

South Africa's Annual Report to the Ecologically Related Species Working Group (ERSWG) of the Commission for the Conservation of Southern Bluefin Tuna, 2024

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forestry, fisheries
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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.

1.1. Large Pelagic Longline

The large pelagic longline sector can be divided into domestic (ZAD) and chartered vessels (ZAC). The general method and gear used by ZAD vessels 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 –1 500 hooks are set per line. Stainless steel hooks are prohibited and as of 2017 wire traces are also prohibited. Other than Southern bluefin tuna (SBT; *Thunnus maccoyii*), ZAD vessels target a mix of tuna species, bigeye (*Thunnus obesus*), yellowfin (*Thunnus albacares*) and albacore (*Thunnus alalunga*) as well as swordfish (*Xiphias gladius*). ZAD vessels operate in both the Atlantic, with effort distribution associated with proximity to the two main fishing harbour locations (Cape Town on the West coast and Richards Bay on the East coast).

Joint-venture (JV) agreements between South African fishing rights holders and Japan vessels have been underway since 1995, whereby these foreign-flagged ZAC vessels are permitted to fish under a South African Rights Holder. JV 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, 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. Due to a relatively small SBT quota, these vessels predominantly target tropical bigeye tuna and yellowfin tuna, and their larger size enables them to fish further offshore and their methodology differs from ZAD vessels. ZAC vessels set up to 3 000 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 targeting and catching of tropical bigeye and yellowfin tunas has proven more successful in the Indian Ocean, resulting in a sizeable amount of the ZAC longline fishing effort being concentrated in the Indian Ocean.

1.2. Tuna Pole and Line (Baitboat)

The Tuna Pole and Line sector operates along the south-west and west coasts of South Africa in the Atlantic Ocean where the traditional target species 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. 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. The main target species remain albacore and yellowfin tuna, while SBT is sporadically caught between May to August. Between 2 and 7 vessels have caught SBT annually since 2020, catching between 0.6 and 2.2 tons.

1.3. Type and magnitude of ERS caught by fishery/method

Protected species that are caught by large pelagic longline sector include seabirds and turtles. Observed numbers of incidental seabird catches are available from 2012, with 10 species identified to date. The observed seabird mortality CPUE (number of seabird mortalities/1000 hooks) has been on a declining trend, with 0.16 in 2014 (43% hooks observed) to 0.04 in 2022 (16% hooks observed). A recent increase in seabird mortality CPUE to 0.15 seabird mortalities/1000 hooks in 2023 (11% hooks observed) may be as a result of reduced observer coverage and therefore requires further investigation. Bycatch and mortality rates among seabird species vary substantially among the common seabird bycatch species. Turtles are only sporadically caught in SBT associated longline sets and are mostly released alive.

The dominant retained non-target bycatch species are blue sharks (*Prionace glauca*) and shortfin mako (*Isurus oxyrinchus*), which are caught in close to equal ratios. In general, due to lower commercial value blue sharks are more likely released alive or discarded than shortfin mako. It is prohibited to retain thresher sharks belonging to the genus *Alopias*, hammerhead sharks (belonging to genus *Sphyrna*), oceanic whitetip sharks (*Carcharhinus longimanus*), porbeagle sharks (*Lamna nasus*), dusky sharks (*C. obscurus*) and silky sharks (*C. falciformis*) and manta- and mobulid rays on board any vessel and all releases (and release condition) of these species must be noted in the logbooks.

2. Review of SBT Fisheries

“Targeted” SBT effort is defined here as the total number of hooks per set that retained at least one SBT. SBT effort in the large pelagic longline domestic fleet (ZAD) has been steadily increasing over the period 2006-2023, from 500 thousand hooks in 2006 to present levels of over 1.8 million hooks and peaking in 2023 at 2.59 million hooks. Commercialization of the SBT fishery has been motivated and supported by the allocation increases following South Africa’s accession to CCSBT in 2016.

Large pelagic longline ZAC SBT effort fluctuated widely between 6 and 498 thousand hooks during the same period (Table 2). Following the low in 2014 of 85 thousand hooks, ZAC SBT effort slightly increased in 2016, and exceeded 200 thousand hooks in 2017. After a large pelagic longline fishery policy change in 2015 that compels JV vessels to reflag within the first three years of JV operations, the number of JV vessels has been declining, from 4 in 2015 to 1 in 2022 and none in 2023.

Total catches of SBT using large pelagic longline gear have increased in response to increased allocations, peaking in 2018 at 180t and reaching 120t in 2022 and 95t in 2023 after a dip during the covid-19 pandemic. Despite the gradual increase in catches, South Africa has not yet come close to reaching its annual TAC allocations. During the 2022-2023 fishing season (1 March 2022 to 28 February 2023) 61 right holders were authorised to take part in the large pelagic longline fishery. A total of 33 right holders activated their right to fish for SBT using 40 vessels (all ZAD), and of those vessels 18 caught SBT in the 2022-2023 season. The ZAD fleet landed 120.2 tons (N = 1 856), the ZAC vessel did not land SBT and the Tuna Pole and Line fleet landed 0.68 tons (N = 10) SBT in the 2022-2023 season.

The longline fishery operates mostly within South Africa’s EEZ and catches SBT from April to November; however the majority of SBT catch is typically taken over a two-month period; July and August. Consistent with previous years, most catches of SBT for the 2022-2023 season occurred from April to November, but contrary to previous years, SBT catches dropped in August before picking up in September.

There are notable differences in the distribution of catch and effort between the domestic (ZAD) and chartered (ZAC) longline vessels (Figures 1 & 2). The domestic fleet operates off the East and West coast of South Africa (Figure 1), 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). Since 2017 the effort distribution of the ZAD vessels has contracted, with clear concentrations off Richards Bay and the West Coast. Coupled with the mixed species catch composition of ZAD vessels (i.e. variety of targeting strategies among vessels), the effort distribution demonstrates the limited range of the smaller ZAD vessels (20-30m LOA). The ZAC vessels have been exclusively operating east of Cape Agulhas (>20° Longitude) since 2012 (Figure 2). The ZAC fleet showed a strong range contraction from formally widespread effort in Area 9, including the High Seas, to predominantly fishing South Africa's EEZ of Area 14 from 2013-2016. However, compared to the years 2013-2016, ZAC vessels have also made SBT catches at offshore positions in 2017 and 2019. The ZAC fleet comprises 2-4 larger vessels (48-50m LOA) that can fish further offshore and in the high seas. No ZAC vessels fished in South Africa in 2020 due to the covid-19 pandemic and only 1 ZAC vessel was active 2021 and 2022.

3. Fisheries Monitoring for Each Fleet

3.1. 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 up until March 2011, 11-20% observer coverage was achieved on local vessels per year based on the total effort (number of hooks) deployed and 100% observer coverage on foreign-flagged (ZAC) vessels. 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. Observer coverage for joint-venture chartered (ZAC) vessels has continued with 100% of fishing trips observed. Furthermore, increased sampling of tuna pole-line vessels is conducted during offloading in port by land-based scientific observers.

The observers collect all operational, catch (retained and discard), effort and length frequency data, and biological material when required. The observers record data on the following South West Indian Ocean Fisheries Program (SWIOFP) 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

With the change in 2015 in the large pelagic longline fishery policy regarding JV vessels, the decline in the number of JV (ZAC) vessels has led to a decline in observer coverage in recent years. Total observer coverage has decreased from 1 068.1 thousand hooks in 2017 to 316 thousand hooks in 2023. This resulted in a decrease of percentage observer coverage from 39.9% in 2017 to 11% in 2023. Although there is a decrease in percentage observer coverage, the number of observed trips on ZAD vessels has increased from as few as 3 trips prior to 2017, to between 20 and 39 trips a year since. The effective observer coverage of SBT effort (sets with at least one SBT) is summarized by fleet segment and statistical area in Table 1. The total number of SBT measurements taken by observers peaked in 2019 at N = 816, reducing from N = 373 in 2020 to N = 124 in 2023, attributed to the mixed targeting strategies of the ZAD vessels and the opportunistic capture of SBT.

The measurements equate to 26.1% of the total retained catch in 2019, down to 8.4% in 2023.

To further improve the spatio-temporal observer coverage for ZAD fleet segment, since 2018-2019 Section 16 (Observer Programme) of the Large Pelagic Longline Permit Conditions 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. The observer coverage for the 2023-2024 fishing season will be provided as part of the 2024 ERSWG data exchange and presented in the South Africa's National Report to the Extended Scientific Commission. Initial analysis indicate that the observer coverage for ZAD could be further improved, while ZAC observer coverage at 100% in line with permit conditions.

3.2. Logsheet data collection and verification

Vessels in the Large Pelagic Longline fishery and Tuna Pole-line fishery must 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 monthly. 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 setting and time of hauling, number of hooks set, reason for setting, float line length, branch line length, bait type, observer present (y/n), number of tori lines, sea surface temperature, light stick info, catch by species, weight and number, product type, non-retained species in numbers, number of SBT released alive and dead at sea.

3.3. 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.

3.4. 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. Transshipment of fish is not permitted at sea. Transshipments of fish in port require pre-authorization, issuance of a transshipment permit and is only allowed under the supervision of a Fisheries Control Officer. These measures have been in place since 1998.

4. Seabirds

Capture incidents of seabirds in observed sets that caught at least one SBT in between 2019 and 2023 are summarized in Table 2 for ZAD and ZAC vessels. A total of 62 seabirds (shy albatross, white-chinned petrel and black-browed albatross) were caught together with SBT, 58 of those reported as dead, with most captured in Statistical Area 15. In contrast, the total observed number of seabirds for the total observed hooks of

2.415 million hooks (incl. non-SBT sets) for 2019-2023 was 299 seabirds, including 66 shy albatross, 109 white-chinned petrel, 45 black-browed albatross and 60 Indian yellow-nosed albatross. Logbook bycatch records (incl. non-SBT sets) from unobserved ZAD reported an additional 39 seabirds (Table 3). Atlantic yellow-nosed albatross, appearing in observer records each year until 2019, have not been reported recently.

5. Non-target shark species

Capture incidents of sharks and rays in sets that caught at least one SBT between 2019 and 2023 are summarized in Table 4(a-e) for ZAC and ZAD vessels. Blue sharks and shortfin mako are the most common shark bycatch that are caught together with SBT. Thresher sharks (including bigeye threshers) have been caught regularly over this period. There were also unusually high catches of 102 silky sharks in Statistical Area 15 in 2021. In the total observed number of sharks for the total observed hooks (incl. non-SBT sets), 23 species of sharks and rays were reported in contrast with 14 species in the SBT-only sets. Logbook bycatch records from unobserved ZAD vessel trips (incl. non-SBT sets) provide additional information on non-target bycatch species (Table 5). It is important to note that mostly prohibited shark species are recorded as bycatch in the logbooks whereas commonly retained species, such as blue shark and shortfin mako would be recorded under the main species section unless released in larger numbers.

6. Marine Mammals and Marine Reptiles

Between 2019 and 2023 there were 49 observed capture incidents of turtles (green, loggerhead, leatherback) in longline sets that caught at least one SBT (Table 6). These turtles were either released alive (N=19) or in an "Other" state (N=30). By contrast, the total observed number of turtles (incl. non-SBT sets) for 2019-2023 was 233 turtles, comprising 162 loggerhead turtles, 30 green turtles and 27 leatherback turtles. Logbook bycatch records (incl. non-SBT sets) from unobserved ZAD vessels reported a comparably high number of 591 turtles caught in between 2019 and 2023 (299 Loggerhead turtles, 57 leatherback turtles, 9 green turtles and 226 unidentified turtles), of which all except 4 were released alive (Table 7).

The only marine mammal captures recorded by observers were Cape fur seals, released alive (N=12) or in an "Other" state (N=13) (Table 8). Far more Cape fur seals were reported by observers in non-SBT sets (N=49), along with six dolphins released alive between 2019 and 2023. However, like in 2018, the logbook bycatch records for 2021 revealed another incident of a pilot whale being caught in a long-line that could not be released alive. An interaction with a killer whale that was released alive was also recorded in the logbook records in 2023.

7. Mitigation Measures to Minimise Seabird and Other Species Bycatch

7.1. Seabirds

The start and completion of line setting must be conducted at night, defined by the period between nautical dusk and nautical dawn. Vessels must either fly a bird scaring line (tori line) during the setting of each longline or use line weighting (40 g or greater attached within 0.5 m of the hook, or 60 g or greater attached within 1 m of the hook, or 80 g or greater attached within 2 m of the hook). 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 to be kept to a minimum. The beams of deck lights must be directed towards the deck. All bait must be appropriately thawed, and where necessary, the swim bladder punctured to ensure rapid sinking of the bait.

All birds caught must 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 and 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 a second tori line must be flown, and branch lines (snoods) must 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 must 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 is present to investigate the nature of the high seabird mortality and that instructions given by the observer will be followed.

7.2. Sharks

The large pelagic longline permit conditions prohibit targeting of sharks. To enforce this, annual shark catches per right's holder must be less than 50% to comply with the permit conditions. If quarterly catches exceed 60% of the catch an observer must be taken on board for the remainder of the fishing season. The fins and trunks of all sharks caught must remain attached to the trunk naturally or via a cord. A precautionary upper catch limit (PUCL) for blue sharks is set at 1000 t total weight for the entire South African longline fishery and a quota of 154 t in the ICCAT region for shortfin mako sharks. Furthermore, the use of wire traces has been banned from the Large Pelagic Longline fishery as of 2017. Thresher sharks belonging to the genus *Alopias*, hammerhead sharks (belonging to genus *Sphyrna*), oceanic whitetip sharks, porbeagle sharks, dusky sharks and silky sharks shall not be retained on board the vessel.

Retention of shark species is not allowed on board a Tuna Pole and Line vessel.

7.3. Marine Turtles

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 h-oker 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.
- 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 ZAC 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.

8. Public relations

In addition to governmental activities, which communicated and disseminated through the Large Pelagic Management Working Group and the Scientific Large Pelagics and Sharks Working Group, DFFE conducts annual “road shows” where DFFE personnel visit various sites around the country to inform stakeholders about changes in permit conditions and reporting requirements. DFFE provides education materials in the form of booklets, bycatch species ID guides, guides for correct use of logbooks and bycatch handling guides.

South Africa is a member of three Regional Fisheries Management Organisations (RFMOs): The Indian Ocean Tuna Commission (IOTC), The International Commission for the Conservation of Atlantic Tunas (ICCAT) and The Commission for the Conservation of Southern Bluefin Tuna (CCSBT). As such, South Africa is required to provide information to each of these RFMOs, generally in the form of data submissions and reports. In terms of Ecologically Related Species, South Africa is required to submit an annual report to each RFMO indicating by catch trends and statistics. In addition, South Africa is required to submit numerous species-specific data submissions that detail catch and effort of our Large Pelagic Longline fishery. Scientific analyses are presented to regional and international working groups and are published in the form of numerous technical reports and peer reviewed scientific publications.

ERS Data Exchange and Dissemination

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-session 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.

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 DFFE 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 focused 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 20 degrees.

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. 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.

9. Information on other ERS (non-bycatch) such as prey and predator species

Killer whales and pilot whales have been observed mauling fish caught on the longline, and these depredations are recorded in the skipper logbooks. These data sets are currently being used for a regional study examining the effect of depredation on longline fleets in South Africa. In addition, South Africa is a collaborator of the project, "Population structure of IOTC species in the Indian Ocean: Estimation with next generation sequencing technologies and otolith micro-chemistry". The overall aim of the project is to develop a better understanding of the stock structure of tuna, billfish and sharks of the Indian Ocean using two independent, complementary techniques: genetics and otolith (or vertebrae) chemistry. The project intends to determine the degree of population structure and connectivity of the priority species of tuna, billfish and shark over a wide geographical range. Furthermore, the project aims also to develop and extend research networks among partners and to contribute to technical capacity building in participating coastal states.

10. Other

Nothing to report

11. Implementation of the IPOA-Seabirds and IPOA-Sharks

The Department, with the assistance of NGOs (e.g. Birdlife SA), assesses the impact of longline fisheries on seabirds, turtles and sharks and to investigate various mitigation and management measures.

11.1. NPOA Birds

A National Plan of Action for seabirds (NPOA-seabirds) was published in 2008, which aimed to reduce seabird mortalities below 0.05 seabirds.1000 hooks-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 indicates that seabird mortalities have decreased.

South Africa is in the process of reviewing and updating its NPOA-seabirds and a final draft is expected to be completed by mid-year.

11.2. NPOA Sharks

The South African National Plan of Action for sharks (NPOA-Sharks) was finalised in 2013 and provided information on the status of chondrichthyans in South Africa and examined structure, mechanisms and regulatory framework related to research, management, monitoring, and enforcement associated with shark fishing and trade of shark product in the South African context. This information was used to identify, group and prioritize issues particular to South African chondrichthyan resources that require intervention in the forms of specific actions, associated responsibilities and time frames. It provides a guideline for identifying and resolving the outstanding issues around management and conservation of sharks to ensure their optimal, long term, sustainable use for the benefit of all South Africans.

Integral to the NPOA for Sharks -South Africa was the list of issues to be addressed in terms of improving sources of data, addressing scientific knowledge on common and cryptic species and thereby improving the management of chondrichthyan fisheries. In 2018, DAFF updated and reviewed the NPOA which was presented at the IOTC WPEB14 (da Silva et al., 2018).

https://www.iotc.org/sites/default/files/documents/2018/09/IOTC-2018-WPEB14-11_Rev1.pdf

The review indicated that progress was made in six of the seven “Issue Clusters” and within most 22 issues highlighted in the NPOA Sharks SA. Most notable progress was made within the optimum use (100% of listed actions completed) and classification and assessment of species (84% of listed actions completed) issue clusters. The least progress was made in the data and reporting and regulatory tools issue clusters.

In May 2020, following public concern about shark populations along the South African coast, The Minister of Environment, Forestry and Fisheries, Ms Barbara Creecy, appointed an External Panel to formally review the NPOA-Sharks I. The Expert panel was tasked to provide an independent critical appraisal of the NPOA-Sharks I, to review the progress made with implementation of the plan and to provide input towards an updated and improved NPOA. The Expert panel scrutinised 60 background documents and reviewed the 62 actions of NPOA-Sharks I and provided scores for each section. The external experts commended the external review process as a unique example of accountability and transparency that highlighted the Departments’ commitment to conserve shark species and properly manage their long-term sustainable use. Overall, the review of the Panel was positive and acknowledged good progress with the foundational sections of the plan relating to research. They noted that in this context, South Africa’s plans and achievements compare well with the standard of developed countries such as the USA and Australia. To improve on sections where limited progress was made, specific recommendations were made for immediate implementation. These included but were not limited to effective communication and coordination from science

to policy, the need for measurable indicators to track progress of the updated plan and a stronger focus on illegal, unregulated, and unreported fishing (DEFF, 2020).

Emanating from this review, after an extensive stakeholder consultation phase, the revised NPOA-Sharks II (2022) builds on the achievements and lessons learned from NPOA-Sharks I and closely follows the recommendations of the Shark expert panel. In 2022, the NPOA-Sharks II was finalised and adopted. The NPOA-Sharks II was presented at the 2022 IOTC WPEB (*South Africa NPOA Sharks II. C. da Silva, S.E. Kerwath. IOTC-2022-WPEB18-10*).

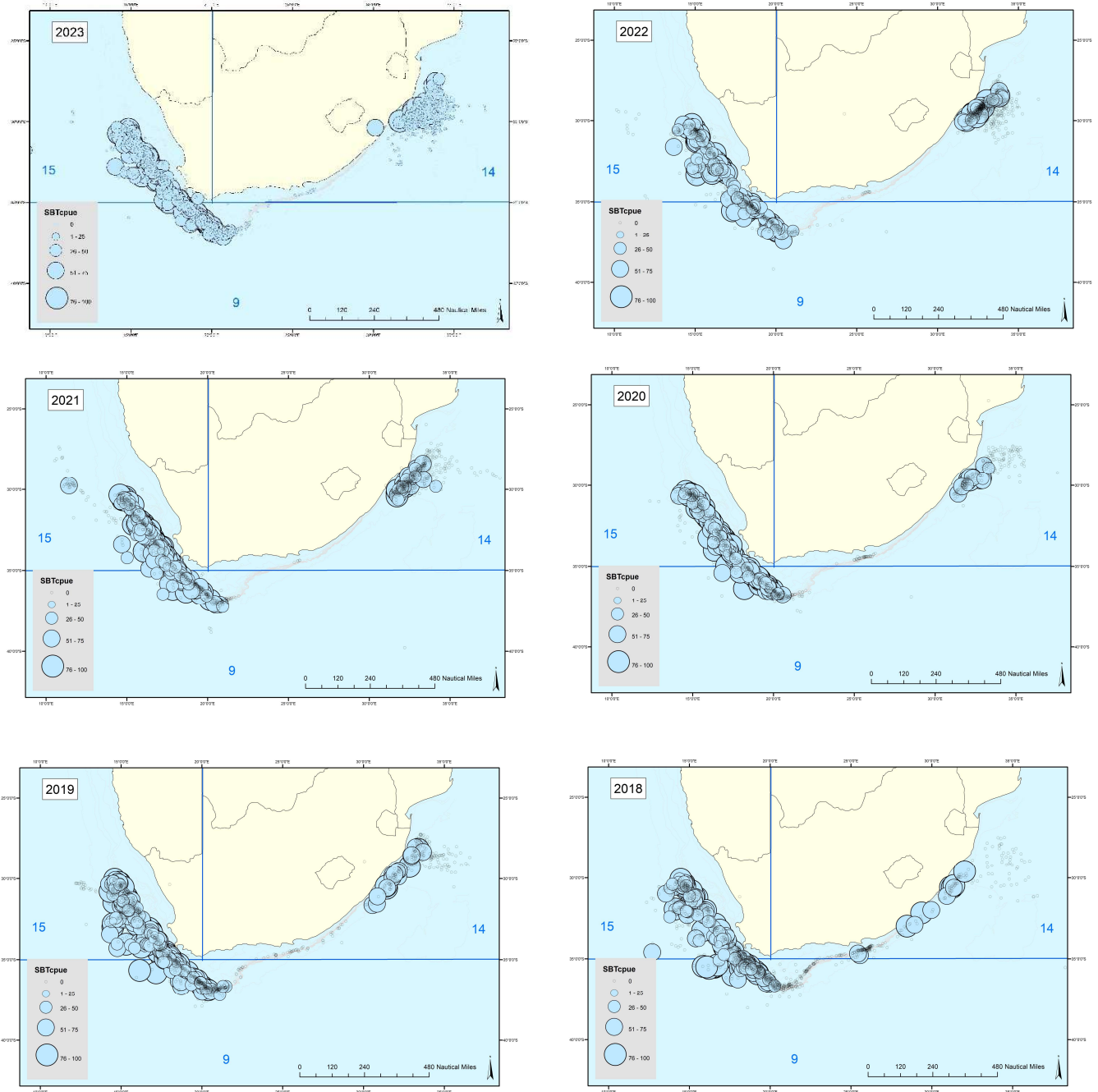


Figure 1. Annual distribution (2012 - 2023) of longline sets for the South African domestic vessels fleet (ZAD). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks.

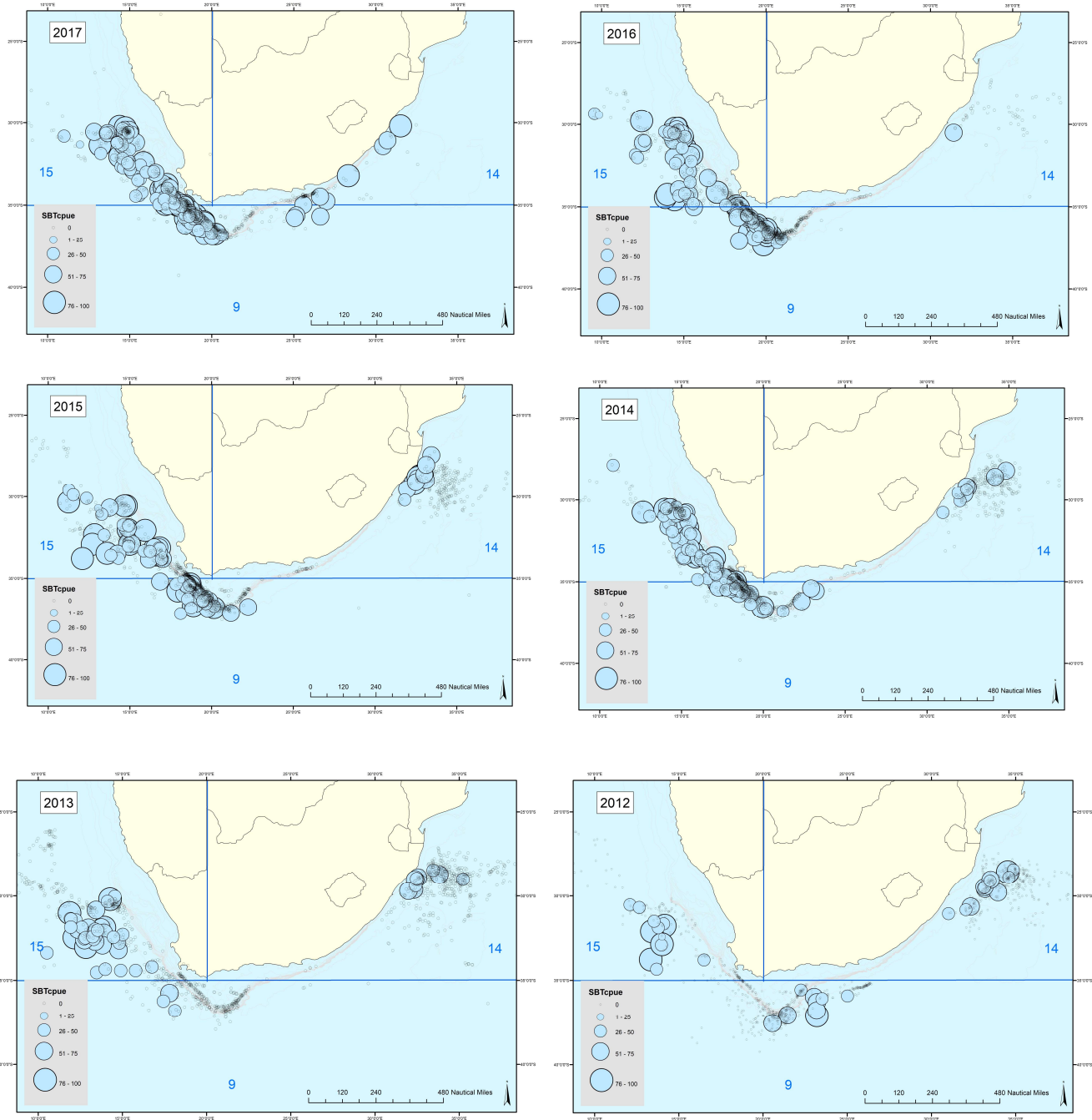


Figure 1 contd.. Annual distribution (2011 - 2022) of longline sets for the South African domestic vessels fleet (ZAD). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks.

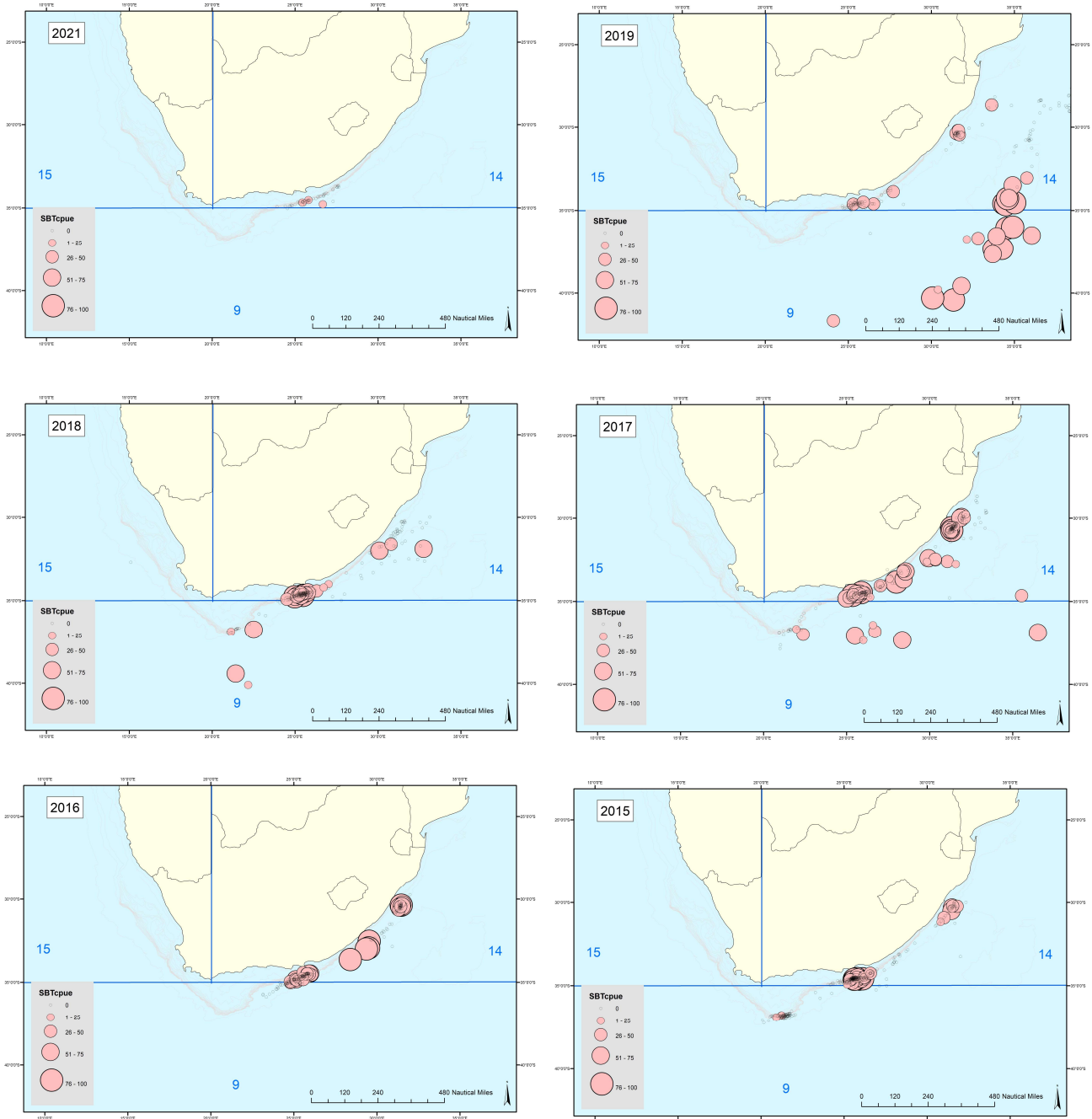


Figure 2. Annual distribution (2011 - 2021) of longline sets for the South African chartered (foreign flagged) vessels (ZAC). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks. No ZAC effort was present in 2020, 2022 and 2023.

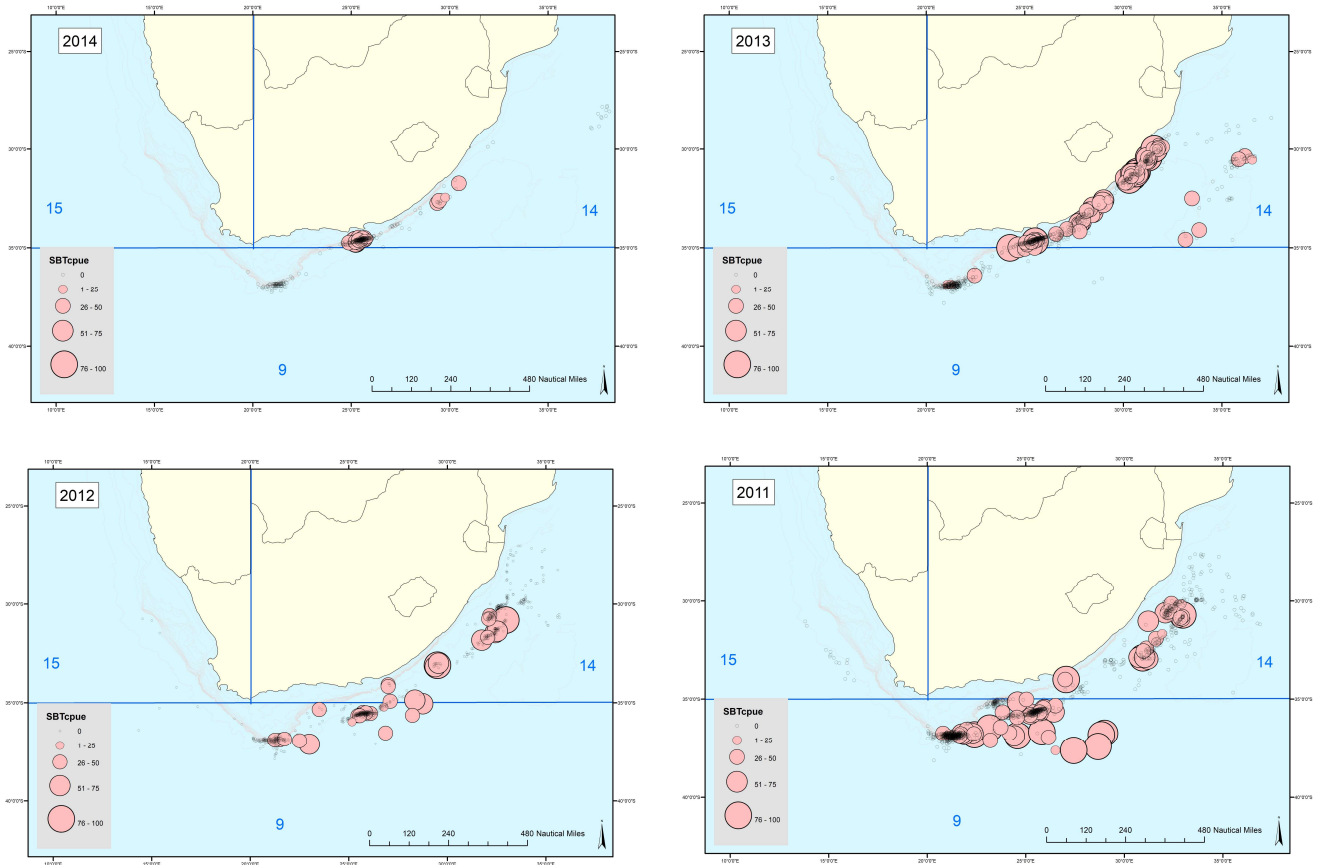


Figure 2 contd. Annual distribution (2011 - 2021) of longline sets for the South African chartered (foreign flagged) vessels (ZAC). The size of the bubble indicates the relative SBT catch per set in kg per 1000 hooks. No ZAC effort was present in 2020, 2022 and 2023.

Table 1 contd. Total fishing and observed effort for South Africa from 2019-2023 in the large pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Total & Observed Effort		Proportion of observed effort with specific mitigation measures								Others (add additional columns if required)
			Gear code	Fleet code		Longitude	Latitude	Total effort	Total observed effort	TP + NS	TP + WB	NS + WB	TP + WB + NS	TP	NS	WB	NIL	
ZA	2021	2	LL	ZAD	Human Obse	-30	15	121963	6000	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
ZA	2021	2	LL	ZAD	Human Obse	-35	15	4292	1512	0	0	1	0	0	0	0	0	
ZA	2021	2	LL	ZAD		-30	30	5736	-	-	-	-	-	-	-	-	-	
ZA	2021	2	LL	ZAD	Human Obse	-25	30	51727	25002	0	0	0.94	0	0	0	0.06	0	
ZA	2021	2	LL	ZAD		-30	10	4300	-	-	-	-	-	-	-	-	-	
ZA	2021	2	LL	ZAD	Human Obse	-25	10	1500	1500	0	0	1	0	0	0	0	0	
Foreign flag	2021	2	LL	ZAC	Human Obse	-40	20	6876	6876	0	0	0	1	0	0	0	0	
Foreign flag	2021	2	LL	ZAC	Human Obse	-40	25	9240	9240	0	0	0	1	0	0	0	0	
Foreign flag	2021	2	LL	ZAC	Human Obse	-30	25	9228	9228	0	0	0	1	0	0	0	0	
ZA	2021	3	LL	ZAD	Human Obse	-30	15	182220	17097	0	0	0.3088	0.6912	0	0	0	0	
ZA	2021	3	LL	ZAD	Human Obse	-35	15	100311	17897	0	0	0	1	0	0	0	0	
ZA	2021	3	LL	ZAD		-25	30	44413	-	-	-	-	-	-	-	-	-	
ZA	2021	3	LL	ZAD		-30	30	23095	-	-	-	-	-	-	-	-	-	
ZA	2021	3	LL	ZAD		-35	20	15126	-	-	-	-	-	-	-	-	-	
ZA	2021	3	LL	ZAD	Human Obse	-30	10	25710	15338	0	0	0	1	0	0	0	0	
ZA	2021	4	LL	ZAD		-35	15	2754	-	-	-	-	-	-	-	-	-	
ZA	2021	4	LL	ZAD		-30	15	40201	-	-	-	-	-	-	-	-	-	
ZA	2022	2	LL	ZAD		-35	20	3276	-	-	-	-	-	-	-	-	-	
ZA	2022	2	LL	ZAD		-30	30	7900	-	-	-	-	-	-	-	-	-	
ZA	2022	2	LL	ZAD		-30	10	1250	-	-	-	-	-	-	-	-	-	
ZA	2022	2	LL	ZAD		-30	15	48703	-	-	-	-	-	-	-	-	-	
ZA	2022	2	LL	ZAD		-35	15	12889	-	-	-	-	-	-	-	-	-	
ZA	2022	2	LL	ZAD		-25	30	70118	-	-	-	-	-	-	-	-	-	
ZA	2022	3	LL	ZAD		-25	30	64396	-	-	-	-	-	-	-	-	-	
ZA	2022	3	LL	ZAD	Human Obse	-30	15	91080	8023	0	0	0.3567	0.6433	0	0	0	0	
ZA	2022	3	LL	ZAD	Human Obse	-35	15	103809	1135	0	0	1	0	0	0	0	0	
ZA	2022	3	LL	ZAD		-35	20	8027	-	-	-	-	-	-	-	-	-	
ZA	2022	3	LL	ZAD		-30	30	2800	-	-	-	-	-	-	-	-	-	
ZA	2022	3	LL	ZAD		-30	10	19978	-	-	-	-	-	-	-	-	-	
ZA	2022	4	LL	ZAD	Human Obse	-30	15	28890	3012	0	0	1	0	0	0	0	0	
ZA	2022	4	LL	ZAD	Human Obse	-30	10	13038	6000	0	0	1	0	0	0	0	0	
ZA	2022	4	LL	ZAD	Human Obse	-35	20	7433	1386	0	0	1	0	0	0	0	0	
ZA	2022	4	LL	ZAD	Human Obse	-35	15	19662	2898	0	0	1	0	0	0	0	0	
ZA	2023	1	LL	ZAD		-30	5	1400	-	-	-	-	-	-	-	-	-	
ZA	2023	2	LL	ZAD	Human Obse	-30	15	84567	4120	0	0	0.3204	0.6796	0	0	0	0	
ZA	2023	2	LL	ZAD	Human Obse	-35	15	43210	5840	0	0	0.5034	0.4966	0	0	0	0	
ZA	2023	2	LL	ZAD	Human Obse	-35	20	14983	1745	0	0	1	0	0	0	0	0	
ZA	2023	2	LL	ZAD	Human Obse	-30	10	14700	6400	0	0	0	1	0	0	0	0	
ZA	2023	2	LL	ZAD	Human Obse	-25	30	38821	4872	0	0	0	0	0	1	0	0	
ZA	2023	2	LL	ZAD		-30	30	4800	-	-	-	-	-	-	-	-	-	
ZA	2023	3	LL	ZAD		-35	20	23355	-	-	-	-	-	-	-	-	-	
ZA	2023	3	LL	ZAD	Human Obse	-35	15	132395	18105	0	0	0.5311	0.3579	0	0.111	0	0	
ZA	2023	3	LL	ZAD	Human Obse	-30	15	114324	22988	0	0	0.0713	0.9287	0	0	0	0	
ZA	2023	3	LL	ZAD	Human Obse	-25	30	52387	4907	0	0	0.3566	0	0	0	0.643	0	
ZA	2023	3	LL	ZAD		-30	10	16662	-	-	-	-	-	-	-	-	-	
ZA	2023	3	LL	ZAD		-30	30	7383	-	-	-	-	-	-	-	-	-	
ZA	2023	4	LL	ZAD	Human Obse	-35	15	23171	5224	0	0	1	0	0	0	0	0	
ZA	2023	4	LL	ZAD	Human Obse	-30	15	39682	4914	0	0	1	0	0	0	0	0	
ZA	2023	4	LL	ZAD	Human Obse	-30	10	6591	2790	0	0	1	0	0	0	0	0	

Table 2. Observed (human observer) captures/mortalities of seabirds for South Africa from 2019 - 2023 in the pelagic longline fishery, for sets where at least one SBT was caught.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Gro	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	25	PRO	Procellaria aequ	10	0	0	0	White-chinned petrel
ZA	2020	2	LL	ZAD	Human Obse	-30	15	DIM	Thalassarche m	8	0	2	0	Black-browed albatross
ZA	2020	2	LL	ZAD	Human Obse	-30	15	DCU	Thalassarche ca	2	0	0	0	Shy albatross
ZA	2020	3	LL	ZAD	Human Obse	-30	15	DCU	Thalassarche ca	3	5	0	0	Shy albatross
ZA	2020	3	LL	ZAD	Human Obse	-30	15	DIM	Thalassarche m	3	1	0	0	Black-browed albatross
ZA	2020	3	LL	ZAD	Human Obse	-30	15	PRO	Procellaria aequ	2	0	0	0	White-chinned petrel
ZA	2021	2	LL	ZAD	Human Obse	-30	15	DCU	Thalassarche ca	2	2	0	0	Shy albatross
ZA	2022	4	LL	ZAD	Human Obse	-35	15	DIM	Thalassarche m	0	0	2	0	Black-browed albatross
ZA	2023	2	LL	ZAD	Human Obse	-30	15	DIM	Thalassarche m	0	0	0	3	Black-browed albatross
ZA	2023	2	LL	ZAD	Human Obse	-30	10	DIM	Thalassarche m	2	0	0	0	Black-browed albatross
ZA	2023	3	LL	ZAD	Human Obse	-30	15	DIM	Thalassarche m	13	1	0	0	Black-browed albatross
ZA	2023	3	LL	ZAD	Human Obse	-30	15	DCU	Thalassarche ca	2	0	0	0	Shy albatross
ZA	2023	3	LL	ZAD	Human Obse	-30	15	PRO	Procellaria aequ	2	0	0	0	White-chinned petrel

Table 3. Total bycatch of seabirds reported in logbooks of the South African longline fishery (incl. non SBT sets) for 2019-2023 in the pelagic longline fishery.

Year	Species	N Captures	N Dead	N Alive	Mortality (%)
2019	Albatrosses nei	4	3	1	75
2019	Seagulls nei	1	1	0	100
2019	White-chinned petrel	3	2	1	67
2020	Albatrosses nei	3	1	2	33
2020	Shy albatross	5	1	4	20
2020	Seagulls nei	1	0	1	0
2021	Albatrosses nei	2	1	1	50
2021	Seagulls nei	1	1	0	100
2021	Shearwaters nei	1	1	0	100
2022	Albatrosses nei	5	3	2	60
2022	Seagulls nei	1	1	0	100
2023	Albatrosses nei	10	2	8	20
2023	Shy albatross	1	0	1	0
2023	Seagulls nei	1	1	0	100

Table 4a. Observed (human observer) captures/mortalities of sharks for South Africa for 2019 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Group	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
ZA	2019	1	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	55	1	0	0	Blue shark
ZA	2019	1	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinch	1	0	0	0	Shortfin mako
ZA	2019	2	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	0	2	41	0	Blue shark
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	30	BSH	Prionace glauca	19	0	0	0	Blue shark
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	25	BSH	Prionace glauca	1	0	0	0	Blue shark
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	30	ALV	Alopias vulpint	0	2	0	0	Thresher
ZA	2019	2	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	0	0	21	0	Blue shark
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	30	PTH	Alopias pelagic	0	0	2	0	Pelagic thresher
ZA	2019	2	LL	ZAD	Human Obse	-30	15	PTH	Alopias pelagic	0	0	2	2	Pelagic thresher
ZA	2019	2	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinch	6	0	2	0	Shortfin mako
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	30	SMA	Isurus oxyrinch	2	0	0	0	Shortfin mako
Foreign flag	2019	2	LL	ZAC	Human Obse	-30	25	SMA	Isurus oxyrinch	6	0	0	0	Shortfin mako
ZA	2019	2	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinch	2	0	0	0	Shortfin mako
ZA	2019	2	LL	ZAD	Human Obse	-30	10	PLS	Dasyatis violac	0	0	1	0	Pelagic stingray
ZA	2019	3	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	325	28	263	55	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-30	10	BTH	Alopias superci	0	2	0	4	Bigeye thresher
ZA	2019	3	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	164	4	156	136	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-30	15	FAL	Carcharhinus fa	0	2	0	0	Silky shark
ZA	2019	3	LL	ZAD	Human Obse	-30	15	BTH	Alopias superci	0	6	0	4	Bigeye thresher
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	30	BSH	Prionace glauca	44	32	94	0	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-40	20	BSH	Prionace glauca	49	17	46	0	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	35	BSH	Prionace glauca	7	7	42	0	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-25	30	FAL	Carcharhinus fa	0	0	0	24	Silky shark
ZA	2019	3	LL	ZAD	Human Obse	-25	30	BSH	Prionace glauca	0	0	0	7	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-40	25	BSH	Prionace glauca	83	18	88	0	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	25	BSH	Prionace glauca	100	10	23	0	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-40	30	BSH	Prionace glauca	39	4	16	0	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-25	30	BSH	Prionace glauca	2	0	0	0	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-30	30	BSH	Prionace glauca	2	15	0	0	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	0	0	110	0	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-30	30	BSH	Prionace glauca	12	0	0	6	Blue shark
Foreign flag	2019	3	LL	ZAC	Human Obse	-30	25	BSH	Prionace glauca	2	0	3	0	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-30	30	FAL	Carcharhinus fa	0	0	0	8	Silky shark
ZA	2019	3	LL	ZAD	Human Obse	NULL	NULL	BSH	Prionace glauca	17	0	0	0	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-35	20	BSH	Prionace glauca	0	5	14	0	Blue shark
ZA	2019	3	LL	ZAD	Human Obse	-30	10	POR	Lamna nasus	0	6	0	2	Porbeagle
ZA	2019	3	LL	ZAD	Human Obse	-25	30	PTH	Alopias pelagic	0	0	0	2	Pelagic thresher
ZA	2019	3	LL	ZAD	Human Obse	-30	30	PTH	Alopias pelagic	0	0	0	4	Pelagic thresher
ZA	2019	3	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	101	0	0	0	Mako sharks
ZA	2019	3	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinch	37	0	0	0	Shortfin mako
ZA	2019	3	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinch	61	1	14	0	Shortfin mako
ZA	2019	3	LL	ZAD	Human Obse	-30	15	THR	Alopias spp	0	1	13	3	Thresher sharks nei
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	30	SMA	Isurus oxyrinch	2	4	12	0	Shortfin mako
ZA	2019	3	LL	ZAD	Human Obse	-30	10	MAK	Isurus spp	43	0	0	0	Mako sharks
Foreign flag	2019	3	LL	ZAC	Human Obse	-40	20	SMA	Isurus oxyrinch	0	8	41	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	35	SMA	Isurus oxyrinch	0	3	4	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-30	30	MAK	Isurus spp	3	0	0	0	Mako sharks
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	30	MAK	Isurus spp	6	0	0	0	Mako sharks
Foreign flag	2019	3	LL	ZAC	Human Obse	-40	25	SMA	Isurus oxyrinch	2	0	0	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	25	SMA	Isurus oxyrinch	3	3	0	0	Shortfin mako
ZA	2019	3	LL	ZAD	Human Obse	-25	30	SMA	Isurus oxyrinch	1	0	0	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	25	MAK	Isurus spp	2	3	0	0	Mako sharks
ZA	2019	3	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinch	6	0	0	0	Shortfin mako
ZA	2019	3	LL	ZAD	Human Obse	-30	10	THR	Alopias spp	0	0	0	4	Thresher sharks nei
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	35	MAK	Isurus spp	8	0	0	0	Mako sharks
ZA	2019	3	LL	ZAD	Human Obse	-30	30	SMA	Isurus oxyrinch	3	0	0	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-30	25	SMA	Isurus oxyrinch	1	0	0	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-35	30	SPN	Sphyrna spp	0	1	0	0	Hammerhead sharks
ZA	2019	3	LL	ZAD	Human Obse	-30	30	PLS	Dasyatis violac	0	0	0	1	Pelagic stingray
ZA	2019	3	LL	ZAD	Human Obse	-35	20	MAK	Isurus spp	3	2	3	0	Mako sharks
Foreign flag	2019	3	LL	ZAC	Human Obse	-30	25	MAK	Isurus spp	1	0	0	0	Mako sharks
ZA	2019	3	LL	ZAD	Human Obse	NULL	NULL	SMA	Isurus oxyrinch	6	0	0	0	Shortfin mako
Foreign flag	2019	3	LL	ZAC	Human Obse	-40	20	THR	Alopias spp	0	0	1	0	Thresher sharks nei
ZA	2019	4	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	45	11	0	0	Blue shark
ZA	2019	4	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	6	0	0	0	Blue shark
ZA	2019	4	LL	ZAD	Human Obse	-35	15	MAK	Isurus spp	34	0	0	0	Mako sharks

Table 4b. Observed (human observer) captures/mortalities of sharks for South Africa for 2020 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Gro	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
ZA	2020	2	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	8	36	188	187	Blue shark
ZA	2020	2	LL	ZAD	Human Obse	-35	20	BSH	Prionace glauca	0	2	17	0	Blue shark
ZA	2020	2	LL	ZAD	Human Obse	-30	15	ALV	Alopias vulpinu	0	0	0	3	Thresher
ZA	2020	2	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	0	11	12	0	Blue shark
ZA	2020	2	LL	ZAD	Human Obse	-30	15	BRO	Carcharhinus br	0	0	1	0	Copper shark
ZA	2020	2	LL	ZAD	Human Obse	-30	15	FAL	Carcharhinus fa	0	4	5	0	Silky shark
ZA	2020	2	LL	ZAD	Human Obse	-25	30	BRO	Carcharhinus br	0	2	2	0	Copper shark
ZA	2020	2	LL	ZAD	Human Obse	-25	30	BSH	Prionace glauca	1	0	0	0	Blue shark
ZA	2020	2	LL	ZAD	Human Obse	-30	30	BSH	Prionace glauca	2	0	0	0	Blue shark
ZA	2020	2	LL	ZAD	Human Obse	-30	30	ALV	Alopias vulpinu	0	0	1	0	Thresher
ZA	2020	2	LL	ZAD	Human Obse	-25	30	RMB	Manta birostris	0	0	0	1	Giant manta
ZA	2020	2	LL	ZAD	Human Obse	-35	20	SMA	Isurus oxyrinchu	1	0	0	0	Shortfin mako
ZA	2020	2	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinchu	37	4	2	12	Shortfin mako
ZA	2020	2	LL	ZAD	Human Obse	-30	10	THR	Alopias spp	2	6	8	0	Thresher sharks nei
ZA	2020	2	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinchu	24	0	0	0	Shortfin mako
ZA	2020	2	LL	ZAD	Human Obse	-30	15	THR	Alopias spp	0	2	10	6	Thresher sharks nei
ZA	2020	2	LL	ZAD	Human Obse	-30	15	PLS	Dasyatis violac	0	0	1	0	Pelagic stingray
ZA	2020	2	LL	ZAD	Human Obse	-30	30	MAK	Isurus spp	1	0	0	0	Mako sharks
ZA	2020	3	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	0	82	80	36	Blue shark
ZA	2020	3	LL	ZAD	Human Obse	-30	15	BTH	Alopias superci	0	2	17	3	Bigeye thresher
ZA	2020	3	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	15	97	204	4	Blue shark
ZA	2020	3	LL	ZAD	Human Obse	-35	15	BTH	Alopias superci	0	2	1	0	Bigeye thresher
ZA	2020	3	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	0	5	5	0	Blue shark
ZA	2020	3	LL	ZAD	Human Obse	-35	15	ALV	Alopias vulpinu	0	0	2	0	Thresher
ZA	2020	3	LL	ZAD	Human Obse	-30	30	ALS	Carcharhinus al	0	0	1	0	Silvertip shark
ZA	2020	3	LL	ZAD	Human Obse	-30	15	ALV	Alopias vulpinu	0	0	3	0	Thresher
ZA	2020	3	LL	ZAD	Human Obse	-30	30	BSH	Prionace glauca	2	0	0	0	Blue shark
ZA	2020	3	LL	ZAD	Human Obse	-35	15	PTH	Alopias pelagic	0	6	1	2	Pelagic thresher
ZA	2020	3	LL	ZAD	Human Obse	-30	15	STI	Dasyatis spp	0	0	0	1	Stingrays nei
ZA	2020	3	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	87	0	1	1	Mako sharks
ZA	2020	3	LL	ZAD	Human Obse	-35	15	MAK	Isurus spp	6	0	0	0	Mako sharks
ZA	2020	3	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinchu	21	0	4	0	Shortfin mako
ZA	2020	3	LL	ZAD	Human Obse	-30	10	MAK	Isurus spp	1	0	0	0	Mako sharks
ZA	2020	3	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinchu	0	22	8	0	Shortfin mako
ZA	2020	3	LL	ZAD	Human Obse	-30	30	MAK	Isurus spp	3	0	0	0	Mako sharks
ZA	2020	3	LL	ZAD	Human Obse	-30	15	PLS	Dasyatis violac	0	0	1	0	Pelagic stingray
ZA	2020	4	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	47	18	9	2	Blue shark
ZA	2020	4	LL	ZAD	Human Obse	-30	15	BTH	Alopias superci	0	0	0	2	Bigeye thresher
ZA	2020	4	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	14	0	0	2	Mako sharks
ZA	2020	4	LL	ZAD	Human Obse	-30	15	PLS	Dasyatis violac	0	0	1	0	Pelagic stingray

Table 4c. Observed (human observer) captures/mortalities of sharks for South Africa for 2021 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Gro	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
Foreign flag	2021	2	LL	ZAC	Human Obse	-30	25	BSH	Prionace glauca	8	0	0	0	Blue shark
ZA	2021	2	LL	ZAD	Human Obse	-25	30	BSH	Prionace glauca	0	55	28	0	Blue shark
ZA	2021	2	LL	ZAD	Human Obse	-35	15	BTH	Alopias superci	0	0	1	0	Bigeye thresher
ZA	2021	2	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	0	6	13	0	Blue shark
ZA	2021	2	LL	ZAD	Human Obse	-25	30	FAL	Carcharhinus fa	0	84	18	0	Silky shark
ZA	2021	2	LL	ZAD	Human Obse	-30	15	BTH	Alopias superci	0	2	20	0	Bigeye thresher
ZA	2021	2	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	53	12	24	0	Blue shark
ZA	2021	2	LL	ZAD	Human Obse	-25	30	BTH	Alopias superci	0	4	0	0	Bigeye thresher
ZA	2021	2	LL	ZAD	Human Obse	-25	30	MNT	Manta spp	0	0	0	6	Manta rays
ZA	2021	2	LL	ZAD	Human Obse	-25	30	OCS	Carcharhinus lo	0	2	1	0	Oceanic whitetip sha
ZA	2021	2	LL	ZAD	Human Obse	-25	30	TIG	Galeocerdo cuv	0	0	1	0	Tiger shark
ZA	2021	2	LL	ZAD	Human Obse	-25	30	PTH	Alopias pelagic	0	3	0	0	Pelagic thresher
Foreign flag	2021	2	LL	ZAC	Human Obse	-30	25	SMA	Isurus oxyrinchu	0	1	2	0	Shortfin mako
Foreign flag	2021	2	LL	ZAC	Human Obse	-40	20	SMA	Isurus oxyrinchu	0	4	2	2	Shortfin mako
ZA	2021	2	LL	ZAD	Human Obse	-25	30	SMA	Isurus oxyrinchu	0	0	3	0	Shortfin mako
Foreign flag	2021	2	LL	ZAC	Human Obse	-40	25	SMA	Isurus oxyrinchu	0	3	6	3	Shortfin mako
ZA	2021	2	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	12	0	0	0	Mako sharks
ZA	2021	2	LL	ZAD	Human Obse	-25	10	MAK	Isurus spp	1	0	0	0	Mako sharks
ZA	2021	3	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	3	2	0	31	Blue shark
ZA	2021	3	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	14	63	92	53	Blue shark
ZA	2021	3	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	218	142	199	185	Blue shark
ZA	2021	3	LL	ZAD	Human Obse	-30	10	ALV	Alopias vulpinu	0	3	0	7	Thresher
ZA	2021	3	LL	ZAD	Human Obse	-30	10	BRO	Carcharhinus br	0	1	0	0	Copper shark
ZA	2021	3	LL	ZAD	Human Obse	-30	15	ALV	Alopias vulpinu	0	0	0	1	Thresher
ZA	2021	3	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinchu	92	1	1	0	Shortfin mako
ZA	2021	3	LL	ZAD	Human Obse	-30	10	MAK	Isurus spp	27	0	0	0	Mako sharks
ZA	2021	3	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinchu	1	0	0	1	Shortfin mako
ZA	2021	3	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	11	3	0	0	Mako sharks
ZA	2021	3	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinchu	19	0	0	0	Shortfin mako
ZA	2021	3	LL	ZAD	Human Obse	-35	15	THR	Alopias spp	0	0	0	2	Thresher sharks nei

Table 4d. Observed (human observer) captures/mortalities of sharks for South Africa for 2022 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Gro	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
ZA	2022	3	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	40	27	41	30	Blue shark
ZA	2022	3	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	12	0	10	0	Blue shark
ZA	2022	3	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinch	18	0	0	0	Shortfin mako
ZA	2022	3	LL	ZAD	Human Obse	-30	15	THR	Alopias spp	0	0	1	4	Thresher sharks nei
ZA	2022	3	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	1	0	0	8	Mako sharks
ZA	2022	3	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinch	2	0	0	0	Shortfin mako
ZA	2022	4	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	0	0	80	0	Blue shark
ZA	2022	4	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	0	0	44	0	Blue shark
ZA	2022	4	LL	ZAD	Human Obse	-35	20	BSH	Prionace glauca	0	0	9	0	Blue shark
ZA	2022	4	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	0	0	65	0	Blue shark
ZA	2022	4	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinch	13	0	0	0	Shortfin mako
ZA	2022	4	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinch	1	0	0	0	Shortfin mako
ZA	2022	4	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinch	4	0	0	0	Shortfin mako

Table 4e. Observed (human observer) captures/mortalities of sharks for South Africa for 2023 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Gro	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitud	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
ZA	2023	1	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	9	6	24	0	Blue shark
ZA	2023	1	LL	ZAD	Human Obse	-30	15	PTH	Alopias pelagic	0	0	1	0	Pelagic thresher
ZA	2023	1	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinchu	10	0	0	0	Shortfin mako
ZA	2023	2	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	0	6	3	15	Blue shark
ZA	2023	2	LL	ZAD	Human Obse	-30	15	ALV	Alopias vulpinu	0	6	0	3	Thresher
ZA	2023	2	LL	ZAD	Human Obse	-35	20	BSH	Prionace glauca	2	0	0	0	Blue shark
ZA	2023	2	LL	ZAD	Human Obse	-25	30	FAL	Carcharhinus fa	0	0	0	14	Silky shark
ZA	2023	2	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	30	21	90	0	Blue shark
ZA	2023	2	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	1	4	0	10	Blue shark
ZA	2023	2	LL	ZAD	Human Obse	-35	15	ALV	Alopias vulpinu	0	5	0	1	Thresher
ZA	2023	2	LL	ZAD	Human Obse	-30	10	ALV	Alopias vulpinu	0	1	0	0	Thresher
ZA	2023	2	LL	ZAD	Human Obse	-35	15	FAL	Carcharhinus fa	0	1	0	0	Silky shark
ZA	2023	2	LL	ZAD	Human Obse	-30	10	POR	Lamna nasus	0	0	1	0	Porbeagle
ZA	2023	2	LL	ZAD	Human Obse	-35	15	PTH	Alopias pelagic	0	2	4	0	Pelagic thresher
ZA	2023	2	LL	ZAD	Human Obse	-30	10	PTH	Alopias pelagic	0	1	2	0	Pelagic thresher
ZA	2023	2	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinchu	2	0	0	7	Shortfin mako
ZA	2023	2	LL	ZAD	Human Obse	-35	20	MAK	Isurus spp	2	0	0	0	Mako sharks
ZA	2023	2	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinchu	23	0	2	0	Shortfin mako
ZA	2023	2	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinchu	13	0	0	1	Shortfin mako
ZA	2023	2	LL	ZAD	Human Obse	-35	15	THR	Alopias spp	0	0	0	12	Thresher sharks nei
ZA	2023	2	LL	ZAD	Human Obse	-35	15	MAK	Isurus spp	5	0	0	2	Mako sharks
ZA	2023	3	LL	ZAD	Human Obse	-30	15	BSH	Prionace glauca	119	10	75	3	Blue shark
ZA	2023	3	LL	ZAD	Human Obse	-35	15	BTH	Alopias superci	0	0	0	3	Bigeye thresher
ZA	2023	3	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	27	0	10	91	Blue shark
ZA	2023	3	LL	ZAD	Human Obse	-25	30	FAL	Carcharhinus fa	0	0	0	12	Silky shark
ZA	2023	3	LL	ZAD	Human Obse	-25	30	BSH	Prionace glauca	0	0	0	1	Blue shark
ZA	2023	3	LL	ZAD	Human Obse	-30	15	STT	Dasyatidae	0	0	1	0	Stingrays, butterfly r
ZA	2023	3	LL	ZAD	Human Obse	-30	15	PTH	Alopias pelagic	0	3	10	0	Pelagic thresher
ZA	2023	3	LL	ZAD	Human Obse	-35	15	PTH	Alopias pelagic	0	0	1	0	Pelagic thresher
ZA	2023	3	LL	ZAD	Human Obse	-30	15	SMA	Isurus oxyrinchu	114	0	0	0	Shortfin mako
ZA	2023	3	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinchu	26	1	0	1	Shortfin mako
ZA	2023	3	LL	ZAD	Human Obse	-25	30	THR	Alopias spp	0	0	0	32	Thresher sharks nei
ZA	2023	3	LL	ZAD	Human Obse	-25	30	SMA	Isurus oxyrinchu	2	0	0	0	Shortfin mako
ZA	2023	3	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	5	0	0	0	Mako sharks
ZA	2023	4	LL	ZAD	Human Obse	-30	10	BSH	Prionace glauca	0	0	71	13	Blue shark
ZA	2023	4	LL	ZAD	Human Obse	-35	15	BSH	Prionace glauca	0	0	7	0	Blue shark
ZA	2023	4	LL	ZAD	Human Obse	-30	15	MAK	Isurus spp	15	0	0	0	Mako sharks
ZA	2023	4	LL	ZAD	Human Obse	-35	15	MAK	Isurus spp	2	0	0	0	Mako sharks
ZA	2023	4	LL	ZAD	Human Obse	-30	10	SMA	Isurus oxyrinchu	2	0	0	0	Shortfin mako
ZA	2023	4	LL	ZAD	Human Obse	-30	10	MAK	Isurus spp	2	0	0	0	Mako sharks
ZA	2023	4	LL	ZAD	Human Obse	-35	15	THR	Alopias spp	0	0	2	0	Thresher sharks nei
ZA	2023	4	LL	ZAD	Human Obse	-35	15	SMA	Isurus oxyrinchu	12	0	0	0	Shortfin mako

Table 5. Total bycatch of sharks and rays reported in logbooks of the South African longline fishery (incl. non SBT sets) for 2019 – 2023 in the pelagic longline fishery.

Year	Species	N Captures	N Dead	N Alive	Mortality (%)
2019	Blue shark	64	25	39	39.1
2019	Copper shark	58	11	47	19.0
2019	Dusky shark	1	0	1	0.0
2019	Hammerhead sharks nei	57	20	37	35.1
2019	Oceanic whitetip shark	29	2	27	6.9
2019	Pelagic stingray	6	0	6	0.0
2019	Porbeagle	12	8	4	66.7
2019	Silky shark	249	101	148	40.6
2019	Thresher	22	14	8	63.6
2019	Thresher sharks nei	435	153	282	35.2
2019	Tiger shark	2	0	2	0.0
2020	Blue shark	655	234	421	35.7
2020	Hammerhead sharks nei	55	18	37	32.7
2020	Oceanic whitetip shark	24	4	20	16.7
2020	Sharks, rays, skates, etc. nei	7	5	2	71.4
2020	Silky shark	122	67	55	54.9
2020	Thresher sharks nei	300	113	187	37.7
2021	Blacktip reef shark	1	1	0	100.0
2021	Blue shark	3090	982	2108	31.8
2021	Copper shark	18	6	12	33.3
2021	Hammerhead sharks nei	63	22	41	34.9
2021	Manta rays	2	0	2	0.0
2021	Mantas, devil rays nei	1	0	1	0.0
2021	Oceanic whitetip shark	151	18	133	11.9
2021	Pelagic stingray	2	0	2	0.0
2021	Sharks, rays, skates, etc. nei	2	0	2	0.0
2021	Silky shark	628	260	368	41.4
2021	Thresher sharks nei	457	136	321	29.8
2021	Tiger shark	3	0	3	0.0

Table 5 contd. Total bycatch of sharks and rays reported in logbooks of the South African longline fishery (incl. non SBT sets) for 2019 – 2023 in the pelagic longline fishery.

Year	Species	N Captures	N Dead	N Alive	Mortality (%)
2021	Whitespotted smooth-hound	1	0	1	0.0
2021	Whitetip reef shark	2	0	2	0.0
2022	Blue shark	1692	498	1194	29.4
2022	Copper shark	24	9	15	37.5
2022	Hammerhead sharks nei	33	11	22	33.3
2022	Manta rays	2	0	2	0.0
2022	Oceanic whitetip shark	280	16	264	5.7
2022	Porbeagle	1	1	0	100.0
2022	Silky shark	1005	400	605	39.8
2022	Thresher sharks nei	400	119	281	29.8
2022	Tiger shark	6	0	6	0.0
2023	Blue shark	2583	738	1845	28.6
2023	Copper shark	42	7	35	16.7
2023	Great hammerhead	2	1	1	50.0
2023	Hammerhead sharks nei	36	10	26	27.8
2023	Oceanic whitetip shark	242	3	239	1.2
2023	Pelagic stingray	15	0	15	0.0
2023	Porbeagle	8	3	5	37.5
2023	Silky shark	908	346	562	38.1
2023	Stingrays nei	4	0	4	0.0
2023	Thresher	27	8	19	29.6
2023	Thresher sharks nei	401	111	290	27.7
2023	Tiger shark	28	0	28	0.0
2023	Whitetip reef shark	15	0	15	0.0

Table 6. Observed (human observer) captures/mortalities of marine turtles for South Africa for 2019 - 2023 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Gro	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
ZA	2019	3	LL	ZAD	Human Obse	-30	10	TTX	Testudinata	0	0	2	0	Marine turtles nei
ZA	2020	2	LL	ZAD	Human Obse	-30	15	TUG	Chelonia mydas	0	0	1	1	Green turtle
ZA	2020	2	LL	ZAD	Human Obse	-30	15	TTL	Caretta caretta	0	0	3	15	Loggerhead turtle
ZA	2020	2	LL	ZAD	Human Obse	-30	15	TTX	Testudinata	0	0	2	4	Marine turtles nei
ZA	2020	2	LL	ZAD	Human Obse	-30	10	TTX	Testudinata	0	0	0	2	Marine turtles nei
ZA	2020	3	LL	ZAD	Human Obse	-30	15	TUG	Chelonia mydas	0	0	1	1	Green turtle
ZA	2020	3	LL	ZAD	Human Obse	-30	30	TTL	Caretta caretta	0	0	1	0	Loggerhead turtle
ZA	2020	4	LL	ZAD	Human Obse	-30	15	TTL	Caretta caretta	0	0	2	0	Loggerhead turtle
ZA	2021	2	LL	ZAD	Human Obse	-25	30	TTL	Caretta caretta	0	0	2	6	Loggerhead turtle
ZA	2021	3	LL	ZAD	Human Obse	-30	15	DKK	Dermochelys cc	0	0	2	0	Leatherback turtle
ZA	2023	2	LL	ZAD	Human Obse	-35	15	TUG	Chelonia mydas	0	0	1	1	Green turtle
ZA	2023	3	LL	ZAD	Human Obse	-35	15	TUG	Chelonia mydas	0	0	2	0	Green turtle

Table 7. Total bycatch of turtles reported in logbooks of the South African longline fishery (incl. non SBT sets) for 2020, 2021 and 2022 in the pelagic longline fishery.

Year	Species	N Captures	N Dead	N Alive	Mortality (%)
2019	Leatherback turtle	11	1	10	9.1
2019	Loggerhead turtle	29	0	29	0.0
2019	Marine turtles nei	25	0	25	0.0
2020	Leatherback turtle	3	0	3	0.0
2020	Loggerhead turtle	64	0	64	0.0
2020	Marine turtles nei	34	0	34	0.0
2021	Leatherback turtle	11	1	10	9.1
2021	Loggerhead turtle	50	1	49	2.0
2021	Marine turtles nei	64	0	64	0.0
2022	Green turtle	3	0	3	0.0
2022	Leatherback turtle	13	0	13	0.0
2022	Loggerhead turtle	75	0	75	0.0
2022	Marine turtles nei	37	0	37	0.0
2023	Green turtle	6	0	6	0.0
2023	Leatherback turtle	19	0	19	0.0
2023	Loggerhead turtle	81	1	80	1.2
2023	Marine turtles nei	66	0	66	0.0

Table 8. Observed (human observer) captures/mortalities of marine mammals for South Africa for 2019-2023 in the pelagic longline fishery.

Country/Fishing Entity	Calendar Year	Quarter	Fishery		Human Observer/E M	Area		Species code (or group code)	Species Scientific Name or Species Group	Observed captures Fate (numbers)				English name
			Gear code	Fleet code		Longitude	Latitude			Retained (dead)	Discarded (dead)	Released (live)	Other	
ZA	2019	3	LL	ZAD		-30	15	SEK	Arctocephalus	0	0	0	2	South African fur seal
ZA	2019	3	LL	ZAD		-35	15	SEK	Arctocephalus	0	0	2	0	South African fur seal
ZA	2020	3	LL	ZAD		-35	15	SEK	Arctocephalus	0	0	2	0	South African fur seal
ZA	2021	3	LL	ZAD		-30	10	SEK	Arctocephalus	0	0	0	5	South African fur seal
ZA	2022	3	LL	ZAD		-30	15	SEK	Arctocephalus	0	0	0	2	South African fur seal
ZA	2023	2	LL	ZAD		-30	10	SEK	Arctocephalus	0	0	2	0	South African fur seal
ZA	2023	3	LL	ZAD		-35	15	SEK	Arctocephalus	0	0	2	4	South African fur seal
ZA	2023	3	LL	ZAD		-30	15	SEK	Arctocephalus	0	0	4	0	South African fur seal