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Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2014

Osvaldo Ernesto Chacate &
Rui Mutombene

Instituto Nacional de Investigação Pesqueira

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National report submitted to the Secretariat in 2014 final data for the 2013 calendar year must be provided to the Secretariat by 30 June 2014)	YES The data from semi-industrial linefishery, sport fishery, recreational fishery and artisanal fishery available are reflected in this report. Mozambique has no national purseseiner fleet so far, although a national fleet under the Tuna Fleet Development Plan – FDP is expected.
In accordance with IOTC Resolution 10/02, provisional **longline data** for the previous year was provided to the Secretariat by 30 June of the current year [e.g. for a National report submitted to the Secretariat in 2014, preliminary data for the 2013 calendar year was provided to the Secretariat by 30 June 2014). **REMINDER:** Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [e.g. for a National report submitted to the Secretariat in 2014, final data for the 2013 calendar year must be provided to the Secretariat by 30 December 2014).	YES Mozambique has submitted a Nil report for its one national longliner vessel, letter with reference 621/ADNAP/2014 on 27th June as the vessel didn't operate. There is no need to submit final report since it is a Nil reporting.
If no, please indicate the reason(s) and intended actions: to increase the level of compliance regarding the fisheries data and statistics, Mozambique started an internal reflection in regard to its institutional arrangement under the MoF to guaranty effective collection of fisheries data. A national task force group was created in 2013 with all institutions under the MoF with mandate to collect and report fisheries data and also fisheries surveillance involved. The task force group monitor the implementation of obligation of Mozambique with IOTC in order to guarantee that all compliance issues are being followed accordingly. This year we initiate a preparation of an internal document to assess the level of gaps (limitations) and needs for improvement on the national fisheries data collection system, according with IOTC standards for data collection and reporting. This document (still opened) was proposed to be discussed on WPDCS10 for improvements and once finalized actions will be taken immediately. Mozambique believes that this document will allow each intervenient on the process of data collection and reporting, to better understand what is needed and what shall be done with respect to fisheries data collection and report to IOTC.	

Executive Summary

The main tuna industrial fishery in Mozambique is operated by foreign distant water fishing fleets. Between 2005 and 2010, to this industry, the Ministry of Fisheries has issued annually, an average of 125 licenses (44 purse seiner and 81 long liners). From 2011 to date, the number of foreign vessels licensed to fish for Tuna in Mozambique EEZ from 12 nautical miles offshore has been decreasing. Purse seiner fishing occurs mainly between the parallels 10º 32' and 20º south while the long-liner fishing occurs between 20º and 26º 52' south with particular intensity below parallel 25º south.

The recent official information, reports an annual catch ranging from 1,000 tons to 17,500 tons, with annual average between 5,000 to 7,000 tons. However, recent statistics particularly deposited on IOTC indicate that the real catch from Mozambican waters is close to 20,000 tons per year. This scenario clearly indicates some mistakes in reporting the catches which was explained by the wrong line border limit leading to miss reporting of Mozambican catches until June 2012.

Apart from the more accurate and better structured information stated above, Mozambique has one industrial longliner which operated for two years 2011 and 2012, targeting tuna and tuna-like species. The artisanal, sport and recreational fisheries coming from very long time, along the coast with some impact in the tuna and tuna-like species. The semi-industrial linefishery exits prior to 1990 and impacts on Spanish mackerel. The average catch of the two years of operation of the industrial longliner vessel was 240 tons and the picture from the artisanal, semi-industrial linefishery, sport and recreational fisheries together, appoint to 1765 tons in 2013. The estimates from artisanal, sport and recreational fisheries can be considered incomplete taking into account that gathering of data on catch from these fisheries is actually a challenge for a country with a long coast of 2,780 Km, with insufficient funding of research activities and lack of well trained personnel at the provincial level where the fishery occurs.

All the issues related to compliance under IOTC resolutions are being considered by Mozambique, now with an increasingly more strong national structure to deal with IOTC issues, the national technical body composed by three mains actors in fisheries, National Fisheries Administration, Fisheries Research Institute and Law enforcement established in 2013.

Contents

1. BACKGROUND/GENERAL FISHERY INFORMATION

Mozambique is located in the south-eastern part of the African Continent, between latitudes 10°27' S to 26°52' S and longitudes 30°12'E and 40°51'E. The country has the third longest coastline in the Indian Ocean with a total of 2,780 km. Total continental shelf area is about 104,300 km^2 and the EEZ area is 999, 000Km^2. The coastal areas of Mozambique are divided into seven different provinces that can be separated into three macro-areas: (i) northern coast (about 770 km), with a rocky and coral-bearing sea bed and a narrow continental shelf, from the border with Tanzania in Cabo Delgado province to northern Nampula province. (ii) Central coast (about 980 km) facing the Sofala bank and including most of the Zambezia province. (iii) The southern coast, that is about 950 km long and it is characterised by coral and rocks in some areas and sand in others. It stretches from southern part of the Inhambane province to the Maputo province in the border with South Africa. The main and more productive fishing area for the national fishing fleets is the Sofala bank area. However, other areas as described above are used by the fishers.

The fishing sectors operating along the coastal area are namely the *artisanal fishing sector, the industrial* (shallow water shrimp and deep water lobsters trawlers, longliner and line fishing), and the semi-industrial sector. *The artisanal fishing sector,* with particular importance for the country´s food security, operates in the coastal provinces where two thirds of the population live and also in the inland areas where around 20% of the artisanal fisheries catch, comes from. The total catch of this sector from marine fisheries is around 133,000 tons/year, and represents around 90% of the country catch; the fishery usually operates from beaches, or near coastal waters (generally within 3 miles), with a wide range of gears, from beach-seines, to hand-lines, gillnets, purse seines and longlines deployed by a mixed fleet of vessels less than 10 m in length. Vessels usually conduct daily fishing trips using one type of gear, but in some cases multiple gears are employed simultaneously. Beach-seines are responsible for most of the catches, around 38% of the total catch; this sector catches are composed mostly of small pelagic fishes, small demersal species and smaller part of the catch include tuna and tuna like species. The data collection

systems run by the Ministry of Fisheries doesn´t gather all the information regarding all the species of IOTC interest. Thus, the information currently reported by this sector can be considered incomplete. *The industrial fishing sector* is distributed among shallow water shrimp trawlers with almost no impact on tuna and tuna-like species; *the deep water lobsters* trawlers also with almost no impact on tuna and tuna-like species; *the industrial line fishing* targeting primarily the bottom fish (large demersal species), having a potential impact on a tuna-like species, specially the narrow-barred Spanish mackerel. *The semi-industrial sector* is characterised by vessels with size between 10 to 20 m. The sector is sub-divided in shrimp trawling and line fishery. The related impacts are as described above to the corresponding Industrial sector.

The national fishing sectors that directly target on tuna and tuna-like species are the industrial longliner fleet, the sport and recreational fishery. The industrial longliner fleet is actually composed by one vessel but a fleet development plan has been elaborated with provisions to increase rapidly the size of national fleet in the coming years. The practice of recreational and sport fisheries is more active in the southern coast (21°S to 26°S) comprising the coast of Maputo province, Gaza province and Inhambane province. Despite these fisheries have been practiced in different modalities, ranging from shore (without boat) to offshore boat based, it was found tuna and tuna-like species mainly in the catches from offshore boat based operations (fibreglass ski boat; 3-9m length), using mainly hook and line operated with a fishing rod and manual reel.

2. FLEET STRUCTURE AND CATCH AND EFFORT (BY SPECIES AND GEAR)

In Mozambique tuna are mainly targeted by the foreign distant waters fishing vessels. National fleet which is oriented to catch tuna is composed by sport and recreational fishing, and commercially by one national longliner which did not operated in 2013-2014. However many other coastal fisheries in Mozambique have impacts on tuna, tuna-like-species and other IOTC species such as sharks.

The actual number of foreign fishing vessels licensed to fish in Mozambique fishing areas is low when compared to the past, see Table 1 bellow.

The reduction in the number of issued licenses is probably associated with the issue of piracy which caused insecurity along the northern part of the Mozambican channel in the last years.

Table 1. Number of fishing licenses for Mozambique fishing area issued to foreign vessels during the last seven years: 2007 to 2013 (Source: ADNAP annual reports).

	N° licenses	
Year	Purse-seiners	Longliners
2007	51	110
2008	47	75
2009	41	70
2010	34	37
2011	34	39
2012	23	35
2013	18	27

The Mozambique fishing zone is assessed by the foreign vessels primarily in a seasonal base, when the tuna resource is abundant in the Mozambique Channel. The annual catch of the main tuna species by the foreign vessels is presented below, Table 2.

Table 2. The annual catch in tons of the tuna primary species and the fishing effort for the Mozambican fishing area by the foreign vessels. (ADNAP annual reports)

Species	2007	2008	2009	2010	2011	2012	2013
Skipjack	641	2550	1942	2345	1162	249	21
Albacore	541	341	106	248	663	114	229
Bigeye	350	322	173	274	387	154	257
Yellowfin	3402	2647	824	1613	2280	890	2096
Swordfish	218	209	721	837	463	920	590
Tuna	428	471	538	603	465	99	448
Total catch (tons)	5581	6549	5221	6640	5925	2426	4149
Total effort (fishing days)			1353	2727	2412	1551	1734

The national fleet with impact on tuna and tuna-like species and other important IOTC bycatch species is constituted of a wide range of gears, including beach seines, hook and line, gillnets, artisanal purse seines

and longlines from artisanal, industrial, recreational and sport fishery (Table 3). The gears, vessels size and duration of fishing operation are as described in the table 3, presented below.

Table 3: Summary description of the vessel types and gears by fishery sector operating in the IOTC area of competence

Fishery Sector	Vessel	Crew	Main gear types	Comment on catch, operations and duration of the trip
Artisanal Fishermans were around 130,000 in 2012 and the number of fishing boats is 39,550 units. About 88% of the boats of artisanal fishing are canoes (IDPPE 2012).	N/A	N/A	Handline and beach seine	Artisanal fisheries are multi-gear and multispecies and occur along all the coastal provinces, targeting almost everything and are formally licensed. The main species are small pelagic and small demersal fish of the inshore coastal area and estuaries where the fishery occurs. No mean of catch conservation or iced catch (1 day trip maximum).
	Canoe < 3m (paddle) Boat, 3-8m (paddle/sail) Boat 5-10m (outboard)	1-6	Handline/trap, beach seine, gillnet, purse seines and longlines	
	Skiboat, 5-8m	3-6	Rod + line	
Recreational and sport fishing No accurate data is available; around 50 boats operate annually	N/A	N/A	Rod + line	In the domestic recreational fishing there is undocumented number of people fishing as leisure and to supplement domestic food. The sport fishing is more organised. The fishers belong to a club that normally sets standards for fisher ethics and organises tournaments. The recreational spear fishing involves individuals who dive without scuba equipment using spear guns to target selected species. The catch is composed by pelagic species only.
	Skiboat – sport, 5-8m	2-6	Rod + line	
	Skiboat –spear, 5-8m	2-6	Spear	
Semi-industrial An average of 21 operational vessels/month	10-20m	10-15	Rod + line/ handline	The species caught are mainly the large bottom fish. However, it impacts in pelagic such as the Spanish mackerel. Fishing operations takes place more offshore; activity formally licensed; Iced catch (7 to 12 days trip); Port-based activity.

Industrial An average of two operational vessel/month	vessels >20m	15-30	Rod + line /handline and Longlines	The fishing operations takes place more offshore**;** activity formally licensed. The handline fleet is oriented to large bottom fish and the longliners to the tuna and tuna-like species. Frozen catch; up to 30 days trip; Port-based activity.

The estimated total catch of tuna and tuna-like species by the national fleet in 2013 was 1765.4 tons. The catch information for the coastal artisanal fisheries comes from three of the seven coastal provinces and represents about 90% of the total catch of the fisheries with potential impact on IOTC species. The contributions of each province for the total catch of the artisanal sector are Zambézia (59%), Nampula (32%) and Inhambane (9%). In general, the species that contributed more to the total catch are namely, spanish mackerel (42%), frigate tuna (9.6%), kawakawa (7%) and aggregated sharks species (40%) (Table 4). The actual total catch of tuna and tuna like species represents only 31% of the total catch reported in year 2012 (5,706 tons). This reduction of catch can be explained by no operation of the Industrial longliner vessel, and also associated to difficulties of monitoring the recreation and sport fishing and lack of accurate catch data of IOTC species for the artisanal fisheries in some provinces (Sofala, Cabo-Delgado).

Table 4. Aggregated Annual Catch and Effort by gear and primary species in the IOTC area of competence for artisanal coastal fisheries, semi-industrial linefishery and recreational and sport fishery in 2013.

Species	**Artisanal fisheries** **(Inhambane, Nampula and Zambézia provinces)**	**Recreational fishery and Sport fishery** **(Maputo Province)**	**Semi-industrial Linefishery**	**Total**
Yellowfin	0	11.237	0	11.2
Skipjack	0	0.926	0	0.9
Bigeye	2.72	0.402	0	3.1
Albacore	0	0.023	0	0.0
Other Tuna	0	0	0	0.0
Black Marlin	9.90	1.158	0	11.1
Indo pacific Sailfish	0	0.408	0	0.4
Swordfish	0	0	0	0.0
Sharks	704	0	0	4.4
Spanish mackerel	579.15	13.87	150	743.0
Striped marlin	0	0	0	0.0
Bullet tuna	0		0	0.0
Frigate tuna	170.19	0.041	0	170.2
Kawakawa	120.63	0.405	0	121.0
Longtail tuna	0	0.341	0	0.3
King mackerel	0		0	0.0
Total fishing effort	Not available	Not available	4,100 days	
Total catch in tons	1587	28.8	150	1765.4
of the total catch	**89.9%**	**1.6%**	**8.5%**	**100%**

From the table, **not available** means that the information was not made available to the fisheries institution but the fishing activity as such, took place or it was not assessed.

The active fishing efforts for the artisanal fishing gears were not assessed. However, the general view is that fishing effort has been increasing from one year to another posing a challenge to the management of the fishing resources considering that most of them are heavily exploited. From the table 5, presented below, it

can be seen the fishing effort through the number of licenses issued for the different gears with impact on the tuna and tuna-like species in the recent years. In summary ADNAP refers that in 2013 was able to license 30% more gears than in 2012 (ADNAP, 2013).

Table 5. Summary of fishing licenses by gear issued for artisanal fishery, semi-industrial, Industrial, recreational and sport fishery in the last years. Source: ADNAP (2012 and 2013), for all fisheries except artisanal and IDPPE 2012, for artisanal fisheries.

Fishery sector	*Gear*	*Number of licenses 2011*	*Number of licenses 2012*	*Number of licenses 2013*	*Comments*
Artisanal fishery					
	Beach seine	-	9.042	*9916*	*Information based on census of artisanal fishing (IDPPE 2012). Data refers to coastal provinces only.* *This is a multispecies fishery with a considerable impact in tuna and tuna-like species*
	Handlines	-	*12.683*	*13853*	
	Gillnets	-	*14.817*	*20396*	
	longlines	-	*678*	*1077*	
	Purse seine	-		*563*	
Semi-industrial					
	Sofala bank Shallow water shrimp	*15*	*14*	*22*	*For Sofala Bank only. In this fishery significant amount of marine turtles area captured and released.*
	Linefishery	*23*	*41*	*37*	*In this fishery narrow-barred Spanish mackerel an IOTC mandatory species, is impacted*
Industrial					
	Sofala bank Shallow water shrimp;	*51*	*57*	*44*	*For Sofala Bank only. In this fishery significant amount of marine turtles area captured and released.*
	Linefishery	*2*	*2*	*3*	*In this fishery narrow-barred Spanish mackerel an IOTC mandatory species, is impacted*
	Pelagic longline tuna	*1*	*1*	*0*	*This fleet as tuna and tuna-like species as target.*
Recreational & sport					
	Coastal provinces Recreational and sport fishing	*2.728*	*2.741*	*3.552*	*Licenses include all modalities shore based, boat based, within and out of fishing tournaments. Tuna and tuna like species are captured in offshore boat based operations (within or out of tournaments)*

The trend of the catch of the tuna and tuna-like species by the artisanal coastal fishery show an increase from one year to another (Table 6). This increase may not reflect an increase in catch but perhaps sign of more statistics that can be recorded from time to time. However, from the fishing effort that was seen from the licenses (Table 5), it can be hypothesized that the impact on the species is not increasing that much.

Table 6. Aggregated Catch of tuna and tuna-like species for artisanal coastal fisheries from 2008 to 2013 in tons. The 2011 and 2013 information is incomplete.

Species	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Frigate tuna	595.15	331.66	2550.87	65.80	443.61	170.19
Kawakawa	322.22	428.52	125	3.29	566.97	120.63
Indo-pacific sailfish	67.2	0	0	0	0	0
Skipjack	935.7	36.2	42.88	0	0	0
Black marlin	826.69	6.22	0.17	0	0	9.90
Blue marlin	0	4.13	27.55	0	0	0
Spanish mackerel	1,549.5	1,640.1	1,676.2	690. 22	2,224	579.15
Striped marlin	0	0	11	0	0	0
Albacore	125	4.19	5.56	0	16	0
Yellowfin tuna	25	1.36	1.01	0	2.7	0
Bigeye	684	325	321	26.32	2,125.2	0
Longtail tuna	0	0	125	0	0	0
Swordfish	223	2,5	0	0	0	0
Total	5,353.48	2,780.0	4,886.2	785	5,378.5	880

The aggregated catch information above, is for the five coastal provinces, namely Maputo, Inhambane, Sofala, Nampula and Cabo Delgado where the tuna and tuna-like species are considerable impacted by the artisanal fisheries. However, for 2013 data are referred to three provinces only, Inhambane, Zambezia and Nampula.

The historical annual catch refers to two years of national fleet existence and the catch of it is as presented bellow in Kg (Figure 1).

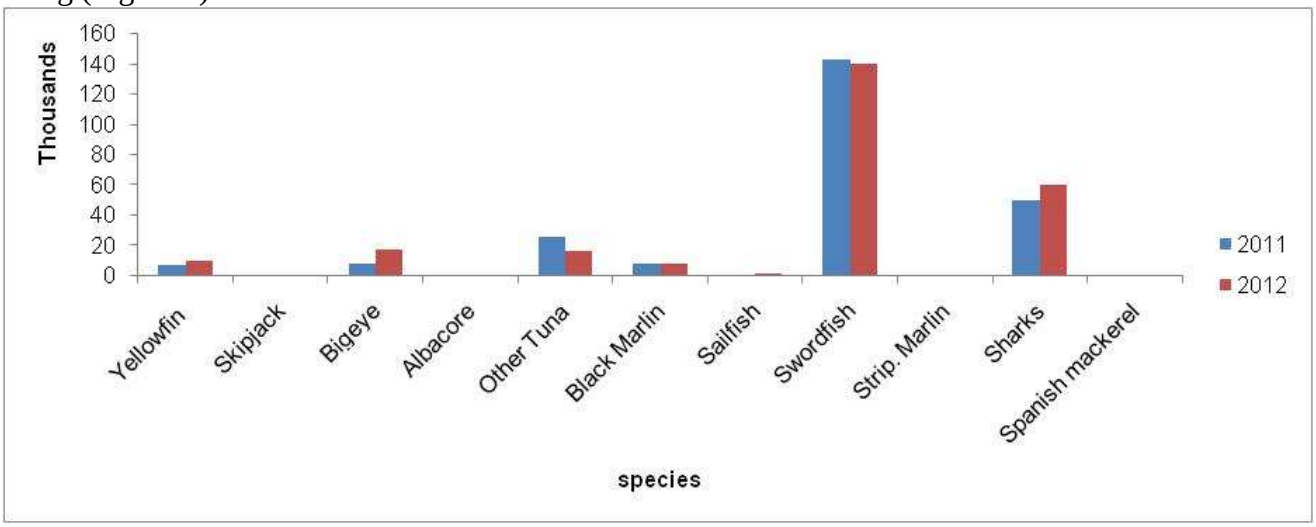

Figure 1. Historical annual catch for the national fleet, by gear and primary species, for the IOTC area of competence for the entire history of the fishery/fleet. No updates since the vessel didn´t operate in 2013.

The map of fishing effort is related to the industrial longliner fishing vessel is as presented bellow. The red dots refer to the positions where the fishing activity occurred.

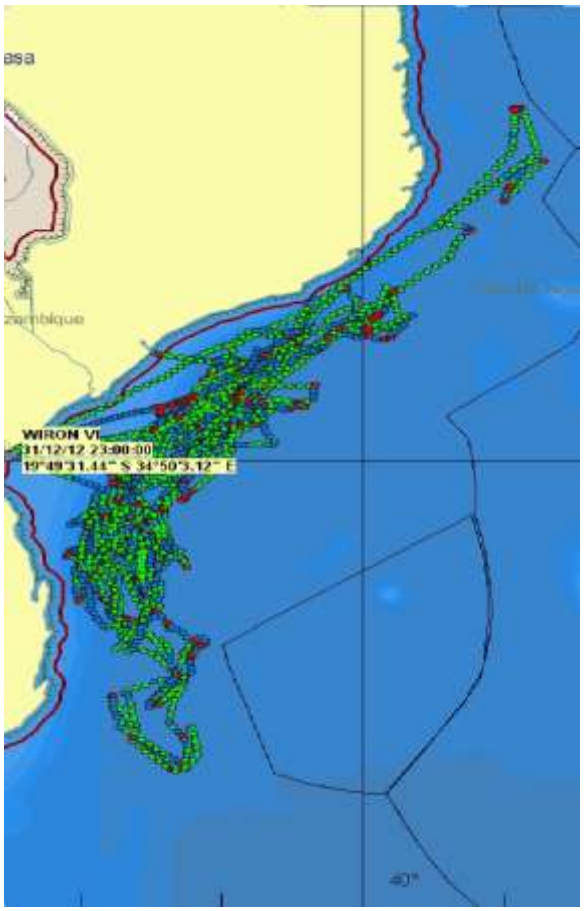

Figure 2a. Map of the distribution of fishing effort in 2012, for the long liner fishing in the IOTC area of competence. No update available because the vessel didn't operate in 2013.

Figure 2b. Map of the distribution of fishing effort, by gear type for the national fleet in the IOTC area of competence (average of the 5 previous years e.g. 2008–2012). **Not available.**
We are reporting for a fishery that begun in 2011 and by that time, a problem was noticed with the VMS that came to effective function in 2012.

Figure 3a. Map of distribution of fishing catch, by species for the national fleet, in the IOTC area of competence (most recent year e.g. 2012). **Not available**

Figure 3b. Map of distribution of fishing catch, by species for the national fleet, in the IOTC area of competence (average of the 5 previous years e.g. 2008–2012). **Not available**

The Ministry of Fisheries of Mozambique, recognizing the VMS as important tool for MCS contracted a VMS provider in 2001. Nevertheless, the system never worked properly due the lack of assistance to the installed equipment. Thus, the Ministry decided to look for a new provider. So in 2010 was developed the current system which became fully operational in 2011 covering national fisheries and also tuna fleet (national and foreign fleets). For national tuna fleet fisheries, the Ministry started using VMS system in 2012.
Additionally, the logbook previously (before, year 2012), used for this fisheries, did not collect information on coordinates, due to such limitations the Ministry has developed a new logbook which address most of the issues to allow the follow up of coverage of fishing effort.

3. RECREATIONAL FISHERY

The practice of recreational and sport fisheries is more active in the southern coast (21°S to 26°S) comprising the coast of Maputo province, Gaza province and Inhambane province. In the Northern site of the country the activity are pronounced in Cabo Delgado province.

Despite the fact that these fisheries are practiced in different modalities, ranging from shore (without boat) to offshore boat based, it was found that tuna and tuna-like species mainly in the catches from offshore boat based operations (fibreglass ski boat; 3-9m length). The main gear used to target tuna and tuna-like species is hook and line operated with a fishing rod and manual reel. In 2013, a total of 3,552 recreational licenses (includes all modalities of recreational and sport) were issued to all coastal provinces which potentially

include fishers that operate offshore targeting on tuna and billfish species, Table 7. This picture represents an increase of around 20% comparing with the previous year of 2012.

Table 7. Number of recreational licenses (recreational and sport fishing) issued for coastal provinces by ADNAP from 2011 to 2013.

Year/Province	C. Delgado	Zambezia	Nampula	Sofala	Inhambane	Gaza	Maputo	Total
2011	189	14	20	55	875	523	1241	2728
2012	161	6	0	62	702	390	1581	2741
2013	306	10	24	46	922	542	1702	3552

In 2013, the monitoring program covered only fishing competitions that took place in Maputo province. The catches were dominated by Spanish mackerel, some tuna species like skipjack, albacore and yellowfin tuna, and also the billfish black marlin, Table 8.

Table 8. Total catch of tuna and tuna-like species on recreational and sport fishing of Maputo province in 2013.

Species	Nº ind	Weight (kg)	% Weight
Albacore	6	0.0225	0.1
Yellowfin tuna	2292	11.2365	39
Bigeye tuna	78	0.4023	1.4
Skipjack tuna	180	0.9258	3.2
Longtail tuna	90	0.4005	1.2
Frigate tuna	6	0.0408	0.1
Kawakawa	93	0.4047	1.4
Spanish mackerel	2319	13.8696	48.1
Black marlin	9	1.158	4
Indo-pacific sailfish	12	0.408	1.4
TOTAL	5085	28.809	100

For the recreational fishing, voluntary submission of catch cards by recreational anglers (mainly on boats) occurred from 1996-1999 at Ponta d'Ouro and Ponta Malongane in the south coast, and commenced again in 2008 (with inclusion of Maputo and Inhambane provinces). The cards are inconsistently completed by anglers, who use various common names of fish, and zero catches are not reported. Thus, the information for this fishery can just be considered available for Ponta d'Ouro and Malongane with consistent reporting in the last three years. In these specific places that are within a conservation area, the Marine Park officers were trained by IIP (Fisheries Research Institute) and a partnership was established to help in the collection of these cards. For the other areas the information of this fishery is unavailable.

4. ECOSYSTEM AND BY CATCH ISSUES

No specific action plan was set and implemented yet. In future issues to take into consideration at the national level in this regard are going to be identified and prioritised. The new Law on Fisheries is already in force (Law No 22/2013 of November 01) in Mozambique and with a view of bringing the aspects that are in the Law there is an ongoing process of revising the fishing regulation. Thus, a paragraph that will define the obligation of vessels to comply with all IOTC resolution in regard to sharks, seabirds and sea turtles is going to be included in the revised regulation.

Moreover, Mozambique has developed in this year, the Terms and Conditions of Licensing for tuna fishing to be attached to fishing license. These contain all the measures for the conservation and management of tuna fisheries and include the aspects related to conservation of sharks, seabirds and sea turtles.

4.1 Sharks

The lack of specific national strategies is still a challenge. However, in regard to the NPOA Shark specifically, drafting is expected to commence is 2015 financed under SWIOFish project within the framework of the implementation of the Linefish Management Plan.

Moreover, the country is supporting the listing of new species as protected following the adequate assessment thought the CITES Commission at the national level.
The total annual catches for shark species is presented bellow on table 9. The information is relative the two main coastal provinces, were IOTC species of interest are more impacted by this fishing segment.

Table 9. Total catch (in tons) of shark species in artisanal fisheries of Zambézia and Nampula provinces in 2013.

Shark species name	Zambézia	Nampula	Total
Sphyrna lewini	95.87	0.07	95.94
Sphyrna zygaena	211.65	0	211.65
Carcharhinus falciformis	0	1.83	1.83
Carcharhinus leucas	200.53	1.03	201.56
Carcharhinus sealei	69.03	0	69.03
Carcharhinus sorrah	24.9	0	24.9
Carcharhinus limbatus	3.79	0	3.79
Loxodon macrorhinus	0	26.33	26.33
Rhizoprionodon acutus	26.19	27.92	54.11
Hemipristis elongatus	0	14.54	14.54
Total sharks catches	631.96	71.72	703.68

Recreational and sport fishery as well the semi-industrial linefishery has practically null impacts on shark species.

4.2 Seabirds

No NPOA is available yet in this regard. However, to help in monitoring, Mozambique is regularly briefing the master of their fishing vessel on the mandatory requirement to report any seabird interaction with longliner fleet; has developed a new logbook which requires the skipper to fill in the information on interactions whenever it occur and the observers when on-board, are required to report these interactions. It is useful to mention that the Mozambican vessel is not fishing the area of critical occurrence of sea birds and of conservation concern, following the assessment done during the 2012. Recently, it was agreed at the national level to introduce in the national legislation all the requirements regarding sea birds conservation measures in the terms and conditions for licensing.

4.3 Marine Turtles

No specific strategy for marine turtles is available. However, Mozambique has developed and introduced since 2012 a new logbook for tuna longliner to improve data collection, including information on interactions with sea turtles.

Sea turtles interaction with fisheries in Mozambique have been reported in the Sofala Bank trawlers since the onset of the fishery and the first attempt to quantify the level of incidental catch and mortality in this fishery was done by Gove et al., (2001). An interviews to "ice vessel" skippers based study concluded that sea turtle capture and mortality by the shrimp industry is a problem since every fishing season between 1,932 and 5,436 sea turtles were caught by this fleet and recommended that TEDs should be mandatory in the fishery. The re-design of the current maritime fisheries regulation, which was enacted in 2003 (Decree 43/2003) used those findings and the perception of at least part of the wider Sofala Bank operators and conservation organizations to make the use of TEDs mandatory by 2004.

A second interview based assessment was conducted by Brito (2012) Reporting that at least 1,735±1,235 sea turtles are caught each fishing season. Over 54.8% of the incidents occur within a few miles of the small islands forming the Primeiras and Segundas archipelago in the northern one fifth section of the Sofala Bank shrimp fishery.

Although there are known interaction between the artisanal fisheries and sea turtles, no actual studies are available to cite on the magnitude of these interaction along the coastal area.

4.4 Other ecologically related species (e.g. marine mammals, whale sharks)

No relevant information available now.

Table 9. Observed annual catches of species of special interest by species (seabirds, marine turtles and marine mammals) by gear for the national fleet, in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2007–2011 or to the extent available).

No data available

5. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

In Mozambique the collection of fisheries data and statistics is under mandate of Ministry of Fisheries (MoF). The fisheries data collected includes catch and effort, environmental data and socio-economic data. Each category of data is collected under the responsibility of one or more of the four institutions of the MoF; the National Fisheries Administration (ADNAP), the National Fisheries Research Institute (IIP), the National Institute for the Development of Small Scale Fisheries (IDPPE) and the National Directorate of Fisheries Economy and Policy (DNEPP) (Table 10).

Table 10. Fisheries data collection in Mozambique. Institutions involved and categories of data collected.

Category of data	Artisanal fleet	S-industrial fleet	Industrial fleet
Annual catches	IIP	ADNAP/ IIP	ADNAP/IIP`
Fishing craft statistics	IDPPE	ADNAP	ADNAP
Catch-and-effort data	IIP, IDPPE	ADNAP	ADNAP
Length frequency data	IIP	IIP	IIP
Observer trip report	IIP	IIP	IIP

Socio-economic data	IDPPE, DNEPP	DNEPP	DNEPP

Despite a functional data collection system exists on National scale, it proved to be not very efficient to fulfil with the IOTC standards for data collection and reporting. To increase the level of compliance regarding the fisheries data and statistics, Mozambique started an internal reflection in regard to its institutional arrangement under the MoF to guaranty effective collection of fisheries data. This reflection will lead to assess the level of gaps (limitations) and needs for improvement on the national fisheries data collection system, according with IOTC standards for data collection and reporting. The document which contains such analysis will next year be the basis for this section of the National Scientific Report.

All the fisheries except the subsistence fisheries (invertebrate collectors), are subjected to scientific monitoring program implemented by the Fishery Research Institute (IIP). The on-board observer program is conducted in semi-industrial and industrial commercial fisheries while the catch and effort from the artisanal fisheries are monitored by a National Stratified Random Sampling System locally known as SNAPA (sistema nacional de amostragem da pesca artesanal), and recreational and sport fisheries are covered by on landing site sampling. Logbooks and other monitoring tools are also used as part of monitoring system (see table 10 below). Logbooks are monitored by ADNAP which also issue the fishing licences. However, the information from the logbooks is shared with IIP when required. The IIP also conduct specific studies as a tool to fill the gaps of both monitored and not monitored fisheries.

5.1. **Logsheet data collection and verification** (including date commenced and status of implementation)

New Logbook data collection has been developed in 2011/2 to improve quality of data collection. The new logbook was developed according to the IOTC requirements for longliner fleet and was introduced this year for all national fisheries including tuna. The data verification process is carried out by Fisheries Administration of Mozambique (ADNAP), since 2001. The logbooks filled by EU vessels has been received through the EU commission in Mozambique, however this has not always been the case for some vessels. The EU fleet is also reporting catches through ERS system under FPA. The other foreign fleets outside of the FPAs send catch reports directly to ADNAP through entry exit reports. For the Mozambican flagged vessel the information is also collected by logbooks and it is expected that this system will gradually improve with the current investments in monitoring control and surveillance and Mozambique's integration with the regional RFMO's and bilateral cooperation. The new logbooks are provided to the captain of the vessel prior to the fishing activity. The new logbooks in use since 2013, allow collecting a wide range of

information such as fishing positions (coordinates), catch per set, by species and interaction with protected species. The logbooks are returned back to ADNAP by the end of each fishing trip and after the verification of the information ADNAP send a copy to IIP.

The actual system involves the use of new logsheet designed according to the IOTC requirements in terms of information, formats. The information is delivered to ADNAP by the end of each fishing trip that last some 30 days on average.

Associated to this, there is a national observer scheme that allows the collection of the scientific data as required.

5.2. Vessel Monitoring System (including date commenced and status of implementation)

Vessel Monitoring System was developed in 2001 with Bluefinger as provider. This system was not working properly and was not satisfactory for the Ministry. Due to technical problems, the Ministry decided to finish the contract with Bluefinger and started to negotiate with CLS, the current provider of VMS. This new system commenced in 2011 using META software and is currently operational. The system was installed in Maputo at National Fisheries Administration – ADNAP with FMC and allows monitoring of all foreign industrial, semi-industrial national vessels through the communication protocol established.

In 2012 VMS was upgraded from META software to THEMIS software with the aim of having a multifunctional system.

The THEMIS software was proved to be better because it allows the vessels monitoring and produce reports containing the required information on vessel location (position), velocity, date, time and direction. It also allows exchange of information with other FMCs, and will allow integrating ERS in VMS, and receive information from Orbcomm and AIS Satellite providers.

Linked to the above action, training of personnel in the use of the tools of the THEMIS software was carried out.

The implementation of the VMS has been providing positive results such as detention of illegal fishing vessels, location of the vessels for conflicts resolution propose, control of the entrance and exit of authorized foreign fishing vessels in the Mozambican EEZ.

The current challenges to the implementation of the VMS are related to increasing the capacity building in VMS and also to expand it to small scale national fleet to allow an effective operational VMS Centre. The other challenge is to incorporate catch report and ERS in VMS to allow cross check and better analysis.

5.3. Observer programme and Port sampling programme (including date commenced and status; number of observer, include percentage coverage by gear type).

Scientific Observer programme has only been carried out in the national fleet targeting shallow water shrimps, deep-water shrimps and on those for demersal fish since the 1980s. It was implemented on a national flagged tuna longliner during the time of its operation and as mentioned this vessel didn't operate in 2013, until to date. . Other fisheries which are not tuna oriented but with impacts on IOTC species of interest are also monitored by the scientific observer program conducted by the Fishery Research Institute (IIP) (Table 11). The on-board observer program is conducted in semi-industrial Linefishery. The artisanal fisheries are monitored by a National Stratified Random Sampling System locally known as SNAPA (sistema nacional de amostragem da pesca artesanal), where sampling is taken on landing site (fishing centers) by IIP enumerators along the coast. Sport fisheries are covered by on landing site sampling during the disembarkation on the local of the fishing completion. Once informed about the intention of organizing a fishing competition IIP local technicians are mobilized to cover the sampling of the dezerbaked fish. The recreational fishing is the less monitored fishery. IIP distribute fishing catch cards to many lodges and hotels were recreational fishing is a current activity but the level of fill and return of these card is very low. The cards were supposed to be filled per outing but the operators normally says that tourist fishers do not accept or they forget to fill the cards.

Mozambique's commitment with IOTC initiatives in this field and will improve the ability of the country to carry out scientific monitoring of tuna. The Fishery Research Institute has eight scientific observers who have been trained under the SWIOFP and have the respective registration and certification. Most of these observers are above 45 years of age what poses a challenge to IIP in training new people who will answer to future challenges.

Table 11. The coverage of Mozambican fisheries with potential impacts on IOTC mandatory species by the scientific observer program under the Ministry of Fisheries (IIIP/ADNAP)

Fishery Sector and fisheries	**On-board Sampling (%)**	**Port Sampling (%)**	**On landing site Sampling (%)**	**Logbooks (%)**
1. Artisanal	No	No	Yes	No
1.1. Beach seine	0%	0%	>50%	0%
1.2. Handlines	0%	0%	>50%	0%
1.3. Gillnets	0%	0%	>50%	0%
1.4. purse seines	0%	0%	>50%	0%
1.5. longlines	0%	0%	>50%	0%
1.6. other gears	0%	0%	<50%	0%
2. Semi-industrial	Yes	Yes	NA	Yes

2.1 Linefishery	3%	10%	NA	80%
3. Industrial	Yes	No	NA	Yes
3.2. Linefishery	3%	0%	NA	100%
3.3. Pelagic longline	60%	0%	NA	100%
4. Recreational & sport	No	NA	Yes	Yes
4.1. Recreational fishing	0%	NA	2%	2%
4.2. Sport fishing	0%	NA	0%	30%

5.4. Length data

Table 11 shows the length data collected in the fisheries which potentially impact on IOTC species

Table 11. Number of individuals measured, by species and by fishery in 2013

Fisheries	Species	Number sampled	Observation
Artisanal coastal fisheries	No IOTC mandatory species measured	0	The sampling system of artisanal fisheries was designed to collect data of the main species (coastal) that support the fishery (mainly small pelagic and demersal species). Although catch data are recorded for all species including IOTC mandatory species, size measurements for IOTC species is not taken by artisanal sampling system. Recognizing that this is a sector with a potential impact on many of the IOTC species, IIP is currently studying alternative approaches to collect such type of data
Semi-industrial Linefishery	Narrow-barred Spanish mackerel	234	Only the Narrow-barred Spanish mackerel is captured in this fishery. This species has a great contribution on total production of linefishery and biological data such lengths are collect by mean of observer on board. Other IOTC species (tunas, billfish, pelagic sharks, marine turtles, birds and mammal) are not impacted by the fishery.
Sport fishery (Linefishery)	Black Marlin	3	Data refer to on landing site sampling in or out of some fishing tournaments in the southern part of Mozambique (Maputo province in 2013). Collection of recreational fishing data is very difficult as the cards distributed by IIP to the many lodges along the coast are not filled by the amateur fishers. IIP is currently studying alternative approaches to collect such type of data
	Yellowfin tuna	764	
	Skipjack	60	
	Albacore	2	
	Bigeye tuna	26	
	Frigate tuna	2	
	kawakawa	31	
	Indo-pacific Sailfish	4	
	Spanish mackerel	774	

	Longtail tuna	30	
All fleets	Sharks	0	Sharks size is not measured. Observers are being trained on shark issues. Logbooks and other sheets used to collect data were modified to accommodate sharks size data.

5.5. Unloading/Transhipment [including date commenced and status of implementation]
No transhipment

5. NATIONAL RESEARCH PROGRAMS

The Fisheries Research Institute (IIP), under the Ministry of Fisheries, has the responsibility of undertaking research in fisheries related issues as well as the aquatic environment and aquaculture. The IIP does not possess a research vessel what is a challenge to carry out its mission. However, several research on demersal fish, small and large coastal pelagic fish, squids and octopus, bivalves, shallow water shrimp and oceanographic research are ongoing with collaboration of fishing industry and countries such as Norway, and others which provide the necessary support in vessels or funding. Recently, the tuna fishery development plan was completed and approved by the cabinet.

Table 12. Summary table of national research programs, including dates.

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description
Implementation of the recently approved linefish management plan	2014-2018			Mozambique Government	Guarantee the sustainability of fishery by using an ecosystem approach	A plan to develop a NPOA sharks is under this management plan
Demersal fishery potential	2012-2015			IFAD	Assess the fishing potential accessible to small scale fishers	
Small and large coastal pelagic fish	2012-2015			IFAD	Assess the fishing	

fishery potential					potential accessible to small scale fishers	
Octopus fishery potential	2012-2015			IFAD	Assess the fishing potential accessible to small scale fishers	
Implementation of FADs for the small scale coastal fishers	2012-2015			IFAD	Improve the use of FADs as an option to increase the income of the smaller fishers	

6. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

Table 13 Respond with progress made to recommendations of the SC and specific Resolutions relevant to the work of the Scientific Committee [to be updated annually to include most recent Conservation and Management Measures adopted by the Commission].

Res. No.	Resolution	Scientific requirement	CPC progress
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	The Mozambican longliner fishing for tuna in the Indian Ocean reported aggregated shark catches in 2012 and this information was reported to the IOTC. However the information was not reported at the species level as required and with the implementation of the new logbook started in 2013 it will done in future. Mozambique does not license vessels to target pelagic sharks. The implementation of the observer scheme is going to address other issues related to this resolution compliance.
10/02	Mandatory statistical requirements for IOTC members and cooperating non contracting parties	Paragraphs 1–7	Mozambique submitted the mandatory statistics for the one longliner operating in Mozambique EEZ and sport fisheries information.
10/06	On reducing the incidental bycatch of seabirds in longline fisheries. **Reminder**: Resolution 12/06 will supersede Resolution 10/06 on 1 July 2014	Paragraphs 3–7	Mozambique reported to IOTC that there have been no interactions with sea birds reported by the one national tuna fishing vessel, in 2012. Mozambique is regularly briefing the master of the vessel on the mandatory requirement to report all interactions and the new logbook recently implemented have fields to fill in the information on interactions with seabirds. Mozambique is going to update the licensing

Res. No.	Resolution	Scientific requirement	CPC progress
			condition considering the use of mitigation measures to reduce the sea birds mortality. The provision of use of mitigation measures to reduce mortality of sea birds is going to be introduced in the new fisheries regulation being drafted.
11/04	On a regional observer scheme	Paragraph 9	Mozambique reported the information on the number of vessels monitored (one vessel) and the coverage achieved. The artisanal fishery information covers more than 50% of the area.
13/03	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–11	This Resolution entered in force on 14th September although, due to India objection this Resolution will just come in to force in November 14, unless more than 1/3 of CPCs also object within 60 days from 14 November. If this comes to force, Mozambique is already prepared to address as the new logboook is addressing the required information.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Mozambique reported that there have been no interactions with marine turtles reported in 2012. Mozambique introduced in 2012 a new logbook for tuna longliner to improve data collection, including information on interactions with sea turtles which. The information was based in the fleet. However, with the implementation of the observer scheme more information will became available Although, the information is not reported yet, the interaction with artisanal beach seine and gill net is known in specific areas area and mitigation measures are implemented such as sensibilization to the fishers.
12/09	On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Mozambique is going to update the licensing condition considering the ban of thresher Sharks catch. Provision of the ban on thresher Sharks is going to be introduced in the new fisheries regulation being drafted.

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