Annual Review of National SBT Fisheries for the Extended Scientific Committee

(Revised as agreed at SC22 following CCSBT 24)

1. Introduction

- Background

No directed fisheries of Southern Bluefin Tuna (SBT) are permitted under the EU quota system of SBT and, therefore, EU fishing vessels do not target SBT. Any incidental catches of SBT by EU vessels are the result of by-catches of longliners operating in the Southern Hemisphere targeting swordfish, in general, in association with sharks, notably in the IOTC Convention Area (Table 1).

Activities in South Atlantic and Southwest Pacific, in areas where SBT bycatch could occur are very low and therefore the information provided for those areas are general and less than the data provided for Indian Ocean.

EU Purse Seiners operating in the Southern hemisphere do not harvest SBT as they fish in tropical tunas fishing grounds.

Area	Year	SBT reported catch (tonnes)
Indian Ocean	2000	0
Indian Ocean	2001	0
Indian Ocean	2002	0
Indian Ocean	2003	3
Indian Ocean	2004	22
Indian Ocean	2005	0
Indian Ocean	2006	3
Indian Ocean	2007	18
Indian Ocean	2008	14
Indian Ocean	2009	2
Indian Ocean	2010	11
Indian Ocean	2011	3
Indian Ocean	2012	4
All	2013	0
All	2014	0
All	2015	0
All	2016	0
All	2017	0
All	2018	0

Table 1. Total reported EU bycatch of SBT.

- Summary of historical developments in the fishery

Indian Ocean

In 2017 (last IOTC report), 22 EU long-liners were fishing for swordfish in association with sharks in IOTC in which interaction with SBT has taken place in the past (14 vessels from Spain, 6 from Portugal and 2 from UK). The average size of the longliners is roughly 40 meters, ranging from 35 to 50 meters. There are also some small longliners active in La Reunion EEZ, mainly fishing Albacore fishing intermittently outside their EEZ but not operating in areas of SBT distribution (i.e. not interfering with SBT fisheries). The number of EU longliners has decreased in recent years from around 31 in 2013 to 22 in 2017.

Atlantic Ocean
In 2018, there were 37 EU longliners (29 from Spain and 8 from Portugal) operating in the South Atlantic (ICCAT), mainly operating outside the SBT distribution area. These surface longliners have the same characteristics as the EU oceanic surface longliners active in IOTC.

West Pacific
In 2018 (last WCPFC report), there were 3 Spanish longliners operating in the Southwest Pacific Ocean that had some fishing trips in the SBT distribution area. These surface longliners have the same characteristics as the EU oceanic surface longliners active in IOTC.

- Overview of the most recent fishing season

No by-catch of SBT in 2018 was reported by the EU fleet, including data provided by observers, operating in all oceans in areas where incidental catches of SBT could occur.

2. Catch and Effort

- Trends (longline), and
- Trends by area and season

(Table should include: catch & effort for above strata as well as totals for the entire history of the fishery)

The EU fleet does not target SBT and there were no incidental catches of SBT by EU vessels operating in the SBT distribution area. The information and data provided below concerns fishing activities of the EU longliners operating in areas where SBT encounters could occur in all oceans.

Indian Ocean
Catch and effort of the EU longline fleet targeting swordfish in association with sharks is distributed in the Southern Indian Ocean between latitudes 20°S and 40°S, mainly around and north of 30 ºS, in the Mozambique Channel, at the south of Madagascar and around the longitude of 100°E (Figures 1 to 2).

The nominal effort – number of hooks - for all longliners targeting swordfish in association with sharks has decreased since 2013 (Table 2). EU fleet (Spain, Portugal and UK flagged vessels) mainly operate in IOTC high seas. In 2017, swordfish and sharks catches represented respectively about 43 % and 49 % of total catches.

Year	Effort	Catches (t)						
	(10^6 Hooks)	SWO	BSH	SMA	TUS	BIL	NEI	Total
2011	5,353	4.682	4.459	612	159	52	259	10.223
2012	5,941	5.770	4.559	750	110	51	146	11.385
2013	8,324	6.692	1.765	887	224	84	164	9.816
2014	7,665	5.285	5.794	1.026	324	45	100	12.574
2015	6,312	5.240	5.166	692	402	69	126	11.696
2016	6,398	4.958	5.140	715	913	237	303	12.265
2017	5,697	4.609	4.495	798	431	159	271	10.763

Table 2. Nominal efforts (Number of hooks) and catches in tonnes of live weight of the EU longliners in IOTC area targeting Swordfish in association with sharks.

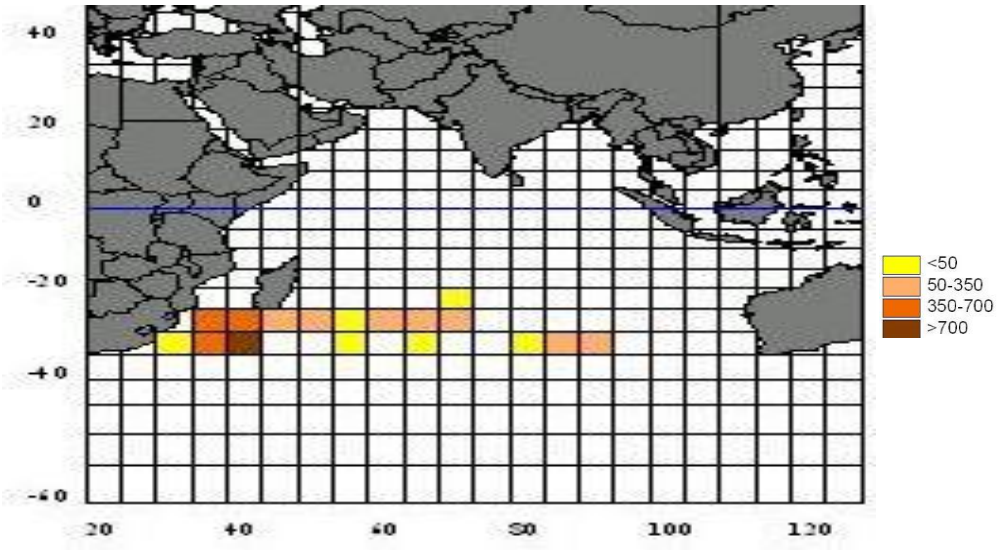

Figure 1. Distribution of the nominal fishing effort (thousands hooks) by 5ºx5º squares carried out by the Spanish surface longline fleet in the Indian Ocean during the year 2017.

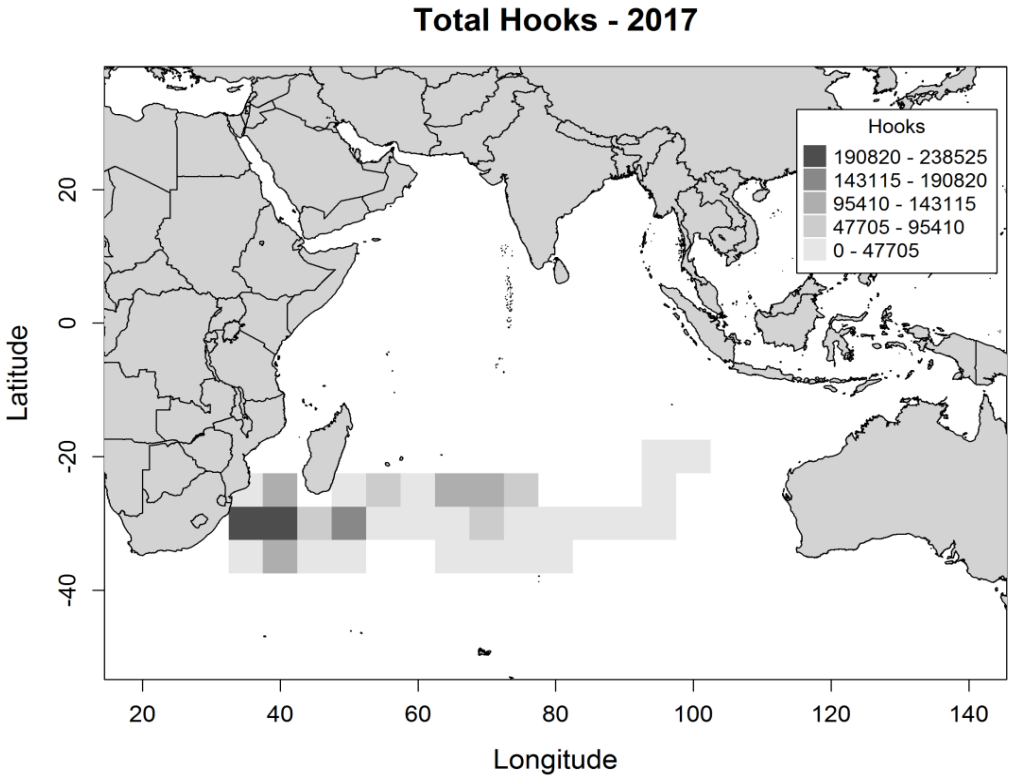

Figure 2. Map of the distribution of fishing effort (number of hooks deployed), by the Portuguese surface longline fleet operating in the IOTC area of competence during 2017.

Year	Total Effort	Total Catch
2017	500300	579.8
2016	271700	469.4
2015	388300	745.5
2014	579700	1004
2013	502700	931.1
2012	577900	1224.9
2011	690800	1165
2010	566000	1064.6
2009	800900	1295.9

Table 3: Historical total catches (tonnes) and effort (No. of hooks x no. of sets x days fished) by UK in IOTC area (distribution maps per species presented at 3. Nominal CPUE)

Southern Atlantic Ocean

The EU longline fleet operating in the Southern Atlantic Ocean, targets swordfish in association with sharks. These vessels mainly operated in fishing areas situated at the north of 30° south but intermittently entered the SBT distribution area.

In 2018 in the in South Atlantic, the Spanish surface longliners operated 6381 fishing days (FAO 47 zone, 3417 days and FAO 41 zone, 3730 days) (main catches of the Spanish fleet are shown in **table 9**) and the Portuguese surface longliners operated 1220 fishing days (**table 4**).

FAO_AREA	DAY EFFORT	TON
41.1.4	**162**	**614,258**
41.2.1	**56**	**144,358**
41.2.2	**21**	**93,16**
41.2.3	**33**	**335,156**
41.2.4	**319**	**4471,403**
41.3.1	**41**	**552,054**
41.3.3	**20**	**184,945**
47.A.0	**27**	**114,312**
47.A.1	**31**	**136,392**
47.B.0	**83**	**224,337**
47.B.1	**147**	**566,642**
47.C.0	**105**	**426,512**
47.C.1	**52**	**184,766**
47.1.3	**123**	**1024,84**
Total	**1220**	**9073.135**

Table 4: Portuguese surface longliners in the South Atlantic effort and catches

Relevant information on catch and effort of these fleets has been provided to the ICCAT secretariat.

West Pacific

The Spanish surface longline fleet is composed by 3 longliners. These longliners operated in the temperate area south of 20° south and the mostly work around of 30° south. The port of Auckland (New Zealand) is the main hub for landings and supply activities. Long distances toward south are usually covered before starting fishing activities.

The vessels carry on lengthy trips lasting for 2 to 3 months. The main catches are swordfish and blue shark (catches shown in table 5). They displayed an average of 1.177 hooks per vessel and operated 892 fishing days in 2018. The activity of the fleet commenced in 2004, and it has been targeting swordfish since then.

In 2018, The Portuguese fleet was not active in the WCPFC Convention area.

ALB	BET	BLM	MLS	YFT	BUM	SKJ	PBF	LMA	BSH	SMA	TOTAL
2216.4	**39150.17**	**35152.36**	**7445.6**	**13463.99**	**-**	**-**	**-**	**9644.0**	**1893130.8**	**469024.5**	**2467011.42**

Table 5. Total estimated catches by species in the Pacific Ocean South of the Equator (Kg).

3. Nominal CPUE

Where appropriate:

- Trends by gear type (longline)

Information provided below refers to nominal catch rates of the EU surface longline fleets targeting swordfish in the Southern Hemisphere, including, where available, data on Ecological Related Species.

- Trends by area and season

(Table should include: nominal CPUE for above strata as well as totals for the entire history of the fishery)

Indian Ocean (this data refers to 2017, extracted from the last scientific report sent to IOTC)
Spanish fleet:
Table 6 shows the total yearly catches of swordfish in number of fish and in kg round weight as well as the nominal fishing effort (thousands of hooks) for the 2008-2017 period. All the species caught are dressed, frozen and stowed on board.

During the year 2017 a total of 3,579 thousand hooks were deployed by 14 longliners. The number of fish and round weight of swordfish catches are also shown in **table 6**.

The **figures 3a, 3b and 3c** show, for swordfish, respectively the spatial distribution of catches, the spatial distribution for the nominal effort in number of thousand hooks and the nominal yield in tons of round weight per thousand hooks set in the Indian Ocean by the Spanish surface longline fleet during the year 2017.

	TOTAL CATCH SWO		NOMINAL FISHING EFFORT
YEAR	Number of fish	Kg RW	hooks*1000
2008	76882	3924743	4885
2009	66000	3306663	3634
2010	61100	3116458	3174
2011	63165	3191553	3758
2012	85472	4396670	4674
2013	92909	4766588	6263
2014	79373	4164218	6107
2015	64698	3421352	4509
2016	66952	3354291	4427
2017	58671	2897902	3579

Table 6. Catch in number of fish and in kg round weight of swordfish obtained by the Spanish surface longline fishery and total number of hooks (in thousands) set in the Indian Ocean during the period 2008-2017 (data of previous years have been already reported).

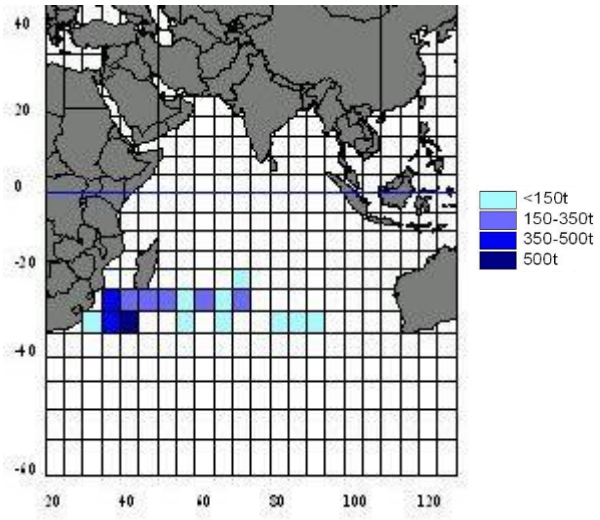

Figure 3a. Map of the distribution of swordfish catch (tons round weight) by 5ºx5º squares of the Spanish surface longline fleet in 2017.

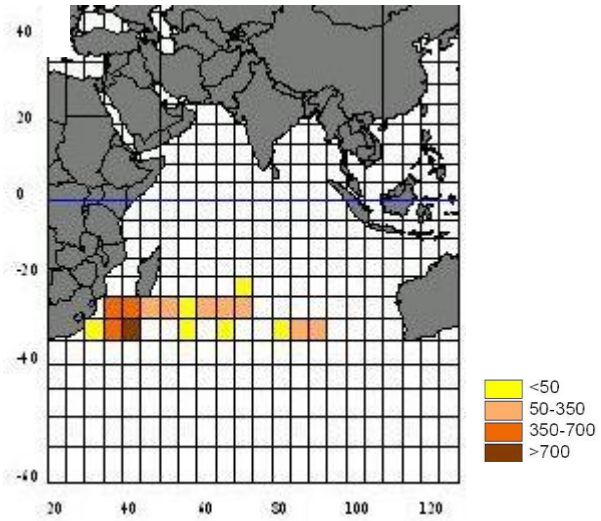

Figure 3b. Distribution of the nominal fishing effort (thousands hooks) by 5ºx5º squares carried out by the Spanish surface longline fleet in the Indian Ocean during the year 2017.

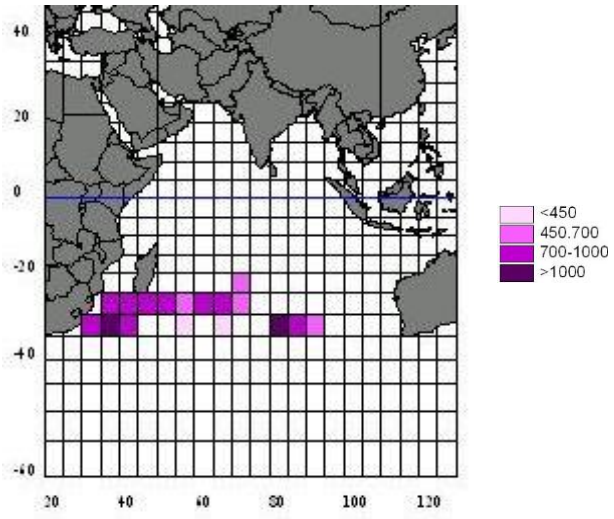

Figure 3c. Distribution of the nominal CPUE in kg (round weight) of swordfish landed per thousand hooks set by 5ºx5º degrees, carried out by the Spanish surface longline fleet in the Indian Ocean during the year 2017.

Portuguese fleet:

The overall catch had a peak in 2006 (4,867 MT), followed by a sharp decrease in 2008. In recent years an increasing trend has been observed. The 2017 overall production was 3,168 MT, which represents a 6.4% decrease from 2015 catches (3,386 MT) and a 9.8% decrease from 2016 (3,511 MT).

The Portuguese fleet has swordfish as the main target species. After a peak on the catches of swordfish in 2007 of 1,956 MT (**Table 7** and **Figure 4**), the mean catches during the last 5 years were of 1251 mt. In 2017, a total of 1439 mt of swordfish were caught. Pelagic sharks, mainly blue shark, are the primary by-catch species. Pelagic sharks showed a peak on the catches in 2006, while tuna reached a peak in 2007. Among the pelagic sharks, the blue shark is the main species, followed by the shortfin mako (**Table 7** and **Figure 4**). During the last five years, their mean catches were of 1181 and 210 mt, respectively.

Year	Total effort	Total Catch	SWO	BSH	SMA	TUS	BIL	NEI
2013	1558	3080	1370	1160	220	163	61	106
2014	978	1924	594	885	148	230	30	37
2015	1415	3386	1454	1249	225	308	60	90
2016	1699	3511	1400	1375	241	311	84	100
2017	1618	3168	1439	1240	218	133	51	86

Table 7. Total EU-Portugal longliners annual catch (MT - metric tons) and effort (x10^3 hooks) and catch for the primary species (or group of species) in the IOTC area of competence, for the period 2013 to 2017. SWO – swordfish; BSH – blue shark; SMA – shortfin-mako; TUS – tuna; BIL – other billfishes; NEI – not elsewhere included, category for all other species combined.

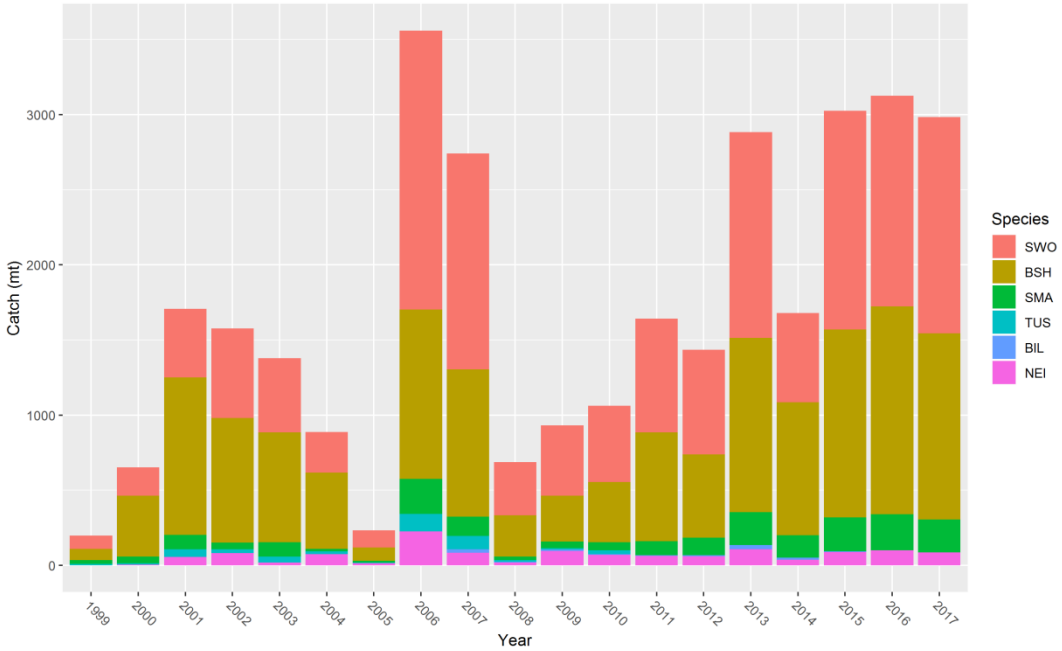

Figure 4. Historical annual catch for the Portuguese longline fleet, by primary species (or groups of species), for the IOTC area of competence for the entire history of the fishery (1999-2017). SWO – swordfish; BSH – blue shark; SMA – shortfin mako; TUS – tuna; BIL – billfishes; NEI - category for all other species combined.

During 2017 the overall fishing effort arose to 1,618 thousand hooks, with the SW area being the most heavily fished (**Figure 5**). During the first years of the fishery the fishing effort was concentrated in the SW Indian Ocean, but then developed towards the Central and Eastern regions of the convention area (**Figure 6**). However, in recent years due to a number of reasons (including piracy, oil price and the decreased number of active boats), most of the fishing activity in occurring in the SW area of the Indian Ocean. **Figure 7** shows the spatial distribution of the catch for the three most important species in 2017.

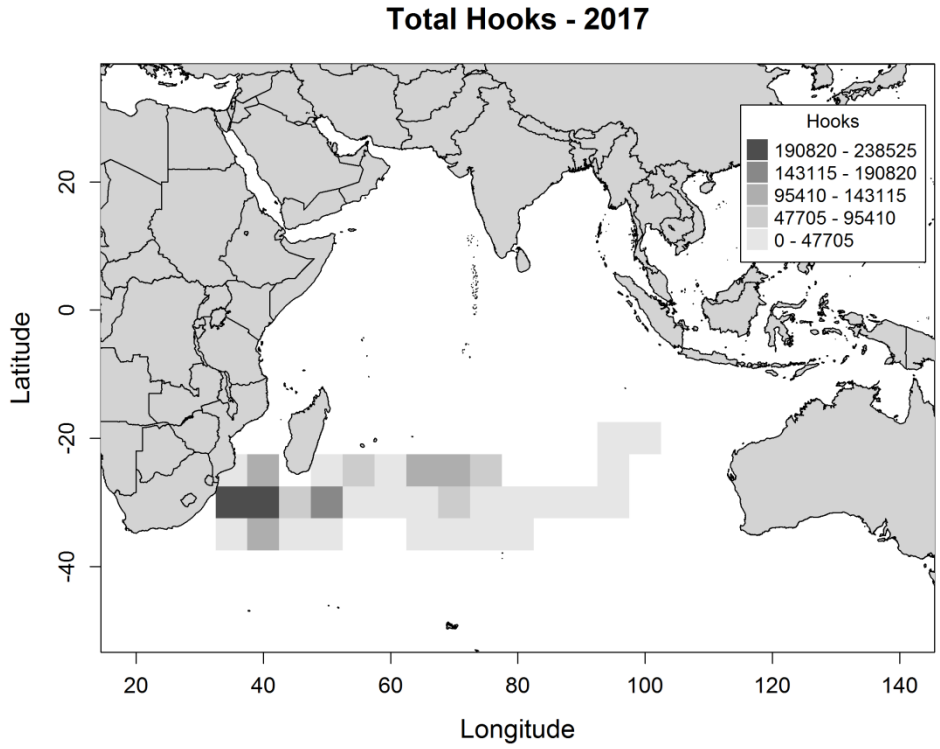

Figure 5. Map of the distribution of fishing effort (number of hooks deployed), by the Portuguese longline fleet operating in the IOTC area of competence during 2017.

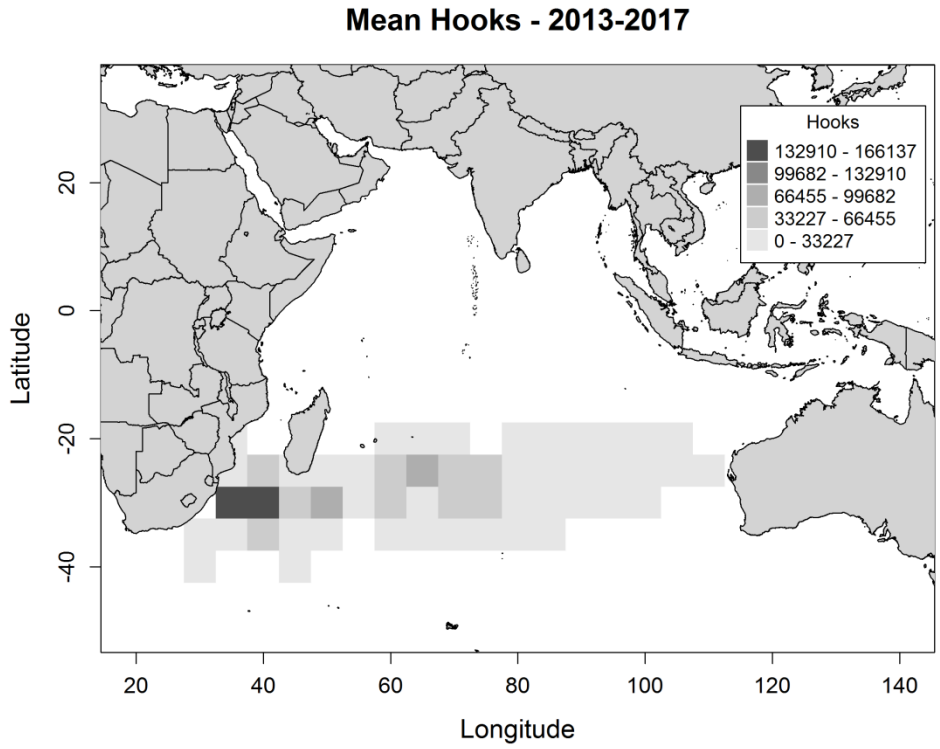

Figure 6. Map of the distribution of mean fishing effort (number of hooks deployed), by the Portuguese longline fleet operating in the IOTC area of competence during the period 2013-2017.

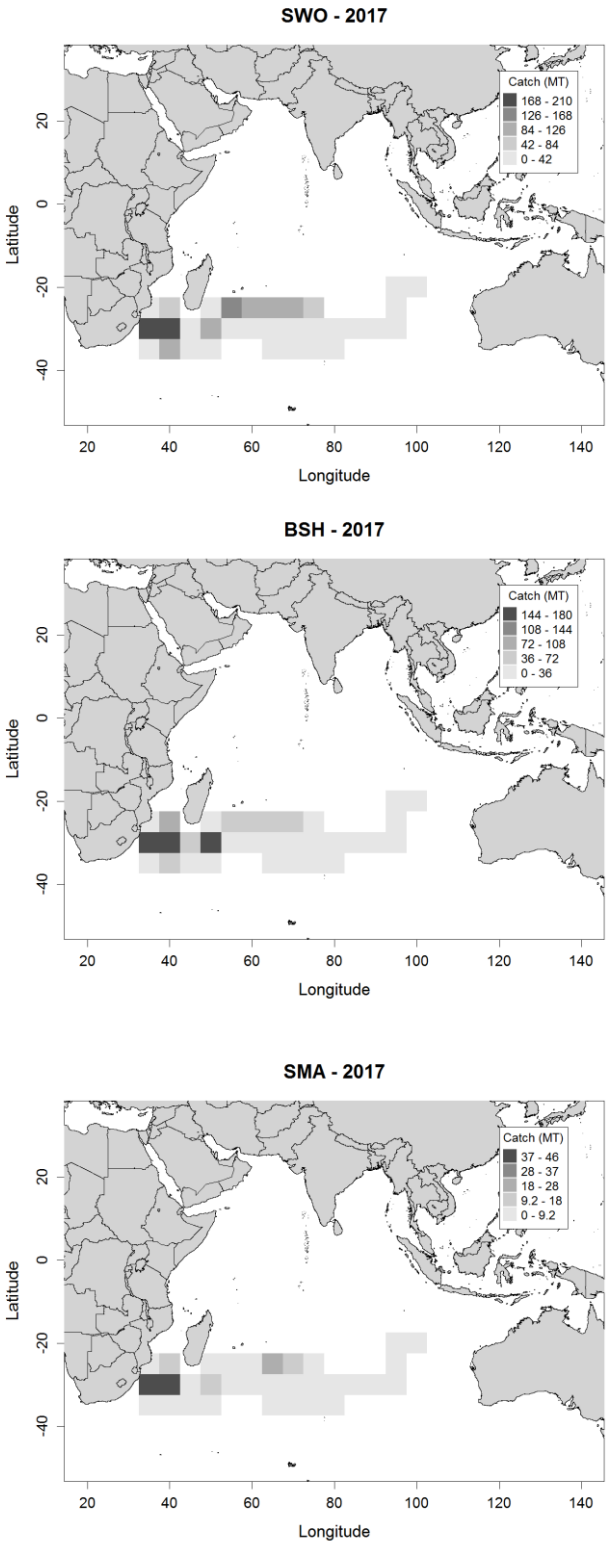

Figure 7. Spatial distribution of the catch in 2017 for Swordfish, Blue Shark and Shortfin Mako

UK fleet:

Table 8 shows all catches of the UK fleet by species between 2009 and 2017 and figures 8a and 8b show the spatial distribution of UK fleet for the 2 species (swordfish and blue sharks) in 2017.

	ALB	BET	BON	BSH	BUM	OIL	BIL	LEC	SAI	GRO	BAZ
2017	3.1	2.5		195.7	4.1		3.3	15.6			
2016	2.1			172.4	3.5			19.6			
2015	8.5			215.3	7.9			30.5			
2014	8.0			251.8	11.7			41.3			
2013	7.0			189.9	16.0			46.4			
2012	6.6	3.3		318.7	19.9			49.7	1.7		
2011	3.9	3.1		319.7	8.7			34.5	4.2		
2010	4.6	2.2		332.6		4.3	21.5	41.4		0.4	0.7
2009	8.8		5.8	427.1		32.7	21.7	8.2		1.0	

	SFA	AMX	SPL	SMA	SKH	FAL	SWO	WAH	YFT	YTC
2017	1.2			48.0		2.0	272.1	0.7	20.6	7.2
2016	1.7			22.8			203.7	0.4	41.8	1.4
2015	1.2			26.0			365.0	1.7	85.4	4.0
2014	2.8			54.0			527.2	2.8	85.9	18.7
2013	5.6			46.3			555.7	2.1	53.6	8.3
2012	7.5			69.5		1.5	677	3.3	55.8	10.5
2011	2.9			60.1		1.3	662.4	1.4	42.1	20.7
2010	4.7	5.9		7.9	0.0	1.0	581.1	0.8	46.1	9.4
2009	0.9		0.1	18.7	0.2	0.3	646.3		120.3	3.8

**FAO code used.*

Table 8. Historic total catches by species of UK (EU) in IOTC area (tonnes).

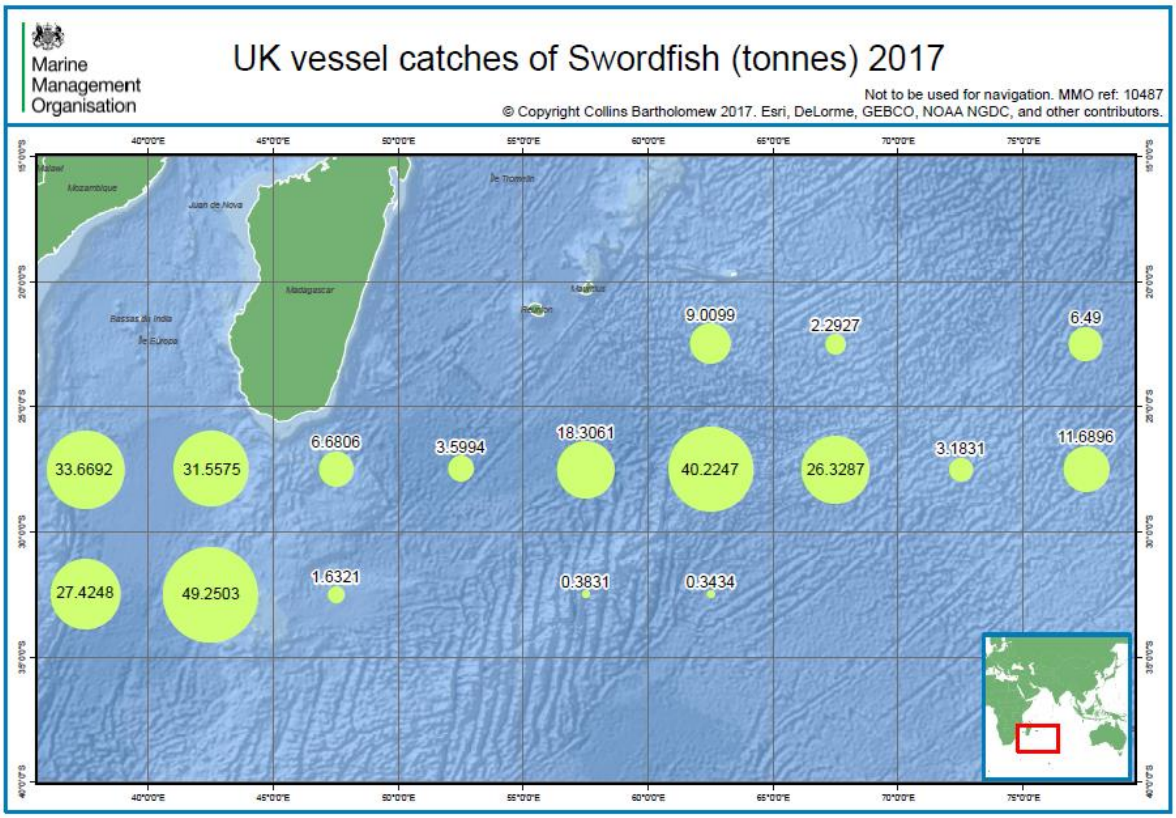

Figure 8a. Map showing UK catches of swordfish (tonnes) in 2017 by 5˚ area

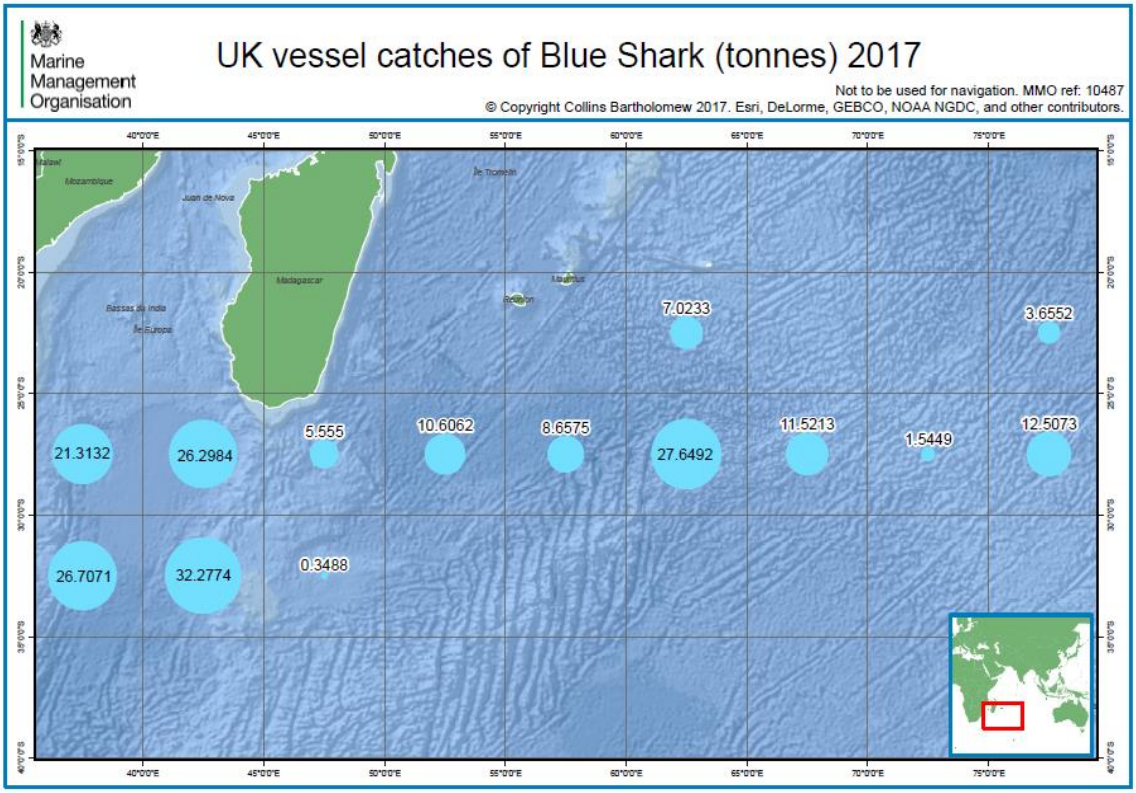

Figure 8b. Map showing UK catches of blue shark (tonnes) in 2017 by 5˚ area

Atlantic Ocean

Globally the Spanish fleet swordfish catches in the Southern Atlantic were 3936 tonnes in 2018 (**Table 9)**, which represented a decrease of 6 % compared to 2017.

Year	SWO	BSH	SMA
2018	3936.294	12485.377	1032.669

Table 9. Spanish surface longline catches of swordfish, blue shark and shortfin mako for their Southern Atlantic stocks in the ICCAT area in the period 2017-2018.

The Catches of Swordfish by the Portuguese surface longline fleet operating in the South Atlantic in 2018 were about 296 tons. This fleet also caught 597 tons of Yellowfin tuna, which indicates important activities in Tropical fishing grounds. In addition there are catches of some demersal species that probably indicate the use of deep water longlines (**Table 10**).

SPECIES	tonnes	SPECIES	tonnes	SPECIES	tonnes
ALB	10,87	JAX	28,90	PAC	60,68
ANF	0,00	JOD	5,19	PLA	1,28
BET	100,97	JOS	5,49	PPH	61,05
BLM	28,10	KGX	0,32	SAI	41,04
BRB	16,88	LDV	33,90	SBP	22,62
BRF	0,24	LEC	63,63	SCS	3,76
BSH	6.475,19	LMA	3,58	SDX	0,04
BUM	47,42	LNL	38,58	SMA	263,04
CCG	1,94	MAS	29,78	SMD	0,02
CHM	0,24	MHP	0,47	SPF	22,36
COB	2,11	MIA	0,22	SQC	9,06
COE	0,05	MKM	0,57	SSP	37,47
CTC	3,79	MLS	38,11	SWO	296,11
DEL	301,97	MON	0,02	TDQ	80,34
DGP	0,90	MSP	0,57	UBS	8,07
DOL	8,78	MUX	0,05	WAH	6,45
GPN	0,80	MZZ	94,07	WRF	0,13
HAU	0,08	OCT	0,00	YFT	596,62
HKE	211,89	OIL	7,34	YTC	0,01
				TOTAL	9.073,14

Table 10: Catches of Portuguese Longliners by species in 2018.

West and Central Pacific

The total amount of catches is based on fishing logbook data and landing declarations of longliners authorized in WCPFC area. Catches are referred to FAO major fishing areas, and all of them are referred to Pacific Ocean South Equator, it has been included FAO fishing areas corresponding to IATTC areas because in some cases it was difficult to differ if the position of the vessel was under one RFMO or under the other.

The total amount of estimated catches is presented **in table 11** (not including bycatch, which is provided in **table 25**).

Species	BET	SKJ	BLM	YFT	BUM	ALB	MLS	PBF	SWO
Total general (tons)	39150.17	0	35152.36	13463.99	0	2216.4	7445.6	0	1123813.1

Table 11. Total estimated catches in 2018 (Kg).

4. Size composition

- Trends by gear type (surface and longline)
- Trends by area and season

(Figures should include: average size frequency distributions by gear type for each 10 year period, as well as individually for each of the last 5 years)

As mentioned the EU has no SBT catches to report and therefore no size frequencies to be transmitted to the CCSBT or referred in this report. Notwithstanding, size frequencies for other species caught by EU vessels in ICCAT, IOTC and WCPFC have been transmitted to their respective secretariats according to the mandatory data requirements of these organisations.

5. Fleet size and distribution

- Trends by season
- Trends by area

(Maps should include: historical catch and effort by gear type for the entire history of the fishery, as well as individually for each of the last 5 years)

Indian Ocean

There were 22 EU longliners operating in the IOTC area intermittently in the distribution area of SBT, 14 from Spain, 6 from Portugal and 2 from UK. Catch and effort of the EU longline fleet targeting swordfish in association with sharks is distributed in the Southern Indian Ocean between latitudes 20°S and 40°S, mainly around and north 30 ºS, in the Mozambique Channel, at the south of Madagascar and around the longitude of 100°E.

Atlantic Ocean

There were 37 EU longliners (29 from Spain and 8 from Portugal) operating in the ICCAT (South Atlantic) area mainly operating outside the SBT distribution area but intermittently entering in the latitude southern to 30°S where SBT encounters could occur. However, no SBT by-catch has been reported by masters and observers.

West Pacific

The 3 Spanish longline vessels in the Western and Central Pacific operate in the temperate area south of 20º south and they mostly work around 30º south.

The Portuguese longline that normally operates in the Pacific Ocean did not fish in the SBT distribution area in 2018.

6. Research and monitoring to improve estimates of attributable catch
Any research or monitoring activities focused on better understanding the level of mortality related to:

- *releases and/or discards;*
- *recreational fishing;*
- *other sources (e.g. customary, traditional and/or artisanal fishing)*

The EU fleets operating in the SBT distribution area didn't bycatch any SBT (including releases and discards). There are no specific research activities and monitoring to improve estimates of attributable catch.

Information reported to the EU on activities of longliners operating in the SBT distribution

area includes data provided by observers.

The EU has neither recreational vessels nor artisanal fishing boats operating in the SBT distribution area.

7. Development and implementation of scientific observer programs[1]

- Provide a report containing the information specified in Annex 1 on the sampling scheme and arrangements for collecting data from the Member's/CNM's observer program.

Indian Ocean

Spanish fleet:

The sampling at sea programme started at the beginning of the fishery in 1993. A total of 59,890 hooks were observed during the year 2017 (**table 12**) in areas between 20ºS-25ºS and 60ºE-70ºE.

The main task of the samplers at sea is recording catch and effort data as well as sampling the size of the target species, the species composition of catches to more detailed taxonomic level possible and to observe the interaction with bycatch and incidental-bycatch species. At the same time, information about fishing operations and fishing gear configuration is also taken.

The working protocol for scientific purposes of sampler is based on recording of catches of the target species, biological and obtaining biometric information and sampling to various studies. They also record the number of individuals affected by the false killer whale attacks. In the case of sharks, sometimes reproductive factors and presence-absence of embryos is also studied. In another hand observers continue tagging different species.

Year	Hooks observed
2010	106619
2011	63139
2012	7451
2013	180921
2014	70750
2015	45732
2016	105918
2017	59890

Table 12. Yearly number of hooks observed at sea by year in the Spanish surface longline fishery

During 2017 a total of 300 swordfish and 233 pelagic sharks were measured. From tunas were measured 64 individuals and 22 billfish were also measured, with the total catch retention on board. More than 100 individuals of lower economic value species and species that were eventually released or discarded were also measured. The number of by-catch size-sampled observed for the year 2017 are shown in **table 13.** The total catch in kg (DW) caught during the observed trip is in **table 14**. Faunal list observed is shown in **table 15**.

[1] Section 11 and Attachment 2 of the CCSBT Scientific Observer Program Standards.

Species	Number
Acantocibium solandri	13
Coriphaena hipurus	29
Isurus oxyrinchus	16
Lepidocibium flavobrunneum	94
Makaira indica	3
Makaira mazara	11
Prionace glauca	217
Tetrapturus angustirostris	5
Tetrapturus audax	3
Thunnus alalunga	2
Thunnus albacares	9
Thunnus obesus	53
Xiphias gladius	300

Table 13. Number of by-catch fish size-sampled observed during 2017.

Species	Catch(kg DW)
Acantocibium solandri	275
Coriphaena hipurus	457
Isurus oxyrinchus	1490
Lepidocibium flavobrunneum	1821
Makaira indica	794
Makaira mazara	2471
Prionace glauca	18137
Tetrapturus angustirostris	90
Tetrapturus audax	246
Thunnus alalunga	107
Thunnus albacares	687
Thunnus obesus	3696
Xiphias gladius	23177

Table 14. Total catch (Kg DW) of the observed trip in 2017 by species.

Species
Acantocibium solandri
Alepisaurus ferox
Alopias superciliosus
Carcharhinus longimanus
Caretta caretta
Coriphaena hipurus
Cubiceps baxteri
Dasiatys violacea
Dermochelys coriacea
Galeocerdo cuvier
Gempilus serpens
Isurus oxyrinchus
Isurus paucus
Katsuwonus pelamis
Lepidocibium flavobrunneum
Makaira mazara
Makaira indica
Mola mola
Mobula mobula
Prionace glauca
Sphyrna zygaena
Tetrapturus audax
Tetrapturus angustirostris
Thunnus alalunga
Thunnus obesus
Thunnus albacares
Xiphias gladius

Table 15. Faunal list observed during 2017.

Portuguese fleet:
Since 2011 an observer program was fully implemented by IPMA. The current budget is approved until 2020. The program aims to cover 10% of the fishing effort on the convention, while a minimum of 5% is established in IOTC.

Five observers have received the necessary training to collect a wide range of fisheries data, to fulfil all fields covered by the IOTC Observer Trip Report. Furthermore, starting in 2011, the observers started collecting information on all specimens caught, which includes: ID to the most detailed taxonomic possible level; size; sex; the condition at-haulback (alive / dead); fate (retained/discarded); and, condition if discarded (alive/dead). Finally, biological samples were collected for some of the major shark and bony fish species, aiming a number of studies focusing on: life history issues (ages, growth and reproduction); genetics (population structure and paternity; and, morphometrics (weight:length, length:length, weight:weight relationships).

During 2017 observers embarked in one fishing vessel for 116 days, covering a total of 98

pelagic longline sets, which corresponded to 7.9% and 7.0% of the total fishing effort in terms of number of hooks and sets, respectively (**Table 16; Figure 9**).

Year	Gear	Observer coverage		Size data coverage
		Hooks (%)	Sets (%)	
2011	Pelagic longline	17.9	16.3	
2012	Pelagic longline	10.7	10.9	All retained
2013	Pelagic longline	11.0	9.9	specimens
2014	Pelagic longline	7.3	5.7	and dead
2015	Pelagic longline	11.1	8.2	discards
2016	Pelagic longline	9.1	7.2	
2017	Pelagic longline	7.9	7.0	

Table 16. Annual observer coverage of the Portuguese pelagic longline fleet since it was established in 2011, measured as a percentage of the total effort in number of hooks and sets, for the period 2011–2017.

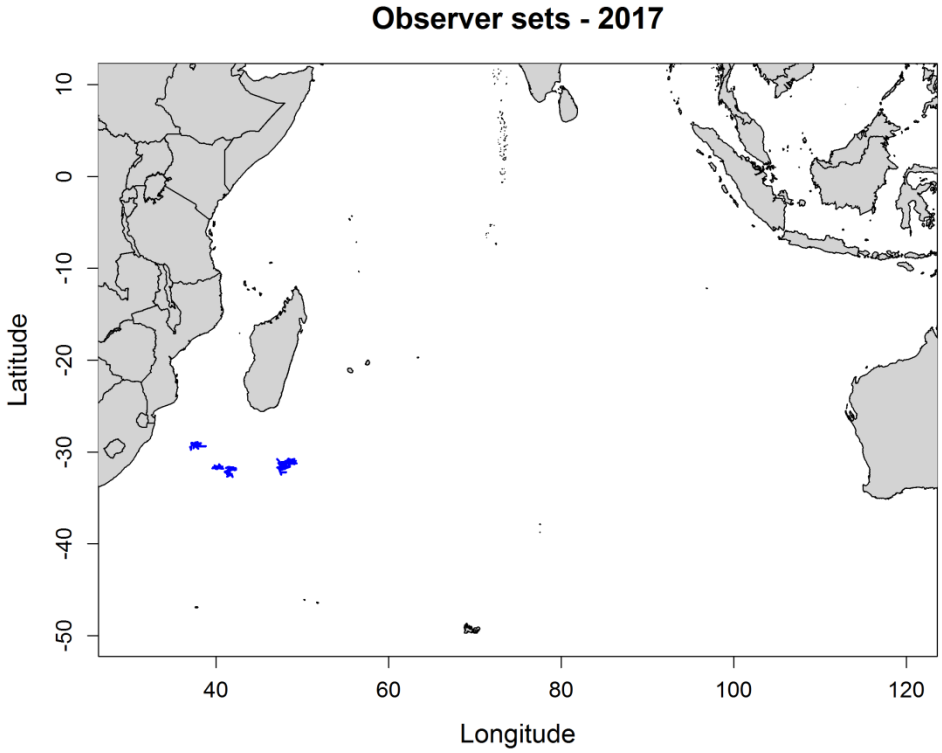

Figure 9: Map showing the spatial distribution of longline sets covered by the observer program in 2017.

Size data were recorded for more than 6,825 specimens during 2017 (**Table 17**). Most of the records corresponded to swordfish (44.9%) the target species of the fisheries, followed by the blue shark (22.7%), and to a much lower level the other species that are bycatch of the fishery. It is worth noting that in the past years (until 2013), skippers used to self-report size data for the major target species, as well as additional information on discards. However, since the EU regulation that obliges sharks to be landed with fins naturally attached is in force (June 2013, (fishermen are no longer allowed to cut off shark fins at sea, while in the past some vessels had special permits that allow shark fin removal on board vessels), the level of self-reporting has decreased dramatically. Specifically, for 2017 no self-reporting size data was provided, and as such all the measurement reported come from the fishery observer program (**Table 17**).

FAO Code	Species name	Size measurements
ALB	*Thunnus alalunga*	24
ALX	*Alepisaurus ferox*	43
BET	*Thunnus obesus*	86
BSH	*Prionace glauca*	1552
BTH	*Alopias superciliosus*	12
BUM	*Makaira nigricans*	31
DOL	*Coryphaena hippurus*	472
FAL	*Carcharhinus falciformis*	281
GBA	*Sphyraena barracuda*	2
GES	*Gempylus serpens*	76
LAG	*Lampris guttatus*	9
LEC	*Lepidocybium flavobrunneum*	589
MLS	*Tetrapturus audax*	20
OCS	*Carcharhinus longimanus*	7
OIL	*Ruvettus pretiosus*	130
POA	*Brama brama*	1
POR	*Lamna nasus*	2
PRP	*Promethichthys prometheus*	1
PSK	*Pseudocarcharias kamoharai*	7
SFA	*Istiophorus platypterus*	18
SKJ	*Katsuwonus pelamis*	2
SMA	*Isurus oxyrinchus*	283
SPL	*Sphyrna lewini*	1
SPZ	*Sphyrna zygaena*	18
SSP	*Tetrapturus angustirostris*	9
SWO	*Xiphias gladius*	3063
TIG	*Galeocerdo cuvier*	3
WAH	*Acanthocybium solandri*	20
WHM	*Tetrapturus albidus*	1
YFT	*Thunnus albacares*	62
TOTAL		**6825**

Table 17. Number of specimens caught by pelagic longline that were measured during 2017.

All Portuguese vessels operating in the IOTC convention area are landing their catches in foreigner countries. Furthermore, the catches are transhipped to containers in IO ports and shipped to non-Portuguese ports (mostly Vigo, Spain). Thus, the current port sampling program for the Portuguese longline fleet does not cover those vessels operating in the IOTC conventional area.

UK fleet:

An observer programme has been implemented for UK vessels since July 2017. More than 10% of the fishing trips have been covered by observers in the first year of the observer programme.

All UK vessels operating in the IOTC Convention area land their catches in third countries. The catches are usually loaded into containers and shipped to non-UK ports. The UK's port sampling programme does not cover those vessels but regular contact is made with the competent authorities of countries where we know that the vessels land. Port sampling is therefore carried out occasionally.

Atlantic Ocean

An EU-wide framework for the collection of fisheries data is in place since the early 2000s. Under this Framework, implemented by the relevant research institutes and ministerial departments in each EU Member State, a complete set of information pertaining to the fleets (catch, effort and economic indicators) is compiled.

Data on the EU sampling activities concerning species under the competence of ICCAT will be provided for ICCAT (no SBT caught) once the annual report will be finalised.

Observers:

The EU national scientific observers cover the main fisheries in which the EU is involved, including SWO (longliners). These observers follow appropriate training courses including data validation training. The information collected concerns all target and not-target species and, where possible, the collection of data is extended to cover turtles, seabirds and marine mammals. The type of data collected refer to catch, discards, by-catch, vessels and fishing gear characteristics as well as biological parameters such as length, weight, sex, maturity and growth.

Spanish Fleet

The total observed effort on board the Spanish longline fisheries reached 15% in all ICCAT area in 2018, as required by the ICCAT.

Portuguese fleet

The total observed effort on board the Portuguese longline fisheries was 7% in all ICCAT area in 2018 (about 5% in South Atlantic).

West Pacific

EU longliners have observers onboard according to the rules and coverage rate adopted in WCPFC. In 2018 the observer coverage in EU longliners operating in WCPFC was about 15%.

The weight of the catches were estimated by the observers and the electronic logbooks were daily sent to the relevant national authority (Centro de Comunicaciones de la Secretaria General de Pescas dof Spain). In 2018, 326679 Kg of fish were measured by observers, detailed data was transmitted to the WCPFC secretariat and the WCPFC scientific provider.

8. Other relevant information

Notes:

- *Data on catches should be presented by both calendar year and fishing year.*
- *Weight data should be reported as whole weight, conversion factors used should be specified.*
- *Nominal CPUE, particularly for longline fisheries, should be expressed in standard units (eg, number of SBT per 1000 hooks).*
- *State where estimates are scaled from sample data.*
- *Where appropriate measures can be calculated.*

The EU does not have SBT fisheries and in 2016 and 2017 there was no by-catch of SBT. Information related to the EU longline activities in the SBT distribution area is provided in the previous chapters of this report. In this chapter, complementary information and data mainly concerning Ecological Related Species is reported.

Indian Ocean

Spanish fleet

This report includes preliminary data of by-catch data obtained during 2017. The catches of the by-catch by species since the beginning of this fishery in 1993 have been described in several scientific papers previously presented and also provided by reports of the National Fishing Authority. Total catch of sharks in 2017 was estimated as 3,592 t, 99 t for billfish, 272 t for tunas and 157 t for other species. Basic statistical tasks, the scientific monitoring of the swordfish fishery and some research was conducted to find out what species are captured as by-catch or incidental interactions occurred. Following the scientific recommendations of the SC, it was carried out a study about the interaction between seabirds and the Spanish surface longline targeting swordfish in the IO. Another study on considerations regarding strategies for gathering information and sampling was in progress in 2018.

Sharks

The sharks, trunks or carcass with their respective fins naturally attached are retained, frozen and stowed on board and landed for human consumption. The profitable use of the different parts of the sharks is regularly better than that most teleost species. The presence of on-board observer when feasible, has allowed us to compare data and acquire some additional biological information on the catches. By-catch data of sharks have been reported for the period 2011-2017 (**table 18**). It was not feasible to obtain a scientifically robust data by extensive area-time stratification due to the low occurrence of most by-catch species. However, total catches of all by-catch species are scientifically estimated for assessment.

SPECIES	2010	2011	2012	2013	2014	2015	2016	2017
Carcharhinus spp.	281021	145803	25625	565	0	0	0	0
Galeocerdo cuvieri	260	241	0	0	0	0	0	0
Isurus oxyrinchus	349959	439784	561690	620973	823549	441013	450893	532306
Isurus paucus	289	228	250	791	171	0	122	0
Lamna nasus	0	0	0	0	0	0	0	0
Prionace glauca	2422054	3290769	3686452	414948	4657270	3701847	3592515	3059154
Other sharks	289	228	0	0	0	0	0	0

Table 18. Preliminary scientific estimation of sharks by species, of the annual by-catch landings (kg round weight) obtained by the Spanish longline fleet in the Indian Ocean for the 2011-2017 period.

Seabirds

During 2017 a total of 59,889 hooks were observed in the Spanish surface longline fishery targeting swordfish in the Indian Ocean that means a total of 45 fishing days. The observed area ranged between 20ºS-25ºS and 60ºE-70ºE.

There was no interaction between this gear and seabirds, so the interaction and mortality rates observed during 2017 was null.

After analyzing 640,419 hooks observed during the period 2010-2017, the overall interaction rate reached was of $2.97E^{-05}$ seabirds by hook. **Table 19** shows the different rates obtained by year during the 2010 to 2017 period.

Fishing areas, night setting and low levels of lighting during setting operations as well as other fishing protocols applied by the vessels were identified as the most important factors to explain the regularly low or null interaction with seabirds in this fishery.

More complete scientific studies about sea birds interaction with this surface longline gear have been recently presented for the period 2011-2015 for areas South of 25ºS (Fernández-Costa *et al*. 2016). A broader study was presented this year 2018 including a retrospective and geographical overview of the interaction observed between seabirds and this fishery during the long 1993-2017 period inferred from data provided by scientific observers (Fernández-Costa *et al*. 2018 ref. IOTC-2018-WPEB14-23).

SEABIRDS	Year	Interaction rate	Mortality rate	Number
	2010	0	0	0
	2011	0	0	0
	2012	0	0	0
	2013	$7.19E^{-05}$	$7.19E^{-05}$	13
	2014	$2.83E^{-05}$	$2.83E^{-05}$	2
	2015	$8.75E^{-05}$	$8.75E^{-05}$	4
	2016	0	0	0
	2017	0	0	0

Table 19. Observed annual interactions rates of surface longline gear (Spanish fleet) on seabirds for the 2010-2017 period and total number of individuals observed.

Marine Turtles

During the year 2017 a total of 45 sets and 59,889 hooks were analyzed in the Spanish surface longline fishery targeting swordfish in the Indian Ocean. The observed area ranged between 20ºS-25ºS and 60ºE-70ºE. Two encounters with marine turtles were observed in 2017. One of the turtles was of the species *Caretta caretta* and the other one belonged to the species *Dermochelys coriacea* and both of them were released alive, so that the mortality rate was null.

After analyzing 640,419 hooks observed during the period 2010-2017, the overall interaction rate reached was of $4.84E^{-05}$ marine turtles by hook. **Table 20** shows the different rates obtained by year for between 2010 and 2017.

TURTLES	Year	Interaction rate	Mortality rate	Number
	2010	0	0	0
	2011	0	0	0
	2012	0	0	0
	2013	$1.49E^{-04}$	$2.76E^{-05}$	27
	2014	$7.07E^{-05}$	0	5
	2015	$4.37E^{-05}$	0	2
	2016	$3.78E^{-05}$	$9.44E^{-06}$	4
	2017	$3.34E^{-05}$	0	2

Table 20. Observed annual interactions rates of surface longline gear (Spanish fleet) on marine turtles for the 2010-2017 period and total number of individuals observed.

Portuguese fleet

All IOTC Resolutions and Recommendations concerning Sharks, Seabirds and Marine Turtles are broadly publicized among fishermen operating in the IOTC convention area. The Portuguese Institute for the Ocean and Atmosphere (IPMA) prepared and distributed among the fleet ID sheets for all major species usually caught in the fishery. These ID sheets include photos, FAO and scientific names for target, by-catch and accidentally species caught (including marine turtles and seabirds). The recently IOTC ID guides will be distributed as Portuguese and/or Spanish printed translations are made available.

Sharks

Major shark species catches are reported annually. Fishermen are encouraged to release by-catch species that are alive at-haulback, as well as juvenile specimens. The fleet has to comply with the EU regulations on shark finning and fins-attached policy. Blue shark belly have been observed as being occasionally used as bait, particularly in areas/seasons when high shark bycatch occur. Accordingly, an increase use of wire traces has also been observed. Since 2013 shark catches have remained relatively stable, with minimum values reported in 2014 and maximum values in 2016 (**Table 21**). Only blue shark and shortfin mako are retained by the national fleet and commercialized, while the other species are discarded due to International and/or EU regulations.

FAO code	Species name	2013	2014	2015	2016	2017
BSH	*Prionace glauca*	1160.4	885.0	1248.8	1375	1240
CWZ	Carcharhinidae					
FAL	*Carcharhinus falciformis*					
LMA	*Isurus paucus*					
OCS	*Carcharhinus longimanus*					
SMA	*Isurus oxyrinchus*	219.7	148.0	225.1	241	218
SPN	*Sphyrna* spp.					
SPZ	*Sphyrna zygaena*					
SKH	Not elsewhere included					
	Total	1380.1	1033.0	1473.9	1616.0	1458.3

Table 21. Total weight (MT) of sharks, by species, retained by the Portuguese fleet in the IOTC area of competence during the period 2013-2017.

In **Table 22** it is summarized the observed number of sharks, by species, released/discarded in the IOTC area of competence in 2017, including their condition status at haulback and upon released/discarded. However, these figures should be regarded carefully, as they are based on the observer coverage which represented 7.9% in 2017 of the total fishing effort and are limited both geographically and seasonally.

FAO code	Species name	Status at release		Total no. sharks released/discarded
		Dead	Alive	
BSH	*Prionace glauca*	21	44	65
BTH	*Alopias superciliosus*	14	3	17
FAL	*Carcharhinus falciformis*	270	15	285
OCS	*Carcharhinus longimanus*	6	1	7
POR	*Lamna nasus*	2	0	2
PSK	*Pseudocarcharias kamoharai*	4	3	7
RMM	*Mobula mobular*	0	7	7
SMA	*Isurus oxyrinchus*	18	7	25
SPL	*Sphyrna lewini*	1	0	1
SPZ	*Sphyrna zygaena*	21	0	21
TIG	*Galeocerdo cuvier*	3	0	3
	Total	360	80	440

Table 22: Observed number of sharks (elasmobranchs), by species, released/discarded in 2017 by the EU-Portugal longline fleet in the IOTC area of competence, including life status at haulback and upon released/discard.

Sea-birds

IOTC recommendations on seabirds have been made available to the fishermen operating longline gear. Skippers are encouraged to adopt mitigation measures, namely the use of *tori* lines, line weights and to conduct night gear setting with minimum deck lights, when fishing south of 25^0 South or whenever interaction with seabirds is foreseen. Moreover, within the scope of the EU data collection framework (EU-Portugal mainland component), skippers are encouraged to report the incidental catches of sea birds. The recently IOTC ID sea-bird guides are distributed to the fleet.

During 2017, 3 seabirds was accidentally captured in the sets covered by the fishery observer program. The full high resolution sea-bird interactions data with date, biology, fate and in 1*1 degree spatial resolution was reported to IOTC in the respective observer trip data. **Table 23** provides a summary of this data.

Marine Turtles

Fishermen are encouraged to carefully handle marine turtles accidentally caught, and immediately release them after gear removal. IPMA has provided guidance on how to safely handle and release the turtles, as well as ID guides. Within the scope of the EU data collection framework (EU-Portugal mainland component), skippers are encouraged to report the incidental catches of marine turtles.

During 2017, 11 sea turtles were accidentally captured in the sets covered by the fishery observer program, and all those sea turtles were released alive. The full high resolution sea-turtle interactions data with date, biology, fate and in 1*1 degree spatial resolution was reported to IOTC in the respective observer trip reports and data. **Table 23** provides a summary

of this data.

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

The accidental catch of other species such as marine mammals and whale sharks are considered extremely rare. Whenever such animals are caught, fishermen are encouraged to immediately and safely release them.

In 2017, there was 1 interaction with a marine mammal in the sets covered by the fishery observer program, which was immediately released alive (**Table 23**). The full high resolution marine-mammal interactions data with date, biology, fate and in 1*1 degree spatial resolution was reported to IOTC in the respective observer trip reports and data.

Taxa	FAO Code	Scientific name	Status		Total no. specimens released/discarded
			Dead	Alive	
	TQH	*Thalassarche carteri*	2	0	2
Sea birds	ALZ	Diomedeidae	1	0	1
	Total sea birds		**3**	**0**	**3**
Marine turtles	TTL	*Caretta caretta*	0	9	9
	DKK	*Dermochelys coriacea*	0	2	2
	Total marine turtles		**0**	**11**	**11**
Marine mammals	DLP	*Delphinidae*	0	1	1
	Total marine mammals		**0**	**1**	**1**

Table 23. Observed catches of species of special interest (marine turtles, seabirds and marine mammals) in 2017, for the EU-Portugal longline fleet operating in the IOTC area of competence. Observer coverage represented 7.9% of total fishing effort in 2017.

UK fleet

Sharks

Shark catches are reported by species and the vessels are encouraged to release bycatch species that are caught alive. Table 6 of this report details the total weight of sharks retained by the UK fleet in the IOTC area of competence. In 2010 the UK revoked the permits allowing for fins to be removed from sharks therefore all sharks retained must have their fins still naturally attached.

Turtles

No incidents reported this year.

All vessels are aware of and use proper handling techniques and keep on board equipment needed for the release of live turtles. All skippers are encouraged to report all incidental catches of marine turtles.

Seabirds

No incidents reported this year. All longline fishing vessels are aware of the need to use mitigation measures when fishing south of 25 degrees south or whenever interaction with seabirds is expected. Additional information is being sent to vessels to ensure they are complying with their obligations.

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

No reported incidents this year. All fishers are encouraged to immediately and safely release them.

Atlantic Ocean

The most important shark species caught by the Spanish surface longliners are the Blue Shark (*Prionace glauca*) and the Shortfin Mako (*Isurus oxirynchus*). Catches for these two species in 2018 amounted to 12485 tonnes for Blue Shark and 1032 tonnes for Shortfin Mako (**table 9**).

The 2018 data on interactions with ecologic related species of Spanish surface longliners including those operating in the southern Atlantic will be provided to ICCAT (2019 report still under preparation according to ICCAT reporting rules)).

With regard to the Portuguese longline fleet the main shark's species caught were also the Blue Shark (*Prionace glauca*) and the Shortfin Mako (*Isurus oxirynchus*). Catches for these two species in 2018 amounted to 6475 tons for Blue Shark and 263 tonnes for Shortfin Mako (**table 10**).

The **table 24** shows the interactions with sea-birds, turtles and cetacean in the South Atlantic by the Portuguese longline fleet, all these interactions occurred in the tropical areas.

Notes:	**All records between 0-10º South Atlantic** (equatorial and tropical South Atlantic regions)					
	Effort Coverage: 5% (measured from nº sets for South Atlantic LL)					
Taxa	**FAO Code**	**Scientific name**	**Total no. specimens recorded**	**Total no. specimens released/discarded**	**Status at release**	
					Dead	**Alive**
Sea birds	-	-	0	0	0	0
Marine turtles	DKK	*Dermochelys coriacea*	27	27	1	26
Marine mammals	-	-	0	0	0	0

Table 24 EU.Portugal/IPMA LL fishery observer program - 2018 Interactions with vulnerable taxa in south Atlantic

Western and Central Pacific

Data on interactions with ecologic related species are not specifically available for the SBT distribution area. Total catch of sharks by EU fleet in WCPFC area is provided in **Table 25**.

Species	**BSH**	**MAK (SMA)**	**MAK (LMA)**	**OCS**	**POR**	**FAL**	**THR/ALV**	**RHN**	**SPN/SPY**
Total catch (Tn)	1893130.8	469024.5	9644.0	0	0	0	0	0	0

Table 25. Total estimated catches of sharks by EU (Spanish) longliners in WCPFC in 2018 (Kg).

No interactions with seabirds, marine turtles and mammals have been reported in 2018 from EU longliners operating in WCPFC.

Mitigation methods on seabirds and turtles used by Spanish surface longliners operating in the WCPO: night setting with minimum deck lighting; tori-lines; weighted branch lines; side setting with a bird curtain and weighted branch lines; blue-dyed bait; management of offal discharge; deep setting line shooter; turtle Release Devices; circular hooks; bait fish flake; turtle Release Pole.

Annex 1

FORMAT OF NATIONAL REPORT SECTIONS ON DEVELOPMENT AND IMPLEMENTATION OF SCIENTIFIC OBSERVER PROGRAMS

(from the CCSBT Scientific Observer Program Standards)

REPORT COMPONENTS

The observer program implementation report should form a component of the annual National Reports submitted by members to the Scientific Committee. This report should provide a brief overview of observer programs for SBT fisheries, and is not intended to replace submitted papers containing proper analyses of collected observer data. This observer program report should include the following sections:

A. Observer Training

An overview of observer training conducted, including:

- Overview of training program provided to scientific observers.
- Number of observers trained.
- Summary of qualifications / training and years of experience of the observers deployed in SBT fisheries during the past year.
- A copy of the latest version of relevant manuals in their original language for reference

No observer program for SBT fisheries.

B. Scientific Observer Program Design and Coverage

Details of the design of the observer program, including:

- Which fleets, fleet components or fishery components were covered by the program.
- How vessels were selected to carry observers within the above fleets or components.
- How was observer coverage stratified: By fleets, fisheries components, vessel types, vessel sizes, vessel ages, fishing areas and seasons.

Details of observer coverage of the above fleets, including:

- Components, areas, seasons and proportion of total SBT catch, specifying units used to determine coverage.
- Total number of observer employment days, and number of actual days deployed on observation work.

No observer program for SBT fisheries.

C. Observer Data Collected

List of observer data collected against the agreed range of data set out in Attachment 1. In broad structure this would include:-

- Effort data: Amount of effort observed (vessel days, sets, hooks, etc), by area and season and % observed out of total by area and seasons
- Catch data: Amount of catch observed of SBT and other species (if collected), by area and season, and % observed out of total estimated SBT catch by area and seasons
- Length frequency data: Number of fish measured per species, by area and season.
- Biological data: Type and quantity of other biological data or samples (otoliths, sex, maturity, Gonosomatic index, etc) collected per species.
- The size of sub-samples relative to unobserved quantities.

Observers (in EU longline fleets) covered nearly 3% of the hooks in the Indian Ocean (2017), more than 10% in the Atlantic Ocean (2018) and about 15% Western and Central Pacific (2018).

D. Tag Return Monitoring

Number of tags returns observed, by fish size class and area.

N/A.

E. Problems Experienced

- Summary of problems encountered by observers and observer managers that could affect the CCSBT Observer Program Standards and/or each member's national observer program developed in the light of the Standards.

N/A.