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[Mauritius] National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2015

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Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Islands

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** [e.g. for a National Report submitted to the IOTC Secretariat in 2015, final data for the 2014 calendar year must be provided to the Secretariat by 30 June 2015)	YES 30/06/2015
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 [e.g. for a National Report submitted to the IOTC Secretariat in 2015, preliminary data for the 2014 calendar year was provided to the IOTC Secretariat by 30 June 2015). **REMINDER:** Final longline data for the previous year is due to the IOTC Secretariat by 30 Dec of the current year [e.g. for a National Report submitted to the IOTC Secretariat in 2015, final data for the 2014 calendar year must be provided to the Secretariat by 30 December 2015).	YES 30/06/2015 Final longline data for the year 2014 will be provided by 30 December 2015.
If no, please indicate the reason(s) and intended actions:	

Executive Summary

The national tuna fleet has undergone major development with an increase in capacity from 4 vessels in 2013 to 10 in 2014 mainly because of an increase in the number of purses seiners (1 purse seiner in 2013 compared to 7 in 2014). A total of 151 foreign vessels and 47 national vessels were monitored through the vessel monitoring programme (VMS) through a satellite based system. The local purse seiners operated on a large spatial scale outside the Mauritius Exclusive Economic Zone (EEZ) with fishing zones spreading between latitudes 01ºN-14ºS and longitudes 49ºE-69ºE. These vessels unloaded a total catch of 7785 tonnes of tunas and tuna like species, comprising of a high percentage of yellowfin tuna (Thunnus albacares, 51.7%), followed by skipjack tuna (Katsuwonus pelamis, 39%) and bigeye tuna (Thunnnus obesus, 7%). The other species caught included mackerel scads (Decapterus spp, 1.2%), albacore tuna (Thunnus alalunga, 0.58%) and others (marlins, sailfish and dolphin fish, 0.61%). Fishing operations were also carried out by 3 local longliners (< 24m), which undertook a total of 29 trips in 2014. The fishing effort (105,120 hooks) was mostly concentrated in zones distributed between latitudes 15°S-20°S and longitudes 55°E-61°E with a total catch of 42 tonnes of chilled fish. Swordfish remained the target species of this fishery, representing 32.9% of the total catch followed by yellowfin tuna (26.4%), bigeye tuna (18.7%), albacore tuna (15.1%) and billfishes (2.5%). Tunas can be considered as the secondary target species of the national longline fishery with an increasing yearly trend from 39% of the total catch recorded in 2012 to 60% of the total catch in 2014. A very small amount (0.2%) of shortfin mako shark (Isurus oxyrhinchus) was retained by the national longline vessels and the latter reported no encounter with seabirds and turtles. A total of 1608 tunas were sampled on the catch of national purses seiners and longliners with a distribution range of 40 cm to 163cm for yellowfin tuna, 42 cm to 161 cm for bigeye and 40cm to 73cm for skipjack. The length varied between 90 cm to 121 cm for albacore tuna landed by national longliners.

Contents

1. BACKGROUND/GENERAL FISHERY INFORMATION

The tuna resources within the 1.9 million km2 exclusive economic zone (EEZ) of Mauritius represent a great opportunity for economic development. These tuna resource are mostly harvested by foreign longliners (mostly Asian) and purses seiners (mostly European) operating under a fishing licence against the payment of a licence fee or under fishing agreements. The local tuna fishery in Mauritius is diverse, ranging from large scale, industrial purse seine operations in both the EEZ of Mauritius and the high seas to small scale local longline fishery, recreational fishery and anchored Fish Aggregating Device (aFAD) fishery operating exclusively inside the EEZ.

The local longline fishery consists of small boats less than 24 meters which landed swordfish as the primary target species and tunas as the secondary target species. The fishes caught by the local longliners are gutted and/or headed prior to be stored on ice onboard the vessels. These chilled fishes are destined for both local and foreign consumption. There were 3 longliners that operated in 2014 with a total catch of 42 tonnes of tunas and tuna associated species.

The recreational fishing is an important activity for the tourism industry and local recreational fishermen. The species caught in this fishery comprises mainly marlins (mainly Makaira spp), sailfish (Istiophorus spp) and tunas. International big game fishing competitions are held annually. The main fishing gear is trolling and the fishery supplies the local market with an additional estimated amount of about 350 tonnes.

Mauritius-flagged vessels have not been operating in the purse seine fishery since the year 2000. However, in October 2013, one Mauritius-flagged purse started operating and in 2014 there were seven Mauritius-flagged purse seiners in operation. This major increase in fleet capacity caused an increase in the amount of tuna landed from 855 tonnes in 2013 to 7597 tonnes in 2014. Moreover, most of the catch was made on log associated schools .

The national fisheries are monitored through the collection, processing and analysis of fishing data obtained through the logbooks submitted by the local and foreign licensed vessels. Data is also collected from vessels calling at Port Louis by the Port State Control Unit, from fishing companies representing foreign vessels calling at Port Louis and from the Mauritius Ports Authority.

2. FLEET STRUCTURE

In 2014, the Mauritian longline fleet consisted only of 3 vessels less than 24 metres in length targeting swordfish. These surface longline fishing vessels undertook 29 fishing campaigns (131 Fishing days) in the EEZ of Mauritius. There was an increase in the fleet capacity of purses seiners from only one vessel operating in 2013 to 7 vessels in 2014. 22 fishing trips which were equivalent to 386 fishing days were carried out by these 7 purses seiners.

Table 1: Number of vessels operating in the IOTC area of competence, by gear type and size

Year	Gear	Number of vessels	Number of fishing days	GT	LOA (m)	Preservation Methods
2010	Surface longline	2	87	30.2-38.4	13.50-15.80	Chilled
	Surface longline	1	122	577	48	Frozen
2011	Surface longline	4	316	38.4-99.4	13.50-22.80	Chilled
2012	Surface longline	5	238	38.4-90.4	13.50-22.80	Chilled
2013	Surface longline	3	196	38.4-90.4	13.50-22.80	Chilled
	Purse seine	1	81	2660	89.4	Frozen
2014	Surface longline	3	131	38.4-90.4	13.50-22.80	Chilled
	Purse seine	7	386	278-2660	49.56-89.4	Frozen

3. CATCH AND EFFORT (BY SPECIES AND GEAR) [Mandatory]

The fishing activities of the longliners are carried out exclusively in the EEZ of Mauritius between latitudes 15°-20°s and longtitudes 55°-61°E. The catch of the surface longline fishery has varied over the years with the lowest catch recorded in 2010 (32t) and the highest catch recorded in 2011 (89t). The catch unloaded consisted mainly of swordfish and some amount of tunas is also obtained as major by-catch. Other minor by-catch include dorade (Coryphaena hippurus), followed by wahoo (Acanthocybium solandri) and oilfish (Ruvettus pretiosus). The amount of yellowfin tuna caught has remained constant for the year 2013 and 2014. Although the target specie of the fishery remains swordfish, the catch of tunas has shown to increase over the years from 39% of the total catch recorded in 2012 to 60% of the total catch in 2014. In the group of tunas, the proportion of yellowfin tunas has remained high (40.1%-58.2%) compared to others tunas with the exception of year 2013 where the catch of bigeye tuna was highest (49.6%).

In 2013, one local purse seiner was active as from October with a total catch of 855 tonnes comprising of skipjack tuna (51%) followed by yellowfin tuna (41%) and bigeye tuna (3%). However in the year 2014, seven purse seiners were operational and the catch composition showed yellowfin (51.7%) as the dominant species making up the majority of the catch, followed by skipjack tuna (39%) and bigeye tuna (7%). The catch also consisted of albacore (0.58%) and miscellaneous species (1.82%) including sailfish, dolphin fish, horse mackerel (Decapterus spp) and rainbow runner. The majority of the total catch was made from log associated fishery (58.8%) where 77.8% of the log associated catch were derived from artificial logs (drifting FADs) and 22.2 % from natural logs. A total of 482 sets were recorded for the purse seine fishery. The total catch was obtained on log associated schools and 83.8% of the catch came from artificial FADs.

Table 2a. Annual catch (kg) of surface longline chilled fish fishery (vessels <24 m).

Species	2010	2011	2012	2013	2014
Yellowfin	7621	16476	5715	11265	11265
Bigeye	460	10826	2960	17185	7955
Albacore	4998	8415	5555	6215	6451
Swordfish	17070	43999	17065	28320	14015
Other billfishes	260	3531	1810	2053	1055
Sharks	Nil	740	455	680	90
NEI	1925	5407	2561	2255	1789
Effort (hooks)	58 500	252 480	182 300	150 560	105120
Total	32334	89394	36121	67973	42620

Table 2b. Annual catch of tropical tuna (tonnes) of purse seine fishery

Species	2013	2014
Yellowfin	352	4025
Bigeye	27	540
Skipjack	476	3032
Effort (no. of sets)	53	482
Total	855	7597

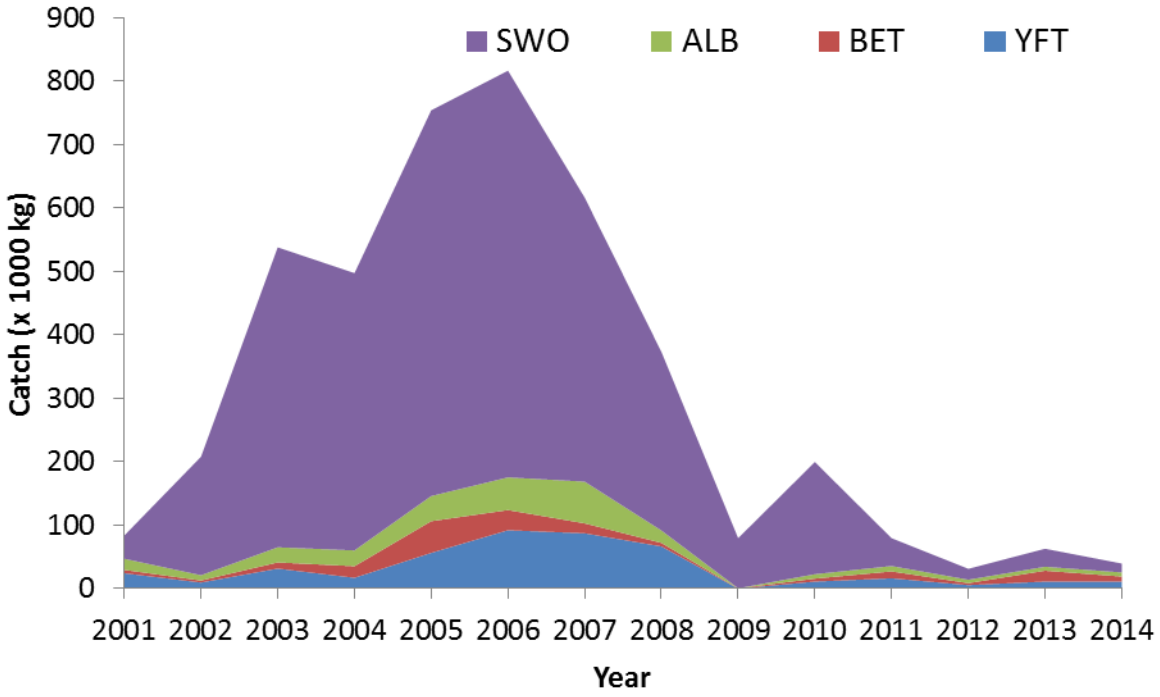

Figure 1. Historical annual catch for the national longline fleet and primary species, for the IOTC area of competence for the entire history of the fishery/fleet

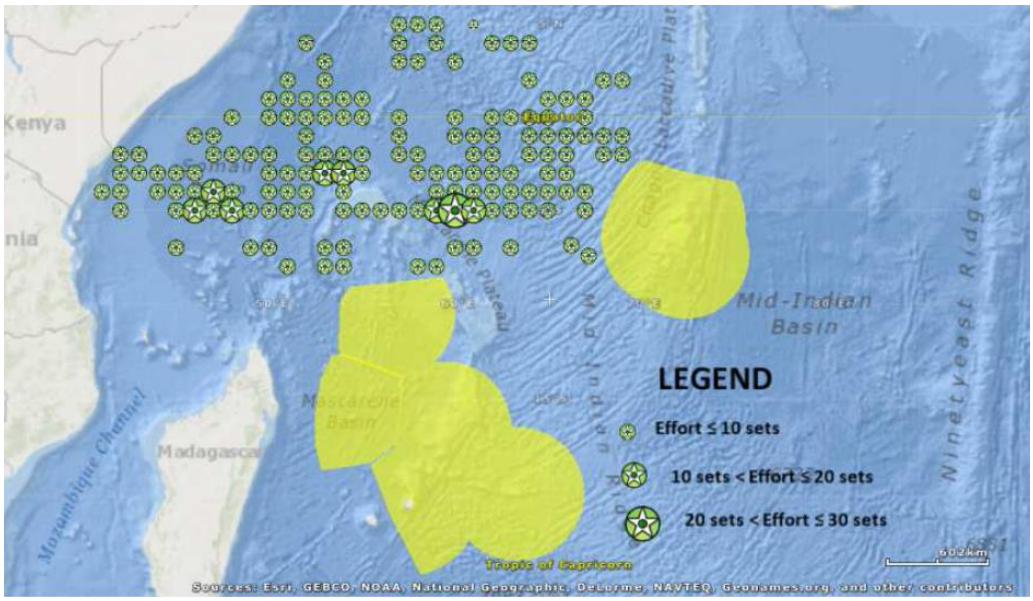

Figure 2a(i): Map of the distribution of fishing effort (number of sets) for the national purse seine fleet in the IOTC area of competence for the year 2014.

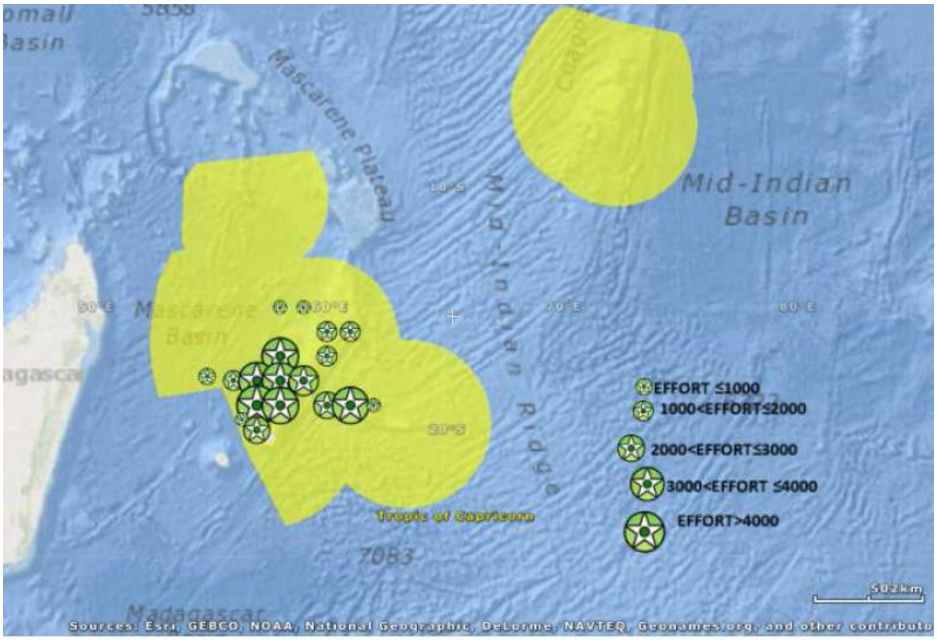

Figure 2a(ii): Map of the distribution of fishing effort (number of hooks) for the national longline fleet in the IOTC area of competence for the year 2014.

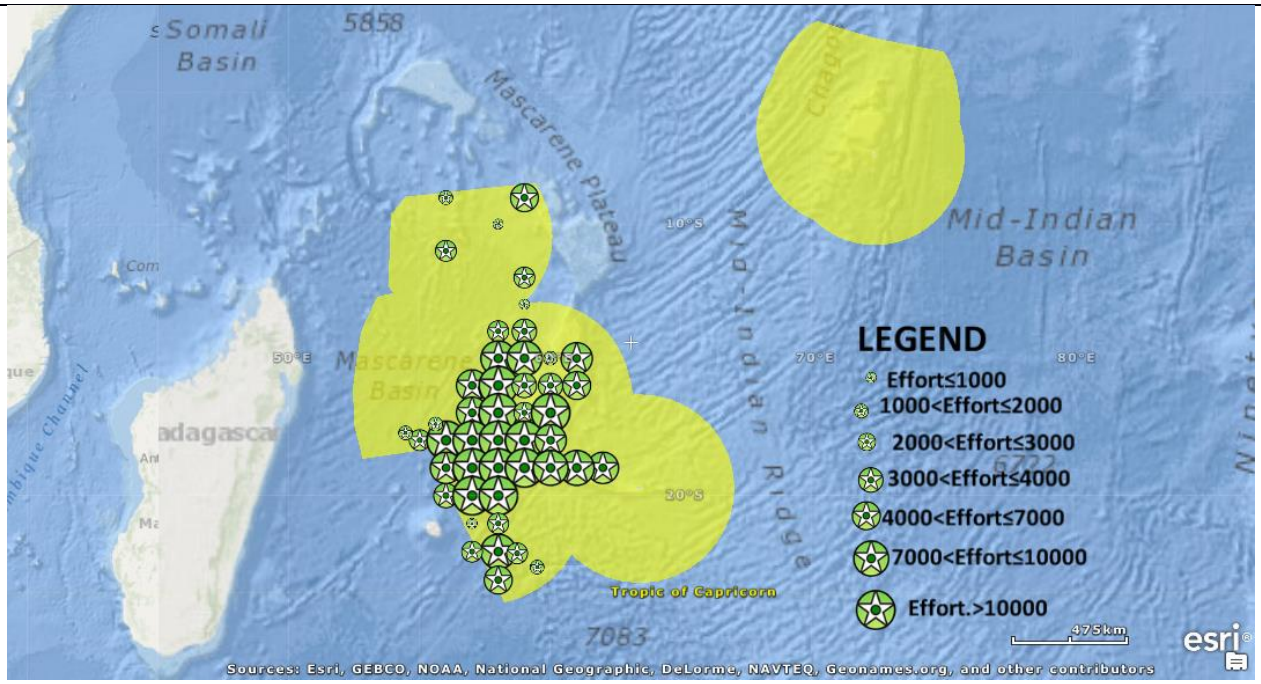

Figure 2b (i) Map of the distribution of fishing effort (number of hooks) for the national longline fleet in the IOTC area of competence for the years 2010-2014.

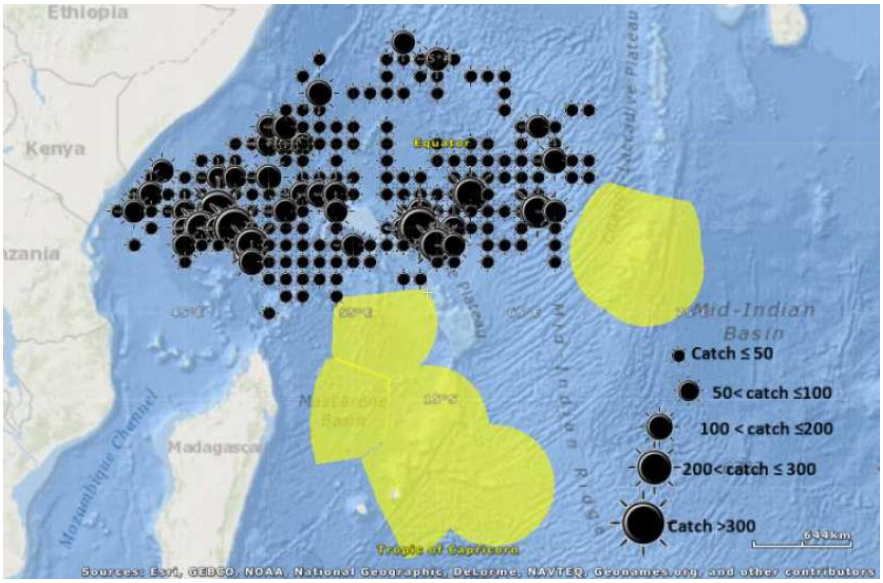

Figure 3a (i): Map distribution of tuna catch (tonnes) for the national purse seine fleet in the IOTC area of competence for the year 2014

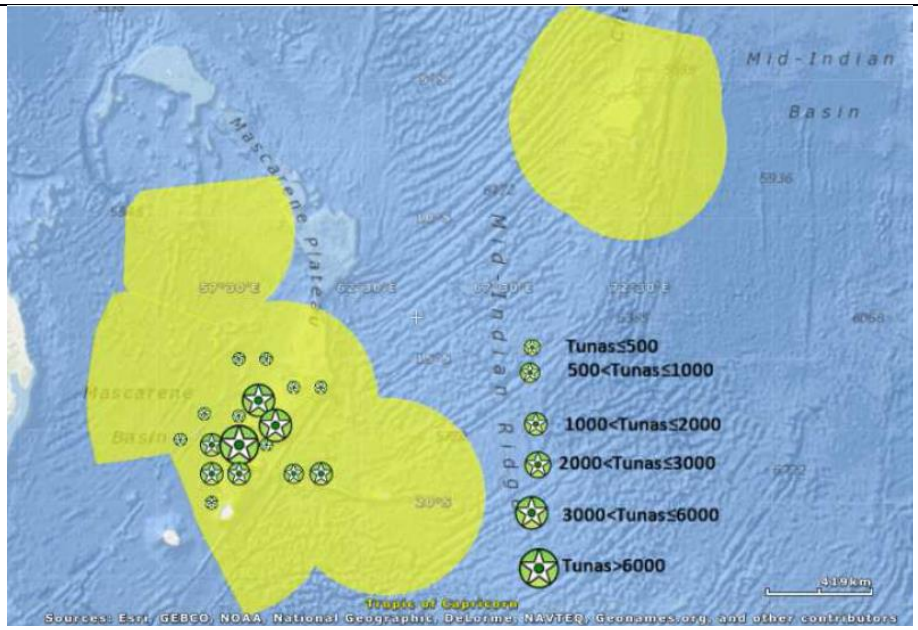

Figure 3a (ii): Map distribution of tuna catch (Kg) for the national longline fleet in the IOTC area of competence for the year 2014

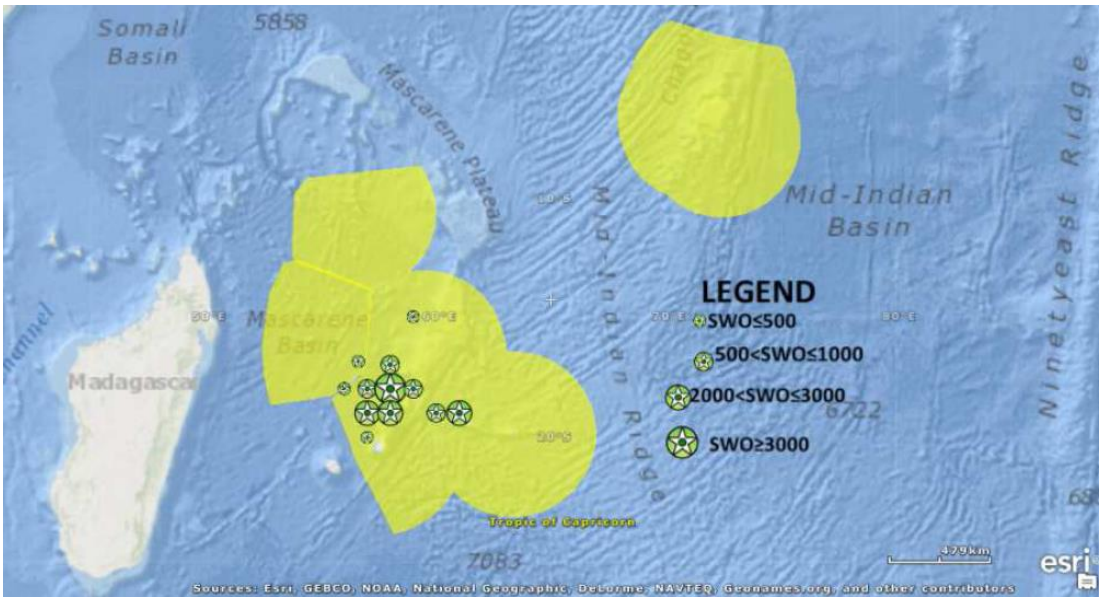

Figure 3a (iii): Map distribution of swordfish catch (Kg) for the national longline fleet in the IOTC area of competence for the year 2014

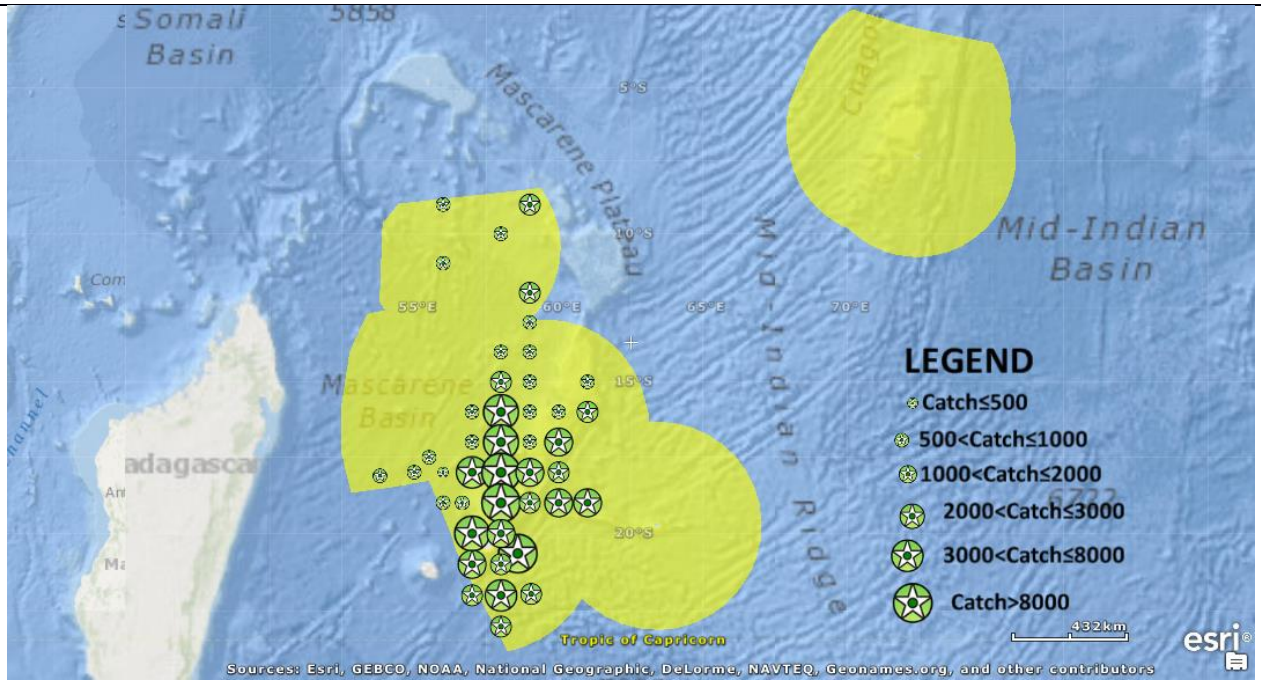

Figure 3b (i): Map of distribution of tuna catch (kg) for the national longline fleet, in the IOTC area of competence for years 2010–2014).

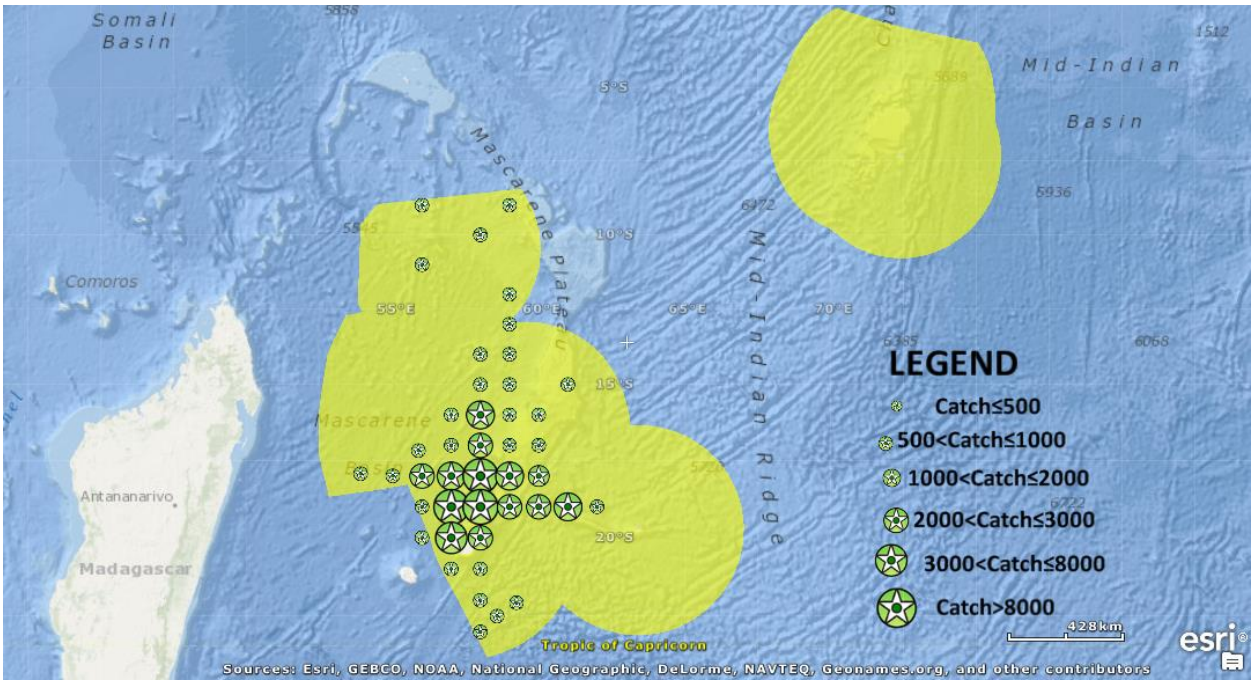

Figure 3b (ii): Map of distribution of swordfish catch (kg) for the national longline fleet, in the IOTC area of competence for years 2010–2014).

4. RECREATIONAL FISHERY [Mandatory]

The sports/recreational fishing is an important activity for the tourism industry and local recreational fishermen. International big game fishing competitions are held annually. Around 60 sports/recreational fishing boats are involved in this fishery. The main fishing gear is trolling and the fishery supplies the local market with an additional estimated amount of about 350 tonnes. The main species comprises marlins,

sailfish, tuna, common dolphinfish and wahoo. A data collection system is presently being planned for the proper monitoring of the sports fishery.

5. ECOSYSTEM AND BYCATCH ISSUES

5.1 Sharks [Mandatory]

The NPOA-sharks has been completed and is currently in the implementation phase. 2 workshops on the identification of demersal and pelagic shark and shark fins were conducted by Smartfish/FAO during the year under review. The working sessions included practical and theoretical sessions that emphasized mostly on the identification of sharks species using the identification keys the Shark and Shark fin Identification manual devised by the NPOA.

Table 3: Total number and weight of sharks, by species, retained by the national fleet in the IOTC area of competence for the period 2013-2014.

Year	No. of sharks	Species	Weight (Kg)
2013	**17**	*Isurus oxyrhinchus*	**680**
2014	**3**	*Isurus oxyrhinchus*	**90**

Table 4: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2010–2014). Where available, include life status upon released/discard. **[Desirable]**

5.2 Seabirds [Mandatory]

There has been no encounter with seabirds as per the logbooks submitted by foreign-flagged and Mauritius-flagged licensed vessels. Since the zone of operation of national flagged vessels is not in the area south of 25 degrees South latitude, the encounter of seabirds is nil. Nevertheless, the respective agents and masters of national flagged vessels are sensitised on the mitigation measures and they have been provided by 'Seabirds Identification cards' as well.

5.3 Marine Turtles [Mandatory]

Sections 16 and 17 of the Fisheries and Marine Resources Act 2007, Act no. 27 of 2007 have made provisions for the protection of marine turtles as well as the eggs of marine turtles. Also, 'Marine Turtle Identification Cards – for Indian Ocean Fisheries' depicting different species of turtles, techniques of releasing hooked turtlesas well as some literature related to the ecology, threats; amongst others, have been distributed to all masters and agents of the Mauritius-flagged vessels.

Moreover, the agents of Mauritius-flagged and foreign-flagged have been advised to sensitise the operators of longliners on the mandatory possession of line cutters and de-hookers onboard their vessels, as specified in Resolution 12/04

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

The Fisheries and Marine Resources Act 2007 provides that: *no person shall land or cause to land, sell or have in his possession in Mauritius or in the maritime zones any marine mammal.*

Table 5. 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. 2010–2014 or to the extent available).

No catch of seabirds, marine turtle and marine mammals have been recorded for the national fleet in the IOTC area of competence for the most recent five years.

No seabirds, marine turtle and marine mammals have been recorded during port inspection by the Port State Control Unit in 2013.

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS [Mandatory]

6.1. Logsheet data collection and verification

Data collection using log sheets commenced in 2001 and is still being implemented. One of the fishing licence conditions is mandatory submission of properly filled catch logbooks by fishing vessels prior to unloading. Failure to provide factual logbooks may entail forfeiture of logbook deposit fees paid and may also disqualify the applicant for future licences.

A total of 192 logbooks were collected from both foreign licensed longliners and purses seiners in 2014. 48 logbooks were received from local vessels. These logbooks are collected by the fisheries officers based at the port state control unit and are sent to the Fisheries Monitoring Centre (FMC) and the statistical unit for verification. Trip and catch/effort information obtained from logbooks are examined with the aid of VMS data (fishing position) obtained from the FMC and landing data that are provided by the port state control unit (PSCU).

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

The Fisheries Monitoring Center (FMC), which was set up in 2005 comprises of a VMS (vessel monitoring system) network that regularly receives information such as geographical positions of vessels and their

corresponding date and time. The VMS network consists of a server which holds five workstations, out of which three are located at the Fisheries Monitoring Centre and the remaining two at the National Coast Guard. A set of regulations was prescribed to provide the legal framework to support the VMS. All licensed fishing vessels are required to be equipped with the VMS system and to report to the FMC every two hours on fishing positions, speed and directions. A total of 198 vessels have been monitored during the year 2014.

6.3. Observer programme

The observer programme was not implemented in 2014. However, deployment of observers onboard national purse seiners has been initiated as from February 2015 and a total of 3 purse seine trips has been covered under the observer programme.

Table 6. Annual observer coverage by operation, e.g. longline hooks, purse seine sets (for the most recent five years at a minimum, e.g. 2010–2014 or to the extent available). **[Mandatory]**

Figure 4. Map showing the spatial distribution of observer coverage. **[Mandatory]**

6.4. Port sampling programme [including date commenced and status of implementation]

The sampling programme consists of sampling exercises that are carried out on the catch of tuna unloaded by licensed longliners and purse seiners. Data collection sheets have been designed accordingly to enable the recording of length, weight and species composition data during unloading of catch from both foreign vessels and local boats. The vessel's name and date of unloading is also recorded during sampling. The local longline fishery which targets swordfish also lands a substantial amount of by-catch comprising of tuna with yellowfin tuna being the most predominant species in the group of tuna landed (26%) followed by bigeye tuna (19%) and albacore tuna (15%). Fork length measurements and weight data are recorded for tunas while operculum to keel measurements and weight are recorded for swordfish that are unloaded by local longliners. The number of individuals measured, by species is given in table below.

Table 7. Number of individuals measured, by species and by gear type

Species	Number of individual measured	
	Longline	Purse seine
Swordfish	183	-
Yellowfin tuna	225	546
Albacore tuna	74	-
Bigeye tuna	99	216
Skipjack tuna	-	448

6.5 Unloading/Transhipment [including date commenced and status of implementation] **[Mandatory]**

The Mauritius-flagged purse seiners transhipped in Port Victoria, Seychelles in 2014, as detailed below:

- Yellowfin tuna: 3386 tonnes transhipped

- Bigeye tuna: 174 tonnes transhipped
- Albacore tuna: 8 tonnes transhipped
- Skipjack tuna: 262 tonnes transhipped

7. NATIONAL RESEARCH PROGRAMS [Desirable]

No national research programme is presently in place.

Table 8. Summary table of national research programs, including dates.

Project title	Period	Countries involved	Budget total	Funding source	Objectives	Short description

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

Table 9. Scientific requirements contained in Resolutions of the Commission, adopted between 2005 and 2015.

Res. No.	Resolution	Scientific requirement	CPC progress
15/01	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–10	It is mandatory for all licensed vessels to submit the fishing logbooks prior to unloading. All data concerning fishing operations (e.g. catch and effort data) of all fleet are processed, verified and analyzed on a regular basis. The data sets are regularly reported to the IOTC as per the submission deadlines established under RES 15/02.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	The statistical data required in RES 15/02 is regularly submitted to the Secretariat as per the deadlines specified in the resolutions covered by 15/02. All final catch data for 2014 for purse seiners and national-flagged longliners have already been submitted to the IOTC as well as the preliminary catches of foreign-flagged longliners; the final catch of the later shall be submitted by 30th December 2015.
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	The requirements of RES 15/05 are being presently considered for implementation.
13/04	On the conservation of cetaceans	Paragraphs 7– 9	The Masters and agents of all Mauritius-flagged vessels have been sensitised on the need to comply with RES 13/04. No encounter with cetaceans has been reported for the year 2014. Furthermore, the Fisheries and Marine Resources Act 2007, Act No. 27 of 2007 has prohibited the fishing of marine mammals, as per Section 17.
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7– 9	All vessels have reported nil encounter with whale sharks. Also, the masters and agents of the Mauritius-flagged vessels have already been sensitised on the importance to comply with RES 13/05.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraph 5–6	There has been no encounter with oceaninc whitetip sharks during the year 2014. All fishers have been informed on the need to comply with Resolution 13/06. Furthermore, the NPOA Sharks of Mauritius, which is currently in the implementation phase, has made provisions for the conservation of the oceanic whit etip shark.
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	Skippers of national flagged vessels have been trained in the identification of thresher sharks and have been informed to release live specimens of thresher sharks caught. No vessel has reported any encounter with

Res. No.	Resolution	Scientific requirement	CPC progress
			thresher sharks.
12/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraphs 3–7	No encounter with seabirds has been reported by foreign flagged and local-flagged vessels. All vessels have been advised on the application of the seabird mitigation measures. Furthermore, 'Seabird Identification Cards' provided by the IOTC, have been distributed to the agents of the Mauritius-flagged vessels.
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	Licensed fishing vessels have been notified about the mitigation measures proposed under this resolution. Furthermore, marine turtles and their eggs are protected by the Mauritian law as specified in Sections 16 and 17 of the Fisheries and Marine Resources Act 2007, Act no. 27 of 2007.
11/04	On a regional observer scheme	Paragraph 9	Deployment of observers has been initiated in 2015 and a total of 3 purse seine operations have been covered.
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	Mauritius is not a shark-fishing nation does not issue licenses to foreign vessels targeting sharks. However, guides related to the shark identification have been distributed among the agents of the Mauritius-flagged vessels to avoid the retention of endangered shark species under the IOTC mandate onboard. Moreover, the NPOA sharks of Mauritius have made provisions for the conservation of sharks caught as bycatch. Hence, Mauritius has planned to hold a forthcoming workshop on the 'Identification of sharks and sharks' fins in January 2016 with the aim to sensitise all relevant stakeholders.

9. LITERATURE CITED

1. National report 2013 (Mauritius).

2. National report 2014 (Mauritius).

3. The Fisheries and Marine Resources Act 2007, Act No. 27 of 2007 (Mauritius).