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

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SAMOA

INDEPENDENT STATE OF SAMOA

ANNUAL REPORT TO THE COMMISSION

PART 1: INFORMATION ON FISHERIES, RESEARCH ANDSTATISTICS

JULY 2014

FISHERIES DIVISION
MINISTRY OF AGRICULTURE AND FISHERIES
GOVERNMENT OF SAMOA

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. ABSTRACT

Tuna fishery in the Independent State of Samoa consists of domestic longline and troll fishing vessels ranging from 9 meters to over 20 meters in length. Overall estimated catches for 2013 was about 2,209 metric tons with long liners contributing 92% and the remaining by troll fleet. Main targeted species were that of albacore, yellowfin, big eye tuna and skipjack. By catches such as marlins and dolphin fish are important domestic catches as well to the local markets. Total export was about 1,441 metric tons with 99% of frozen albacore to American Samoa canneries. Transshipment operations were also conducted in Samoa's ports with an estimated volume of 522 metric tons valued at ST$6,005.

In comparison to past years records, troll catches have declined and have obtained about the same catches in 2010. Long line catches have declined as well but only that of 13% from 2012. The volume of export has declined by 21% compared to 2012 and it is the second lowest export of pelagic species in Samoa in the past 5 years. Numbers of fishing vessels are fairly the same for commercial fleet while artisanal have declined about half the number of active vessels last year.

2. ANNUAL FISHERIES INFORMATION

2.1. Background

Samoa's tuna fishery mainly consists of longline and trolling fishing vessels which fish all year round in Samoa's Exclusive Economic Zone (EEZ) of approximately 120,000km^2.The fishing fleet is exclusively domestic consisting of vessels ranging from 9 meters to over 20 meters in length.

Vessels that are up to 11 meters are artisanal (catamarans) which conduct both longline and troll fishing. These catamarans 'alia' were introduced in1975 with the objective to increase offshore fishery production particularly for trolling and bottom fishing and provide employment. Samoa's catamaran fleet was known as one of the most successful domestic long line fleet in the Pacific Islands that could profitably supply tuna for commercial purposes. It was successful until in the early 1990s, catches declined and the catamarans that were mainly designed for bottom fishing were innovated to long line fishing to catch tuna commercially with assistance from Secretariat of the Pacific Community (SPC).

Commercial longliners of above 11 meters in length entered the fishery in late 1990s and their increasing number contributed the bulk of the catches. However, it was in 2002 that the catches substantially declined towards 2004 which led to the formulation of the Samoa's Tuna Development and Management Plan 2005-2009. This plan was

formulated to provide strategic directions for the development of the tuna long line fishery industry as well as promoting sustainable management of the tuna resources.

Artisanal vessels tend to switch gear depending on the albacore season. Longlining is preferred during the albacore season while most switch to trolling in the off season to target schools of skipjack tuna and other pelagic species around the fish aggregating devices (FADs) and open sea. The commercial vessels mainly target albacore throughout the year with bulk of the catches being exported. Fresh-chilled tuna and other pelagic species are mainly exported to the United States of America and New Zealand. Albacore is mostly exported frozen to American Samoa canneries.

2.2 Annual catch by species, gear in the WCPFC Convention Area

2.2.1 Troll

Estimated catch landed from troll fishing in 2013 was 166 metric tons. In comparison to past 5 years, this is a 20% decline from 2012, 50% decline from 2011 but an increase than catches recorded in 2008 to 2010 (Table 1).

Table 1: Annual catch estimates (in metric tonnes) for Samoa's troll fleet by primary species, for the WCPFC Convention Area, for years 2009-2013

SPECIES	2008	2009	2010	2011	2012	2013
ALBACORE						0.02
BARACUDA	0.01	0.14	0.04	0.02	0.08	0.11
BIGEYE TUNA				0.17	0.21	0.15
DOLPHINFISH	4.00	0.33	1.00	0.19	0.52	2.10
KAWAKAWA	3.39	2.97	0.00	0.92	4.18	1.63
RAINBOW RUNNER	0.04	0.16	0.02	0.06	0.12	0.11
SKIPJACK	141.00	86.00	104.00	334.00	202.00	138.47
WAHOO		0.40		0.03	0.17	0.03
YELLOWFIN	6.00	9.00	10.00	11.00	23.00	24.10
TOTAL	148.44	90.00	105.06	335.39	207.28	166.72

In terms of species, skipjack remains to be the dominant fish caught from trolling with 138 metric tons recorded this year. However, skipjack catches have declined compared to catches recorded in past two years. Second ranked species was yellowfin with 24 metric tons which has increased compared to the past 5 years.

Dolphinfish and kawakawa (mackerel tuna) were few common species ranging from 1 to 2 metric tons. The least common species recorded this year were that of albacore, wahoo, barracuda, rainbow runner and bigeye tuna.

2.2.2. Longline

Estimated catches from all longline vessels in 2013 was about 2,042 metric tons with an estimate fishing effort of 5,353,098 million hooks (Table 2, Figure 1). The catches were dominated by albacore (80%) and yellowfin (16%). The least common species were that of swordfish, striped marlin and black marlin.

In comparison to past catch estimates recorded, albacore have declined by 19% compared to 2012 catches but more than that was recorded in 2011. Moreover, albacore recorded in 2013 is the second lowest catches estimate in the past 5 years. On the other hand, yellowfin catches have increased by 41% compared to 2012. However, this estimate is fairly stable compared to other past year estimates. Overall total catches show a decline from 2012 by 14% and it's the second lowest catches in the past 5 years.

Table 2: Annual catch estimates (in metric tons) for Samoa's long line fleet by primary species, for the WCPFC Convention Area, for years 2009-2013

SPECIES	2009	2010	2011	2012	2013
ALBACORE	2,816	2,529	1,415	2,038	1,642
BIGEYE TUNA	117	108	71	54	36
BLACK MARLIN	13	15	5	10	5
BLUE MARLIN	9	6	7	11	7
PACIFIC BLUEFIN			0.04	0.2	
SKIPJACK	77	67	51	27	14
STRIPED MARLIN	7	16	4	3	5
SWORDFISH	5	7	5	5	3
YELLOWFIN	412	386	395	234	330
TOTAL	3456	3132	1953	2383	2042

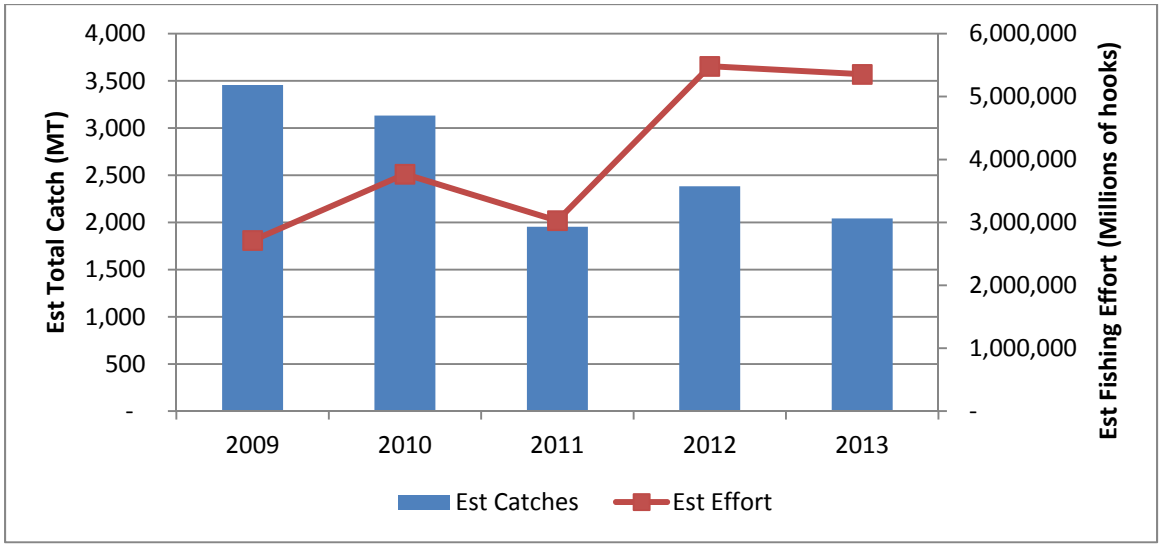

Figure 1: Estimate annual catch and effort by long line gear for the WCPFC convention area in 2009 to 2013

2.3. Number of vessels by gear type, size (fleet structure)

All catches from the tuna fishing fleet are landed within the country and are all locally based. Fishing vessels are licensed according to their overall lengths which are categorized into 5 groups that are stated in the Samoa's Tuna Management and Development Plan 2011-2015 (Table 3). This attempt looks into the ability of the vessel to catch fish as ideally a longer vessel is larger and has powerful engines to catch more fish than a shorter vessel.Hence, the license fees are higher and license caps are smaller for longer vessels.

Table 3: Five groups that fishing vessels are licensed accordingly

VESSEL CLASS	GRT SIZE CLASS	FLEET	FISHING METHOD
A (Up to 11m)	0-10	Artisanal	Longline, Troll
B (> 11-12.5m)	10-50	Commercial	Longline
C (>12.5-15m)	10-50	Commercial	Longline
D (>15-20.5m)	10-50	Commercial	Longline
E (>20.5m)	50-200	Commercial	Longline

This year, a total of 52 artisanal vessels were licensed. About half of the licensed artisanal vessels conducted troll fishing (Table 4). In comparison to past 5 years, the numbers of troll vessels have declined by half than that of 2011 and 2012.

For commercial long liners, a total of 12 vessels were licensed and active in 2013 where 10 were in the 10-50 GRT size class and 2 of the 50-200 GRT size class (Table 4). The number of active long liners has been fairly stable in the past 3 years.

Table 4: Number of Samoan vessels, by gear and size category, active in the WCPFC Convention Area, for years 2009-2013

Gear	**TROLL**
Fleet	*Locally-based*

Size class (GRT)	2009	2010	2011	2012	2013
0–10	30	40	50	55	25

Gear	**LONGLINE**
Fleet	*Locally-based*

Size class (GRT)	2009	2010	2011	2012	2013
0–10	28	37	35	23	27
10–50	8	10	9	11	10
50–200	6	3	2	2	2

2.4. Fishing patterns (catch by time/area)

Distribution of catches within a 5 by 5 grid throughout this year showed that most of the catches were caught from west of Savaii island and north of Upolu (Figure 1). Dominance of albacore is clearly visible across the WCPFC convention area. Second ranked species was yellowfin with least contribution from bigeye tuna, skipjack and other species.

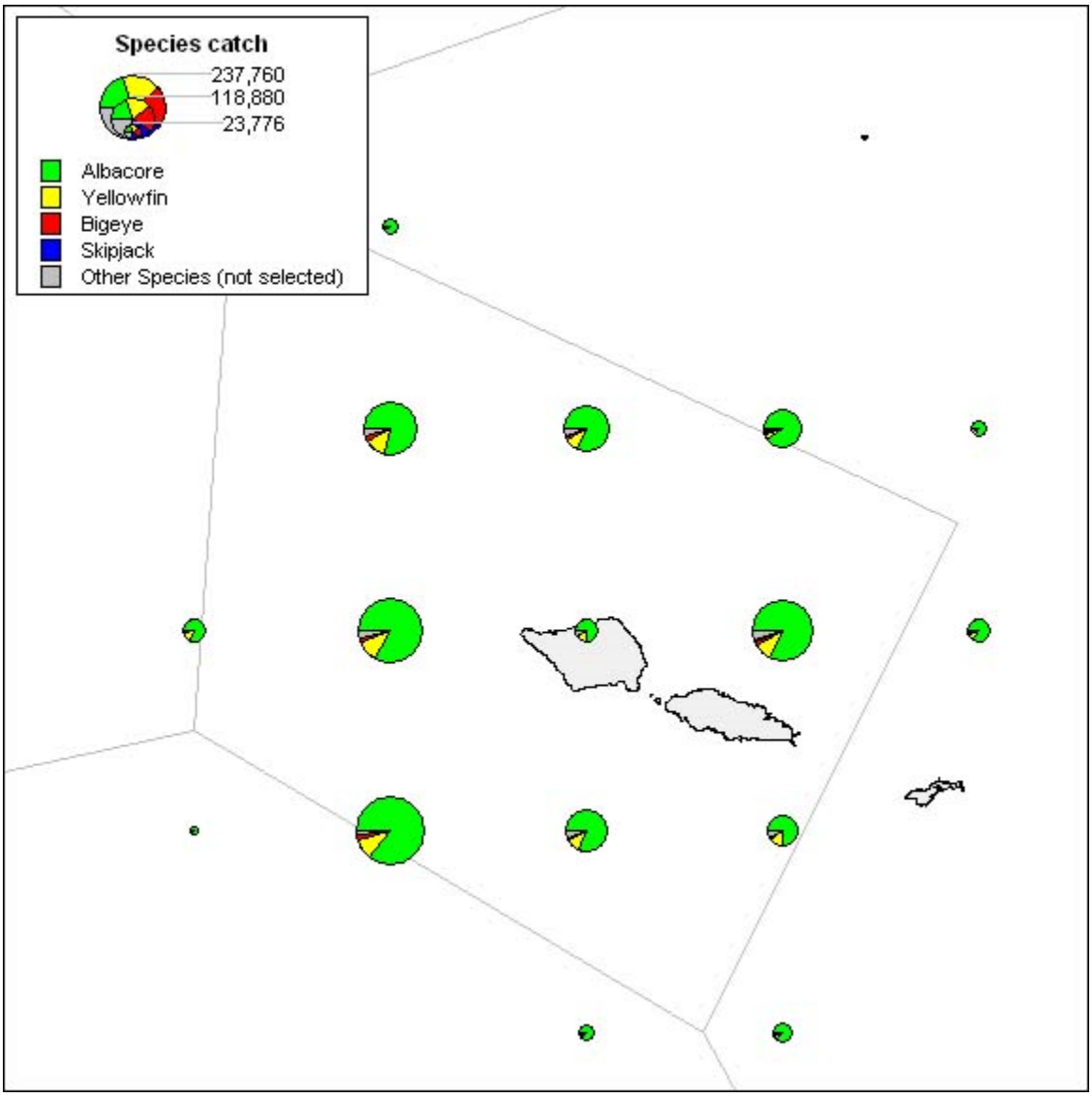

Figure 2: Annual distribution of target species catch (kilograms) by all Samoan long line fleet active in theWCPFC convention area, for 2013.

2.5. Estimated catches on non-targeted species

Catches from non-targeted species in 2013 was estimated to be of 61 metric tons. The dominant species was that of the dolphin fish and wahoo that contributed 52% and 43% to the total catch respectively. Dolphin fish has declined in 12% in comparison to catches of 2012 but more than 2011. As for wahoo, the 2013 catches are the lowest compared to catches recorded in the past 5 years. The least common non targeted species are tabulated in table 5.

Table 5: Annual estimated catches of non-target, associated and dependent species, including sharks, by the Samoa tuna longline fleet, in the WCPFC Convection Area, for years 2009-2013

NON TARGETED SPECIES	2009	2010	2011	2012	2013
BIGEYE THRESHER SHARK (*Alopiassuperciliosus*)			0.01		
BLACKTIP REEF SHARK (*Carcharhinusmelanopterus*)					
BLUE SHARK *(Prionaceglauca)*		0.19	0.24	0.83	0.35
DOGTOOTH TUNA (*Gymnosarda unicolor*)	0.30	1.10			
DOLPHINFISH (*Coryphaenahippurs*)	81.60	64.50	20.70	35.59	31.50
ESCOLAR (*Lepidocybiumflavobrunneum*)					
GALAPAGOS SHARK (*Carcharhinusgalapagensis*)		0.03			
GREAT BARRACUDA (*Sphyraena barracuda*)	11.00	9.30	3.40	3.80	0.57
LONGNOSE LANCET FISH (*Alepisaurusferox*)		0.16	0.18		
MAKO SHARK			0.03	0.09	0.18
MOONFISH (*Lamprisguttatus*)	9.50	8.96	5.01	1.65	0.63
OCEANIC WHITETIP *(Carcharhinuslongimanus)*		0.19	0.24		0.12
OILFISH (*Ruvettuspretiosus*)	0.20	2.46	0.04	0.47	0.06
POMFRET[1]	4.80	3.49	0.99	0.69	0.21
RAINBOW RUNNER (*Elagatisbipinnulata*)		0.01		0.08	
SAILFISH (*Istiophorusplatypterus*)				1.90	0.79
SHARK[2]	1.60	1.89	0.43	0.08	
SHORTBILL SPEARFISH (*Tetrapturusangustirostris*)	2.60	7.46	1.65	0.07	
SILKY SHARK *(Carcharhinusfalciformis*)		0.03		0.09	0.24
SOUTHERN BLUEFIN TUNA (Thunnusmaccoyii)		0.01			0.01
SUNFISH (*Ranzanialaevis*)		0.09		0.09	
TUNA[3]					
WAHOO (*Acanthocybiumsolandri*)	88.40	74.20	43.80	33.72	26.38
TOTAL	**189.11**	**173.88**	**76.72**	**79.15**	**61.05**

3. USEFUL INFORMATION

3.1. Disposal of catch

Total exported pelagic fish recorded in 2013 was about 1,441 metric tons (Table 6). About 99% of the export was that of frozen albacore to American Samoa canneries. The remaining percentage was exported as fresh chilled to United States of America (Los Angeles), New Zealand (Auckland) and Japan (Tokyo). The volume of export has declined by 21% compared to 2012 and it is the second lowest export of pelagic species in Samoa in the past 5 years. In addition, the volume of fresh chilled export has dramatically declined.

Table 6: Volume in (MT) of Samoa's frozen and fresh chilled fish exports from 2009 to 2013

EXPORT TYPE	2009	2010	2011	2012	2013
FROZEN	2,412	2,603	1,229	1,777	1,435
FRESH CHILLED	149	99	100	49	7
TOTAL	2,561	2,702	1,329	1,826	1,441

3.2. Transshipment activities

In 2013, 23 transshipment operations of 6 foreign fishing vessels (longliners) flagged by Fiji, Cook Islands and Kiribati were conducted in Samoa's ports. About 9% of these operations were carried out in Apia's main port located at Matautu village while the rest was mainly at the Apia Fishery wharf. A 100% monitoring and inspections of all unloading vessels and fish carriers was implemented in reference to national laws and good standing records. Estimated total landings from these operations was about 522 metric tons, with the majority exported directly to American Samoa and Japan.

Table 7: Volume in (MT) of transship catch by vessel and flag state

Transhipment Date	Flag State	Vessel Agent	Port	GW Transhipped (kg)
04-Jan-13	Fiji	BBE	APIA MAIN WHARF	47,770
14-Jan-13	Cook Island	AEFP	APIA FISHERY WHARF	16,425
24-Jan-13	Fiji	BBE	APIA MAIN WHARF	64,150
11-Feb-13	Cook Island	AEFP	APIA FISHERY WHARF	13,164
20-Mar-13	Cook Island	AEFP	APIA FISHERY WHARF	4,510
01-Apr-13	Fiji	BBE	APIA MAIN WHARF	106,298
02-Apr-13	Fiji	BBE	APIA MAIN WHARF	93,958
27-May-13	Cook Island	AEFP	APIA FISHERY WHARF	4,526
12-Jun-13	Cook Island	AEFP	APIA FISHERY WHARF	10,700
24-Jun-13	Fiji	BBE	APIA MAIN WHARF	33,345
25-Jun-13	Fiji	BBE	APIA MAIN WHARF	48,901
22-Jul-13	Cook Island	AEFP	APIA FISHERY WHARF	4,479

20-Jul-13	Cook Island	AEFP	APIA FISHERY WHARF	3,895
31-Jul-13	Cook Island	AEFP	APIA FISHERY WHARF	10,227
20-Aug-13	Cook Island	AEFP	APIA FISHERY WHARF	7,878
20-Sep-13	Cook Island	AEFP	APIA FISHERY WHARF	5,658
09-Oct-13	Cook Island	AEFP	APIA FISHERY WHARF	740
02-Oct-13	Cook Island	AEFP	APIA FISHERY WHARF	5,449
24-Oct-13	Kiribati	BBE	APIA MAIN WHARF	9,720
24-Oct-13	Kiribati	BBE	APIA MAIN WHARF	13,939
05-Nov-13	Cook Island	AEFP	APIA FISHERY WHARF	13,394
20-Dec-13	Cook Island	AEFP	APIA FISHERY WHARF	2,900
23-Dec-13	Cook Island	AEFP	APIA FISHERY WHARF	745
	TOTAL			522,771

3.3. Onshore developments

The Government through the Fisheries Division continues to provide a safe and maintained fishery wharf (Apia) for easy access of fishing vessels to processing facilities. It also provides a safe and hygienic domestic market for the artisanal fleet to land and sell their catches. Ice making facilities at the main Apia port are being well maintained and services are made available early hours of the morning throughout the week including weekend and holidays. Rural ice making facilities (Mulifanua and Salelologa) are also regularly maintained and running with one newly established one in Siumu village. This will ensure easier access of fishermen to these facilities in order for better storage of their catches and maintenance of the fish's good quality.

4. RESEARCH AND STATISTICS

4.1. Fishery data collection system

A draft national tuna data procedure document has been developed where it details the rationale of each tuna data collection being implemented in Samoa. It is also guide or manual on survey forms used with format and version, target coverage, responsible personnel, required submissions, data management and other information that would assist in implementing the tuna data collection system.

4.1.1. Logsheets

Log sheets remain to be the essential source of catch and effort estimates for Samoa's tuna fishery.The current regional form used for commercial longliners is the SPC/FFA Regional Standard Expanded LonglineLog sheet (Rev Dec 09). The same form was modified into *'Rev Aug 11'* to cater for the smaller artisanal vessels, which are using

longline fishing gear and may or may not have a GPS on board. These log sheets are being collected from vessel captain or vessel owners within one week upon return date. The collected data are then verified by fisheries officers and entered into the Regional TUFMAN database.

Aimed coverage for logsheet was 100% and in 2013 all longliners submitted their logsheets. Details of coverage by vessel category and total coverage are portrayed in table 7.

Table 7: Estimated annual coverage of logsheet data for the Samoan tuna longline fleet 2013

LONGLINE VESSEL TYPE	FISHING DAYS	FISHING TRIPS/ UNLOADING	LOGSHEET COVERAGE (FISHING TRIPS)
Artisanal vessels (0–10 GRT)	214	101	101 (100%)
Commercial vessels (>10 GRT)	1,537	153	153 (100%)
TOTAL	1,751	254	254 (100%)

Catch estimates of tuna and tuna-like species from trolling by artisanal vessels are also collected from vessel owners and sometimes filled in by Fisheries Officers when conducting surveys. However, there are challenges faced with timely data submission and Fisheries Division is currently looking into solutions as well as strategies to strengthen troll data collection. The regional standard form being used was the SPC/FFA Regional Standard Artisanal Tuna Fishing Log sheet (Rev May 2013). These forms are collected on a weekly basis in the urban areas and monthly for the rural areas. The collected data are then verified by Fisheries Officers and entered into the Regional TUFART database.

4.1.2. Port Sampling

A total of 39longline vessels consisting of artisanal and larger commercial vessels were licensed in 2013 and were recorded to be actively fishing in the convention area. These vessels conducted 254 fishing trips an equivalent of 1,751 fishing days (Table 8).

Aimed coverage for port sampling was 25%. This year, sampling coverage in terms of vessel category was 50% of artisanal vessels and 61% commercial vessels. The total port sampling conducted in 2013 was 57% coverage (20% artisanal vessels and 37% commercial vessels).

Table 8: Estimated annual coverage of port sampling data for the Samoan tuna longline fleet 2013

LONGLINE VESSEL TYPE	FISHING DAYS	FISHING TRIPS/ UNLOADING	PORT SAMPLINGCOVERAGE (FISHING TRIPS)
Artisanal vessels (0–10 GRT)	214	101	51 (50%)

Commercial vessels (>10 GRT)	1,537	153	93 (61%)
TOTAL	1,751	254	144 (57%)

4.1.3. Domestic market surveys

Fisheries Division continues to conduct surveys of the domestic market landings twice a week. These surveys provide estimates of catches that were landed at the domestic markets from the artisanal vessels in terms of volume, value, length, species, numbers and effort. The collected data are entered and stored in Samoa Fisheries Database and its volume and value are extrapolated accordingly to give total estimates on a monthly and yearly basis.

At present, catch estimates of the troll tuna fleet are extracted from this database given the challenges faced with the artisanal log sheet data collection as mentioned earlier.

4.1.4. Boat census

The purpose of Boat Census is to record visual counts of vessels in port to determine total number of vessels out fishing, with respect to the list of licensed vessels for that licensing period. A Fisheries Officer records this information on a daily basis for all licensed vessels in the urban area (Apia) while the rural areas are on a monthly basis given that very few vessels dock outside Apia. The data collected is entered and stored in the Samoa Fisheries Database.

This survey serves a similar purpose as the regional standard port visit and vessel activity log where it identifies fishing trips and fishing days of the vessels. Currently, boat census data is used to gauge levels of fishing effort in days for the alia fleet until the Vessel Monitoring System (VMS) data is deemed to be reliable.

4.1.5. Observer Programme

Initially the Samoa observer program was funded by SPC and Fisheries Forum Agency (FAA) in 2005 but it is currently being implemented under Samoa's local government budget. This program is only being conducted for vessels larger than 12.5 meters as smaller vessels are unsafe for an additional member given the space capacity.

The information obtained from observers assists in verifying the data recorded from vessel log sheets such as by catch and discards as well as help in assessing special

species interactions such as turtles, seabirds and sharks. These data and information are submitted to SPC for data entry, storage and analysis that are later reported back to Samoa Fisheries for reporting. Currently, SPC have developed a database and webtool for analysis of such data set which Samoa Fisheries have signed up to for installation.

Table 9: Estimated annual coverage of observer data for the Samoan tuna longline fleet 2013

LONGLINE VESSEL TYPE	FISHING DAYS	FISHING TRIPS/ UNLOADING	OBSERVER COVERAGE (FISHING TRIPS)
Artisanal vessels (0–10 GRT)	214	101	
Commercial vessels (>10 GRT)	1,537	153	3 (2%)
TOTAL	1,751	254	3 (1%)

Aimed coverage for observer program is 10% of the total fishing trips being conducted by the national fishing fleet. However, in 2013 the coverage by vessel category was 2% with total coverage of all vessels at only 1%. This was mainly due to the fact that Samoa Fisheries only have two observers who are also Fisheries Officers obligated to implement other onshore tasks (Table 9).

Summary of data on species of special interest obtained from the observer trips conducted in 2013 showed that a common number of blue sharks and oceanic white tip sharks were caught by longliners (Table 10). Moreover a total of 14 sharks were caught in 2013 fishing activities where 12 were discarded and 2 retained (Table 11). In comparison to records of past 4 years, numbers for these two shark species have increased. However, for blue shark this recent record is the same as the record in 2008.

Table 10: Observed numbers of species of special interest (seabird, sharks, turtles and marine mammals) by Samoa's longline fleet, in the WCPFC Convention Area, for years 2009-2013 from observer program

SPECIES	2009	2010	2011	2012	2013
Bieye Thresher shark					
Blue shark		4	5		7
Dolphin				6	
Green turtle				2	
Mako shark					
Oceanic whitetip		2	2		7
Sandbar shark					
Silky shark					
Unidentified		6	1		
TOTAL	**0**	**10**	**8**	**8**	**14**

Table 11: Observed status of blue shark and oceanic white tip caught by Samoa's longline fleet in 2013 from observer program

SPECIES	RETAIN	DISCARD	STATUS UPON RELEASE
Blue shark		7	6 Alive healthy, 1 Dead
Oceanic whitetip	2	5	6 Alive healthy, 1 Dead
TOTAL	2	12	12 Alive healthy, 2 Dead

4.1.6. Species length frequency

Data collected from port sampling in 2013 indicated that albacore (Figure 3) in the beginning of the year, the common fish length obtained was 100-120 cm (1st, 2nd Quarter) while towards the end of the year the common length is lower around 70-90 cm (3rd, 4th Quarter). Similarly with yellowfin while bigeye tuna is fairly spread out in size (Figure 4, 5). Average length for albacore 92 cm (N=24,184) and 97 cm for both yellowfin (N=3612) and bigeye (N=483).

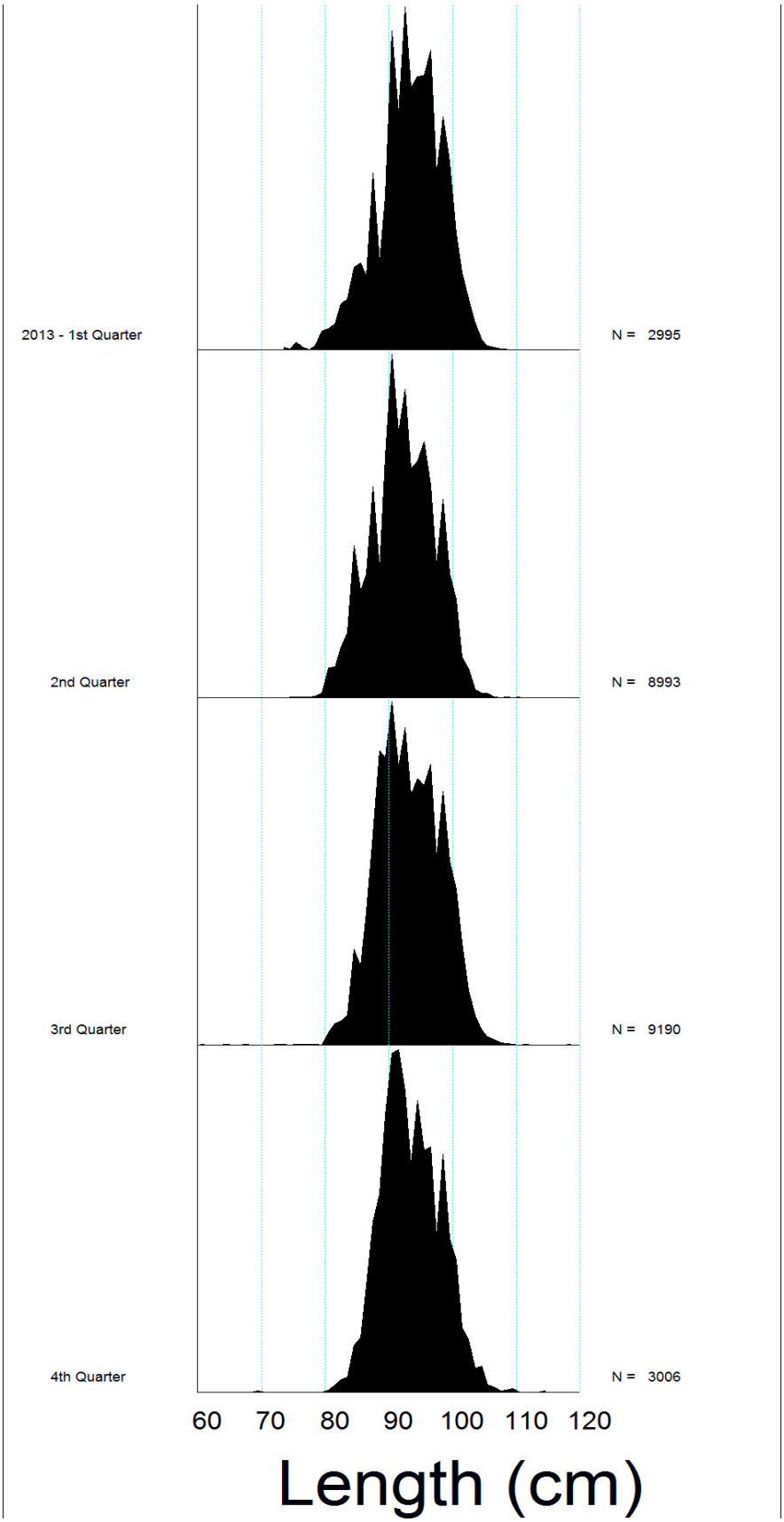

Figure 3: Albacore length frequency 2013

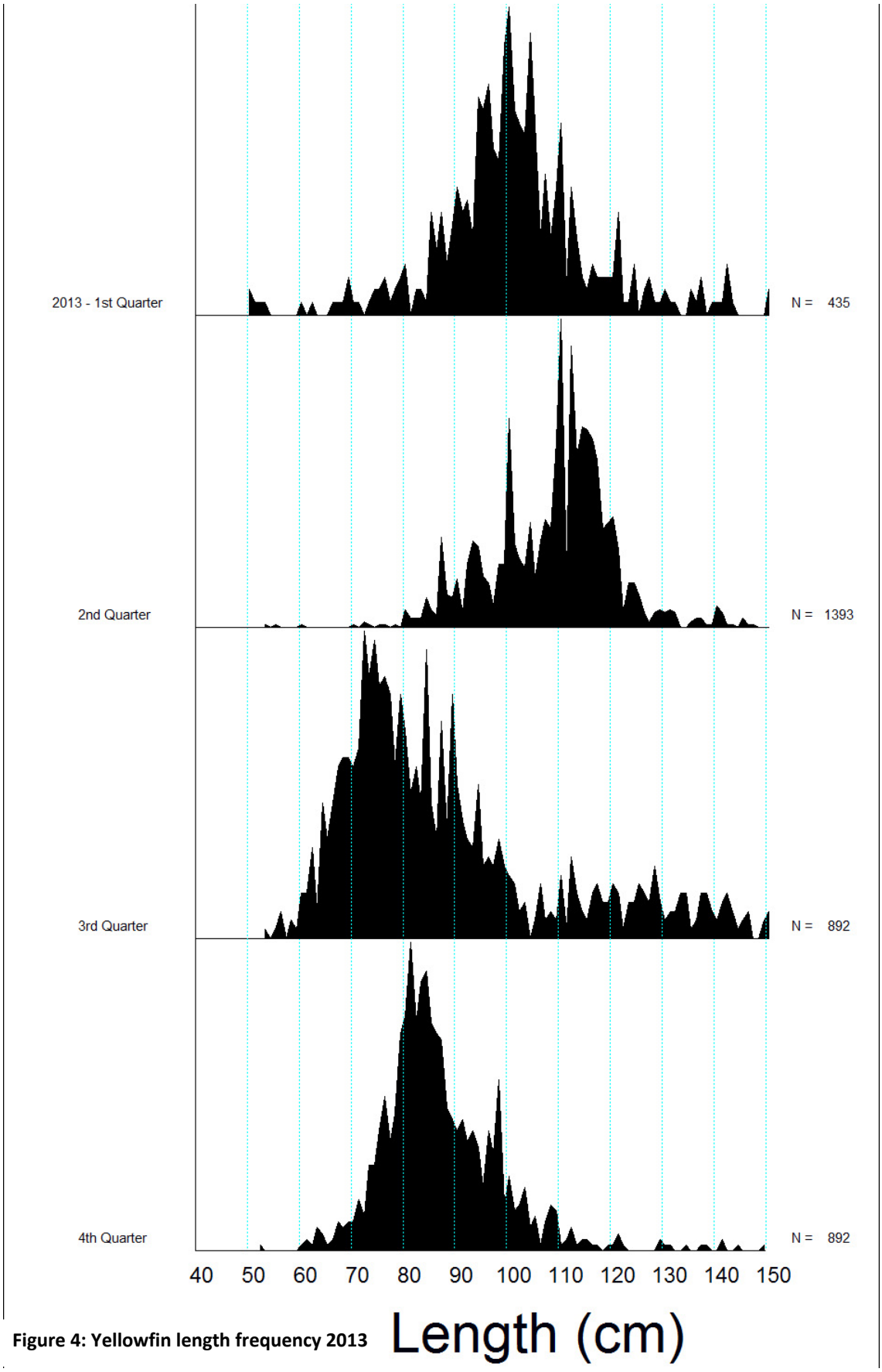

Figure 4: Yellowfin length frequency 2013

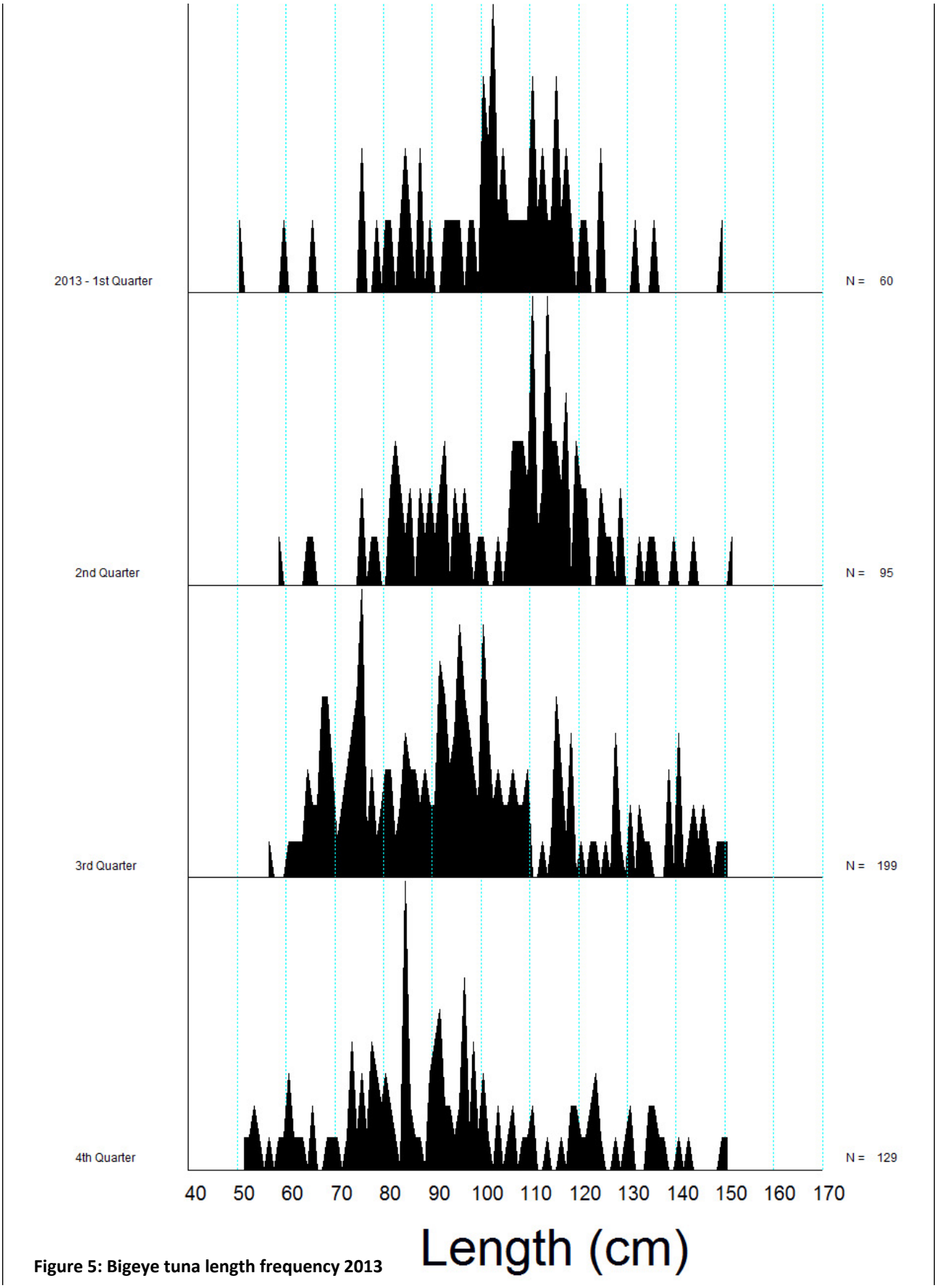

Figure 5: Bigeye tuna length frequency 2013