

South African National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2012

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Department of Agriculture, Forestry and Fisheries

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, for all fleets other than longline [<i>e.g.</i> for a National report submitted to the Secretariat in 2010, final data for the 2009 calendar year must be provided to the Secretariat by 30 June 2010)	YES 25/07/2012
In accordance with IOTC Resolution 10/02, provisional longline data for the previous year was provided to the Secretariat by 30 June of the current year [<i>e.g.</i> for a National report submitted to the Secretariat in 2010, preliminary data for the 2009 calendar year was provided to the Secretariat by 30 June 2010). REMINDER: Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [<i>e.g.</i> for a National report submitted to the Secretariat in 2010, final data for the 2009 calendar year must be provided to the Secretariat by 30 December 2010).	YES 25/07/2012
If no, please indicate the reason(s) and intended actions:	

Executive Summary

South Africa has two commercial fishing sectors which either target or catch tuna and tuna-like species as by-catch in the Indian Ocean. These sectors are swordfish/tuna longline (the shark longline fishery has been incorporated into this sector), pole and line/ rod and reel. In addition, there is a boat-based recreational/sport fishery.

1. BACKGROUND/GENERAL FISHERY INFORMATION

1.1. TUNA/SWORDFISH LONGLINE

This fishery was commercialized in 2005, with the issuing of 18 swordfish-directed and 26 tuna-directed long term (ten year) fishing rights. The fishery is restricted to 50 permits (one permit per vessel) through a Total Applied Effort (TAE) control until quotas are stipulated for this region. The large pelagic longline fishery was deliberately split into swordfish and tuna-directed sub-sectors due to the drastic declines in swordfish CPUE experienced during the period of the experimental fishery from 1997 to 2005. South Africa amended its fishery policy in 2007 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. The fishery is in the process of encouraging foreign vessel owners in the tuna-directed sub-sector to reflag their vessels and to transfer skills to South Africans.

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 only started increasing in the Indian Ocean since 2001 with the development of ice and processing facilities at Richard's Bay, which is situated on the east coast of South Africa. In recent years, a sizeable amount of the longline fishing effort was conducted 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 longline component, which predominantly targets shortfin mako. The latter also catches blue shark, tuna 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 stock status of these species. South Africa consolidated the pelagic shark fishery with the tuna/swordfish longline fishery in March 2011. Seven shark exemption holders were permitted to fish in 2010, but only four vessels were active in the Indian Ocean. Six of the seven shark exemption holders were issued with tuna/swordfish rights in March 2011, five of which are actively fishing. Pelagic sharks are managed as by-catch in the tuna and swordfish longline fishery.

1.2. POLE AND LINE/ROD AND REEL

The use of pole and line has been employed commercially since the 1970s to target tuna. In 1979 commercial tuna fishing effort increased after a record run of yellowfin tuna off Cape Point. Subsequent to this, the South African tuna fishery has essentially been a surface pole and line fishery that targets mainly juvenile (3-4 year old) albacore in near-shore waters off the west coasts of South Africa and Namibia. The fishery generally operates between September and May along the west coast of South Africa. It is important to note that within

the tuna pole fishery there has been an emerging rod and reel component that targets large yellowfin tuna (> 45 kg dressed weight) south of Cape Town. Although the fishing ground lies just outside the IOTC area the yellowfin catch is presumed to be of Indian Ocean origin.

South Africa also has a commercial linefish fishery which opportunistically catches albacore, yellowfin, king mackerel and shark in the Indian Ocean using rod and reel when linefish species such as kob, geelbek and slinger are not available. These catches usually only contribute to a small percentage of the total catch by the linefishery due to the multispecies nature of the fishery.

2. FLEET STRUCTURE

Table 1: Number of vessels operating in the IOTC area of competence, by gear type and size, in 2011

Fishing Sector	Fleet Structure			
	No Active Permits	Min Vessel Size (in m)	Max Vessel Size (in m)	Avg Vessel Size in (m)
Tuna/swordfish longline (pelagic shark longline, inclusive in total)	33 (5)*	19	50	~30
Pole & Line	128*	10	49	~18
Rod & Reel (commercial)	335	4	8	~7
Rod & Reel (recreational)	unknown	4	10	~6

* - denotes a Rights Holder but not necessarily active in the Indian Ocean

3. CATCH AND EFFORT (BY SPECIES AND GEAR)

Table 2 a). Annual pelagic longline catch (t dressed weight excluding albacore) and effort (number of hooks) of primary species in the IOTC area of competence from 2007 to 2011.

Year	Total number of hooks	Bigeye tuna	Yellowfin tuna	Albacore	Southern bluefin tuna	Swordfish	Shortfin mako	Blue shark
2007	2891580	413.6	738.3	97.9	38.9	206.4	27.5	87.8
2008	3142204	377.6	513.6	176.5	13.5	237.6	38.6	106.8
2009	3030966	505.4	829.8	107.9	25.0	163.4	35.5	70.8
2010	3502189	605.1	901.2	45.8	4.3	304.8	34.4	76.3
2011	4521104	643.3	816.7	229.5	32.0	321.1	360.4	178.5
Total	12948399	2545.1	3799.6	657.7	113.7	1233.3	496.4	520.2

Table 2 b). Annual pole and line/rod and reel catch (t dressed weight excluding albacore) and effort (number of days) of primary species in the IOTC area of competence from 2007 to 2011.

Year	Total number of catch days	Albacore	Yellowfin tuna	Tuna Unid
2007	0	0.0	0.0	0.0
2008	12	4.5	4.5	0.0
2009	4	1.2	0.0	0.0
2010	2	3.5	0.0	0.0
2011	181	45.6	2.2	5.3
Total	199	54.8	2.2	5.3

Figure 1. Historical combined annual catch (t dressed weight excluding albacore) of primary species for the national pelagic longline and pole and line/road and reel fleets for the IOTC area of competence for the entire history of the fishery/fleet.

Year	Bigeye	Yellowfin		Southern bluefin		Shortfin		
	tuna	Albacore	tuna	Swordfish	tuna	Tuna unid	Blue shark	mako shark
Pelagic longline								
1997	0.0	0.0	0.0	37.5	0.0		0.0	0.0
1998	6.5	5.2	38.6	102.5	0.2		1.1	2.4
1999	10.8	0.8	96.8	28.4	0.0		2.9	3.2
2000	18.6	9.3	153.9	10.1	2.1		3.8	2.5
2001	28.0	12.8	85.2	218.7	0.1		0.7	4.3
2002	187.7	73.2	143.1	631.2	0.6		29.0	10.9
2003	206.1	64.9	497.5	629.6	0.2		64.5	15.2
2004	330.2	49.6	626.4	217.4	8.7		29.9	14.3
2005	516.0	85.7	817.4	182.2	21.4		31.8	26.2
2006	51.0	62.9	119.0	141.9	7.0		8.8	3.8
2007	413.6	97.9	738.3	206.4	38.9		87.8	27.5
2008	377.6	176.5	513.6	237.6	13.5		106.8	38.6
2009	505.4	107.9	829.8	163.4	25.0		70.8	35.5
2010	605.1	45.8	901.2	304.8	4.3		76.3	34.4
2011	643.3	229.5	816.7	321.1	32.0		178.5	360.4
Pole and line/road and reel								
1989		0.01	16.75			0.0		
1990		0.008	11.582			0.0		
1991		0.0	0.0			9.53		
1992		0.0	0.0			0.01		
1994		0.942	0.002			0.0		
1995		0.0	2.1			0.0		
1997		0.0	0.0			0.27		
1998		1	6.759			0.769		
2000		0.04	0.03			0.0		
2001		9.309	6.286			0.0		
2002		2.234	0.0			0.0		
2004		0.18	3.8			0.0		
2005		0.0	4.1			0.0		
2006		86.388	13.474			8.1		
2008		4.569	4.519			0.0		
2009		1.184	0.0			0.0		
2010		3.5	0.0			0.0		
2011		45.6	2.2			5.3		

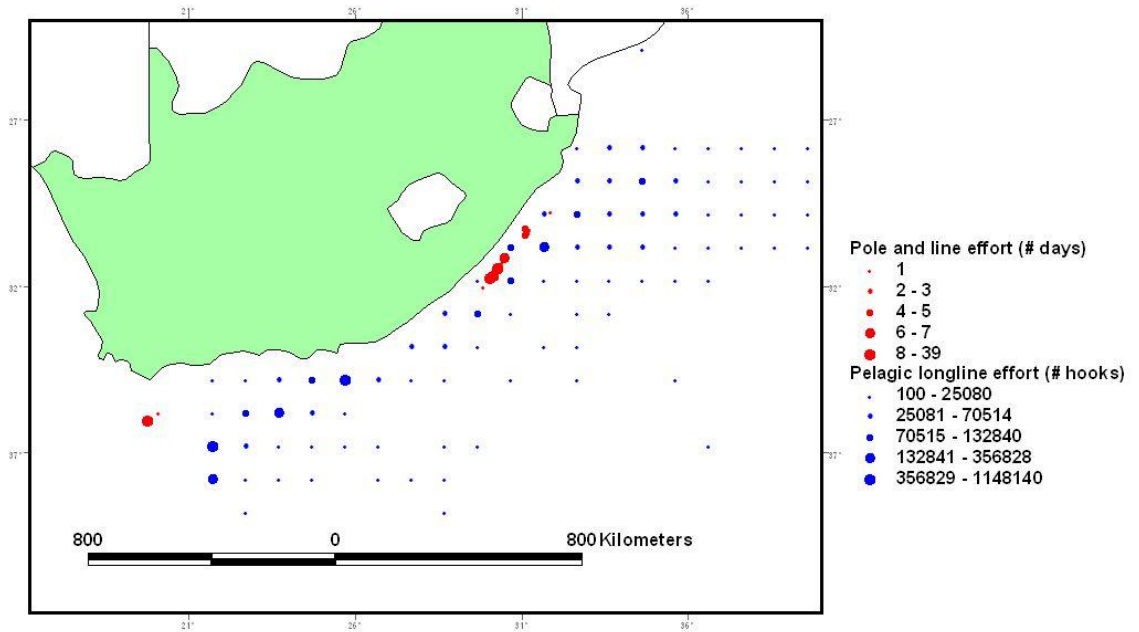


Figure 2a. Map of the distribution of fishing effort for pelagic longline (number of hooks) and pole and line/rod and reel (number of days) for the national fleet in the IOTC area of competence in 2011.

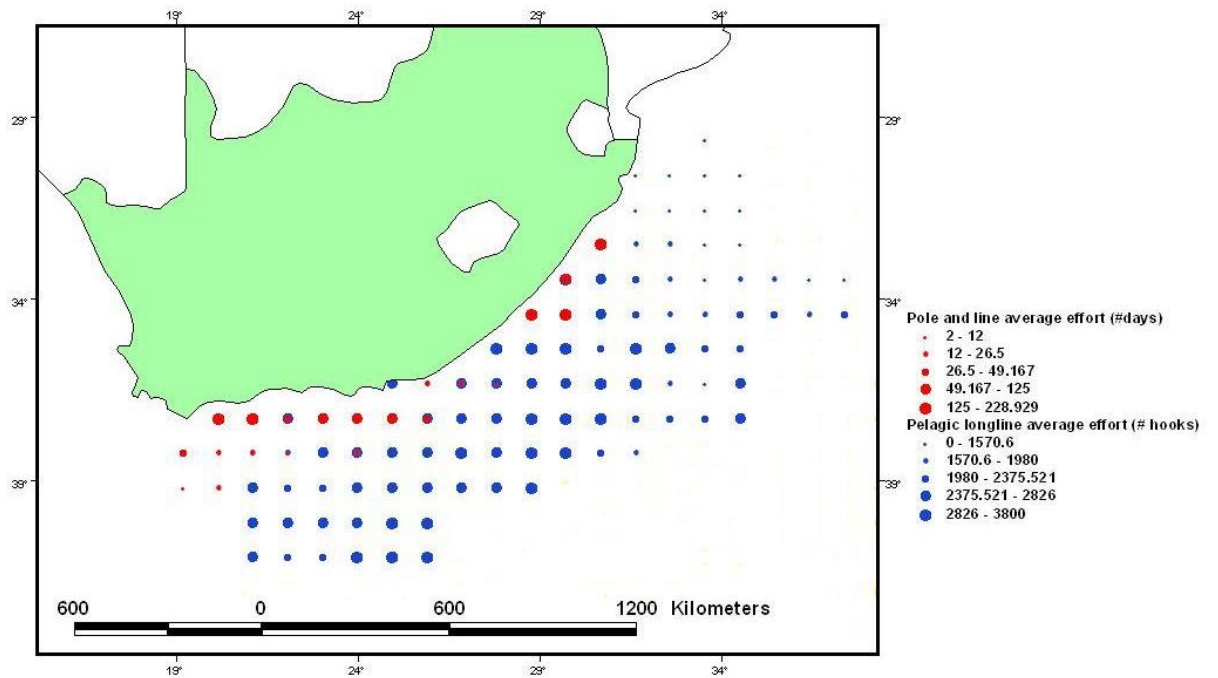
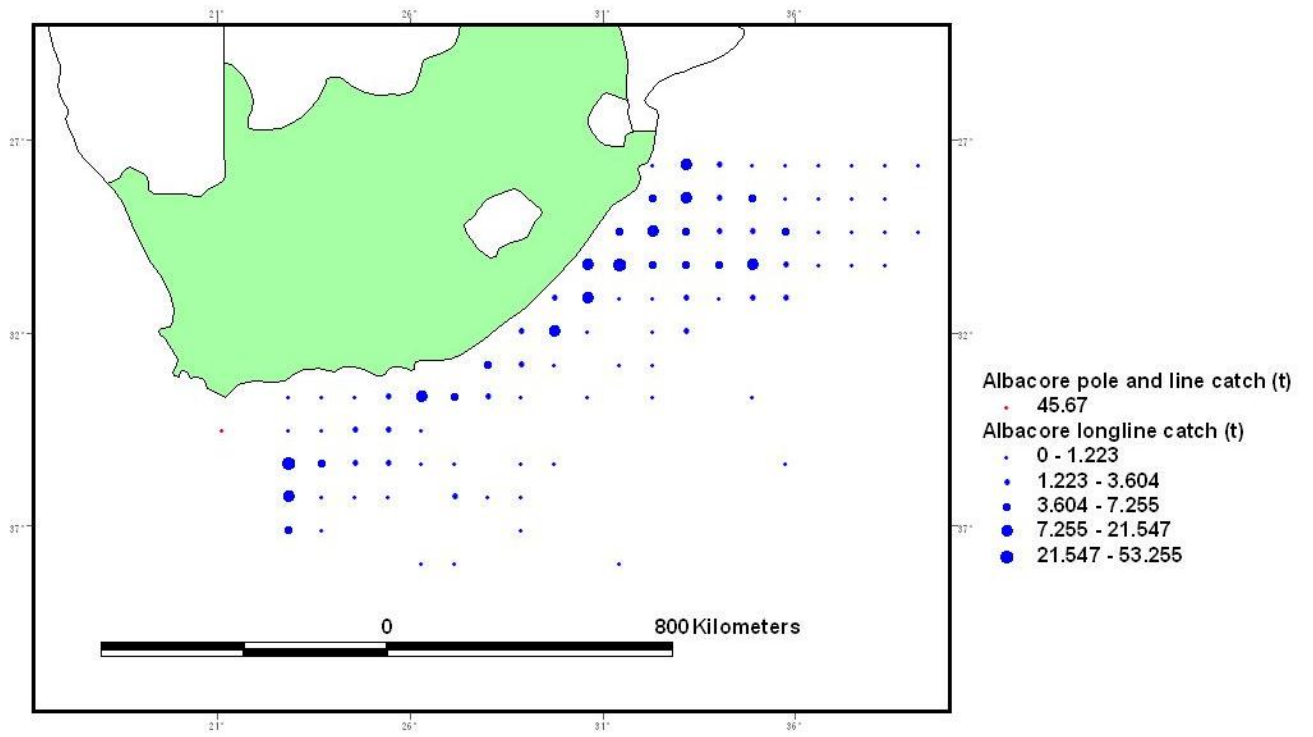
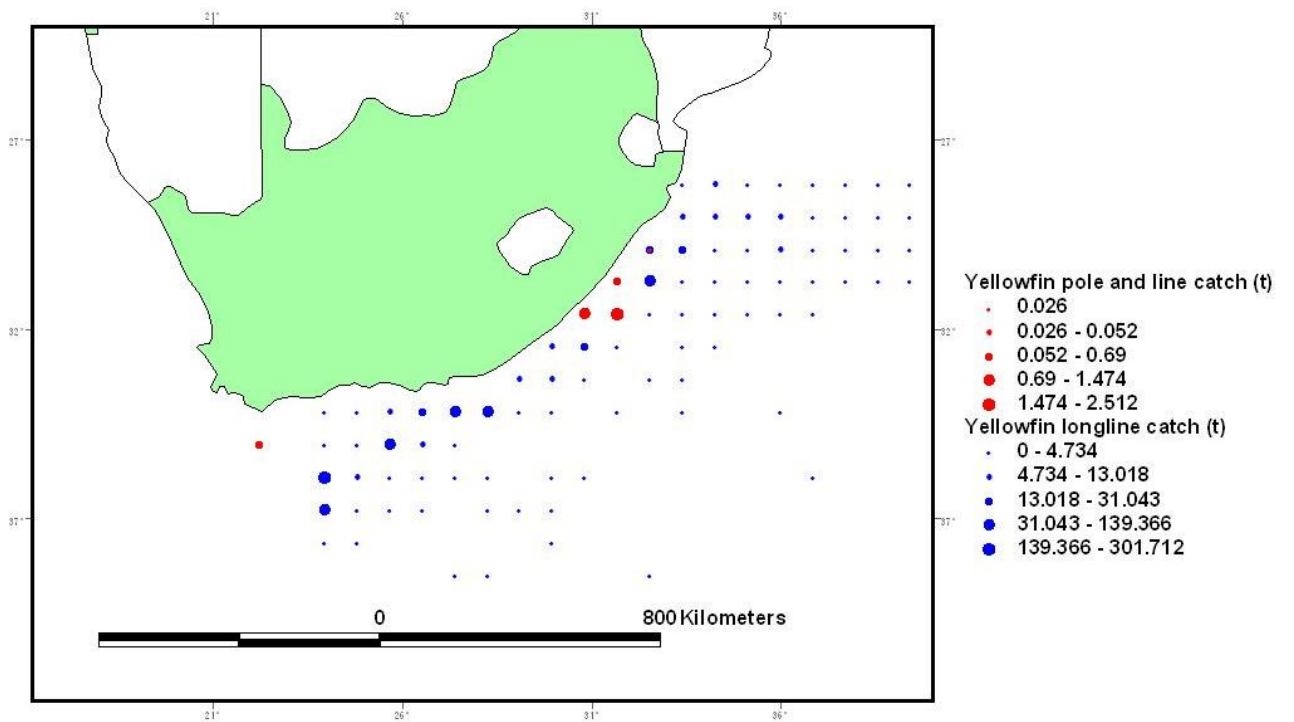


Figure 2b. Map of the distribution of average pelagic longline (number of hooks) and pole and line/rod and reel (number of days) effort from 2006 to 2011 in the IOTC area of competence.

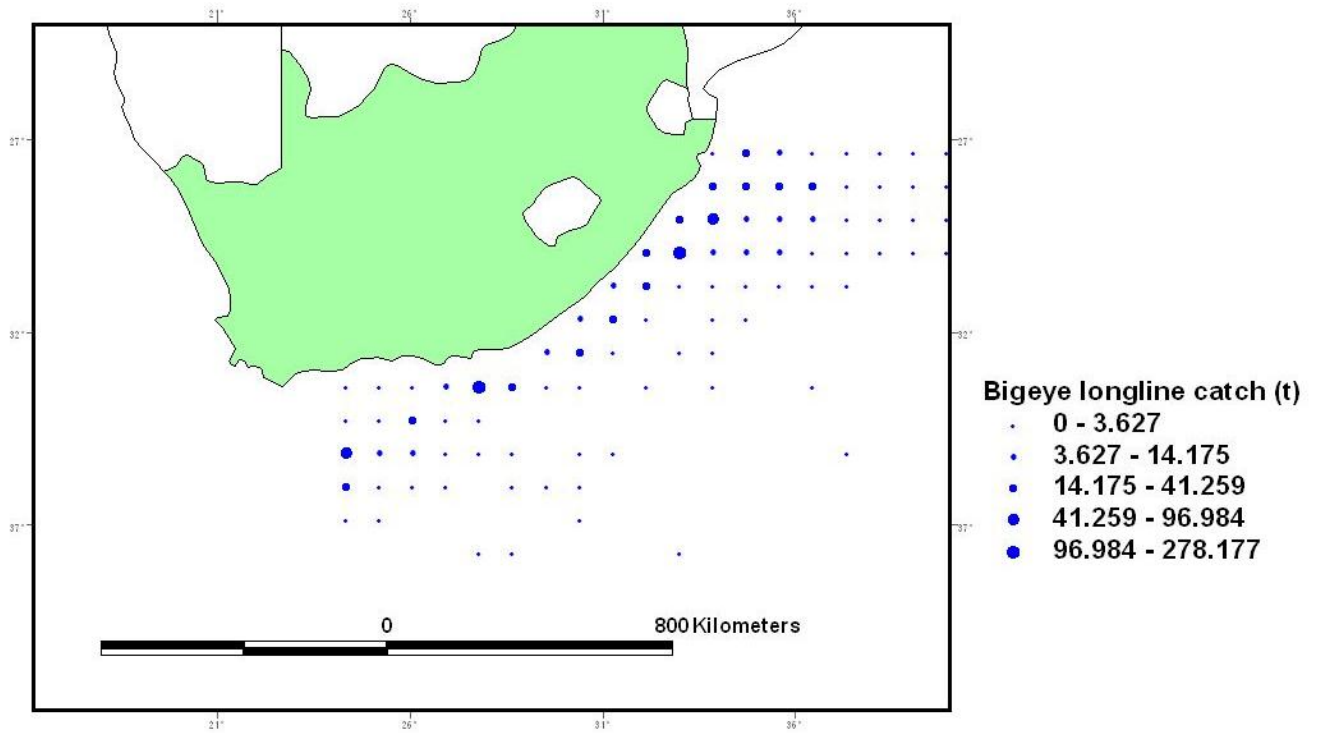
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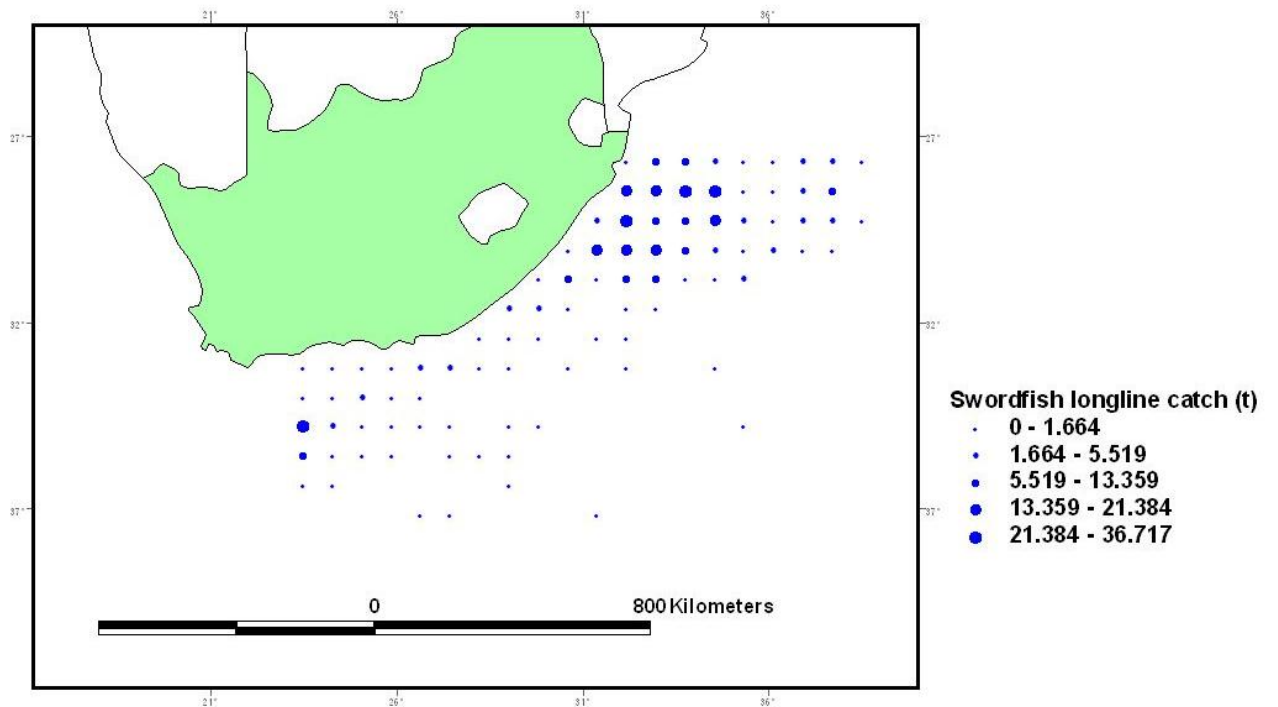
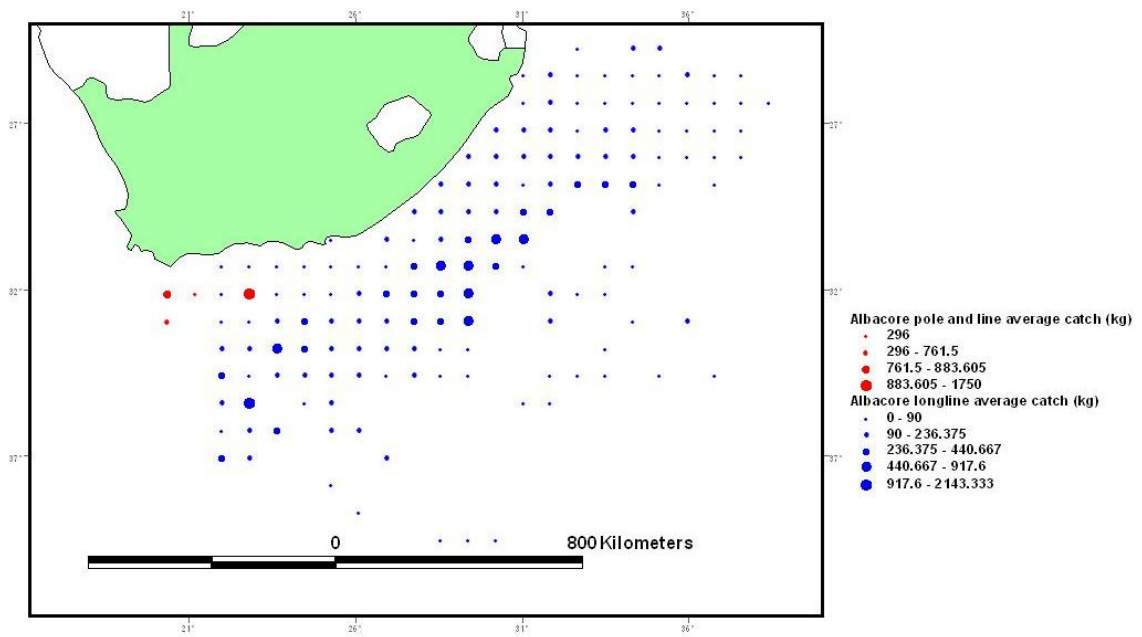
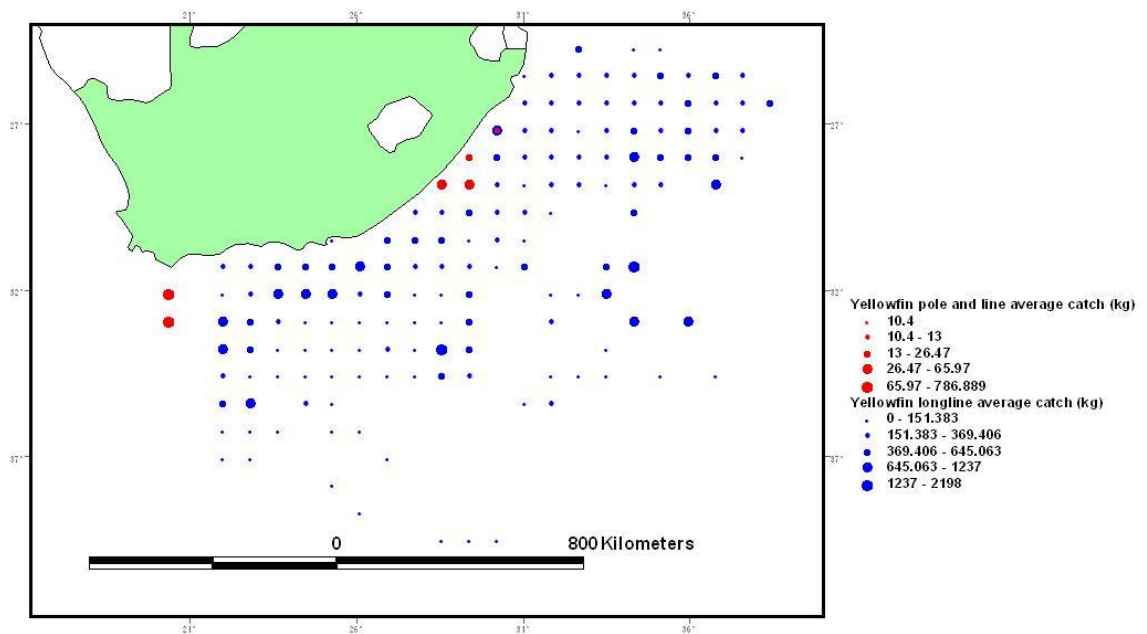


Figure 3a. Map of distribution of fishing catch (tons), for i) albacore, ii) yellowfin tuna, iii) bigeye tuna, and iv) swordfish for longline and pole and line/rod and reel for South Africa, in the IOTC area of competence in 2011.

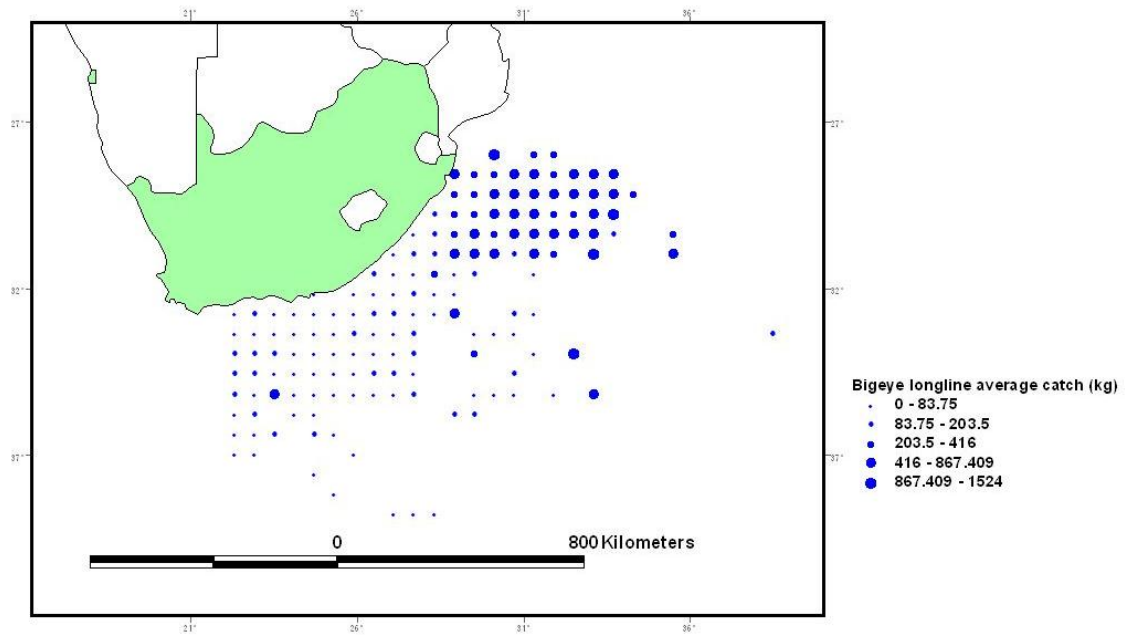
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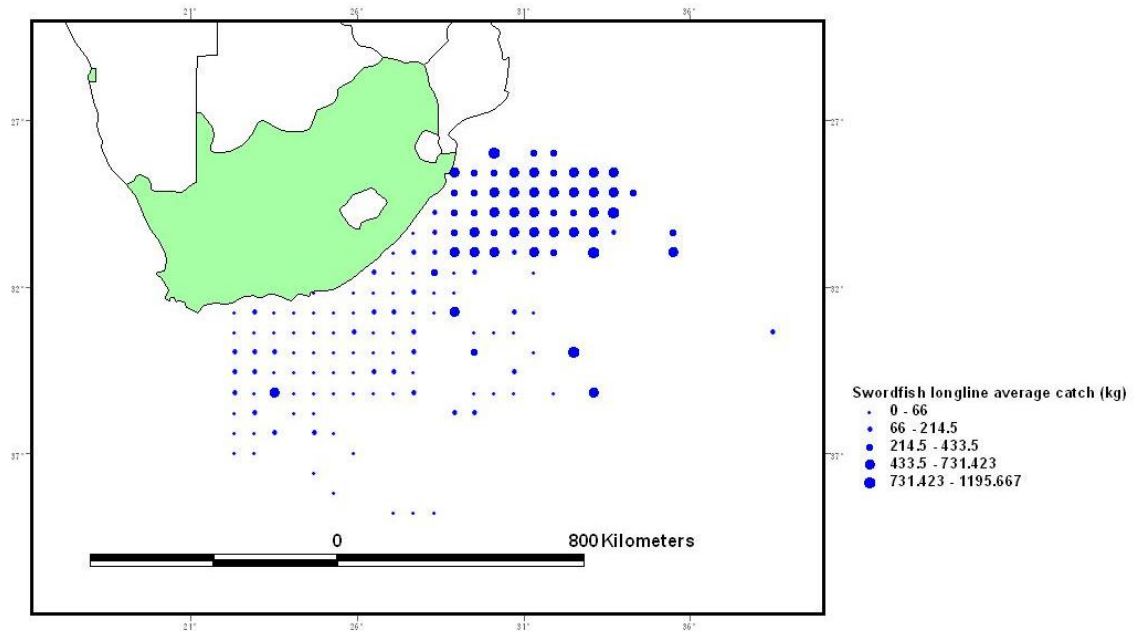


Figure 3b. Map of distribution of pelagic longline and pole and line/rod and reel average catches (kg) from 2006 to 2011 for i) albacore, ii) yellowfin tuna, iii) bigeye tuna and iv) swordfish in the IOTC area of competence.

4. RECREATIONAL FISHERY

The recreational fishery uses rod and reel from ski-boats (5-8 m) to target numerous game fish, including yellowfin, king mackerel and billfish. Although catch and effort data are unknown for this fishery it is estimated that over 100 t of yellowfin and king mackerel are landed annually for the Atlantic and Indian Oceans combined. 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 weight restrictions of 3.2 kg for yellowfin and bigeye, 6.4 kg for southern bluefin and 25 kg for swordfish caught.

5. ECOSYSTEM AND BYCATCH ISSUES

Sharks

The NPOA for sharks has been redrafted and gazetted for public comment in August 2011. The Department is currently finalising this process..

Table 3: a) total number and b) dressed weight in tons of sharks, by species, retained by the national fleet in the IOTC area of competence from 2006 to 2011.

a)

Year	Blue shark	Shortfin mako shark	Requiem sharks
2006	775	183	18
2007	4455	1429	12
2008	5176	1819	53
2009	3293	1792	0
2010	3575	1662	5
2011	8718	14725	519

b)

Year	Blue shark	Shortfin mako shark	Requiem sharks
2006	8.849	3.775	0.072
2007	87.836	27.51	0.049
2008	106.783	38.571	0.516
2009	70.833	35.46	0.003
2010	76.274	34.426	0.094
2011	178.817	360.517	23.02

Seabirds

South Africa has been collecting data on seabird interaction with its longline fishery since 1998. South Africa has finalized its NPOA for seabirds and was published in 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 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 has developed a management plan to reduce seabird by-catch in its longline fishery in 2008. This plan includes a seabird limit per vessel per year that was implemented in 2008. 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. Since the implementation of seabird mitigation measures and the stringent monitoring thereof seabird mortality rates has reduced by more than an order of magnitude. The current seabird mortality rate for 2012 is for the first time in history below the stipulated rate of 0.05 birds/1000 hooks.

Marine Turtles

The South African government has worked closely with WWF to educate skippers on release procedures for turtles. The use of circle hooks are also encouraged as stated in the permit conditions, as well as releasing turtles with the use of a dehooker. Skippers are not allowed to land turtles.

Table 5. Observed annual catches of seabirds and marine turtles and marine mammals in the national pelagic longline fleet from 2006 to 2011, in the IOTC area of competence.

Seabirds							
Species	2006	2007	2008	2009	2010	2011	Total
Albatross Unid	8	21		36	16	18	99
Albatross Black browed		24	5	12	10	5	56
Albatross Grey Headed		15	3		1	4	23
Albatross Northern Royal				1			1
Albatross Shy	6	252	41	73	28	23	423
Albatross Wandering		16	3		5		24
Albatross Indian Yellow nosed		66	5	14	32	58	175
Albatross Atlantic Yellow nosed						10	10
Gannet Cape		61		7	12	10	90
Gannet Unid	1						1
Petrel Cape		5		33		1	39
Petrel Giant		5					5
Petrel Great-Winged		1					1
Petrel Grey			1				1
Petrel Pintado				1			1
Petrel Southern Giant		8	1	6			15
Petrel Unid	2	96	1	27	1	45	172
Petrel White chinned	2	590	96	198	57	208	1151
Shearwater flesh-footed						1	1
Shearwater Unid				1			1
Skua				2		1	3
Tern Unid				1			1
Unidentified bird		15	1	51			67
Marine turtles							
Species	2006	2007	2008	2009	2010	2011	Total
Turtle green			1		1	1	3
Turtle Leatherback	1	14	5	2	17	4	43
Turtle Loggerhead Sea Turtle	1	13	5	4	2	5	30
Turtle Olive Ridley		6	2	1			9
Turtle Flatback						1	1
Turtle Unid	1	9	2	6	4	1	23
Marine mammals							
Species	2006	2007	2008	2009	2010	2011	Total
Cape fur seal			1				1
Seal unid	2	1		1		1	5
Killer Whale	1	1			1	1	3
Dolphin common					1		1
Dolphin BottleNose		1		1			2
Dolphin unid	2	1	1				4
Total number of hooks observed	177496	3594965	3288378	3118159	2441265	3112535	

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

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

Vessels in the tuna/swordfish longline fishery have been required to complete daily logs of catches since 1997. The data are verified by comparing logs of catches with landing declarations that are overseen by South Africa Fisheries Compliance Officers.

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

The Vessel Monitoring System (VMS) became a requirement in 1998 for longline vessels and was subsequently followed by the tuna pole vessels. All longline, pole and line/rod and reel vessels are required to have a functional VMS system on board that transmits directly to the Department's base station. It is the vessels responsibility to ensure that the VMS transmits data prior and throughout the duration of the trip.

6.3. Observer programme (including date commenced and status; number of observer, 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 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 deployed. The observer programme contract expired in March 2011 and the Department is in the process of re-establishing the programme. The observer programme for charter vessels has continued with 100% of fishing trips on charter vessels observed. There were 16 observers actively observing on the tuna/swordfish longline vessels in 2011. There are no observers stationed on pole and line vessels; however, limited inspections and sampling of pole vessels is covered in port by South Africa Fisheries Compliance Officers.

Table 6. The number of trips and number of hooks observed, including charter vessels, per year from 2006 to 2011 in the IOTC region.

Year	Number of hooks observed	Percentage of total effort in IOTC region	Number of trips observed
2006	177496	17	14
2007	3594965	80	28
2008	3288378	77	34
2009	3118159	70	43
2010	2441265	48	32
2011	3112535	65	20

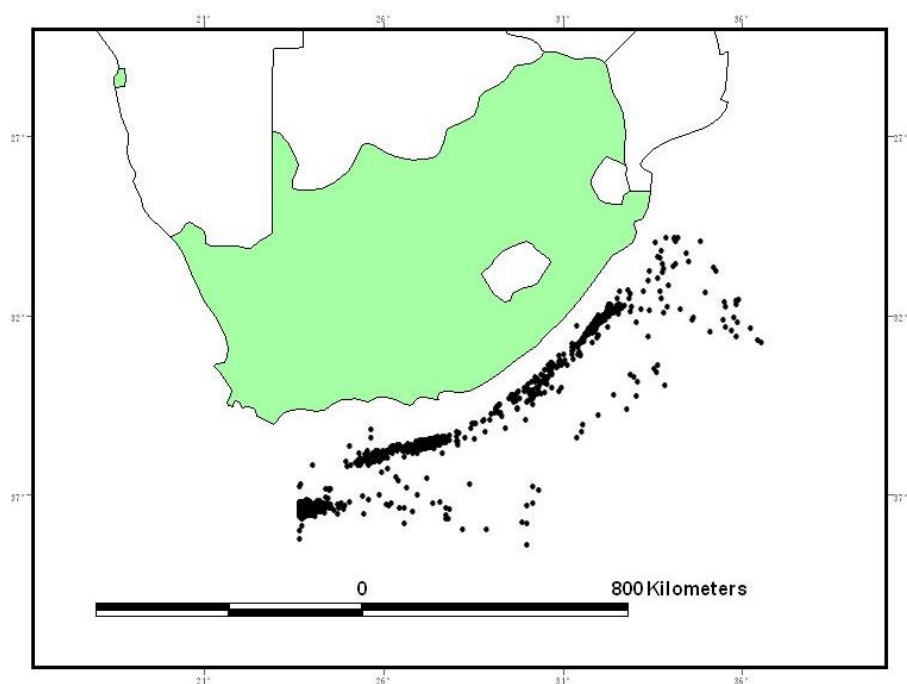


Figure 4. Map showing the spatial distribution of observer coverage in 2011. Each point represents a line set.

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 length frequency data through port sampling of pole and line/rod and reel vessels in 2011 has been achieved by employees of the Department of Agriculture, Forestry and Fisheries and by vessels sending in yellowfin tuna length frequency data. Length frequencies on the longline vessels are collected at sea prior to the fish being dressed.

Table 7. Number of yellowfin tuna, skipjack tuna and bigeye tuna measured from pole and line/rod and reel vessels from 2009 to 2011 in the IOTC region.

	Number of length frequency measurements		
	2009	2010	2011
Yellowfin tuna	695	562	
Skipjack tuna		3	
Bigeye tuna	120		
Southern bluefin tuna	60		
Albacore	21		291

6.4. Unloading/Transshipment [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 by a South African Fisheries Control Officers. Transshipment of fish is not permitted at sea. Transshipments of fish in port requires pre authorisation. Unloading of tuna pole vessels are monitored on a random basis. These measures have been in place since 1998.

7. NATIONAL RESEARCH PROGRAMS

Various projects were initiated in 2008 including: collection of material for studying the age and growth of albacore and bigeye tuna; the life history, stock delineation and spatial movement and distribution of bigeye tuna, swordfish and blue sharks between the Atlantic and Indian Oceans. The Department, with the assistance of NGOs (Birdlife SA) and universities, continued to assess the impact of longline fisheries on seabirds and investigated various mitigation and management measures. The recent establishment of a large pelagic fishery represents an important milestone in the development of South African fisheries. However, research activities directed at the large pelagic species targeted by longline are in its infancy in South Africa and to date only four dedicated research trips have been undertaken since 2008.

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, bigeye and yellowfin tuna within the SWIO region, to which end 15 pop-up archival tags (PATs) have been provided for deployment on swordfish, yellowfin and bigeye tunas as well as hook monitors and time depth records for deployment of an instrumented longline. Prior to the inception of this project two bigeye tuna and four blue sharks have been tagged with PATs and 441 blue sharks with conventional tags.

In 2010, three yellowfin tuna were tagged with PAT tags provided by SWIOFP. The three 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. Three blue sharks were also tagged with PAT tags in 2010 and a further two blue sharks were tagged with SPOT tags in 2011. The Department's national research cruise in 2011 was a momentous achievement during which 11 swordfish were successfully PAT tagged in the SWIO region with SWIOFP tags. Swordfish have proven to be very sensitive to handling and South Africa is the first country to achieve PAT tagging of swordfish in this region. Tags have been programmed for either 90 or 180 days. Of the 11 tags, 4 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).

The Department continues to collaborate with WWF, University of Washington Seas Grant, and Birdlife SA to assess the impact of longline fisheries on seabirds, turtles and sharks and to investigate various mitigation and management measures. A National Plan of Action for seabirds was also published in 2008, which aimed to reduce seabird mortalities below 0.05 seabirds.1000hooks-1. Good collaboration with the fishing industry, researchers and managers, continual refining of mitigation measures, the implementation of stringent management measures through permit conditions, and close monitoring through the observer programme has resulted in seabird mortalities to decrease and the mortality rate in 2010 was 0.06 seabirds per thousand hooks and is almost at the goal identified in NPOA-seabirds.

Rhodes University (Grahamstown) is also collaborating with the Department and is conducting research on the stock delineation of yellowfin in the boundary region between the Indian and Atlantic Oceans by conducting genetic analysis and investigating movement patterns. The results, which form part of a MSc thesis, have yet to be released and verified.

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 as well as testing out the more affordable electronic spaghetti tags. Coupled with movement data, genetic studies on the difference between swordfish from the two Ocean basins will be explored.

A study on exploratory live bait permits issued to the tuna pole sector is intended from 2012 to 2013. The aim of the study will be to review a live bait component in South Africa and to ascertain the effect live bait extraction will have on the Small Pelagics sector.

South Africa has 3 years of instrumented longline data from the dedicated research cruises which should be analysed from 2012 onwards in a target and bycatch study.

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

Table 9. Respond with progress made to recommendations of the SC and specific Resolutions relevant to the work of the Scientific Committee – the Secretariat to provide a table for completion no later than 60 days prior to the next SC meeting.

No.	Resolution	Scientific requirement	CPC progress
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 should not exceed 8%. 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. In 2011 no wire traces are allowed to be used within 50cm from the hook. The upper precautionary catch

No.	Resolution	Scientific requirement	CPC progress
			limit for sharks is set at 2000t dressed weight for the entire South African longline fishery. Only charter vessels are restricted to a 10% shark by-catch limit.
10/02	Mandatory statistical requirements for IOTC members and cooperating non contracting parties	Paragraphs 1–7.	South Africa submits nominal catch data and catch and effort data for surface and longline fisheries. Size data is collected through the observer program and port sampling.
10/06	On reducing the incidental bycatch of seabirds in longline fisheries.	Paragraph 7.	A report outlining measures that are being implemented to reduce seabird bycatch was sent to the IOTC in February 2012.
11/04	On a regional observer scheme	Paragraph 9.	100% observer coverage is achieved on charter vessels. The observer programme for domestic vessels expired in 2011 and the Department is currently in process of re-establishing the programme which would require 20% coverage of domestic fishing trips.
12/03	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1-9	All longline and pole and line/rod and reel vessels are required to complete a logbook of catch and effort and submit this on a monthly basis to the Department.
12/04	On the conservation of marine turtles	Paragraphs 3, 4 6-10	A report outlining measures that are being implemented to manage marine turtle bycatch was sent to the IOTC in February 2012.
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 allowed to be retained onboard the vessel.

9. LITERATURE CITED