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Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2022

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INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 15/02, final scientific data for the previous year was provided to the IOTC Secretariat by 30 June of the current year, **for all fleets other than longline**.	YES The data from semi-industrial linefishery and partial data from artisanal fishery were sent to the IOTC secretariat on 30th June 2022. Also, part of these data are reflected in this report.
In accordance with IOTC Resolution 15/02, provisional **longline data** for the previous year was provided to the IOTC Secretariat by 30 June of the current year. **REMINDER:** Final longline data for the previous year is due to the IOTC Secretariat by 30 Dec of the current year	YES Mozambique has submitted the preliminary data of longline fleet of the year 2021 to the IOTC secretariat on 30 June 2022. The final longline data are partially reflected in this report. Regardless of that, Mozambique will submit the final data formally to the secretariat before the deadline of 30 December 2022.
If no, please indicate the reason(s) and intended actions:	

Executive Summary

The total catch of IOTC species in the Mozambique EEZ in 2021 was estimated at 7782 tons. No foreign vessels have been licensed. The national longline fleet, expanded from two to eight operational longliners from 2019 to 2021. As result, the fleet landed 390.3 tons in 2021, an increase of 34.4% compared to 2020 and an increase of 170% compared to 2019. IOTC primary species represented 95% of the total catch, with yellowfin tuna (41%) and swordfish (34%) being the most important species followed by bigeye (13%). The only shark species retained by this fleet was the shortfin mako shark with 6 tons landed in 2021.

The artisanal fishing sector landed 7,325 tonnes of IOTC primary species in 2021, a decrease of -30% compared to 2019, probably associated with the impact of Covid-19. Catch composition continued being dominated by narrow-barred Spanish mackerel (49%) and frigate and bullet tuna with 39%. The catch of sharks as estimated at around 2200 tonnes composed mainly of scallop hammerhead shark.

The recreational and sport fishing sector presented a significant reduction in the number of licenses and suffered serious operational restrictions directly associated with Covid-19 mitigation measures in the last two years. In 2021 the Recreational and Sport Fishing Regulation was revised and approved, bringing some conservation and management measures that will impact positively on IOTC species.

To improve knowledge about the dynamics of tuna fishing and strengthen the management and conservation of IOTC and associated Endangered species in Mozambique, some tools and programs have been implemented, including 100% implementation of logbooks, implementation of scientific programs on-board large vessels and observer sampling at the landing site for artisanal fisheries, development of NPOA-Sharks and NDFs and other research initiatives. In 2020, a new Maritime Fishing Regulation was approved, incorporating a wide range of IOTC conservation and management measures, including the protection of all sharks prohibited by the IOTC; banning shark finning and establishing minimum sizes for billfish and sharks.

Contents

1. BACKGROUND/GENERAL FISHERY INFORMATION

Mozambique is located in the south-eastern Africa, between latitudes 10°27'S to 26°52'S and longitudes 30°12'E and 40°51'E. The country has a coastline of approximately 2,700 km, a total continental shelf area of about 104,300 km^2 and an EEZ area of 999, 000Km^2. The coastal area of Mozambique covers seven different provinces and it is normally divided into three macro-areas: (i) northern coast (Cabo-Delgado and Nampula Provinces) with a coast line of about 770 km and characterized by rocky and coral-bearing sea bed and a narrow continental shelf; (ii) Central coast (including part of Nampula province, the Zambézia and Sofala provinces) with a cost line of about 980 km facing the Sofala bank; (iii) The southern coast (Inhambane, Gaza and Maputo Provinces), that is about 950 km long and it has some coral and rock bottom in some areas and sand in others. Fishing activity takes place along the entire coast, although the main and more productive fishing area for the national fishing fleets is the Sofala bank.

The fishing sectors operating along the marine waters of Mozambique are the artisanal, the semi-industrial, the industrial and the recreational and sport sector.

The artisanal fishing sector has particular importance for the country´s food security. Artisanal fisheries (approx. 300 000) are spread out along the marine coast of all coastal provinces, where two thirds of the population live. The total catch from artisanal marine sector, is around 310,000 tons/year, and represents around 90% of the total catch of the country. The fishing activity usually take place from beaches or near coastal waters (generally within 3 nautical miles) using canoes and small motorized boats less than 10 m in length. Fishing operations are conducted with a wide range of gears, including beach seine, handline, gillnet and small purse seines as the main gears. The catches are composed mostly by small pelagic fishes and small demersal species. Tuna and tuna like species, mainly composed by neritic species, represent a small portion of the catch, estimated as less than 3%.

The industrial fishing sector is dominated by *shallow water shrimp trawling* and *the deep water crustaceans trawling* with almost no impact on tuna and tuna-like species. Interactions with marine turtles are the unique concern of the shallow water shrimp trawling. The national longline tuna fishery is on it incipient phase, growing from 2 vessels in 2012 to the actual 24 vessels registered in 2021. This rapid growth is a result of the commitment of Mozambique government in promoting the implementation of the Tuna Fishery Development Plan (PEDPA). However, the fleet is still facing operational problems with only 1/3 of the fleet operational.

The semi-industrial sector is characterised by vessels between 10 to 20 m in size. It is sub-divided in shallow water shrimp trawling and linefishery. In this Sector, the fishery with a potential impact on IOTC primary species is the linefishery which target primarily rocky bottom fish (demersal species), but actually has the narrow-barred Spanish mackerel, as the only IOTC captured species.

The practice of Recreational and Sport fisheries is more active in the southern coast (21°S to 26°S). Operations takes place from the shore or are boat based, using rod and reel. Tuna and tuna-like species are captured on boat based operations (fibreglass ski boat; 3-9m length), being particularly the target species within fishing tournaments.

On general, species under the IOTC mandate may be more or less impacted by all fisheries sector in Mozambique. However, fisheries that directly target on IOTC primary species are the industrial tuna longline fishery and Sport fishery.

2. FLEET STRUCTURE

Historically, the main fleet fishing tuna and tuna-like species in the Mozambique EEZ was the Foreign Distant Waters Tuna Fishing Nations (DWTFN). However, the number of licenses issued to foreigners decreased sharply since 2010 and no foreign purse-seine vessels have been licensed since 2019 and no foreign longliners have been licensed since 2020 (Figure 1).

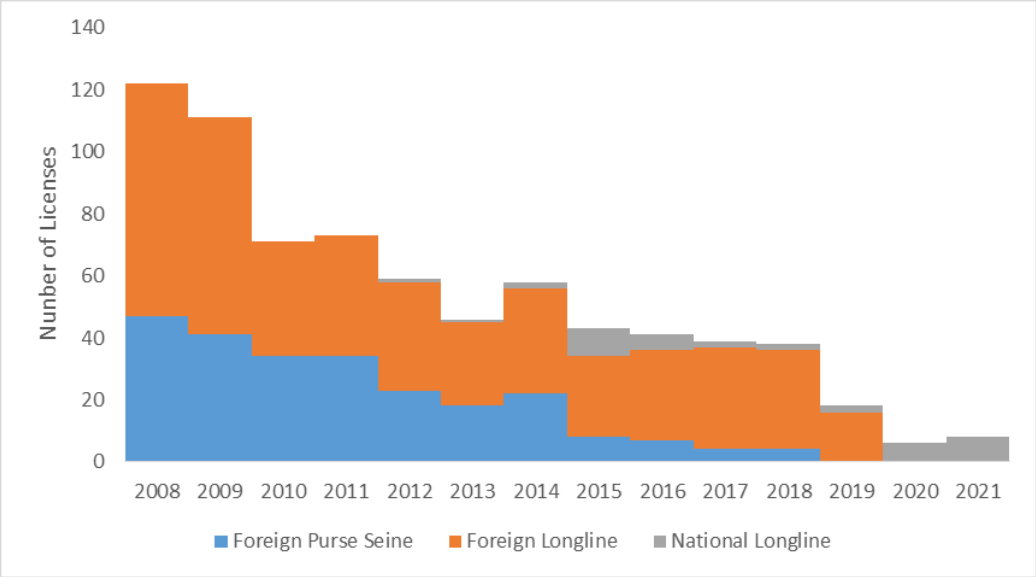

Figure 1. Number of fishing licenses issued to foreign and national flag vessels to fish tuna in the Mozambique EEZ, from 2007 to 2021 (Source: ADNAP 2007 to 2019 annual reports & MIMAIP, 2017, 2018, 2019, 2020, 2022).

The national Industrial tuna fishery started with one longline vessel licenced in 2012. Despite registered, this vessel did not operate in the following years. In November 2014 two new longline vessels were licensed and operated during December (Figure 1). In 2015 other seven boats were introduced increasing the fleet to a total of nine longliners (Figure 1). In 2016 all these vessels remained non-operational aside of three that operated only during the first quarter. However in the same year two new vessels were registered and licensed and operated throughout the year (Figure 1). In 2017, 2018 and 2019 only two national longliners were licensed. In 2020 the joint ventures foreign vessels started changing their flag status increasing the national fleet to a total of six longliners. In 2021 throughout the same process the number of longline vessels flagging the Mozambique flag increased to eight (Figure 1).

The Recreational and sport fishing, other sector that target on IOTC primary species, in 2020 issued about 2500 licenses for coastal provinces operators, which represent a reduction of -52% compared to the previous year and`-45% when compared with the average of the last five years (2015-2019 period) (Figure 2). This reduction in the number of recreational licenses is directly associated with the impact of the Covid-19 in this fishery sector strongly dependent of the foreign tourism. In 2021 despite a slightly increase in the number of licenses (39%) compared to the year 2020, the operations of recreational and sports fisheries were restricted as part of the Covid-19 safety measures adopted by the Government. Nevertheless, from figure 2, it can be seen that the main area for recreational operations still the southern coast (Maputo, Gaza and Inhambane) with about 90% of the licenses issued.

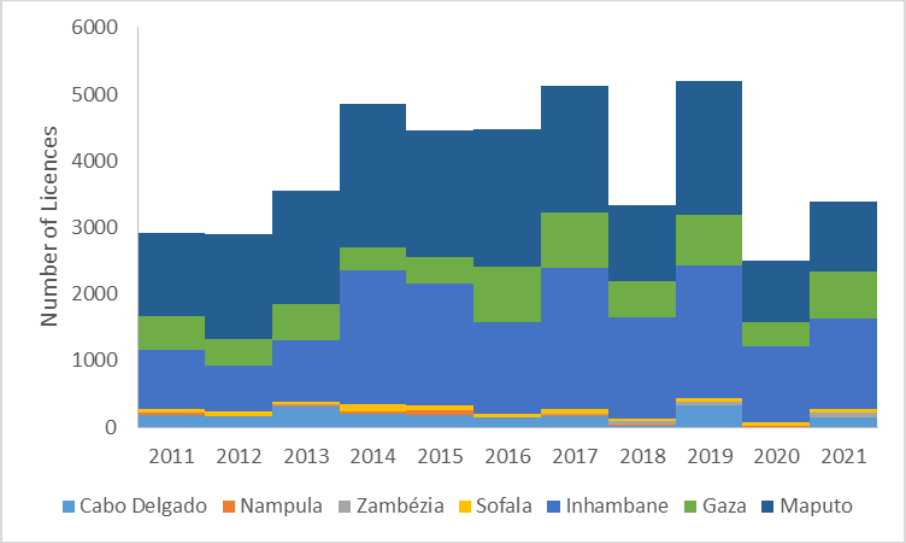

Figure 2. Number of Recreational and Sport fishing licenses issued for coastal provinces from 2011 to 2021.

The gears, vessels size and duration of fishing operation by the artisanal, recreational and sport, semi-industrial and industrial fisheries fleet are described below in the Table 1.

Table 1. Summary description of vessel types and gears by fishery sector with impact on IOTC species, operating along the Mozambican coast.

Fishery Sector	Vessel	Crew	Main gear types	Comment on catch, operations and duration of the trip
Artisanal Fisherman 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	beach seine	Artisanal fisheries are multi-gear and multispecies and occur along all the coastal provinces, targeting almost everything. About 50% 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 for catch conservation or iced catch (1 day trip maximum).
	Canoe < 3m (paddle) Boat, 3-8m (paddle/sail) Boat 5-10m (outboard)	1-6	Handline, beach seine, gillnet, purse seines and longlines	
	Skiboat, 5-8m	3-6	Rod and reel	
Recreational and sport fishing No accurate data is available; around 50 boats operate annually	N/A	N/A	Rod and reel	The recreational involves a large number of people fishing demersal and pelagic linefish as leisure. Operations takes place from shore or boat based. The sport fishing is more organised. The fishers belong to a club that normally sets standards for fisher ethics and organises tournaments. The catch is composed by pelagic species (Billfishes, tropical tunas and Spanish mackerel). Operations are boat based. A large number of recreational and sport fishers are foreign.
	Skiboat – sport, 5-8m	2-6	Rod and reel	
	Skiboat –spear, 5-8m	2-6	Spear	
Semi-industrial An average of 21 operational vessels/month	10-20m	10-15	Rod and reel/ handline	The species caught are mainly the large Demersal rocky 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 six to eight operational vessel/month	vessels >23m (many are 23.3m)	15-30	Longlines	The fishing operations takes place more offshore; activity formally licensed. The longline fleet is oriented to catch tuna and tuna-like species with minor impacts on neritic species. Frozen catch; up to 15 days trip; Port-based activity.

The summary of annual fishing licenses by all national fisheries with potential to catch or interact with IOTC species are described in the Table 2, bellow.

Table 2. Number of annual fishing licenses issued for artisanal fisheries, semi-industrial, Industrial, recreational and sport fisheries in the last eight years. Source: ADNAP annual reports, for all fisheries except for artisanal that information is provided by IDPPE, 2013.

Fishery sector	***Gear***	***N# licenses 2014***	***N# licenses 2015***	***N# licenses 2016***	***N# licenses 2017***	***N# licenses 2018***	***N# licenses 2019***	***N# licenses 2020***	***N# licenses 2021***
Artisanal									
	Beach seine	*9,916*	*9,916*	*9,916*	*9,916*	*9,916*	*9,916*	*9,916*	*9,916*
	Handline	*13,853*	*13,853*	*13,853*	*13,853*	*13,853*	*13,853*	*13,853*	*13,853*
	Gillnets	*20,396*	*20,396*	*20,396*	*20,396*	*20,396*	*20,396*	*20,396*	*20,396*
	Small Longlines	*1,077*	*1,077*	*1,077*	*1,077*	*1,077*	*1,077*	*1,077*	*1,077*
	Small purse seine	*563*	*563*	*563*	*563*	*563*	*563*	*563*	*563*
Semi-industrial									
	Sofala bank Shallow water shrimp	*23*	*20*	*16*	*21*	*37*	*37*	*31*	*24*
	Linefishery	*34*	*40*	*30*	*33*	*37*	*32*	*31*	*26*
Industrial									
	Sofala bank Shallow water shrimp;	*35*	*41*	*43*	*40*	*42*	*39*	*34*	*34*
	Pelagic longline tuna	*2*	*9*	*5*	*2*	*2*	*2*	*6*	*8*
Recreational & sport									
	Recreational and sport fishing	*4,853*	*4,452*	*4,473*	*5,180*	*3,343*	*5,206*	*2,497*	*3,481*

- **Comments on artisanal fisheries**

Information based on census (frame survey) of artisanal fishing conducted in 2012 (IDPPE 2013). Data refers to coastal provinces only.

- **Comments on semi-industrial and industrial shrimp fishery**

Sofala bank Shallow water shrimp fishery was included because of potential interactions with marine turtles (none retained).

3. CATCH AND EFFORT

- CATCH AND EFFORT BY DWTFN

In 2021, similarly to the previous year, no DWTFN operated in Mozambique waters (Figure 3, Table 3).

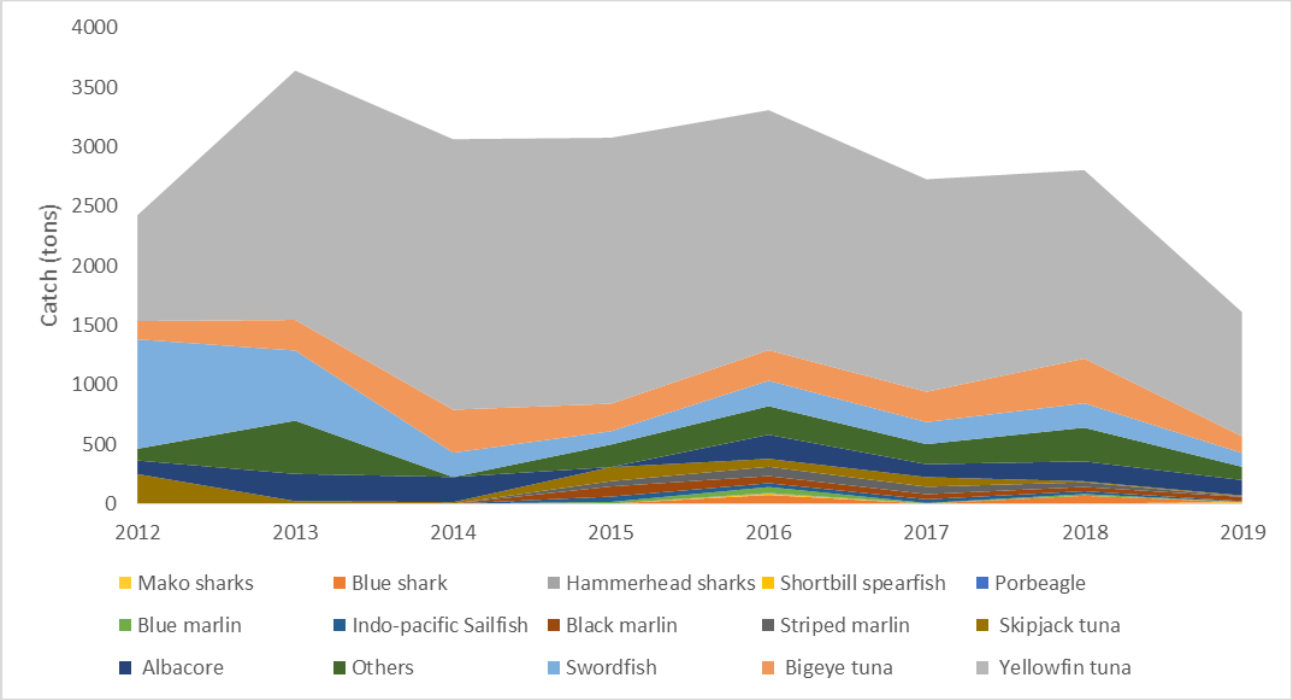

Figure 3. Landings of IOTC species caught by DWTFN in Mozambican EEZ from 2012 to 2019.

Table 3. Total Landings and fishing effort of DWTFN in Mozambican EEZ from 2012 to 2021.

Species	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total catch (tons)	2,426	4,149	3,065	3,079	3,249	2,728	2,805	1,609	-	-
Effort (days)	1,551	1,734	2,215	2,229	2,238	1,636	2,063	1,201	-	-

- CATCH AND EFFORT BY THE INDUSTRIAL NATIONAL FLEET

The national longline tuna fleet production in 2020 was 290 tons representing an increase in 100% (doubling) compared to the year 2019 (Figure 4). A further increase has noted from 2020 to 2021 with a magnitude of 34.4% (Figure 4). The IOTC primary species represented 95% of total in weight with the most important species being yellowfin tuna (41%) and swordfish (34%) followed by bigeye with 13% (Figure 4). The increase in total landings recorded in 2020 and 2021 is a result of an increase in fishing effort associated with expansion of the National fleet (Table 2 and Table 4).

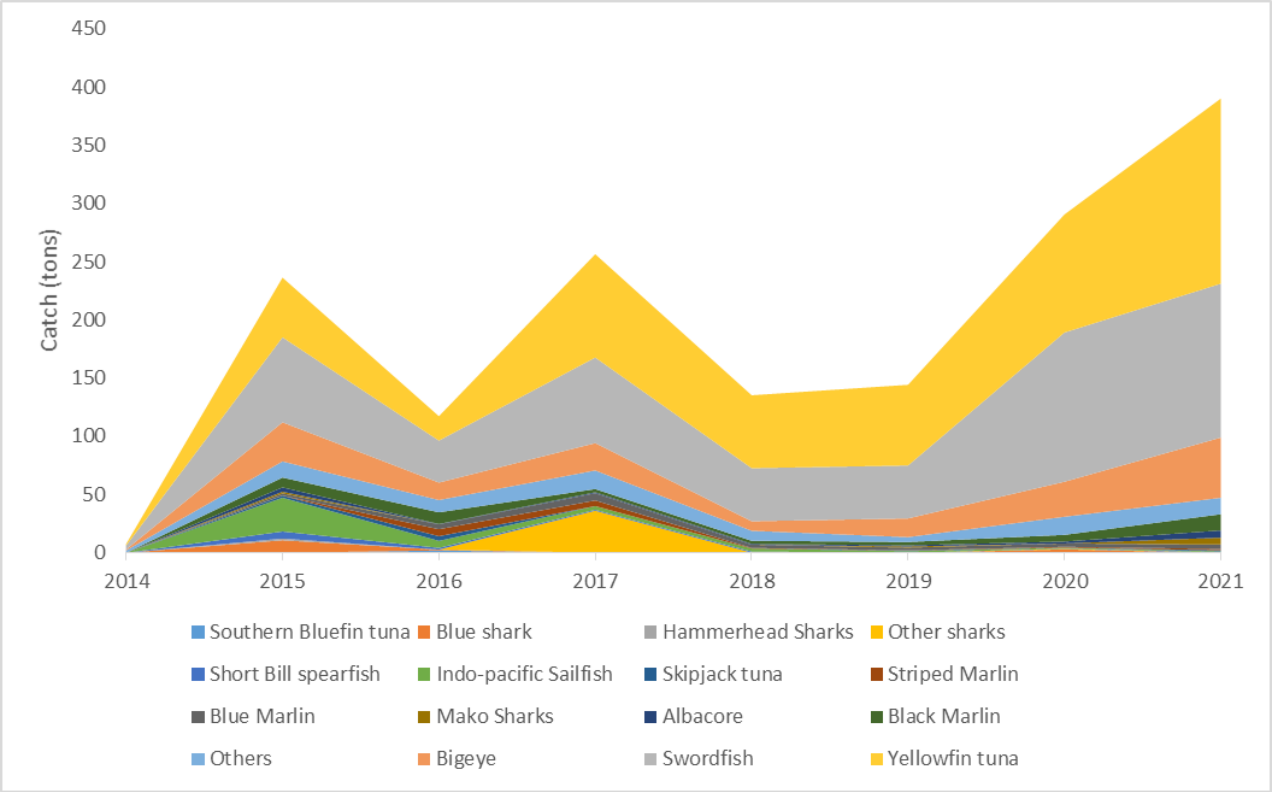

Figure 4. Landings of IOTC species by the national longline fleet from the period 2014 to 2021.

Table 4. Total landings and fishing effort for the national longline fleet from the period 2014 to 2021.

Species	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Total Catch (tons)	7.5	217.5	117	256.4	135.2	144	290	390.1
Total Effort (days)	6	310	-	190	182	200	677	906
Total Effort (hooks)			230,296	284,369	202 281	205,152	749,074	861,967

- **CATCH AND EFFORT BY THE ARTISANAL COASTAL FISHERIES**

The estimated catch of IOTC primary species by the artisanal coastal fisheries in 2020 was about 500 tons, 1/20 of the catch of year 2019 (Figure 5, Table 5). This magnitude of reduction is a result of the impact of the Covid-19 in this sector either by reduction on fleet operations either by a deficient level of monitoring of the artisanal fisheries. However, subsequently in 2021 the production increased 16 times compared with the previous year. Nevertheless, when compared with 2019 the catches of the year 2021 represent a decrease of 30% (Figure 5, Table 5).

Similarly to the year 2019, the catch composition in 2021 was dominated by Narrow-barred Spanish mackerel (49%) and by frigate and bullet tunas with 39% (Figure 5).

Gears contributions analysis made in 2019 suggested handline (34%) and gillnets (30%) as the most important gears targeting IOTC species followed by beach seine (13%) and small purse seine (12%) (Mutombene *et. al.* 2020). The spatial analysis of the catches of the artisanal sector made in 2017 showed that the northern coast (Cabo-Delgado and Nampula provinces) is the most important area with a contribution of 60% of the IOTC primary species (Chacate and Mutombene 2017 IOTC-2017-SC20-NR18).

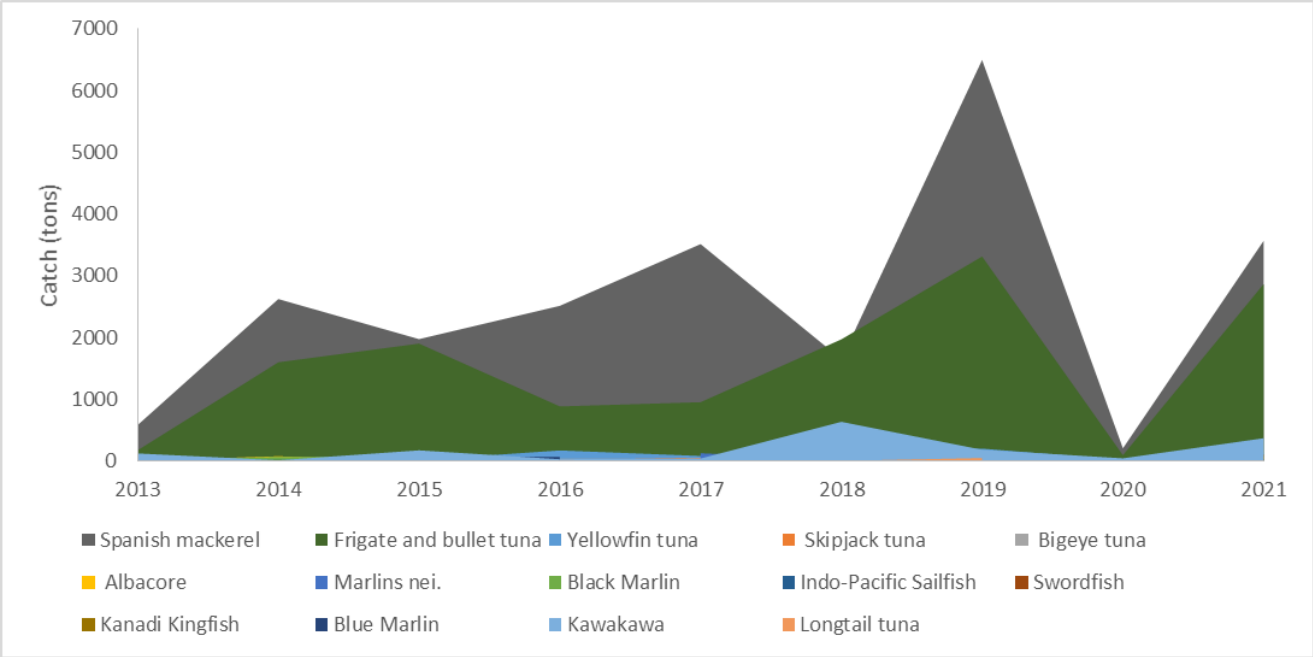

Figure 5. Landings of IOTC primary species by artisanal coastal fishery sector (2013-2021).

Table 5. Total landings and effort of IOTC primary species by artisanal coastal fisheries (2013-2021).

Species	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total catch	880	4,443	4,236	3,715	4,821	4,513	10,500	457	7,325
Total fishing effort in 2021 by fishing gear	Beach Seine=643,538 sets; Gillnet=645,150 sets; Handline=536,807 boat days; Spearfishing=18,085 gear days; Longline=5,506 gear days; Seine nets = 42,041 boat days.								

REMARKS:

- **2010 to 2012:** The aggregated catch information in the table above is from five coastal provinces, namely Maputo, Inhambane, Sofala, Nampula and Cabo Delgado;
- **2013**: The data are only from three provinces, Inhambane, Zambézia and Nampula;
- **2014 to 2018:** The data covers six provinces out of the seven coastal provinces.
- **2019 to 2021:** All the seven coastal provinces.

- **CATCH AND EFFORT BY THE SEMI-INDUSTRIAL LINEFISHERY**

The total catch of IOTC species (the narrow-barred Spanish mackerel) in semi-industrial linefishery decreased 31% in year 2020 when compared to the tear 2019. A further decrease of 37% has subsequently observed in 2021 in relation to the 2020 landings (table 6). The reduction in the total landings in 2020 and 2021 is a result of the reduction of the fleet operations associated with the impact of the Covid-19 in this fishery strongly dependent of the local tourism markets (coastal restaurants, lodges and hotels).

Table 6. Aggregated Annual Catch in tons and Effort in fishing days by gear and primary species for semi-industrial linefishery (Only Narrow-barred Spanish mackerel) 2014-2021.

Spanish Mackerel	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Total Catch	80	36	83	60	90	98	67	42
Total effort	4,560	4,536	4,656	3,675	4,224	3,686	2,908	2,440

4. RECREATIONAL AND SPORT FISHERY

There were no fishing tournament conducted in 2021 as result of covid-19 restrictive measures. However some recreational fishing activity were conducted despite with poor monitoring. Based on the number of licences issued in 2021, it was roughly estimated a total catch of 25 tons of IOTC primary species by this sector, a reduction of about 57% compared with 2019.

Monitoring and assessing the impact of this sector on IOTC species still a challenge. A comprehensive update of the year 2008 recreational fisheries census was planned to be undertaken in 2020 in order to fill the gaps and improve the knowledge on the dynamic of this fishery. However, due the covid-19 pandemic effects and the availability of the funds this activity were not conducted. In 2021, the Recreational and Sport Fishing Regulation was revised and approved in 2021 (Decreto 82/2021 from October 15th). The regulation brings some conservation and management measures that will impact positively on IOTC species. The total bag limited was reduced from 10 to 5 fish per fisherman per day. The summary of the measures is presented in the table 7.

Table 7. Recreational and Sport Fishing Regulation CMMs related to IOTC species.

Species	**Minimum size**	**Bag limit**	**Other restrictions**
Sharks	-	-	Prohibited
Marlins and sailfish	60 cm	2	-
Swordfish	-	2	
Yellowing and Bigeye	60 cm	5	Minim 3.5 kg
Skipjack and kawakawa	40 cm	5	
Frigate and bullet tuna	30 cm	5	
Spanish mackerel	65 cm	5	

5. ECOSYSTEM AND BY-CATCH ISSUES

The new Marine Fisheries Regulation approved in 2020 is already in force (Decreto n.º 89/2020 of October 8th). Key IOTC resolutions pertaining conservation and management of sharks, seabirds and sea turtles were incorporated into the regulation with assistance of an external consultant supported by the IOTC.
In addition of protecting all marine turtles and marine mammals, all IOTC prohibited sharks and all CITES appendice I sharks were included in the protected species list. Additionally minimum size were introduced for many IOTC species including sharks as presented in the table below (Table 8). Shark finning is prohibited according with this regulation.

Table 8. Maritime Fishing Regulation CMMs related to IOTC species.

Species	Minimum size	Other restrictions
Great white shark	-	Protected
Thresher sharks	-	Protected
Oceanic whitetip	-	Protected
Whale shark	-	Protected
Mobulid rays	-	Protected
Sawfishes	-	Protected
Marine turtles	-	Protected
Marine mammals	-	Protected
Marlins, sailfish and Spanish mackerel	60 cm	-
Hammerhead sharks, blue shark and other requiem sharks (Carcharhinidae)	150 cm	-
Mako sharks	200 cm	-

Moreover, Mozambique has developed in 2014, the Terms and Conditions of Licensing for tuna fishing and are 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.

5.1 Sharks

The national longline fleet captured 6 ton of the shortfin mako shark in 2021 (see Figure 4). Despite, retaining only one species, the fishery interactions with elasmobranches include other species that are promptly released or discarded back to the sea (Table 9 and 10). Based on the observer coverage for 2021 (5.1%) the level of fisheries integration with non-retained elasmobranches was raised to be around 5200 integration with a total level of mortality estimated around 32%. Dusky shark was the main impacted shark with a level of interactions raised to 3264 in 2021 and a level of mortality of 39%.

Table 9. Observed interactions of the longline fleet with sharks and rays in the year 2021.

Species	Released alive (A1)	Discarded dead (D)	Retained
Bigeye thresher	3		
Pigeye shark	5		
Oceanic whitetip shark	4		
Dusky shark	107	69	
Sandbar shark	6	5	
Shortfin mako shark			7
Longfin mako	3		
Devil fish	1		
Giant oceanic manta ray	1		
Sicklefin lemon shark	13		
Blue shark	33	9	
Smooth hammerhead	7	2	

Table 10. Integrations of the longline fleet with sharks and rays in the year 2021.

Month	Area5x5	Species	Total Effort	Observed Effort	Released alive (A1)	Discarded dead (D)	Retained
5	6225035	Bigeye thresher	90,641	10,610	1		
5	6225035	Pigeye shark	90,641	10,610	5		
5	6225035	Oceanic whitetip shark	90,641	10,610	2		
5	6225035	Dusky shark	90,641	10,610	8	2	
5	6225035	Sandbar shark	90,641	10,610	6	5	
5	6225035	Shortfin mako shark	90,641	10,610			4
5	6225035	Devil fish	90,641	10,610	1		
5	6225035	Sicklefin lemon shark	90,641	10,610	13		
5	6225035	Blue shark	90,641	10,610	33	9	
5	6225035	Smooth hammerhead	90,641	10,610	4	2	
7	6220035	Oceanic whitetip shark	88,121	15,750	2		
7	6220035	Dusky shark	88,121	15,750	36	39	
7	6220035	Dusky shark	88,121	15,750	8		
7	6220035	Shortfin mako shark	88,121	15,750			1
7	6220035	Smooth hammerhead	88,121	15,750	2		
10	6220035	Bigeye thresher	80,945	6,000	2		
10	6220035	Dusky shark	80,945	6,000	20	11	
10	6220035	Shortfin mako shark	80,945	6,000			1
10	6225035	Dusky shark	80,945	12,000	35	17	
10	6225035	Shortfin mako shark	80,945	12,000			1
10	6225035	Longfin mako	80,945	12,000	3		
10	6225035	Giant oceanic manta ray	80,945	12,000	1		
10	6225035	Smooth hammerhead	80,945	12,000	1		

Estimation of shark catches in the artisanal sector was very difficult in 2021. The figures presented here are related to year 2019. Base on collaboration between Mozambique government and WCS, the project of shark and ray monitoring in artisanal fisheries in Maputo, Zambézia and Nampula, it was estimated that hammerhead sharks represented 56% (Figure 6). Most of the catch comes from Zambézia province with 73%, followed by Nampula province with 20% of the total sharks (Figure 6).

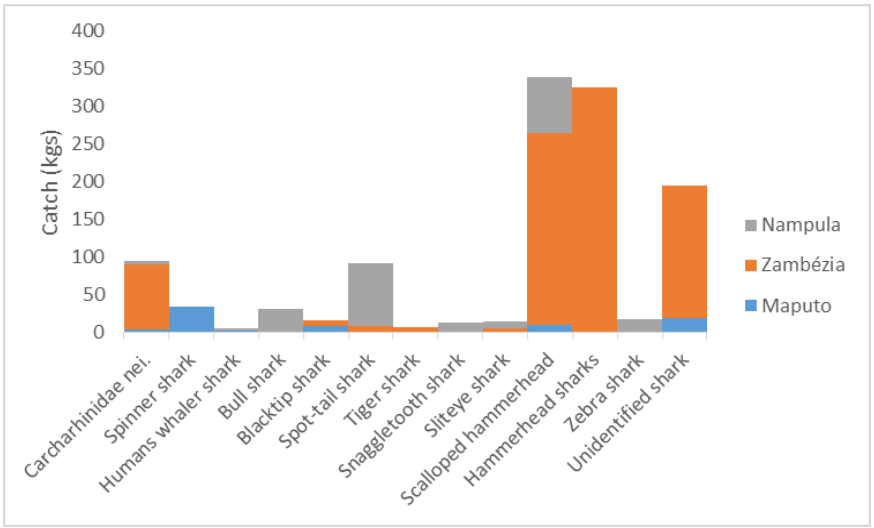

Figure 6. Catch composition of sharks in the artisanal fisheries of the provinces covered by a dedicated monitoring program in 2019 (catches are not representative for all the country).

In 2019 the catch of sharks by artisanal sector, mainly hammerhead, was estimated to be about 3500 tons while in 2021 the shark landing was estimated at 2200 tons.

The semi-industrial linefishery has practically null impacts on shark species. The level of sharks interactions with the Recreational and sport fishery is unknown but is assumed to not be significant.

The lack of specific national strategies for sharks is still a challenge. However, there are ongoing activities associated elaboration of the first NPOA-Shark, started in 2016. In 2021 working group, composed representatives of government institutions, the University Eduardo Mondlane, WWF, WCS, TRAFFIC and others produced the first draft of the NPOA which is currently under consultation with the stakeholders.

In 2021 this group guides by WCS international experts produced also drafts of NDFs for two IOTC/ CITES appendices II sharks, Scalloped hammerhead and the silky shark, with the results suggesting negative NDF for the first and positive NDF for the second.

5.2 Seabirds

No NPOA is available for seabirds yet, but in the perspective to evaluate the potential impact on seabirds from both national and foreign longline fleets Mozambique joined the FAO Common Oceans Project implemented by the Birdlife South Africa. In 2017, a national awareness workshop on seabirds was conducted with support of Birdlife South Africa. The event joined the representatives of the national and foreign vessel with license to operate in Mozambique waters, members of the government and NGOs to discuss issues related to conservation of seabirds, including potential interactions of the fleet with seabirds and mitigation measures.

The current activities in place in order to ensure the conservation of seabirds are; regular briefing of masters on the mandatory requirement to report any seabird interaction with longline fleet and the deployment of scientific observers on-board the vessels. Vessels used to implement night setting and line-weigh either when operating above or below the parallel 25°S. In other hand, the frequency of the fleet south of parallel 25°S is relatively low estimated in 7% (64297 hooks deployed) of the total effort for the 2021...

Null interaction of the fleet with seabirds was reported in logbooks from 2015 to 2021. Based on scientific observer data, a preliminary assessment of the impact of the longline fleet on seabirds was conducted and the results presented in the WPEB with the paper with reference IOTC – 2015 – WPEB 11-45, reporting null interaction with seabirds. Null incidental catch of seabirds was found in the following observer missions this document will be updated and presented in the next session of the WPEB in 2022.

5.3 Marine Turtles

No specific strategy for marine turtles is available yet. However, Mozambican tuna longline logbooks in use since 2012 include fields to register information on interactions of the fishery with sea turtles. Additionally, the observer program implemented in this fishery collects information on interactions of the fishery with marine sea turtles. In 2021 a total of two interactions with turtles were observed (5.1 % of total fishing effort), giving the total level of 40 integration in 2021 that were released alive and in good state (Table 11).

Table 11. Observed interactions of marine turtles with the Mozambique Longline gears in 2021.

Month	Area5x5	Species	Total Effort	Observed Effort	Released alive (A1)
5	6225035	Loggerhead sea turtle	90,641	10,610	1
10	6220035	Olive ridley sea turtle	80,945	12,000	1

In 2015, based on scientific observer data, it was assessed that the interaction catch ratio was one turtle/7000 hooks deployed in the longline fleet and that specimens are released alive and in good state (IOTC – 2015 – WPEB 11-45). This document will be updated and presented in the next session of the WPEB in 2022.

Interactions of marine fisheries with Sea turtles in Mozambique have been reported in the Sofala Bank shrimp trawlers since the onset of the fishery. The first attempt to quantify the level of incidental catch and mortality of turtles in this fishery using an interview based was done by Gove et al., (2001) which concluded that sea turtles capture and mortality by shrimp trawlers was a problem since every fishing season between 1932 and 5436 sea turtles were caught and thus, it was 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) considered 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) concluding around 1235-1735 sea turtles are caught each fishing season. Over 54.8% of the incidents occur within 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 interactions between the artisanal fisheries with sea turtles are known to exist, no recent studies are available to cite on the magnitude of these interaction along the coastal area and especially in the main fishing grounds.

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

Little has been published on the status of marine mammals along the Mozambican coast but a total of 18 marine mammals in Mozambique (including dugong, dolphins and whales) have been recorded. Of these, 6 are common in littoral ecosystems and include 3 species of migratory whales that breed in Mozambique waters, 2 species of dolphins that occur all year long and dugong that feed on seagrass.

The interaction of cetaceans with the longline gear is marginal according to the scientific observer data (IOTC – 2015 – WPEB 11-45).
In 2021 a total of two interactions with marine mammals were observed (5.1 % of total fishing effort), giving the total level of 40 integration in 2021. All marine mammals were released alive and in good state by cutting the line and not bring then on-board (Table 12).

Table 12. Observed intarations of marine mammals with the Mozambique Longline gears in 2021.

Month	Area5x5	Species	Total Effort	Observed Effort	Released alive (A1)
10	6220035	Dolphin Nei	80,945	6,000	1
10	6225035	Whale Nei	80,945	12,000	1

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

Collection of fisheries data and statistics in Mozambique is under mandate of the Ministry of Sea, Inland waters and Fisheries (MIMAIP) created in 2015 (Decreto 1/2015 de 16 Janeiro) with the extinction of the former Ministry of Fisheries. To improve the coverage and quality of fisheries data, MIMAP made both structural and functional changes on the fisheries statistical system which is reflected in the revised master plan of fisheries statistics. In the new framework, DEPI (Directorate of Studies, Plan and Infrastructures) is the Directorate within the Ministry, responsible to globalize and publish the fisheries data that includes catch, effort and socio-economic data. There are autonomous institutions from this Ministry responsibly for collecting fisheries statistics. These institutions are namely the National Fisheries Administration (ADNAP), the Oceanographic Research Institute (InOM) former National Fisheries Research Institute (IIP), and the National Institute for the Development of Fisheries and Aquaculture (IDEPA) (Table 13).

Table 13. Fisheries data collection in Mozambique: Institutions involved and categories of data collected.

Category of data	Artisanal fleet	Semi-industrial fleet	Industrial fleet	Recreational and Sport
Fishing craft statistics/ licenses	IDEPA/ADNAP	ADNAP	ADNA	ADNAP
Catch-and-effort data	ADNAP	ADNAP	ADNAP	ADNAP
Length frequency data	InOM	InOM	InOM	InOM
Other scientific data	InOM	InOM	InOM	InOM
Socio-economic data	IDEPA and DEPI	DEPI	DEPI	DEPI

All fisheries with potential to catch IOTC species are subjected to monitoring programs. On-board scientific observer program is conducted by InOM in semi-industrial and industrial commercial fisheries. Artisanal fisheries are monitored through National Stratified Random Sampling System locally known as SNAPA (Sistema Nacional de Amostragem da Pesca Artesanal). Historically, the system was implemented by IIP but since 2015 this is under responsibility of DEPI and in 2021 this responsibility was transferred to National Fisheries Administration (ADNAP). The number of artisanal gears available in the country and other social aspects of the artisanal sector are assessed on a five-year basis through a national census of the artisanal fishing (frame survey) conducted by IDEPA (former IDPPE). As the last frame survey was performed in 2012 there is an ongoing process of preparation (mobilization of funds) to conduct the next survey in 2022. Recreational fisheries are monitored by mean of outing cards however the level of reporting is recognizably low. Sport fishing is covered by on landing site sampling during the disembarkation on the local of the fishing tournaments and also by catch reports that the organizers provides to the fishing sector authorities at local level.
Logbooks and other monitoring tools are also used as part of monitoring system (see table 14 below). These Logbooks are monitored by ADNAP which also issue the fishing licenses.

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

Longline Logbook compatible with IOTC requirement of data collection and reporting was developed by Mozambique in 2012 and its implementation started in 2014 in the national fleet. It allows collecting a wide range of information such as fishing positions (coordinates), catch by species and effort (hooks) per set and fishery interaction with protected species. The logbooks are provided to the vessels captains at annual basis prior to the fishing activity and during this process captains are briefed on how to fill it correctly. Filled

logbooks are returned back to the National Fisheries Administration (ADNAP) by the end of each fishing trip. The data verification process is carried out by ADNAP. After the verification of the information, ADNAP send a copy to IIP which use the relevant information for scientific advice on the fishery activity.
Mozambique is still facing difficulties in terms of accessing to logsheet data of foreign fleet.

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

The Ministry of Fisheries of Mozambique, recognizing the Vessel Monitoring System - VMS as important tool for MCS contracted a VMS provider in 2001. Nevertheless, the system was not working properly due the lack of assistance to the installed equipment. Thus, the Ministry decided to look for a new provider. So in 2010 it was developed the current system which became fully operational in 2011 covering national fisheries and also foreign tuna fleets through the communication protocol established. The system was running in META software and it is installed in Maputo at National Fisheries Administration – ADNAP. In 2012, the 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.
In the 2015, the VMS was expanded to cover all semi-industrial fleet 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. **Scientific Observer programme and Port sampling programme**

Scientific Observer programme is implemented for all national industrial fisheries. For the linefishery the scientific observer programme has been carried out since year 1998 while for the national longline fleet it has been implemented since 2015. Improvements in the observer program are being expected in the following years as Mozambique is willing to participate in the pilot project on regional observer scheme.
For artisanal fisheries a sampling program started on experimental basis in 1997. The system was expanded and became adopted as the official source of artisanal fisheries statistics of Mozambique. The system is based on a random-stratified sampling at landing sites defined as fishing centres. The Data collected include catch by species, effort and length frequency of the dominant species. Not all fishing centres are sampled. The geographical extension and complexity of the artisanal sector, which primarily do not target IOTC species, associated with logistical (financial) limitations for the implementation of the sampling system are the primary causes affecting the effectiveness of data collection. To improve the coverage and the quality of fisheries data there is a pilot implementation of the *FAO ARTFISH data collection framework* which is expected to replace the actual system that relay on PESCART database. As ARTIFISH does not secure collection of biological data, this swift will imply a review of the research plan by IIP and, to complement the primary catch and effort statistics generated by ARTIFISH.

The recreational fishing is the less monitored fishery, where ADNAP distribute fishing catch cards to lodges and hotels were recreational fishing is a current activity but the level of return of these cards is very low. The cards were expected to be filled per outing but the operators normally inform or argument that tourist

fishers do not will or accept to complete the cards or they forget to fill it what represents a serious offence to the minimum requirement of the law in terms of information provision by those was conduct fishery activities.

Table 14. The data collection coverage by IIP and ADNAP in 2021 for Mozambican fisheries with potential impacts on IOTC species.

Fishery Sector and fisheries	On-board Sampling	Port Sampling	On landing site Sampling	Logbooks
1. Artisanal	NA	NA	Yes	No
1.1. Beach seine	NA	NA	1-5%	0%
1.2. Handline	NA	NA	1-5%	0%
1.3. Gillnets	NA	NA	1-5%	0%
1.4. purse seines	NA	NA	1-5%	0%
1.5. longlines	NA	NA	1-5%	0%
1.6. other gears	NA	NA	1-5%	0%
2. **Semi-industrial**	Yes	Yes	NA	Yes
2.1 Linefishery	4%	0%	NA	100%
3. Industrial	Yes	No	NA	Yes
3.2. Linefishery	5%	0%	NA	100%
3.3. Pelagic longline	5.1%	0%	NA	100%
4. Recreational & sport	NA	NA	Yes	Yes
4.1. Recreational fishing	NA	NA	0%	5%
4.2. Sport fishing	NA	NA	0%	5%

Mozambique is committed with IOTC initiatives and will to improve the country ability to carry out scientific monitoring of tuna and tuna-like species by implementing innovative research projects that allow capturing relevant information and data. 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. A recent theoretical training course for Mozambique scientific observers was conducted at Maputo IIP-headquarters by the Fishery Cooperation Foundation of Japan in 2016.

6.4. Length data

Table 15 shows the length data collected in the fisheries which potentially impact on IOTC species.

Table 15. Number of individuals measured by species and fishery in 2021.

Fisheries	Species	Number sampled	Observation
Semi-industrial Linefish	Narrow-barred Spanish mackerel	616	Narrow-barred Spanish mackerel is unique IOTC species captured in this fishery. Biological data including lengths are collect by mean of observer on board. (data submitted to IOTC secretariat res. 15/02 on June 30th 2022)
Industrial Longline Fishery	Swordfish	242	Data collected thought scientific observers on-board (data submitted to IOTC secretariat res. 15/02 on June 30th 2022)
	Black marlin	9	
	Indo-pacific Sailfish	4	
	Short-billed spearfish	2	
	Bigeye tuna	52	

	Yellowfin tuna	63	
	Albacore	9	
	Skipjack tuna	2	
	Longtail tuna	1	
	Shortfin mako	9	
Artisanal Fishery-Tuna			Data collected thought skipjack and kawakawa SWIO project and also Billfish-WIO project. Samplings were made at landing sites in the northern region (Cabo Delgado). (data submitted to IOTC secretariat res. 15/02 on June 30th 2022)
Gillnet	Frigate tuna	30	
	Kawakawa	30	
	Skipjack tuna	63	
Purse seine	Frigate tuna	315	
	Bullet tuna	29	
	Kawakawa	164	
	Skipjack tuna	49	
	Yellowfin tuna	2	
	Albacore	8	
Handline	Kawakawa	8	
	Albacore	5	
	Yellowfin tuna	24	
	Bigeye tuna	21	
	Skipjack tuna	41	
Artisanal Fishery-Sharks			Data collected thought shark and rays monitoring program for artisanal fisheries in Maputo, Zambézia and Nampula provinces. (data submitted to IOTC secretariat at the same time of submission of this Report))
Gillnet	Scalloped hammerhead	134	
Handline	Scalloped hammerhead	14	

6.5. Unloading/Transhipment [including date commenced and status of implementation]
No transhipment by Mozambique flagged vessels and within Mozambique waters**.**

7. NATIONAL RESEARCH PROGRAMS

The table 16 summarizes the national research programs in place that are directly or indirectly related with management and conservation of IOTC species.

Table 16. Summary table of national research programs, including dates.

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description
Revision and update of the linefish management plan	2019-2021	**Mozambique**	-	Mozambique Government/ SWIOFISH 1 Project	Guarantee the sustainability of linefishery by using an ecosystem approach	Stock assessment of Spanish mackerel conducted for Mozambique channel sub-stock.
Kawa-kawa Skipjack SWIO project	2018-2021	Kenya, Mozambique, South Africa, and Tanzania	USD 330 000	WIOMSA	Enabling Sustainable Exploitation of the Coastal Tuna Species (Kawakawa and Skipjack) in the Western Indian Ocean	describe genetic diversity, population structure and connectivity of two commercially important small tuna species, Kawakawa and Skipjack, across the participating countries and relate this to key economic, biological and environmental information to inform management and development of this sector
BILLFISH-WIO (ABF)	2019-2022	Kenya, Madagascar, Mozambique, Somalia, South Africa, and Tanzania	US$ 524,940	WIOMSA	Billfish Interactions, Livelihoods And Linkages For Fisheries Sustainability In The Western Indian Ocean (BILLFISH – WIO)	Review and assess historical and current billfish landings and catch rates in WIO fisheries. Evaluate the genetic make-up and zonation of selected flagship species. Assess the socio-economic perspective of billfish in recreational, commercial, and artisanal fisheries.
InOM – WCS Shark monitoring project	2019-2021	Mozambique	-	WCS	Improving Shark monitoring in Mozambique	Provide training and share technical-scientific knowledge on: i) sampling and monitoring techniques; ii) visual identification of species (focusing on threatened species); iii) new regional scientific information.
InOM – WCS Shark monitoring project	2019-2021	Mozambique	-	WCS	NDFs for two CITES Appendice II shark species	Provide training and share technical-scientific knowledge on: i) sampling and monitoring techniques; ii) visual identification of species (focusing on threatened species); iii) new regional scientific information.
Mozambique Government and Partners - on establishment of the First NPOA Sharks	2017-2021	Mozambique	-	Mozambique Government, WWF, WCS	Mozambique NPOA-Shark	Deliver the first NPOA –Shark with the best available knowledge and participation of all groups of interest

8. Implementation of Scientific Committee Recommendations and Resolutions of the IOTC relevant to the SC.

Table 17. Scientific requirements contained in Resolutions of the Commission, adopted between 2012 and 2020.

Res. No.	Resolution	Scientific requirement	CPC progress
11/04	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	In 2021, three trips were covered by Mozambique observers in the national longline fishery. A total of 44360 hooks were observed corresponding to a coverage level of 5.1% of the total annual effort of the fleet (861987hooks deployed). Mozambique was selected to participate in the pilot project on ROS.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Marine turtles are protected according with national legislation (Conservation Law, Fisheries Law and Marine Fisheries Regulation). Observer scheme observations, shows that there are some interactions of longline fleet with these species. In 2021 two marine turtles were observed and based on that the annual level raised to 39 interactions. So far all turtles caught incidentally have been released alive. Mozambique is regularly briefing the master of the vessels on the mandatory requirement to report all interactions with marine turtles and on safe realise procedures. Also, this resolution is included in the Terms and Conditions for Tuna License. There is an ongoing monitoring program of marine turtles in the main nesting sites falling within the well-established MPAs across the coastline.
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	Based on the longline logbook information and the observer scheme observations, Mozambique reported that his longline fleet doesn't have interactions with seabirds. The measures adopted by the fleet to reduce incidental seabird bycatch are; night setting and branch line weighting. In other hand, the frequency of the fleet south of parallel 25°S is relatively low estimated in 7% (64297 hooks deployed) of the total effort for the 2021. Mozambique is regularly briefing the master of the vessels on the mandatory requirement to report all interactions with seabirds. Also, this resolution is included in the Terms and Conditions for Tuna License.
12/09	On the conservation of thresher sharks (family Alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	All thresher sharks are protected in Mozambique according with the new maritime fishing regulation approved in 2020 and fishing by any fleet is totally prohibited. Mozambique is recording the incidentals catches and live releases of sharks of *Alopiidae family* through scientific observer scheme. In 2021 three interactions were observed and based on that the annual level raised to 58 interactions. Fishing masters are continuously encouraged to record and report on these species of sharks during the pre-fishing briefing. Also, this resolution is included in the Terms and Conditions for Tuna License. Recreational and sport fishing have no impact on thresher sharks since all sharks' catches are forbidden.
13/04	On the conservation of cetaceans	Paragraphs 7– 9	Mozambique has no purse seine fleet. Additionally, according to the national legislation (as updated in the maritime fisheries regulation approved in 2020) the cetaceans are protected species.

Res. No.	Resolution	Scientific requirement	CPC progress
			In the longliners, two interaction with cetaceans (dolphins) was observed in 2021 which raised to total level of 39 interactions.
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7– 9	Whale sharks are protected in Mozambique according with the new maritime fishing regulation approved in 2020 and fishing is totally prohibited. Moreover, Mozambique has no purse seine fleet. In the longliners, no interaction with whale sharks was observed in 2021.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	The Oceanic whitetip shark is protected in Mozambique according with the new maritime fishing regulation approved in 2020 and fishing is totally prohibited. Mozambique has been recording the incidentals catches and live releases of the oceanic whitetip through scientific observer scheme. In 2021 four interactions with Oceanic whitetip shark were observed which raised to total level of 78 intarations for entire fleet. Fishing masters are continuously encouraged to record and report on this species of shark during the pre-fishing briefing. Also, this resolution is included in the Terms and Conditions for Tuna License.
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	Mozambique has developed and implemented since 2014 the national tuna longline logbook that captures all required information stated in this resolution.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Mozambique submitted the mandatory statistics for the national fleet as stated in the resolution requirements within deadlines (30/06/2022). Moreover, continuous interaction with the secretariat exists to clarify any matter related to the data. From this integration, additional data from coastal fisheries where submitted later.
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	Mozambique has no gillnet fisheries impacting on marlin species.
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	Mozambique has developed and implemented since 2014 the national tuna longline logbook that captures all required information stated in this resolution.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	Mozambique submitted the mandatory statistics for the national fleet as stated in the resolution requirements within deadlines (30/06/2022). Moreover, continuous interaction with the secretariat exists to clarify any matter related to the data. From this integration, additional data from coastal fisheries where submitted covering the issues highlighted by the secretariat.
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	Mozambique has no gillnet fisheries impacting on marlin species.
17/05	On the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 6, 9, 11	The Mozambican sharks' catches of the year 2021 were reported within the deadlines as required in the res. 15/02. However, shark cathes reporting still needs improvements to better report at the species level. In the longline fishery sharks have been monitored through the observer scheme. The new maritime fishing regulation approved in 2020 (Decreto n.º 89/2020 of October 8th) establish in the number 6 of the article 146 the ban of shark finning. Size limits was established for all IOTC sharks to discourage catches of juveniles sharks. Additionally, the new Recreational and Sport Fishing Regulation approved in 2021 (Decreto 82/2021 from October 15th) prohibit the catch of sharks in recreation and

Res. No.	Resolution	Scientific requirement	CPC progress
			sport fishing. Fishing masters are continuously encouraged to record on logbooks and report on this species of shark during the pre-fishing briefing. Also, this resolution is included in the Terms and Conditions for Tuna License. Mozambique is also committed to improve the level of scientific research on sharks. There is an ongoing project, since 2019, called "Improving Shark monitoring in Mozambique" aiming to assess the impacts of artisanal fisheries on sharks and rays. Additionally the project is focused in describe the biodiversity of sharks species in some potential KBAs for sharks and rays in Mozambique using BRUVs. The preliminary results will be shared in the next WPEB.
18/02	On management measures for the conservation of blue shark caught in association with IOTC fisheries	Paragraphs 2-5	In the longline fishery information of blue shark have been collected through the observer scheme size and maturity status. The new maritime fishing regulation approved in 2020 (Decreto n.º 89/2020 of October 8th) established the minimum size of 150cm TL for blue shark caught in all fisheries (article 145 – appendice XI) and finning was prohibited (nr. 6 of article 146). Fishing masters are continuously encouraged to record on logbooks and report on this species of shark during the pre-fishing briefing. Also, this resolution is included in the Terms and Conditions for Tuna License.
18/05	On management measures for the conservation of the Billfishes: Striped marlin, black marlin, blue marlin and Indo-Pacific sailfish	Paragraphs 7 – 11	The new maritime fishing regulation (Decreto n.º 89/2020 of October 8th) established the minimum size of 60cm TL for billfishes caught in all fisheries as a conservation measure for this group. Additionally, a daily bag limit of 2 billfish per fisherman was established for recreational and sport fishing by the new Recreational and Sport Fishing Regulation. Billfish catches are captured throughout logbooks and reported according the res. 15/01. Information of billfishes have been collected through the observer scheme in the longline fisheries, in artisanal fisheries and recreational fisheries. Fishing masters are continuously encouraged to record and report on this species of shark during the pre-fishing briefing. Also, this resolution is included in the Terms and Conditions for Tuna License. In terms of research, Mozambique joined the regional project entitled "Billfish Interactions, Livelihoods And Linkages For Fisheries Sustainability In The Western Indian Ocean (BILLFISH – WIO)" 2020-2022 and preliminary results will be shared in the next WPB.
18/07	On measures applicable in case of non-fulfilment of reporting obligations in the IOTC	Paragraphs 1, 4	-Mozambique updates annually, the Terms and Conditions for Tuna License where all relevant IOTC resolutions are listed; -Mozambique is implementing a mandatory logbook since 2014, based on the IOTC requirements for data gathering. Mozambique conduct pre fishing briefings sessions prior to give fishing license to the fishing masters at port where they are informed to comply with recording of data according to the logbook. Mozambique also conducts trainings for the vessel masters on how to fill properly the logbooks. The quality of logbook data for national fleet is assessed by comparing it with the scientific observer data, mainly on ecosystem and bycatch issues. -Mozambique is implementing Electronic Report System-ERS

Res. No.	Resolution	Scientific requirement	CPC progress
			for foreign fleet, entry exit catch report system and Vessel Monitoring System which cover all national and foreign tuna vessels; -Mozambique is implementing observer scheme for national fleet and Mozambique observers were trained by OFCF-Japan in 2016 and IOTC species ID guides were translated into Portuguese to facilitate all users to correctly identify IOTC species and thus improve reporting. - Mozambique is implementing the pilot project to improve the data collection on artisanal costal tuna fisheries in two northern provinces (Cabo Delgado and Nampula) where artisanal fisheries show significant catches of tuna species and billfishes; -The master plan of fishing statistics was recently revised aiming to adequate the actual data collection system to the new structure of the fishing sector (under the Ministry of Sea, Inland Waters and Fisheries) and decentralization process; - Following recommendations of the Secretariat, Mozambique adopted the Submission of observer data in electronic format since 2015, that is more accessible by the secretariat (data section) and minimize data entry errors. Observer data from year 2019 were submitted to the IOTC.
19/01	On an Interim Plan for Rebuilding the Indian Ocean Yellowfin Tuna Stock in the IOTC Area of Competence	Paragraph 22	Despite not having an established gillnet fleet targeting on IOTC primary species, Mozambique has been making efforts to increase the level of observer coverage above the recommended minimum of 5% in the longline fishery. In 2015 the coverage level was 16% while in 2016 and 2017 the coverage was 11%. In 2018 coverage increase to 21% while in 2019 it was18%. Exception was 2020 and 2021 that coverage was 5.1% as result of some restrictive measures to mitigate the COVID 19.
19/03	On the Conservation of Mobulid Rays Caught in Association with Fisheries in the IOTC Area of Competence	Paragraph 11	All Mobulid Rays are protected in Mozambique according with the new maritime fishing regulation approved in 2020 (Decreto n.º 89/2020 of October 8th) and fishing by any fleet is totally prohibited (Article 146 – Appendice XIII). Mozambique is recording the incidentals catches and live releases of Mobulid Rays through scientific observer scheme. In 2021 two interactions were observed and based on that the annual level raised to 39 interactions. Fishing masters are continuously encouraged to record and report on fisheries interactions with these group of rays during the pre-fishing briefing including the briefing on safe release technics. Also, this requirement is included in the Terms and Conditions for Tuna License.

9. LITERATURE CITED

- ADNAP (2019). Relatório Preliminar do PES 2019 – Janeiro-Dezembro. Administração Nacional as Pescas. Maputo. Moçambique. 40pp.
- ADNAP (2018). Relatório Anual de Actividades PES 2017. Moçambique, Maputo. 46 pp.
- ADNAP (2017). Relatório Anual de Actividades PES 2016. Moçambique, Maputo. 51 Pp. ADNAP (2014). PLANO DE GESTÃO PARA A PESCARIA DE LINHA DAS ÁGUAS MARÍTIMAS DE MOÇAMBIQUE 2014-2018. Moçambique, Maputo. 56pp.
- ADNAP (Administração Nacional das Pescas) (2013). Plano Estratégico e Desenvolvimento da Pescaria de Atum em Moçambique – PEDPA. Moçambique, Maputo. 48pp.
- Baloi P., Santana-Afonso, P., Premegi N e Volstad, J.H., 2007. Metodologia e processamento de dados de captura e esforço de pesca em Moçambique. Revista de Investigação Pesqueira Nº. 27. Instituto de Investigação Pesqueira, Moçambique.
- Brito. A. (2012). An interview-based assessment of the incidental capture and mortality of sea turtles in Mozambique´s Sofala Bank commercial shrimp fishery. Revista Moçambicana de Investigação Pesqueira. 30: 31-56.
- Chacate, O and R. Mutombene (2019). Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2018. IOTC-2019-SC22-NR18. 28pp.
- Chacate, O and R. Mutombene (2018). Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2017. IOTC-2018-SC21-NR18. 28pp.
- Chacate, O and R. Mutombene (2017). Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2017. IOTC-2017-SC20-NR18. 28pp.
- IDPPE (2013). Censo da pesca artesanal 2012 – Principais Resultados. Instituto Nacional para o Desenvolvimento da Pesca de Pequena Escala. Moçambique, Maputo. 122pp.
- IIP (2015). Relatório Anual 2014. Instituto Nacional de Investigação Pesqueira. Moçambique, Maputo. 81pp.
- MINISTÉRIO DAS PESCAS (2013). Plano Director de Estatisticas de Pescas 2013-2019. Moçambique, Maputo. 43pp.
- MINISTÉRIO DAS PESCAS (2009). Plano Director das Pescas 2010-2019. Moçambique, Maputo. 55pp.
- MIMAIP (Ministério do Mar, Aguas Interiores e Pescas) (2022). Balanço do Plano Económico e Social de 2021. Ministério do Mar, Aguas Interiores e Pescas. Moçambique, Maputo. 46 pp
- MIMAIP (Ministério do Mar, Aguas Interiores e Pescas) (2020). Balanço do Plano Económico e Social de 2019. Ministério do Mar, Aguas Interiores e Pescas. Moçambique, Maputo. 43 pp
- MIMAIP (Ministério do Mar, Aguas Interiores e Pescas) (2019). Balanço do Plano Económico e Social de 2018. Ministério do Mar, Aguas Interiores e Pescas. Moçambique, Maputo. 47 pp.
- MIMAIP (Ministério do Mar, Aguas Interiores e Pescas) (2018). Balanço do Plano Económico e Social de 2017. Ministério do Mar, Aguas Interiores e Pescas. Moçambique, Maputo. 31 pp.
- MIMAIP (Ministério do Mar, Aguas Interiores e Pescas) (2017). Balanço do Plano Económico e Social 2016. Ministério do Mar Aguas Interiores e Pescas. Moçambique, Maputo. 35 pp.

- Mutombene R., O. Chacate, C. Chioze and J. Halafo (2020). Mozambique National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2020. 29pp.

- Mutombene, R., O. Chacate, J. Mafuca, C. Chioze e B. Malauene (2020). Avaliação do Estado de Exploração dos Peixes Demersais Acessíveis à Pesca Semi-industrial e Industrial de Linha em Moçambique 2016-2020. IIP. Maputo.

- Mutombene, R., I. Chaúca and O. Chacate (2016a). Assessment of the Status of Data Collection and Reporting of Artisanal Fisheries in Mozambique. Case study of two coastal provinces, Cabo Delgado and Nampula. IOTC-2016-WPDCS12-13. 21pp.

- Mutombene, R., O. Chacate, J. Mafuca e B. Malauene (2016b). Avaliação do Estado de Exploração dos Peixes Acessíveis a Pesca Semi-industrial e Industrial de Linha em Moçambique 2011-2015. IIP. Maputo.

- Mutombene, R. (2015). Depredation and Incidental Catches on Longline Fishery of Southern Mozambique: Preliminary information on ecosystem issues based on observer on-board sampling. IOTC-2015–WPEB11–45. 07pp.