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

WCPFC-SC9-AR/CCM-20

SAMOA

INDEPENDENT STATE OF SAMOA

ANNUAL REPORT TO THE COMMISSION

**PART 1: INFORMATION ON FISHERIES, RESEARCH AND
STATISTICS.**

JULY 2013

**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 2013	YES
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1. ABSTRACT

Samoa's tuna fishery consisting of the long line and troll fleet landed an estimated total of 2613 metric tons of fish caught exclusively in the EEZ of approximately 120,000 km². This has seen a decrease of 12% compared to total catch landed in 2011. A total of 68 vessels in the fishing fleet remained active in 2012, comprising of 55 alia (<11m) and larger vessels ranging from over 12.5 meters to over 20.5 meters in length.

Log sheets verified by port sampling data continue to provide main sources of information for catch and effort estimates from the tuna long line fleet. The data is entered into the regional TUFMAN database for tuna fisheries data currently in use by Samoa Fisheries and is a vital data output reporting system for albacore and primary species caught by long line operations. The local market landing is surveyed regularly to provide the trolling catch estimates on the species volume and value caught and sold domestically.

2. ANNUAL FISHERIES INFORMATION

2.1. Background

The tuna fishery plays a vital role in the economy of Samoa as it continues to be the main export earner for the country. The fishery comprises mainly of the commercialized tuna long line fishery and the small scale troll fishery. The fishing fleet consists of vessels ranging from 9 meters to over 20 meters in length and is based locally, with participation in the fisheries being exclusively domestic. Both fisheries operate in Samoa's Exclusive Economic Zone (EEZ) of approximately 120,000km² with all catches landed in Samoa.

Troll fishing mainly involves the alia vessels (ranging from 9-11m in length), targeting schools of skipjack tuna swimming around fish aggregating devices (FADs) and in the open sea. Among other pelagic species caught include dolphin fish and yellowfin tuna. The catch is mainly sold at the fish market outlets and restaurants in Upolu and Savaii.

The commercialized long line fishery involves bigger vessels ranging from 12.5 to over 20.5 meters in length. Alia vessels may also become involved but somewhat on a more optional basis depending on the albacore season. The fishery targets albacore tuna and the bulk of the long line catch is mainly utilized for the export markets. Yellowfin and bigeye tuna of over 30 kilograms are also important components of the long line fishery, supplying the fresh-chilled markets in the United States of America and New Zealand. Frozen albacore are exported to the canneries in American Samoa and the recent additions to export markets in Ecuador and Indonesia. The long line fishery operates all

year round, applying an increase on fishing effort when the albacore season approaches, usually towards May/June until October/November of each year.

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

2.2.1. Troll

An estimated 202 metric tons of skipjack was caught from trolling operations in 2012, contributing to 88% composition to the total troll catch. This is a 39% drop compared to skipjack landed in 2011 of 334 metric tons, which was the highest of skipjack catches over the past five years.

In contrast the yellow fin tuna catch in 2012 has risen by 52% from the previous year and is the highest recorded catch since 2008, however a small portion of the total trolling catch with just 10%. The remaining 2% of the total trolling catches consist of other pelagic species including wahoo, dolphinfish and kawakawa.

Table 1a: Annual catch estimates (in metric tonnes) for Samoa's troll fleet by primary species, for the WCPFC Convention Area, for years 2008-2012.

TROLL					
SPECIES	2008	2009	2010	2011	2012
SKIPJACK	141	86	104	334	202
YELLOWFIN	6	9	10	11	23
DOLPHINFISH	4	0.33	1	0.19	0.52
BARACUDA	0.01	0.14	0.04	0.02	0.08
WAHOO	0	0.4	0	0.03	0.17
KAWAKAWA	3.39	2.97	0	0.92	4.18
BIGEYE	0	0	0	0.17	0.21
RAINBOW RUNNER	0.04	0.16	0.02	0.06	0.12
TOTAL	154	99	115	346	230

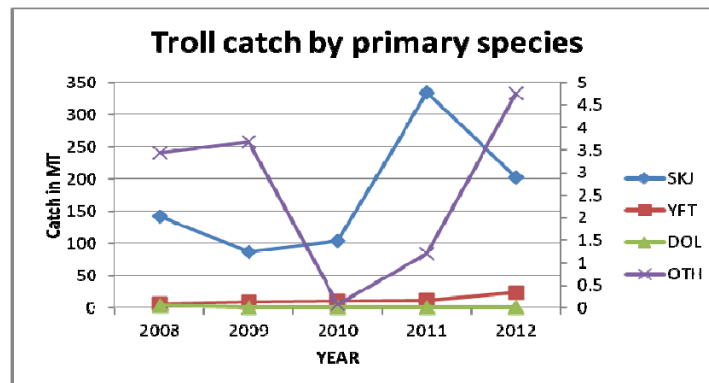


Figure 1a: Annual catch for Samoa's troll fleet by primary species for the WCPFC Convention Area

2.2.2. Longline

Total long line catch landed in 2012 is estimated at 2462 metric tons, an increase of 17% from the total long line catch landed in 2011.

Albacore catch which constitutes about 83% of the total long line catch in 2012 has increased by 44%, compared to 2011 albacore catch of 1415 metric tons.

Fishing effort by number of hooks steadily increases over the years with a significant intensification in 2012.

Table 1b: Annual catch estimates (in metric tons) for Samoa's long line fleet by primary species, for the WCPFC Convention Area, for years 2008-2012.

YEAR	FISHING EFFORT: AVERAGE NO. OF HOOKS	LONGLINE CATCH BY PRIMARY SPECIES (MT)									
		Yellowfin	Bigeye	Blue Marlin	Black Marlin	Skipjack	Albacore	Pacific Bluefin tuna	Striped Marlin	Swordfish	TOTAL (mt)
2008	1500400	317	106	16	15	31	2342	0	21	6	2854
2009	2712700	412	117	9	13	77	2816	0	7	5	3456
2010	3766200	386	107	6	15	66	2529	0	16	7	3132
2011	3027600	395	71	7	5	51	1415	0.04	4	5	1953
2012	5480200	234	54	11	10	27	2038	0.2	3	5	2383

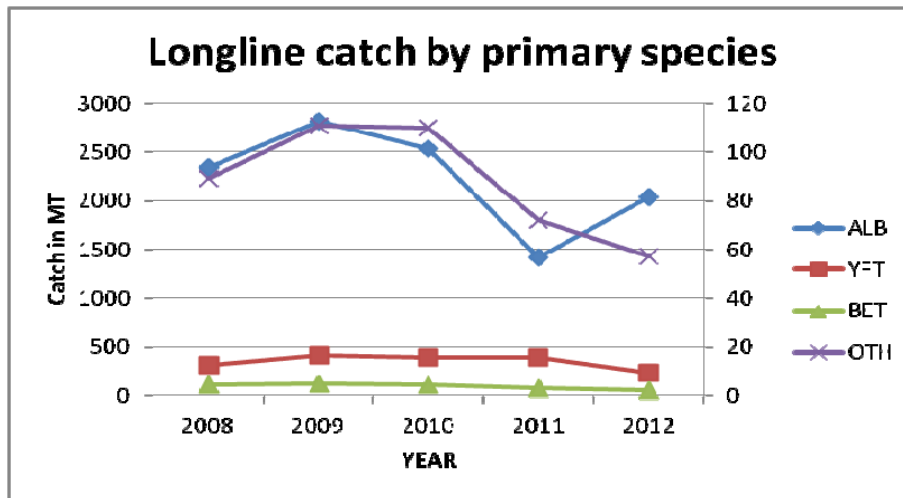


Figure 1b: Annual catch for Samoa's longline fleet by primary species for the WCPFC Convention Area.

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

Samoa's fishing fleet comprises of domestic vessels operating exclusively in the EEZ of Samoa and landing all its catches on national ports. Fishing vessels in Samoa's fishing fleet are licensed annually and categorized accordingly to vessel size. Fishing vessels are categorized under five classes: Class A: Alias ($\leq 11\text{m}$), Class B ($>11\text{m}\leq 12.5\text{m}$), CLASS C ($>12.5\text{m}\leq 15\text{M}$), Class D ($>15\text{m}\leq 20.5$), and CLASS E ($>20.5\text{m}$).

A total of 68 vessels across all classes remained active in the fishing fleet in 2012, 55 being alias and the other 13 consisting of larger vessels categorized under Classes C, D and E. All 55 alias contributed to the troll catch in 2012, in which 23 switched to long line at mid-year to the end of year when the albacore season approached. As aforementioned, the versatility of an alia allows it to alternate between different fishing methods including bottom fishing, trolling and long line, depending on the seasonal variations of targeted species for each method. Class vessel C and D are categorized together in the table below given that their fishing capacities fall within the range of 10 to 50 Gross Registered Tonnage (GRT). There was no vessel registered under Class B for the year 2012.

Table 2: Number of Samoan vessels, by gear and size category, active in the WCPFC Convention Area, for years 2008-2012.

LOGLINE VESSELS						
Size (m)	Gross Registered Tonne (GRT)	2008	2009	2010	2011	2012
$\leq 11\text{m}$	0 - 10	28	28	37	35	23
$>12.5\text{m}\leq 20.5\text{m}$	10 - 50	11	8	10	9	11
$>20.5\text{m}$	50 - 200	5	6	3	2	2
	200 - 500					
TROLL VESSELS						
Size (m)	Gross Registered Tonne (GRT)	2008	2009	2010	2011	2012
$\leq 11\text{m}$	0 - 10	25	30	40	50	55
	10 - 50					

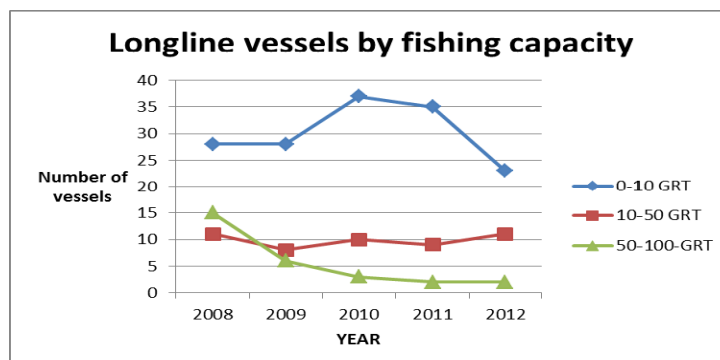


Figure 2a: Number of vessels in Samoa's long line fleet by fishing capacity active in the WCPFC Convention Area, for years 2008-2012

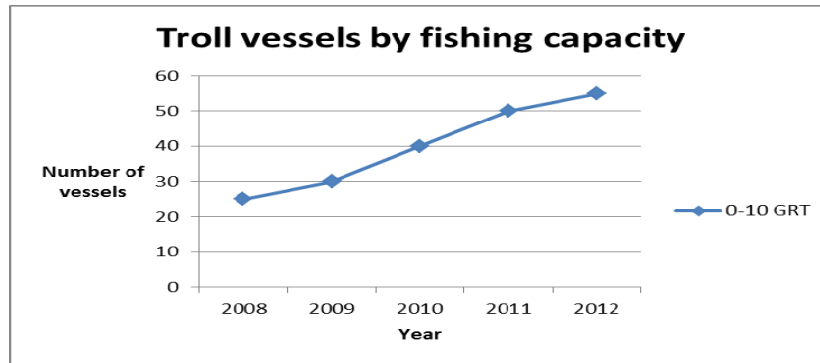


Figure 2b: Number of vessels in Samoa's troll fleet by fishing capacity active in the WCPFC Convention Area, for years 2008-2012

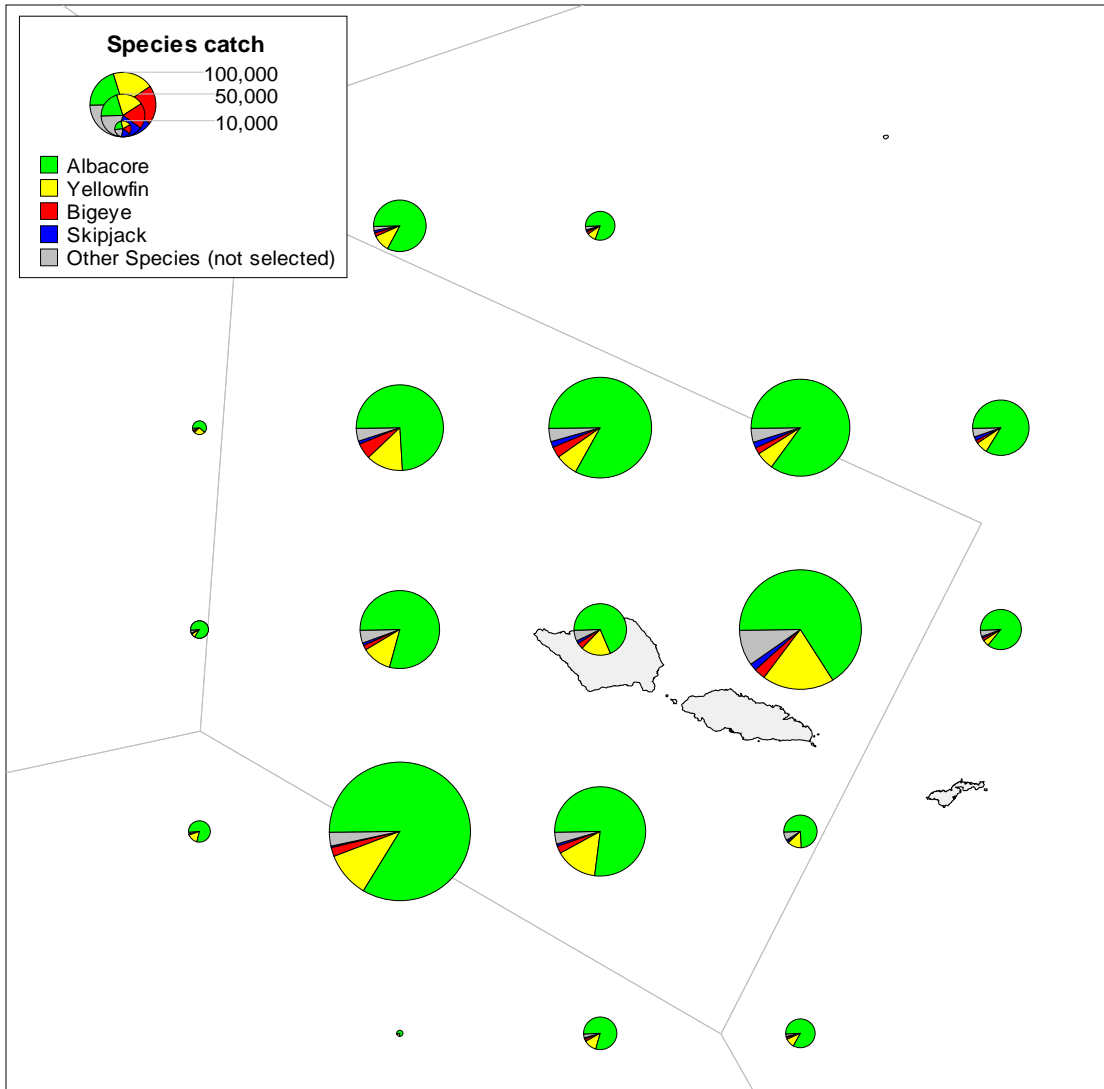
2.4. Fishing patterns (catch by time/area)

The distribution of Samoa's longline effort is mostly confined within Samoa's EEZ which approximately falls within a 5° lat. by 5° long grid. As illustrated, the bulk of the catch is albacore tuna with yellowfin species making up a significant secondary composition.

Effort levels are consistently focused within the central region of the EEZ with effort levels increased towards the southern and north-eastern areas. Alias engaging in long line operations mainly go as far as 30 to 50 nautical miles at most, with larger vessels operating beyond this range as per national policy.

Availability/distribution of tuna resources within Samoa's EEZ plus operational costs such as fuel prices are contributing factors to the distribution of effort levels in areas of national jurisdiction.

Figure 3: Annual distribution of target species catch by the Samoan longline fleet active in the WCPFC convention area, for 2012.



2.5. Estimated catches on non-targeted species

The catches of non-target species remain lower than the highest recent catches in 2010, however slightly higher than that of 2011.

Dolphinfish constitutes about 45% of the total bycatch caught by longline vessels in 2012; wahoo follows at 43%. Although seen as non-targeted species, dolphinfish and wahoo are important compositions of the longline catch and are of high value to local restaurants and domestic consumers alike.

Table 3: Annual estimated catches of non-targeted, associated and dependent species, including sharks, by the Samoan tuna longline fleet in the WCPFC Convention Area for years 2008-2012.

<i>Non-targeted species</i>	2008	2009	2010	2011	2012
BIGEYE THRESHER SHARK (<i>Alopias superciliosus</i>)				0.01	
BLACKTIP REEF SHARK (<i>Carcharhinus melanopterus</i>)					

BLUE SHARK (<i>Prionace glauca</i>)			0.19	0.24	0.83
DOGTOOTH TUNA (<i>Gymnosarda unicolor</i>)		0.3	1.1		
DOLPHINFISH (<i>Coryphaena hippurs</i>)	39.19	81.6	64.5	20.7	35.589
ESCOLAR (<i>Lepidocybium flavobrunneum</i>)					
GALAPAGOS SHARK (<i>Carcharhinus galapagensis</i>)			0.034		
GREAT BARRACUDA (<i>Sphyræna barracuda</i>)	8.18	11	9.3	3.4	3.799
LONGNOSE LANCET FISH (<i>Alepisaurus ferox</i>)	0.02		0.162	0.18	
MAKO SHARK				0.03	0.093
MOONFISH (<i>Lampris guttatus</i>)	10.67	9.5	8.96	5.01	1.651
OCEANIC WHITETIP (<i>Carcharhinus longimanus</i>)			0.19	0.24	
OILFISH (<i>Ruvettus pretiosus</i>)	1.04	0.2	2.46	.04	0.474
POMFRET ¹	3.1	4.8	3.49	.99	0.685
RAINBOW RUNNER (<i>Elagatis bipinnulata</i>)			0.008		0.075
SAILFISH (<i>Istiophorus platypterus</i>)					1.903
SHARK ²	1.69	1.6	1.89	.43	0.078
SHORTBILL SPEARFISH (<i>Tetrapturus angustirostris</i>)	1.21	2.6	7.46	1.65	0.07
SILKY SHARK (<i>Carcharhinus falciformis</i>)			0.033		0.092
SOUTHERN BLUEFIN TUNA (<i>Thunnus maccoyii</i>)			0.006		
SUNFISH (<i>Ranzania laevis</i>)	0.38		0.087		0.093
TUNA ³	0.91				
WAHOO (<i>Acanthocybium solandri</i>)	62.14	88.4	74.2	43.8	33.721
Total	128.53	189.11	173.88	76.72	79.15

3. USEFUL INFORMATION

3.1. Disposal of catch

Total exports in 2012 have increased by 37% from that of 2011. There is a significant increase in frozen products exported to overseas markets, directly due to increased albacore catch in 2012 and as a probable factor, the addition of export markets for frozen products in Ecuador and Indonesia. Fresh chilled markets in the United States have been supplied with about 49% of fresh-chilled yellowfin and bigeye tuna of approximately 30 kilograms and more in weight.

Table 4: Volume in (MT) of Samoa's frozen and fresh chilled fish exports from 2008 to 2012

¹ This includes *Brama brama*, *Eumegistus illustris*, *Taractichthys steindachneri* and all other pomfrets coded BRZ

² Sharks unloaded from longline vessels without fins and tails.

³ Tuna unloaded from longline vessels covered with sheets to be exported fresh chilled

Year	Frozen	Fresh chilled	Total Exports
2008	2083	125	2208
2009	2412	149	2561
2010	2603	99	2702
2011	1229	100	1329
2012	1777	49	1826

3.2. Transshipment activities

Transshipment operations in Samoa are exclusively carried out at the main port in Apia and at Fisheries wharf, with 100% inspection and monitoring coverage by Fisheries Officers. A total of 2431 metric tons of fish were transshipped at port in 2012 by 28 foreign longliners, generating a total revenue of \$24,308 SAT from transshipment weight fees. Catches by these foreign fishing vessels are caught beyond areas of national jurisdiction and mainly comprise of skipjack, yellowfin, marlins, swordfish, albacore and bigeye tuna.

4. RESEARCH AND STATISTICS

4.1. Fishery data collection system

4.1.1. Logsheets

Logsheets handed in by longline fishing vessels continue to provide essential catch and effort data for Samoa's longline tuna fishery. Logsheets for each fishing trip are to be handed in by the vessel captain upon return date or within one week since arrival. Logsheets are verified by port sampling data and port visit logs covered by national port samplers. The regional TUFMAN database for tuna fisheries data is currently in use by Samoa and is a vital reporting system for catch/effort levels and other key information TUFMAN caters for (eg. Port sampling data, licensed vessels, unloadings data etc).

4.1.2. Port Sampling

A total of 36 vessels consisting of alias and larger vessels classified under Classes C, D and E engaged in long line operations in 2012. Fishing trips by the long line fleet is dominated by alias, with a total of 690 fishing trips throughout the year. Fishing trips by larger vessels is at 24% of total numbers of unloading. Port sampling coverage by fishing days consists of 18.2% from alias and 30.3 % from larger vessels.

Table 5: Estimated annual coverage of port sampling data for the Samoan tuna longline fleet 2012.

		PORT SAMPLING COVERAGE	LOGSHEET COVERAGE
Fishing trips/Unloadings	910	451 (49.6%)	100%
Fishing days	4638	2250 (48.5%)	100%

4.1.3. Market surveys

Market landing surveys provide catch estimates of fish landed from the troll fleet. It is conducted in a similar way to port sampling; however, only a few samples are measured and data is extrapolated accordingly to catch information (in numbers) given by fish seller (usually boat owner) at the time of the survey. Prices of fish sold at market are also recorded. This data is entered into a local database developed by Fisheries offshore staff, which generates monthly and yearly reports for catch estimates and estimated values of fish sold at market. It is a good source of data for the economic performance of the fishery.

Boat census is conducted on Apia Fisheries wharf on a weekly basis and entered into the same database to keep record of active troll vessels leaving and entering port. Samoa Fisheries is currently looking at strategies to strengthen tuna fisheries data collected from troll vessels.

4.1.4. Observer Programme

The observer programme in Samoa was established in 2005 with observer trainings conducted and funded by the Secretariat of the Pacific Community in collaboration with Forum Fisheries Agency (FFA). Assistance from these regional organizations enabled Samoa to hold national certified observers, to provide vital information on on-board handling of fish, bycatch, discards and verification of fish catch by national longliners. The programme is now currently funded by local government budget and implemented at 10% coverage of total unloadings by the domestic longline fishing fleet. Observers are only placed on large vessels categorized under classes C, D and E due to space convenience, which assures the safety of the crew and the observer placed on board. Alias are exceptions in this case due to space limitation.

Observer coverage in 2012 falls at 0.9% of 220 longline unloading by vessels classified under Classes C,D and E and is a minimal coverage due to lack of observers available. The fact that observers are fisheries staffs themselves, who are also committed to work obligations in office, poses more drawbacks for the national programme to fully achieve its 10% coverage. Fisheries Division is currently looking at ways to improve observer data coverage by looking at recruitment strategies.

SPC continues to assist Samoa with managing observer data submissions sent by national observers upon completion of every observer trip. Developing a locally-based database for entering and managing observer data is currently underway by Samoa Fisheries Division with the kind assistance of SPC.

Table 6. 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 2008-2012 to the extent available.

YEAR	NUMBER OF OBSERVED SHARK CAPTURES	OTHER SPECIES	TOTAL
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	Sandbar shark	Blue shark	Silky shark	Mako shark	Oceanic Whitetip	Bigeye Thresher shark	Unidentified	Dolphin	Green turtle	
2008	4	7	1	2						14
2009										0
2010		4			2		6			10
2011		5			2		1			8
2012								6	2	8

Observer data is useful in providing first-hand detailed information on by-catch and discards out at sea. As presented in Table 3, all species of sharks captured by observed fishing trips, within the given range of years were discarded alive. An observer trip conducted in 2012 recorded sighting of 6 dolphins interacting with the fishing gear at position 15°12.783'S 172°22.705'W. The same trip recorded two male green turtles (41 and 42 centimeters in length) landed on deck dead and were discarded. One green turtle was caught at position 12°01.664'S 173°43.399'W and the other at 11°34.649'S 173°43.376'W. Seven sharks were unidentified due to visual complications as they were cut off far from point of observation. There were no seabird interactions recorded.

5. ONSHORE FACILITIES

Samoa Government continues to prioritize assistance to ensure our domestic commercial fishery fleet continues to gain maximum yield through the long line fishery. The renewal of our fishery wharf and port in Apia continues to provide easy access by our fishermen onto the 2 existing processing facilities in Samoa, in addition to our fish market for domestic sales. The reduction of berthing fees further allows our fishermen with ample time to offload, refuel and reload for fishing operations.

In addition we are in the process on expanding of ice making facilities, with two new ice machines installations installed this year at the rural parts of Upolu Island to ensure our rural tuna fishermen and subsistence fishers can access ice for better fish quality maintenance.

Our FAD program for both offshore and inshore is also a priority for our Government guided by our Tuna Management and Development Plan (TMDP) 2011-2015 which has contributed largely to the increase of skipjack catches and also the reduction of fishing efforts through smaller distances to travel for fishing skipjacks.

It is earmark that our TMDP review will be in December of this year, and we continue to pursue other avenues to assist our fishermen in particular with onshore facility support.