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FIFTEENTH REGULAR SESSION**

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

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**WCPFC-SC15-AR/CCM-25 (Rev.01)**

**TONGA**



**Ministry of Fisheries**  
**GOVERNMENT OF THE KINGDOM OF TONGA**

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WESTERN AND CENTRAL PACIFIC COMMISSION  
Fifteen Regular Session of the Scientific Committee  
12<sup>th</sup> – 20<sup>th</sup> August 2019

TONGA

**Annual Fisheries 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 <sup>th</sup> April 2019	<b>YES</b>
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## 1.0 ABSTRACT

The tuna fishery in Tonga composed of a National (Flag State) and Foreign longline fleet (Coastal state). The total estimated catch for tuna and tuna-like species for both national and foreign fishing fleets for 2018 was estimated to 1,486 mt, a significant decrease by 44 % from 2,675 mt in 2017. The Tonga National fleet consists of five National long-line vessels with a total estimated catch of primary species of 321 mt which shows a decrease by 37 % in comparison to 508 mt in 2017. The total estimated catch of all species for National fleets was 463 mt. The Foreign fleets also consist of 5 longline vessels with a total estimated catch of 1,023 mt, a decrease by 49 % compared to 2,006 mt in 2017.

The national fleets catch in 2018 was dominated by Yellowfin tuna of 188 mt and Mahimahi dominated the catches for non-target species of 107 mt. The catch composition indicated that the National fleets targeted Bigeye and Yellowfin tuna for fresh fish market. The foreign fleets catch in 2018 was dominated by Albacore tuna of 659 mt. Targeting of any shark's species is prohibited in Tonga according to the Term and Conditions for fishing licenses. According to the observer reports, Tonga's long-line fishery has no reported interactions with Species of Special Interest (eg. turtle, marine mammals and seabirds).

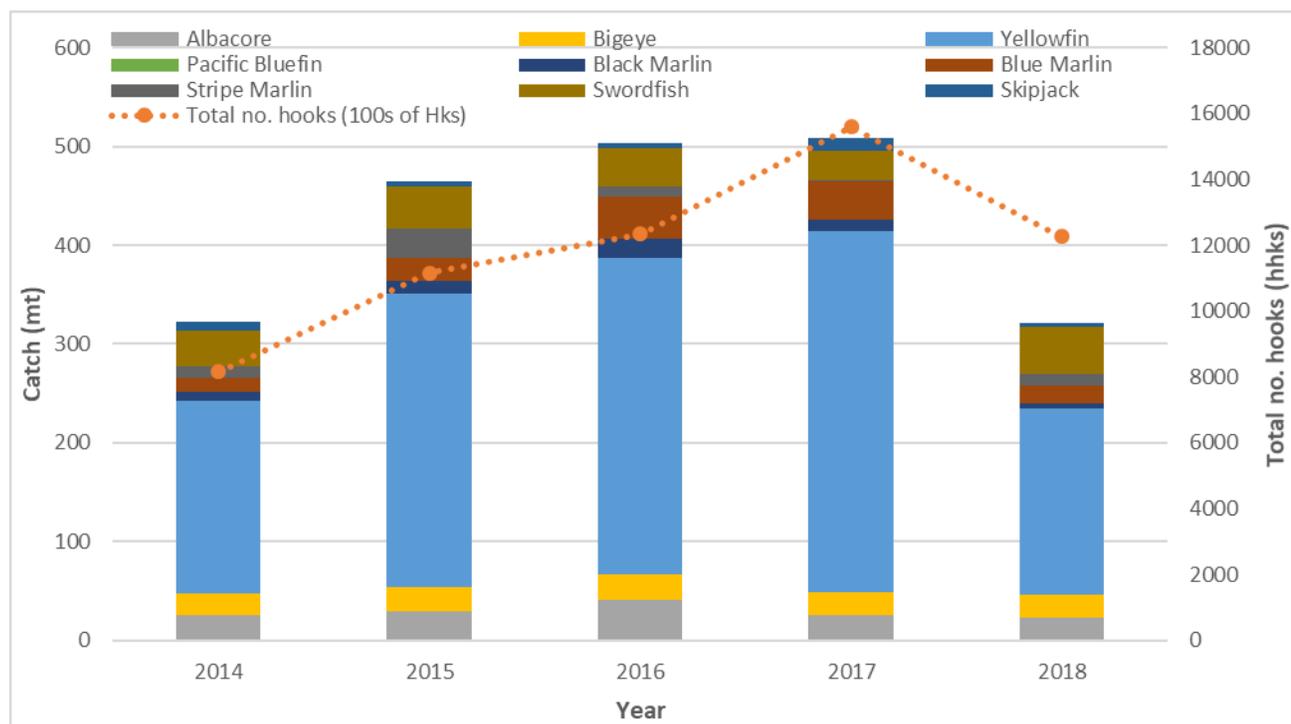
The total tuna harvested by Tongan fleet in 2018 was still insignificant to pose any major impact on the whole stock in the region and the WCPO. Despite the ample room for improvement and development of tuna fleet in Tonga, high operation cost and slight decrease in catch records has been the main problem faced by the operators.

Tonga has no purse seine fisheries; therefore, some of the WCPFC measures regarding purse seine fisheries are not applicable to Tonga. But at the same time, Tonga has set an effort limit effort for Purse Seine fishing with in its EEZ per calendar year to be not exceeded 150-200 days. There were no days recorded for any Purse seine fishing activity within Tonga EEZ in 2018.

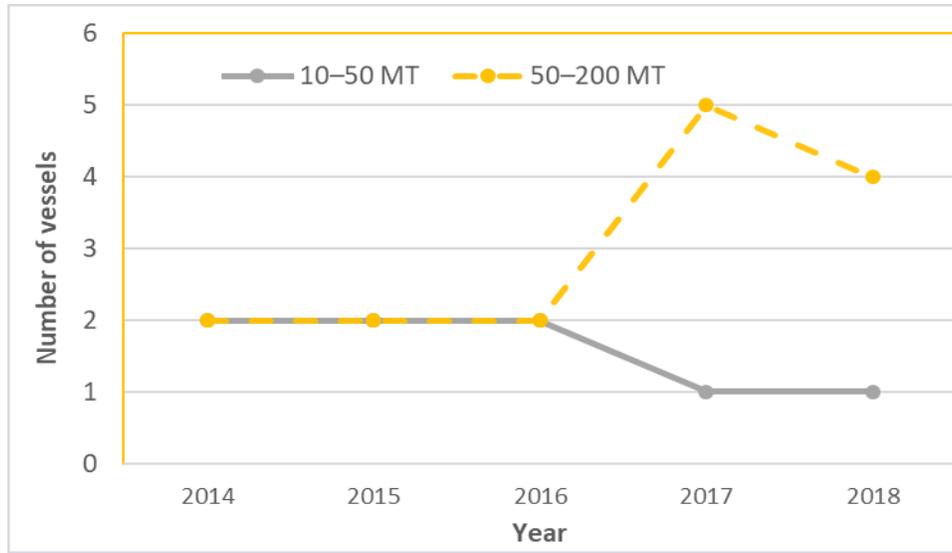
Tonga has its National Observer Program and active domestic port sampling program for highly migratory species. These programs continue to work closely with the Offshore Fisheries Program (OFF) of South Pacific Communities (SPC) on data collection regarding the status of tuna resources in the Tonga EEZ.

**Table 1. Annual catch (mt) and effort (hooks) estimated for the Tonga longline vessels, by primary species, for the WCPFC Convention Area, 2014 – 2018** (Source: Dorado – TufMan Reports – RECON\_Report #2.2.3 – “National Fleet – LL – Key species in WCPFC Area raised with VMS”)

Year	Effort	Catch (mt)									
	Total no. hooks (100s of Hks)	Albacore	Bigeye	Yellowfin	Pacific Bluefin	Black Marlin	Blue Marlin	Stripe Marlin	Swordfish	Skipjack	Total
2014	8160	25	22	195	0	10	13	12	37	8	322
2015	11161	29	25	297	0	13	23	30	42	6	465
2016	12348	41	26	320	0	19	43	11	38	5	503
2017	15596	25	23	366	0.2	12	38	2	30	12	508
2018	12253	23	23	188	0	5	17	11	48	4	321



**Figure 1: Historical annual Catch (mt) and Effort (no. of hooks), by primary species, for the Tongan longliners (National Fleets) were active in the WCPFC Convention Area for the years 2014 to 2018**



**Figure 2: Historical annual longline vessels number for Tonga, for the WCPFC Convention Area, 2014 - 2018**

**Table 2. Number of fishing vessels active in tuna fisheries in WCPFC Convention Area by gear and size class.**

Gear	<b>LONGLINE</b>
Fleet	National Fleets

Size class (GRT)	2014	2015	2016	2017	2018
0-10					
10-50	2	2	2	1	1
50-200	2	2	2	5	4
200-500					
500+					

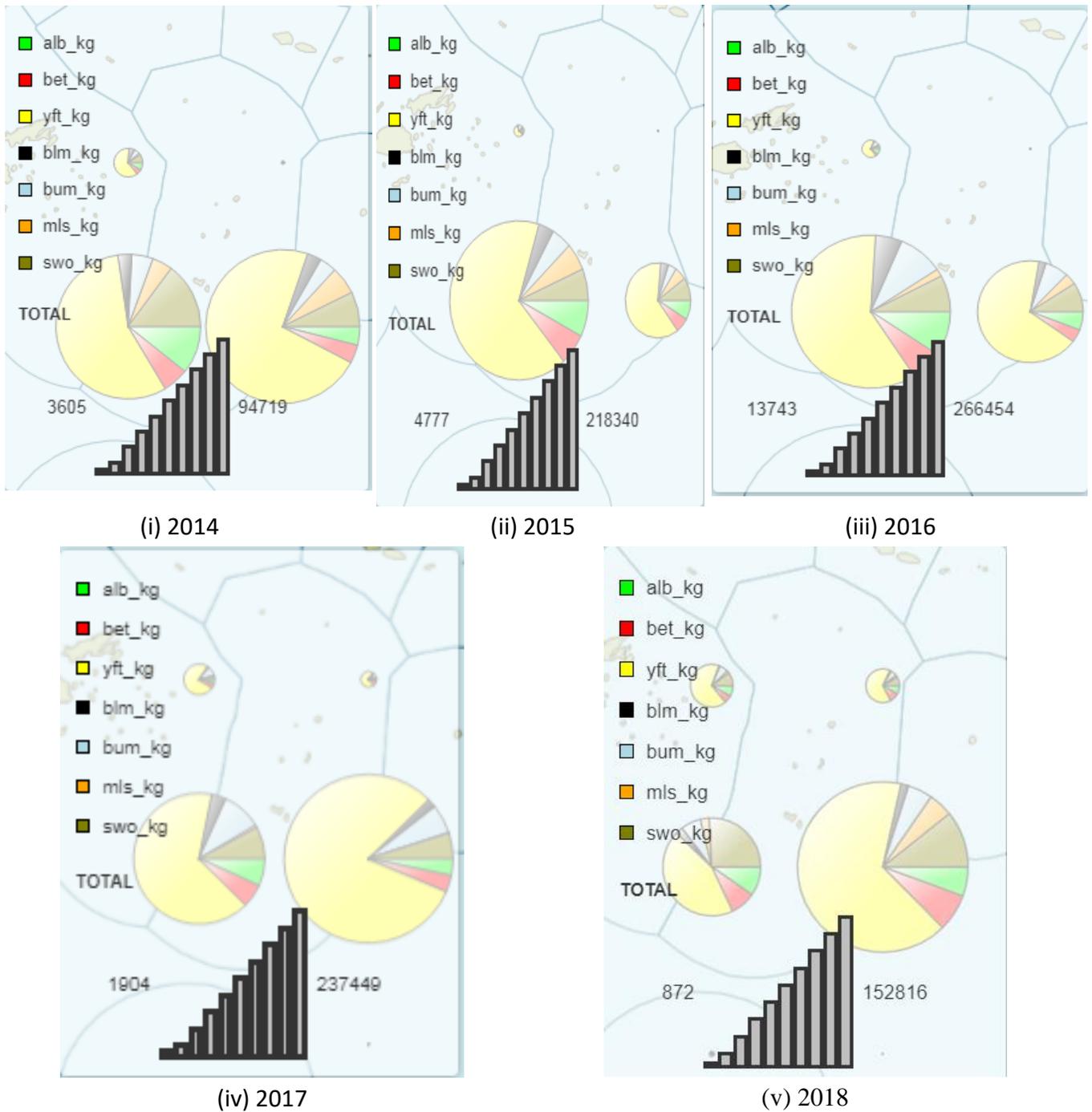
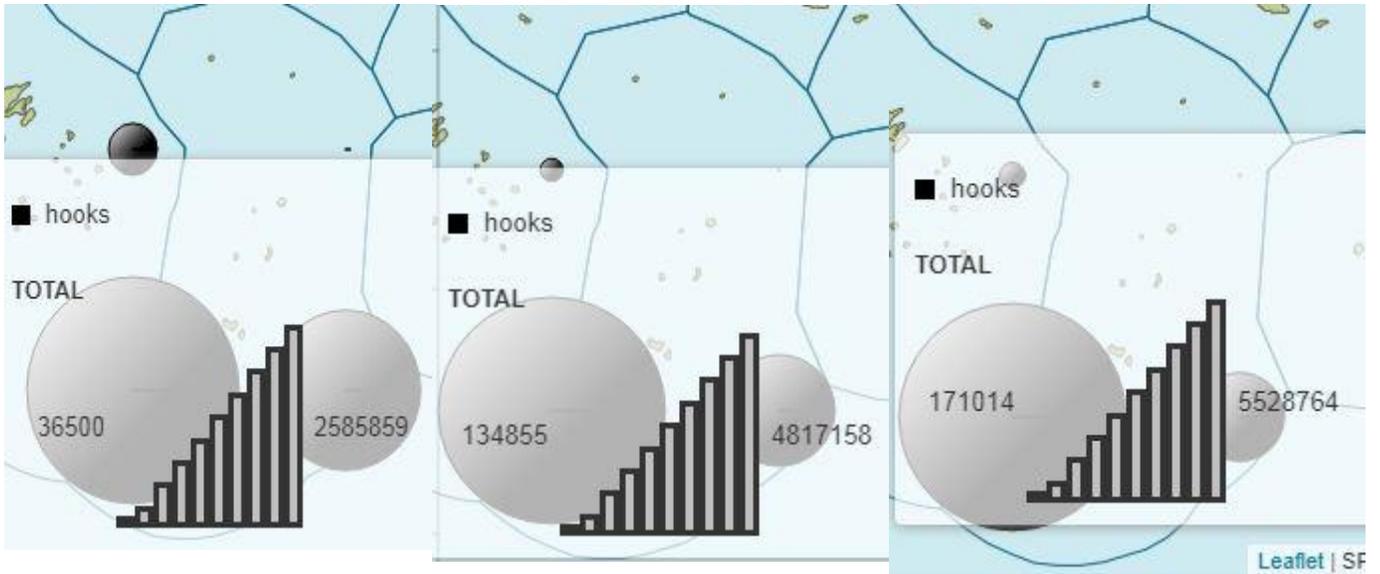


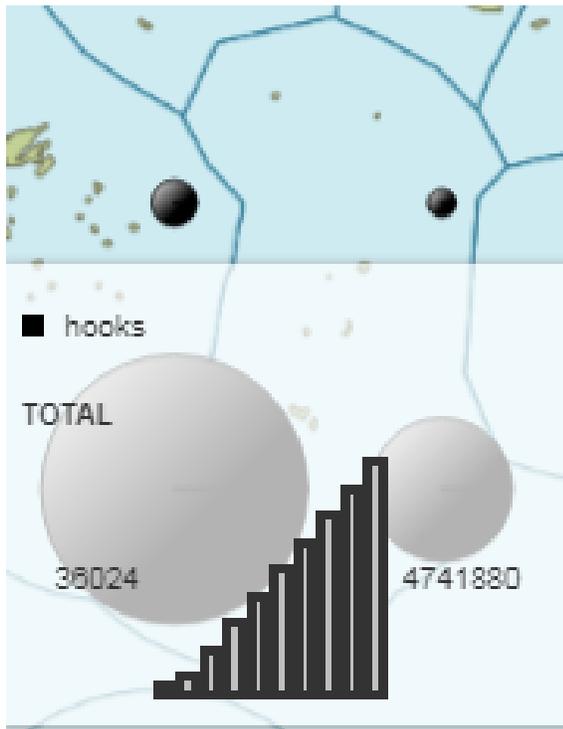
Figure 3a (i-v). Annual distribution of Longline National Fleet catches by target species (in kilograms) in the WCPF Convention Area for the year 2014 to 2018.



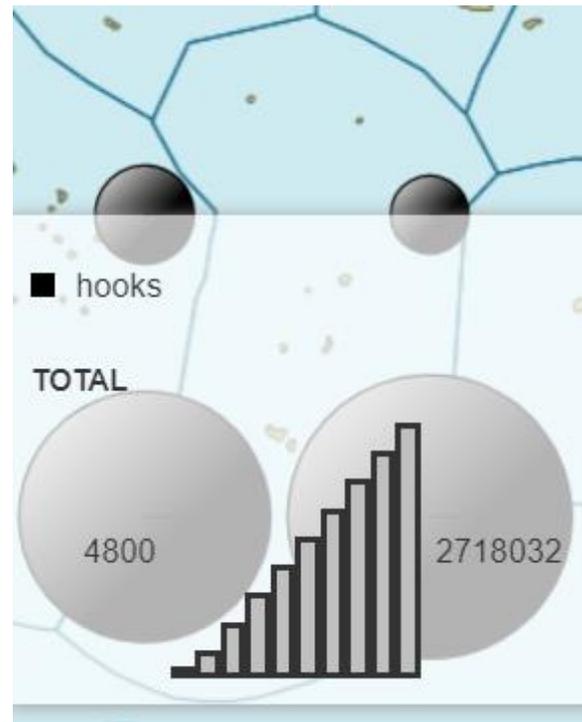
(i) 2014

(ii) 2015

(iii) 2016



(iv) 2017



(v) 2018

**Figure 3b (i-v): Annual distribution of Longline National Fleet Longline National Fleet effort (in hooks) in the WCPF Convention Area, for the year 2014 to 2018.**

**Table 3. Annual estimated catches (mt) of non-target, associated and dependent species, including sharks, by the Tongan Longliners (National Fleets), in the WCPFC Convention Area, for years 2014 to 2018.** (Source: Dorado – TufMan Reports – RECON\_Report #2.2.3 – “National Fleet – LL – Key species in WCPFC Area raised with VMS”)

<b>Non Target Species</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Wahoo	9.7	17.4	16.0	13.3	7.6
Short-Billed Spearfish	4.1	7.9	8.0	3.2	3.5
Mako Sharks	8.4	19.8	19.6	14.0	13.4
Hammerhead Sharks	0.0	0.0	0.0	0.0	0.0
Oceanic Whitetip Sharks		0.0	0.0	0.0	0.0
Silky Sharks		0.0	0.0	0.0	0.0
Thresher Sharks		0.0	0.0	0.0	0.0
Blue sharks			0.0	0.2	0.2
Sharks (unidentified)	4.5	0.0	0.0	0.0	0.0
Sailfish (Indo Pacific)	4.0	14.4	10.8	6.3	6.4
Dolphin fish	190.1	163.0	125.9	120.6	106.8
Opah/Moonfish	0.3	0.1	0.0	0.1	0.1
Others	6.5	7.1	9.8	8.8	3.8
<b>Total</b>	<b>227.63</b>	<b>229</b>	<b>190.1</b>	<b>166.5</b>	<b>141.8</b>

## 2.0 BACKGROUND

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

Tonga is a small island development state in the WCPFC and has continued to develop its Tuna Fishery capacities. The current focus for Tonga is to strengthen the capacities for development of Tuna fishery. Currently, Tonga tuna fishery consists solely of longline fishing vessels targeting tuna and tuna-like species, with a very small artisanal fleet, include small fishing vessels with outboard engine and game fishing vessels which used trolling fishing method. Most of the activity is concentrated within Tonga EEZ except for foreign flagged vessels which can access high seas with permit from flag states. Tonga has only one flagged vessel with permit to fish in high seas, but she has no fishing activity in high seas for the year 2018.

Tonga has approximately 700,000km<sup>2</sup> of undeclared EEZ that extends from Latitude 14 degrees south to 26 degrees south, offers a moderate potential for exploitation. The total catches from the Tonga EEZ have displayed a similar trend to effort. The total catches for Tonga's National fleets from the EEZ have decreased from 674 mt in 2017 to 463 mt in 2018. This is due to the decline in catch rates of main target species (YFT & BET) and fishing efforts during the year. A significant game-fishing sector also exists in Tonga with minor interactions with the commercial long-line fleets.

Artisanal data has been continued on using TAIL application module on Tufman 2 for online data entry although data collection from these fleet is still in its early stage.

Tonga National Observer Programme (TNOP) has been authorized since 2011 to provide ROP observer trips. Tonga has four certified Debriefers to debrief observer data which speed up observer data entry into TUFMAN 2 database. Tonga continues to use the latest version (2014) of SPC/FFA regional forms for logsheets, port sampling and unloading. For observer data collection Tonga is using the latest version (2016). These forms have had several revisions over the years, some of which is to cater for the requirements of the WCPFC. For example, the identification to species level of seven key shark 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 total observer coverage onboard foreign and domestic vessels for 2018 were 92 % and 2 % respectively. The port sampling and logsheets coverage were

100% in 2018. At the same time, Tonga continues to implement and monitor its obligation towards the Commission's Conservation and Management Measures and also the Resolutions and report back to the Commission annually (Appendix 1 – CMM Reporting).

Tonga Ministry of Fisheries continues to work closely with the Oceanic Fisheries Program (OFP) of SPC on issues regarding the status of tuna stock in the Tonga EEZ relative to the whole stock within the Western and Central Pacific Ocean (WCPO).

Despite the ample room for improvement and development of tuna fleet in Tonga, there are challenges identified including the high operation cost had restricted the operation of fishing vessels mainly to areas near the main fishing port, Nuku'alofa. Decline catch rates within the EEZ also a factor that hindered the fishing effort in term of vessel number especially foreign fleets.

Tonga continues to develop and build sustainable fisheries through better management decision that will allow the people of Tonga to continue benefiting from now and in the future.

## **3.0 FLAG STATE REPORTING**

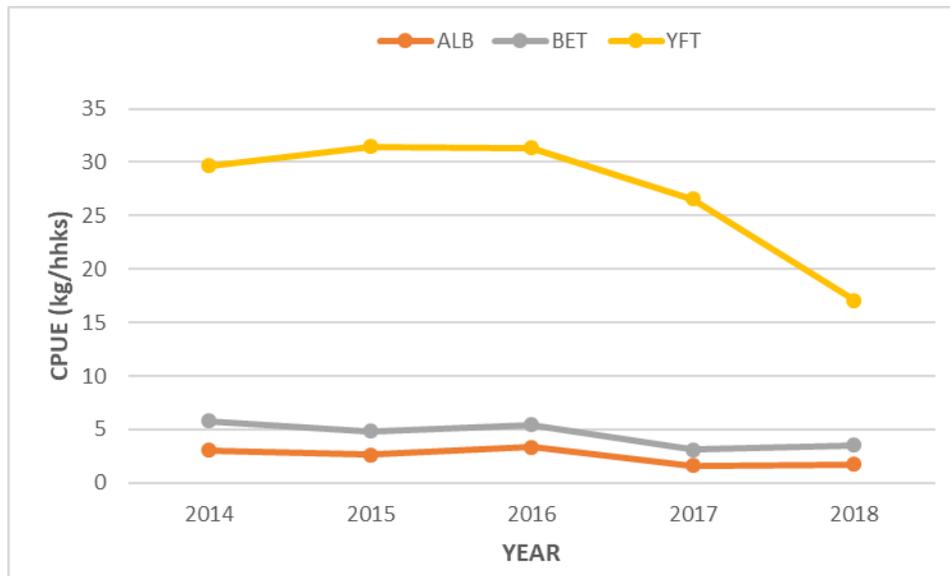
### **3.1 Status of the Fishery**

#### **3.1.1 Total annual catch, by primary species**

The annual catch and effort estimated, by primary species for the national longline fleet fishing throughout the WCPF Convention Area for the years 2014 to 2018 are summarized in Table 1 with the historical estimates further provided in Figure 1. The total effort in the WCPF-CA was approximately 12253 hundred hooks (Table 1) a 21 % decrease from 2017, and it's all attributed to the Tonga EEZ. In further details, the annual catch estimates of primary species, (Table 1) in 2018 were 321 mt decreased by 37% from the previous year.

The decrease in catch could be partially decreasing YFT CPUE and partially decreased in effort. In 2018, the catches for primary species were dominated by yellowfin (59 %) for main tuna species, followed by bigeye and albacore with both 7% then skipjack tuna with 1%. For billfish species, swordfish occupied 15 % of the total catch of primary species followed by blue marlin with 5 % and with lesser percentage of stripe and black marlin with 4 % and 2 % respectively. In reference to the history of this fishery in Tongan waters; longline effort in terms of number of hooks, rapidly increased from the mid-1990s and peak at more than 10 million hooks during 2002 before a rapid decline in both hooks and number 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 efforts.

The annual CPUE (kg/100hks) estimated for main tuna species caught by the Tongan Longliners during the reporting period (2014 to 2018) shows in Figure 4 below. The trends have been fluctuating for bigeye and albacore while a slight decline on the CPUE of yellowfin since 2016. This is due to some environmental factor such as El-Nino and La Nina during the reporting period which has an impact on catch rate that leads to a decrease in fishing efforts in terms of the number of hooks that put in the water.



**Figure 4. CPUE (kg per 100 hooks) of main tuna species for Tonga longliners were active in the WCPF Convention Area for the years 2014 to 2018**

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

The estimated total catch of non-target associated and dependent species for the national longline fleets for the last five years are provided in Table 3. The species composition of the catch by weight in 2018 was dominated by Dolphin fish (*Mahimahi*) totaling 107 mt followed by *Wahoo* with 8 mt. The total shark catches for the National fleets within WCPF-CA dominated by *Mako* sharks with 13 mt, followed by blue shark with 0.2 mt with no retention record for other key shark species.

By-catches are obtained from logsheets and 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, including those that are discarded due to different condition. *Wahoo*, mahimahi, moonfish and billfishes also had high retention rates as they are also having valuable components for the fishery especially the local market.

Based on available data, there was no interaction of Tonga flagged longliners with Species of Special conservation Interest (eg. Marine turtle, marine mammal and sea birds) recorded by observers (*Appendix 1*). To reduce sea turtle mortality in fishing operations, Tonga National longline fleets used circle hooks and fish baits with less squid bait in longline fishing operation.

### **3.2 Fishing Patterns – National Fleets in the WCPF Convention Area**

Figures 3a & 3b provide an illustration of the pattern of catch and effort for the national longline fleets over the past five years in the WCPF Convention Area. In 2018, more than 70% of the catch and effort of the National longline fleet was widely distributed in the southern part of the Tonga EEZ.

The reporting requirements stipulated under the conservation and management measures adopted by the Commission are demonstrated in appendix 1. In accordance to CMM 2006-04, no vessels specifically targeted striped marlin and all catch was taken as by-catch. A total of 10.8 mt of stripe marlin was caught as bycatch in south of 15°S of the Convention area. For the CMM 2009-03, there were five vessels caught a total of 38.3 mt of swordfish as bycatch in the Convention Area South of 20°S. There were no vessels operating under charter, lease or other similar mechanism as part of domestic fishery. Five foreign flagged vessels caught 1.2 mt of swordfish as bycatch in the area south of 20°S.

For Shark species (CMM2010-07), five vessels recorded an annual catch of 12.6 mt of whole Mako sharks and 0.2 mt blue sharks were caught and retained. There were no Hammered Sharks, Thresher sharks, Whale Sharks or Porbeagle sharks were recorded. There were 5 OCS, 8 FAL, 1 BRO and 16 SMA were recorded by observers and released all species except for shortfin mako (SMA) were retained whole body. For CMM 2011-04 (Oceanic whitetip sharks) and CMM 2013-08 (Silky sharks) a raised estimated were 223 Oceanic whitetip and 357 silky sharks based on observer coverage. More of the CMM reports and details are attached to this report as Appendix 1.

### **3.3 Fleet Structure**

In 2018, the Tonga National fleets consist of five (5) domestically based longline vessels that operate within the WCPF-CA. All these vessels are Tonga flagged vessels and authorized to fish within the Tonga EEZ only. Among these, one vessel listed on the WCPFC Record of Fishing vessels (RFV) and there was no high seas permit issued during 2018 and the vessel did not fished in high seas.

## 4.0 COASTAL STATE REPORTING

In 2018, there were five (5) foreign flagged longline vessels licensed to fish in Tonga EEZ compared to nine (9) in 2017 (Table 4 and 5). The decrease in number of foreign vessels licensed to fish in Tonga was mainly due to the revised Tuna Development and Management Plan 2015 – 2017 with low catch record during the previous years.

**Table 4. Number of foreign longline vessels with valid licenses to fish in the Tonga EEZ by year and size category (GRT).**

Gear	Longline				
Fleets	FFV				
Source	Number of Licenses vessel (TufMan)				
Size Category (GRT)	2014	2015	2016	2017	2018
0 - 100MT	19	13	5	8	3
100 - 200MT	0	0	0	0	2
200+	0	0	0	0	0

**Table 5. Number of foreign longline vessels with valid licensed to fish in the Tonga EEZ by flag and year.**

Year	Flag			Total
	CHINA	CH-TAIPEI	FIJI	
2014	3	14	2	19
2015	1	5	0	6
2016	0	8	0	8
2017	0	7	0	9
2018	0	3	2	5

Annual catch for foreign flagged vessels in 2018 is given in Table 6 and are similar in species composition of the catches to that of Tonga National fleets. Those catches by foreign vessels contributed to Tonga National Catch of tuna and tuna-like species within Tonga jurisdiction waters. The total catch for 2018 was 1023 mt, a decrease by 49% compared to 2006 mt in 2017.

**Table 6. Annual foreign Longline catch and effort estimates by foreign flagged vessels licensed to fish with Tonga EEZ (national waters) in 2017. Operational logsheet data raised using VMS eRecap Application Tools. (Dorado report 12)**

Flag	YEAR	GEAR	SPECIES																		Total
			ALB	YFT	BET	SKJ	BUM	BLM	MLS	SWO	SFA	DOL	FAL	BSH	OCS	THR	MAK	HAM	POR	OTH	
FJ	2018	LL	128.8	18.8	3.8	1.3	4.1	0.0	0.0	0.5	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	164.0
TW	2018	LL	530.3	160.2	38.5	7.7	23.5	0.9	10.2	6.6	5.3	6.2	0.0	15.5	0.0	0.0	9.3	0.0	0.0	45.0	859.2
TOTAL			659.0	179.0	42.3	9.0	27.6	0.9	10.2	7.1	5.6	6.6	0.0	15.5	0.0	0.0	9.3	0.0	0.0	51.2	1023.2

#### 4.0 SOCIO-ECONOMIC FACTOR

Export of Tuna catches in 2018 from Tonga continued. The tuna fleets contribute a large portion of fish exported from Tonga in comparison to other fishery such as snapper fishery and aquarium trades. Unfortunately, there was a tragic decrease in the export quantity of longline catch in 2018 in comparison to 2017 and this due to meagre catch rates force the decline in fishing effort. The total catch exported were recorded to be 632mt which is a huge drop by 70 % from the export total in 2017. The total estimated FOB revenue collected from fish exported during 2018 was reduced by 7% from TOP\$12,065,604.00 in 2017 into TOP\$3,628,489.00 during 2018. Apart from export value, the local market continues the supply of fish to local people for domestic consumption. Licensing of fishing vessels (domestic & foreign) and resources rent from landing and export catches continue to provide an additional revenue stream to the domestic fisheries sector. All catches by foreign vessels were unloaded in port Nuku'alofa then repacked into a shipping container and exported to overseas market with a portion of their catch were sold at the local market and retail store.

#### 5.0 DISPOSAL OF CATCH

##### 5.1 Marketing

Tonga regulates that all longline vessels license to fished in Tonga water shall 100 % discharge in designated port in Tonga before disposed to respective market destination whether to overseas or domestic market. The foreign fishing vessels unloaded all catch in Nuku'alofa and repack the export fish into a cargo container and send to overseas market while local fish sold locally. The Ministry of Fishery has been starting a new fish selling program with an agreement with foreign vessel's agency as part of fish consumption promotion. This is due to the high cost of fish in the domestic market which hindered people from buying fish for their daily meal. So, on every trip of the foreign vessels, they will provide at least 2mt of fish to the Ministry to sell it out at a lower price. This program is being successful and allows local people to consume more fish.

Tonga’s main export markets for its fresh chilled tuna (Yellowfin and Bigeye) were Japan, US (Los Angeles, Hawaii) with less portion for New Zealand and Australian market. The frozen tuna and tuna-like species with another bycatch were mainly exported to Taiwan, Pagopago, Thailand, and Fiji. In 2018, foreign vessels continue exporting of frozen tuna (Bigeye and Yellowfin) to Japanese market. At present, fresh chilled albacore and some of the bycatch (frozen and fresh) are sold locally.

Figure 5 describes the main markets destination with respect to the weight of longline catch export for Tonga in 2018. Frozen fish market destination dominates the total export volume longline vessels catch landed in 2018. The biggest portion of the total export volume was Thailand with 30% followed by Taiwan with 26%. These two-market destinations received frozen fish only. Japan market gains 22% of the total export volume but it is a combination of frozen and fresh chilled yellowfin and bigeye tuna. Other market destination such as US and Pagopago obtains 11% and 10% of the total export volume respectively with lesser portion shares by other destination such as Fiji, New Zealand, and Australia.

Albacore tuna dominated the exported of individual species with 43% of the total volume, followed by yellowfin with 32% and lesser percent of bigeye, mahimahi, marlin, shark and Others with 6%, 8%, 3%, 3%, 5% respectively. Export of bycatch species described as “Others” (OTH) were mainly frozen fish exported mainly to Taiwan which includes barracuda, escolar, oilfish, sailfish, spearfish, and wahoo. Other species export to US market were mainly mahimahi and wahoo send to Hawaii.

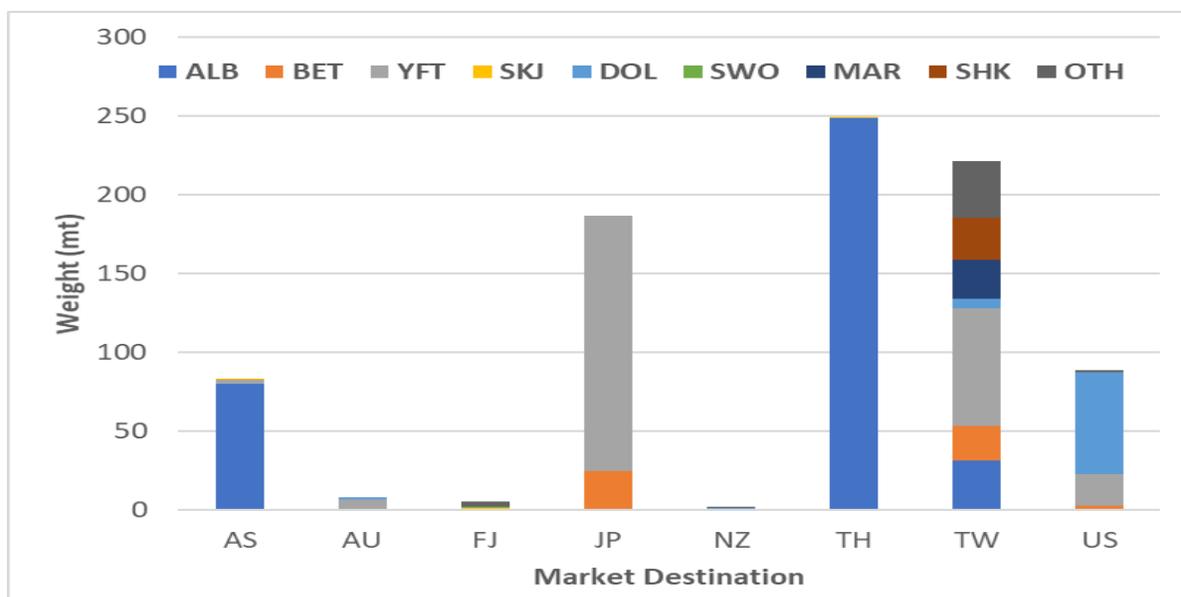


Figure 5. Longline catch (MT) export and Destinations for Tonga, 2018

## 6.0 ONSHORE DEVELOPMENT AND FUTURE PROSPECTS OF FISHERY

Tonga commercial longline fishery is currently limited by a cap on the number of longline vessels authorized to fish within the EEZ to only 15 licenses (*Revised Tonga Tuna Management & Development Plan*). Unfortunately, high operating costs and a lack of adequate infrastructure has restricted the development of a locally based fleet.

*Pacific Sunrise Fishing Co.* still the only domestic tuna fishing company operated with viable production outputs in exporting of fresh chilled tuna to sashimi markets especially to Japan, US, Australia, Honolulu, and New Zealand. Also entailing in provides employment for local people in crewing their vessels, and its processing and retailing plant. The year 2018 is not a good fishing year for the company as shown on catch and effort data with a drop-in catch during the year. Even though the catch was low, but they still operate five vessels.

The National Fisheries Council (NFC) continues the partnership with the Ministry of Fisheries and respective stakeholders in developing different fisheries sector including Tuna fishery. Within this partnership, the NFC planned to deal with many challenges especially the infrastructure such as the development of 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 operated and lessen the foreign fishing vessels.

In 2018, Tonga continued to participate in the regional Tuna Data and Stock Assessment Workshop which is conducted on an annual basis for SPC member countries. Tuna Data Workshop is 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).

TUFMAN 2 and its recent developments such as e-Reporting tool through ONBOARD applications allows sea captains to submit their logsheets data online. Tonga has been benefitted from these new developments through trialing the applications and provided with tablets for the trial. The online data entry feature of TUFMAN 2 database allows timely submissions of the logsheets data resulted in data extraction more easily and speedy especially analyzing of data for the scientific report. Artisanal data collection through TAILS is still ongoing.

The Stock Assessment Workshop was recognized as an important program in capacity building for fisheries officers and managers in the region. In this workshop, participants were introduced to various stock assessment models that assist officers in providing scientific advice to managers and policy-makers base on the best models used. Not only that but participants were also 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 was 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 Logsheets and Unloading data collection**

Tonga continues to use the expanded format of SPC/FFA Regional Longline Logsheets (2014) for data collection in 2018. 100% coverage of logsheets, unloading and port sampling data were achieved from both National and foreign vessels licenses to fish in Tonga. Unloading forms were submitted together with logsheets in timely manner.

### **7.2 Observer Programme**

The Tonga National Observer Programme (TNOB) continues to deploy observers' onboard domestic and foreign longline vessels operated within Tonga EEZ, and place observers on US purse seiner vessels under Multilateral Treaty arrangement. The observer coverage for TOB was 92 % onboard foreign fishing vessels licensed to fish in Tonga EEZ and 2.2 % onboard Tonga flagged vessels. All those observer trips are non-ROP trips.

TOB is aimed to collect information on fish catch, fish handling techniques, fishing technology, by-catch and discards and all other activities that the vessel conducted for the duration of the trip. All these data will analyze, and it will be very useful for stock assessment and management purposes. Fishing vessels' compliance with fisheries legislation is also an integral part of this program.

### **7.3 Port sampling Programme**

The Ministry of Fisheries continues to employ dedicated port samplers which covering 100% of the longline unloading in Nuku'alofa port. The Ministry is also obliged to maintain this high percentage coverage of port sampling to ensure the fulfillment of its obligation to the Commission. Data types collected are logsheets, unloading and port sampling data. The logsheets and the unloading forms are collected and entered TUFMAN 2. The port sampling forms are then scanned and sent to SPC/OFP on a regular basis for data entry and further analysis.

The ONBOARD application developed by SPC was on trial in two (2) domestic longline vessels in 2018. This application replaces the e-Tunalog smart pdf form manually filled of logsheets by captains and submit to national authorities and fishing companies. The application was installed on tablets which was also provided by SPC.

The National Observer and Port sampling programme warmly extend our sincere gratitude and 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 as well as training of new observers for the Observer program. Tonga has been blessed with the kind assistance of these financial donors and technical support for almost a decade. Furthermore, the implementation of both program and the completion of this scientific report would not have been possible if we did not have your support in all approach. !!! ***Malo 'aupito***

## Appendix 1 – CMM Reporting

### Summary for each CMM

<b>CMM 2005-03</b> <b>[North Pacific Albacore], Para 4</b>	NOT APPLICABLE No flagged vessels fished North of the equator
<b>CMM 2006-04</b> <b>[South West striped Marlin], Para4</b>	<b>2018 – 5 LL vessels</b> caught a total of <b>10.8mt</b> of SW_MLS as bycatch south of 15°S of the Convention area. No flagged vessel target MLS south of 15°S
<b>CMM 2009-03</b> <b>[Swordfish], Para 8</b>	<p>a) <b>2018 – 5 domestic flagged LL vessels</b> fished and caught a total of <b>38.3mt</b> of SP_SWO within South of 20°S of the Convention Area;</p> <p>b) there were NO vessels operating under charter, lease or other similar mechanism as part of domestic fishery</p> <p>c) <b>2018 – 5 foreign flagged LL vessels</b> fished and caught <b>1.2mt</b> of SP_SWO as bycatch within South of 20°S of the Convention Area</p>
<b>CMM 2009-06</b> <b>[Transshipment], Para 11 (ANNEX II)</b>	NOT APPLICABLE There were <b>NO</b> transshipment activities occurred in Tonga ports or Tonga EEZ. Not an Issue as Transshipments is prohibited in Tonga Fisheries Waters. However, Regulation 19 of the Fisheries (Fishing Vessels Licensing) Regulations 2016 provides that transshipment is only allowed pursuant to written Authorization from the Minister.
<b>CMM 2010-07</b> <b>[Sharks], Para 4</b>	<p><u>(Source: Dorado – TufMan Reports – Regional Reporting – Report # 26 – “CMM 10-07 Shark catches by National Fleets summary”)</u></p> <ul style="list-style-type: none"> <li>• 2018 - 5 LL vessels recorded an annual catch of:               <ul style="list-style-type: none"> <li>• <b>12.6mt Mako Sharks</b></li> <li>• <b>0.2mt Blue Sharks</b></li> </ul> </li> </ul> <p><u>Source: Dorado – TUBs Reports – Regional Reporting – Report # 8 – “CMM 10-07 Shark catches by National Fleets”</u></p> <ul style="list-style-type: none"> <li>• <b>Observed number of sharks by Tonga Observer Program</b> <ul style="list-style-type: none"> <li>- <b>5 Oceanic whitetip sharks</b> were caught and all release</li> <li>- <b>8 Silky sharks</b> were caught and all release</li> <li>- <b>1 Bronze whaler sharks</b> also caught and release</li> <li>• - <b>16 Shortfin Mako sharks</b> were all retained</li> </ul> </li> </ul> <p>There were NO record of other shark species; <b>Hammerhead sharks, Thresher sharks</b> and <b>Porbeagle shark</b> were caught by these 5 LL vessels in 2018.</p>

<p><b>CMM 2011-03</b> [Impact of PS fishing on cetaceans], Para 5</p>	<p><b>NOT APPLICABLE</b></p> <ul style="list-style-type: none"> <li>• Tonga does not have purse seine fleets</li> </ul>
<p><b>CMM 2011-04</b> [Oceanic whitetip sharks], Para 3</p>	<p><u>Source: Dorado – TUBs Reports – Regional Reporting – Report # 10a – “CMM 11-04 Oceanic Whitetip - RELEASE Life Status estimates”</u></p> <ul style="list-style-type: none"> <li>• Observed <b>5 Oceanic Whitetip</b> were record by Tonga Observer program and all released.</li> <li>• Four (4) <i>oceanic whitetip</i> were alive upon release and one (1) was released dead.</li> <li>• <b>Raised estimated</b> should be <b>223 Oceanic whitetip sharks</b> based on observer coverage</li> </ul>
<p><b>CMM 2012-04</b> [Whale sharks], Para 06</p>	<p><b>NOT APPLICABLE</b></p> <ul style="list-style-type: none"> <li>• Tonga does not have purse seine fleets</li> </ul>
<p><b>CMM 2013-08</b> [Silky sharks], Para 3</p>	<p><u>Source: Dorado – TUBs Reports – Regional Reporting – Report # 13 – “CMM 13-08 SILKY SHARK species catches by National Fleets”</u></p> <ul style="list-style-type: none"> <li>• <b>Observed 8 Silky sharks</b> were record by Tonga Observer program and all released dead and alive.</li> <li>• Six (6) <i>Silky shark</i> was still alive upon release and two (2) were escape before landed.</li> <li>• <b>Raised estimated</b> should be <b>357 silky sharks</b> based on observer coverage</li> </ul>
<p><b>Observer coverage (WCPFC 11 decision – para 484(b))</b></p>	<p>Observer Coverage:</p> <ul style="list-style-type: none"> <li>• Total of 3 observer trips conducted by Tonga Observer Program in 2018</li> <li>• <b>2.24%</b> of Observer trip coverage on board domestic longliners</li> <li>• All flagged vessels” observer trips are Non-ROP trips</li> </ul>
<p><b>CMM 2015-02</b> [South Pacific Albacore] Para 4</p>	<p>Data has been submitted to SPC</p> <p>Addressed through the regular provision of operational catch/effort logsheet data to SPC, who automatically include these data in the WCPFC databases, as per our authorisation.</p>
<p><b>CMM 2018-03</b> [Seabirds] Para 13</p>	<p><u>Source: Dorado – TUBs Reports – Regional Reporting – Report # 12 – “CMM 12-07 Seabird interactions by NATIONAL FLEETS”</u></p> <ul style="list-style-type: none"> <li>• <b>There is NO interaction with seabirds by Tonga longline vessels</b></li> </ul>

## Appendix 2 – The provision of shark species catch estimates

Flag	Year	Observer Data		Target tuna catch estimate	Shark species estimate (t)							See Note
		Available?	Coverage		BSH	FAL	MAK	OCS	POR	SPN	THR	
TO	2014	N	2.0%	250	0	0	8.4	0	0	0	0	2
TO	2015	Y	90.0%	357	0	0	19.8	0	0	0	0	1
TO	2016	Y	8.8%	397	0	0	19.6	0	0	0	0	1
TO	2017	Y	8.5%	429	0.2	0	14	0	0	0	0	1
TO	2018	Y	2.2%	213	0.2	0	13	0	0	0	0	1

### 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.