South African National Report to the Extended Scientific Committee of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), 2018

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Summary

South Africa continues to develop its SBT directed performance within its large pelagics directed fishing sectors. In the Longline Fishery, for the first time SBT directed effort exceeded 600 thousand hooks and the total annual SBT landings attained a new maximum of 136.2 tons. SBT was caught by 13 longline vessels (11 domestic (ZAD); 3 chartered (ZAC)) in 2017. ZAD vessels landed 115.8 tons (*N* = 1,353) and ZAC vessels landed 22.1 tons (*N* = 221). Contrary to the previous season there were no reported SBT catches from the Tuna Pole and Line fleet in 2017-2018. South Africa continues to increase its observer coverage for its Large Pelagic Longline Fishery, from 31.1% in 2016-2017 to 39.9% in the 2017-2018 season.

1. Introduction

South Africa was formally accepted as a Cooperating Non-Member (CNM) of the CCSBT on 24 August 2006; and subsequently became a Member of the Extended Commission, committed to CCSBT obligations from the 15th of February 2016. The two South African commercial fishing sectors that target large pelagic species comprise the Large Pelagic Longline (LL) and the Tuna Pole and Line (baitboat) fleet. These fisheries have the potential to expand their Southern Bluefin Tuna (SBT) catches. .

1.1 Summary of the Historical Developments in the Fishery – Large Pelagic Longline

South Africa had a brief history targeting Southern Bluefin Tuna (SBT) in the early 1960s, along the west coast. During this period SBT was one of the most common species caught on longline. This fishery ceased by mid-1960s in favour of developing other more lucrative fisheries, but foreign vessels continued to fish in South African waters since the 1970s under a series of bilateral agreements. Only in 1997, thirty experimental large-pelagic longline permits were issued to revive the local tuna fishery, though swordfish (*Xiphias gladius*) turned out to be the dominant target species initially. 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 was restricted to 50 permits (one permit per vessel) through Total Allowable 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.

In 2014, a 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 pelagic sharks as by-catch. Directed targeting of pelagic sharks is officially not permitted and has been further disincentivized by banning the use of wire traces since 2016. The 10-year long-term rights granted in 2005 expired in January 2015. The new Large Pelagic Longline fishing rights were allocated in February 2017 for a period of 15 years. A total of 60 commercial fishing rights were granted (37 to new applicants), and a total of 34 vessels were authorized to fish in this fishery, however, these figures can only be regarded as preliminary as the Department is considering to further develop this sector by allocating new fishing rights to those appellants that were not initially successful in their applications. Previously, the fishery had been allowing an interim period for foreign vessels to charter in this sub-sector as a means of skills development and as well as a means of acquiring suitable 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 between South African fishing rights holders and Japan vessels 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 on board every trip. The catch from these vessels accrues to South Africa. According to sector specific policy, foreign vessels that operate under South African rights will be required to eventually reflag their vessels and to transfer skills to South Africans.

During the 2016-2017 fishing season, the entire South African SBT catch occurred from April to November, with occurring peak in June, July and August. The Large Pelagic Longline (LPL) fishery, which includes the Domestic (ZAD) and foreign flagged chartered (ZAC) vessels, caught 637 individual SBT (ZAD *N* = 490; ZAC *N* =147), according to logbook data. The round weight equivalent was 61.8 tons, of which 47.7 tons was caught by ZAD vessels and 14.1 tons by ZAC vessels.

1.2 Summary of the Historical Developments in the Fishery – Tuna Pole and Line (Baitboat)

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 6 000 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). In addition to the tuniform target species, vessels will augment catches opportunistically with snoek (*Thyrsites atun*) and yellowtail (*Seriola lalandi*).

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 (455 vessels and 3 450 crew), the hake-handline sector (130 vessels and 785 crew) and the Tuna 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) which still remains. 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. The South African Tuna Pole and Line sector started to fish for SBT for the first time, in 2016. During this season 3.7 tons of SBT was caught by the Tuna Pole and Line sector (May-July), which was landed by seven vessels.

1.3 Overview of the most recent fishing season

During the 2017-2018 fishing season 34 ZAD and 3 ZAC longline vessels were authorised by DAFF to take part in the SBT fishery. A total of 18 longline vessels activated their right to fish for SBT and 13 vessels (11 ZAD; 3 ZAC) caught SBT in 2017. The ZAD fleet landed 115.8 tons (*N* = 1,353) and the ZAC fleet landed 22.1 tons (*N* = 221) of SBT. Contrary to the previous season there were no reported SBT catches from the Tuna Pole and Line fleet in 2017-2018. Unused quota from the TPL sector (20 tons) was transferred on 14 July 2017 to those LPL

vessels active in the fishery. The CCSBT resolution[1] on limited carry-forward of unfished annual total allowable catch (TAC) of SBT was enacted by South Africa in 2016-17 (20 tons) and 2017-18 (36 tons).

2. Catch and Effort

2.1 Trends by gear type

"Targeted" SBT effort is defined here as the total number of hooks per set that retained at least one SBT. The 2017-2018 season was the first time SBT directed effort exceeded 600 thousand hooks since the commercialization of the SBT fishery in 2015. SBT effort in the domestic fleet (ZAD) has been steadily increasing over the period 2006-2016, from a mere 45 thousand hooks in 2006 to present levels of over 400 thousand hooks (**Figure 1).** ZAC effort fluctuated widely between 6 and 326 thousand hooks. Following the low in 2014 of 85 thousand hooks, ZAC SBT effort has marginally increased since 2016 and subsequently exceeded 200 thousand hooks in 2017.

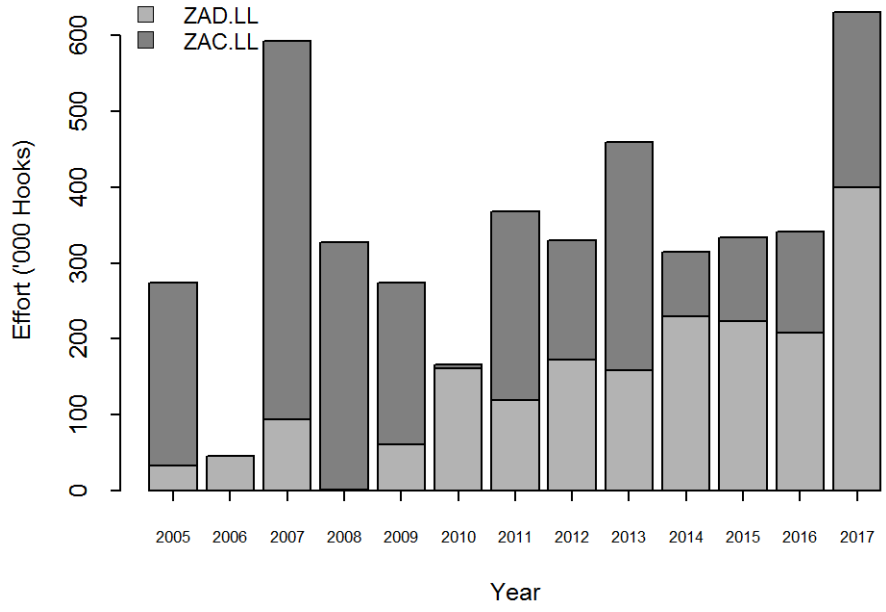

Figure 1. South African SBT directed domestic (ZAD) and chartered (ZAC) longline effort for the period 2006 – 2017. Effort is calculated as the total number of hooks in all sets that retained a SBT.

Similar to effort, total annual SBT landings attained a new maximum of 136.2 tons in 2017 (**Figure 2)**. Consistent with relative catches since 2014, the domestic vessels accounted for the majority of South Africa's annual SBT catch. In April 2016, quotas were for the first time allocated to the Tuna Pole and Line sector, which contributed just over 3.7 tons (~ 5.5%) to total SBT catch, but no catch was taken by the Tuna Pole and Line fleet in 2017.

[1] CCSBT (2017) Resolution on Limited Carry-forward of Unfished Annual Total Available Catch of Southern Bluefin Tuna 3pp

The unused quota from this sector (20 tons) was transferred to active LPL rights holders that had SBT performance in the current season.

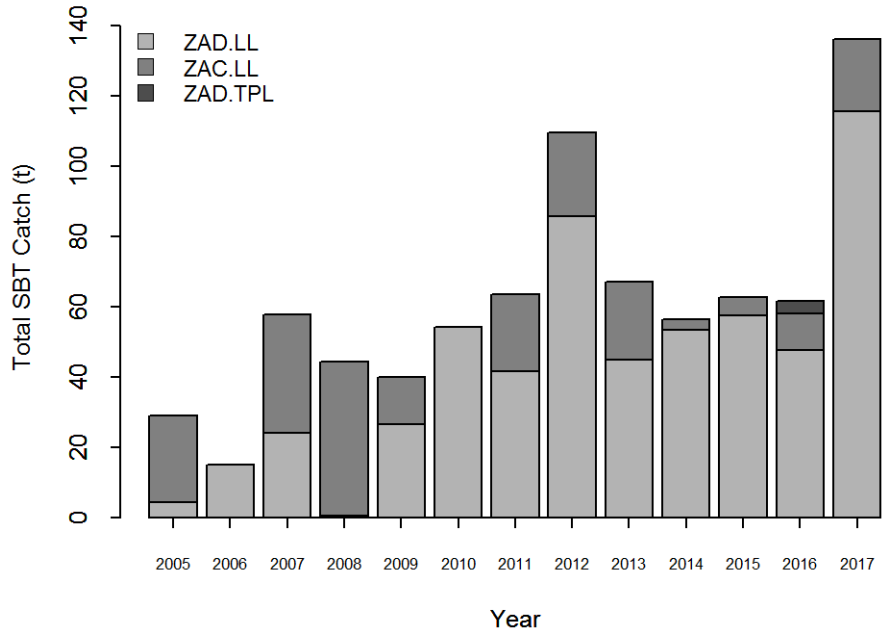

Figure 2. Total catches of SBT for South African longline (LL) vessels, domestic (ZAD) and chartered (ZAC), for the period 2006 – 2016; and the domestic tuna pole and line (TPL) in 2016. Total catch weights are up-scaled to reflect round weight using vessel-specific conversion factors for GGT and DRT.

2.2 Trends by area and season

The longline fishery operates mostly within South Africa's EEZ from April to November; however the majority of SBT catch is typically taken over a three month period; June, July and August. Consistent with previous years, all catches of SBT for the 2017/2018 season occurred from April to November, but contrary to previous years, SBT catches were fairly low in June. This changed drastically in July when SBT catches peaked at 57.4 t, followed by 39 t in August (**Figure 3)**. Trends in monthly catches across the three statistical areas 9, 14 and 15 and total catch per area (43 – 48 tons) were very similar (**Table 1).**

There are notable differences in the distribution of catch and effort between the domestic (ZAD) and chartered (ZAC) longline vessels (**Figures 4 & 5**). The domestic fleet operates off the East and West coast of South Africa (**Figure 4**), with effort distribution clearly associated with proximity to the two main fishing harbour locations (Cape Town on the West coast and Richards Bay on the East coast). The catch distribution for 2017/2018 shows a notable increase in ZAD catch along the east coast (Area 14) compared to the two previous years. The ZAC vessels have been exclusively operating east of Cape Agulhas (>20° Longitude) since 2012 (**Figure 5**). The ZAC fleet shows a strong range contraction from formally widespread effort in Area 9, including the High Seas, to predominantly fishing South Africa's EZZ of Area 14 in recent years. However, compared to the years 2014-2016, ZAC vessels have also made SBT catches at a few offshore positions. In contrast, since 2014 an increasingly large of SBT catch in the domestic fleet (ZAD) has been derived from the West coast of South Africa, or CCSBT Statistical Area 15.

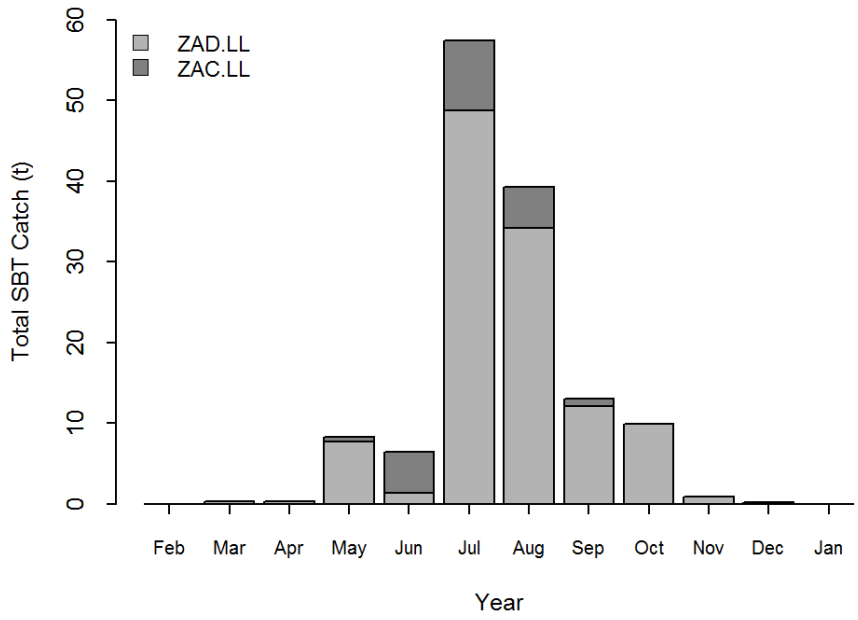

Figure 3. Total monthly SBT catch (in tons) for the Large Pelagic fishery of South Africa for the 2017/2018 season (Feb 2017 – Jan 2018). The catch statistics are derived from the domestic longline (LL ZAD) and chartered longline (LL ZAC). No SBT catch was made by the Tuna Pole and Line Fleet.

Table 1. Spatial and temporal statistics of South African Large Pelagic longline fishery SBT catches for 2017/2018.

Month	Area 9		Area 14		Area 15		Combined	
	tons	N	tons	N	tons	N	tons	N
Feb	0	0	0	0	0	0	0	0
Mar	0.1	2	0	0	0.2	2	0.3	4
Apr	0	0	0	0	0.3	4	0.3	4
May	3.9	43	0.6	7	3.9	44	8.3	94
Jun	0.1	1	5	57	1.4	18	6.5	76
Jul	20.5	230	32.1	382	4.8	58	57.4	670
Aug	11	129	8.6	81	19.6	238	39.3	448
Sep	3.9	45	1.3	11	8	104	13.1	160
Oct	5.9	65	0	0	4.1	47	9.9	112
Nov	0	0	0	0	0.9	9	0.9	9
Dec	0.2	2	0	0	0	0	0.2	2
Jan	0	0	0	0	0	0	0	0
Total	45.6	517	47.6	538	43.2	524	136.2	1579

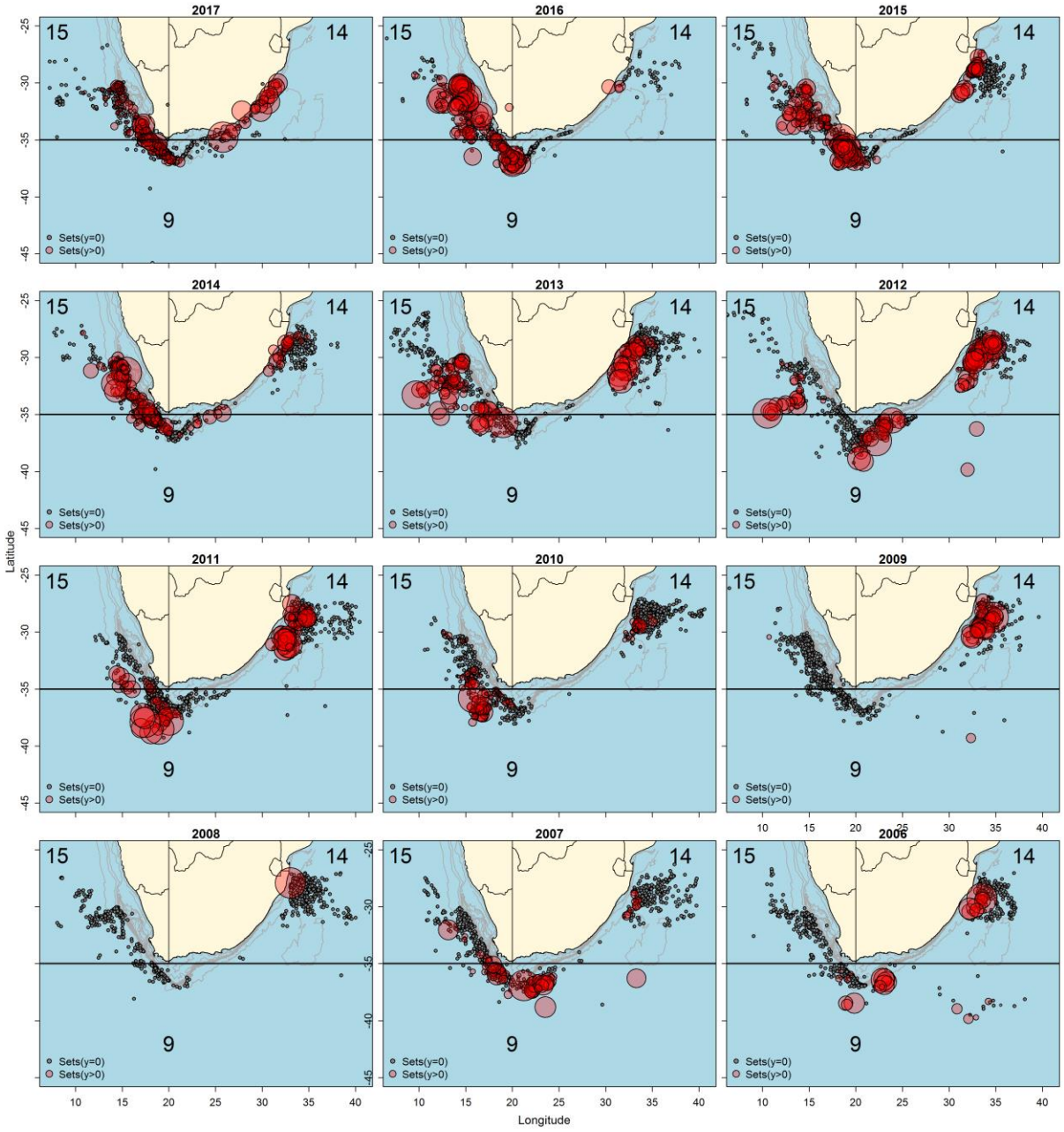

Figure 4. Annual distribution (2006 - 2017) of longline sets for the South African domestic vessels fleet (ZAD). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks.

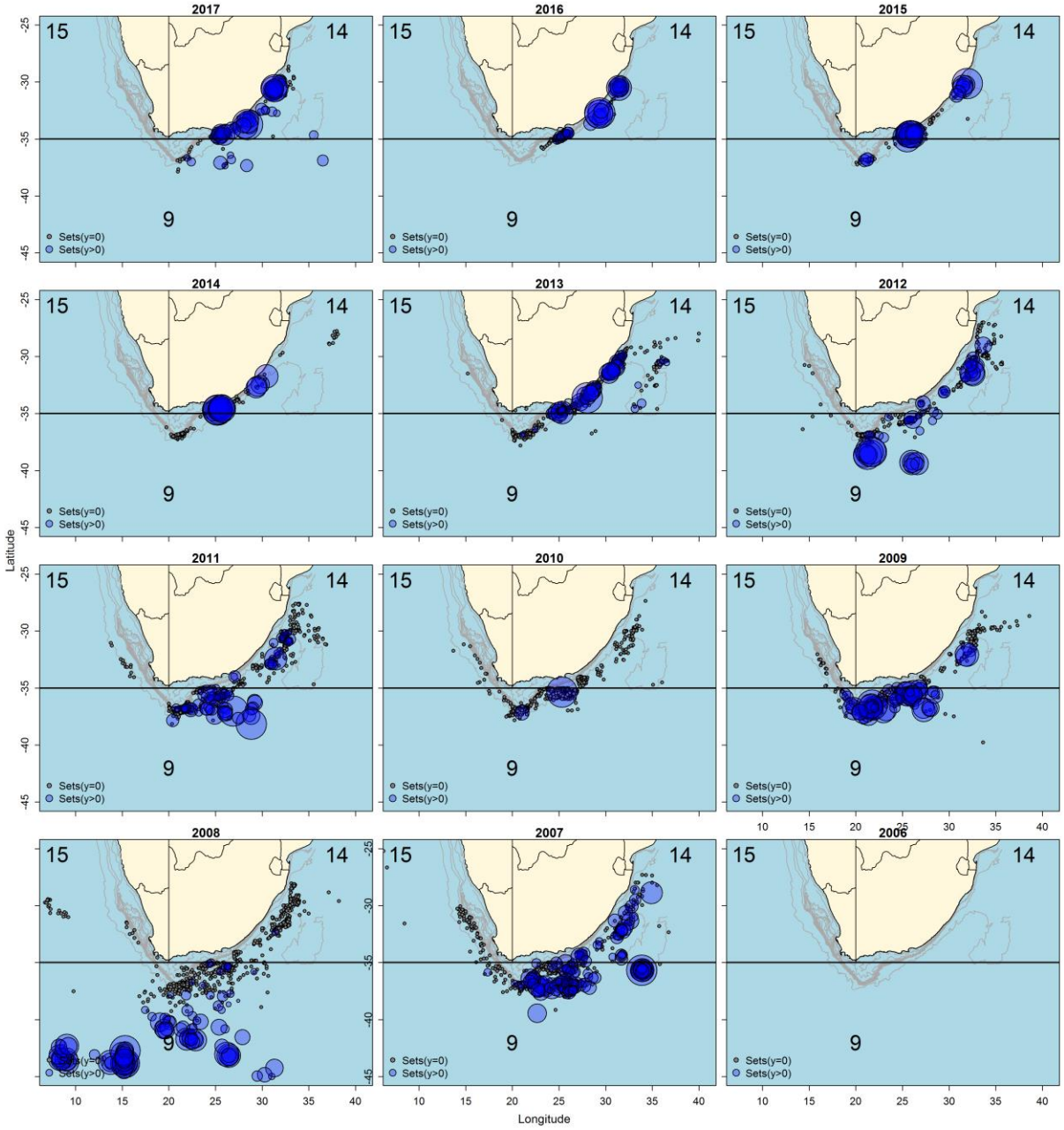

Figure 5. Annual distribution (2006 - 2017) of longline sets for the South African chartered (foreign flagged) vessels (ZAC). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks.

3. Nominal CPUE

Nominal CPUE for the longline fleet sector was calculated as kg of SBT round weight per 1000 hooks. The nominal CPUE only includes sets that caught at least one SBT, which is consistent with the definition of "targeted" effort used throughout this report. In the absence of a direct SBT target fishery and given the historically small quota of 40 tons, the South African longline CPUE can therefore not been seen as an index of relative abundance. The CPUE trends in Areas 9 and 14 were variable, generally increased around 2012, but showed overall no clearly discernible trend for both ZAD and ZAC vessels. There was, however, a steep

increase in ZAD CPUE in 2017 for Area 14 (**Figure 6**). In area 15, there was a notable increase in CPUE starting in 2008, which has subsequently remained at fairly stable since peaking in 2012 (**Figure 6**).

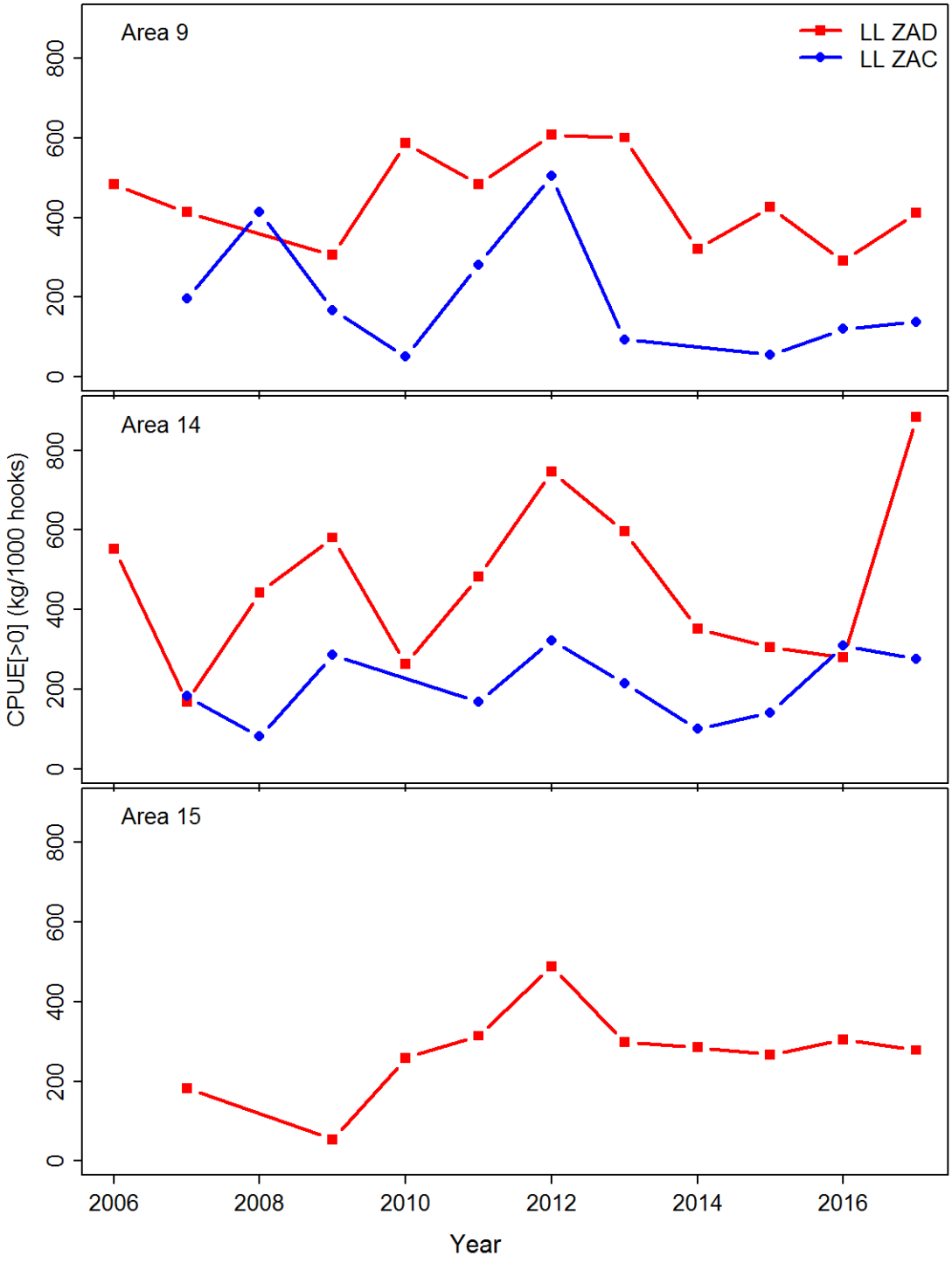

Figure 6. Trends in Nominal CPUE (kg/1000 hooks) by area and fleet segments of domestic and chartered vessels for SBT over the period 2006-2017. Effort is calculated as the total number of hooks in all sets that retained at least one SBT.

4. Size composition

Size composition data (mm Fork Length) were compiled from the on-board scientific observer programme. Availability of observer size data has improved since 2013, particularly in Areas 9 and 14 (**Figure 7**). In 2017, the mean lengths for SBT were 174.7 cm FL for Area 14, 169.8 cm FL for Area 15 and 163.6 cm FL for Area 9. Area 14 typically appears to produce a large proportion of SBT > 150 mm FL and there is some indication the SBT in Area 9 may be smaller on average. The strongest contrast between the two areas is evident from the size frequency distribution from 2012. Length information from CDS reporting is not presented here and is currently undergoing an internal review process.

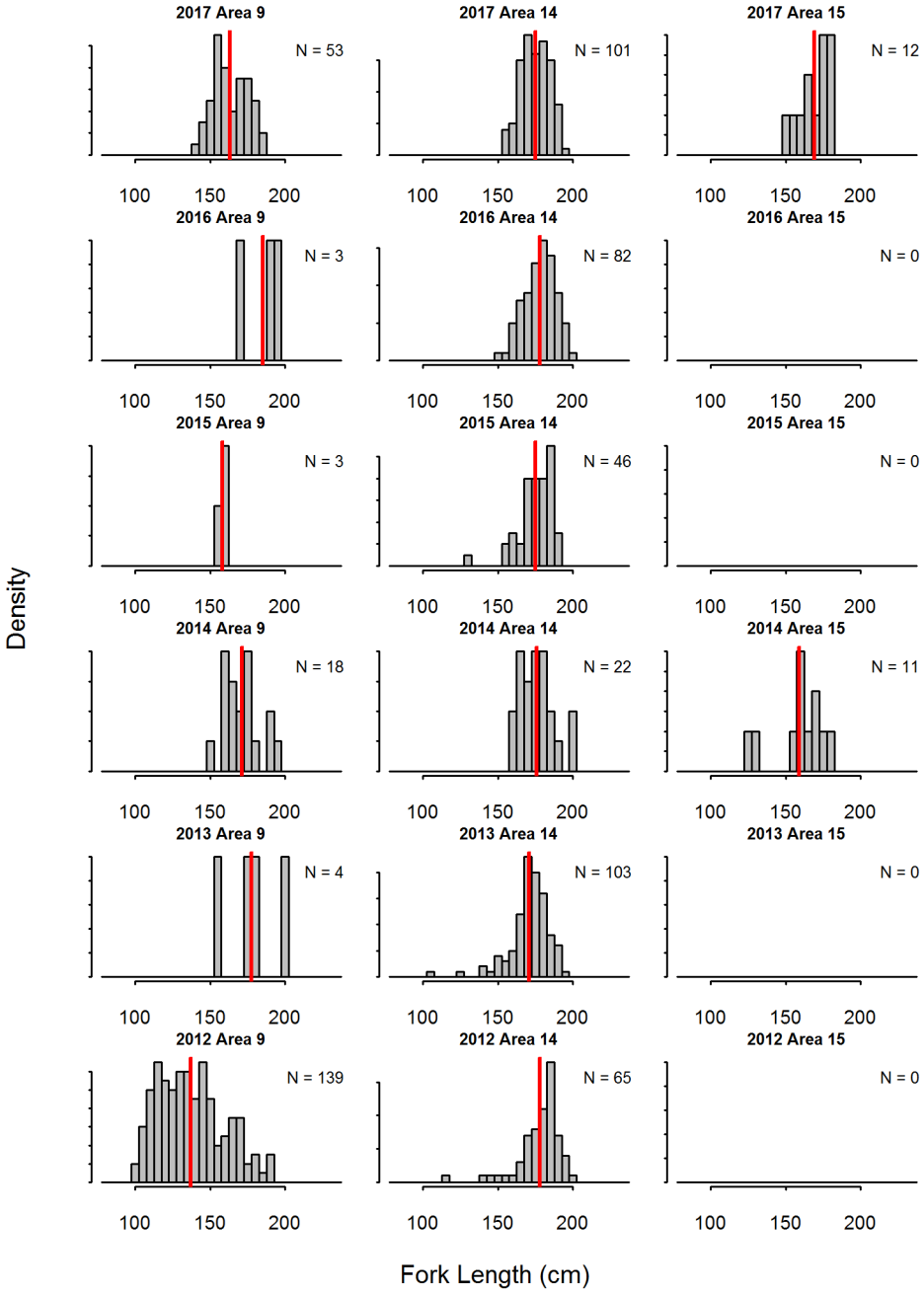

Figure 7. Length frequency distribution (in mm FL) of SBT by area based on observer data from 2012-2017, with red line denoting the mean length and N the sample size.

5. Fleet size and distribution

All active ZAC vessels typically report at least one SBT per year, so that this fleet segment is fully represented here. The number ZAC vessels have declined from 12 in 2006 to only three in 2016 and 2017 (**Table 2**). The activity of the ZAC fleet segment has notably shifted from Area 9 (2007-2010) to Area 14 (2013-2017). ZAD vessels reporting at least on SBT has increased from two in 2006 to ten in 2017. SBT activity appears to be similar in all three Areas, following a previously observed decrease in Area 14 during the period 2013-2016 (**Table 2**).

Table 2. Total number of active domestic (ZAD) and chartered joint-venture (ZAC) vessels that have landed at least one SBT per year and the percentage (%) of those vessels that reported a SBT from a specific CCSBT area.

	ZAC			ZAD			
Year	Area 9	Area 14	Total N	Area 9	Area 14	Area 15	Total N
2017	66.7%	100.0%	3	45.5%	54.5%	45.5%	11
2016	33.3%	100.0%	3	90.0%	20.0%	80.0%	10
2015	50.0%	100.0%	4	70.0%	30.0%	70.0%	10
2014	0.0%	100.0%	4	54.5%	27.3%	81.8%	11
2013	22.2%	100.0%	9	36.4%	27.3%	63.6%	11
2012	77.8%	77.8%	9	66.7%	44.4%	33.3%	9
2011	81.8%	45.5%	11	55.6%	55.6%	44.4%	9
2010	100.0%	0.0%	2	44.4%	33.3%	66.7%	9
2009	100.0%	12.5%	8	25.0%	75.0%	25.0%	4
2008	100.0%	11.1%	9	0.0%	100.0%	0.0%	1
2007	100.0%	50.0%	12	77.8%	11.1%	44.4%	9
2006	0.0%	0.0%	0	100.0%	50.0%	0.0%	2

6. Data

6.1 Scientific Observer Program Design and Coverage

The South African Pelagic Longline Observer Programme 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 Chartered (ZAC) vessels has continued with 100% of fishing trips observed. Furthermore, increased inspections and sampling of tuna 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 as well as biological material when required. The observers record data on the following forms:

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

Total observer coverage has increased from 679.5 thousand hooks in 2016 to 1041.7 thousand hooks in 2017. This resulted in an increase of percentage observer coverage from 31.1% to 39.9%, which can be largely attributed to an increased in the number of ZAD trips observed from three in 2016 to sixteen in 2017. The effective observer coverage of SBT effort (sets with at least one SBT) is summarized by fleet segment and statistical area in in **Table 3**. The total number of SBT measurements taken by observers was *N* = 166, which equates to 10.5% of the total retained catch.

To improve the spatio-temporal observer coverage for ZAD fleet segment, South Africa is aiming to increase its overall observer coverage for the 2018/19 fishing season to 20% per quarter. To achieve this, Section 16 (Observer Programme) of the current Large Pelagic Longline Permit Conditions (2018-2019**Error! Bookmark not defined.**) now require Permit Holders to carry one or more scientific observers on board their vessel on a minimum of one fishing trip per quarter so as to ensure that 20% of all fishing days per quarter are monitored.

Table 3. Total fishing and observed effort[2] for South Africa in 2017 in the pelagic longline fishery

Country / Fishing Entity	Calendar Year	Fishery		CCSBT Statistical Area	Total & Observed Effort			Proportion of observed effort with specific mitigation measures					
		Gear Code	Fleet Code		Total Effort	Total Observed Effort	Observer Coverage *(percentage)*	TP+NS	TP+WB	NS+WB	TP+WB+NS	NIL	Others (*add additional columns if required*)
ZAF	2017	LL	ZAC	9	25 152	25 152	1	0	0	0	1	0	
ZAF	2017	LL	ZAC	14	205 592	205 592	1	0	-	0	1	0	
ZAF	2017	LL	ZAD	9	152 070	11 310	0.07	0	0	0	1	0	
ZAF	2017	LL	ZAD	14	34 300	-	-	0	-	0	1	0	
ZAF	2017	LL	ZAD	15	213 286	7 250	0.03	0	0	0	1	0	

[2] Number of observed hooks per set for shots that caught at least one SBT

6.2 Logsheet data collection and verification

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. Records of by-catch are required in the skipper logbooks.

Mandatory information to be included on all longline logbooks while at sea includes: date, latitude, longitude, time of start and end set, number of hooks set, reason for set, float line length, branch line length, bait type, observer present (y/n), drift, light stick info, catch by species, weight and number, product type, non-retained species in numbers. For this current fishing season DAFF have introduced on logsheets a column specific for SBT that will note the number and weight of SBT released alive at sea.

6.3 Catch Documentation Scheme (CDS)

A new CDS database has been developed and is in implementation phase for the 2018/2019 season. The CDS database has been developed and designed in MS ACCESS and provides user friendly Forms for input and extraction of CDS data (**Figure 8**). The specific objectives for developing the CDS database were to:

- Minimise data capturing errors
- Prevent invalid formats
- Prevent duplicates
- Ensure reproducibility of CDS reports
- Prevent version corruptions
- Increase data capturing efficiency
- Early identification of misreporting
- Facilitate internal cross-validation with independent data streams (logbooks, landing declarations)

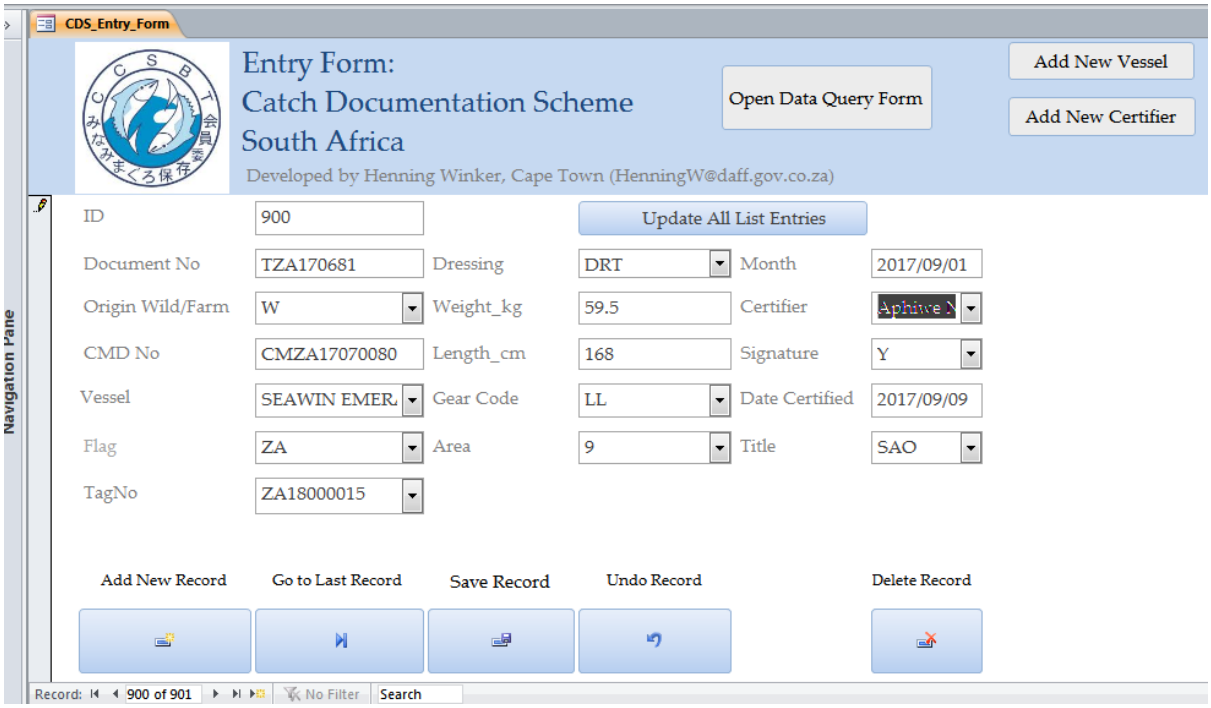

Figure 8. Showing the Entry Form of the South African Catch Documentation Scheme MS ACCESS database (default start-up).

6.4 Vessel Monitoring System

The Vessel Monitoring System (VMS) was implemented in 1998. 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 uninterrupted prior to and throughout the duration of the trip. South Africa is in the process of upgrading its VMS, which should bring about a more stringent monitoring and surveillance regime by applying the most advanced VMS technologies.

6.5 Offloading/Transshipment

Unloading or discharging of fish from a longline and tuna pole and line vessels 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. Transshipments of fish in port require pre-authorisation and is only allowed under the supervision of a Fisheries Control Officer. These measures have been in place since 1998.

7. Other relevant information

7.1 Unaccounted mortality

South Africa's boat based recreational fishing fleet operates along the entire coast including areas of SBT presence. Data from the recreational fishery are scarce as there is no mandatory reporting of catches. There are a number of craft with the capacity to target SBT but thus far there is little indication of SBT catches. Data from tuna-directed fishing competitions from 2000 onwards do not include any SBT among the total of 6684 specimens of tuna and tuna-like species caught. It is likely that SBT become more regularly available in the range of the recreational fleet in the future, as the stock recovers. To account for possible recreational mortality of SBT among other sources, South Africa has set aside 5 tons of its SBT allocation for the 2017-2018 season for unaccounted mortality.

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