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Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2013

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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 2013 final data for the 2012 calendar year must be provided to the Secretariat by 30 June 2013)	YES Mozambique has submitted the data on sport and recreational fishery, letter with reference 538/ADNAP/2013 sent on 28th June to IOTC Secretariat. The data from artisanal fishery are reflected in this report. Mozambique has no national purse seine fleet so far, although there is intent to develop a national fleet under the tuna Fleet Development Plan - FDP.
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 2013, preliminary data for the 2012 calendar year was provided to the Secretariat by 30 June 2013). **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 2013, final data for the 2012 calendar year must be provided to the Secretariat by 30 December 2013).	YES Mozambique has submitted the data on its one national longline vessel on 28/06/2013. There is no need to submit final data as the above refers to final one.
If no, please indicate the reason(s) and intended actions: for the artisanal fishery the information was not made available on time because of misunderstandings regarding the submission of the artisanal fisheries data. To help Mozambique to be clear which data has to submit and in which format and other details, an IOTC experts came to Mozambique (Compliance Support Mission: 22 - 26 July 2013), to train local senior staff (managers) on data reporting issues and implementation of resolutions. It was agreed that Mozambique will prepare and submit the data from artisanal fisheries in the Scientific National Report.	

Executive Summary

The main tuna industrial fishery in Mozambique is operated by foreign distant water fishing fleets. In the last five years, to this industry, the Ministry of Fisheries has issued annually, an average of 125 licenses (44 purse seiner and 81 long liners). The fishing operations occur in the Mozambique EEZ from 12 nautical miles offshore from January to December. 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 its tuna national fleet composed of one industrial long liner operating since 2011, the artisanal, sport and recreational fisheries coming from very long time, along the coast with some considerable impact in the tuna and tuna-like species. The catches of the industrial national fleet is around 240 tons per year and the picture from the artisanal, sport and recreational fisheries together, appoint to 4,014 tons by year. The estimates from artisanal, sport and recreational fisheries can be considered incomplete taking into account that gathering all the 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 a strong national structure to deal with IOTC issues (established a technical body composed by three mains actors in fisheries issues (Fisheries administration, Fisheries Research scientific and Law enforcement)), which will allow in the near future a better contribution to all the processes.

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 7 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 boarder 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 caratcherised by coral and rocks in some areas and sand in others. It streaches from southern part of the Inhambane province to the Maputo province in the boarder 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 100,000 tons/year, and represents around 80% 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 lenght. 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 catchs 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 system 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 pactice 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

The national fleet with impact on tuna and tuna-like 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 1). The gears, vessels size and duration of fishing operation are as described in the table 1, presented bellow.

Table 1: 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 127, 584 in 2007 and the number of fishing boats increased around 35% from 2002 and 2007.	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.s
	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.

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

The estimated total catch of tuna and tuna-like species by the national fleet in 2012 was 5,706.44 tons. The catch information for the coastal artisanal fisheries comes from five of the seven coastal provinces. The largest catch is from Nampula province, representing 92% of the total. The species that contributed more to the total catch are namely, the swordfish, bigeye, Spanish mackerel, sharks and other tunas (Table 2).

Table 2a. Aggregated Annual Catch and effort by gear and primary species in the IOTC area of competence for the national longliner fleet, artisanal coastal fisheries, recreational and sport fishery in 2012.

Species	**(Industrial longliner fleet)**	**Artisanal fishery**	**Recreational fishery**	**Sport fishery**	**Linefishery**	**Total**
Yellowfin	6.12	0	Not available	0. 806	0	6.93
Skipjack	0.026	0	Not available	0.181	0	0.21
Bigeye	7.706	2,125.2	Not available	0.105	0	2,133.01
Albacore	0	0	Not available	0.158	0	0.16
Other Tuna	24.91	0	Not available	0.013	0	24.92
Black Marlin	7.85	0	Not available	1	0	8.85
Sailfish	0.47	0	Not available	0	0	0.47
Swordfish	142.12	0	Not available	0	0	142.12
Strip. Marlin	0	0	Not available	0	0	0
Sharks	49.77	4.42	Not available	0	0	54.19

Spanish mackerel	(-)	2,224	Not available	2	99	2,325
Stripped marlin	(-)	0	Not available	0	0	0
Bullet tuna	(-)	0	Not available	0	0	0
Frigate tuna	(-)	443.61	Not available	0	0	443.61
Kawakawa	(-)	566.97	Not available	0	0	566.97
Longtail tuna	(-)	0	Not available	0	0	0
King mackerel	(-)	0	Not available	0	0	0
Total fishing effort	196 days	Not available	Not available	698 boats	3,082 days	
Total catch in tons	238.98	5,364.2	Not available	4.26	99	5,706.44
of the total catch	**4.2%**	**94%**		**0.07**	**1.7%**	**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. And, (-) means that format in which the information was reported did not allow to access the respective species for this fishery.

Just to stress that, there is just one Industrial long liner fishing vessel for tuna fishery, operating since 2011. This vessel operated along all the year in 2012 and the operation were confined to the area between 13º40'49'' and 25º18'10''. The fishing pattern remains the same since the beginning of the fishing operations in 2011. Thus, the data cannot be aggregated and, it cannot be published as per the rules of confidentiality.

A total of 196 fishing days was recorded for the industrial sector and a total of 3,082 fishing day for semi-industrial fishing sector and 698 boats for sport fishery.

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 3, presented bellow, 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.

Table 3. Summary of fishing licenses by gear issued for artisanal fishery, semi-industrial, Industrial, recreational and sport fishery in the last years. Source: ADNAP (2012), for all fisheries except artisanal and IDPPE 2012, for artisanal fisheries.

Fishery sector	*Gear*	*Number of licenses 2011*	*Number of licenses 2012*	*Average # license/year*	*Comments*
	Beach seine	-	9.042		*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*		
	Gillnets	-	*14.817*		
	longlines	-	*678*		
	Purse seine	-			
Semi-industrial					
	Sofala bank Shallow water shrimp	*15*	*14*		*For Sofala Bank only. In this fishery significant amount of marine turtles area captured and released.*
	Linefishery	*23*	*41*		*In this fishery narrow-barred Spanish mackerel an IOTC mandatory species, is impacted*
Industrial					
	Sofala bank Shallow water shrimp;	*51*	*57*		*For Sofala Bank only. In this fishery significant amount of marine turtles area captured and released.*
	Linefishery	*2*	*2*		*In this fishery narrow-barred Spanish mackerel an IOTC mandatory species, is*

					impacted
	Pelagic longline tuna	*1*	*1*		*This fleet as tuna and tuna-like species as target.*
Recreational & sport					
	Coastal provinces Recreational and sport fishing	*2.728*	*2.741*		*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 4). 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 3), it can be hypothesized that the impact on the species is not increasing that much.

Table 4. Aggregated Catch of tuna and tuna-like species for artisanal coastal fisheries from 2008 to 2012 in tons. The 2011 information is incomplete

Species	**2008**	**2009**	**2010**	**2011**	**2012**
Frigate tuna	595.15	331.66	2550.87	65.80	443.61
Kawakawa	322.22	428.52	125	3.29	566.97
Sailfish	67.2	0	0	0	0
Skipjack	935.7	36.2	42.88	0	0
Black marlin	826.69	6.22	0.17	0	0
Blue marlin	0	4.13	27.55	0	0
Spanish mackerel	1,549.5	1,640.1	1,676.2	690. 22	2,224
Tetrapturus audax	0	0	11	0	0
Albacore	125	4.19	5.56	0	16
Thunnus albacares	25	1.36	1.01	0	2.7
Bigeye	684	325	321	26.32	2,125.2
Thunnus tonggol	0	0	125	0	0
Xiphias gladius	223	2,5	0	0	0
Total	5,353.48	2,780.0	4,886.2	785	5,378.5

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.

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).

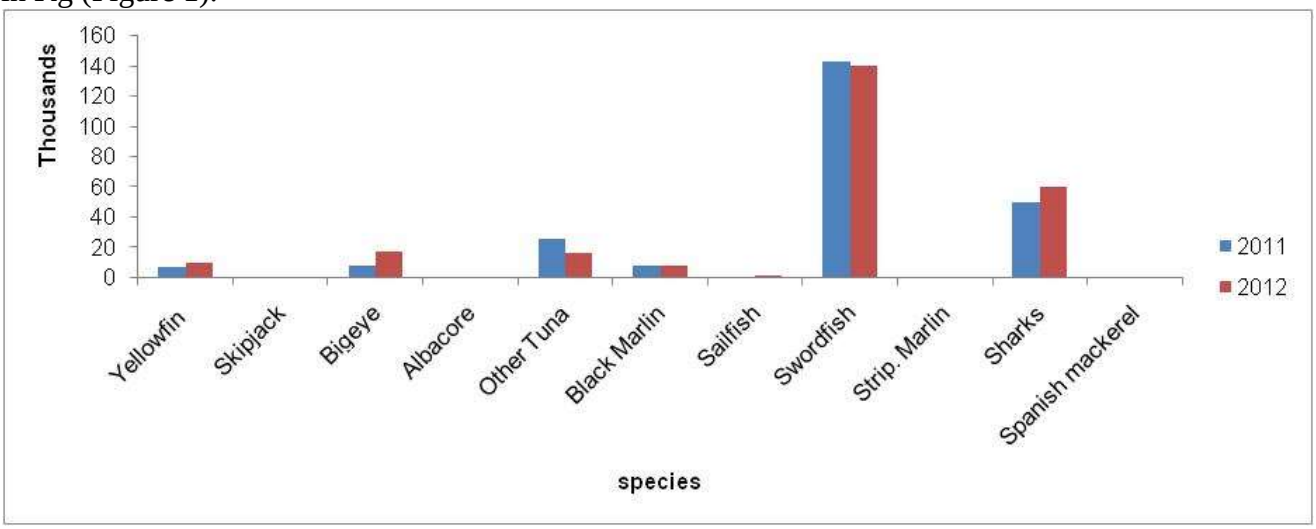

Figure 1. Historical annual catch for the national fleet, by gear and primary species, for the IOTC area of competence for the entire history of the fishery/fleet.

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

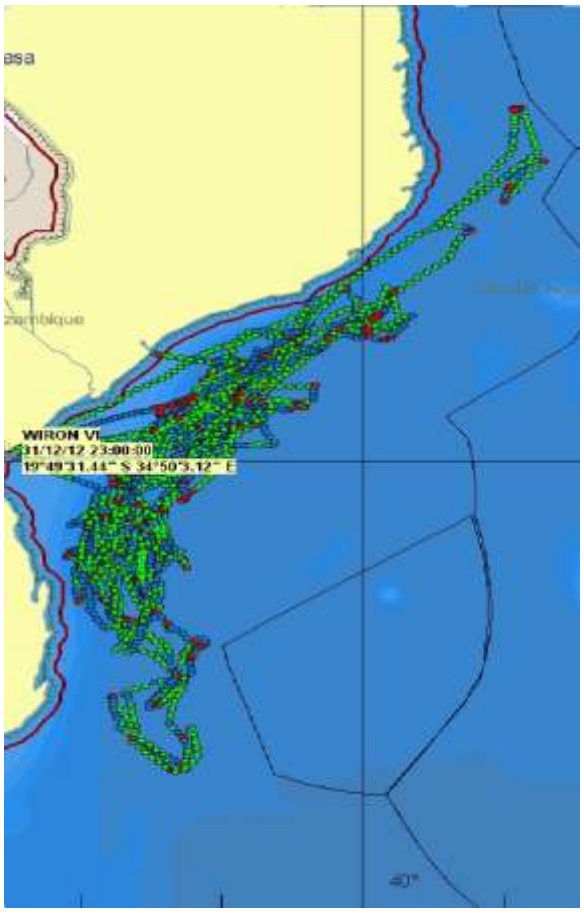

Figure 2a. Map of the distribution of fishing effort in 2012, for the long liner fishing in the IOTC area of competence.

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.

4. RECREATIONAL FISHERY

The pactice 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 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 2012, a total of 2,741 recreational licenses (includes all modalities of recreational and sport) were issued to all costal provinces which potentially include fishers that operate offshore targeting on tuna and billfish species, Table 5.

Table 5. Number of recreational licenses (recreational and sport fishing) issued for coastal provinces by ADNAP in 2012.

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

In 2012, 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 6.

Table 6 Total catch and effort of tuna and tuna-like species during fishing tournaments of Maputo province in 2012.

Species	Weight (kg)	Nº ind	% weight	Effort (boat.day)
Makaira indica	1,060.8	6	11.8	698
Thunnus albacares	806.4	108	9.0	698
Acanthocybium solandri	483.2	42	5.4	698
Scomberomorus commerson	2,090	236	23.3	698
Coryphaena equiselis	104.2	12	1.2	698
Katsuwonus pelamis	1,805.8	290	20.1	698
Coryphaena hippurus	963.6	64	10.8	698
Caranx ignobilis	112.4	8	1.3	698
Thunnus alalunga	158.2	22	1.8	698
Rachycentron canadum	21	4	0.2	698
Aprion virescens	5.6	2	0.1	698
Sphyraena jello	18.2	2	0.2	698
Caranx sexfasciatus	28.6	2	0.3	698
Euthynnus affinis	12.4	2	0.1	698
Thunnus obesus	1,049	60	11.7	698
Elagatis bipinnulata	9	2	0.1	698
Gymnosarda unicolor	135.2	8	1.5	698
Sphyraena genie	99.2	10	1.1	698
TOTAL	8,962.8	880	100	698

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.

5. ECOSYSTEM AND BYCATCH ISSUES

No specific action plan was set and implemented yet. There is only one national fishing boat using longline, which is more selective. In future issues to take into consideration at the national level in this regard are going to be identified and prioritised. *The terms and conditions for licensing consider issues to reduce bycatch and skippers are briefed during pre fishing briefing.*

5.1 Sharks

The lack of specific national strategies is still a challenge. However, drafting of new legislation is in place which is considering the issues of shark conservation as a requirement to consider in the licensing process. Moreover, the country is supporting the listing of new species as protected following the adequate assessment thought the CITES Commission at the national level.

Table 7: Total number and weight of sharks, by species, retained by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2008–2012).
Information not available.

The information available regarding shark catches in 2011 and 2012 for the tuna Industrial fishing vessel was not reported at the species level as required. However, with the use of the new logbook that started in 2013 and the observer scheme operational, it will allow the reporting of the information as required in the near future. Also, the information from artisanal fisheries does not provide single species details.

5.2 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 onboard, 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.

5.3 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.

5.4 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

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

All the fisheries except the subsistence fisheries (invertebrate colectors), 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 8 below). Logbooks are monitored by ADNAP which also issue the fishing licences. However, the information from the logbooks are 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.

6.1. 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.

6.2. **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 the propose of conflicts resolution, 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.

6.3. Observer 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, deepwater shrimps and on those for demersal fish since the 1980s. Since June 2012 it has been implemented on a national flagged tuna long liner. 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 10. 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%	30%	NA	100%
3. Industrial	Yes	No	NA	Yes
3.2. Linefishery	3%	0%	NA	80%
3.3. Pelagic longline	60%	0%	NA	100%
4. Recreational & sport	No	NA	Yes	Yes
4.1. Recreational fishing	0%	NA	5%	5%
4.2. Sport fishing	0%	NA	0%	30%

6.4. Port sampling programme

No port sampling due to data collection through observer scheme in place.

Table 11 Number of individuals measured, by species and gear

Fisheries	Species	Number sampled	Observation
Artisanal coastal fisheries	No IOTC mandatory species measured	NA	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		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	10	Data are not available for recreational fishing out of the fishing competitions. Data refer to on landing site sampling during some fishing tournaments in the southern part of Mozambique (Maputo province in 2012).
	Yellowfin tuna	180	
	Skipjack	300	
	Albacore	36	
	Bigeye tuna	60	
Industrial Longliner for tuna	Bigeye tuna	23	Data refer to the observer coverage onboard from one trip in the national long liner vessel, 2012.
	Yellowfin tuna	1	
	Skipjack	-	
	Albacore	7	
	Black Marlin	-	
	Sailfish	-	
	Swordfish	294	
Industrial longliner for tuna and artisanal	Sharks	NA	Sharks size is not measured. Observers are being trained on shark identification. Logbooks and other sheets used to collect data were modified to accommodate sharks size data.

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

7. 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
Demersal fishery potencial	2012-2015			IFAD	Assess the fishing potential accessible to small scale fishers	
Small and large coastal pelagic fish fishery potential	2012-2015			IFAD	Assess the fishing potential accessible to small scale fishers	
Octopus fishery potential	2012-2015			IFAD	Assess the fishing potential accessible to small scale fishers	
Implemention 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	

8. 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 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.

Res. No.	Resolution	Scientific requirement	CPC progress
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.

9. LITERATURE CITED

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