**SCIENTIFIC COMMITTEE**
**TENTH REGULAR SESSION**

Majuro, Republic of the Marshall Islands
6-14 August 2014

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

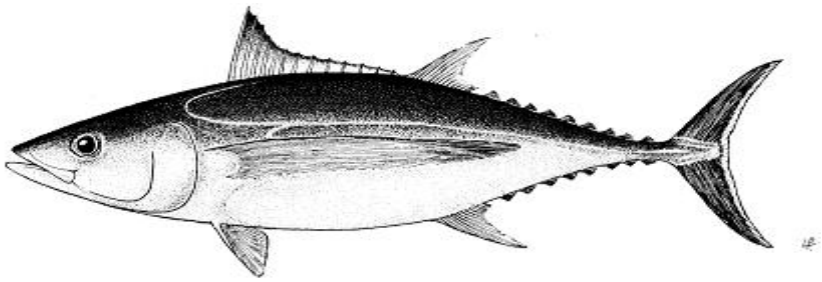
**WCPFC-SC10-AR/CCM-25**

**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 2014 | **YES** |

# 1.0 ABSTRACT

The estimated catch of Tonga National longline fleets operation within its fisheries water for the year 2013 was indicated a reduction by 10.8% compared to the previous years. The number of vessels under Tonga National fleets was decreased to three longline vessels only (Table 3) compared four vessels in 2012. Two of these three vessels were locally-based foreign fishing vessels with Taiwanese flag operate by local fishing agency; with a single domestic longliner (Tongan flag) owned by a local fishing company. Apart from National fleets, Tonga continues on licensing foreign fishing vessels to fish entirely in Tonga fisheries water with conditions since 2011. This brings up to a total of twenty four (24) foreign vessels (locally-based foreign vessels is not included) with valid license in 2013. These foreign fishing vessels unloaded their catch either 100% or 50% overseas and 50% locally before they shipped to its respective destination.

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 5 years with a slightly increase for yellowfin during 2011 then drops again the following year. In 2013, yellowfin tuna dominated the catch composition with 57% followed by albacore with 6%. Catch composition indicated that the domestic longline vessel targeted bigeye and yellowfin tuna for fresh fish market, while the locally-based (Chinese Taipei flagged) and foreign fishing vessels (CH-Taipei, China and Fiji flagged) targeting frozen main tuna species (albacore, bigeye, yellowfin and skipjack) for cannery and other overseas market. Mahimahi and sharks dominated the non-target species (bycatch) composition by 49.6% and 12.3% of the total non-target species respectively. According to the observer reports, Tonga tuna fishery has no impacts on species of special interest (e.g. turtle, marine mammals) except one seabird (species: Cape pigeon) but it struck off before landing.

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 2013 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 has an Observer program and an active domestic port sampling program for highly migratory species. Tonga's National Observer Programme was audited by WCPFC Secretariat in March 2011 and is authorized to provide ROP observers. One of the issues identified in this audit was the lack of debriefing of observer data due to lack of certified debriefer. Tonga is now including some of its observers on debriefer's training course and it's close to the completion of its prerequisite to become a certified debriefer.

In addition, Tonga uses SPC/FFA regional forms for logsheets and observer data. These forms have had a number of revisions over the years, some of which is to cater for requirements of the

WCPFC. For example, seven key shark species are now required to be identified and recorded by species. This is one of the areas identified by the Compliance and Monitoring Scheme where many of the SIDS such as Tonga requires assistance. The observer coverage on foreign vessels for 2013 was relatively high of close to 70%. The port sampling coverage was almost 99% as compared to 95% in 2012. 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, F.V.Lofa, donated by Japan. In 1991, the Government established a semi-Government company, Sea Star, to operate 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 Latitude 14 degrees south to 26 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 250 mt in 2012 to 223 mt in 2013 due to the reduced number of vessels license and hooks. 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.

Lastly, Tonga will commence collecting data from artisanal tuna fisheries in the very near future and also to input into TufArts database system provided by SPC. The main artisanal tuna fishing activities concentrate on trolling around FADs and free schools associate with birds using outboard motor boats. Vertical line (for tuna) and mini longline were also introduce to fishing associations and communities to encouraging them to shift fishing to deeper waters rather than over exploited of coastal and near shore species.

## 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 2009 to 2013 are summarized in Table 1 with the historical estimates further provided in Figure 1. For the last 5 years since 2009, 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 2013 was amounted to 223mt and about a 10.8% decrease from the previous year. The significant drop in catch was due to the number of domestic vessels operates throughout the year. The 2013 catches for primary species were dominated by yellowfin (57 %) for main tuna species, followed by 6 % albacore with lesser amount for bigeye (3 %). Blue marlin occupied 22 % of the total catch of primary species followed by swordfish (12%), strip marlin (1%) and skipjack 0.4% with no record of black marlin.

Additionally, effort (average number of hooks) also illustrated in Table 1 and figure 1. The number of hooks in the water for 2013 was decrease by 198800 hooks compared to the number of hooks in the previous year. This is due to the decline in number of vessels (3 vessels) operating during the year and the expiry of fishing license for the two locally-based during the 3rd quarter of the year and they return to their flag states (Chinese Taipei) in October, which is indicate the drops in total catch of primary species for the National fleets.

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 annual CPUE (kg / 100 hks) estimated by primary species for the Tongan Longliners for the year 2009 to 2013 illustrated in Figure 2 which shows a continuous decline in catch of albacore and bigeye for the last five years. Yellowfin tuna was drop in 2012 with a very slight increase in 2013 while other species decline since 2011.

**Table 1. Annual catch (mt) and effort (hooks) estimates for the Tonga longline vessels, by primary species, for the WCPFC Convention Area, 2009 - 2013**

| | Effort | Catch (metric tonnes) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| YEAR | Average no. of hooks | Albacore | Bigeye | Yellowfin | Black Marlin | Blue Marlin | Stripe Marlin | Swordfish | Skipjack | Total |
| 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 |
| **2013** | **778600** | **13** | **7** | **126** | **-** | **48** | **2** | **26** | **1** | **223** |

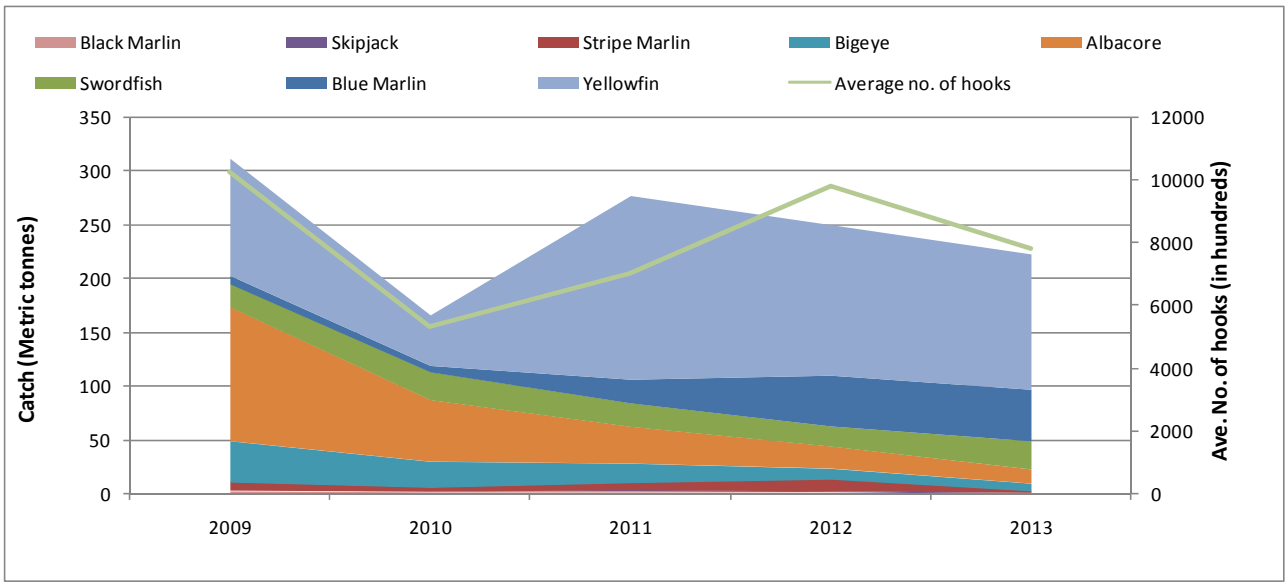



**Figure 1. Historical annual Catch (mt) and Effort (no. of hooks), by primary species, for the Tongan longliners were active in the WCPFC Convention Area for the years 2009 to 2013**

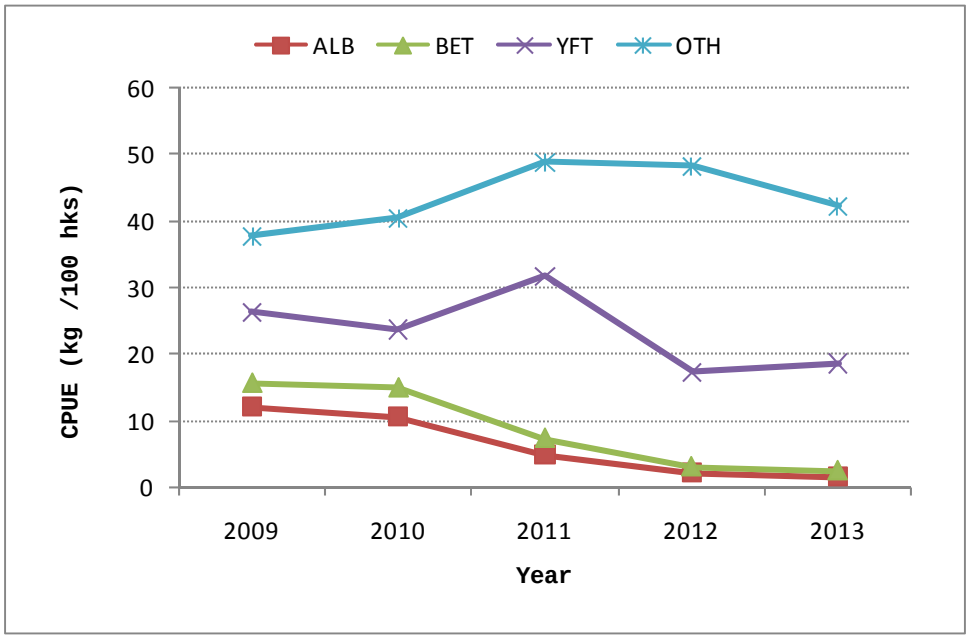



**Figure 2. CPUE (kg per 100 hooks) of main tuna species and others for Tonga longliners were active in the WCPFC Convention Area for the years 2009 to 2013**

### 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. Dolphin fish (Mahimahi) is the most common by-catch

species followed by other species and sharks (unidentified). Sharks (unidentified) has a dramatic drops by almost 90% compared to the previous year.

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 due to shark damaged. Wahoo, mahimahi, moonfish and billfishes also had high retention rates as these are also have valuable components for the fishery especially the local market.

Only one interaction of Tonga longliners with species of special conservation interest observes which was on seabirds as it shown on table 3. No interaction with marine turtle and marine mammal.

**Table 2. Annual estimated catches (mt) of non-target, associated and dependent species, including sharks, by the Tongan Longliners (Chinese Taipei and Tongan flagged), in the WCPFC Covention Area, for years 2009 to 2013.**

| Non Target Species | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|
| Wahoo | 10.0 | 7.0 | 8.8 | 6.3 | 3.0 |
| Short-Billed Spearfish | 2.0 | 1.3 | 3.1 | 1.0 | 2.6 |
| Mako Sharks | | | | | 1.0 |
| Sharks (Unidentified) | 10.0 | 2.1 | 14.2 | 130.0 | 13.2 |
| Sailfish (Indo Pacific) | 2.0 | 0.8 | 2.5 | 0.8 | 2.1 |
| Pacific Bluefin Tuna | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Dolphin fish | 45.0 | 27.1 | 30.9 | 39.0 | 53.3 |
| Opah/Moonfish | 13.0 | 11.8 | 3.4 | 0.5 | 0.0 |
| Others | 0.1 | 0.0 | 4.3 | 8.5 | 32.2 |
| **Total** | **82.1** | **50.1** | **67.2** | **186.0** | **107.4** |

**Table 3: Observed annual estimated catches of species of special interest (seabird, turtle and marine mammals) for the Tonga longline vessels (Chinese Taipei and Tonga flagged), in the WCPFC Convention Area, for 2013.**

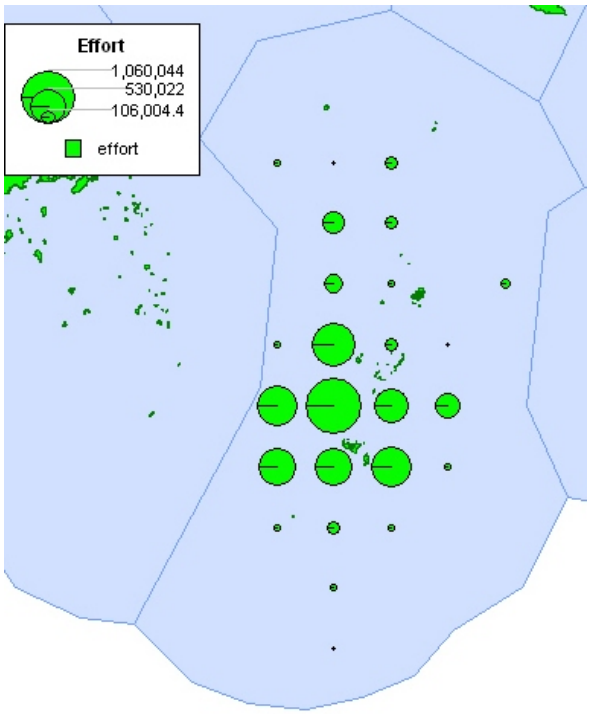
| gear | flag | species | date | latitude | longitude | EEZ | FATE | # of individuals |
|---|---|---|---|---|---|---|---|---|
| L | TW | CAPE PIGEON | 11-08-13 | 1857.889S | 17559.644W | TO | DSO | 1 |

### 3.2 Fishing Patterns

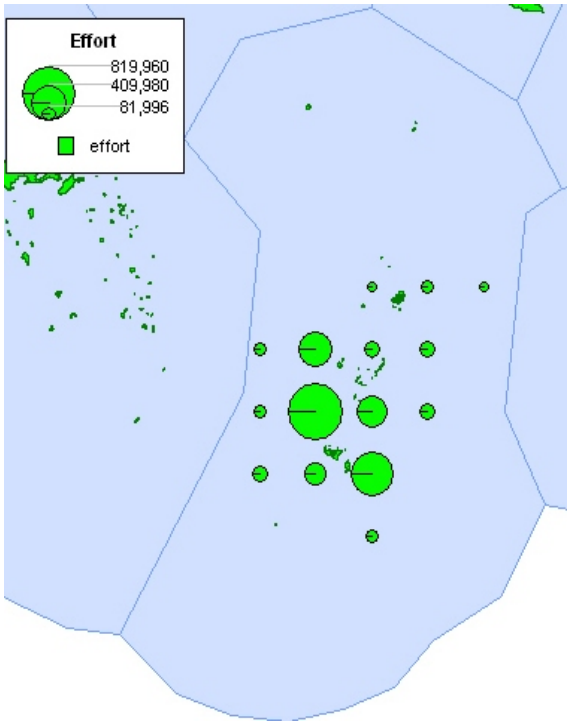
Figure 3a & 3b provides an illustration of the annual distribution of effort and catch for the national longline fleets over the past five years. All vessels (Chinese Taipei and Tonga flagged) were based in Tonga for unloading, and both the effort and catch were concentrated in the central area except

for last year (2013) fishing was concentrated in central area and move up to the northern side of the EEZ.

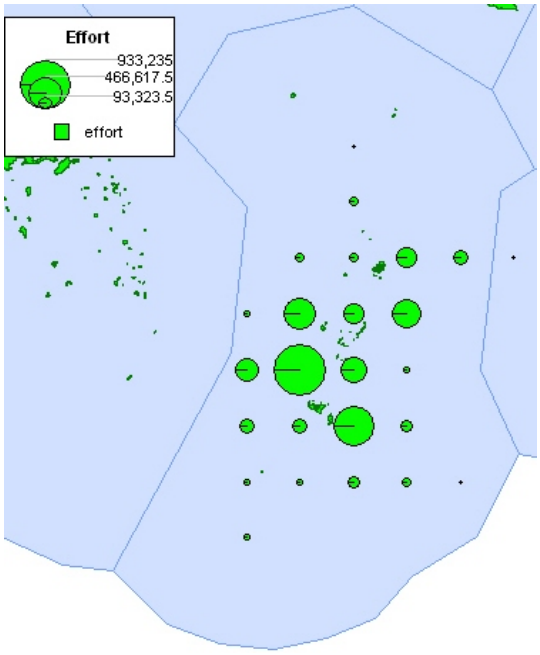
The highest albacore catch rates from the Tonga EEZ are generally reported during the middle of the year where Tonga has its cool season, with a smaller peak at the end of the year. Albacore catch rates are relatively high in the central and the northern side of the EEZ during the second and the last quarter of the year (2013). Yellowfin tuna dominated the annual catch distribution for the last four years, and both yellowfin and bigeye were highly reported from central to south of EEZ.



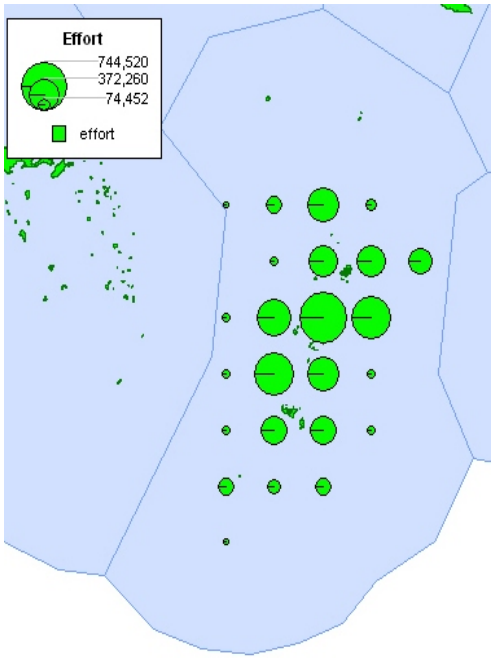

(i) 2009



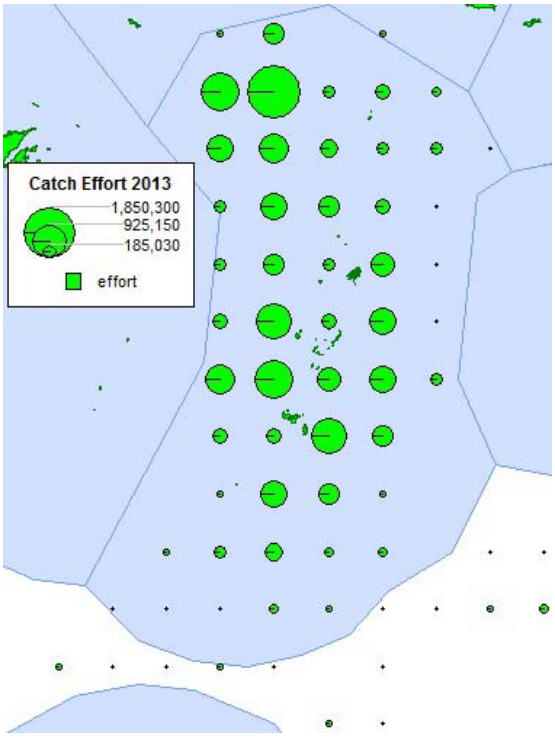

(ii) 2010




(iii) 2011

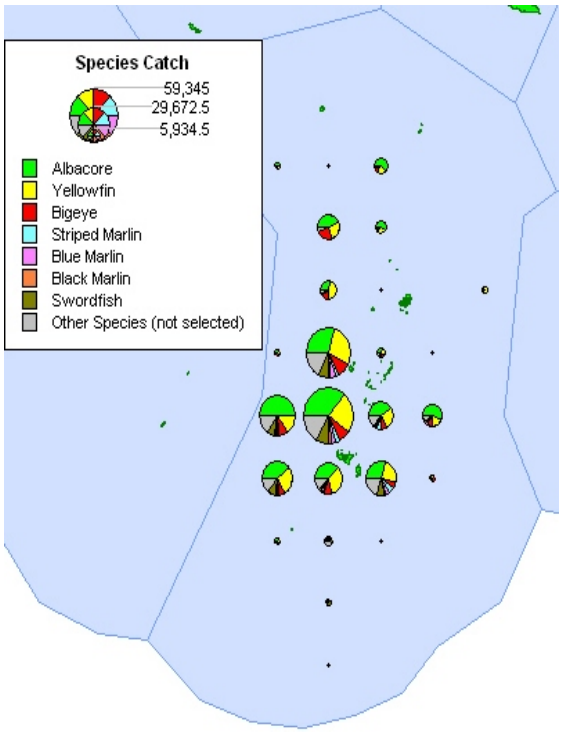



(iv) 2012

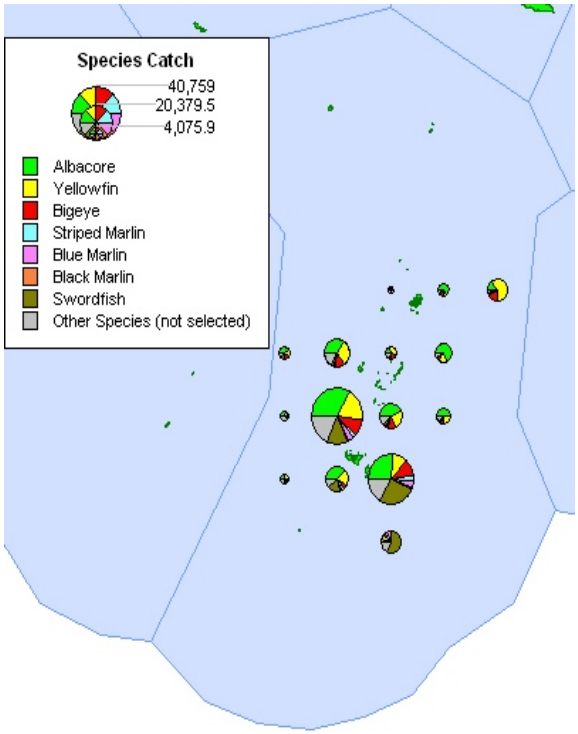



(v) 2013

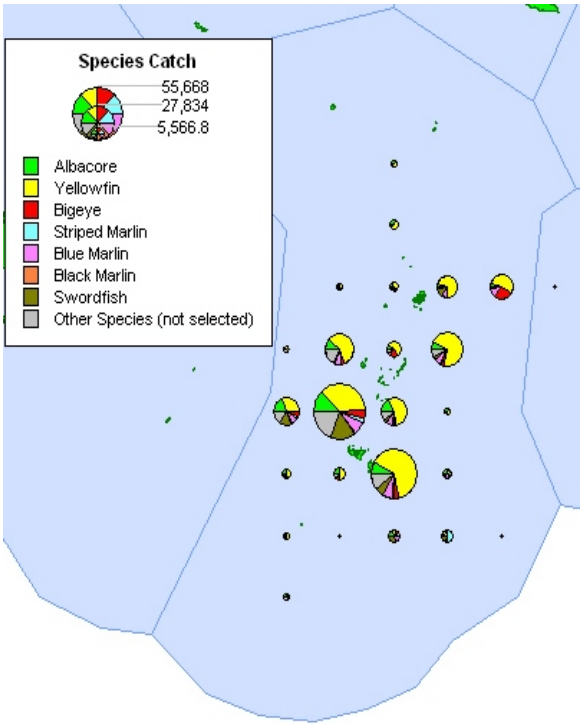
**Figure 3a (i-v). Annual Distribution of effort (hooks) by the Tongan Longliners active in the WCPFC Convention Area, for the year 2009 to 2013.**



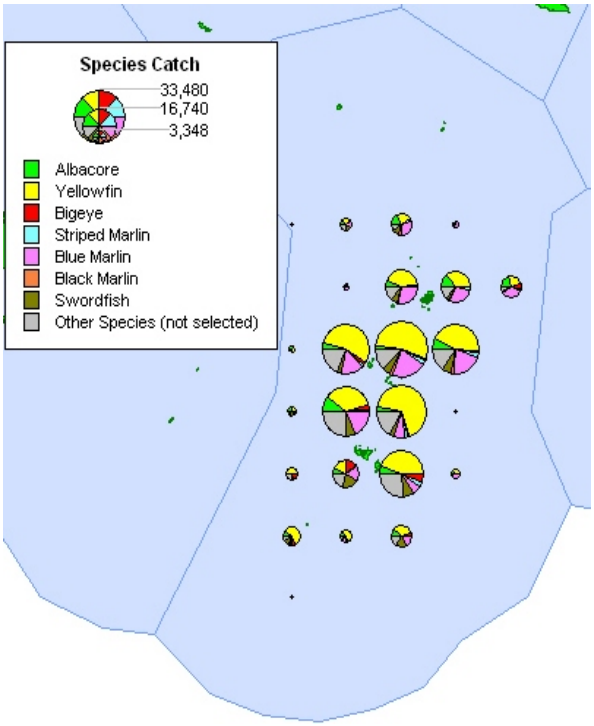

(i) 2009



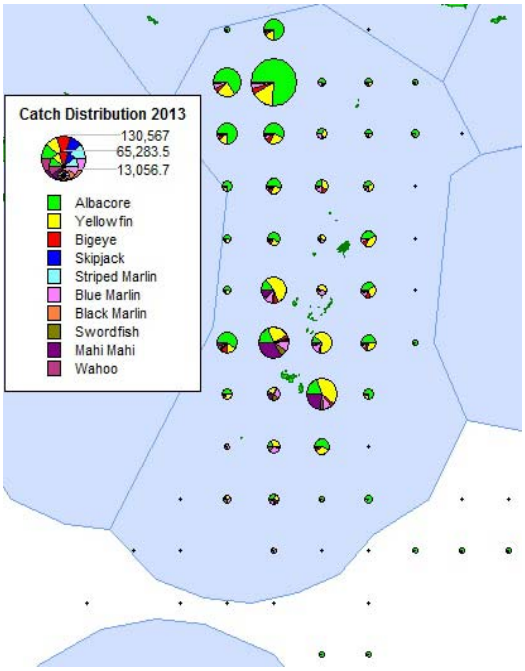

(ii) 2010




(iii) 2011




(iv) 2012




(v) 2013

**Figure 3b (i-v): Annual Distribution of target species catches (in kilogram) by the Tongan Longliners active in the WCPFC Convention Area, for the year 2009 to 2013.**

To fulfill reporting requirements stipulated under the conservation and management measures adopted by the Commission, in accordance with CMM 2006-04, no vessels specifically targeted striped marlin and all catch was taken as by-catch. A total of 1.91mt of stripe marlin was caught as bycatch in the Convention Area below 15 degrees S in 2013. Further, in accordance with CMM 2010-05, only one vessel fished for albacore as bycatch in 2013 with a total of 5.6mt. But a total of 20 vessels (including Foreign fishing vessels licenses to fish in Tonga waters) catch 1259 mt as target species within the said Convention location in 2013. A total of 9.64mt of South Pacific Albacore catch by National fleets in the Convention Area below 20°S. More of the CMM report is attached to this report as Appendix 1 which includes summary and data reporting.

### 3.3 Fleet Structure

Following the development of the domestic longline fishery 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.

Three domestic longline vessels with valid licenses to fish in Tonga waters, but unfortunately, only one vessel was active in the Convention Area during 2013 (Table 3 & Figure 5) while the other two vessels still hold a valid licenses from previous years but facing technical problem and under repair process. Therefore, the total number of active vessels represented Tonga national fleets consists of three (3) longline vessels (2 locally-based foreign vessels and one domestic vessel (CH-Taipei and Tonga flagged, respectively)).

The numbers of locally-based foreign longline vessels (CH-Taipei flagged) are not included in this; even it is described to be part of the national longline fleets as they are based and unloaded 100% of their catch in port Nuku'alofa. They are included in table 5 & 6. The reduced in fishing effort contributes to the declined of the total catch of Tonga National fleets for 2013.

**Table 4. The number of Tongan (flagged) longline vessels, by size category, active in the WCPFC Convention Area, 2009 - 2013.**

| Size Category (GRT) | YEAR | | | | |
|---|---|---|---|---|---|
| | 2009 | 2010 | 2011 | 2012 | 2013 |
| 0 - 100MT | 5 | 4 | 4 | 4 | 3 |
| 100 - 200MT | 2 | 1 | | | |
| 200+ | | | | | |

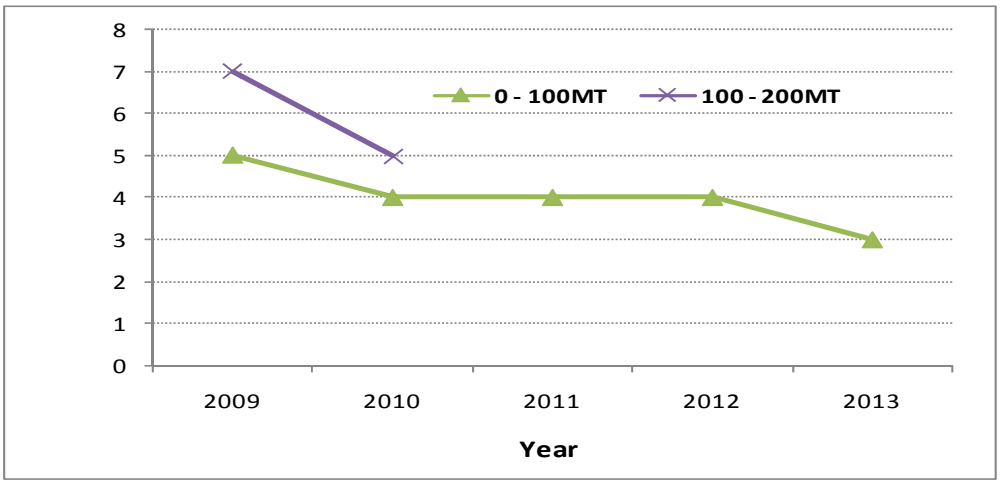



**Figure 4: Historical annual longline vessels number for Tonga, for the WCPFC Convention Area, 2009 - 2013**

## 4.0 COASTAL STATE REPORTING

Table 5 and 6 provides description of foreign-flagged vessels licensed to fish in the Tonga fisheries water over the past three (3) years since the moratorium for locally-based and foreign fishing vessels lifted in 2011 and allowing again foreign fishing vessel as part of its programmed to develop tuna fisheries production.

Locally based foreign longline vessels fly foreign flag of registration and not necessarily the national flag of the operating and managing country which is essentially the Kingdom of Tonga, but they do unloading 100% of their catch in port Nuku'alofa.

**Table 5. Number of foreign longline vessels with valid licenses to fish in the Tonga EEZ by year and size category (GRT).**

| | YEAR | | |
|---|---|---|---|
| Size Category (GRT) | 2011 | 2012 | 2013 |
| 0 - 100MT | 1 | 19 | 19 |
| 100 - 200MT | 0 | 2 | 6 |
| 200+ | 0 | 1 | 1 |

**Table 6. Number of foreign longline vessels licensed to fish in the Tonga EEZ by flag and year.**

| | Flag | | | |
|---|---|---|---|---|
| Year | CHINA | CH-TAIPEI | FIJI | Total |
| 2011 | | 1 | | 1 |
| 2012 | 1 | 20 | 1 | 22 |
| 2013 | 3 | 20 | 3 | 26 |

The locally based foreign fishing vessel (LBFV; unloaded 100% in Tonga ports) and foreign fishing vessels (FFV; 50% and 100% unloaded in overseas port) comprises of vessels of Chinese Taipei, China and Fiji flagged which are managed and operated through a local fishing agency, *The Ngatai Marine Enterprise*. These foreign fishing vessels with the exception the locally based vessel mostly offloaded their catch in port of Suva and Levuka in Fiji and Pagopago due to their well developed infrastructure like -50°C blast freezer connection and cannery.

The overall catch estimates by foreign longline fleets in 2013 indicates about 33% increase from the previous year (Table 7). Albacore catch continues to account for the major part of the target catch composition. The fishing effort is widely distributed throughout the zone and also occurs more to the northern sides and dominated by albacore tuna.

**Table 7. Annual catches by foreign longline fleets in Tonga EEZ, by flag and species, 2011 – 2013 (**Source: Tufman report application of Tonga EEZ tuna catch and effort report by flag and year**)**

| | | | | | Catch (metric tonnes) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| FLAG | Year | Vessels | Trips | 100s of Hooks | ALB | BET | YFT | OTH | TOTAL |
| CHINESE TAIPEI | 2011 | 1 | 2 | 920 | 2 | 1 | 24 | 27 | 54 |
| | 2012 | 8 | 44 | 36893 | 702 | 103 | 284 | 516 | 1605 |
| | 2013 | 17 | 62 | 73354 | 1174 | 183 | 451 | 470 | 2278 |
| CHINA | 2011 | | | | 0 | 0 | 0 | 0 | 0 |
| | 2012 | | | | 0 | 0 | 0 | 0 | 0 |
| | 2013 | 1 | 1 | 950 | 17 | 1 | 2 | 6 | 26 |
| FIJI | 2011 | | | | 0 | 0 | 0 | 0 | 0 |
| | 2012 | | | | 0 | 0 | 0 | 0 | 0 |
| | 2013 | 2 | 3 | 3145 | 68 | 5 | 13 | 10 | 97 |

## 4.0 SOCIO-ECONOMIC FACTOR

Exportation of catches from Tonga continued in 2013. Even though the total catch for national fleet decreased by 10% from previous year but the licenses of few numbers of foreign vessels continue to provide additional revenue stream to the domestic fisheries sector in Tonga. Most of the catch by foreign unloaded in port Nuku'alofa were repack into shipping container and export which is contribute to the revenue collection by charging of resource rent to the export of marine product.

The FOB value is TOP$7.00 which is well-known to be lower than the true value of export prices in overseas market. This amount was based on the average prices of fish sold in the local market. The total estimated FOB revenue collected from export in 2013 was decrease to TOP$2,152,739.00 as compared to TOP$4,376,283.00 collected in 2012.

## 5.0 DISPOSAL OF CATCH

### 5.1 Marketing

Figure 5 describe the main markets destination with respect to weight of longline catch export for Tonga in 2013. The biggest portion; 84.7 % of the total export volume was exported to Taiwan followed by 5.5 % to Pagopago, 4.3 % to Japan and 4.0% to Hongkong. Other important markets are Australia, Honolulu and United States but in a very low portion of 0.002%, 1.3% and 0.1% 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 cannery in Pagopago and to Taiwan and Hongkong market.

Sharks dominated the export species of 60.7% of the total volume of fish exported, followed by yellowfin and albacore with 10.1% and 7.8% respectively. Foreign vessel also provides more fish to be sold locally and it contributes to a drop in fish price compared to the last three years. Bycatch species described as others were also export (frozen) mainly to Taiwanese market and they consist of marlins species, sailfish, oilfish, shortbill spearfish, wahoo, mahimahi and escolar.

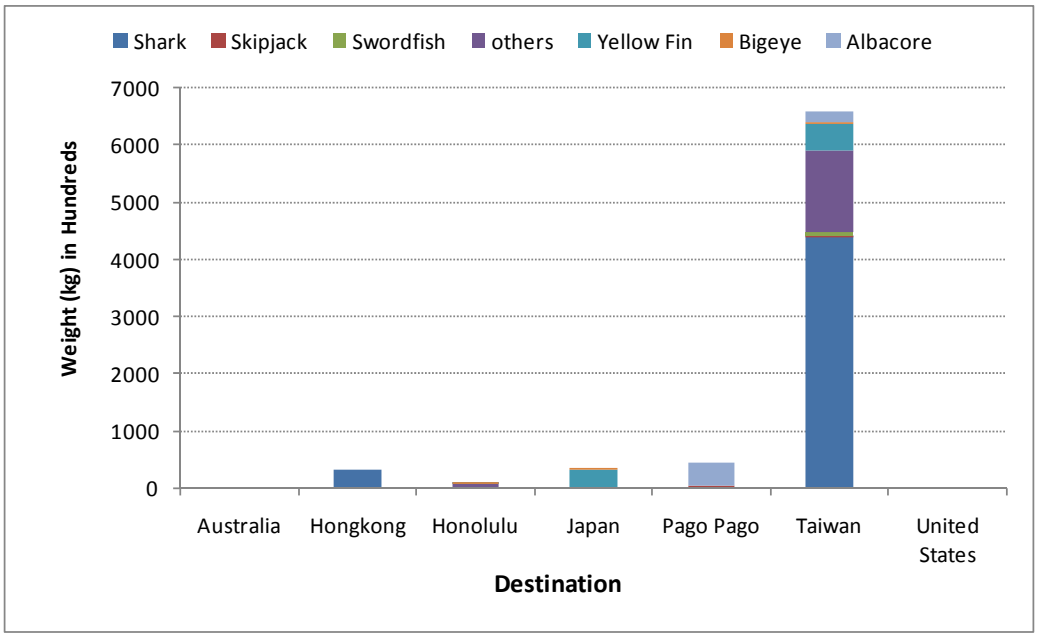



**Figure 5. Longline catch export and Destinations for Tonga, 2013**

## 6.0 ONSHORE DEVELOPMENT AND FUTURE PROSPECTS OF FISHERY

The only domestic tuna fishing companies, Atlantis Fisheries continues to operate with viable production outputs in exporting of fresh tuna to sashimi market especially to Japan and Honolulu. Also entailing in provides employment for local people in crewing their vessel, FV PACIFIC SUNRISE and also their processing and retailing plant. They also plan to extend their service to operate more longline vessels and a better processing unit.

During the year, the National Fisheries Council (NFC) has been established and aimed to build up partnership with Fisheries department and respective stakeholder in developing fisheries sector including Tuna fishery. Within this partnership, the NFC planned to deal with many challenges especially the infrastructure such as the development fisheries wharf, packing facilities that provide low fees for fishermen and equipment such as vessels, fishing gears etc. For future development, it is expected that more domestic vessels to be operates and lessen the foreign fishing vessels.

In 2013, Tonga continued to participate in the regional Tuna Data and 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 improvement of database system especially TUFMAN and TUBs allows speedy in extracting and analyzing of data for the scientific report.

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. Seapodym model were also introduced and it is very supportive especially the status of the stock in related to fishing activities and climate change.

## 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 in port 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. 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..

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 2013 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 and fishing gears have restricted the operation of local fishing vessels mainly to areas near the main fishing port, Nuku'alofa.

The National Observer and port sampling programme are warmly show appreciation to the overseas donor (JTF fund) and regional organization (FFA & SPC) for their great financial and technical support in developing our tuna data collection and analysis. This scientific report completed with all your great effort in different approach!!! Malo 'aupito

## Appendix 1 – CMM Reporting

Summary and data provided for each CMM.

| CMM Reference | Description | Response |
|---|---|---|
| CMM 05-03 | North Pacific Albacore | **NOT APPLICABLE**<br>This is not a target species of the Tonga longline fishery. |
| CMM 06-04 | SW Striped Marlin | No vessels specifically targeted striped marlin and all catch was taken as by-catch. A total of 1.91mt was caught as bycatch below 15 degrees S. |
| CMM 07-04 | Seabirds | A total of one seabirds catch on longline operation at location 1858S/17560W and its struck off when close to the vessel. Seabird Species: Cape Pigeon - Fate code (DSO) |
| CMM 09-03 | SW Swordfish | No vessels specifically targeted SW Swordfish and all catch was taken as by-catch. A total of 20.55mt was caught as bycatch below 20$^{o}$S. |
| CMM 09-06 | Transhipments | **NOT APPLICABLE**<br>Transhipments are not applicable to Tonga longline fisheries. All vessels within Tonga National fleets will be offloaded in port facility. |
| CMM 10-05 | South Pacific Albacore | Only one vessel fished for ALB as bycatch in 2013 with a total of 5.6mt. But a total of 15 vessels (including Foreign fishing vessels licenses to fish in Tonga waters) catch 287.8mt as target species within the said Convention location in 2013. A total of 9.64mt of South Pacific Albacore catch by National fleets in the Convention Area below 20$^{o}$S. |
| CMM 10-07 | Sharks | A total of 98 sharks (of different species) and 72 were retained but 25 were discarded. 71 sharks were finned and trunk retained. The discarded sharks (25) consist of 22 Oceanic white-tip, 1 Pelagic stingray and 2 Pelagic Thresher sharks. No sharks were finned but trunk discarded. Also refer to Appendix 2 for Provision of sharks species catch estimates. |
| CMM 11-03 | Cetaceans | **NOT APPLICABLE**<br>There is no Purse seine fishery in Tonga |
| CMM 11-04 | Oceanic White-Tip Shark | Total of 12 oceanic white-tip sharks through data collected from observer were recorded and released with A1 (Alive and healthy) condition. All these sharks were catch by locally-based foreign vessels license to fish in Tonga. |
| CMM 12-04 | Whale Sharks | **NOT APPLICABLE**<br>No Purse seine fisheries in Tonga |
| CMM 13-08 | Silky Sharks | Total of four (4) silky sharks were recorded by observer. All sharks were caught during the month of August 2013 and retained with fin attached to the body. |
| | | |

## CMM 05-03 –North Pacific Albacore

**NOT APPLICABLE -** This is not a target species of the Tonga longline fishery.

## CMM 06-04 –SW Striped Marlin

No vessels specifically targeted striped marlin and all catch was taken as by-catch. A total of 1.91mt was caught as bycatch below 15 degrees S.

| Flag | Year | No. of Vessels | Catch (Numbers) | Catch (MT) |
|---|---|---|---|---|
| TO | 2009 | 7 | 152 | 8.07 |
| TO | 2010 | 5 | 70 | 3.55 |
| TO/TW | 2011 | 4 | 157 | 7.56 |
| TO/TW | 2012 | 4 | 131 | 6.75 |
| TO/TW | 2013 | 3 | 40 | 1.91 |

## CMM 07-04 – Seabirds

A total of one seabirds catch on longline operation at location 1858S/17560W and its struck off when close to the vessel.

| gear | flag | species | date | latitude | longitude | EEZ | FATE | # of individuals |
|---|---|---|---|---|---|---|---|---|
| L | TW | CAPE PIGEON | 11-08-13 | 1857.889S | 17559.644W | TO | DSO | 1 |

## CMM 09-03 –SW Swordfish

No vessels specifically targeted SW Swordfish and all catch was taken as by-catch. A total of 20.55mt was caught as bycatch below 20$^{o}$S.

| Flag | Year | Vessels | Catch (Number) | Catch (MT) |
|---|---|---|---|---|
| TO | 2009 | 7 | 375 | 17.01 |
| TO | 2010 | 5 | 489 | 24.50 |
| TO/TW | 2011 | 4 | 382 | 18.45 |
| TO/TW | 2012 | 4 | 254 | 10.61 |
| TO/TW | 2013 | 3 | 496 | 20.55 |

## CMM 09-06 – Transhipments

Transhipments is not applicable to Tonga longline fisheries. All vessels within Tonga National fleets will be offloaded in port facility.

## CMM 10-05 –South Pacific Albacore

Only one vessel fished for ALB as bycatch in 2013 with a total of 5.6mt. But a total of 15 vessels (including Foreign fishing vessels licenses to fish in Tonga waters) catch 287.8mt as target species within the said

Convention location in 2013. A total of 9.64mt of South Pacific Albacore catch by National fleets in the Convention Area below 20$^{o}$S.

| Flag | Year | Vessels | Catch (Number) | Catch (MT) |
|---|---|---|---|---|
| TO | 2009 | 7 | 5290 | 90.67 |
| TO | 2010 | 5 | 2414 | 39.86 |
| TO/TW | 2011 | 4 | 1513 | 25.49 |
| TO/TW | 2012 | 4 | 510 | 8.92 |
| TO/TW | 2013 | 3 | 539 | 9.64 |

Catch level of longline vessels *by flag* (that have licenses to fish in Tonga fisheries water) have taken South Pacific Albacore as a bycatch as well as the number and catch levels of vessels actively fishing for South Pacific albacore in the Convention area south of 20°S.

| Flag | Year | Vessels | Catch (Number) | Catch (MT) |
|---|---|---|---|---|
| TO | 2009 | 7 | 5290 | 90.67 |
| TO | 2010 | 5 | 2414 | 39.86 |
| TO | 2011 | 3 | 1472 | 24.65 |
| TO | 2012 | 3 | 398 | 6.56 |
| TO | 2013 | 1 | 339 | 5.62 |

| Flag | Year | Vessels | Catch (Number) | Catch (MT) |
|---|---|---|---|---|
| TW | 2011 | 1 | 41 | 0.85 |
| TW | 2012 | 8 | 9311 | 165.13 |
| TW | 2013 | 12 | 14206 | 271.70 |

| Flag | Year | Vessels | Catch (Number) | Catch (MT) |
|---|---|---|---|---|
| FJ | 2013 | 2 | 246 | 3.57 |

## CMM 10-07 – Sharks

A total of 98 sharks (of different species) and 72 were retained but 25 were discarded. 71 sharks were finned and trunk retained. The discarded sharks (25) consist of 22 Oceanic white-tip, 1 Pelagic stingray and 2 Pelagic Thresher sharks. No sharks were finned but trunk discarded.

| gear | species | Number | Retained | Discarded | Finned and trunk Retained | Finned but Trunk Discarded |
|---|---|---|---|---|---|---|
| L | BLUE SHARK | 34 | 34 | 0 | 34 | 0 |
| L | GREAT HAMMERHEAD | 1 | 1 | 0 | 1 | 0 |
| L | OCEANIC WHITE-TIP SHARK | 22 | 0 | 22 | 0 | 0 |
| L | PELAGIC STING-RAY | 1 | 0 | 1 | 0 | 0 |
| L | PELAGIC THRESHER SHARK | 2 | 0 | 2 | 0 | 0 |
| L | SHORT FINNED MAKO SHARK | 33 | 32 | 0 | 31 | 0 |
| L | SILKY SHARK | 5 | 5 | 0 | 5 | 0 |

## CMM 11-03 – Cetaceans

Not Applicable to Tonga due to no Purse seine fishery in Tonga.

## CMM 11-04 –Oceanic White-Tip Shark

Total of 12 oceanic white-tip sharks through data collected from observer were recorded and released with A1 (Alive and healthy) condition. All these sharks were catch by locally-based foreign vessels license to fish in Tonga.

| gear | flag | species | date | latitude | longitude | EEZ | FATE | Life Status | # of Individuals |
|---|---|---|---|---|---|---|---|---|---|
| L | TW | OCEANIC WHITE-TIP SHARK | 27-07-13 | 2101.933S | 17629.633W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 28-07-13 | 2101.933S | 17629.633W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 28-07-13 | 2100.441S | 17627.857W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 29-07-13 | 2100.441S | 17627.857W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 30-07-13 | 2044.640S | 17613.842W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 31-07-13 | 1907.683S | 17510.764W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 01-08-13 | 1907.683S | 17510.764W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 01-08-13 | 1903.026S | 17518.221W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 02-08-13 | 1903.026S | 17518.221W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 04-08-13 | 1905.845S | 17532.579W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 05-08-13 | 1907.168S | 17542.828W | TO | DCF | A1 | 1 |
| L | TW | OCEANIC WHITE-TIP SHARK | 09-08-13 | 1857.889S | 17559.644W | TO | DCF | A1 | 1 |

## CMM 12-04 –Whale Sharks

Not applicable due to no Purse seine fishery in Tonga

## CMM 13-08 –Silky Sharks

Total of four (4) silky sharks were recorded by observer. All sharks were caught during the month of August 2013 and retained with fin attached to the body.

| Gear | Flag | Species | Date | lat | lon | EEZ | Fate | Life Status | Individuals |
|---|---|---|---|---|---|---|---|---|---|
| L | TW | SILKY SHARK | 01-08-13 | 1907.683S | 17510.764W | TO | RFR | D | 1 |
| L | TW | SILKY SHARK | 02-08-13 | 1903.026S | 17518.221W | TO | RFR | D | 1 |
| L | TW | SILKY SHARK | 04-08-13 | 1905.845S | 17532.579W | TO | RFR | D | 1 |
| L | TW | SILKY SHARK | 07-08-13 | 1916.458S | 17542.219W | TO | RFR | D | 1 |

**Note:** ***Full detailed data available from the WCPFC ROP Database.***

# Appendix 2 – The provision of shark species catch estimates

| Flag | Year | Observer Data | | Target tuna catch estimate | Shark species catch estimate (t.) | | | | | | | See Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Available ? | Coverage | | BSH | FAL | MAK | OCS | POR | SPN | THR | |
| TO | 1982 | N | 0.00000% | 205.0 | 35.2 | 5.5 | 18.8 | 18.1 | 0.0 | 0.4 | 0.5 | 2 |
| TO | 1983 | N | 0.00000% | 208.0 | 35.7 | 5.6 | 19.0 | 18.4 | 0.0 | 0.4 | 0.6 | 2 |
| TO | 1984 | N | 0.00000% | 218.0 | 37.5 | 5.9 | 20.0 | 19.3 | 0.0 | 0.5 | 0.6 | 2 |
| TO | 1985 | N | 0.00000% | 233.0 | 40.0 | 6.3 | 21.3 | 20.6 | 0.0 | 0.5 | 0.6 | 2 |
| TO | 1986 | N | 0.00000% | 251.0 | 43.1 | 6.8 | 23.0 | 22.2 | 0.0 | 0.5 | 0.7 | 2 |
| TO | 1987 | N | 0.00000% | 298.0 | 51.2 | 8.0 | 27.3 | 26.3 | 0.0 | 0.6 | 0.8 | 2 |
| TO | 1988 | N | 0.00000% | 274.0 | 47.1 | 7.4 | 25.1 | 24.2 | 0.0 | 0.6 | 0.7 | 2 |
| TO | 1989 | N | 0.00000% | 234.0 | 40.2 | 6.3 | 21.4 | 20.7 | 0.0 | 0.5 | 0.6 | 2 |
| TO | 1990 | N | 0.00000% | 190.0 | 32.6 | 5.1 | 17.4 | 16.8 | 0.0 | 0.4 | 0.5 | 2 |
| TO | 1991 | N | 0.00000% | 195.0 | 33.5 | 5.3 | 17.8 | 17.2 | 0.0 | 0.4 | 0.5 | 2 |
| TO | 1992 | N | 0.00000% | 223.0 | 38.3 | 6.0 | 20.4 | 19.7 | 0.0 | 0.5 | 0.6 | 2 |
| TO | 1993 | N | 0.00000% | 329.0 | 56.5 | 8.9 | 30.1 | 29.1 | 0.0 | 0.7 | 0.9 | 2 |
| TO | 1994 | N | 0.00000% | 408.0 | 70.1 | 11.0 | 37.3 | 36.1 | 0.0 | 0.9 | 1.1 | 2 |
| TO | 1995 | N | 0.00000% | 461.0 | 79.2 | 12.4 | 42.2 | 40.7 | 0.0 | 1.0 | 1.2 | 2 |
| TO | 1996 | Y | 10.22434% | 20.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 1 |
| TO | 1997 | N | 0.00000% | 662.0 | 113.8 | 17.9 | 60.6 | 58.5 | 0.0 | 1.4 | 1.8 | 2 |
| TO | 1998 | Y | 5.69883% | 825.7 | 277.2 | 0.9 | 127.0 | 115.6 | 0.0 | 1.0 | 2.5 | 1 |
| TO | 1999 | Y | 1.21928% | 1,080.8 | 74.5 | 12.9 | 72.2 | 51.7 | 0.0 | 0.0 | 1.0 | 1 |
| TO | 2000 | Y | 1.05440% | 1,158.4 | 253.8 | 24.8 | 55.6 | 76.1 | 0.0 | 0.0 | 5.6 | 1 |
| TO | 2001 | N | 0.00000% | 1,718.0 | 295.2 | 46.3 | 157.2 | 151.8 | 0.0 | 3.7 | 4.6 | 2 |
| TO | 2002 | N | 0.00000% | 1,667.0 | 286.4 | 45.0 | 152.6 | 147.3 | 0.0 | 3.6 | 4.5 | 2 |
| TO | 2003 | N | 0.00000% | 968.0 | 166.3 | 26.1 | 88.6 | 85.5 | 0.0 | 2.1 | 2.6 | 2 |
| TO | 2004 | Y | 8.18220% | 472.5 | 74.1 | 26.8 | 83.7 | 116.9 | 0.0 | 4.1 | 0.7 | 1 |
| TO | 2005 | Y | 1.28110% | 628.1 | 114.3 | 8.2 | 91.6 | 44.7 | 0.0 | 0.0 | 0.0 | 1 |
| TO | 2006 | Y | 9.98872% | 757.7 | 94.5 | 37.2 | 44.1 | 72.2 | 0.0 | 0.6 | 1.7 | 1 |
| TO | 2007 | Y | 4.21774% | 859.4 | 118.5 | 42.1 | 81.1 | 59.8 | 0.0 | 6.7 | 4.8 | 1 |
| TO | 2008 | Y | 9.17434% | 591.8 | 88.0 | 6.3 | 40.5 | 40.0 | 0.0 | 1.9 | 0.0 | 1 |
| TO | 2009 | Y | 4.79004% | 271.3 | 50.6 | 20.7 | 14.3 | 12.0 | 0.0 | 0.0 | 1.5 | 1 |
| TO | 2010 | Y | 0.14406% | 127.7 | 21.9 | 3.4 | 11.7 | 11.3 | 0.0 | 0.3 | 0.3 | 3 |
| TO | 2011 | N | 0.00000% | 223.0 | 38.3 | 6.0 | 20.4 | 19.7 | 0.0 | 0.5 | 0.6 | 2 |
| TO | 2012 | N | 0.00000% | 170.0 | 29.2 | 4.6 | 15.6 | 15.0 | 0.0 | 0.4 | 0.5 | 2 |
| TO | 2013 | N | 0.00000% | 146.0 | 25.1 | 3.9 | 13.4 | 12.9 | 0.0 | 0.3 | 0.4 | 2 |

***NOTES***

*1. Shark species catch estimates have been determined by raising the nominal observed catch by the coverage rate (observed target tuna catch to annual catch estimates of target tuna). Observer data with coverage rates > 0.8% have only been considered.*

*2. There are currently no observer data available (for this year) to estimate shark species catches. As an interim measure, Shark species composition data obtained from observers for this fleet in adjacent years have therefore been used to produce estimates of shark species catch. For recent years, processed observer data may become available and will therefore contribute to a more reliable estimate in the future.*

*3. The observer data coverage rate is considered too low (< 0.8%) to produce estimates of shark species catches for this year. As an interim measure, Shark species composition data obtained from observers for this fleet in adjacent years have therefore been used to produce estimates of shark species catch. For recent years, processed observer data may become available and will therefore contribute to a more reliable estimate in the future.*