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South African National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2016

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Department:
Agriculture, Forestry and Fisheries
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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** [e.g. for a National Report submitted to the IOTC Secretariat in 2016, final data for the 2015 calendar year must be provided to the Secretariat by 30 June 2016)	YES 30/06/2016
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 2016, preliminary data for the 2015 calendar year was provided to the IOTC Secretariat by 30 June 2016). **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 2016, final data for the 2015 calendar year must be provided to the Secretariat by 30 December 2016).	YES 30/06/2016
If no, please indicate the reason(s) and intended actions:	

EXECUTIVE SUMMARY

South Africa has two commercial fishing sectors which either target, or catch as bycatch, tuna and tuna-like species in the Indian Ocean – the Large Pelagic Longline and the Tuna Pole-line. The Tuna Pole-line sector, which operates mainly in the Atlantic Ocean from September – May each year, only occasionally crosses over into the Indian Ocean in search of yellowfin tuna. In 2015, only three tuna pole-line vessels fished in the Indian Ocean and the majority targeted albacore (*Thunnus alalunga*) and yellowfin tuna (*Thunnus albacares*) available inshore in the Atlantic Ocean, or opted to target tunas on the high seas at Vema and Valdivia seamounts and in Namibia. The South African-flagged large pelagic longline vessels have traditionally used swordfish (*Xiphias gladius*) targeting methods in the Indian and Atlantic Oceans, whilst the Japanese foreign-flagged vessels target tropical tunas (yellowfin and bigeye tuna, *Thunnus obesus*) with effort focused in the Indian Ocean. Despite an increase in catches for 2015, swordfish catches remained comparatively low in the South West Indian Ocean. Although the local South African fleet targets swordfish, their catch comprises of only 50-60% swordfish, the remainder being tropical tunas and sharks. The 11.7% reduction in longline effort from 2014 to 2015 resulted in decreased catches of bigeye tuna (-24.5%), southern bluefin tuna (-30.1%), albacore (-34.4%) and skipjack (-62.5%). Both albacore and skipjack are considered bycatch in the longline sector. In contrast, yellowfin tuna and swordfish catches increased by 10.2% and 19.4%, respectively. Blue shark (*Prionace glauca)* and shortfin mako (*Isurus oxyrinchus*) shark catches increased in 2015 by 25.3% and 16.6% respectively. Research into the stock origin and intermixing of tuna, swordfish and large pelagic shark populations at the boundary between the Atlantic and Indian Oceans is a priority in South Africa.

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1. BACKGROUND/GENERAL FISHERY INFORMATION

1.1. Large pelagic longline fishery

The South African large pelagic longline fishery was commercialized in 2005, with the issuing of 18 swordfish-directed and 26 tuna-directed fishing rights valid for 10 years. The fishery has been restricted to 50 permits (one permit per vessel) through a Total Applied Effort (TAE) control. The large pelagic longline fishery was initially split into swordfish and tuna-directed sub-sectors due to the drastic declines in swordfish catch and CPUE experienced during the period of the experimental fishery from 1997 to 2005. South Africa amended its fishery policy in 2008 after only 9 swordfish-directed longline vessels operated in 2006, resulting in the lowest annual catch since 2001. The fishery is allowing an interim period for foreign vessels to charter in this sub-sector as a means of skills development and a means of acquiring suitable vessels. Foreign vessel owners in the tuna-directed sub-sector are encouraged to reflag their vessels and to transfer skills to South Africans.

The current local longline vessels have gear configured to catch swordfish, but catch composition is split between swordfish and tropical tunas (bigeye and yellowfin tunas). The general method and gear used to target swordfish involves setting lines at night (to reduce seabird mortality) with squid bait using buoy - and branch lines of 20 m length. Depending on the vessel size, 700 – 1500 hooks are set per line. Stainless steel hooks are prohibited and wire traces are allowed on local vessels until 60% of the precautionary upper catch limit (PUCL) of 2000 t for sharks (blue and mako sharks mainly) has been reached. It should however be noted that as of 1 January 2017, wire traces will be prohibited in the longline fishery. The larger vessels that target tropical tuna are able to fish further offshore and differ slightly in their methodology. These vessels set up to 3000 hooks per set with a combination of fish and squid bait, using deeper branch lines and varying hook numbers per basket to influence the setting depth. The smaller longline vessels carry ice whereas the larger vessels have freezers. Fish are dressed at sea and no further at-sea processing is conducted. Swordfish are targeted in the north east of the South African EEZ and beyond in the Mozambique Channel, whereas tropical tunas are caught along the entire continental shelf edge.

South Africa submitted a bigeye tuna fishing plan (CoC 07/13) to the Commission meeting of the IOTC, thereby notifying the Commission of South Africa's intention to exceed 1000 t of bigeye tuna in future as the fishery develops. Prior to 2002 most of longline fishing effort was concentrated in the Atlantic Ocean. Fishing effort started increasing in the Indian Ocean from 2001 with the development of ice and processing facilities at Richards Bay, which is situated on the east coast of South Africa. The targeting and catching of tropical bigeye and yellowfin tunas has proven more successful in the Indian Ocean, resulting in a sizeable amount of the longline fishing effort being concentrated in the Indian Ocean. This fishery is now the most important South African tuna fishery operating in the Indian Ocean in terms of tonnage landed.

In 2005 the shark longline sector was split into a demersal shark longline component, which predominantly targets soupfin and hound sharks, and a pelagic shark longline component (seven vessels), which predominantly targets shortfin mako and blue sharks. The latter catches tunas and swordfish as bycatch. This fishery was split as a precursor to phase out the targeting of pelagic sharks due to the concern over the local stock status of some species. The pelagic shark fishery operated under exemptions from 2005 until March 2011, when South Africa incorporated the pelagic shark fishery into the tuna/swordfish longline fishery. Six of the seven shark exemption holders were issued with tuna/swordfish rights in March 2011. These vessels are undergoing a phase-out period to reduce shark targeting and focus on tuna

and/or swordfish catches. Pelagic sharks are currently managed as bycatch in the tuna and swordfish longline fishery.

In 2014 the decision was taken to no longer refer to the fleet as two different fishing strategies, tuna-directed and swordfish-directed, since the fishing behaviour of the local fleet has been shifting from exclusive swordfish targeting to include tunas and sharks. The fishery is now referred to as the Large Pelagic Longline fishery and includes vessels that target tunas, swordfish and sharks as by-catch. The 10-year long-term rights granted in 2005 expired in February 2015, and 15-year rights have been provisionally allocated in November 2016 by South Africa's Department of Agriculture, Forestry and Fisheries. The fleet is currently fishing under exemption permits until the end of the 2016/17 fishing season (i.e., 31 January 2017). Although preliminary, the South African longline fleet will have an overall capacity in the order of 60 vessels.

Foreign vessels, mainly from Japan and Chinese-Taipei, fished in South African waters through the issuing of bi-lateral agreements in the 1970s, and re-negotiated these agreements in the 1990s until 2002 (Sauer *et al*., 2003). Joint-venture agreements with Japan have been underway since 1995, whereby these foreign-flagged vessels are permitted to fish under a South African Rights Holder. The vessel is required to adhere to South African legislation, including but not limited to, the Marine Living Resources Act (Act No. 18 of 1998) and Regulations promulgated thereunder, including Large Pelagic Longline sector specific policy. Importantly, each foreign vessel is required to carry an observer onboard every trip. The catch from these vessels accrues to South Africa.

In 2015 the fishing effort was distributed along the continental shelf edge and within meso-scale oceanographic features along the entire South African Indian Ocean coastline.

1.2.Pole and Line fishery, commercial linefishery

Fishing for tunas using rod and reel and/or pole and line dates back to the 1970s in South Africa when they were caught in minimal quantities as bycatch in other fisheries, making this the oldest commercial fishery for tuna in South Africa. Interest sparked in 1979 when yellowfin tuna (*Thunnus albacares*) became available close inshore off Cape Point (Shannon, 1968). Operators from other sectors converted their vessels to ice vessels to fish for yellowfin using pole and line or purse-seine nets, resulting in catches of over 4 500 t (Penney and Punt, 1993). By 1980 the yellowfin tuna was no longer available close inshore, resulting in these vessels targeting albacore (*Thunnus alalunga*) instead on the Southwest and West coasts of South Africa. Albacore catches peaked at 6000 t in 1989, although these catches were under-reported and were probably closer to 10 000 t (Penney and Punt, 1993). The sector has continued to exploit juveniles and sub-adult albacore of between 2 and 3 years old (average of 86 cm FL) and larger yellowfin tuna (average of 133 cm FL). Catches of albacore have remained relatively stable over the last decade, averaging approximately 3 500 t per year. Yellowfin tuna are periodically available inshore with a frequency of 5 to 7 years and the fleet harvests this species opportunistically. In 2014 and 2015 yellowtail were available to the fishery around the Cape of Good Hope region which might have resulted in lower catches in the IOTC region. In addition to the tuniform target species, vessels will augment catches opportunistically with snoek (*Thyrsites atun*) and yellowtail (*Seriola lalandi*).

The sector operates along the south west and west coasts of South Africa in the Atlantic Ocean where albacore is available close inshore from October to May, but vessels make forays into the Indian Ocean depending on target species distribution. Traditionally the South

African fleet has been characterized into three different categories (1) Skiboats, (2) Pole and Line and (3) Freezer vessels (Leslie et al. 2004). Skiboats are less than 25 GRT and are mostly confined to day trips within a range of 50 nm. Pole and Line boats, which represent the bulk of the fleet, are mainly older displacement-type vessels converted from other fisheries. These vessels can undertake multiday trips of limited duration and range, as the catch is kept on ice. Freezer vessels are mainly vessels up to 30 m and 230 GRT. Due to their large size and freezing facilities, these vessels can stay out at sea for long periods and reach the farthest fishing grounds (West *et al.*, 2013). In more recent years, improvements in navigational gear, the use of live bait and sonar equipment has improved the performance of these vessels (West *et al*., 2013).

This sector is effort controlled, limiting the number of vessels and crew. Prior to 2006, the pole and line fishery was managed under the bracket of commercial linefishing. During the long-term rights allocation process in 2006, the commercial linefishery was divided into three separate sectors consisting of the traditional linefishery (452 vessels and 3 450 crew), the hake-handline sector (130 vessels and 785 crew) and the pole and line fishery (200 vessels and 3 600 crew) (Mann, 2013). Of the 200 vessels and 3 600 crew allocation available for 8 years, only 198 vessels and 2961 crew were allocated in 2006 (TAC/TAE, 2015). The reallocation of long-term rights in 2013 saw 130 rights (136 vessels) granted and 15% of the available effort reserved for possible allocation for appeals. Subsequent to the finalisation of the 2015 Appeals process, 34 new rights (41 vessels, 25 repeat and 15 unique) were added, resulting in a total vessel number of 151 (164 rights). This reduction was in response to the 2013 ICCAT albacore stock assessment outcome of large uncertainty around the estimates of albacore stock status in the south Atlantic. ICCAT has issued South Africa with a 4 400 t per annum albacore allocation for the period 2014 to 2016 (ICCAT, 2013), 90% of which is caught by the Tuna Pole-Line sector.

Since vessels are small and the nature of the operation requires the vessel to maximise on crew (who work in pairs to catch and haul albacore), scientific observers cannot be accommodated on the vessel and instead monitor catches in port during offloading.

In 2014, after 6 years of experimental fishing, live-bait purse-seining was incorporated in the sector, allowing a limited number of vessels to cast a net and all vessels to hold live bait (mostly anchovy *Engraulis encrasicolus* with sardine *Sardinops sagax* considered as accidental catch) in tanks that can be kept alive for up to 3 months. The vessels are authorised to use purse-seine nets that do not exceed 210 m in length and 35 m in depth.

In 2015 only three Pole and Line vessels fished in the Indian Ocean. This fishery is largely based in Cape Town and the fleet operates in the Atlantic Ocean along the west coast as far north as Namibia and as far west as Valdivia and Vema seamounts. The fleet has access to near shore albacore and yellowfin tuna in these areas.

South Africa also has a boat-based commercial Linefishery which opportunistically catches yellowfin tuna and eastern little tuna (*Euthynnus affinis*) (Everett, 2014), in addition to king mackerel and shark species in the Indian Ocean using rod and reel when other linefish species such as yellowtail, snoek, kob, geelbek and slinger are not available. These catches usually only contribute a negligible percentage of the total catch of the Linefishery due to the multispecies nature of this fishery.

2. FLEET STRUCTURE

South Africa submitted a Fleet Development Plan (FDP) in 2007 and is yet to provide information on the implementation of the initial FDP and to consult with stakeholders to provide an updated FDP.

Table 1. Number of vessels operating in the IOTC area of competence, by gear type and size, from 2010 - 2015.

	Fleet Structure in 2015			Fleet Structure 2010 - 2014		
Fishing Sector	No. Active Permits	Vessel size range (m)	Trip duration (days)	No. Active Permits	Vessel size range (m)	Trip duration (days)
Large Pelagic Longline	19	20 - 49	7 - 90	2014: 15 2013: 22 2012: 24 2011: 29 2010: 21	2014: 20 - 49 2013: 20 - 50 2012: 22 - 50 2011: 22 - 50 2010: 21 - 50	7 - 90
Pole & Line	3	16-19	2-14	2014: 0 2013: 0 2012: 6 2011: 6 2010: 2	2014: N/A 2013: N/A 2012: 14 - 20 2011: 13 - 22 2010: 13	2 - 14
Commercial Linefishery	370	4 - 10	1 - 2			
Recreational Linefishery	Unknown	4 - 10	1			

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

Table 2 a). Annual Large Pelagic fishery catch (tons round weight excluding sharks and NEI) and effort (number of hooks) of primary species in the IOTC area of competence from 2010 to 2015. NEI indicates all other catch.

Year	Total number of hooks	Bigeye tuna	Yellowfin tuna	Albacore	Southern bluefin tuna	Swordfish	Skipjack	Shortfin mako	Blue shark	NEI
2010	44 52 420	794.9	1207.3	60.3	7.8	467.6	0.7	41.9	90.9	98.8
2011	5 235 123	781.2	1063.2	254.7	60.2	488.2	3.0	341.1	193.8	180.5
2012	3 816 271	759.2	590.1	161.7	109.1	395.1	2.6	221.3	171.7	136.4
2013	3 872 846	590.4	1029.4	177.5	53.3	305.0	3.6	304.4	169.8	101.6
2014	1 828 671	339.2	383.0	28.2	15.3	102.8	0.8	249.3	102.9	38.2
2015	1 614 724	256.0	422.1	18.5	10.7	122.7	0.3	290.6	128.9	47.4

Table 2 b). Annual Pole and Line catch (tons dressed weight excluding albacore) and effort (number of days) of primary species in the IOTC area of competence from 2010 to 2015. NEI indicates all other catch.

Year	Total number of catch days	Albacore	Yellowfin	Skipjack	Bigeye	Snoek	Yellowtail	NEI
2010	3	3.5	0	0	0	0	0	0.26
2011	25	45.7	0.69	0.002	0	0.02	0.88	0.85
2012	31	15.3	0.16	0.04	0.12	0.32	0.01	0.09
2013	2	0.06	0.01	0.01	0	0	0	0
2014	0	0	0	0	0	0	0	0
2015	3	0.13	0.11	0	0	0	0	0

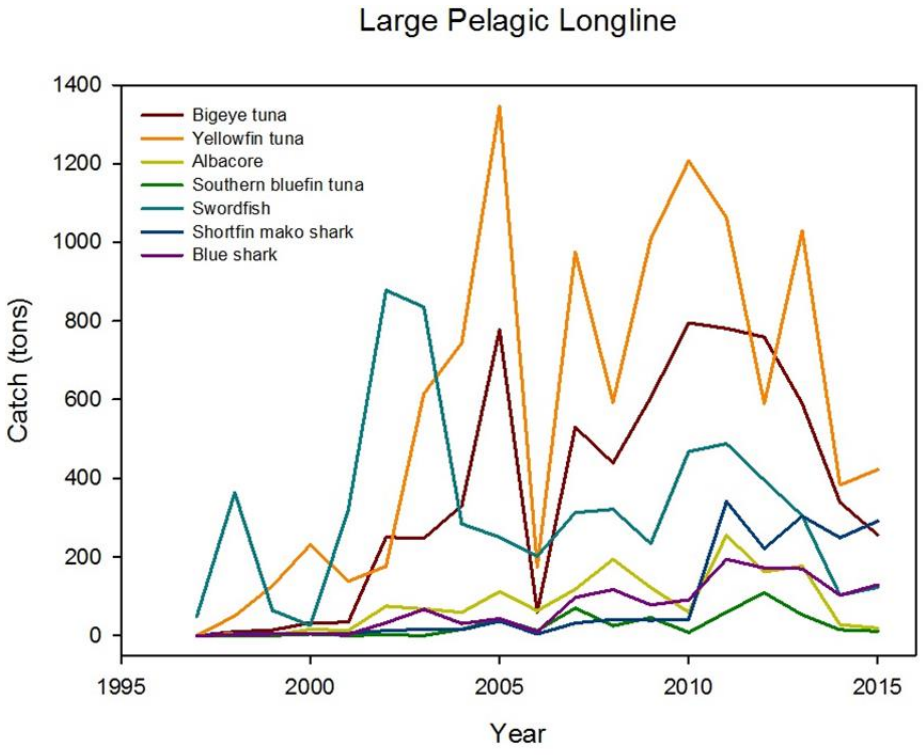

Figure 1a. Historical annual catch for the national Large Pelagic Longline fleet for the IOTC area of competence for the entire history of the fishery/fleet.

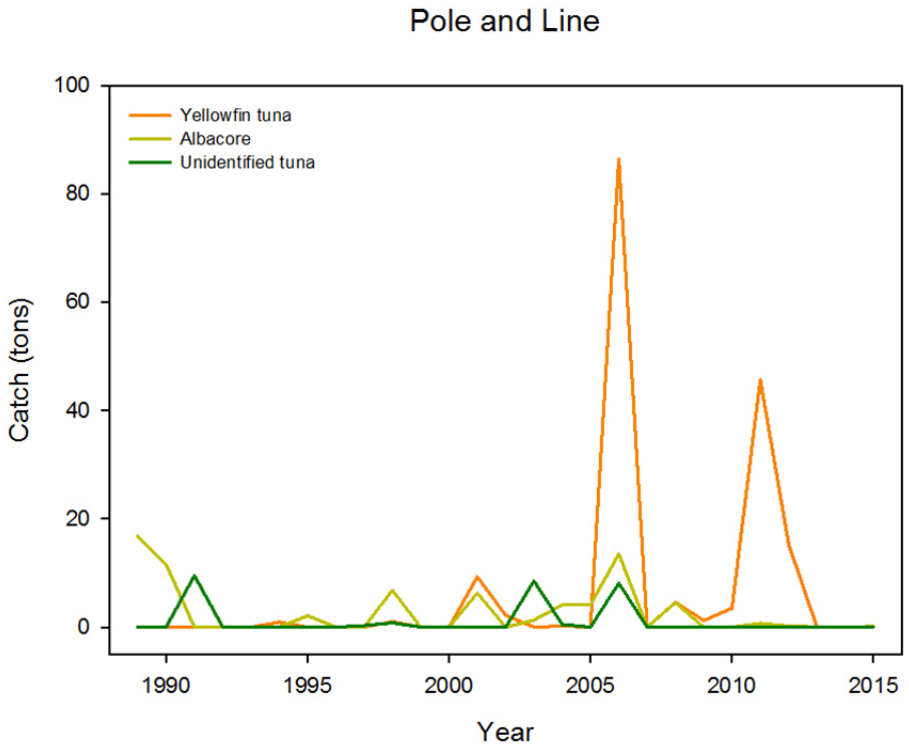

Figure 1b. Historical annual catch for the national Large Pelagic Longline fleet for the IOTC area of competence for the entire history of the fishery/fleet.

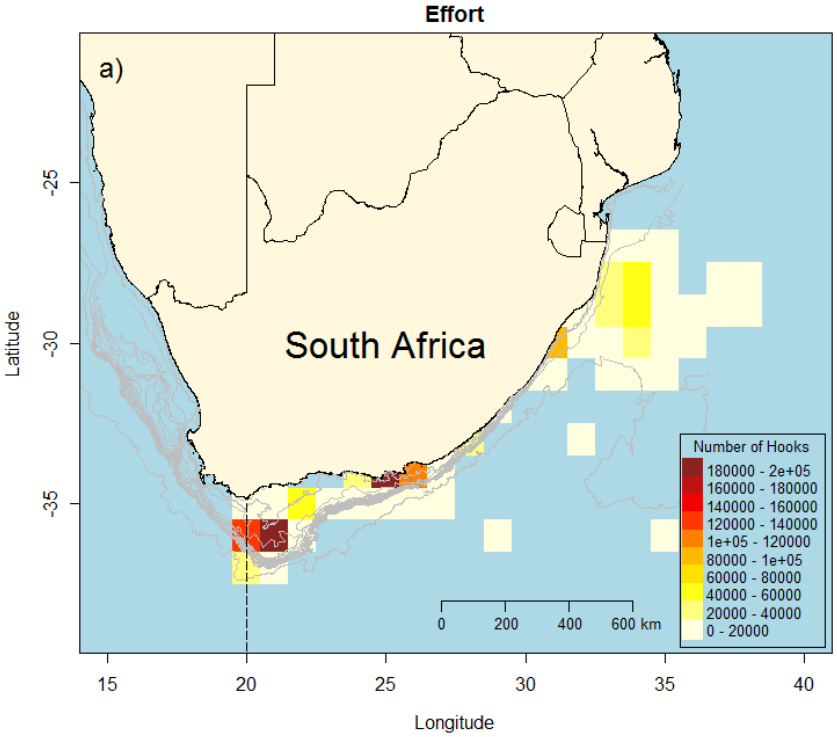

Figure 2a. Map of the distribution of longline fishing effort in 2015 for the national fleet in the IOTC area of competence.

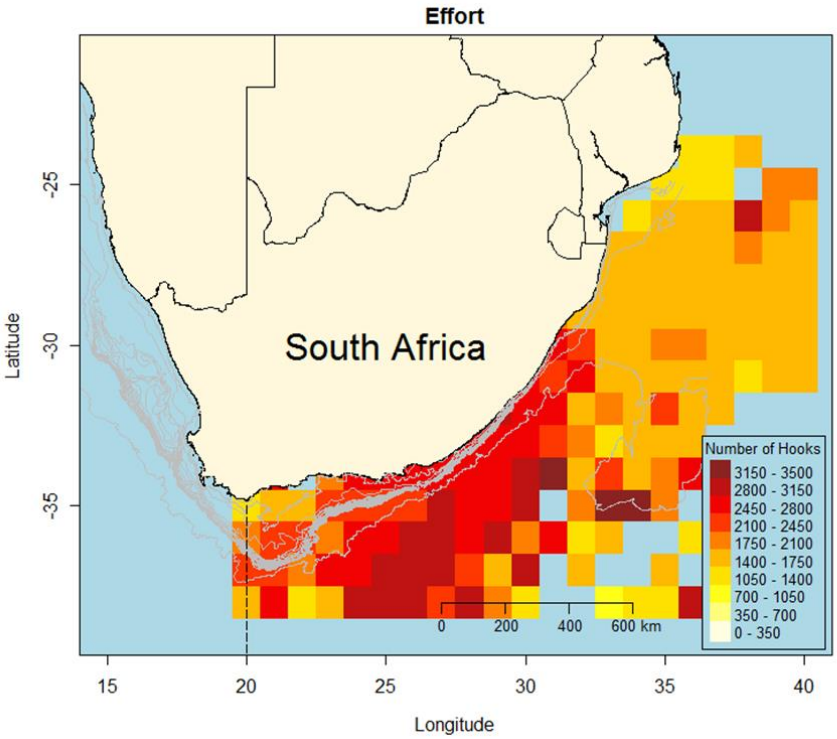

Figure 2b. Map of the distribution of long-term longline fishing effort for the national fleet in the IOTC area of competence (1997–2015).

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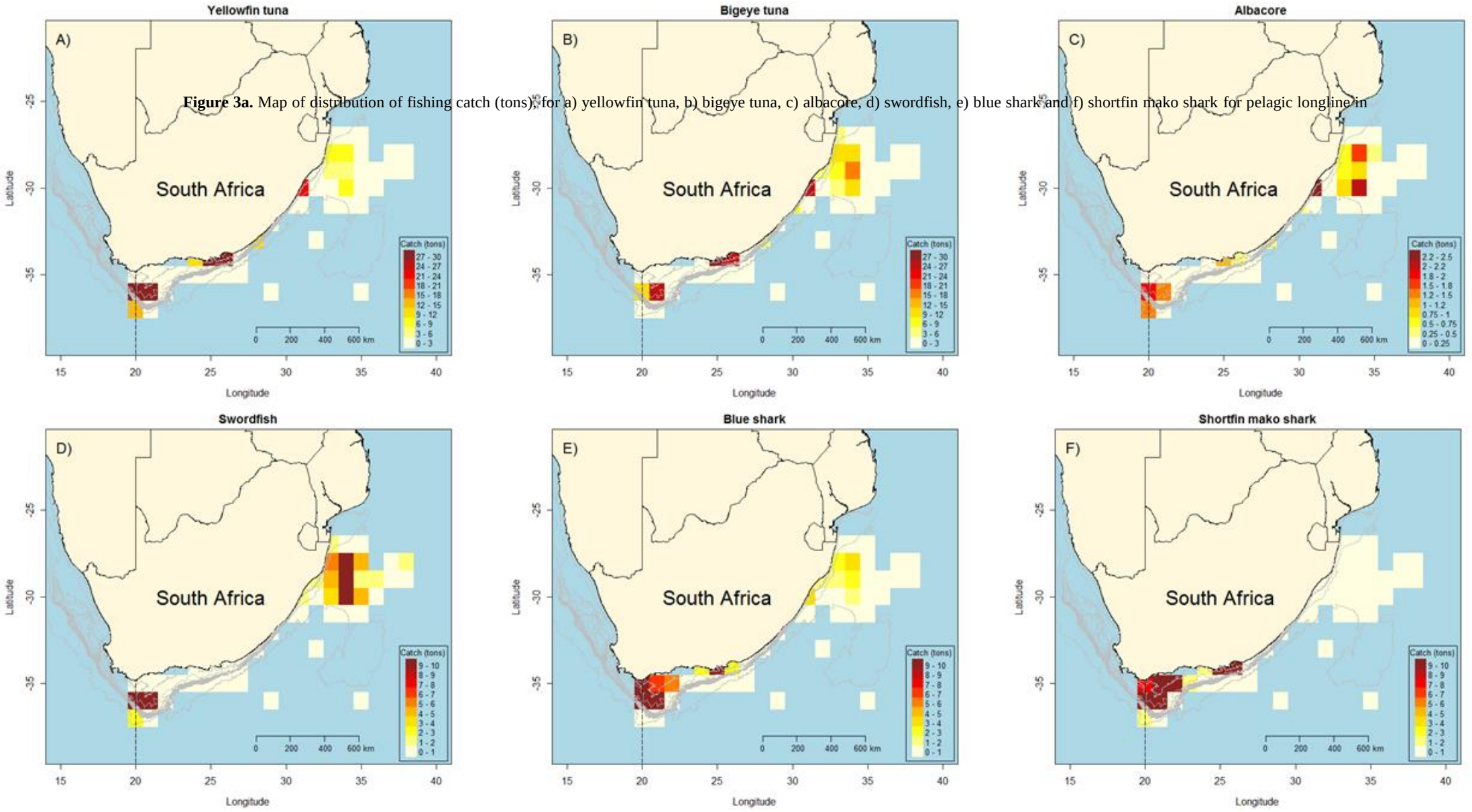

Figure 3a. Map of distribution of fishing catch (tons), for a) yellowfin tuna, b) bigeye tuna, c) albacore, d) swordfish, e) blue shark and f) shortfin mako shark for pelagic longline in

South Africa, in the IOTC area of competence in 2015.

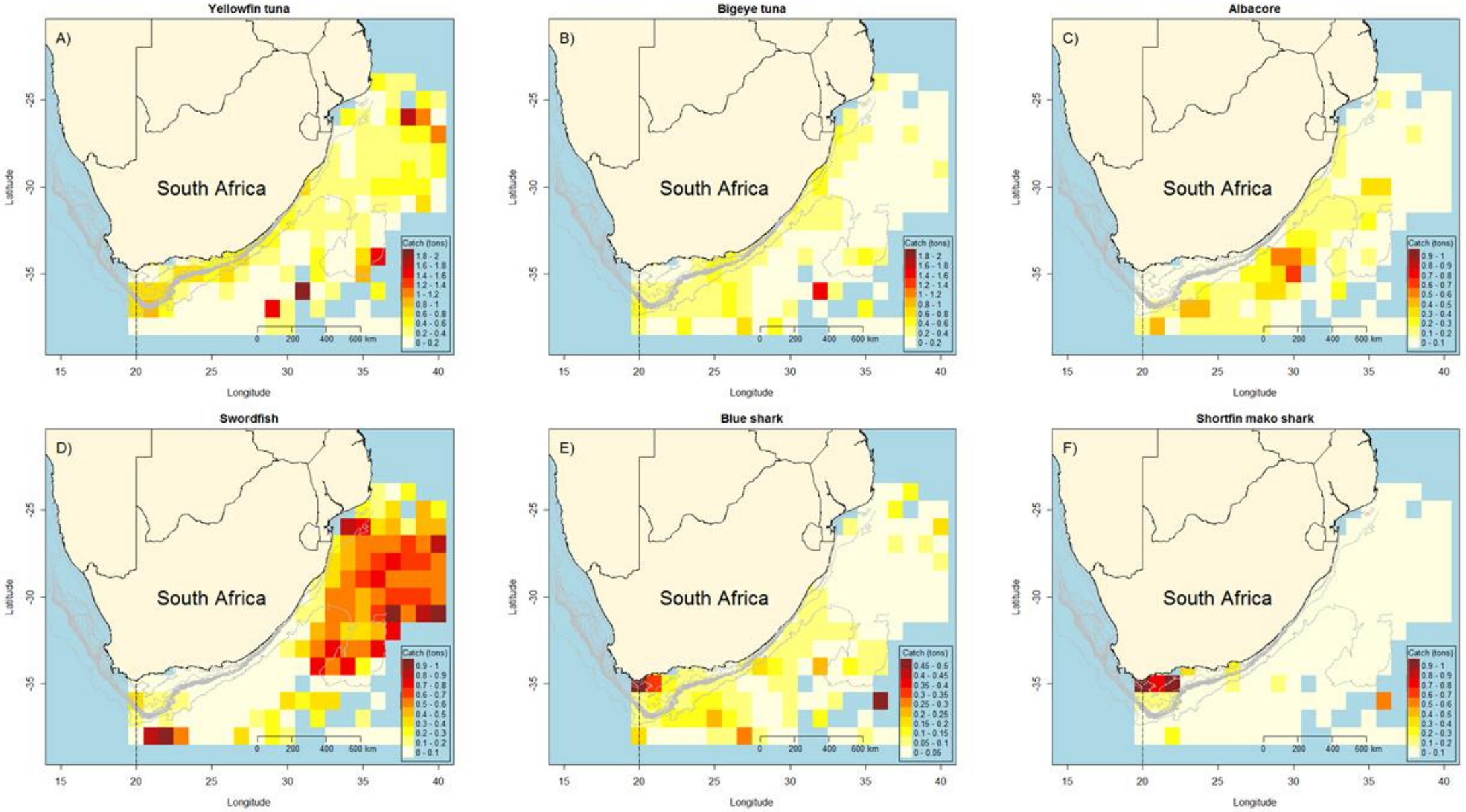

Figure 3b. Map of distribution of pelagic longline average catches (kg) from 2010 to 2015 for a) yellowfin tuna, b) bigeye tuna, c) albacore, d) swordfish, e) blue shark and f) shortfin mako shark in the IOTC area of competence.

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4. RECREATIONAL FISHERY

The boat-based recreational fishery, including informal charter and sport fisheries using rod and reel and spear guns, also targets albacore, yellowfin, skipjack and bigeye tuna, and marlins (blue marlin *Makaira nigricans* and black marlin *Makaira indica*), from small fishing vessels (on average 4 – 10 m in length). All recreational fishers are required to purchase a permit and are restricted to a bag-limit of 10 tuna, 5 swordfish and 5 billfish per day, with the sale of catch prohibited. There are further minimum weight restrictions of 3.2 kg for yellowfin and bigeye, 6.4 kg for southern bluefin and 25 kg for swordfish caught. As there are no reporting requirements for this fishery catch and effort data are not consistently available. The angling associations have regular tuna and billfish competitions every year where they promote research (e.g. tagging), catch-and-release and responsible fishing. Most recreational fishing takes place in nearshore waters during holiday and relatively few anglers are equipped to target tuna.

5. ECOSYSTEM AND BYCATCH ISSUES

The World Wildlife Fund South Africa (WWF-SA) Responsible Fisheries Programme, now the WWF Sustainable Fisheries, has worked since 2007 to facilitate the implementation of an Ecosystem Approach to Fisheries management (EAF) in Southern Africa. An Ecological Risk Assessment (ERA) was conducted in 2007 to identify the issues (e.g. ecological wellbeing, human wellbeing and ability to achieve) in the pelagic longline, shark longline and Tuna Pole-Line fisheries (Petersen, 2007). The Performance Report identified the gaps amongst research, management, compliance and industry and has been used – and has continued relevance – as a tool to guide work plans and the implementation of EAF considerations in permit conditions.

5.1.Sharks

The National Plan of Action (NPOA) for sharks was finalised and launched at the 2013 ICCAT Commission meeting held in Cape Town, South Africa. Shark-related issues discussed in the NPOA-Sharks have been categorised into clusters with proposed actions by the responsible unit within a time frame (NPOA-Sharks, 2013). A task-team of relevant stakeholders is required to achieve the tasks set out in the NPOA-Sharks.

The permit conditions are amended regularly to include shark mitigation measures. A precautionary upper catch limit (PUCL) of 2000 t dressed weight of Chondrichthyans was enforced in 2012. Foreign-flagged fleets may not land Chondrichthyans that exceed 10% of the total dressed weight of tuna species per season. South African-flagged vessels are limited by the following PUCL: 1) Once 60% of the PUCL has been reached, vessels will not be allowed to use steel wire traces on the branch lines; 2) When the PUCL has been reached the entire fishery will close.

Thresher sharks belonging to the genus *Alopias*, hammerhead sharks (belonging to genus *Sphyrna*), oceanic whitetip sharks (*Carcharhinus longimanus*) and silky sharks (*Carcharhinus falciformis*) shall not be retained on board any vessel

Fins may only be landed from shark trunks that are retained on board and both the fins and trunks must be landed together at the first point of landing. If the Permit Holder chooses to remove the shark fins from the trunks then the maximum weight of fins landed or retained on board shall not exceed 13% for blue sharks and 8% of the total weight of all other shark species' trunks. If the Permit Holder chooses to keep the fins attached to the specific trunk (either through a partial cut and folded over or tethered to the trunk via a cord) then no ratio shall apply.

Table 3. Total number and dressed weight (in tons) of sharks retained by the national fleet in the IOTC area of competence from 2010 to 2015. 'Requiem sharks' is a total of bronze whaler (*Carcharhinus brachyurus*) and dusky (*Carcharhinus obscurus*).

Year	Blue shark no.	Blue shark tons	Shortfin mako shark no.	Shortfin mako shark tons	Requiem sharks no.	Requiem sharks tons
2010	4 424	90.9	2 066	41.9	5	0.09
2011	10 844	193.8	14 734	341.1	325	15.21
2012	11 021	171.7	8 184	221.3	456	16.80
2013	11 588	169.8	11 620	304.4	38	1.72
2014	7 544	102.9	8 720	249.3	24	1.36
2015	10 609	128.9	10 856	290.6	281	15.8

Table 4a: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2009.

	Discarded
Mobula spp.	2
Manta spp.	6
Pelagic stingray *Pteroplatytrygon violacea*	445
Blue shark *Prionace glauca*	494
Bronze whaler shark *Carcharhinus brachyurus*	11
Crocodile shark *Pseudocarcharias kamoharai*	55
Hammerhead shark *Sphyrna* spp	8
Shortfin mako shark *Isurus oxyrinchus*	416
Thresher shark *Alopias spp*	110
Big eye Thresher *Alopias superciliosus*	14
Shark unidentified	13
Ray and skate unidentified	17

Table 4b: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2010.

	Discarded
Mobula spp.	1
Pelagic stingray *Pteroplatytrygon violacea*	188
Blue shark *Prionace glauca*	207
Bronze whaler shark *Carcharhinus brachyurus*	4
Crocodile shark *Pseudocarcharias kamoharai*	24
Dusky shark *Carcharhinus obscurus*	2
Hammerhead shark *Sphyrna* spp	7
Shortfin mako shark *Isurus oxyrinchus*	339

Thresher shark *Alopias spp*	133
Big eye Thresher *Alopias superciliosus*	10
Shark unidentified	11

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Table 4c: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2011.

	Alive and in good health	Alive, condition unknown	Alive, life-threatening injuries, unlikely to survive	Alive, minor injuries, stressed, high probability of survival	Dead	Unknown	Total
Bigeye thresher *Alopias superciliosus*	7	36		2	5		50
Blue shark *Prionace glauca*	70	287	3	79	68		507
Bronze whaler shark *Carcharhinus brachyurus*					3		3
Crocodile shark *Pseudocarcharias kamoharai*	6	25		8	3		42
Dusky shark *Carcharhinus obscurus*		7	1	1	5		14
Hammerhead sharks *Sphyrna* spp		11			4		15
Longfin mako *Isurus paucus*	1		1				2
Manta and *Mobula* spp		1					1
Oceanic whitetip shark *Carcharhinus longimanus*	1	3			1		5
Pelagic stingray *Pteroplatytrygon violacea*	62	230	12	80	69		453
Porbeagle shark *Lamna nasus*		2		3			5
Skates and rays unidentified		4					4
Shortfin mako shark *Isurus oxyrinchus*	118	202	8	183	141	1	653
Silky shark *Carcharhinus falciformis*					1		1
Smooth hammerhead shark *Sphyrna zygaena*	1	26			9		36
Thresher shark *Alopias vulpinus*	21	119		1	11	2	154
Tope shark *Galeorhinus galeus*				1	2		3

Table 4d: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2012.

	Alive and in good health	Alive condition unknown	Alive, life-threatening injuries, unlikely to survive	Alive, minor injuries, stressed, high probability of survival	Discard reason unknown	Discard, dead	Discard dead, depredated	Discard, dead, finned	Discard, dead, no commercial value	Discard, dead, undersized	Total
Bigeye thresher *Alopias superciliosus*	5	21				3					29
Blue shark *Prionace glauca*	38	80	13	98	8	4	4	10		15	270
Bronze whaler shark *Carcharhinus brachyurus*				1							1
Crocodile shark *Pseudocarcharias kamoharai*	6		1	26				1			34
Dusky shark *Carcharhinus obscurus*	1	3		2	1	3					10
Great hammerhead shark *Sphyrna mokarran*		2									2
Manta and *Mobula* spp		4									4
Pelagic stingray *Pteroplatytrygon violacea*	53	3		97		2			2		157
Pelagic thresher shark *Alopias pelagicus*		2									2
Porbeagle shark *Lamna nasus*				6							6
Scalloped hammerhead shark *Sphyrna lewini*		4				2					6
Shortfin mako shark *Isurus oxyrinchus*	44	52	7	133	5	13	7	7		27	295
Smooth hammerhead shark *Sphyrna zygaena*	3	14		3		3	1				24
Thresher shark *Alopias vulpinus*	15	23		6		4	1	2			51
Tiger shark *Galeocerdo cuvier*		1									1

Table 4e: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2013.

	Alive and in good health	Alive condition unknown	Alive, life-threatening injuries, unlikely to survive	Alive, minor injuries, stressed, high probability of survival	Discard reason unknown	Discard, dead	Discard, dead depredated	Discard, dead, finned	Discard, dead, no commercial value	Discard, dead, undersized	Total
Bigeye thresher *Alopias superciliosus*		2	1	8	1				1		13
Blue shark *Prionace glauca*	39	59	47	53	3	12	19			34	266
Crocodile shark *Pseudocarcharias kamoharai*	7	4	2	16							29
Dusky shark *Carcharhinus obscurus*				1		1				1	3
Great hammerhead shark *Sphyrna mokarran*	6		2		3	3					14
Manta and *Mobula* spp	2	2									4
Oceanic whitetip shark *Carcharhinus longimanus*	1	2		2							5
Pelagic stingray *Pteroplatytrygon violacea*	34	16	6	27					2		85
Pelagic thresher shark *Alopias pelagicus*		3		1							4
Porbeagle shark *Lamna nasus*	1	8			1			1	1		12
Scalloped hammerhead shark *Sphyrna lewini*				2							2
Shortfin mako shark *Isurus oxyrinchus*	30	31	17	42	3	10	10	6	1	17	157
Silky shark *Carcharhinus falciformis*	3	2	1	1							7
Smooth hammerhead shark *Sphyrna zygaena*				1	1						2
Thresher shark *Alopias spp.*	12	20	3	12	14						61
Tiger shark *Galeocerdo cuvier*				1							1

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Table 4f: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2014.

	Alive and in good health condition	Alive conditions not determined	Alive, life threatening injuries unlikely to survive	Alive, minor injuries / stressed high probability of survival	Discard reason unknown	Discard, dead	Discard, dead, depredated	Discard, dead, no commercial value	Discard, dead, undersize	Total
Bigeye thresher *Alopias superciliosus*	2			5		1				8
Blue shark *Prionace glauca*	73	26	20	98	2	47	27		35	328
Bronze whaler shark *Carcharhinus brachyurus*				2		1				3
Crocodile shark *Pseudocarcharias kamoharai*	5			7		1		1		14
Hammerhead sharks *Sphyrna* spp	1			1						2
Manta and *Mobula* spp				2						2
Pelagic stingray *Pteroplatytrygon violacea*	10	8	3	27		5		2		55
Pelagic thresher *Alopias pelagicus*			2	7						9
Shortfin mako *Isurus oxyrinchus*	24	13	2	64		13	5		25	148
Silky shark *Carcharhinus falciformis*						1				1
Thresher shark *Alopias* spp	18	7		6		5				36

Table 4g: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence in 2015.

	Alive and in good health condition	Alive conditions not determined	Alive, life threatening injuries unlikely to survive	Alive, minor injuries / stressed high probability of survival	Discard reason unknown	Discard, dead	Discard, dead, depredated	Discard, dead, no commercial value	Discard, dead, undersize	Total
Bigeye thresher *Alopias superciliosus*	6									6
Blue shark *Prionace glauca*	144	12	70	64	1	34	18	2	20	365
Bronze whaler shark *Carcharhinus brachyurus*	8		1	4		5				18
Crocodile shark *Pseudocarcharias kamoharai*	3		1	2		2				8
Hammerhead sharks *Sphyrna* spp	10		2	4		5				21
Oceanic whitetip shark *Carcharhinus longimanus*	2					3				5
Pelagic stingray *Pteroplatytrygon violacea*	73		5	8		7		20		113
Scalloped hammerhead shark *Sphyrna lewini*	6					1				7
Shortfin mako *Isurus oxyrinchus*	54	1	19	33	1	25	14		15	162
Silky shark *Carcharhinus falciformis*	9	5				19	1			34
Smooth hammerhead shark *Sphyrna zygaena*	1			1		1				3
Thresher shark *Alopias* spp	33	3	4	9		5				54
Tiger shark *Galeocerdo cuvier*	2									2

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5.2.Seabirds

South Africa has been collecting data on seabird interaction with its longline fishery since 1998. South Africa published its NPOA for seabirds in 2008 (NPOA-Seabirds, 2008). The NPOA-Seabirds specifies a maximum mortality rate of 0.05 birds/1000 hooks, and lays out bycatch mitigation measures for use in longline fishing.

South Africa has introduced a number of bird mitigation measures through permit conditions since the start of its fishery, including the compulsory flying of tori-lines, no daylight setting, and the use of thawed bait to improve sink rates, in the tuna fishery. South Africa does not consider the use of line shooters or offal discard management to be useful in reducing seabird incidental mortality. Furthermore, South Africa (with the Albatross Task Force of BirdLife South Africa) developed a management plan in 2008 to reduce seabird by-catch in its longline fishery. This plan includes two seabird bycatch limits per vessel per year. The first limit stipulates that once a vessel reaches 25 birds killed in a year, it must adopt additional mitigation measures; it has to fly a second tori line and it has to place additional weights on to each branchline. If the vessel reaches the second limit of 50 seabird mortalities, the Department will review compliance with mitigation measures before deciding whether to permit further fishing by that vessel.

Since the implementation of seabird mitigation measures and the stringent monitoring thereof, seabird mortality has been reduced by more than an order of magnitude. For South Africa's entire coastline, the seabird mortality rate has declined from a maximum of 1.85 seabirds/1000 hooks^{-1} in 2011 to 0.38, 0.37 and 0.37 for 2012, 2013 and 2014, respectively, the lowest mortality rates achieved to date. The absence of an observer programme to monitor the local pelagic longline vessels has made it challenging to obtain reliable and accurate data on all seabird encounters in the fleet. That said, the implementation of mitigation measures remains high. All South African vessels, or vessels operating under a bi-lateral agreement with South Africa, are required to employ a combination of bird scaring lines, line weighting and night setting as bird bycatch mitigation measures.

5.3.Marine Turtles

The South African government has worked closely with WWF to educate skippers on release procedures for turtles. Skippers are provided with guidelines/instructions in their permit conditions on how to safely handle and release caught turtles. The use of circle hooks is encouraged as stated in the permit conditions, as well as the release of turtles using a de-hooker. As of 2014, skippers were required to record interactions with turtles, including the fate of the turtle, in the catch statistic logbooks on board the vessel. Although the absence of an observer programme to monitor the local pelagic longline vessels has made it challenging to obtain reliable and accurate data on all turtle encounters in the fleet, there is high awareness among skippers on handling protocols and release mortalities are thought to be low.

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

South Africa encourages vessels to take cognisance of sustainable fishing practices and impacts of tuna longline operations on the ecosystem. A specific concern is the impact of lost

"strops" (cords used to hang fish during freezing) during discharge procedures. Marine animals subsequently become entangled in these strops, resulting in mutilation and potential mortality of entangled animals. In order to solve this problem the Permit Holder is to ensure that "strops" used during freezing and discharge do not exceed the stipulated 80 mm stretched length.

Table 5. Observed annual catches of seabirds, marine turtles and marine mammals in the national pelagic longline fleet from 2010 to 2015, in the IOTC area of competence.

	2010		2011		2012		2013		2014		2015	
	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Seabirds												
Atlantic yellow-nosed albatross *Thalassarche chlororhynchos*			187	42	12	5	8	2	34		14	4
Black-browed albatross *Thalassarche melanophris*	8		64	62	4	1	10		4	2	4	2
Grey-headed albatross *Thalassarche chrysostoma*		1		99	4							
Indian yellow-nosed albatross *Thalassarche carteri*	29	1	1950	34	11		80	1	26		14	2
Shy albatross *Thalassarche cauta*	3	22	350	814	4	7	1	11	1	6	1	1
Albatross unidentified	3	15	387	465	1		6	4	2	1		1
Cape gannet *Morus capensis*	12		180		1		5		19		4	
White-chinned petrel *Procellaria aequinoctialis*	4	52	319	8326	9	66	9	131	16	78	6	38
Petrel unidentified		1	172	2870		1						
Cape petrel *Daption capense*			32									
Great skua *Stercorarius skua*			11									
Marine turtles												
Leatherback turtle *Dermochelys coriacea*	3		227		1		1		2		5	1
Loggerhead turtle *Caretta*	2		202		1				2		5	
Green turtle *Chelonia mydas*			32		1		1					
Hawksbill turtle *Eretmochelys imbricata*					1							
Turtle unidentified	3		154				3				2	
Marine mammals												
Common dolphin *Delphinus* spp	1											
Dolphin unidentified											1	

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

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

Vessels in the Large Pelagic Longline fishery and Tuna Pole-line fishery have been required to complete daily logs of catches since 1997 and 1985, respectively. The data are verified by comparing logs of catches with landing declarations that are overseen by South African Fisheries Compliance Officers and Fisheries Monitors. Rights Holders are required to submit these logsheets on a monthly basis.

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

The Vessel Monitoring System (VMS) was implemented in 1998 for Large Pelagic Longline vessels and was subsequently followed by the Tuna Pole-line vessels. All longline and pole-line vessels are required to have a functional VMS system on board that transmits directly to the Department's VMS OPS Room. It is the Permit Holder's responsibility to ensure that the VMS transmits data continuously and uninterruptedly prior to and throughout the duration of the trip.

6.3. Observer programme (including date commenced and status; number of observers, include percentage coverage by gear type)

The observer program was established in 1998, at the start of the experimental phase of the pelagic longline fishery, and a minimum 20% observer coverage was stipulated. The Offshore Resources Observer Programme (OROP) began in March 2002 and to date it still requires 100% observer coverage on foreign-flagged vessels. Up until March 2011, 11-20% observer coverage was achieved on local vessels per year based on the total effort (number of hooks) deployed. The observer programme contract expired in March 2011, and the Department is in the process of re-establishing the programme, for implementation in the near future. The observer programme for joint-venture (Japanese-flagged) vessels has continued with 100% of fishing trips observed.

There were 9 observers actively observing on the four Japanese foreign-flagged joint-venture vessels in 2015 in the IOTC region. There are no observers stationed on pole-line vessels; however, increased inspections and sampling of pole-line vessels is conducted during offloading in port by South Africa Fisheries Compliance Officers and Fisheries Monitors.

The observers collect all operational, catch (retained and discard), effort and length frequency data, and will collect biological material when required. The observers record data on the following forms:

- Form 1: Vessel and trip information sheet (IOTC Form I-GEN)
- Form 2D: Pelagic longline gear and operation information (IOTC Form 2-LL)
- Form 3D: Fishing effort pelagic long-line (IOTC Form 4-LL)
- Form 4: Marine mammal, sea turtle, and seabird incidental take form
- Form 6: Depredation
- Form 7: Fish biological sampling

Table 6. The number of hooks observed (local and foreign-flagged joint-venture vessels) per year from 2010 to 2015 in the IOTC region.

Year	Total number of hooks set on vessels that carried an observer	Percentage hooks observed on vessel that carried an observer	Percentage hooks observed of total hooks set in IOTC region (of which foreign-flagged coverage)
2010	2 297 122		
2011	3 126 357	48.4	29 (100%)
2012	2 615 568	37.5	26 (100%)
2013	2 235 366	43.7	25 (100%)
2014	1 263 727	43.0	30 (100%)
2015	1 037 222	62.5	64 (100%)

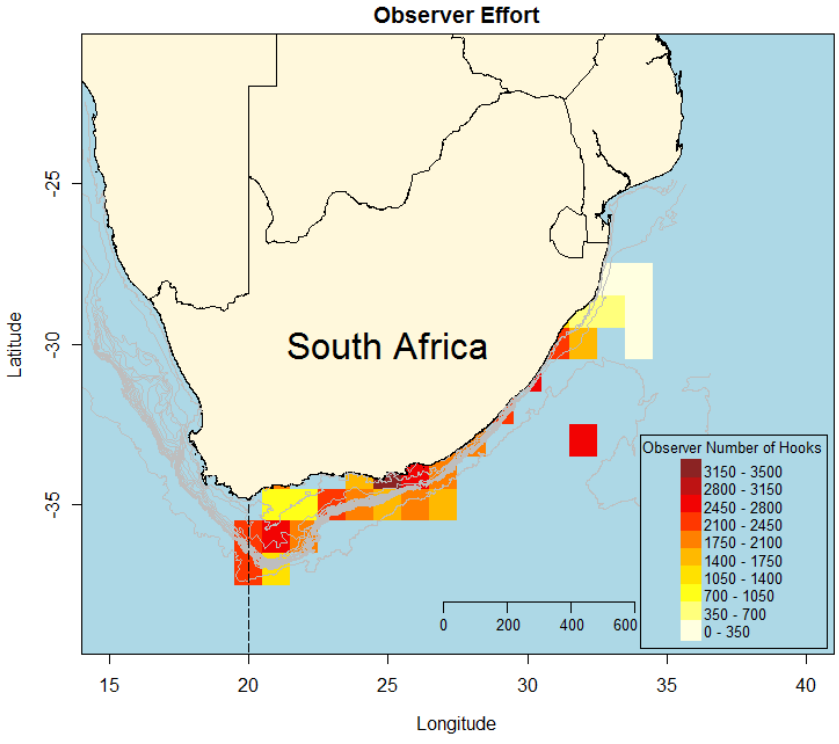

Figure 4. Map showing the spatial distribution of observer effort coverage for 2015.

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

Port sampling for tuna, swordfish and related species began in 1973 in the IOTC region.

The collection of albacore length frequency data through port sampling of Pole and Line vessels has been undertaken by employees of the Department of Agriculture, Forestry and Fisheries since 2011. The skippers are encouraged to collect yellowfin tuna length frequency measurements onboard Pole and Line vessels prior to dressing the catch. All length frequency data on the pelagic longline vessels are collected at sea by observers prior to the fish being dressed.

6.4. Unloading/Transhipment [including date commenced and status of implementation]

Unloading or discharging of fish from a longline vessel can only be undertaken in the presence of a monitor or a South African Fisheries Control Officer. Transhipment of fish is not permitted at sea. Transhipments of fish in port requires pre-authorisation. South Africa is striving towards 100% monitoring of tuna pole-line discharges in port. These measures have been in place since 1998.

Table 7. Number of individuals measured by observers on pelagic longline vessels in 2015 in the IOTC area of competence.

English name	Scientific name	2012	2013	2014	2015
Albacore	*Thunnus alalunga*	6002	4211	1037	311
Atlantic pomfret	*Brama*	15	3	571	45
Atlantic sailfish	*Istiophorus albicans*			2	
Bigeye tuna	*Thunnus obesus*	8138	4812	3134	3046
Big-scale pomfret	*Taractichthys longipinnis*	7			
Black marlin	*Makaira indica*	16	15	12	26
Blue marlin	*Makaira nigricans*	7	9	6	12
Blue shark	*Prionace glauca*	2199	1572	967	1142
Brilliant pomfret	*Eumegistus illustris*			1	
Butterfly kingfish	*Gasterochisma melampus*	7			
Common dolphinfish	*Coryphaena hippurus*	101	227	35	83
Copper shark	*Carcharhinus brachyurus*			1	4
Crocodile shark	*Pseudocarcharias kamoharai*			7	1
Dorado	*Salminus brasiliensis*				9
Escolar	*Lepidocybium flavobrunneum*	1978	1547	844	747
Indo-Pacific sailfish	*Istiophorus platypterus*	8	7	4	3
Long snouted lancetfish	*Alepisaurus ferox*			8	
Longfin mako	*Isurus paucus*		4		
Mako sharks	*Isurus* spp	62	6	68	
Moonfish	*Mene maculata*		1		
Ocean sunfish	*Mola*		2	2	2
Oceanic whitetip shark	*Carcharhinus longimanus*				1
Oilfish	*Ruvettus pretiosus*	2452	772	545	418
Opah	*Lampris guttatus*	231	524	124	51
Pelagic stingray	*Dasyatis violacea*				3
Pomfrets, ocean breams nei	*Bramidae*	1507	1656	127	133
Porbeagle	*Lamna nasus*		1	6	
Rudderfish/Black ruff	*Centrolophus niger*	2		15	
Shortbill spearfish	*Tetrapturus angustirostris*	1	8		7
Shortfin mako	*Isurus oxyrinchus*	664	625	303	517
Silky shark	*Carcharhinus falciformis*			1	7
Skipjack tuna	*Katsuwonus pelamis*	826	253	113	38
Southern bluefin tuna	*Thunnus maccoyii*	411	161	35	66
Striped marlin	*Tetrapturus audax*		6	1	2
Swordfish	*Xiphias gladius*	672	339	114	239
Wahoo	*Acanthocybium solandri*	23	173	18	17
Yellowfin tuna	*Thunnus albacares*	12741	12912	7666	8814

7. NATIONAL RESEARCH PROGRAMS

The management boundary that separates the ICCAT from the IOTC region at 20° East divides the South African pelagic marine environment in two approximately equal zones. Stocks of pelagic species with large ranges and a widespread larval disposal often straddle this boundary, which has implications for South Africa's research, reporting and assessment regimes. Biologically meaningful stock boundaries need to be investigated and considered for each species. The level of intermixing, the degree of reproductive isolation and a biologically and genetically defined boundary for each species needs to be determined and considered when South African catch data are included in regional stock assessments. Studies that aid in resolving stock boundary issues are encouraged and much welcomed in South Africa.

7.1. Current research projects

7.1.1. Albacore has been studied mainly in the North Atlantic and the North Pacific, and little is known about this species in the southern regions and tropics. In the Pacific and Atlantic oceans there is a clear separation of southern and northern stocks associated with the oceanic gyres. The Indian Ocean population is thought to comprise of a single stock, distributed from 5°N to 45°S, but this link between Indian Ocean and South Atlantic stocks needs to be investigated. In South African waters, mainly juveniles are caught but the links with the adult populations are still not completely understood. South Africa is a collaborator on the GERMON project led by Institut français de recherche pour l'exploitation de la mer (IFREMER) and Institut de recherche pour le développement (IRD) to better understand the stock structure of albacore between the Indian and Atlantic Oceans. Genetic, morphological and biological sampling was concluded in July 2014 and the data are currently being analysed for publication. Proposed outputs include:

- Across two oceans: demographic connectivity and population structure of albacore tuna from the southwest Indian Ocean and the southeast Atlantic.
- Multi-markers approach inferring demographic pattern of albacore.
- Feeding behaviour of albacore (isotopes, stomach contents, lipids, maturity, and fatty acids).
- Maturity of albacore.
- Organic contaminants.
- Bioaccumulation of various types of contaminants (organic and metallic) in albacore.

A summary of the project was presented at the 15th Session of the IOTC Scientific Committee (Nikolic and Bourjea, 2012) and a number of results have been published in online reports.

7.1.2. Swordfish genetic samples collected around the coastline have been analysed in an MSc study on swordfish stock delineation between the Indian and Atlantic Oceans. The student has concluded with this project in December 2015 and results are prepared for publication.

7.1.3. South Africa is developing ways to improve CPUE based indices of abundance for a number of fleets. In particular the incorporation of cluster analyses of the species composition to distinguish targeting has yielded promising results and has been implemented in Swordfish and Albacore CPUE standardisations submitted to ICCAT in 2015 and 2016, respectively.

7.1.4. Foraging ecology and habits of albacore tuna, *Thunnus alalunga*, in the south east Atlantic Ocean off South Africa, including comparisons made with yellowfin tuna, *Thunnus albacares*.

7.1.5. Age and growth determination of swordfish, *Xiphias gladius* L., 1758 in the South East Atlantic Ocean using anal fin spines.

7.1.6. Two bigeye tuna (*Thunnus obesus*) and one southern bluefin tuna (*Thunnus maccoyii*) were successfully PSAT-tagged on a research cruise on the *RV Ellen Khuzwayo* in August 2015. These fish were tagged at 36°S, 19°E with tags set up to pop off after 90 (2 tags) and 180 days (1 tag) and results are being analysed.

7.1.7. The heavy metal contamination of commercially important large pelagic species (yellowfin tuna, blue shark and mako shark) has been investigated by a PhD (Department of Animal Sciences) at Stellenbosch University and results have been published (Bosch et al., 2016a, 2016b). A similar study on swordfish is currently underway by the IRD in the Indian Ocean.

7.1.8. An MSc project on the reproductive and feeding behaviour of blue and mako sharks is in the sampling stage. The results of the project hope to extend the knowledge of breeding and nursing grounds around South Africa. In addition, the collection of genetic samples from closely related requiem shark species (silky sharks *Carcharhinus falciformis*, dusky sharks *Carcharhinus obscurus* and bronze whaler sharks *Carcharhinus brachyurus*) will answer questions on the level of species misidentification by vessels.

7.1.9. "Genetic diversity and population structure among Atlantic nurseries of the blue shark *Prionace glauca* (Linnaeus, 1758)". The study aimed to help clarify the Atlantic stock structure of blue sharks by using 13 nuclear microsatellites and a 993 bp fragment of the mitochondrial control region, and by sampling young-of-year and small juveniles (< 2 yr) at each of three reported Atlantic blue shark nurseries, i.e. western Iberia, Azores and South Africa. This study is complete and a paper is currently being published (Website link: http://repositorio-aberto.up.pt/handle/10216/72285).

7.1.10. "Movement of juvenile shortfin mako sharks (*Isurus oxyrinchus*) around the Agulhas Bank shelf edge – investigating the existence of a nursery ground". This project aims to investigate the movement of juvenile shortfin mako sharks around the Agulhas Bank shelf edge by tagging 10-15 juvenile mako

sharks with PSAT tags on the Agulhas Bank shelf edge. Thus far 13 mako sharks have been tagged with a combination of PSAT and SPOT tags.

7.1.11. Movement and distribution of blue sharks based on PSAT tagging data has been analysed within a multi-authored study that is currently in review. The study suggests a single blue shark stock within the southern Atlantic Ocean as well as exchange into the Indian Ocean waters off South Africa.

7.2. Previous research projects

7.2.1. Two bigeye tuna, three yellowfin tuna and seven blue sharks had been tagged with PSATs and SPOTs and 441 blue sharks with conventional tags in 2009 and 2010. The yellowfin tuna tags popped up and transmitted data earlier than what they were programmed for, indicating that the animals had died prematurely and the tags had exceeded their depth limit of 1200m. The trends in the data are yet to be analysed in detail to understand the cause of these premature pop-ups.

7.2.2. South Africa's involvement in the South West Indian Ocean Fisheries Programme (SWIOFP) through Component 4: Assessment and sustainable utilization of large pelagic resources has provided momentum to our research programme. The primary focus is to understand the distribution and movement of swordfish and bigeye and yellowfin tuna within the SWIO region, to which end 15 pop-up satellite archival tags (PSATs) were provided for deployment on swordfish and yellowfin and bigeye tunas, as well as hook monitors and time-depth recorders for deployment of an instrumented longline.

7.2.3. The Department's national research cruise in 2011 was a momentous achievement during which 11 swordfish were successfully PSAT-tagged in the South West Indian Ocean (SWIO) region with SWIOFP tags. Swordfish have proven to be very sensitive to handling and South Africa is the first country to achieve PSAT tagging of swordfish in this region. Tags have been programmed for either 90 or 180 days. Of the 11 tags deployed, four remained on the swordfish for more than 2 months. The results of this study were presented at the IOTC Working Party for Billfish in 2012 (Document number IOTC-2012-WPB10-16). South Africa aims to conduct further research on the movement of large pelagic species between the Indian and Atlantic Oceans by placing more satellite (PSAT and SPOT) tags on animals. Coupled with movement data, genetic studies on the differences between swordfish from the two ocean basins are currently being explored. There are no formal scientific programmes for billfish in South Africa (Rec 06-09).

7.2.4. South Africa has instrumented longline data (Time Depth Recorders and Hook Timers) from 29 sets (of between 259 – 300 hooks per set) obtained on the dedicated research cruises on the Ellen Khuzwayo research vessel, though more data are required for analysis for a target and bycatch study.

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.

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	All longline and tuna pole-line vessels are required to complete a logbook of catch and effort and submit this on a monthly basis to the Department.
15/02	Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs)	Paragraphs 1–7	South Africa submits nominal catch data and catch and effort data for surface and longline fisheries. Size data are collected through the observer program and port sampling. Fleet characteristics are submitted annually.
15/05	On conservation measures for striped marlin, black marlin and blue marlin	Paragraph 4	Marlin species (striped, blue and black) are caught in minimal quantities and are considered secondary species. Marlins less than 120 cm LJFL may not be retained. No discarding of dead marlins is permitted.
13/04	On the conservation of cetaceans	Paragraphs 7-9	There have been minimal encounters (i.e. incidental captures) with cetaceans by the longline vessels. South Africa will endeavour to have all skippers and onboard observers collect data on all encounters with cetaceans.
13/05	On the conservation of whale sharks (*Rhincodon typus*)	Paragraphs 7-9	There have been no recorded encounters (i.e. incidental captures) with whale sharks by the longline vessels. South Africa will endeavour to have all skippers and onboard observers collect data on all encounters with whale sharks.
13/06	On a scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries	Paragraphs 5-6	South Africa's NPOA-Sharks (2013) has grouped issues facing each fishery into clusters with proposed actions, responsibilities, priorities and timeframes (Pg 19-30 of the NPOA-Sharks, 2013)
12/09	On the conservation of thresher sharks caught in association with fisheries in the IOTC area of competence	Paragraphs 4-8	Thresher sharks are not permitted to be retained.
12/06	On reducing the incidental bycatch of seabirds in longline	Paragraphs 3-7	The start and completion of line setting has to be conducted at night, defined by the period between nautical dusk and nautical dawn.

No.	Resolution	Scientific requirement	CPC progress
	fisheries.		Vessels have to fly a bird-scaring line (tori line) during the setting of each longline. • Instruction on the method of tori line construction and deployment is provided to each vessel to ensure that correct specifications and procedures are followed. Deck lighting is kept to a minimum. The beams of deck lights have to be directed towards the deck. All bait has to be appropriately thawed, and where necessary, the swim bladder punctured to ensure rapid sinking of the bait. All birds caught have to be brought onboard and, with the use of the release instructions provided, live birds are to be released. • The release instructions clearly outline the procedures to follow to ensure that a seabird has a good chance of survival after release. The NPOA-Seabirds was gazetted in 2008. The NPOA-SEABIRDS (2008) specifies a maximum bycatch rate of 0.05 birds/1000 hooks. Within this plan an initial seabird bycatch limit of 25 birds killed per year is set per vessel. Once the vessel reaches this limit then: • a second tori line has to be flown and, • branch lines (snoods) have to be weighted by placing 60 g weights within 2 m of the hook to ensure optimal sinking rates. Where multiple weights are used then the first weight should be within 2 m of the hook and the last weight within 3 m of the hook. If a vessel reaches 50 birds killed in a year then the vessel has to stop fishing immediately. If the vessel has complied with all mitigation measures 100% of the time then it will be allowed to fish on condition that a trained onboard observer has to be present to investigate the nature of the high seabird mortality and that instructions given by the observer will be followed.
12/04	On the conservation of marine turtles	Paragraphs 3,4,6-10	The use of circle hooks is encouraged as stated in the permit conditions. The South African government has worked closely with WWF to educate skippers on release procedures for turtles. According to the handling and release instructions provided to vessels in their permit conditions, vessels are required, amongst others, to: • Remove the hook using a long-handled de-hooker on turtles too large to bring onboard and a de-hooker on turtles brought onboard. • Use a line-cutter when a de-hooker is not possible and to cut the line as close to the hook as possible.

No.	Resolution	Scientific requirement	CPC progress
			• Use net to bring the turtle onboard and to avoid pulling on the line. • Handle the turtle with gentle care. Release the turtle headfirst and away from fishing gear once it has recovered onboard. Trained observers are present on all foreign-flagged longline vessels and they record all interactions with marine turtles during the fishing operation. Since 2013, all vessels have been required to record interactions with marine turtles in their logbooks, and each vessel has been given a species guide to aid identification of turtles to species level.
11/04	On a regional observer scheme	Paragraph 9	100% observer coverage is achieved on foreign flagged vessels. The observer programme for domestic vessels expired in 2011 and the Department is currently in the process of re-establishing the programme which would require at least 5% coverage of domestic longline (at-sea observer coverage) and tuna pole-line (port observer coverage) fishing trips. It is envisaged that by March 2017, the observer programme will be in place.
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1-12	South Africa has provided all its historic shark data to IOTC. The fins and trunks of all sharks caught have to be retained and the shark fin to trunk ratio shall not exceed 13% for blue sharks and 8% of the total weight of all other shark species' trunks. In the Large Pelagic fishery a 10% shark by-catch limit was imposed between 2006 and 2010 and skippers were required to release live sharks. The precautionary upper catch limit (PUCL) for sharks is set at 2000 t dressed weight for the entire South African longline fishery. From 2011 no wire traces are allowed to be used within 50 cm from the hook once 60% of the 2000 t PUCL has been met. Joint venture vessels are restricted to a 10% shark by-catch limit. Thresher sharks belonging to the genus *Alopias*, hammerhead sharks (belonging to genus *Sphyrna*), oceanic whitetip and silky sharks shall not be retained on board the vessel.

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