004	16335	187.8	37.7	163.3	3.4	30.3	16.5	**439**
2005	28278	178.2	77.3	114.5	1.7	22.3	35.9	**429.9**
2006	33886	380	101	183	0.5	34	41	**739.5**

2007	32856	390	129	341	0.8	31	49	**940.8**
2008	21093	220.2	81	290.8	0.3	29	28.6	**649.9**

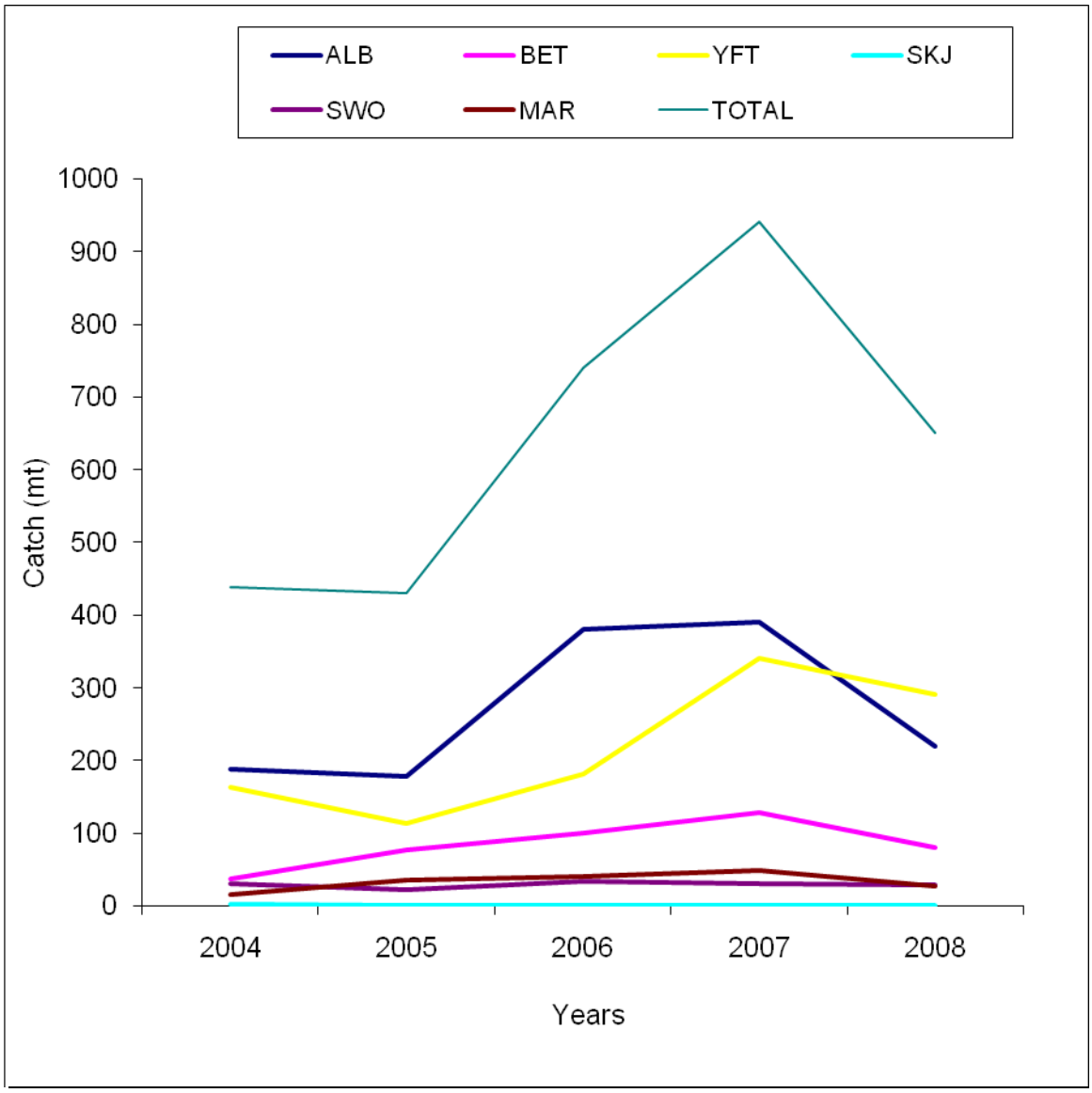


Figure 1. Historical annual catch, by primary species, for the Tongan longliners were active in the WCPFC Convention Area for the years 2004 to 2008.

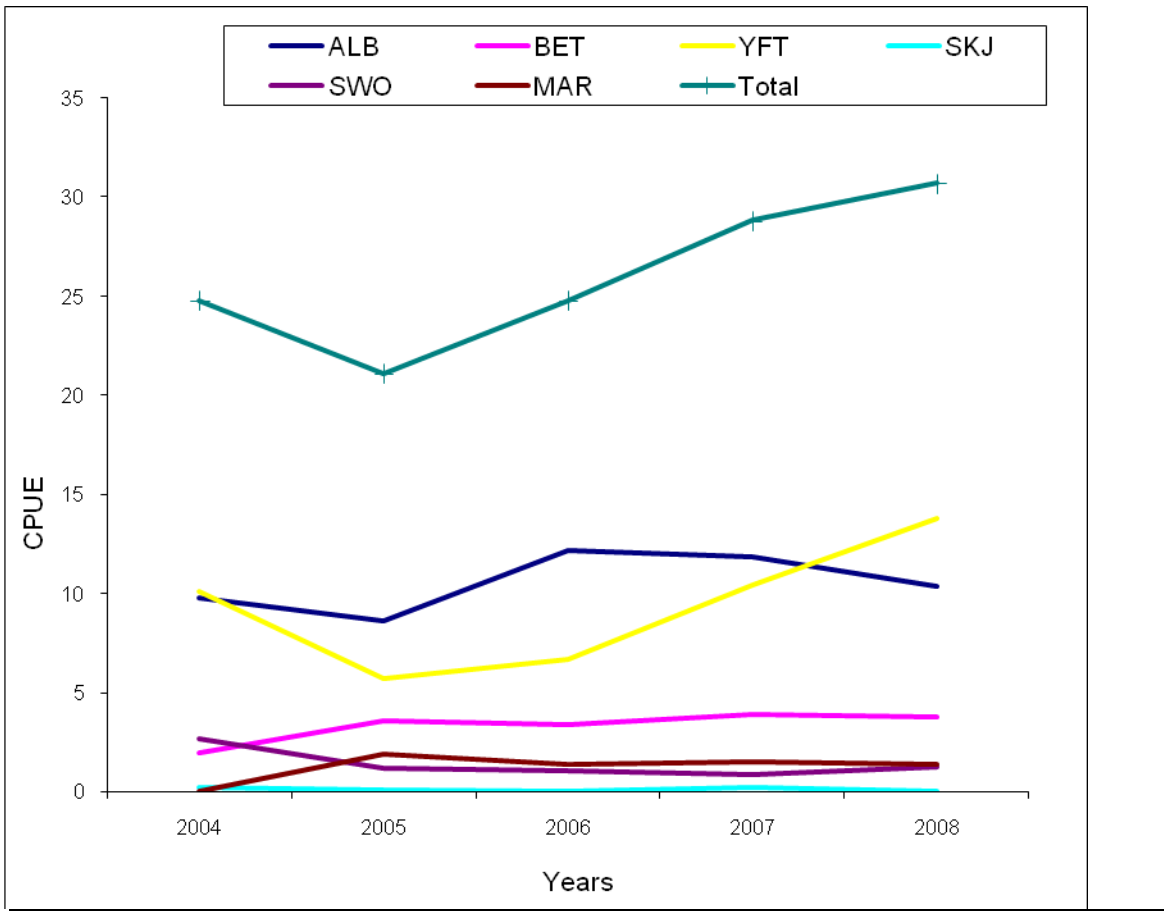


Figure 2. Historical annual CPUE, by primary species, for the Tongan longliners were active in the WCPFC Convention Area for the years 2004 to 2008.

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

The annual estimated catches of non-target, associated and dependent species, by the Tongan Longliners, in the WCPFC Convention Area, for the years 2004 to 2008 are given in Table 2. Dolphin fish is the most common bycatch species followed by sharks and moonfish. The major bycatch species in the longline fishery are significant components of annual exports. The large reductions in longline effort have resulted in reductions in landings of the major bycatch species.

By-catches are obtained from logsheets and are also obtained from observer records. Observer records are important for estimating catches of the less valuable species that are less likely to be retained or recorded; it is difficult to obtain reliable estimates from species rarely caught in longline fisheries

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. In contrast, lancetfish, escolar, oilfish and certain shark species are rarely retained, although almost all sharks (greater than 90 %) are finned before being discarded. A single turtle (unidentified) was captured by the domestic longline fishery in the Tonga EEZ, and was released alive. No other 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 of no-target, associated and dependent species, including sharks, by the Tongan Longliners, in the WCPFC Convention Area, for years 2004 to 2008.

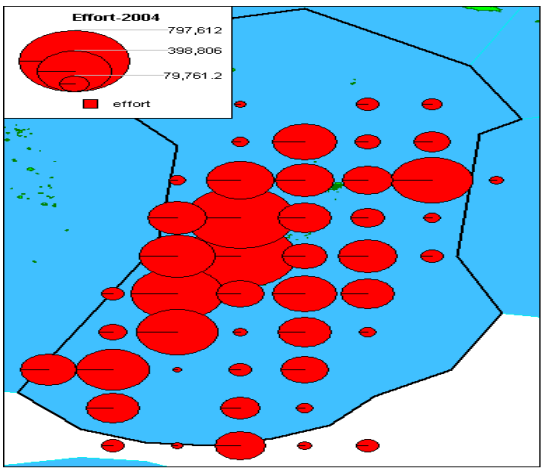
Non Target Species	2004	2005	2006	2007	2008
Wahoo	11.6	38.3	32.5	45.11	29.1
Short-Billed Spearfish	2.4	4.02	5.21	5.23	2.17
Sharks (Unidentified)	42.4	98.1	33.3	38.4	21.9
Sailfish (Indo Pacific)	1.5	2.80	1.13	3.54	1.76
Pacific Blue Tuna	0.12	0	0	0.15	0
Dolphin fish	28.6	57.7	71.9	85.0	42.9
Oilfish	0.03	2.0	0	0	0
Opah/Moonfish	5.01	25.1	10.9	18.0	16.4
Rainbow	0	0	0	0.01	0
Others	1.5	3.2	37.3	5.1	0.69
TOTAL	**93.2**	**231**	**192.2**	**201**	**115**

3.2 Fishing Patterns

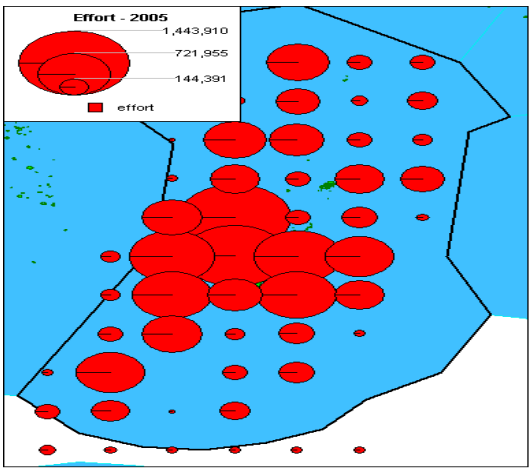
The annual distribution of target species catch and effort by the Tongan longliners active in the WCPFC Convention Area, for years 2004 to 22008 are given in Figure 3a-e and Figure 4a-e. Most longline effort by the Tonga fleet is reported within the Tonga EEZ. However, there have been minor levels of effort reported in high seas areas immediately to the south of the Tonga EEZ. Total catches by Tonga vessels outside of the Tonga EEZ are minor as most vessels are not capable of operating long distances from Nuku'alofa.

As most vessels operate from the port of Nuku'alofa, most effort is focused in the central area of the EEZ. 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 since 2004, with the exception of a reducing range of fishing operations and reducing distances between sets. These may be in response to changes in targeting by the remaining fleet.

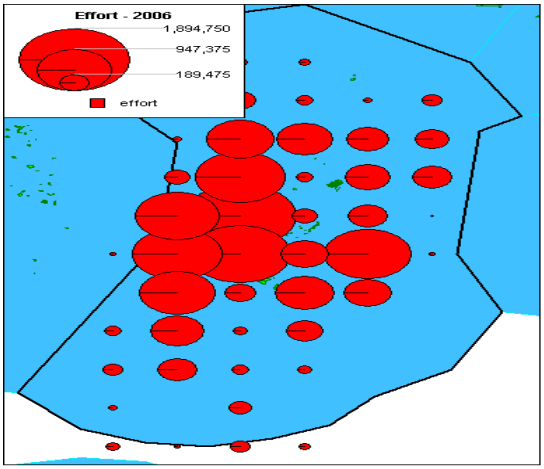
The highest albacore catch rates from the Tonga EEZ are generally reported during the middle of the year, with a smaller peak at the end of the year. Albacore catch rates are relatively high in the northern and southern EEZ during the second and last quarters of the year. Highest catch rates of yellowfin and bigeye are reported from the western EEZ, especially during the first and second quarters of recent years.



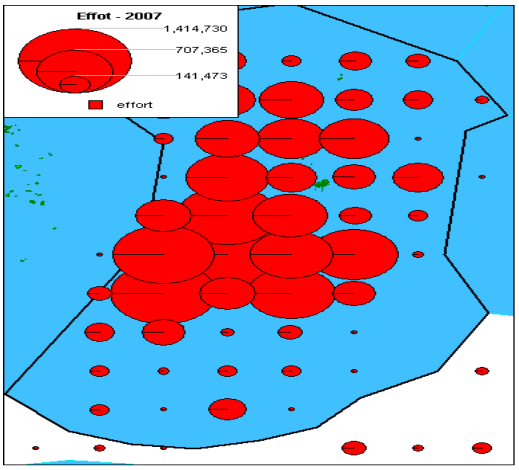
(a) 2004



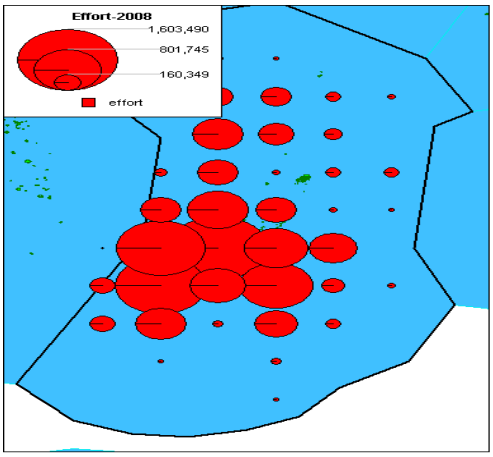
(b) 2005



(c) 2006

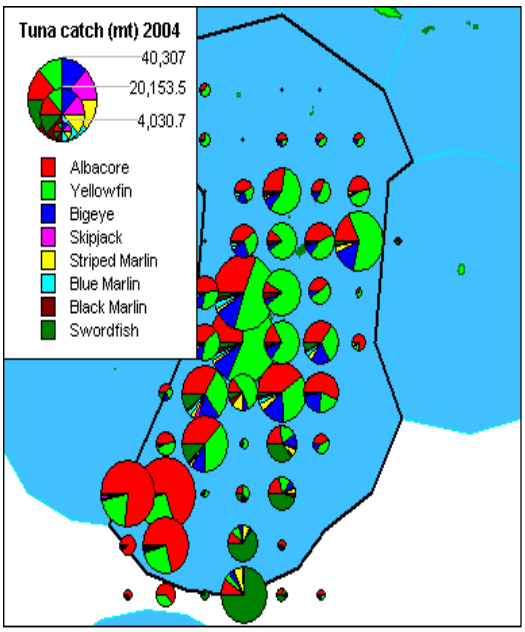


(d) 2007

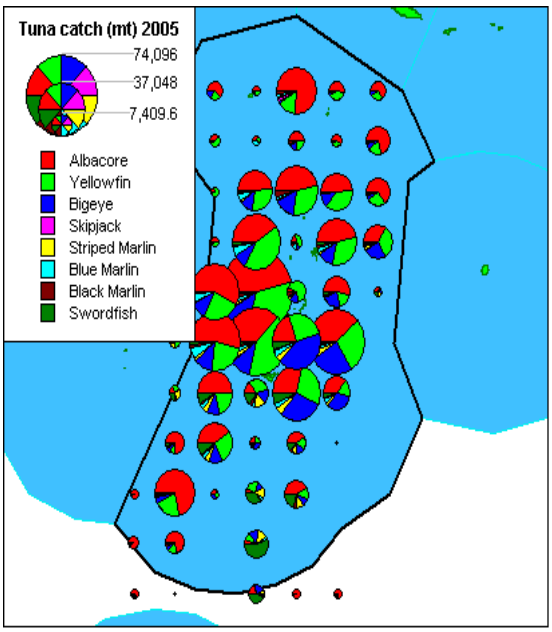


(e) 2008.

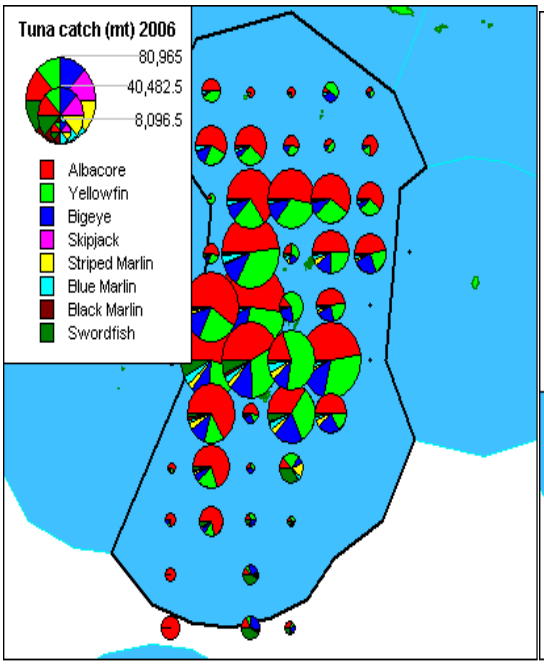
Figure 3a-e. Annual Distribution of target species effort by the Tongan Longliners active in the WCPFC Convention Area, for the year 2004 to 2008.



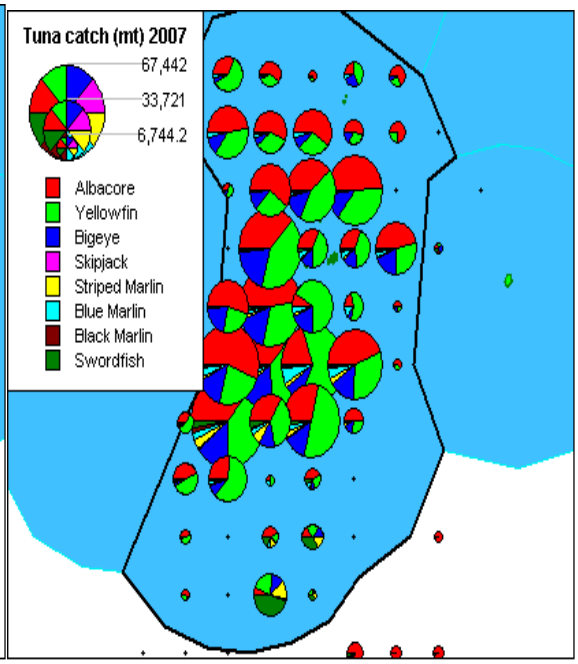
(a) 2004



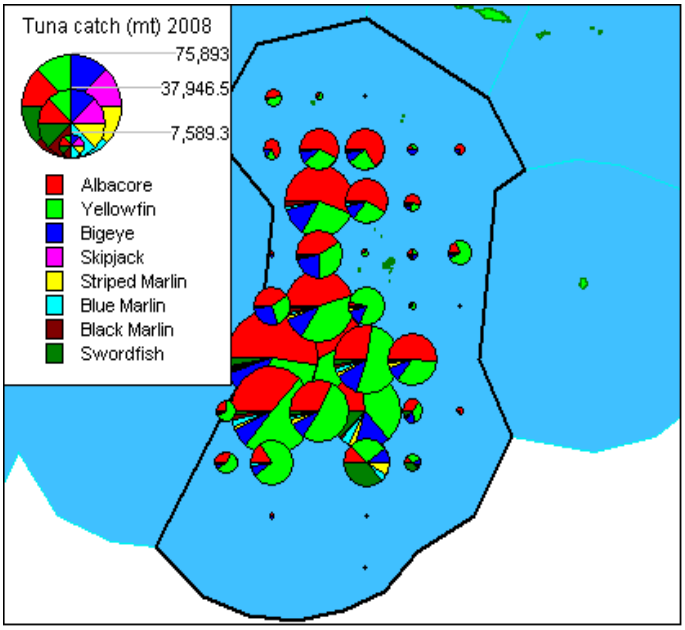
(b) 2005



(c) 2006



(d) 2007



(e) 2008

Figure 4a-e. Annual Distribution of target species catches by the Tongan Longliners active in the WCPFC Convention Area, for the year 2004 to 2008.

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 operation cost. At the end of 2004, all of the Locally Based Foreign Fishing Vessels (LBFV) relocated to other countries. Domestic longliner vessels are mostly 20m-30m.
The Table 3 shows the number of licensed fishing vessels registered to fish in Tonga waters and currently only Domestic fishing are fishing in Tongan waters.

In 2008, a maximum of eleven (11) local longline fishing vessels were license to fish within Tonga's fisheries waters, although not all were active at any one point in time, noting a moratorium is still in place since 2004, for licensing locally based foreign fishing vessels to fish within Tonga's fisheries waters. Out of the 11 license, 2 vessels did not make any trips in 2008 and one sits in port since April 08.

Table 3. The number of Tongan longliners licensed to fish in Tongan waters from 2004 to 2008.

Year	Gear	Domestic	LBFV	Total
2004	Longline	14	14	28
2005	Longline	15	0	15
2006	Longline	12	0	12
2007	Longline	12	0	12
2008	Longline	11	0	11

4.0 SOCIO-ECONOMIC FACTOR

Most Tuna caught in Tonga waters are exported and the rest of it is sold locally. Total FOB revenue estimated was TOP$867,756.50 from the total tuna catch of 2008. The maximum catch for 2008 was in June and the species with most contribution to the export earnings from tuna was yellowfin. The export of tuna depends only on the capability of exporters to meet their operating costs and thus allow them the opportunity to transport tuna to International Market. The decline in the export of tuna during (2003-2004) was due to harsh El Nino conditions in the Tonga seas and operating costs (such a fuel, crew costs, freight, marketing, repairs and maintenance).

The tuna industry employs around 500 people. There were 730.13mt of fresh tuna exported in 2002 and valued at $4,818,858.00. In 2001, 1,202.40 metric tonnes were valued at $7,935,840. For 2008, Yellowfin were valued at T$ $446,686.00, Albacore with T$158,806 and Bigeye with T$ 130,802. The tuna operators continue to benefit from duty free fuel, a subsidy provided by government to assist fishing such as tuna longline.

5.0 DISPOSAL OF CATCH

5.1 Marketing

Most tuna caught in Tonga waters are exported and destination of exports varies depending on markets and the species. For 2008, the main market destinations (shown in Figure 5) for Tonga tuna are Japan, which received 38.2 %, Los Angeles with 20.6 %, Hawaii with 20 % followed by Pagopago with 13.3 %. Other important markets are New Zealand and Australia. Fish are mostly exported “fresh” to markets except most albacore and skipjack are frozen before exporting to Pagopago, American Samoa.

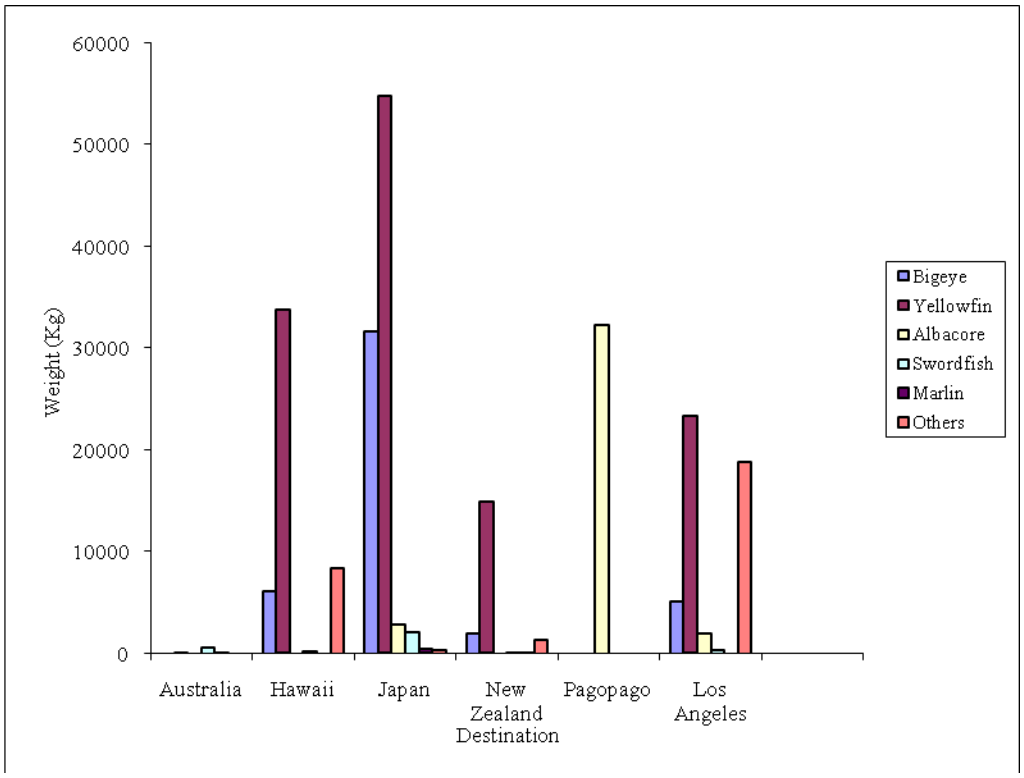


Figure 5. Export Destinations by weight and by species for Tonga Tuna for 2008

6.0 ONSHORE DEVELOPMENT AND FUTURE PROSPECTS OF FISHERY

There are three tuna packing facilities which all operate under HACCP certified conditions. Some companies are required to use these certified facilities. Two companies are exporting loins, fresh cut packed sashimi packets.

The tuna resources still offer opportunity for growth of the domestic industry. Any major growth would be from a combination of factors such as the fishing component which is able to fish beyond the Tonga's waters and a processing that is able to add value to the product. These will raise significant economic contributions. While the industry remains uncertain due to economic difficulties, it must remain flexible and implement good management measures so as to minimize unnecessary costs. More importantly are the subsidies that government has enabled to provide for this fishery and as such has given these companies opportunity to continue fishing in the face of uncertainties.

Tonga Government is making every change possible in its reform process to form conducive policies which encourages foreign investments and local fishers to assure profitability in this fishery. Foreign participation is restricted to tuna provided that all its catches are processed and exported from Tonga. Although Technical Assistance has been sought to assist commercial banks, banks are hesitant to approve loan amounts which are relevant to the running of fishing industry.

Tonga has adopted the ecosystem approach to fisheries management (EAFM) framework that provides for the overall sustainable management of tuna fisheries. Under this framework is the preparation of various policy documents, namely: EAFM report, Operational plan, revised TMP, and a legal framework. The Operational and revised TMP plans will specify the objectives that are to be achieved through implementation of priority/ relevant strategic management actions for Tonga longline (LL) and sport (SP) fisheries. This EAFM process reflects a significant move from the management of single target species into a more holistic management framework.

7.0 RESEARCH ACTIVITIES AND STATUS OF TUNA FISHERY DATA COLLECTION

7.1 Observer

The Tonga National Observer Programme is under the Monitoring & Surveillance Section of the Fisheries Division. The staffs at this program are responsible, for the activities of the Observer Programme in close collaboration with relevant SPC-OFP staffs for deployment on vessels fishing within Tonga waters, and with FFA, when an observer is requested to be deployed under the Multilateral Treaty arrangement

At the beginning of 2008, there were five observers were available for deployment as compared to one in 2007. Overall, the number of observer deployment for 2008 (15 trips) increased dramatically as compared to the 6 deployments made in 2007. Table 4 below shows the number of trips carrying an observer in 2008. Attempt is made to further increase the number of observer deployment in 2009.

Table 4. Number of observer trips made in 2008

Trip Number	Vessel Name	From	To	Sea Days
1	Laumanu	29-Jan-08	7-Feb-08	10
2	Pacific Blue 18	15-Feb-08	28-Feb-08	14
3	Laumanu	17-Mar-08	26-Mar-08	10
4	Paragon 1	19-Mar-08	31-Mar-08	13
5	Paragon 1	13-May-08	23-May-08	11
6	Pacific Blue	15-May-08	28-May-08	14
7	Marine Princess	6-Jun-08	16-Jun-08	11
8	Kerry Elle	26-Jun-08	3-Jul-08	8
9	Pacific Blue 8	7-Aug-08	16-Aug-08	10
10	Kerry Elle	21-Aug-08	29-Aug-08	9
11	Pacific Blue 28	5-Sep-08	16-Sep-08	12
12	Marine Princess	10-Sep-08	22-Sep-08	13
13	Laumanu	17-Nov-08	23-Nov-08	7
14	Pacific Blue 28	3-Dec-08	10-Dec-08	8
15	Pacific Sunrise	7-Dec-08	15-Dec-08	9

The major constraint facing the programme is the availability of observers to carry out observer related duties when requested. Observers are employed when needed and upon request, and as such, sometimes when request are made, observers are not available due to various reasons.

Another constraint faced was the lack of enthusiasm from observers to be deployed on certain vessels, due to the status of these vessels ie. cleanliness etc, leading to observers at most times, becoming "unavailable" for deployment when it is known these fleet will be the ones carrying the observer.

7.2 Port sampling

The tuna fishery port sampling program for Tonga is under the Offshore Section of the Fisheries division and is funded by the Secretariat for the Pacific Community (SPC) since the program was started in 80s. Sampling typically occurs at one port at Nuku'alofa and it occurs throughout the year.
The port sampling activities include; recording of lengths and weights for every species during unloading of tuna fishing vessels, collecting of logsheets from captains of each fishing vessel and also collecting of unloading forms from fishing companies. All data and information from logsheet, port sampling and unloading are entered to TUFMAN database. The port sampling report, logsheet data and unloading information are regularly provided to SPC through monthly report.

There was an improvement in port sampling coverage for the last 4 years as it was increased from 56 % in 2006 to 70 % in 2007, and 76 % in 2008. Coverage rates for logsheet data and unloading data continued to be 100 % in 2008.

Offshore Fisheries Program (OFP) of SPC continued to provide assistance in providing Tonga Fisheries with relevant information about tuna stock in Tongan water relative to the whole stock in the Western and Central Pacific Ocean. The total tuna catch by Tonga fleet in 2008 still remain insignificant to have any major impact on the whole stock in the region and WCPO. Despite the ample room for improvement and development of tuna fleet in Tonga, high fuel cost had restricted the operation of fishing vessels mainly to areas near the main fishing port, Nuku'alofa.