South African National Report to the Extended Scientific Committee of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), 2019

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Summary

South Africa's tuna directed fishery is comprised of two fishing fleets, a bait-boat (pole and line) fleet of 151 vessels (164 fishing rights), and a longline fleet with a domestic (ZAD) and a Japanese flagged joint venture (charter boat; ZAC) component of currently a total of 34 vessels (59 fishing rights). The pole fleet mainly targets albacore and yellowfin tuna, when available, and the longline fleet targets tuna species and swordfish. SBT has previously only been caught by the longline fleet but the Tuna Pole and Line (Bait Boat) fleet has started catching SBT in small quantities since South Africa has become a full Member of CCSBT in 2016. South Africa continues to develop its SBT directed performance within its large pelagic directed fishing sectors. In the 2018/2019 SBT directed effort exceeded 700 thousand hooks and the total annual SBT landings attained a new maximum of 207 tons. SBT was caught by 19 longline vessels (16 ZAD; 3 ZAC) and five Tuna Pole and Line vessels. ZAD longline vessels landed 192.5 tons (*N* = 2,765) and ZAC longline vessels landed 12.1 tons (*N* = 166).Contrary to the previous season with no SBT landings by Tuna Pole and Line vessels, a small amount SBT landings of 2.4 tons of SBT were reported by this fleet in 2018-2019. 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. There are notable differences in the distribution of catch and effort between the domestic (ZAD) and chartered (ZAC) longline vessels, with the latter exclusively operating east of Cape Agulhas (Area 14 and 9, >20° Longitude) in recent years. In contrast, the domestic fleet operates off both the East (Area 14) and West coast of South Africa (Area 15), out of to the two fishing ports cities of Cape Town and Richards Bay. In general, the range of the ZAC fleet appears to have been increasingly contracting closer inshore within South Africa's EZZ (Area 14) in recent years. Similar to the 2017/2018, a large proportion of SBT catch by the domestic fleet (ZAD) remains to be caught along the West coast of South Africa (Area 15). Availability of observer size data has improved since 2013, particularly in Areas 9 and 14. In addition, the 2018/2019 season provided also improved sample sizes for Area 15. The total number of SBT measurements taken by observers was *N* = 359, which equates to 12.2% of the total retained catch by longline vessels and represents a further improvement compared to the 10.5% measured SBT during the 2017-2018 season. Compared to 2017/2018, the mean lengths in 2018/2019 have notably decreased form 163.3 cm FL to 148.8 cm FL in Area 9 and from 189.2 and 160.1 cm in Area 15 as a result of the presence of fish of 80-100 cm FL, which were largely absent from sampled catches since 2013. In Area 14 largely comprised larger SBT (> 150 cm FL), so that the mean length changed only marginally from 174.8 cm FL to 174.0 cm FL. The effective observer coverage of SBT effort (number of hooks per sets with at least one SBT) during the 2018-2019 fishing season was 30%. The observer coverage for joint-venture Chartered (ZAC) vessels has continued with 100% of fishing trips observed. The observer coverage of SBT sets for domestic vessels (ZAD) was 15%, with a minimum of 11% in Area 9 and maximum coverage of 16% in Areas 14 and 15.

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 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 vessels are 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 as well as Large Pelagic Longline sector specific regulations. 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.

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, but no SBT catches were made this sector in 2017/2018.

1.3 Overview of the most recent fishing season

During the 2018-2019 fishing season 60 Longline and 30 Tuna Pole and Line right holders were authorised to take part in the SBT fishery. Of these, 27 right holders reported SBT landings in 2018/2019, which were made by 19 longline vessels (16 ZAD; 3 ZAC) and five Tuna Pole and Line vessels. ZAD longline vessels landed 192.5 tons (*N* = 2,765) and ZAC longline vessels landed 12.1 tons (*N* = 166), Contrary to the previous season with no SBT landings by Tuna Pole and Line (bait boat) vessels, a small amount SBT landing of 2.4 tons of SBT was report by this fleet in 2018-2019, totalling 207 tons for all fleets combined.

1.1 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 2018-2019 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. During the 2018/2019 season, ZAC effort accounted for 127.1 thousand hooks, which corresponds to 17.8% of the total SBT directed longline effort of 712.2 thousand hooks.

Similar to effort, total annual SBT landings attained a new maximum of 207 tons in 2018/2019 (**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. During the 2018/2019, Tuna Pole and Line Vessels caught 2.5 tons.

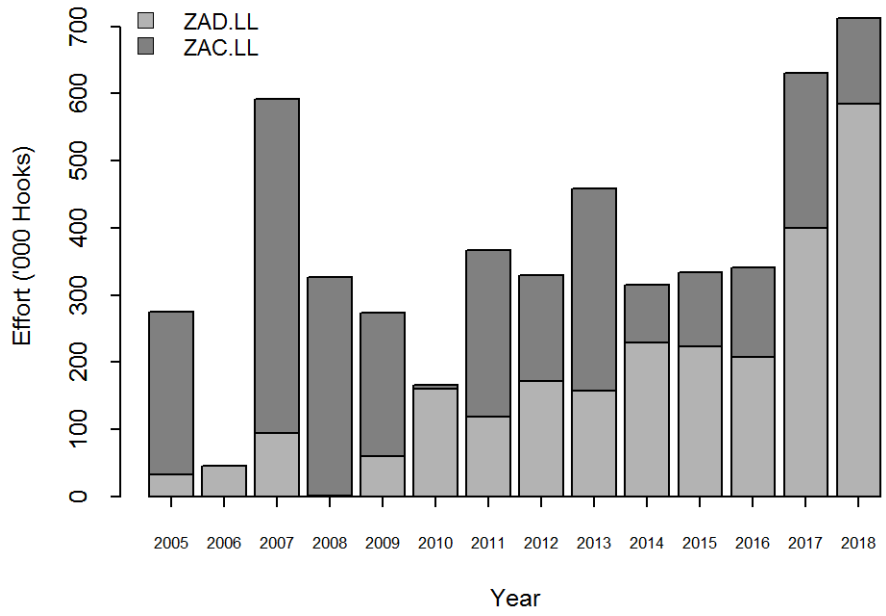

Figure 1. South African SBT directed domestic (ZAD) and chartered (ZAC) longline effort for the period 2005 – 2018. Effort is calculated as the total number of hooks in all sets that retained a SBT.

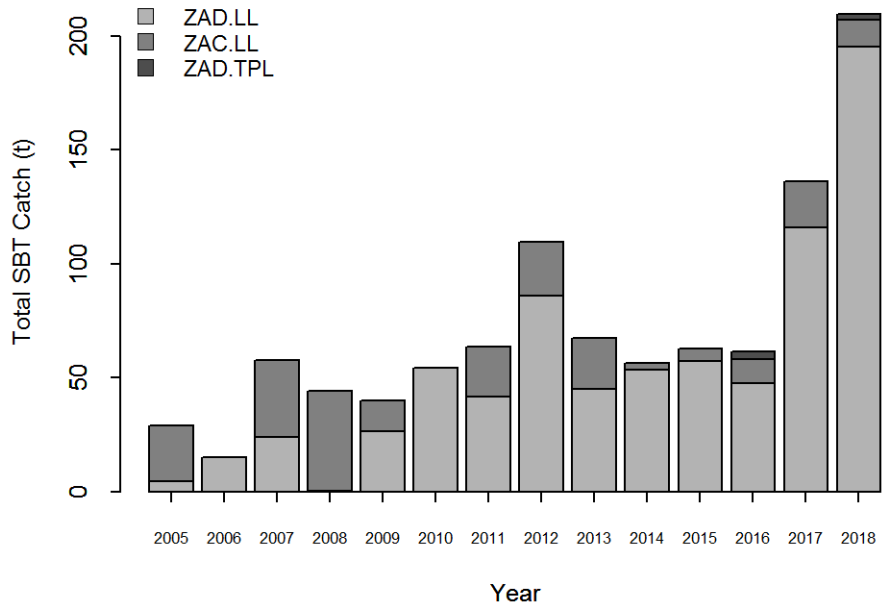

Figure 2. Total catches of SBT for South African longline (LL) vessels, domestic (ZAD) and chartered (ZAC), for the period 2005 – 2018; and the domestic tuna pole and line (TPL) in 2016 and 2018. Total catch weights are up-scaled to reflect round weight using vessel-specific conversion factors for GGT and DRT.

1.2 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 four month period; June, July, August and September. Consistent with previous years, all catches of SBT for the 2017/2018 season occurred from April to November, and just like in 2017/2018 SBT catches were fairly low in June. SBT catches peaked at 80.9 t, followed by 46.7 t in August and 40.9 t in September (**Table 1**; **Figure 3)**. Area 15 produced relatively high catches in June, whereas catches peaked only in September in Area 9 (**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.

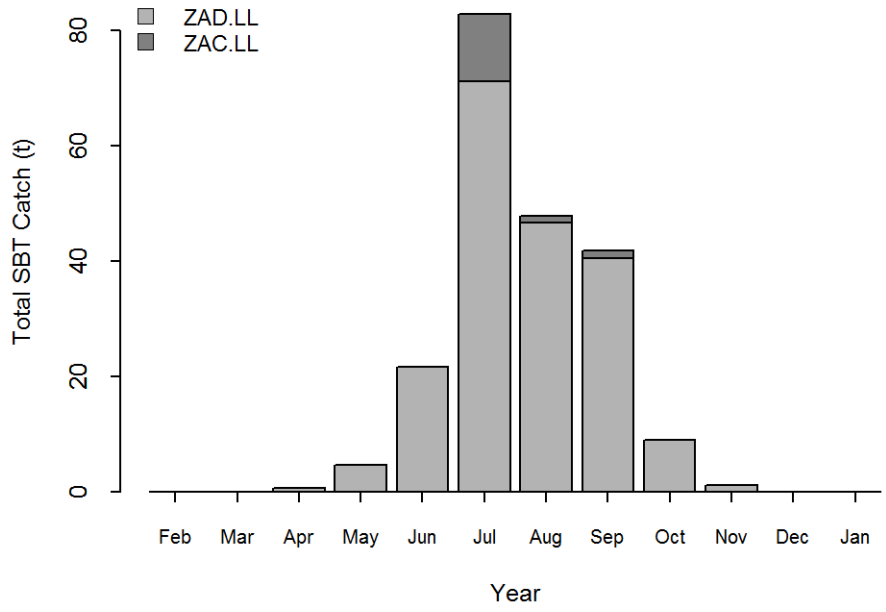

Figure 3. Total monthly SBT catch (in tons) for the Large Pelagic fishery of South Africa for the 2018/2019 season (Feb 2018 – Jan 2019). The catch statistics are derived from the domestic longline (LL ZAD) and chartered longline (LL ZAC).

Table 1. Spatial and temporal statistics of South African Large Pelagic longline fishery SBT catches for 2018/2019.

Month	Area 9		Area 14		Area 15		Combined	
	kg	N	kg	N	kg	N	kg	N
Feb	0.0	0	0.0	0	0.0	0	0.0	0
Mar	0.0	0	0.0	0	0.0	0	0.0	0
Apr	0.1	1	0.0	0	0.5	7	0.6	8
May	0.0	0	0.0	0	4.6	67	4.6	67
Jun	0.1	1	7.4	88	13.7	212	21.2	301
Jul	5.8	77	42.0	503	33.1	502	80.9	1082
Aug	14.3	222	4.2	59	28.2	412	46.7	693
Sep	16.1	234	0.1	1	24.7	384	40.9	619
Oct	2.2	35	0.0	0	6.5	106	8.8	141
Nov	0.8	8	0.0	0	0.3	5	1.1	13
Dec	0.0	0	0.0	0	0.0	0	0.0	0
Jan	0.0	0	0.0	0	0.0	0	0.0	0
Total	39.35787	578	53.71422	651	111.6279	1695	204.7	2924

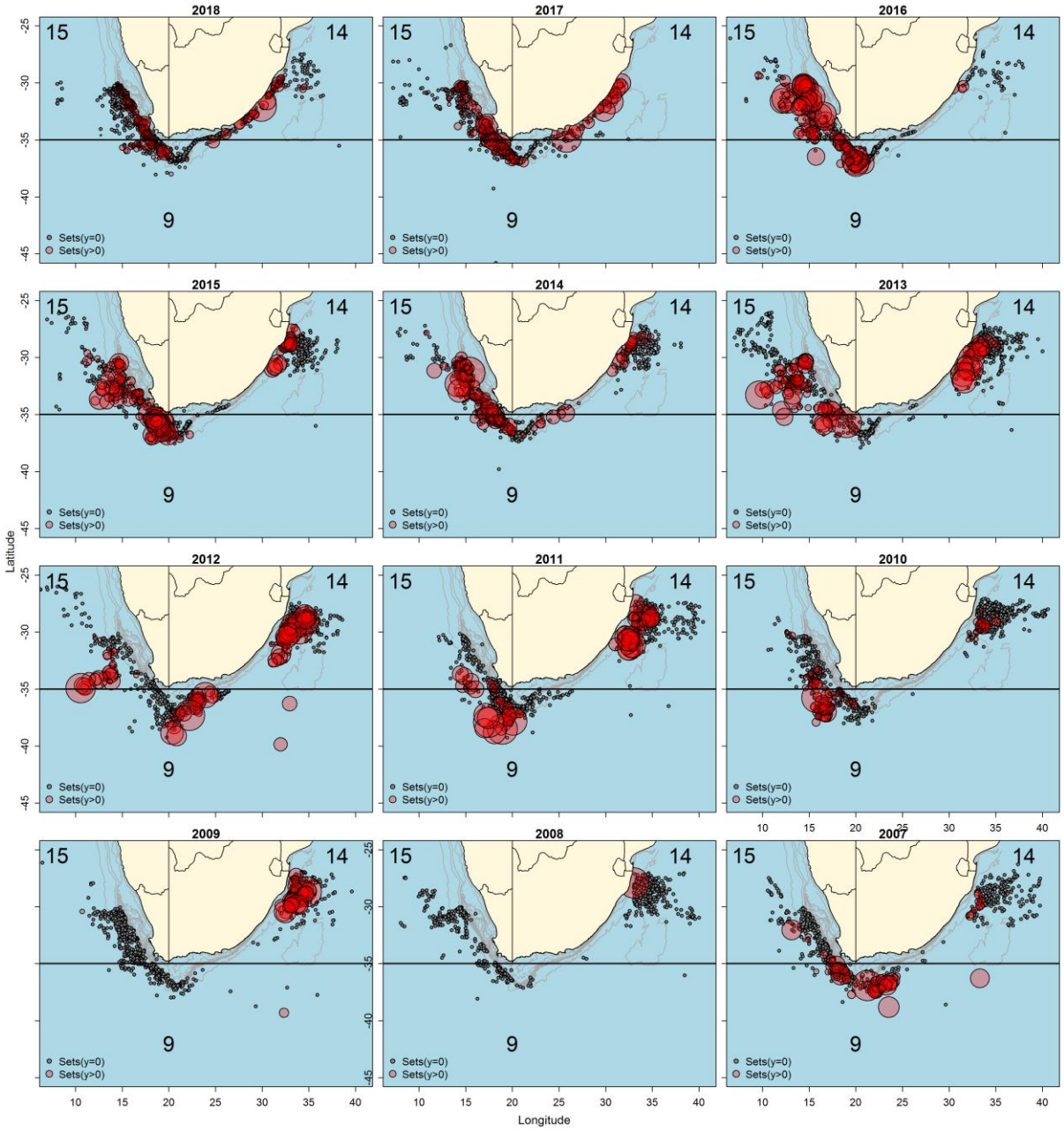

Figure 4. Annual distribution (2007 - 2018) of longline sets for the South African domestic vessels fleet (ZAD). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks.

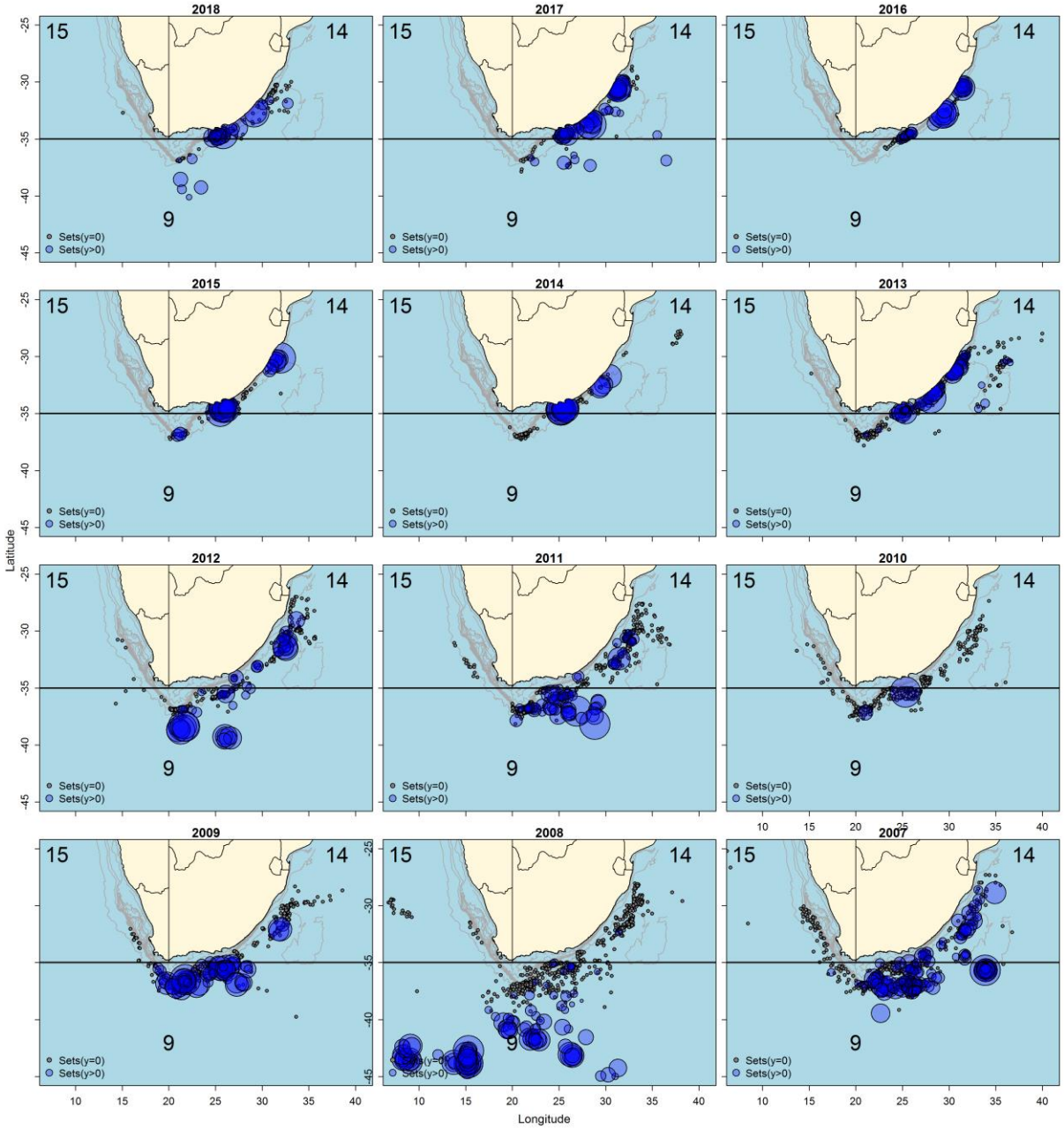

Figure 5. Annual distribution (2007 - 2018) of longline sets for the South African chartered (foreign flagged) vessels (ZAC). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks.

2. 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, which also remained high in 2018 (**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. The 2018 CPUE showed a slight increase compared to 2017 for the ZAC fleet in Areas 9 and 14 and the ZAD fleet in Area 15 (**Figure 6**).

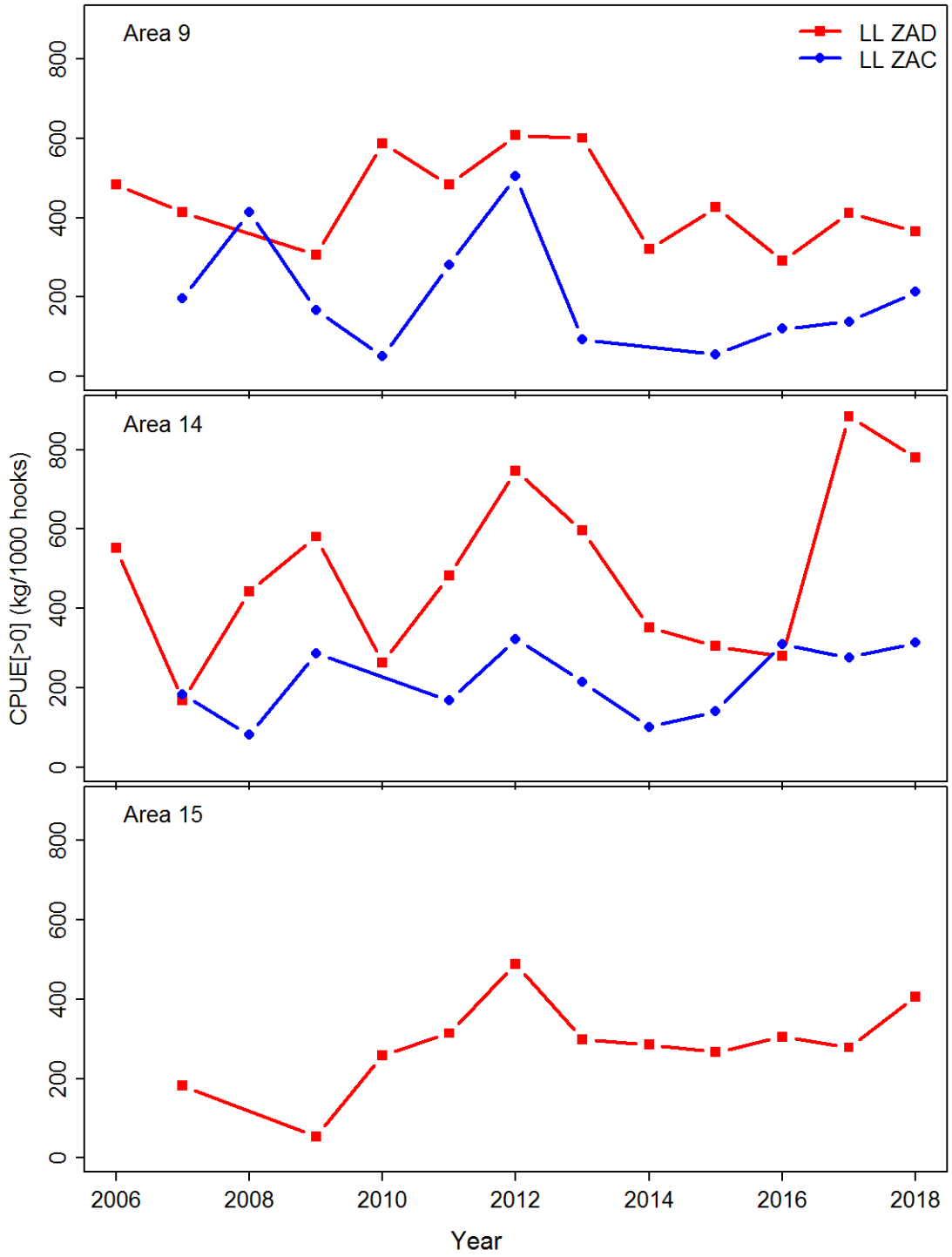

Figure 6. Trends in Nominal CPUE (kg/1000 hooks) by area and fleet segments of domestic and chartered vessels for SBT over the period 2006-2017. Effort is calculated as the total number of hooks in all sets that retained at least one SBT.

3. 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 Area 15 (**Figure 7**). Compared to 2017/2018, the mean lengths in 2018 have notably decreased form 163.3 cm FL to 148.8 cm FL in Area 9 and from 189.2 and 160.1 cm in Area 15 as a result of the presence of fish of 80-100 cm FL, which were largely absent from sampled catches since 2013. In Area 14 largely comprised larger SBT (> 150 cm FL), so that the mean length changed only marginally from 174.8 cm FL to 174.0 cm FL.

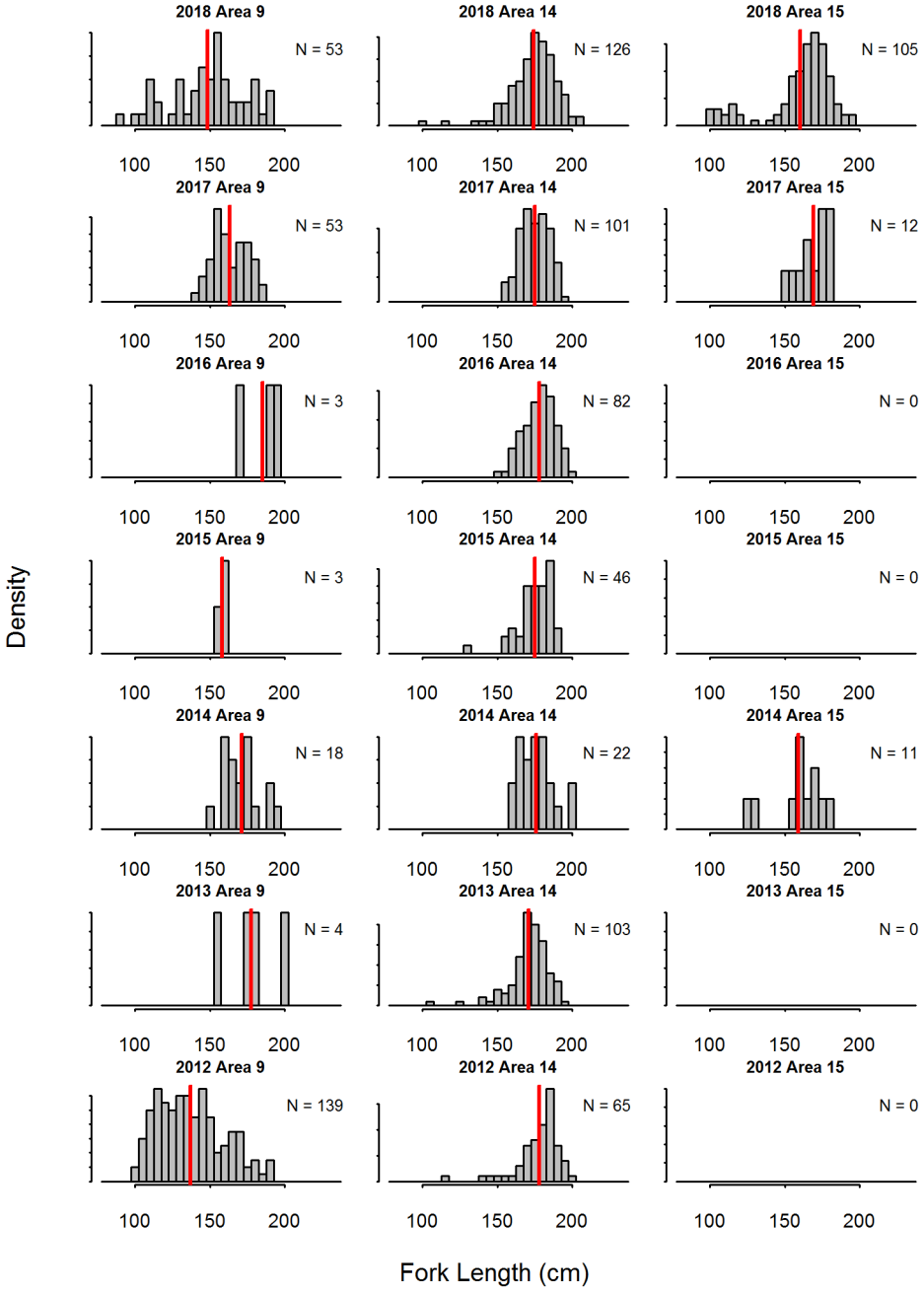

Figure 7. Length frequency distribution (in mm FL) of SBT by area based on observer data from 2012-2017, with red line denoting the mean length and N the sample size.

4. 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 since 2016 (**Table 2**). The activity of the ZAC fleet segment has notably shifted from Area 9 (2007-2010) to Area 14 (2013-2018). ZAD vessels reporting at least on SBT has increased from two in 2006 to 16 in 2018. 2018 has seen a 45% increase in ZAC landing at least one SBT compared to 2017 (**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
2018	33.3%	100.0%	3	81.3%	31.3%	68.8%	16
2017	66.7%	100.0%	3	90.9%	18.2%	90.9%	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				100.0%	50.0%	0.0%	2
2005	100.0%	30.0%	10	0.0%	66.7%	33.3%	3

5. Scientific Observer Coverage

Observers employed on South African pelagic longline vessels 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

The effective observer coverage of SBT effort (number of hooks per sets with at least one SBT) during the 2018-2019 fishing season was 30%. The observer coverage for joint-venture Chartered (ZAC) vessels has continued with 100% of fishing trips observed. The observer coverage of SBT sets for domestic vessels (ZAD) was 15%, with a minimum of 11% in Area 9 and maximum coverage of 16% in Areas 14 and 15. The observer effort and coverage statistics by fleet and statistical area are summarized in **Table 3**. The total number of SBT

measurements taken by observers was *N* = 359, which equates to 12.2% of the total retained catch by longline vessels and represents a further improvement compared to the 10.5% measured SBT during the 2017-2018 season. Neither seabirds nor turtles were encountered in SBT directed longline sets (SBT > 0).

Table 3. Total fishing and observed effort[2] for South Africa in 2018 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	2018	LL	ZAC	9	17 844	17 844	1.00	0	0	0	1	0	
ZAF	2018	LL	ZAC	14	109 676	109 676	1.00	0	0	0	1	0	
ZAF	2018	LL	ZAD	9	138 769	15 900	0.11	0	0	0	1	0	
ZAF	2018	LL	ZAD	14	59 850	9 647	0.16	0	0	0	1	0	
ZAF	2018	LL	ZAD	15	386 515	61 436	0.16	0	0	0	1	0	

[2]Effort is defined as number of hooks per set with at least one SBT retained as catch

7. Other relevant information

South Africa has contributed data and analysis of set level longline data to collaborative work to assess seabird bycatch in pelagic longline fleets (South Atlantic and Indian Oceans). This project is a collaborative work to assess seabird bycatch in the pelagic longline fleets operating in the South Atlantic (SAO) and Indian (IO) Oceans from an entirely scientific perspective was conceived by researchers from several national fleets during the Inter-sessional Meeting of the Sub-committee on Ecosystems of ICCAT, in September 2016. The objectives of this process are 1) to determine the spatio-temporal patterns of seabird bycatch, 2) to estimate the seabird bycatch (at the lowest possible taxonomic level) and data permitting, 3) to gain knowledge on the performance of mitigation measures. South Africa provided spatially disaggregated bird bycatch data for analyses and contributed to the subsequent project report: Collaborative work to assess seabird bycatch in pelagic longline fleets (South Atlantic and Indian Oceans) - 16 to 20 of April 2018, Montevideo, Uruguay. A second workshop to finalise the analysis is agreed to be hosted by South Africa in June 2019.

South Africa has actively participated in the Common Oceans project to assess seabird bycatch in surface longline fisheries in the southern hemisphere south of 20 degrees. The Department has participated in the First Regional Bycatch pre-assessment Workshop held in early 2017, together with other national scientists from countries operating pelagic fleets south of 25°South. This workshop is part of a collaborative process to bring national scientists together, and where appropriate and requested, to help build capacity of national scientists to undertake a global bycatch analysis.

In 2018, scientists from DAFF and NOAA participated in the Seabird Bycatch Small Working Group Meeting hosted by Bird Life SA under the Common Oceans project with the aim to explore alternative techniques to estimate bird encounters and overall captures based on observer and effort data. The Seabird Bycatch Small Working Group focussed on further refining the model options and methodology for calculating bird captures, along with comparing and contrasting the results of methods that account for the variation in space and time of the catch rates, as well as take into account the different levels of information content in disparate data sets. The meeting brought together data from Brazil, the Republic of Korea, and South Africa. The combined dataset was used to develop estimates of Bycatch Per Unit Effort (BPUE) and number of birds caught. Specific outcomes include the development of analytic tools (code) that can be utilised with any aggregation of data and for any spatial area to estimate seabird bycatch. The results were presented to the 2018 IOTC Working Party on Ecosystems and Bycatch in South Africa and are publicly available:

https://www.iotc.org/sites/default/files/documents/2018/08/IOTC-2018-WPEB14-45.pdf

In February 2019, South Africa participated in the final workshop of the Common Ocean Bird Bycatch Project, hosted by Bird Life South Africa. Delegates collaborated by sharing bird bycatch observer data and by applying spatial models and the SEFRA risk assessment method to estimate seabird bycatch of pelagic long fisheries operating south of 25°South.

This project, with meetings in South Africa 2017, Peru in February 2018, and South Africa in February 2019, was led by Birdlife. Delegates collaborated on applying the risk assessment method to estimating seabird bycatch at the species level, using observer data from CCSBT member countries including Japan, New Zealand, Korea, Australia, and South Africa.

A follow-up analysis using the SEFRA model was based on observer data provided by CCSBT member countries Japan, South Africa, Australia and New Zealand. These countries all record the seabird species caught during observed fishing, allowing the estimation of seabird bycatch at the species level. The report of this analysis has been submitted by New Zealand to be presented at the ERSWG 13.

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