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SC-11-15

SIOFA Ecosystem Summary 2026

The SIOFA Secretariat

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| Abstract | |
| <p>This paper presents the SIOFA Ecosystem Summary 2026. The first draft of this document was originally prepared by the SIOFA Secretariat and presented during PAEWG4 and at SC7. SC8 further reviewed and endorsed this document, recommending its publication to MoP10, and the Summary was first published in 2023. Updated versions were published in 2024 and 2025. This new version of the Ecosystem Summary includes figures with data updated to 2024.</p> | |

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² Documents available only to members invited to closed sessions.

Recommendations

The SIOFA Secretariat recommends that the SC11:

- **notes** the work done by the Secretariat in preparing the SIOFA Ecosystem Summary 2026.
- **identifies** any elements in this summary that are confidential and should therefore be withheld from the published version.
- **provides** any comments or edits to the SIOFA Ecosystem Summary 2026 during the meeting.
- **endorses** the SIOFA Ecosystem Summary 2026 and **recommends** that the SIOFA MoP tasks the Secretariat to publish it on the SIOFA website.



SIOFA Ecosystem Summary 2026

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Next review date: 2027

Prepared by the SIOFA Secretariat

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Summary of updates in the 2026 version:

- Catch and Effort data is presented for the last 10 years in the series (2015–2024) and Observer data for the last 20 years (2004-20023), previous data will remain available in older reports but is not showcased here. Note that observer coverage data was only available from 2018 onwards.
- Estimates of observer coverage (Table 2) updated using the newly linked SIOFA CatchEffort and Observer databases, rather than the unlinked version that was previously used.
- Flextables used to create auto-updating tables, particularly those nested, where appropriate.
- Appendix B (list of “sharks” present in the catch record) updated using the available data
- Table 3 (list of sharks at high risk or of concern) revised to align with the updated CMM 12(2025)
- Marine mammal interactions included in this version, see Section 9.3.1, rather than in a separate paper
- Updated with the new benthic protected areas of CMM 18

1. Purpose of this document

The SIOFA Ecosystem Summary describes the main known effects of SIOFA fisheries on ecosystems and species in the SIOFA Area (Figure 1) and summarizes the available data with an emphasis on the most recent five years. This document is targeted at the general public, institutions, and countries wanting to better understand SIOFA fisheries. It also describes SIOFA data available on SIOFA ecosystems and species that could be used by scientists and consultants for scientific research.

The SIOFA Fisheries Summaries provide more detailed information on target species of SIOFA fisheries, and their biology and ecology. The SIOFA Fisheries Overview further integrates this summary and illustrates broad temporal trends in the main fisheries in the SIOFA Area.

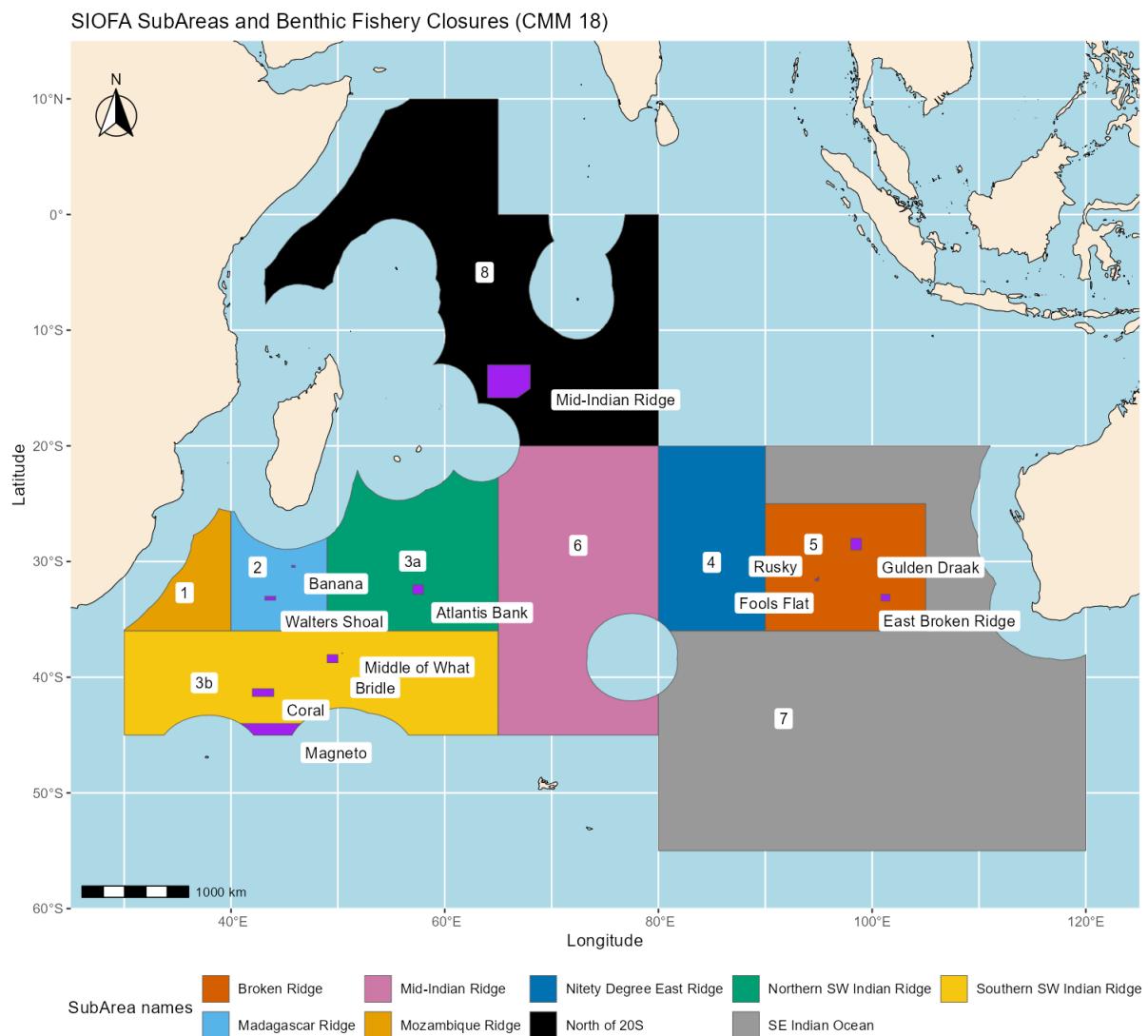


Figure 1 – The SIOFA Area and Subareas (source: SIOFA Spatial database). The Subarea numbers and colour codes are used consistently throughout this summary to identify Subareas. The map highlights SIOFA Benthic Fishery Closures (in purple) as defined in [CMM 18/2025](#) (Table 1 and 2). All the benthic fishery closures have been labelled by name for easier recognition.

2. Data sources and analysis code

2.1 Data availability

There are thirteen CCPs that are members of SIOFA. The SIOFA Secretariat receives data from CCPs pertaining to their fishing activities, biological sampling, and Scientific Observer reports as per [CMM 02\(2025\)](#) (Data Standards). The SIOFA Secretariat acts as custodian for these data on behalf of its members. Request to release or publish these data (e.g., for scientific purposes) are regulated under [CMM 03\(2016\)](#) (Data Confidentiality). Data requests can be made through the SIOFA Secretariat (secretariat@siofa.org).

The main SIOFA databases are:

- AggregatedCatchEffort, which contains catch (and sometimes effort) aggregated at different spatial resolutions, varying from the whole SIOFA Area to 20' squares, from 2000 to 2019.
- HBHCatchEffort, which contains haul-by-haul catch and effort at a spatial accuracy varying from degrees to seconds, from 1998 to 2024.
- Observer, which contains Scientific Observer collected biological sampling, observer reported catches, and observed operations data, from 2012 to 2024.

The SIOFA databases are supported by other data assets such as:

- Spatial layers, which contains all the GIS spatial layers available to the Secretariat (e.g., boundaries of SIOFA Subareas, Assessment Areas). These have been collected at https://github.com/SIOFASecretariat/SIOFA_SC_Spatial_layers
- Codes, including gear and species codes etc. Some of these have been collected at <https://github.com/SIOFASecretariat/FAO-unfied-codes>

The main SIOFA databases have been described in the outputs of project SEC2021-05 (see [SC-07-08](#), restricted access), where it was noted that the data was repeated (i.e., overlaps) across the first two databases. A suggestion has been made to further develop the three databases as three 'subject areas' that form part of a single SIOFA Fisheries Database in the future.

Further data (e.g., on active vessels) is available from Annual National Reports (2015–2025) that SIOFA CCPs submit to the Scientific Committee every year, which are made publicly available on the SIOFA website (<https://siofa.org/meetings/groups/Scientific%20Committee%20Meeting>).

2.2 Missing/incomplete/problematic data for the purposes of this report

2025 Catch, Effort and Scientific Observer data are scheduled to be submitted to the Secretariat at the end of May in 2026. Any data more recent than 2024 should be thus considered as draft, potentially incomplete and subject to further revisions, and has therefore been excluded from this report.

Inconsistencies between tows times and positions have been detected in the 2021 and 2022 data from the orange roughy fishery. Similarly, catch weights in the 2023 data from the orange roughy fishery likely contained some errors. Furthermore, small inconsistencies have been identified in the reported trap effort from 2021.

These data were included in this report, but caution should be exercised when interpreting positional data at a fine scale or catches for the most recent year.

While these reports are based on best available data, there might be other data issues that have not been detected and caution is advised when interpreting the results presented.

2.3 Data used in this report

A SIOFA database extract was delivered on 19 September 2025 and used in this report.

The information presented in this report was extracted from different sources, depending on the type of data required. To minimize the confusion that can arise from having to interpret multiple data sources, explicit references to data sources have been made in each table/figure caption in the report.

The report is intended to cover the last five years of available data (at a minimum) but note that the data used covers the 2015–2024 period (10 years of data), and that the period covered varies across the different sections as detailed below.

- i. Active fleet composition (2015–2024): SIOFA HBHCatchEffort and SIOFA AggregatedCatchEffort databases
- ii. Main fisheries (2000–2024): Annex 1 of [CMM 17\(2025\)](#)
- iii. Total catches per CCP (2015–2024): SIOFA AggregatedCatchEffort database, combined with SIOFA HBHCatchEffort database.
- iv. Catch, Effort (including per Subarea) and discards (2015–2024): SIOFA HBHCatchEffort database, SIOFA AggregatedCatchEffort database and spatial layers (this does not include non-fish catch, see Section 10 for definitions of target catch).
- v. VMEs (2005–2024): SIOFA Observer and HBHCatchEffort databases.
- vi. Fishing in Benthic Fishery Closures (2015–2024): SIOFA HBHCatchEffort and Spatial databases
- vii. Biological sampling (2015–2024): SIOFA Observer database.
- viii. Observer-reported catches (2015–2024): SIOFA Observer database.
- ix. Observer coverage (2015–2024): SIOFA Observer database.
- x. Observed interactions with sharks, turtles, seabirds, marine mammals (2015–2024): SIOFA Observer database.

2.4 Analysis code

The code that produces all analyses presented in this report is publicly available at https://github.com/SIOFASecretariat/SIOFA_SC_Reports_code

3. Ecoregions of the Southern Indian Ocean

The PAE2021-01 project (SIOFA Bioregionalization and VMEs) produced maps of biogeographical regions of the Southern Indian Ocean based on VME indicator taxa using two complementary predictive modelling approaches (“predict first, then group” and “group first, then predict”).

This work detected three biogeographical regions at the first hierarchical level, which broadly represented the upper and lower bathyal, the abyssal and the Southern Ocean (Figure 2). At the second hierarchical level, eight nested biogeographical regions were detected, displaying distinct geographical and bathymetric differences across the region (Figure 3).

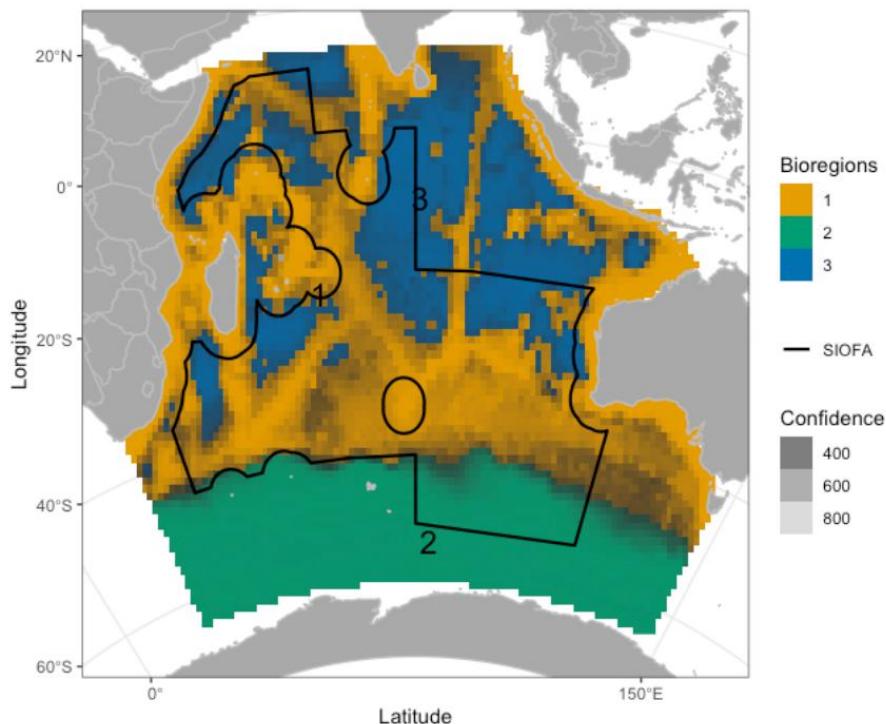


Figure 2 – Predicted biogeographical regions of VME indicator taxa in the Southern Indian Ocean at the first level of the hierarchy. Areas with low confidence in the prediction are shown in darker shades of grey.

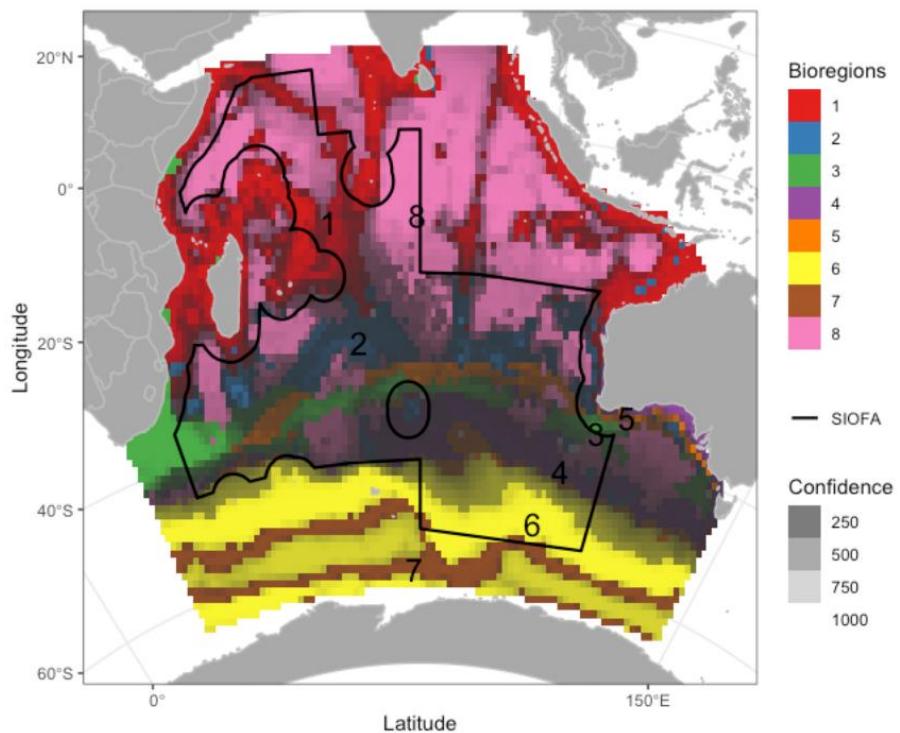


Figure 3 – Predicted biogeographical regions of VME indicator taxa in the Southern Indian Ocean at the second hierarchical level. Areas with low confidence in the prediction are shown in darker shades of grey. Note that, because of the low number of data points, we cannot reliably evaluate these predictions. Bioregion labels: 1: cluster 1.1; 2: cluster 1.2; 3: cluster 1.3; 4: cluster 1.5; 5: cluster 1.7; 6: cluster 2.1; 7: cluster 2.4; 8: cluster 3.1.

Bioregions at the first hierarchical level are the result of taxa distributions spatial clustering, while bioregions at the second hierarchical level reflect limits in dispersal likely driven by the circulation of the water masses in the area. The bioregions, in both predictive approaches, were entirely encompassed within the SIOFA Area. These maps suggest that the SIOFA has a great diversity of bioregions.

4. Main fisheries operating in the SIOFA Area

In the SIOFA Area, a few fisheries account for the majority of the total catch. Table 1 summarises the main SIOFA fisheries by target species and provides information about the fishing method and gear employed, which CCPs engaged in the fishery, and the main Subareas where these fisheries occurred.

Table 1 – Established target species/fisheries in the SIOFA Area, as per Annex 1 of [CMM 17\(2025\)](#)³. The table also provides information on gear employed, the CCPs engaged in the fishery, and the main Subareas where these fisheries were targeted.

| Targeted ⁴ species/fisheries | Fishing gear | Participants | Area |
|--|--|--|--|
| Patagonian toothfish | Set longlines, traps | Australia, EU (Spain), France (Overseas Territories), Japan, Korea | Designated fishing footprints of Australia, EU (Spain), Japan, and France (Overseas Territories). SIOFA sub-areas 3b and 7 |
| Orange roughy | Bottom trawl | Australia, Cook Islands, Japan, China, Mauritius | Designated fishing footprints of Australia, Cook Islands, Japan. Underwater topographic features in SIOFA sub-areas 1, 2, 3a, 3b, 4, 5 and 6. |
| Alfonsino | Midwater trawl | Australia, Cook Islands, Japan, Korea, | Designated fishing footprints of Australia, Cook Islands and Japan. Underwater topographic features in SIOFA sub-areas 1, 2, 3a, 3b, 4, 5 and 6. |
| Brushtooth lizardfish and scads | Trawl (nei), single boat otter board trawl | Thailand | Designated fishing footprint of Thailand. |
| Shallow-water (<200m), Carangoides spp., snappers, emperors and groupers | Set longline, hook and line (handlines), bottom trawl, traps | EU (France), Mauritius, Thailand, Comoros | Designated fishing footprint of Thailand. SIOFA sub-area 8 (mainly Saya de Malha Bank) |
| Deep water (>200m) snappers, lutjanids, hapuka | Set longline, dropline | Australia, China, EU (Spain) | Designated fishing footprints of the EU (Spain) and Australia. SIOFA Subareas 2, 3a, 3b and 4. |
| Oilfish | Pelagic longline, dropline | Chinese Taipei, Seychelles | Southwest Indian Ocean |
| Squid | Light Seining, Squid Jigging | China | Designated fishing footprint of China. SIOFA Subareas 1, 4, 7 and 8 |

³ Annex 1 may be updated by the Meeting of the Parties upon the advice of the Scientific Committee concerning historical catch data and/or other information submitted by CCPs regarding their targeted fisheries.

⁴ As per the endorsed definition adopted by MoP10 (MoP10 Report Para 130).

5. Scientific Observer coverage

In 2024, the SIOFA Scientific Committee tasked the Secretariat to attempt to establish linkages between the Observer and CatchEffort databases, which once established would enable more meaningful analyses of observer coverage. This linkage has been partially addressed by the SIOFA Data Officer, who was able to link 86.4% of all events recorded in the Observer database as observed, with a corresponding event of the CatchEffort database.

Data challenges have been identified with aggregated CatchEffort data (up to 2019) not allowing a direct comparison with Observer data reported on a haul-by-haul basis and making it difficult to calculate coherent numbers of fishing events. This includes the Observer data listing more operations observed than those recorded in the CatchEffort data. The linkage with Observer data is unlikely to be fully resolved for the aggregated CatchEffort data.

The SIOFA Data Officer informed that the gear codes discrepancies between the two databases, already noted in the SIOFA Fisheries Overview 2024, could not be addressed at the database level. Gear codes were therefore manually harmonized at the database extract level by the SIOFA Science Officer, to allow for a more meaningful analysis. Estimated observation rates in different SIOFA fisheries are presented in Table 2.

Discrepancies and gear mismatches persist in a number of instances, where unique linkages could not be established across the two databases. This results in an incorrect estimate of observation rate in many different fisheries and across all years, and thus caution should be exercised in interpreting the results presented in Table 2.

Table 2 – Total fishing events recorded in the Observer and CatchEffort databases, and observer coverage in SIOFA fisheries by gear types (source: Observer database 2018–2024). The Scientific Observer coverage is ratio between the number of events observed (Observer database) and the events recorded in the CatchEffort database. Please note that the Observer database does not record the totality of fishing events, and linkages between the Observer and CatchEffort databases could be established for about 86.4% of the total observed events. Cells highlighted in red flag instances where no fishing events were recorded in the CatchEffort database for a given gear. Cells highlighted in yellow flag instances where the Observer database reported more observed events than those reported in the CatchEffort database.

| Observer coverage in SIOFA fisheries (2018-2024) | | | | | |
|--|------|-----------------|--------------------|-------------------------|---------------------|
| Gear | Year | Observed events | CatchEffort events | Observed events (ratio) | Observed events (%) |
| Bottom trawls (nei) | 2020 | 201 | 252 | 0.8 | 79.8 |
| | 2021 | 0 | 262 | 0.0 | 0.0 |
| | 2022 | 127 | 197 | 0.6 | 64.5 |
| | 2023 | 695 | 653 | 1.1 | 106.4 |
| | 2024 | 418 | 379 | 1.1 | 110.3 |
| Drifting longlines | 2021 | 405 | 5 067 | 0.1 | 8.0 |
| | 2022 | 274 | 4 196 | 0.1 | 6.5 |
| | 2023 | 15 | 0 | | |
| | 2024 | 0 | 23 | 0.0 | 0.0 |
| Dropline | 2018 | 0 | 32 | 0.0 | 0.0 |
| | 2019 | 0 | 8 | 0.0 | 0.0 |
| | 2020 | 0 | 8 | 0.0 | 0.0 |
| | 2019 | 0 | 378 | 0.0 | 0.0 |
| Handlines and hand-operated pole-and-lines | 2020 | 134 | 332 | 0.4 | 40.4 |
| | 2021 | 52 | 100 | 0.5 | 52.0 |
| | 2022 | 49 | 236 | 0.2 | 20.8 |
| | 2023 | 83 | 359 | 0.2 | 23.1 |
| | 2024 | 144 | 326 | 0.4 | 44.2 |
| | 2018 | 0 | 5 000 | 0.0 | 0.0 |
| Longlines (nei) | 2019 | 0 | 5 981 | 0.0 | 0.0 |
| | 2020 | 0 | 4 632 | 0.0 | 0.0 |
| | 2023 | 360 | 5 763 | 0.1 | 6.2 |
| | 2024 | 598 | 7 189 | 0.1 | 8.3 |
| | 2019 | 0 | 150 | 0.0 | 0.0 |
| Mechanized lines and pole-and-lines | 2020 | 0 | 57 | 0.0 | 0.0 |
| | 2021 | 0 | 26 | 0.0 | 0.0 |
| | 2023 | 5 | 5 | 1.0 | 100.0 |
| | 2024 | 21 | 20 | 1.0 | 105.0 |
| | 2018 | 7 | 251 | 0.0 | 2.8 |
| Midwater trawls (nei) | 2019 | 540 | 379 | 1.4 | 142.5 |
| | 2020 | 377 | 1 066 | 0.4 | 35.4 |
| | 2021 | 287 | 1 044 | 0.3 | 27.5 |
| | 2022 | 579 | 743 | 0.8 | 77.9 |
| | 2023 | 1 403 | 1 225 | 1.1 | 114.5 |
| | 2024 | 1 792 | 1 454 | 1.2 | 123.2 |
| | 2021 | 19 | 4 | 4.8 | 475.0 |
| Pots | 2018 | 2 | 606 | 0.0 | 0.3 |
| | 2019 | 432 | 450 | 1.0 | 96.0 |
| | 2020 | 470 | 592 | 0.8 | 79.4 |
| | 2021 | 330 | 565 | 0.6 | 58.4 |
| | 2022 | 289 | 399 | 0.7 | 72.4 |
| | 2023 | 290 | 322 | 0.9 | 90.1 |
| | 2024 | 337 | 381 | 0.9 | 88.5 |
| Set longlines | 2019 | 144 | 161 | 0.9 | 89.4 |
| | 2020 | 464 | 462 | 1.0 | 100.4 |
| | 2021 | 1 017 | 1 003 | 1.0 | 101.4 |
| | 2022 | 982 | 982 | 1.0 | 100.0 |
| | 2023 | 1 | 0 | | |
| Single boat bottom otter trawls | 2018 | 0 | 4 | 0.0 | 0.0 |
| | 2024 | 129 | 129 | 1.0 | 100.0 |
| Traps (nei) | 2018 | 0 | 1 749 | 0.0 | 0.0 |
| | 2024 | 129 | 0 | | |
| Trawls (nei) | 2019 | 1 279 | 1 537 | 0.8 | 83.2 |
| | 2020 | 655 | 376 | 1.7 | 174.2 |
| | 2022 | 61 | 0 | | |
| | 2023 | 29 | 0 | | |
| | 2018 | 0 | 30 | 0.0 | 0.0 |
| Vertical lines | 2020 | 8 | 0 | | |

6. Target catch and bycatch

A wide variety of fish species are targeted in the SIOFA Area. All fish species not in the list of species identified by the SIOFA SC as primary and secondary species in SIOFA fisheries, and considered as target species for the purposes of this overview (Appendix A) were considered bycatch.

Target catch was taken mainly in SIOFA Subareas 1 and 3b (Figure 4a). Bycatch in 2020 was mostly taken in SIOFA Subareas 8 and 2 (Figure 4b). In absolute terms, bycatch is highly variable between years. Bycatch constituted >50% of the total fish catch by weight in 2015 and 2016 (Figure 4a) but has otherwise been around or below 25% of the total catch in other years (Figure 4a). In 2015-2016, when bycatch was highest, the majority of the bycatch came from Subarea 8 (Figure 4b).

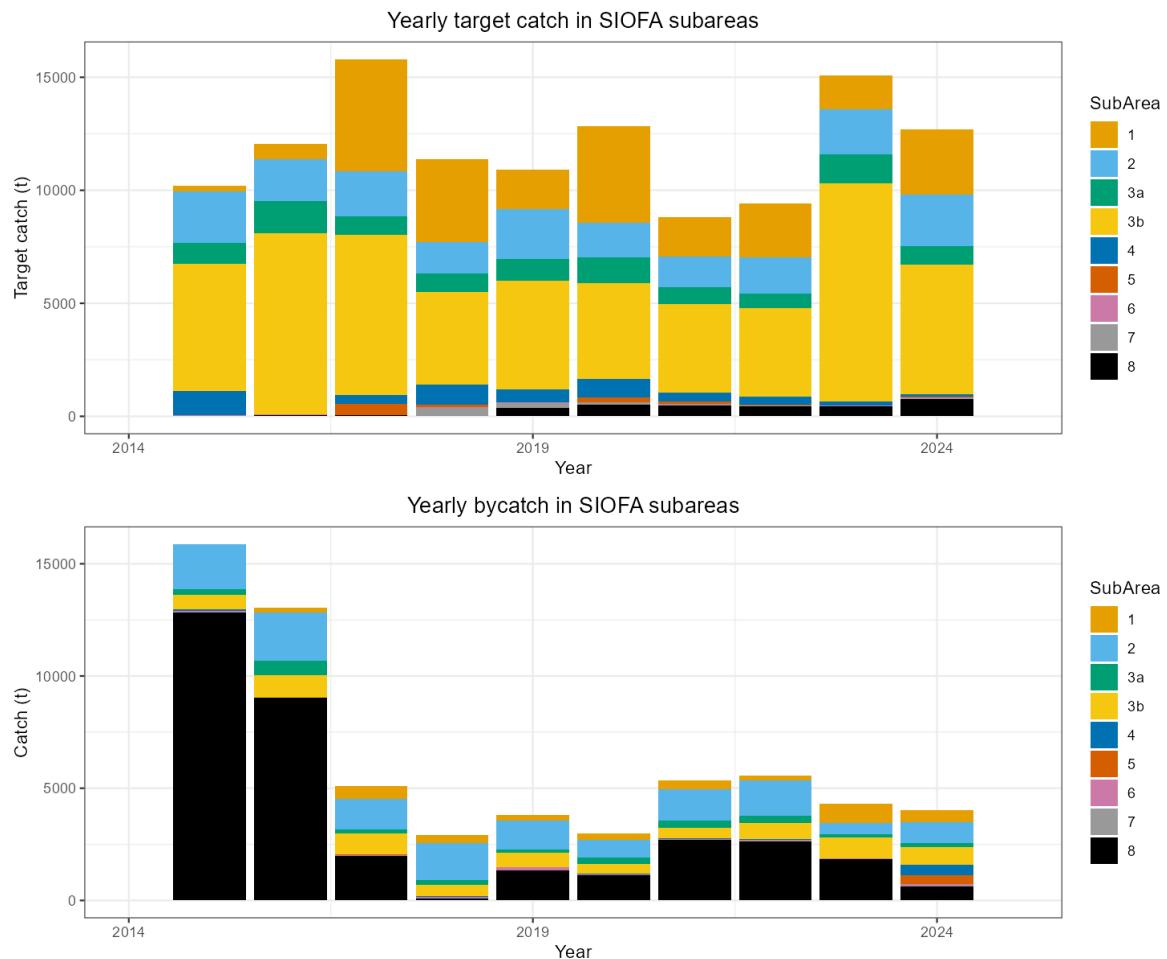


Figure 4a and b – Target catch (upper panel, a) and bycatch (lower panel, b) fish catch by weight in different SIOFA Subareas (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Catches reported without spatial information are not included. See Table D.2 in Appendix D for the values associates with this figure.

The bycatch figures below (Figure 5) show the proportion of 'sharks' in the reported catch. The broad definition of 'sharks' used here includes Chondrichthyans in general (i.e., including rays and chimaeras). In this section, a list of all Chondrichthyan taxa captured in SIOFA fisheries and reported in the HBHCatchEffort database 2015–2024 was extracted and used to define 'sharks'. The full list of shark taxa reported as captured by SIOFA fisheries is shown in Appendix B.

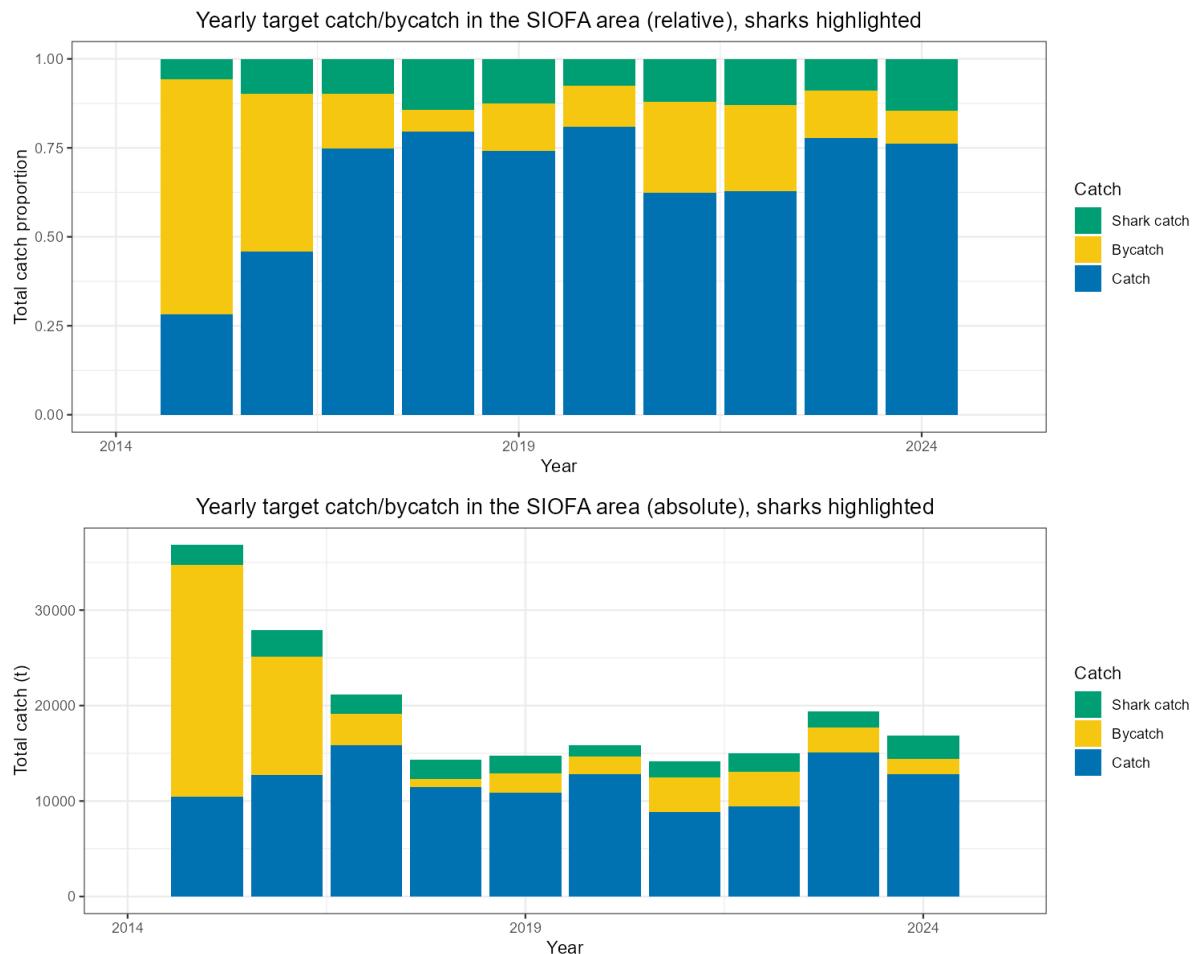


Figure 5a and b – Target catch and bycatch in the SIOFA Area summarised as relative proportions (upper panel, a) and absolute weights (lower panel, b) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Catches reported without spatial information are not included. The portion of catch composed by sharks (as defined in Appendix B) is highlighted. Sharks were targeted in the SIOFA Area until the entry into force of CMM 2019/12 (binding from October 10, 2019), which prohibited targeting any deep-sea shark species listed in its Annex 1. Following the entry into force of CMM 2019/12, all sharks are considered as bycatch for the purpose of this summary. See Table E.1 in Appendix E for the values associates with this figure.

7. Catch of sharks

Sharks were targeted in the SIOFA Area until the introduction of [CMM 2019/12](#), which prohibited targeting the deep-sea shark species listed in its Annex 1 after October 10, 2019. Following the entry into force of [CMM 2019/12](#), all deepwater sharks are considered as bycatch for the purpose of this summary.

Reported catch of sharks (as defined in Appendix B) increased between 2013 and 2016 but has decreased thereafter (Figure 6a). In most years shark catches were dominated by Portuguese dogfish (CYO) and a substantial proportion of unidentified 'other shark species' (including rays, skates, etc. coded SKX). Other prominent shark catch taxa include kitefin shark (SCK), birdbeak dogfish (DCA) and gulper shark (GUP).

The vast majority of shark catches in the SIOFA Area occurred in Subarea 2 (Figure 6b).

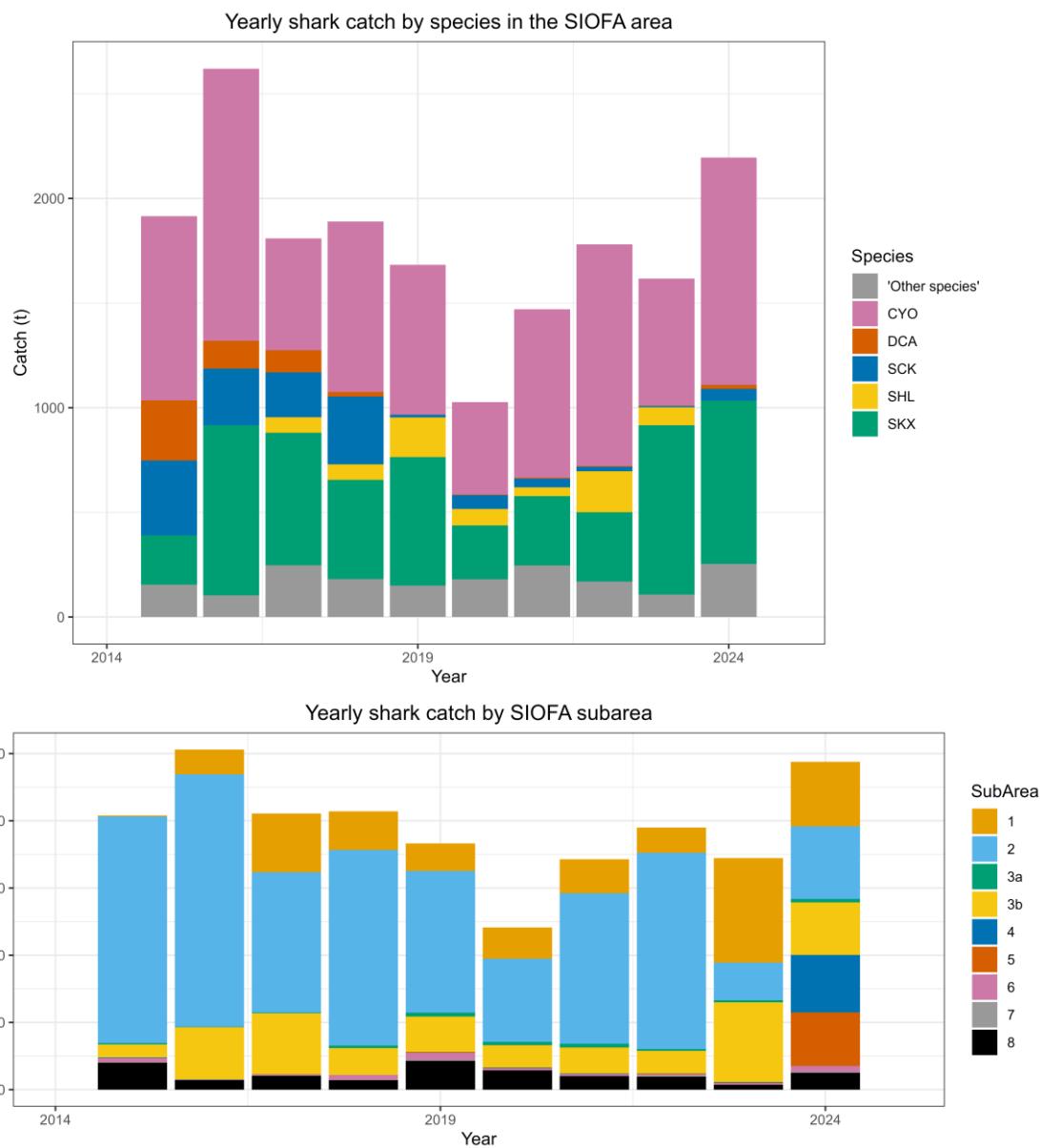


Figure 6 a and b – Yearly catch of sharks in the SIOFA Area by taxon (upper panel, a) and by SIOFA Subarea (lower panel, b) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Only the top 5 species by weight (cumulatively in the full database) are shown individually (identified by their FAO species code, see Appendix B). All other species are grouped under 'other species'. Table D.5 in Appendix D provides a full list of species caught. See Table D.3 in Appendix D for the values associated with the lower panel figure.

Sharks are caught using several different fishing methods and gears. Historically, a larger proportion of sharks reported captured in SIOFA were caught using gillnets, but in recent years sharks have been mainly caught with longlines (Figure 7).

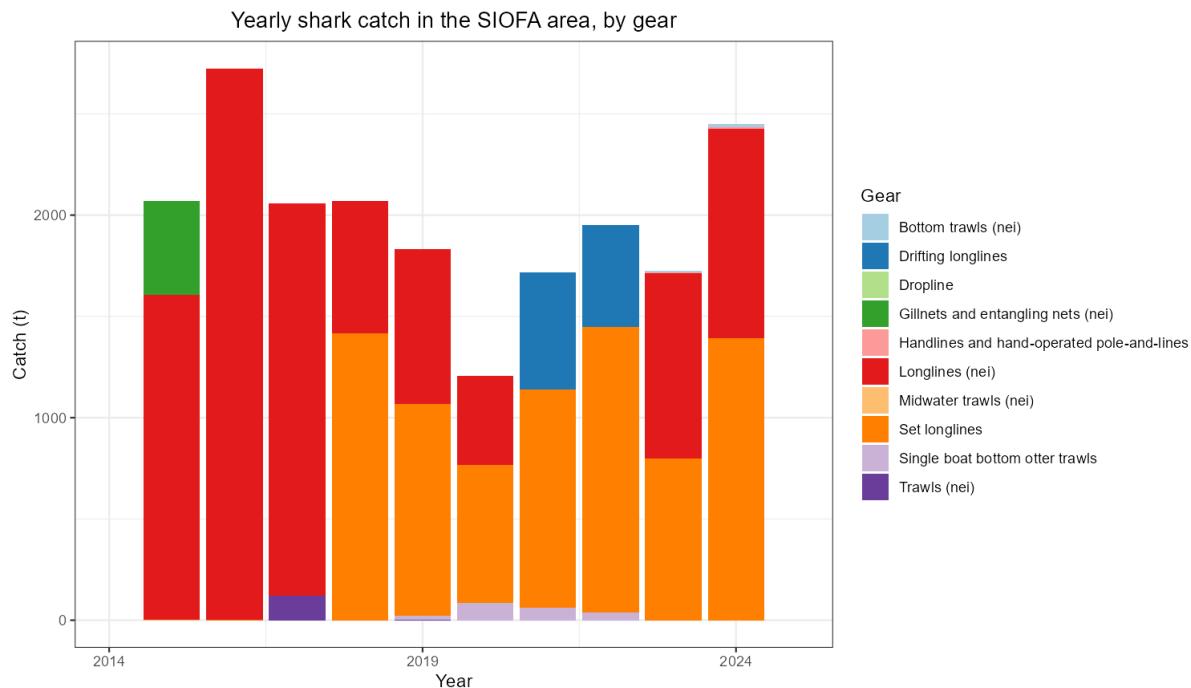


Figure 7 – Yearly catch of sharks in the SIOFA Area by gear type (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024).

At its 8th annual meeting in 2023, the SIOFA Scientific Committee When reviewing the ecosystem summary, the SC noted that some shark bycatch data appeared to be missing from some of the figures of the Ecosystem Summary 2023 and requested the Secretariat to resolve this issue when preparing the ecosystem summary for 2024. The Secretariat identified that the issue arose from the non-inclusion of observer-reported catches in the 2022 extract, and therefore also not in the Secretariat reports.

These data were extracted and released to the Science Officer in 2023, and are now included as Figure 8, so as not to lump them with the other types of data. Please note that observer-reported catches might overlap with catches recorded in the Aggregated and HBHCatchEffort databases.

Observer-reported shark (as defined in Appendix B) catches were first recorded in 2013, but were not consistently reported until 2018 (Figure 8a). In most years shark catches were dominated by Portuguese dogfish (CYO), leafscale gulper shark (GUQ), and a substantial proportion of kitefin shark (SCK). The vast majority of observer-reported shark catches in the SIOFA Area occurred in Subarea 2 (Figure 8b).

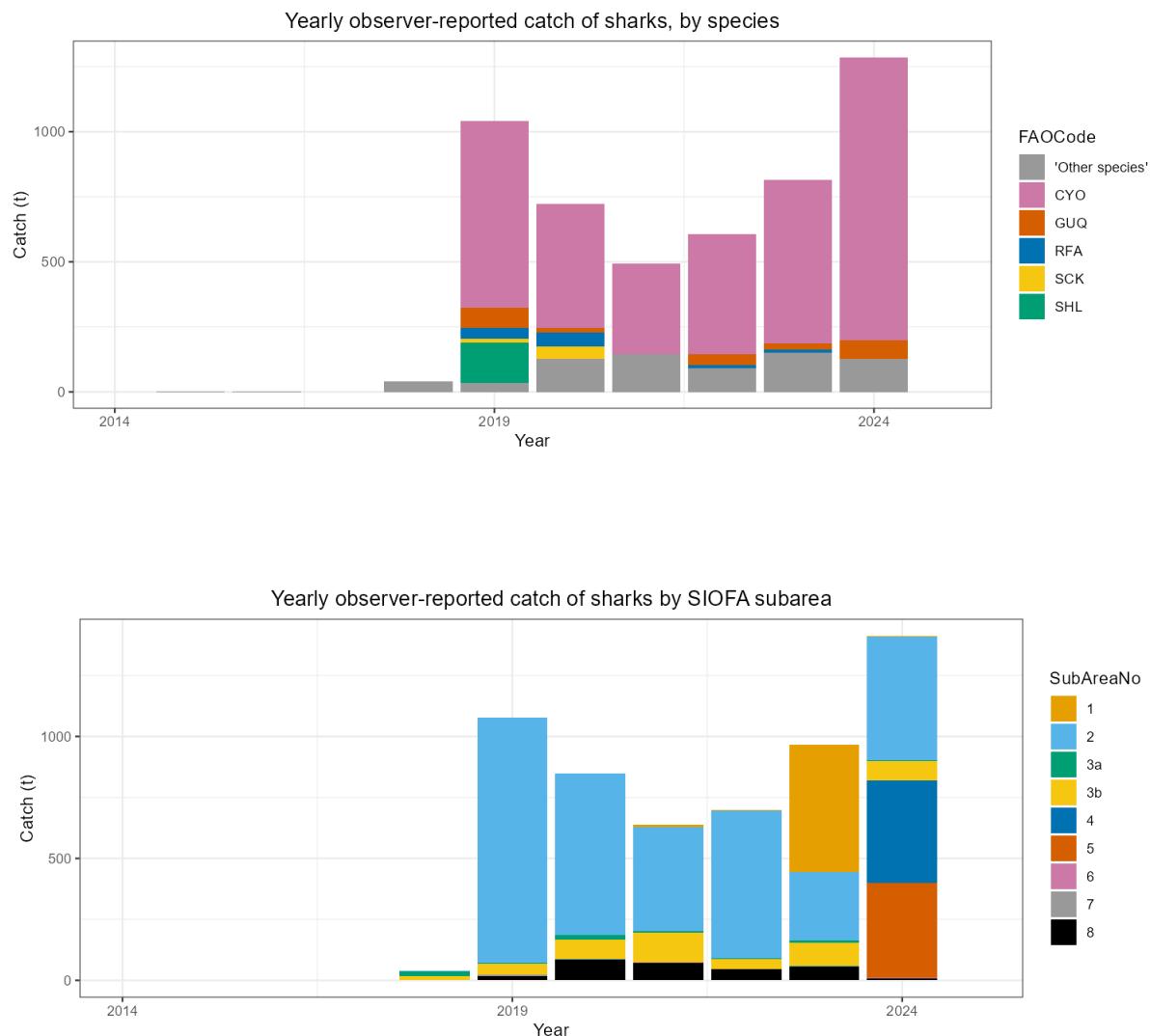


Figure 8a and b – Yearly observer-reported catch of sharks in the SIOFA Area by taxon (upper panel, a) and by SIOFA Subarea (lower panel, b) (source: SIOFA Observer databases 2015–2024). Only the top 5 species by weight (cumulatively in the full database) are shown individually (identified by their FAO species code, see Appendix B). All other species are grouped under ‘other species’.

A list of deep-sea sharks considered to be at “high risk” and “of concern” is included in Annex 1 of SIOFA [CMM 12\(2025\)](#) (Conservation and Management Measure for Sharks) and was derived from work presented at SC8, SC9 and SC10. The following figures refer to this subset of sharks as defined in [CMM 12\(2025\)](#). This list is reproduced below in Table 3.

Table 3—Deep-sea shark taxa considered to be at “high risk” and/or “of concern”, as listed in Annex 1 of SIOFA [CMM 12\(2025\)](#) (Conservation and Management Measure for Sharks). Species considered to be at “high risk” are highlighted in bold.

| FAO code | English common name | French common name | Scientific name |
|----------|--------------------------------|--------------------------------|-----------------------------------|
| APD | Smallbelly catshark | Holbiche artouca | <i>Apristurus indicus</i> |
| BZL | Narrowhead catshark | | <i>Bythaelurus tenuicephalus</i> |
| BZO | Bach's catshark | | <i>Bythaelurus bachi</i> |
| CYO | Portuguese dogfish | Pailona commun | <i>Centroscymnus coelolepis</i> |
| CYP | Longnose velvet dogfish | Pailona à long nez | <i>Centroselachus crepidater</i> |
| DCA | Birdbeak dogfish | Squale savate | <i>Deania calceus</i> |
| DWG | Cristina's skate | | <i>Bathyraja tunae</i> |
| ETP | Smooth lanternshark | Sagre nain | <i>Etomopterus pusillus</i> |
| EZT | Blue-eye lanternshark | | <i>Etomopterus viator</i> |
| EZU | Whitecheek lanternshark | | <i>Etomopterus alphus</i> |
| ETB | Blurred smooth lantern shark | | <i>Etomopterus bigelowi</i> |
| GUP | Gulper shark | Squale-chagrin commun | <i>Centrophorus granulosus</i> |
| GUQ | Leafscale gulper shark | Squale-chagrin de l'Atlantique | <i>Centrophorus squamosus</i> |
| CPU | Little gulper shark | Petit squale-chagrin | <i>Centrophorus uyato</i> |
| HCR | Pacific longnose chimaera | Chimère à nez rigide | <i>Harriotta raleighana</i> |
| HXC | Frilled shark | Requin lézard | <i>Chlamydoselachus anguineus</i> |
| HXN | Bigeyed sixgill shark | Requin-vache | <i>Hexanchus nakamurai</i> |
| JBY | Dusky Snout catshark | | <i>Bythaelurus naylori</i> |
| LMO | Goblin shark | Requin lutin | <i>Mitsukurina owstoni</i> |
| QUK | Shortspine spurdog | Aiguillat épинette | <i>Squalus mitsukurii</i> |
| RFI | Paddlenose chimaera | | <i>Rhinochimaera africana</i> |
| SDQ | Longsnout dogfish | Squale-savate à long nez | <i>Deania quadrispinosa</i> |
| SDU | Arrowhead dogfish | Squale-savate lutin | <i>Deania profundorum</i> |
| SCK | Kitefin shark | Squale liche | <i>Dalatias licha</i> |
| SSQ | Velvet dogfish | | <i>Zameus squamulosus</i> |
| RZZ | Southern sleeper shark | | <i>Somniosus antarcticus</i> |
| YSM | Largespine velvet dogfish | Pailona austral | <i>Scymnodon macracanthus</i> |
| ZZC | Dark-mouth chimaera | | <i>Chimaera buccanigella</i> |
| ZZD | Falkor chimaera | | <i>Chimaera didierae</i> |
| ZZE | Seafarer's ghost shark | | <i>Chimaera willwachi</i> |

Note that the [CMM 2019/12](#) listed the scientific name of *Somniosus antarcticus* (FAO code RZZ) under the FAO code for *Somniosus pacificus* (SON), but only SON was recorded in the data, and likely represents a nomenclature discrepancy in [CMM 2019/12](#). In [CMM 12\(2023\)](#), the *S. antarcticus* species code was updated to RZZ.

Please be advised that the nomenclature of Plunket's shark (*Centroscymnus plunketi*, CYU) has been officially revised in 2023 to largespine velvet dogfish (*Scymnodon macracanthus*, YSM). This change is now reflected in the database and this report, as well as in Annex 1 of [CMM 12\(2025\)](#).

Given the recent changes in shark species codes, combined with the changes in the list of species included in SIOFA CMM 12 Annex 1, the Secretariat further noted that there is a risk that some species data could be missed in the analyses, as the database contains obsolete or even contradictory codes. For the purpose of composing the following figures in a comprehensive way, all FAO codes of species included in Annex 1 of CMM 12 through its different iterations (2019, 2022, 2023 and 2024) were retained but this could create some confusion in reporting, thus supplementary figures have also been prepared to illustrate the differences in using the different Annexes of CMM 12. A revision and upgrade of the shark codes between the database and the CMM could solve this issue, and the SIOFA SC would be best placed to set up a consistent framework for this revision.

Catch of shark species considered to be at “high risk” and/or “of concern” (as defined in [CMM 12\(2025\)](#)) are represented in Figure 9a. In most years Portuguese dogfish (CYO) was the most commonly caught species on this list, with a significant presence of kitefin shark (SCK) until 2019 (Figure 9a). The vast majority of catches of shark at “high risk” and/or “of concern” in the SIOFA Area came from Subarea 2 (Figure 9b) but this changed in 2023.

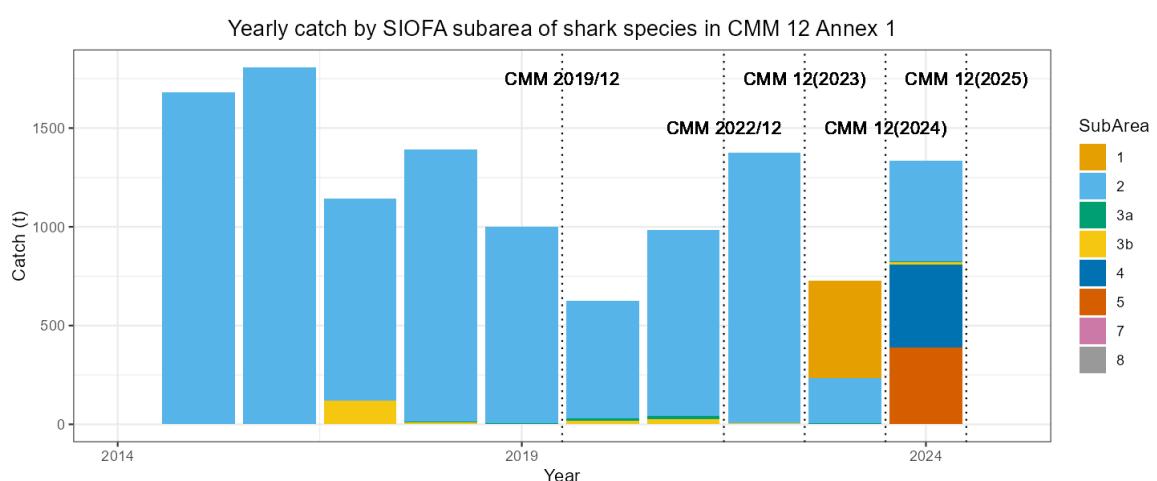
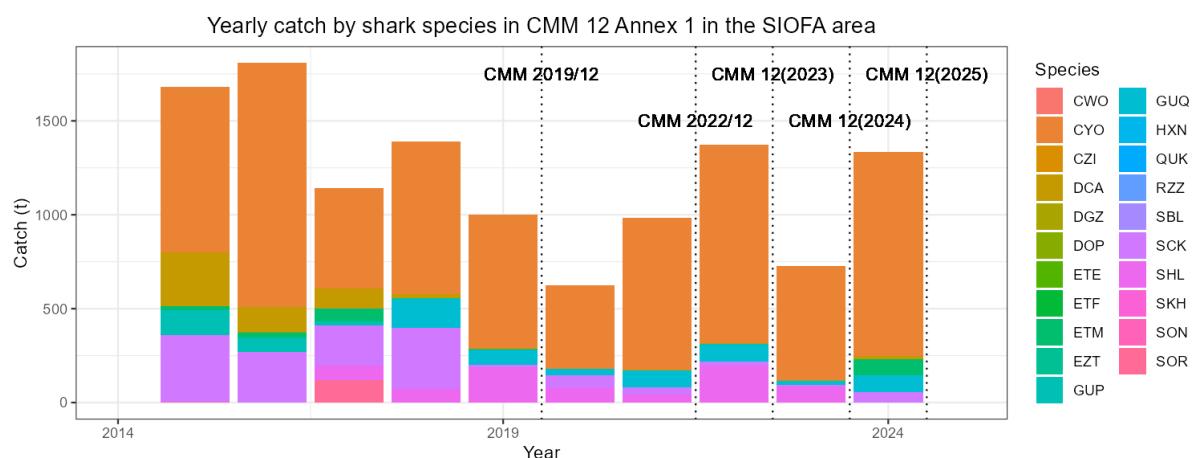


Figure 9a and b – Yearly catch in the SIOFA Area of sharks considered to be at “high risk” and/or “of concern” as included in Annex 1 of SIOFA CMM 12 (Conservation and Management Measure for Sharks). Catches are

summarised by species (upper panel, a) and by SIOFA Subarea (lower panel, b) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Species are identified by their FAO species code (see Table 3 for disambiguation). Figures D.1a and b in Appendix D provide information on species caught separating the different versions of the CMM which had different Annex 1 lists.

8. Discards and bycatch

In SIOFA fisheries most of the catch (both target and bycatch) is retained and landed, with small proportion being discarded at sea. The SIOFA CatchEffort database records the fate of catch per species, aggregated at different levels, which enables an analysis of the proportion discarded.

Discards typically involve non-commercial species in the bycatch and undersized or damaged fish in the target catch.

Discards have historically been a very minor proportion of the total bycatch (Figure 10a), and consequently an even smaller proportion of total catch. In absolute terms, only up to around 100 t of catch is discarded per year, but discards were much higher in 2015, when they were more than 1500 t (Figure 10b). Note that, in this figure, discards also include sharks.

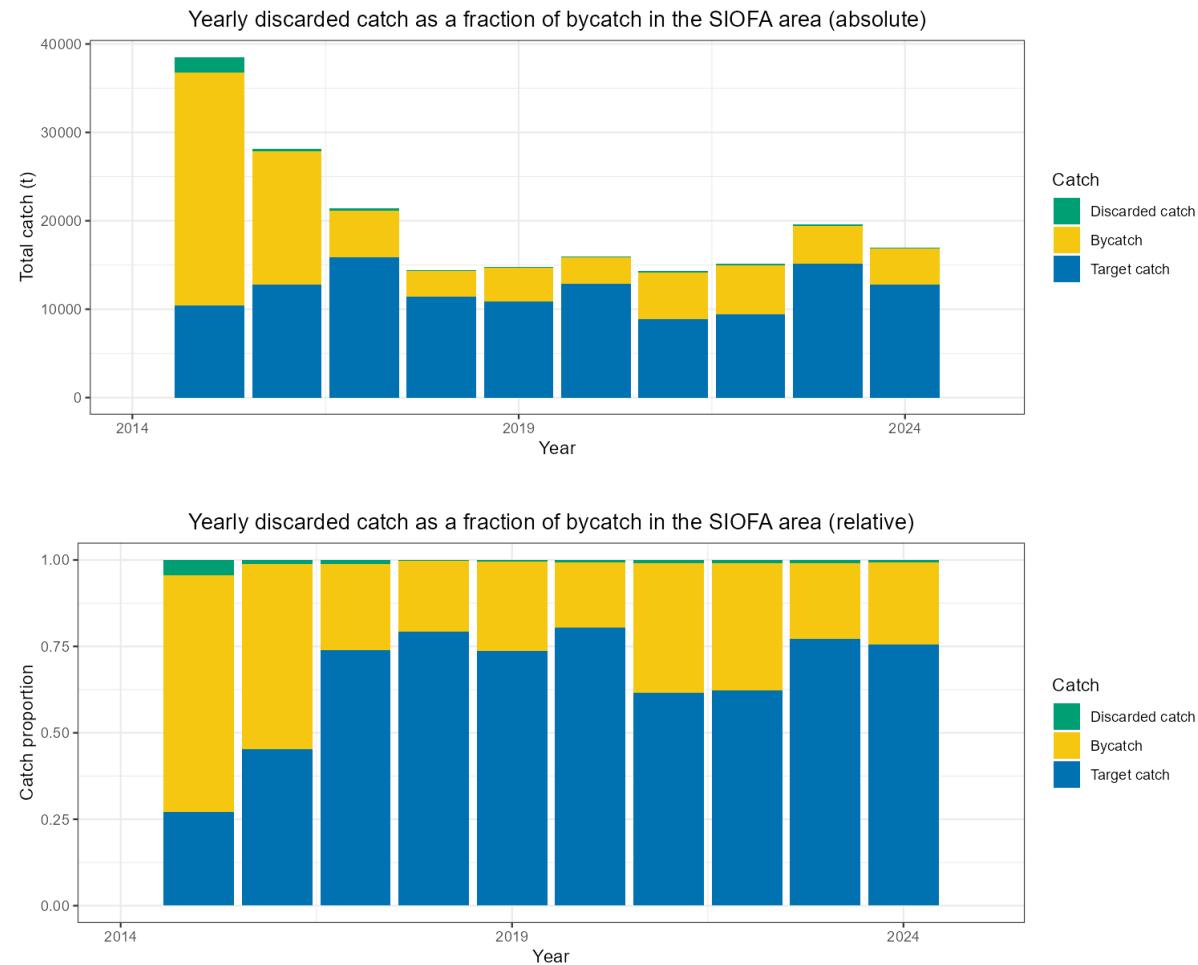


Figure 10a and b – Catch, bycatch and discards (including of sharks) as absolute weights (upper panel, a) and relative proportions (lower panel, b) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Catches reported without spatial information are not included.

Given the high number of species, and imperfect taxonomic reporting, estimates of discards by species was not easy to determine. The high discards recorded in 2015 were recorded as an ‘unspecified marine species’ (MZZ) which was also reported in 2016 and 2017 (Figure 11). The most heavily discarded species that was identified to species level (in 2017) was smooth oreo dory (SSO) (Figure 11).

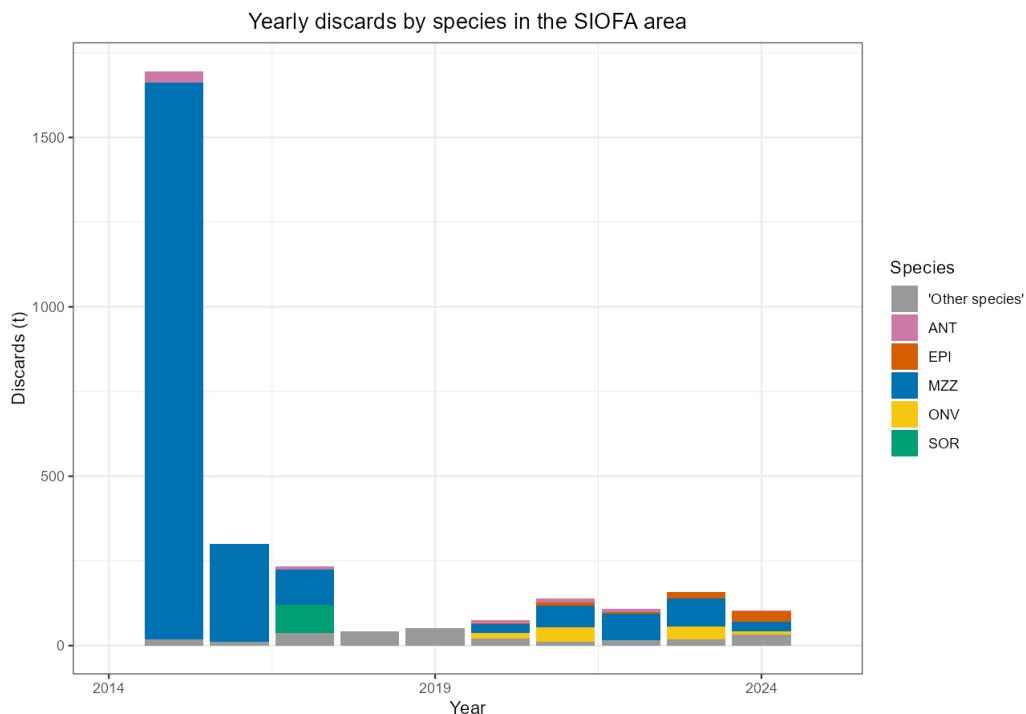


Figure 11 – Yearly discards in the SIOFA Area by species (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2013–2020) Only the top 5 species by weight (cumulatively in the full database) are recorded (indicated by their FAO species code, see Appendix B). All other species are grouped and recorded as ‘other species’. See Table D.7 in Appendix D for a full account of all discarded species.

9. Interactions with seabirds, marine mammals, turtles, and with sharks considered to be at high risk and/or of concern

Only incidental captures of seabirds, marine mammals, turtles, and sharks considered to be at high risk and/or concern are reported in the SIOFA Scientific Observer database, and the following sections have drawn from this database to explore the number and locations of these interactions.

Incidental captures of other species (e.g., of sharks) are also recorded in the SIOFA CatchEffort database but are not reported here. Note that 8 capture records contained wrong codes, these were excluded from further analysis for the time being, pending clarifications from one of the CCPs.

Figure 12 shows the reported locations of incidental captures (Figure 12a) and observations (Figure 12b) of seabirds, mammals, turtles and sharks considered to be at high risk and/or concern (i.e., included in SIOFA CMM 12) in the SIOFA Area as recorded by Scientific Observers.

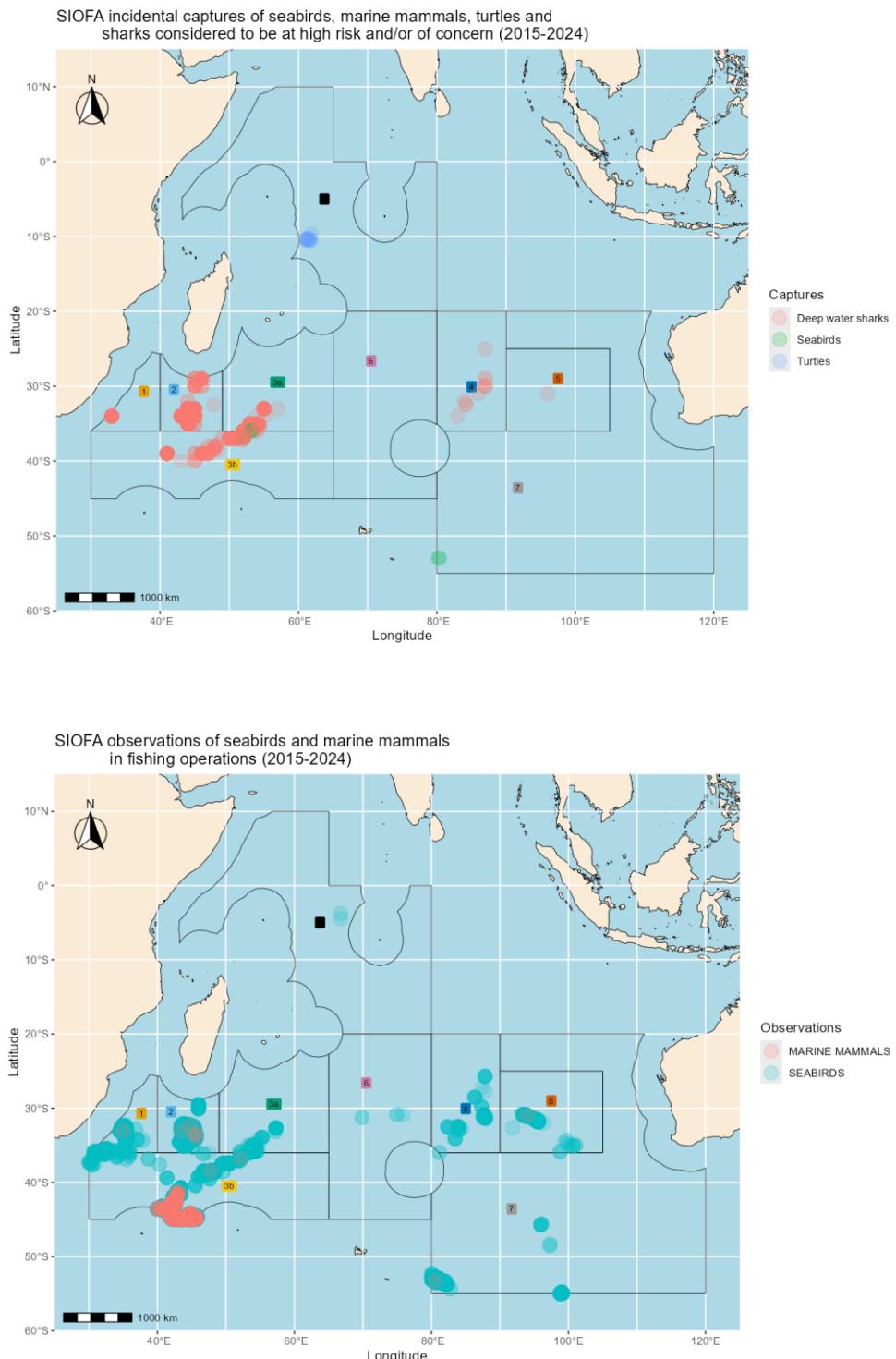


Figure 12a and b – Reported locations of incidental captures (a, upper) and observations (b, lower) of seabirds, mammals, turtles and sharks considered to be “at high risk” and/or “of concern”, as defined in Annex 1 of [CMM 12\(2025\)](#), in the SIOFA Area, as recorded by SIOFA Scientific Observers (source: SIOFA Observer database 2015–2024).

9.1 Seabirds

This Summary uses official FAO taxonomic nomenclature (i.e. common and scientific names) for seabirds, but please note that this might not always correspond to the nomenclature used e.g. by ACAP.

9.1.1 Incidental captures

Only a small number of seabird captures have been reported in SIOFA fisheries, these numbers might be different than those submitted in national reports as the capture data has not been fully submitted to the SIOFA Secretariat.

Table 4 summarises seabird incidental captures reported by Scientific Observers in the SIOFA Area. No captures of seabirds were reported to SIOFA after 2021.

Table 4 - Incidental captures of seabirds for which interactions have been reported (source: SIOFA Observer database 2004–2023). Captures reported without spatial information are not included.

| Captures of seabirds in SIOFA fisheries (2004-2023) | | | | | | | | | | |
|---|------------------------|-----------------------------------|---------------|---------------|----------|----------|----------------|--------------------|------------------|---------------|
| Year | Common name | Scientific name | Fishing gear | SIOFA Subarea | Captures | Releases | Released Alive | Released Lethargic | Released Injured | Released Dead |
| 2016 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 3a | 1 | 1 | | | | |
| 2019 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 7 | 2 | 2 | | | | |
| 2020 | Black-browed albatross | <i>Thalassarche melanophrys</i> | Set longlines | 7 | 1 | | | | | |
| 2020 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 3a | 2 | | | | | |
| 2021 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 3b | 4 | | | | | |

9.1.2 Abundance observed around fishing operations

The abundance and species of seabirds around fishing operations has been recorded on individual fishing events by Scientific Observers starting from 2007. Table 5 shows the total numbers of seabirds recorded by Scientific Observers, per species, across all fishing events of each year.

Note that there are numerous records of seabirds observations without any information on species names in the SIOFA Observers database 2019–2023. These represent observations of seabirds around fishing vessel without species identification and are listed in Table 5 as “Seabirds nei”. This Summary uses official FAO taxonomic nomenclature (i.e. common and scientific names) for seabirds, but please note that this might not always correspond to the nomenclature used e.g. by ACAP.

Problematic records of Parkinson's petrel have been identified in 2021 and 2022 data, which would constitute exceptional records outside of the known distribution area for this species. These observations could not be fully verified and the record resolved; they were thus retained in the data but are flagged here for further consideration.

Potentially problematic records also include observations of Antipodean albatross a in 2024 data. Similar to the case of Parkinson's petrel, this species was never previously reported for the Indian Ocean within the SIOFA Area and would be outside of the known distribution area for this species. In 2024, the Tristan albatross was also recorded for the first time in SIOFA, but its known distribution area includes the Southern Indian Ocean.

Table 5 - Numbers of seabirds observed around fishing operations per species and year (source: SIOFA Observer database 2015–2024). Species nomenclature follows FAO ASFIS codes and might not correspond to other naming conventions (e.g. ACAP nomenclature).

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|-------------------------------|---------------------------------|---------------|-----------|
| 2019 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 18570 |
| 2019 | Black-browed albatross | <i>Thalassarche melanophris</i> | Set longlines | 1140 |
| 2019 | Cape petrel | <i>Daption capense</i> | Set longlines | 15298 |
| 2019 | Hall's giant petrel | <i>Macronectes halli</i> | Set longlines | 1155 |
| 2019 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Set longlines | 34 |
| 2019 | Prions nei | <i>Pachyptila spp</i> | Set longlines | 3 |
| 2019 | Seabirds nei | - | Set longlines | 542 |
| 2019 | Shy albatross | <i>Thalassarche cauta</i> | Set longlines | 1956 |
| 2019 | Southern royal albatross | <i>Diomedea epomophora</i> | Set longlines | 1 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|--------------------------------|------------------------------------|----------------|-----------|
| 2019 | Wandering albatross | <i>Diomedea exulans</i> | Set longlines | 4992 |
| 2019 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 2050 |
| 2019 | Wilson's storm petrel | <i>Oceanites oceanicus</i> | Set longlines | 8 |
| 2020 | Albatrosses nei | <i>Diomedaeidae</i> | Set longlines | 11 |
| 2020 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 3953 |
| 2020 | Antarctic petrel | <i>Thalassoica antarctica</i> | Set longlines | 3 |
| 2020 | Atlant. yellow-nosed albatross | <i>Thalassarche chlororhynchos</i> | Set longlines | 2 |
| 2020 | Black-bellied storm petrel | <i>Fregetta tropica</i> | Set longlines | 568 |
| 2020 | Black-browed albatross | <i>Thalassarche melanophris</i> | Set longlines | 4633 |
| 2020 | Brown skua | <i>Stercorarius antarcticus</i> | Set longlines | 2 |
| 2020 | Buller's albatross | <i>Thalassarche bulleri</i> | Vertical lines | 4 |
| 2020 | Cape petrel | <i>Daption capense</i> | Set longlines | 5686 |
| 2020 | Giant petrels nei | <i>Macronectes spp</i> | Set longlines | 365 |
| 2020 | Great shearwater | <i>Puffinus gravis</i> | Set longlines | 1 |
| 2020 | Great skua | <i>Catharacta skua</i> | Set longlines | 2 |
| 2020 | Grey petrel | <i>Procellaria cinerea</i> | Set longlines | 156 |
| 2020 | Grey-headed albatross | <i>Thalassarche chrysostoma</i> | Set longlines | 1 |
| 2020 | Hall's giant petrel | <i>Macronectes halli</i> | Set longlines | 10295 |
| 2020 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Set longlines | 231 |
| 2020 | Light-mantled sooty albatross | <i>Phoebetria palpebrata</i> | Set longlines | 29 |
| 2020 | Prions nei | <i>Pachyptila spp</i> | Set longlines | 151 |
| 2020 | Seabirds nei | - | Set longlines | 315 |
| 2020 | Seabirds nei | - | Trawls (nei) | 3890 |
| 2020 | Shy albatross | <i>Thalassarche cauta</i> | Set longlines | 1893 |
| 2020 | Sooty albatross | <i>Phoebetria fusca</i> | Set longlines | 16 |
| 2020 | Southern fulmar | <i>Fulmarus glacialisoides</i> | Set longlines | 5 |
| 2020 | Wandering albatross | <i>Diomedea exulans</i> | Set longlines | 10987 |
| 2020 | Wandering albatross | <i>Diomedea exulans</i> | Vertical lines | 9 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|--------------------------------|------------------------------------|---------------------------------|-----------|
| 2020 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 21429 |
| 2020 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Vertical lines | 19 |
| 2020 | Wilson's storm petrel | <i>Oceanites oceanicus</i> | Set longlines | 100 |
| 2021 | Albatrosses nei | <i>Diomedeidae</i> | Set longlines | 10 |
| 2021 | Albatrosses nei | <i>Diomedeidae</i> | Single boat bottom otter trawls | 13 |
| 2021 | Amsterdam Island albatross | <i>Diomedea amsterdamensis</i> | Set longlines | 20 |
| 2021 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Drifting longlines | 64 |
| 2021 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 5655 |
| 2021 | Atlant. yellow-nosed albatross | <i>Thalassarche chlororhynchos</i> | Single boat bottom otter trawls | 37 |
| 2021 | Black-browed albatross | <i>Thalassarche melanophris</i> | Set longlines | 5602 |
| 2021 | Black-browed albatross | <i>Thalassarche melanophris</i> | Single boat bottom otter trawls | 26 |
| 2021 | Blue petrel | <i>Halobaena caerulea</i> | Set longlines | 16 |
| 2021 | Buller's albatross | <i>Thalassarche bulleri</i> | Set longlines | 21 |
| 2021 | Cape petrel | <i>Daption capense</i> | Drifting longlines | 382 |
| 2021 | Cape petrel | <i>Daption capense</i> | Set longlines | 145 |
| 2021 | Fairy prion | <i>Pachyptila turtur</i> | Set longlines | 4 |
| 2021 | Giant petrels nei | <i>Macronectes spp</i> | Set longlines | 176 |
| 2021 | Grey-headed albatross | <i>Thalassarche chrysostoma</i> | Set longlines | 2 |
| 2021 | Hall's giant petrel | <i>Macronectes halli</i> | Set longlines | 2383 |
| 2021 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Drifting longlines | 104 |
| 2021 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Set longlines | 3321 |
| 2021 | Light-mantled sooty albatross | <i>Phoebetria palpebrata</i> | Drifting longlines | 8 |
| 2021 | Light-mantled sooty albatross | <i>Phoebetria palpebrata</i> | Set longlines | 3 |
| 2021 | Parkinson's petrel | <i>Procellaria parkinsoni</i> | Set longlines | 380 |
| 2021 | Seabirds nei | - | Set longlines | 32 |
| 2021 | Shy albatross | <i>Thalassarche cauta</i> | Set longlines | 35 |
| 2021 | Sooty albatross | <i>Phoebetria fusca</i> | Drifting longlines | 9 |
| 2021 | Sooty albatross | <i>Phoebetria fusca</i> | Set longlines | 1 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|--------------------------------|------------------------------------|---------------------------------|-----------|
| 2021 | Sooty shearwater | <i>Puffinus griseus</i> | Set longlines | 8 |
| 2021 | Southern royal albatross | <i>Diomedea epomophora</i> | Set longlines | 1848 |
| 2021 | Wandering albatross | <i>Diomedea exulans</i> | Drifting longlines | 22 |
| 2021 | Wandering albatross | <i>Diomedea exulans</i> | Set longlines | 16352 |
| 2021 | Wandering albatross | <i>Diomedea exulans</i> | Single boat bottom otter trawls | 131 |
| 2021 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Drifting longlines | 180 |
| 2021 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 25673 |
| 2021 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Single boat bottom otter trawls | 683 |
| 2021 | Wilson's storm petrel | <i>Oceanites oceanicus</i> | Set longlines | 1 |
| 2022 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Drifting longlines | 5 |
| 2022 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 25275 |
| 2022 | Atlant. yellow-nosed albatross | <i>Thalassarche chlororhynchos</i> | Set longlines | 1 |
| 2022 | Black-browed albatross | <i>Thalassarche melanophris</i> | Demersal longlines | 261 |
| 2022 | Black-browed albatross | <i>Thalassarche melanophris</i> | Drifting longlines | 15 |
| 2022 | Black-browed albatross | <i>Thalassarche melanophris</i> | Set longlines | 2601 |
| 2022 | Boobies and gannets nei | <i>Sulidae</i> | Drifting longlines | 4 |
| 2022 | Cape petrel | <i>Daption capense</i> | Demersal longlines | 199 |
| 2022 | Cape petrel | <i>Daption capense</i> | Drifting longlines | 343 |
| 2022 | Cape petrel | <i>Daption capense</i> | Set longlines | 3679 |
| 2022 | Cape petrel | <i>Daption capense</i> | Trawls (nei) | 53 |
| 2022 | Flesh-footed shearwater | <i>Puffinus carneipes</i> | Drifting longlines | 12 |
| 2022 | Giant petrels nei | <i>Macronectes spp</i> | Demersal longlines | 374 |
| 2022 | Giant petrels nei | <i>Macronectes spp</i> | Set longlines | 155 |
| 2022 | Great-winged petrel | <i>Pterodroma macroptera</i> | Trawls (nei) | 39 |
| 2022 | Grey petrel | <i>Procellaria cinerea</i> | Set longlines | 1 |
| 2022 | Grey petrel | <i>Procellaria cinerea</i> | Trawls (nei) | 79 |
| 2022 | Grey-headed albatross | <i>Thalassarche chrysostoma</i> | Demersal longlines | 3 |
| 2022 | Hall's giant petrel | <i>Macronectes halli</i> | Set longlines | 382 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|-------------------------------|-----------------------------------|--------------------|-----------|
| 2022 | Hall's giant petrel | <i>Macronectes halli</i> | Trawls (nei) | 226 |
| 2022 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Drifting longlines | 718 |
| 2022 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Set longlines | 1760 |
| 2022 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Trawls (nei) | 4 |
| 2022 | Leach's storm-petrel | <i>Oceanodroma leucorhoa</i> | Drifting longlines | 1 |
| 2022 | Light-mantled sooty albatross | <i>Phoebetria palpebrata</i> | Demersal longlines | 23 |
| 2022 | Parkinson's petrel | <i>Procellaria parkinsoni</i> | Set longlines | 57 |
| 2022 | Prions nei | <i>Pachyptila spp</i> | Demersal longlines | 79 |
| 2022 | Prions nei | <i>Pachyptila spp</i> | Set longlines | 77 |
| 2022 | Prions nei | <i>Pachyptila spp</i> | Trawls (nei) | 16 |
| 2022 | Salvin's albatross | <i>Thalassarche salvini</i> | Drifting longlines | 130 |
| 2022 | Seabirds nei | - | Demersal longlines | 8 |
| 2022 | Seabirds nei | - | Set longlines | 184 |
| 2022 | Seabirds nei | - | Trawls (nei) | 3103 |
| 2022 | Shearwaters nei | <i>Puffinus spp</i> | Set longlines | 425 |
| 2022 | Shy albatross | <i>Thalassarche cauta</i> | Set longlines | 1750 |
| 2022 | Shy albatross | <i>Thalassarche cauta</i> | Trawls (nei) | 130 |
| 2022 | Sooty albatross | <i>Phoebetria fusca</i> | Drifting longlines | 1 |
| 2022 | Southern fulmar | <i>Fulmarus glacialisoides</i> | Demersal longlines | 13 |
| 2022 | Southern royal albatross | <i>Diomedea epomophora</i> | Set longlines | 692 |
| 2022 | Wandering albatross | <i>Diomedea exulans</i> | Demersal longlines | 112 |
| 2022 | Wandering albatross | <i>Diomedea exulans</i> | Drifting longlines | 183 |
| 2022 | Wandering albatross | <i>Diomedea exulans</i> | Set longlines | 18182 |
| 2022 | Wandering albatross | <i>Diomedea exulans</i> | Trawls (nei) | 168 |
| 2022 | White-capped albatross | <i>Thalassarche steadi</i> | Drifting longlines | 6 |
| 2022 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Demersal longlines | 485 |
| 2022 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Drifting longlines | 1441 |
| 2022 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 26675 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|-------------------------------|---------------------------------|-----------------------|-----------|
| 2023 | Amsterdam Island albatross | <i>Diomedea amsterdamensis</i> | Set longlines | 26 |
| 2023 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Bottom trawls (nei) | 157 |
| 2023 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Midwater trawls (nei) | 179 |
| 2023 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 32424 |
| 2023 | Black-browed albatross | <i>Thalassarche melanophris</i> | Bottom trawls (nei) | 24 |
| 2023 | Black-browed albatross | <i>Thalassarche melanophris</i> | Midwater trawls (nei) | 44 |
| 2023 | Black-browed albatross | <i>Thalassarche melanophris</i> | Set longlines | 2162 |
| 2023 | Cape petrel | <i>Daption capense</i> | Bottom trawls (nei) | 96 |
| 2023 | Cape petrel | <i>Daption capense</i> | Midwater trawls (nei) | 106 |
| 2023 | Cape petrel | <i>Daption capense</i> | Set longlines | 2514 |
| 2023 | Giant petrels nei | <i>Macronectes spp</i> | Bottom trawls (nei) | 141 |
| 2023 | Giant petrels nei | <i>Macronectes spp</i> | Midwater trawls (nei) | 48 |
| 2023 | Giant petrels nei | <i>Macronectes spp</i> | Set longlines | 38 |
| 2023 | Great-winged petrel | <i>Pterodroma macroptera</i> | Bottom trawls (nei) | 264 |
| 2023 | Great-winged petrel | <i>Pterodroma macroptera</i> | Midwater trawls (nei) | 328 |
| 2023 | Great-winged petrel | <i>Pterodroma macroptera</i> | Set longlines | 492 |
| 2023 | Grey petrel | <i>Procellaria cinerea</i> | Bottom trawls (nei) | 14 |
| 2023 | Grey petrel | <i>Procellaria cinerea</i> | Midwater trawls (nei) | 7 |
| 2023 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Bottom trawls (nei) | 12 |
| 2023 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Midwater trawls (nei) | 52 |
| 2023 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Set longlines | 4848 |
| 2023 | Prions nei | <i>Pachyptila spp</i> | Bottom trawls (nei) | 5 |
| 2023 | Prions nei | <i>Pachyptila spp</i> | Midwater trawls (nei) | 35 |
| 2023 | Seabirds nei | - | Bottom trawls (nei) | 290 |
| 2023 | Seabirds nei | - | Midwater trawls (nei) | 980 |
| 2023 | Seabirds nei | - | Set longlines | 25 |
| 2023 | Shearwaters nei | <i>Puffinus spp</i> | Set longlines | 30 |
| 2023 | Shy albatross | <i>Thalassarche cauta</i> | Bottom trawls (nei) | 160 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|-------------------------------|-----------------------------------|-----------------------|-----------|
| 2023 | Shy albatross | <i>Thalassarche cauta</i> | Midwater trawls (nei) | 330 |
| 2023 | Shy albatross | <i>Thalassarche cauta</i> | Set longlines | 3155 |
| 2023 | Sooty albatross | <i>Phoebetria fusca</i> | Set longlines | 2 |
| 2023 | Southern royal albatross | <i>Diomedea epomophora</i> | Set longlines | 302 |
| 2023 | Wandering albatross | <i>Diomedea exulans</i> | Bottom trawls (nei) | 81 |
| 2023 | Wandering albatross | <i>Diomedea exulans</i> | Midwater trawls (nei) | 151 |
| 2023 | Wandering albatross | <i>Diomedea exulans</i> | Set longlines | 39214 |
| 2023 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Bottom trawls (nei) | 180 |
| 2023 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Midwater trawls (nei) | 539 |
| 2023 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 59347 |
| 2023 | Wilson's storm petrel | <i>Oceanites oceanicus</i> | Bottom trawls (nei) | 10 |
| 2023 | Wilson's storm petrel | <i>Oceanites oceanicus</i> | Midwater trawls (nei) | 21 |
| 2024 | Albatrosses nei | <i>Diomedidae</i> | Set longlines | 33 |
| 2024 | Amsterdam Island albatross | <i>Diomedea amsterdamensis</i> | Midwater trawls (nei) | 510 |
| 2024 | Antarctic giant petrel | <i>Macronectes giganteus</i> | Set longlines | 14160 |
| 2024 | Antipodean albatross | <i>Diomedea antipodensis</i> | Midwater trawls (nei) | 100 |
| 2024 | B/W bellied storm petrels nei | <i>Fregetta spp</i> | Set longlines | 41 |
| 2024 | Black-browed albatross | <i>Thalassarche melanophris</i> | Set longlines | 2466 |
| 2024 | Buller's albatross | <i>Thalassarche bulleri</i> | Set longlines | 7 |
| 2024 | Cape petrel | <i>Daption capense</i> | Midwater trawls (nei) | 90 |
| 2024 | Cape petrel | <i>Daption capense</i> | Set longlines | 5644 |
| 2024 | Giant petrels nei | <i>Macronectes spp</i> | Set longlines | 793 |
| 2024 | Great-winged petrel | <i>Pterodroma macroptera</i> | Set longlines | 632 |
| 2024 | Grey petrel | <i>Procellaria cinerea</i> | Midwater trawls (nei) | 2 |
| 2024 | Grey petrel | <i>Procellaria cinerea</i> | Set longlines | 20 |
| 2024 | Grey-headed albatross | <i>Thalassarche chrysostoma</i> | Set longlines | 4 |
| 2024 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Bottom trawls (nei) | 9 |
| 2024 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Midwater trawls (nei) | 135 |

| Year | Common name | Scientific name | Fishing gear | Abundance |
|------|-------------------------------|-----------------------------------|-----------------------|-----------|
| 2024 | Indian yellow-nosed albatross | <i>Thalassarche carteri</i> | Set longlines | 2009 |
| 2024 | Prions nei | <i>Pachyptila spp</i> | Set longlines | 59 |
| 2024 | Seabirds nei | - | Midwater trawls (nei) | 13371 |
| 2024 | Shearwaters nei | <i>Puffinus spp</i> | Set longlines | 1826 |
| 2024 | Shy albatross | <i>Thalassarche cauta</i> | Set longlines | 4345 |
| 2024 | Sooty albatross | <i>Phoebetria fusca</i> | Set longlines | 55 |
| 2024 | Southern fulmar | <i>Fulmarus glacialisoides</i> | Midwater trawls (nei) | 3 |
| 2024 | Tristan albatross | <i>Diomedea dabbenena</i> | Bottom trawls (nei) | 7 |
| 2024 | Tristan albatross | <i>Diomedea dabbenena</i> | Midwater trawls (nei) | 87 |
| 2024 | Wandering albatross | <i>Diomedea exulans</i> | Bottom trawls (nei) | 40 |
| 2024 | Wandering albatross | <i>Diomedea exulans</i> | Midwater trawls (nei) | 1393 |
| 2024 | Wandering albatross | <i>Diomedea exulans</i> | Set longlines | 19586 |
| 2024 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Bottom trawls (nei) | 171 |
| 2024 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Midwater trawls (nei) | 1922 |
| 2024 | White-chinned petrel | <i>Procellaria aequinoctialis</i> | Set longlines | 36209 |
| 2024 | Wilson's storm petrel | <i>Oceanites oceanicus</i> | Midwater trawls (nei) | 25 |

Table 6 summarizes the number of records where observers did not detect birds around fishing operations (0 detection events), grouped by type of fishing gear. Due to the missing linkages between the CatchEffort and the Observer database it is impossible to determine the share of fishing events observed for seabirds presence on the total of fishing events.

Table 6 - Records where observers did not detect birds around fishing operations (0 detection events), by gear (source: SIOFA Observer database 2015–2024).

| Observations of seabirds in SIOFA fisheries (2015-2024) | | | | |
|---|--|---|--|--|
| Year | Fishing gear | Fishing events observed with no seabirds reported | Fishing events observed with seabirds reported | Share of events observed with no seabirds reported (%) |
| 2020 | Handlines and hand-operated pole-and-lines | 134 | 0 | 100.0 |
| 2020 | Set longlines | 88 | 1 475 | 5.6 |
| 2020 | Single boat bottom otter trawls | 464 | 0 | 100.0 |
| 2020 | Trawls (nei) | 0 | 209 | 0.0 |
| 2020 | Vertical lines | 6 | 6 | 50.0 |
| 2021 | Drifting longlines | 0 | 41 | 0.0 |
| 2021 | Handlines and hand-operated pole-and-lines | 52 | 0 | 100.0 |
| 2021 | Set longlines | 65 | 852 | 7.1 |
| 2021 | Single boat bottom otter trawls | 3 | 28 | 9.7 |
| 2022 | Bottom trawls (nei) | 984 | 0 | 100.0 |
| 2022 | Demersal longlines | 0 | 125 | 0.0 |
| 2022 | Drifting longlines | 0 | 279 | 0.0 |
| 2022 | Handlines and hand-operated pole-and-lines | 49 | 0 | 100.0 |
| 2022 | Set longlines | 5 | 951 | 0.5 |
| 2022 | Trawls (nei) | 2 | 207 | 1.0 |
| 2023 | Bottom trawls (nei) | 0 | 153 | 0.0 |
| 2023 | Handlines and hand-operated pole-and-lines | 2 | 0 | 100.0 |
| 2023 | Mechanized lines and pole-and-lines | 6 | 0 | 100.0 |
| 2023 | Midwater trawls (nei) | 1 | 277 | 0.4 |
| 2023 | Set longlines | 0 | 1 385 | 0.0 |
| 2024 | Bottom trawls (nei) | 1 | 18 | 5.3 |
| 2024 | Mechanized lines and pole-and-lines | 1 | 0 | 100.0 |
| 2024 | Midwater trawls (nei) | 67 | 783 | 7.9 |
| 2024 | Set longlines | 0 | 1 491 | 0.0 |

Not all fishing events that were observed included the observation of seabirds presence, and Table 7 summarizes at least the total number of events that were not observed for bird presence per each year. Due to the imperfect linkages between the CatchEffort and the Observer database it is challenging to determine the exact share of fishing events observed for seabirds presence on the total of fishing events.

Table 7 - Fishing events that were observed but where bird presence around fishing operations was not observed (source: SIOFA Observer database 2015–2024).

| Fishing events not observed for seabirds in SIOFA fisheries (2015-2024) | | |
|---|-----------------------|---|
| Year | Fishing gear | Fishing events not observed for seabirds presence |
| 2020 | Set longlines | 68 |
| 2021 | Set longlines | 158 |
| 2022 | Set longlines | 84 |
| 2023 | Bottom trawls (nei) | 8 |
| 2023 | Midwater trawls (nei) | 18 |
| 2024 | Midwater trawls (nei) | 165 |
| 2024 | Set longlines | 14 |

9.2 Marine turtles

Four incidental captures of marine turtles have been reported in SIOFA fisheries, in 2019 and 2020 (Table 8).

Table 8 - Reported Incidental captures of marine turtles (source: SIOFA Observer database 2004–2023).

| Captures of marine turtles in SIOFA fisheries (2015-2024) | | | | | |
|---|---------------------|-------------------------------|--|----------|-------------------|
| Year | Common name | Scientific name | Fishing gear | Captures | Status at release |
| 2019 | Hawksbill turtle | <i>Eretmochelys imbricata</i> | Handlines and hand-operated pole-and-lines | 1 | Unknown |
| 2020 | Leatherback turtle | <i>Dermochelys coriacea</i> | Single boat bottom otter trawls | 3 | Alive |
| 2021 | Leatherback turtle | <i>Dermochelys coriacea</i> | Single boat bottom otter trawls | 1 | Alive |
| 2022 | Leatherback turtle | <i>Dermochelys coriacea</i> | Bottom trawls (nei) | 2 | Unknown |
| 2022 | Leatherback turtle | <i>Dermochelys coriacea</i> | Single boat bottom otter trawls | 2 | Unknown |
| 2023 | Leatherback turtle | <i>Dermochelys coriacea</i> | Bottom trawls (nei) | 1 | Unknown |
| 2023 | Leatherback turtle | <i>Dermochelys coriacea</i> | Single boat bottom otter trawls | 1 | Alive |
| 2024 | Hawksbill turtle | <i>Eretmochelys imbricata</i> | Bottom trawls (nei) | 2 | Unknown |
| 2024 | Leatherback turtle | <i>Dermochelys coriacea</i> | Bottom trawls (nei) | 2 | Unknown |
| 2024 | Olive ridley turtle | <i>Lepidochelys olivacea</i> | Drifting longlines | 1 | Unknown |

9.3 Marine mammals

9.3.1 Incidental captures

Only a single incidental capture of a marine mammal (a sperm whale) has been reported in SIOFA fisheries, in 2012 (Table 9).

Table 9 - Reported Incidental captures of marine mammals (source: SIOFA Observer database 2004–2024).

| Captures of marine mammals in SIOFA fisheries (2004-2023) | | | | | |
|---|-------------|-------------------------------|---------------------------------|----------|-------------------|
| Year | Common name | Scientific name | Fishing gear | Captures | Status at release |
| 2012 | Sperm whale | <i>Physeter macrocephalus</i> | Single boat bottom otter trawls | 1 | Alive |

9.3.2 Abundance observed around fishing operations

Marine mammal presence around fishing operations were first recorded in 2021 (Table 10), and a revision of this data in 2025 brought to light more observations than reported in the SIOFA Ecosystem Summary 2024.

Table 10 - Observations of marine mammals around fishing operations (source: SIOFA Observer database 2015–2024).

| Observations of marine mammals in SIOFA fisheries (2015-2024) | | | | |
|---|-------------------------|---------------------------------|--------------------|-------------------|
| Year | Common name | Scientific name | Fishing gear | Maximum abundance |
| 2021 | Antarctic minke whale | <i>Balaenoptera bonaerensis</i> | Set longlines | 3 |
| 2021 | False killer whale | <i>Pseudorca crassidens</i> | Set longlines | 10 |
| 2021 | Killer whale | <i>Orcinus orca</i> | Set longlines | 205 |
| 2021 | Sperm whale | <i>Physeter macrocephalus</i> | Set longlines | 41 |
| 2022 | Humpback whale | <i>Megaptera novaeangliae</i> | Set longlines | 21 |
| 2022 | Long-finned pilot whale | <i>Globicephala melas</i> | Set longlines | 270 |
| 2022 | Sperm whale | <i>Physeter macrocephalus</i> | Set longlines | 59 |
| 2022 | - | - | Set longlines | 2 |
| 2023 | False killer whale | <i>Pseudorca crassidens</i> | Set longlines | 120 |
| 2023 | Humpback whale | <i>Megaptera novaeangliae</i> | Set longlines | 1 |
| 2023 | Killer whale | <i>Orcinus orca</i> | Set longlines | 149 |
| 2023 | Long-finned pilot whale | <i>Globicephala melas</i> | Set longlines | 30 |
| 2023 | Sperm whale | <i>Physeter macrocephalus</i> | Demersal longlines | 1 |
| 2023 | Sperm whale | <i>Physeter macrocephalus</i> | Set longlines | 123 |
| 2024 | Killer whale | <i>Orcinus orca</i> | Set longlines | 203 |
| 2024 | Sperm whale | <i>Physeter macrocephalus</i> | Set longlines | 124 |

9.3.1 Interactions with fishing gear

SIOFA Scientific Observers collect information on marine mammals interactions with fishing gear. This allows considerations of interactions both in time and space, as well as on the species interacting with gear. No information is available on the number of mammals interacting with the gear or the exact nature of the interactions, but solely on the interactions taking place. All interactions were reported exclusively with set longlines in Subarea 3b (Figure 13), but the target species of these operations indicated by the Scientific Observers did not always match those recorded in the CatchEffort database.

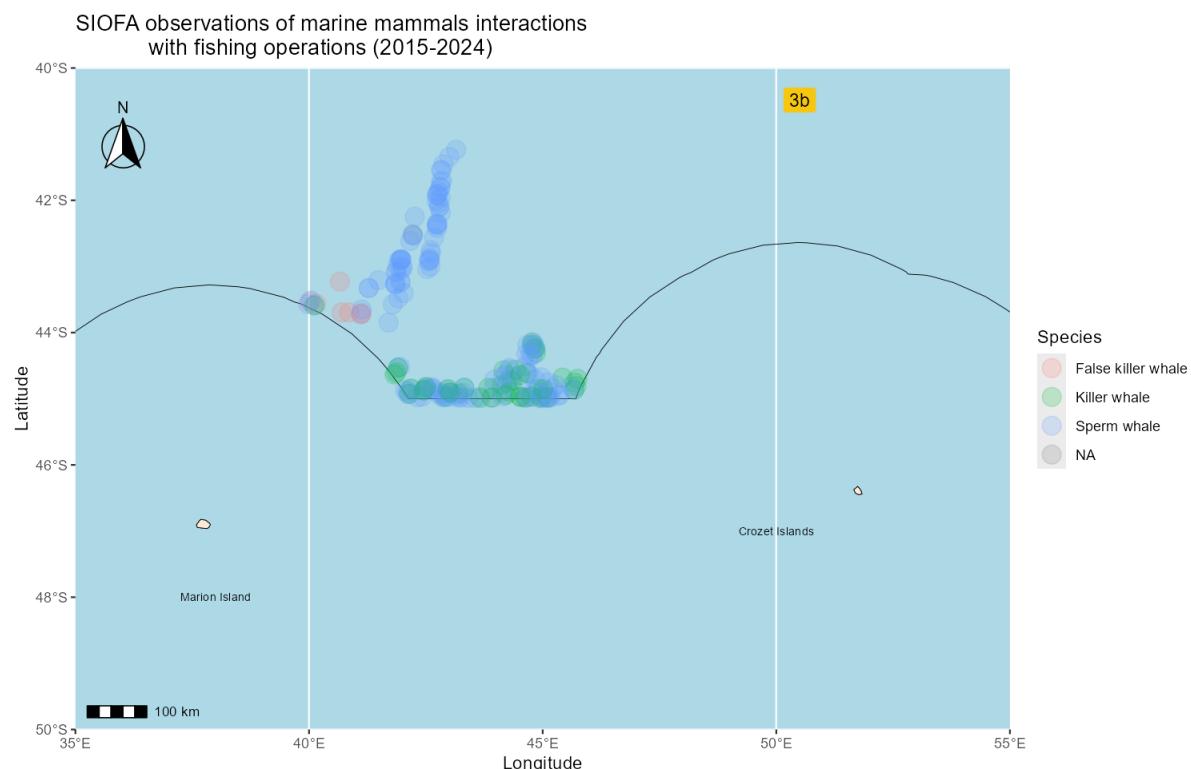


Figure 13 – Reported locations of marine mammal interactions with fishing gear in the SIOFA Area, as recorded by SIOFA Scientific Observers (source: SIOFA Observer database 2015–2024).

Figure 14 illustrates the marine mammal interactions by species; the majority of interactions are by sperm whales, with some killer whales and false killer also interacting with the gear at times. Note that interactions were reported for 2 events where no species identification was recorded (NA in the Figure).

Marine mammal interactions with fishing gear in SIOFA (2015-2024)

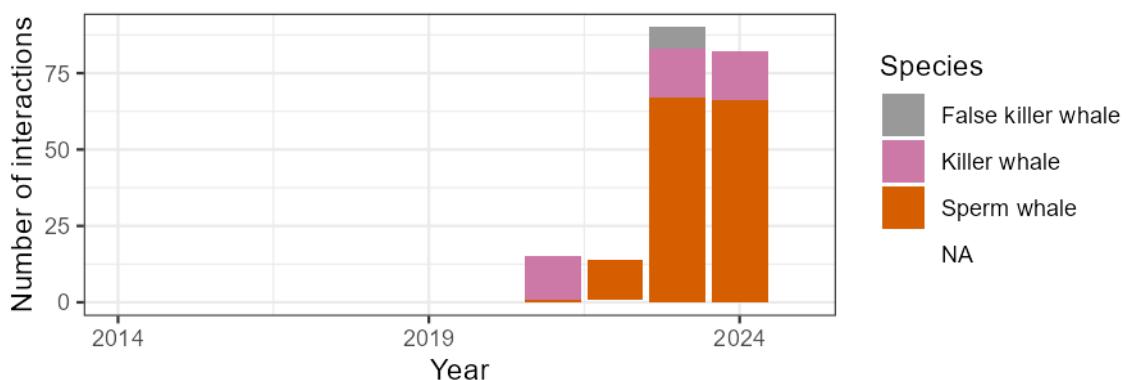


Figure 14 – Reported interactions of marine mammals with fishing gear in the SIOFA Area, by species, as recorded by SIOFA Scientific Observers (source: SIOFA Observer database 2015–2024).

While the observer coverage of Patagonian toothfish fishing trips is 100%, some events are not targeting Patagonian toothfish and some events were not be observed for marine mammals. Furthermore, there are discrepancies between the Observer and CatchEffort databases and the linkage between the events, which are likely the reason why more events were observed than the total events in 2022 and 2023.

Reference to table 11

Table 11 – Share of set longline fishing events in SIOFA Subarea 3b for which presence and interactions with marine mammals have been reported via the Observer database (source: SIOFA Observer database 2015–2024).

| Observation of marine mammals in SIOFA set longline fisheries within Subarea 3b (2015-2024) | | | | | | | |
|---|---------------------------|-----------------------|-------------------------------|--------------------------------|-----------------------------------|-------------------------------|---------------------|
| Year | Total set longline events | Total observed events | % events observed for mammals | % events where mammals present | % events where mammals interacted | % events where mammals absent | % unobserved events |
| 2021 | 357 | 202 | 56.58 | 20.79 | 7.426 | 46.53 | 32.178 |
| 2022 | 225 | 233 | 103.56 | 17.17 | 6.009 | 81.12 | 1.717 |
| 2023 | 253 | 255 | 100.79 | 34.90 | 32.941 | 65.10 | 0.000 |
| 2024 | 209 | 186 | 89.00 | 40.86 | 39.247 | 56.45 | 2.688 |

9.4 Shark captures of species considered to be at high risk and/or of concern

This summary reports captures of sharks considered to be “at high risk” and/or “of concern”, as defined in Annex 1 of [CMM 12\(2025\)](#). However, these shark captures have only been occasionally recorded in the SIOFA Observer database, as shark captures were able to be targeted before 10 October 2019 and were reported in the CatchEffort database (summarised in Section 5.2 and Figure 7 above) instead of in the Observer database. For completeness, shark captures recorded in the Observer database are shown in Table 12, but these data cannot be considered a reliable indicator of actual numbers of captures (e.g., see Figure 7).

Note that discussions during the 8th meeting of the SIOFA Scientific Committee suggested the possibility of data from the Secretariat records being incomplete, in particular those of observer reported captures of sharks included in Annex 1 of [CMM 12\(2025\)](#). This issue has been resolved in the SIOFA Ecosystem Summary 2024.

Table 12 - Incidental captures of sharks considered to be “at high risk” and/or “of concern”, as defined in Annex 1 of [CMM 12\(2025\)](#) for which interactions have been reported via the Observer database (source: SIOFA Observer database 2015–2024).

| Captures of sharks 'at risk' or 'of concern' sharks in SIOFA fisheries (2015-2024) | | | | |
|--|---------------------------|-----------------------------------|---------------------------------|--------------|
| Year | Common name | Scientific name | Fishing gear | Captures (n) |
| 2016 | Birdbeak dogfish | <i>Deania calceus</i> | Midwater trawls (nei) | 1 |
| 2016 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 1 |
| 2017 | Birdbeak dogfish | <i>Deania calceus</i> | Midwater trawls (nei) | 2 |
| 2017 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 3 |
| 2017 | Portuguese dogfish | <i>Centroscymnus coelolepis</i> | Midwater trawls (nei) | 1 |
| 2018 | Birdbeak dogfish | <i>Deania calceus</i> | Bottom trawls (nei) | 297 |
| 2018 | Frilled shark | <i>Chlamydoselachus anguineus</i> | Bottom trawls (nei) | 1 |
| 2018 | Goblin shark | <i>Mitsukurina owstoni</i> | Bottom trawls (nei) | 2 |
| 2018 | Gulper shark | <i>Centrophorus granulosus</i> | Bottom trawls (nei) | 67 |
| 2018 | Kitefin shark | <i>Dalatias licha</i> | Bottom trawls (nei) | 120 |
| 2018 | Largespine velvet dogfish | <i>Scymnodon macracanthus</i> | Bottom trawls (nei) | 76 |
| 2018 | Longnose velvet dogfish | <i>Centroscelachus crepidater</i> | Bottom trawls (nei) | 217 |
| 2018 | Pacific longnose chimaera | <i>Harriotta raleighana</i> | Bottom trawls (nei) | 30 |
| 2018 | Portuguese dogfish | <i>Centroscymnus coelolepis</i> | Bottom trawls (nei) | 34 |
| 2018 | Velvet dogfish | <i>Zameus squamulosus</i> | Bottom trawls (nei) | 9 |
| 2018 | Birdbeak dogfish | <i>Deania calceus</i> | Midwater trawls (nei) | 53 |
| 2018 | Gulper shark | <i>Centrophorus granulosus</i> | Midwater trawls (nei) | 2 |
| 2018 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 47 |
| 2018 | Largespine velvet dogfish | <i>Scymnodon macracanthus</i> | Midwater trawls (nei) | 1 |
| 2018 | Longnose velvet dogfish | <i>Centroscelachus crepidater</i> | Midwater trawls (nei) | 15 |
| 2018 | Portuguese dogfish | <i>Centroscymnus coelolepis</i> | Midwater trawls (nei) | 2 |
| 2018 | Velvet dogfish | <i>Zameus squamulosus</i> | Midwater trawls (nei) | 5 |
| 2019 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 9 |
| 2019 | Leafscale gulper shark | <i>Centrophorus squamosus</i> | Midwater trawls (nei) | 1 |
| 2019 | Smooth lanternshark | <i>Etmopterus pusillus</i> | Midwater trawls (nei) | 82 |
| 2019 | Southern sleeper shark | <i>Somniosus antarcticus</i> | Midwater trawls (nei) | 1 |
| 2020 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 4 |
| 2021 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 4 |
| 2021 | Leafscale gulper shark | <i>Centrophorus squamosus</i> | Midwater trawls (nei) | 2 |
| 2022 | Leafscale gulper shark | <i>Centrophorus squamosus</i> | Midwater trawls (nei) | 2 |
| 2022 | Bigeyed sixgill shark | <i>Hexanchus nakamurai</i> | Single boat bottom otter trawls | 7 |
| 2022 | Birdbeak dogfish | <i>Deania calceus</i> | Trawls (nei) | 2 |
| 2022 | Longnose velvet dogfish | <i>Centroscelachus crepidater</i> | Trawls (nei) | 4 |
| 2024 | Birdbeak dogfish | <i>Deania calceus</i> | Midwater trawls (nei) | 2 |
| 2024 | Kitefin shark | <i>Dalatias licha</i> | Midwater trawls (nei) | 2 |
| 2024 | Gulper shark | <i>Centrophorus granulosus</i> | Set longlines | 5 |

10. Interactions with the seafloor and benthic organisms

A particular focus in the work of the SIOFA Scientific Committee has been the interaction of fisheries with the seafloor and its benthic organisms. This followed a specific mandate included in [CMM 01\(2025\)](#), which required the Scientific Committee to develop and provide advice and recommendations to the Meeting of the Parties to define the maximum extent of an appropriate SIOFA bottom fishing footprint (i.e., a map of the spatial extent of historical bottom fishing in the Agreement Area, for all vessels flagged to all CCPs). Furthermore, VME presence in the SIOFA Area is being investigated, and the SIOFA Scientific Committee is planning to elaborate its scientific advice on management of VMEs for the Meeting of the Parties to consider.

10.1 SIOFA bottom fishing footprint

The 7th meeting of the SIOFA Scientific Committee endorsed a map of the spatial extent of historical bottom fishing in the SIOFA Area, as presented at PAEWG4 (Figure 15, para 180 of the [SC7 Report](#)). The footprint shown in this figure includes midwater trawling fishing activities. The Scientific Committee also recommended that further work was needed to clarify whether national data was properly accounted for in the PAEWG4 footprint shown here and that heatmaps of fishing activity be developed.

The 9th Meeting of the Parties of SIOFA (MoP9) noted that there was still outstanding work on the footprint recommended by 7th meeting of the Scientific Committee but recommended that this estimate of the footprint be adopted on an interim basis until the Scientific Committee can update it (para 113 of the [MoP9 Report](#)). However, MoP9 also decided that midwater trawling was not to be considered bottom fishing for the purposes of defining the footprint (Annex I of the [MoP9 Report](#)).

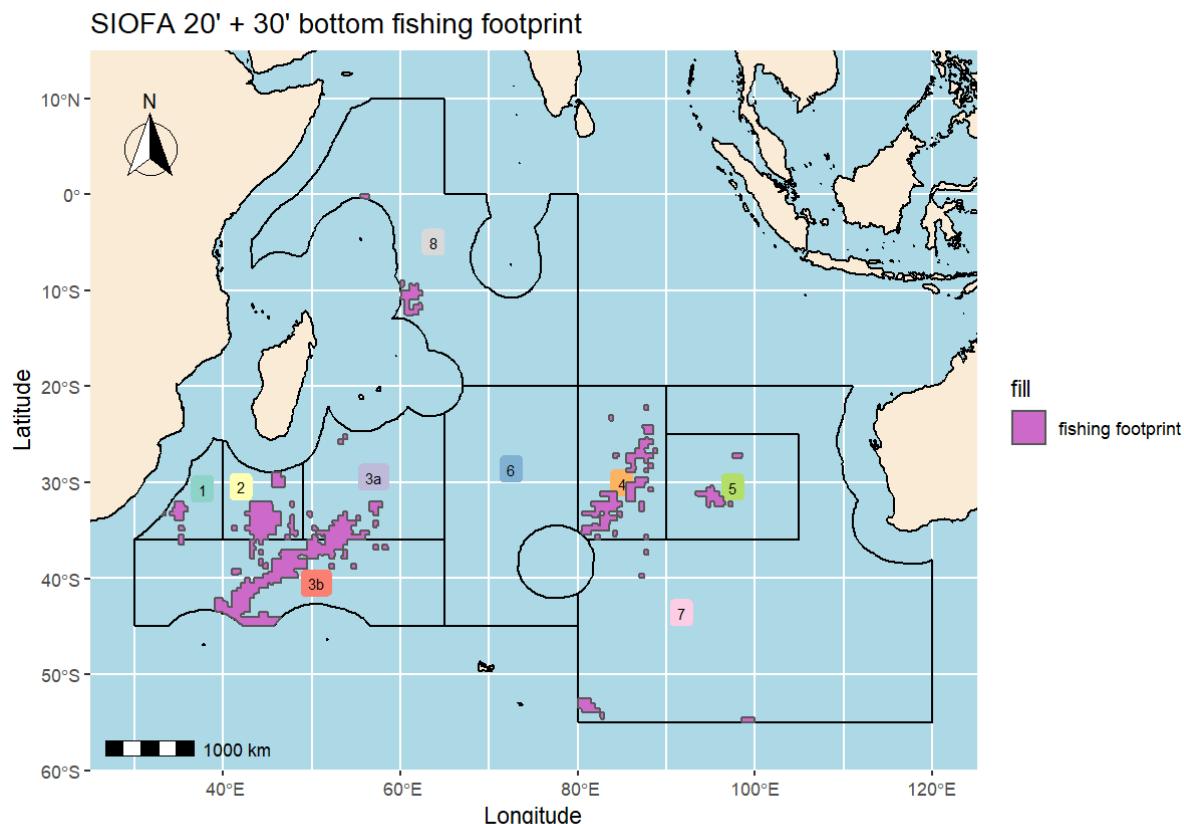


Figure 15 – SIOFA bottom fishing interim footprint map derived from recent (2016–2020) set level and aggregated historical (1998–2015) fishing data, at a hybrid 20' x 30' square resolution (sources: SIOFA HBHCatchEffort 1998–2020, and SIOFA spatial layers, edited from the SC7 final report and PAEWG-04-12 versions

for clarity). Note that because actual fishing events are narrower than the spatial resolution at which the data are summarised, the combined area of the cells will exceed the area of the actual fishery footprint.

After removing midwater trawls, and accounting for the national data provided by SIOFA CCPs for the purpose of updating the mapped footprint, the Interim Footprint map endorsed at MoP9 was revised (Figure 16) and the overall footprint area increased marginally (6%) and shifted in its relative position.

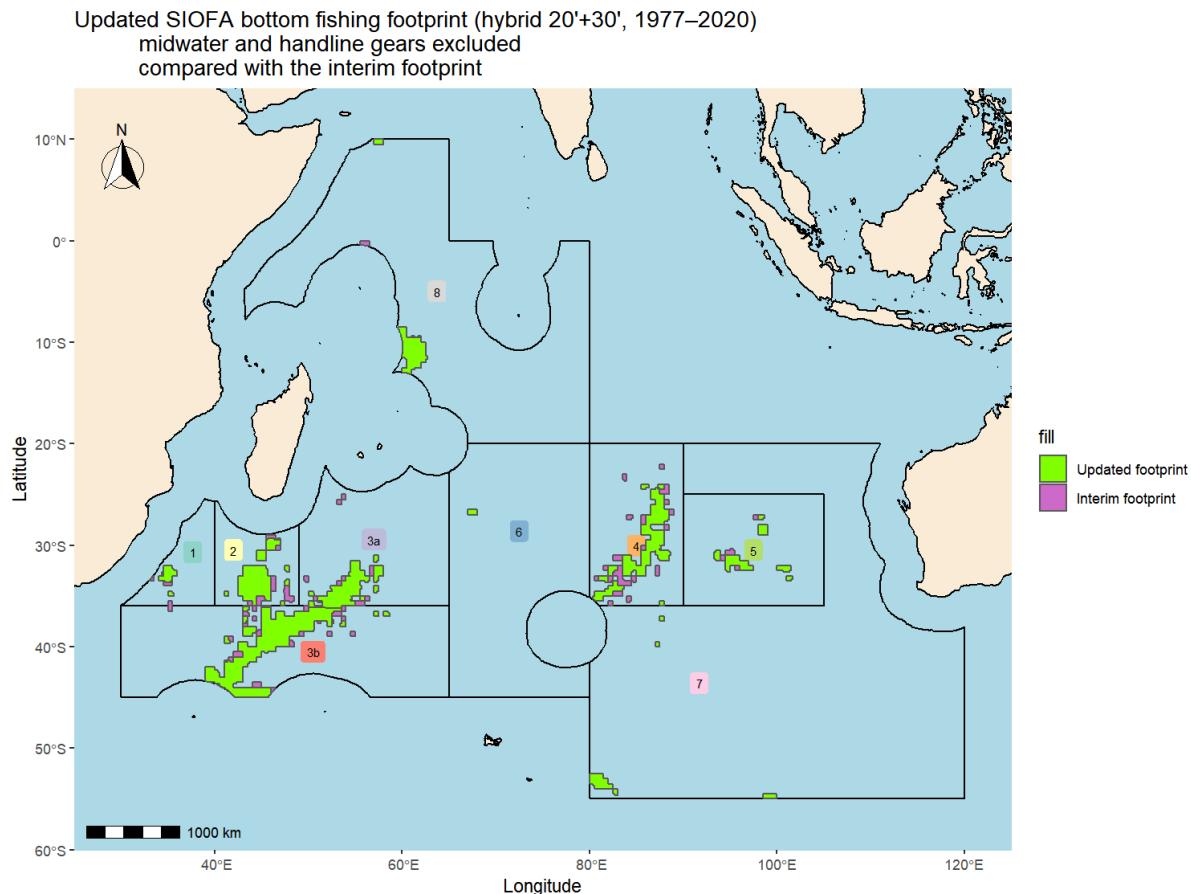


Figure 16 – Revised SIOFA bottom fishing footprint map derived from recent set level and historical fishing data from 1977–2020, at a hybrid 20' x 30' square resolution (sources: SIOFA HBHCatchEffort 1998–2020, national data, and SIOFA spatial layers). The footprint shown in this map does not include midwater trawling or handlining, and includes additional data provided by SIOFA CCPs for the purpose of updating the footprint map. Note that because actual fishing events are narrower than the spatial resolution at which the data are summarised, the combined area of the cells will exceed the area of the actual fishery footprint.

The revised SIOFA Bottom Fishing footprint (Figure 16) was adopted by the SIOFA Meeting of the Parties in 2023 (Para 113-114 [MoP10 report](#)) and was made available as a shapefile through the SIOFA GitHub (https://github.com/SIOFASecretariat/SIOFA_SC_Spatial_layers).

The total surface area of the updated footprint is (approximately) 1 131 244 km².

The total surface area of the SIOFA area is (approximately) 27 162 002 km². Therefore, the updated footprint area is (approximately) 4.16% of the total SIOFA area.

Within the SIOFA area, the total area with depths shallower than 2000m is (approximately) 834 497 km² (3.1% of the total SIOFA area). The updated footprint overlaps with this area for (approximately) 646 236 km² (77.4% of the total area), leaving (approximately) 188 261 km² outside of the footprint (22.6% of the total area).

For the draft heatmap of bottom fishing activities, the number of bottom fishing events (all gears combined) was calculated for each of the 30' cells in the SIOFA Area (Figure 17). WS2022-SUM1 suggested that further developments of this heatmap could consider representing different metrics of fishing effort (e.g., number of hooks or length of trawls), but doing so would require the production of separate maps for different gears, as these measures are not directly comparable.

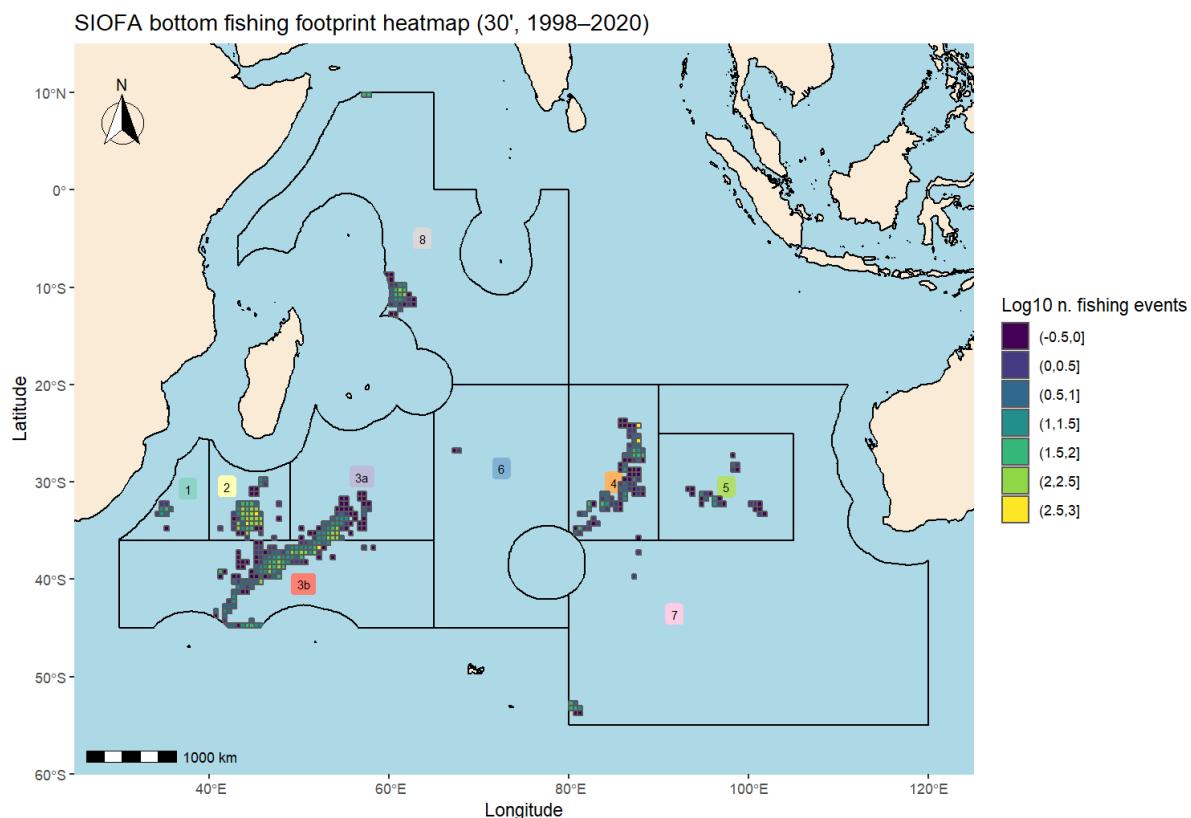


Figure 17 – Heatmap of bottom fishing effort levels in the SIOFA area, derived from recent set level and historical fishing data from 1998–2020, at 30' square resolution (sources: SIOFA HBHCatchEffort 1998–2020, and SIOFA spatial layers). The footprint shown in this map does not include midwater trawling or handlining, and includes additional data provided by SIOFA CCPs for the purpose of updating the footprint map. Note that because actual fishing events are narrower than the spatial resolution at which the data are summarised, the combined area of the cells will exceed the area of the actual fishery footprint.

10.2 Revised bottom fishing footprint by gear

The revised bottom fishing footprint was disaggregated to produce gear-specific maps of bottom fishing effort distribution. Gear-specific maps of bottom fishing effort distribution included longlines (including Demersal longlines, Dropline, Set longlines, and Vertical lines), trawls (including Bottom

trawls (nei), Trawls (nei), and Single boat bottom otter trawls), gillnets and entangling nets (nei), and traps (nei).

These maps are summarised in Figure 18 to Figure 21, shown at a coarser spatial resolution (5 x 5 degree squares) as recommended by WS2022-SUM1.

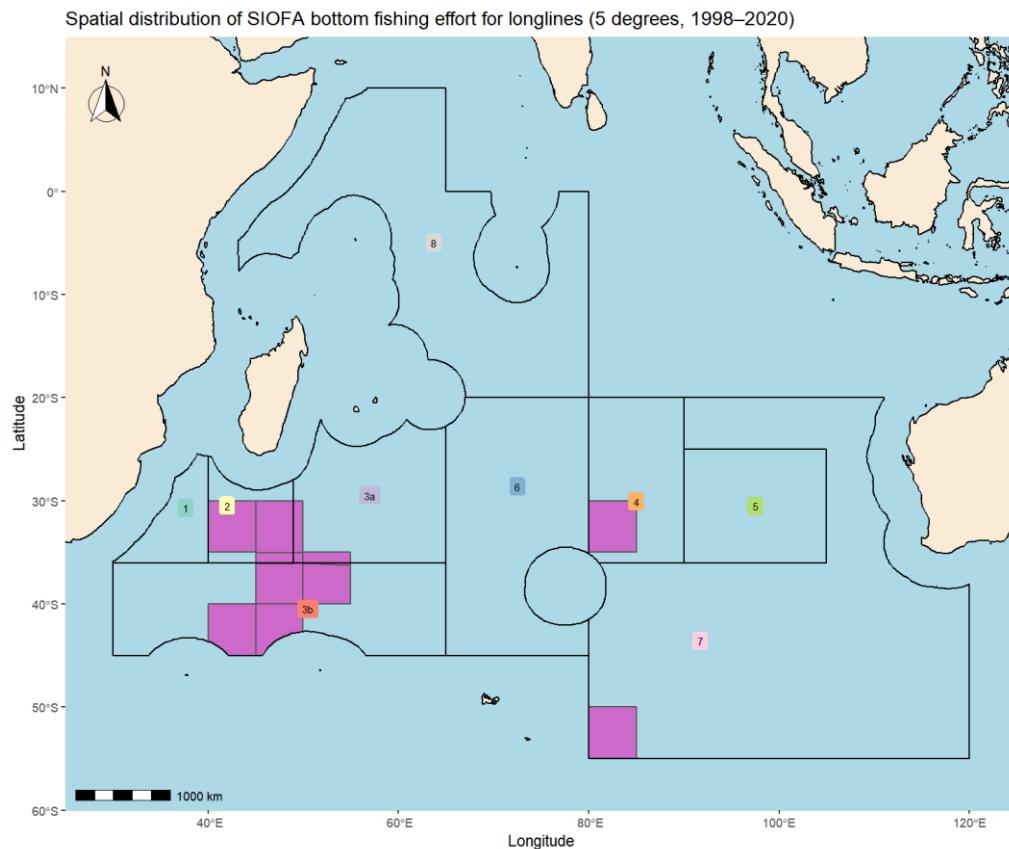


Figure 18 – Spatial distribution of SIOFA bottom fishing effort for longlines (including Demersal longlines, Dropline, Set longlines, and Vertical lines) derived from recent set level and historical fishing data from 1998–2020, at a 5 degrees square resolution (sources: SIOFA HBHCatchEffort 1998–2020, and SIOFA spatial layers). Note that due to the coarse spatial resolution of these data, the area of the non-zero-effort cells will greatly exceed the actual area of the fishing footprint.

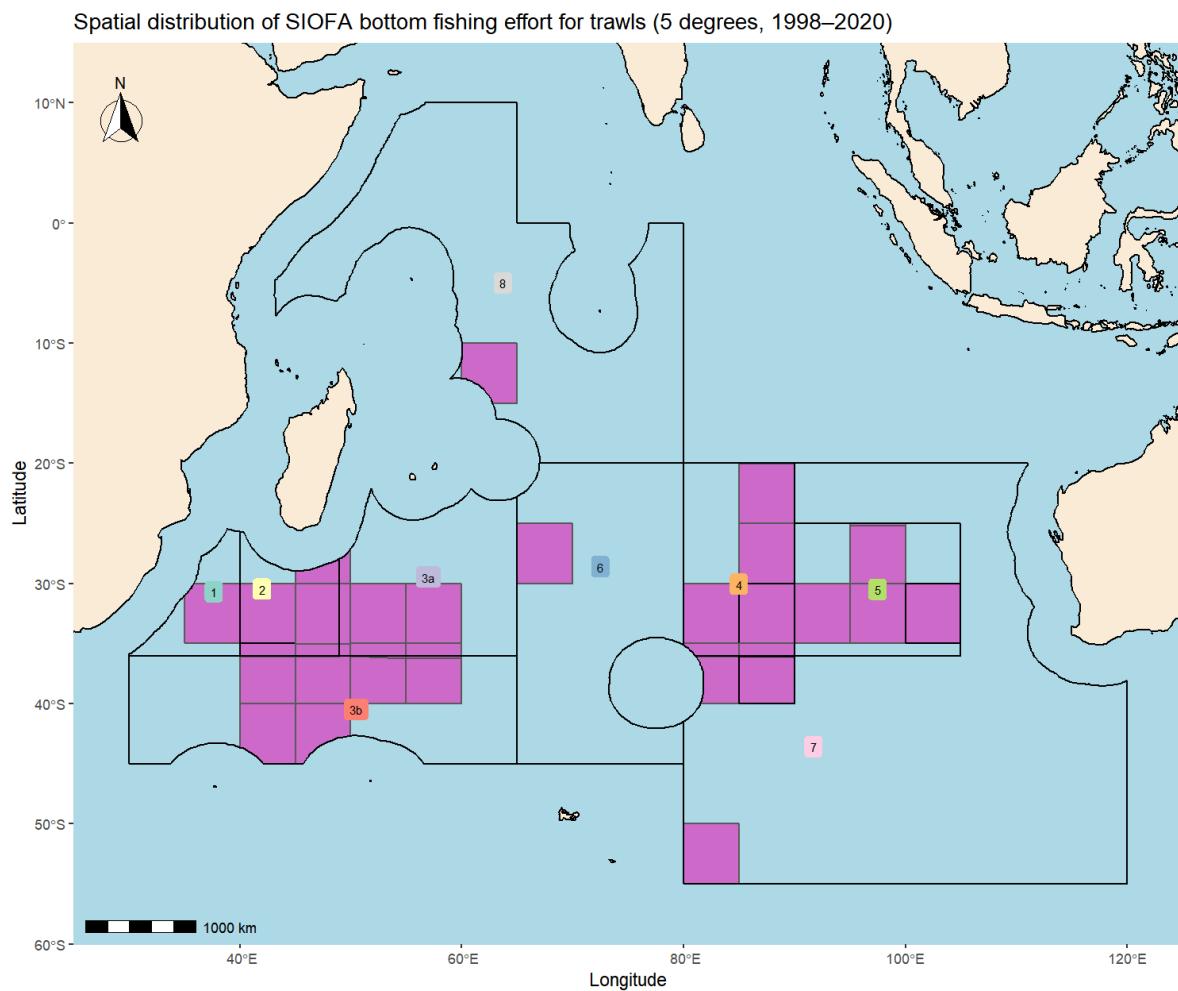


Figure 19 – Spatial distribution of SIOFA bottom fishing effort for trawls (including Bottom trawls (nei), Trawls (nei), and Single boat bottom otter trawls) derived from recent set level and historical fishing data from 1998–2020, at a 5 degrees square resolution (sources: SIOFA HBHCatchEffort 1998–2020, and SIOFA spatial layers). Note that due to the coarse spatial resolution of these data, the area of the non-zero-effort cells will greatly exceed the actual area of the fishing footprint.

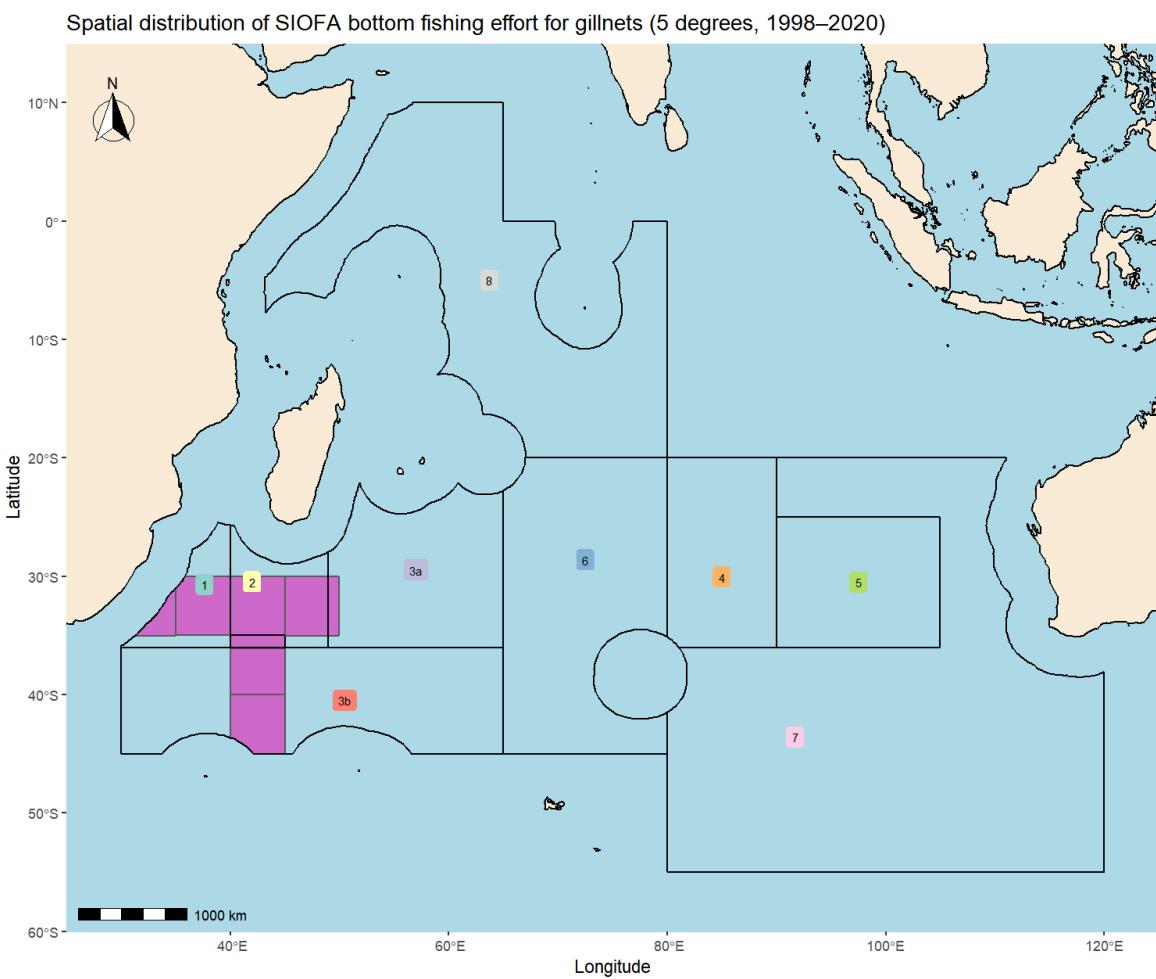


Figure 20 – Spatial distribution of SIOFA bottom fishing effort for gillnets and entangling nets (nei) derived from recent set level and historical fishing data from 1998–2020, at a 5 degrees square resolution (sources: SIOFA HBHCatchEffort 1998–2020, and SIOFA spatial layers). Note that due to the coarse spatial resolution of these data, the area of the non-zero-effort cells will greatly exceed the actual area of the fishing footprint.

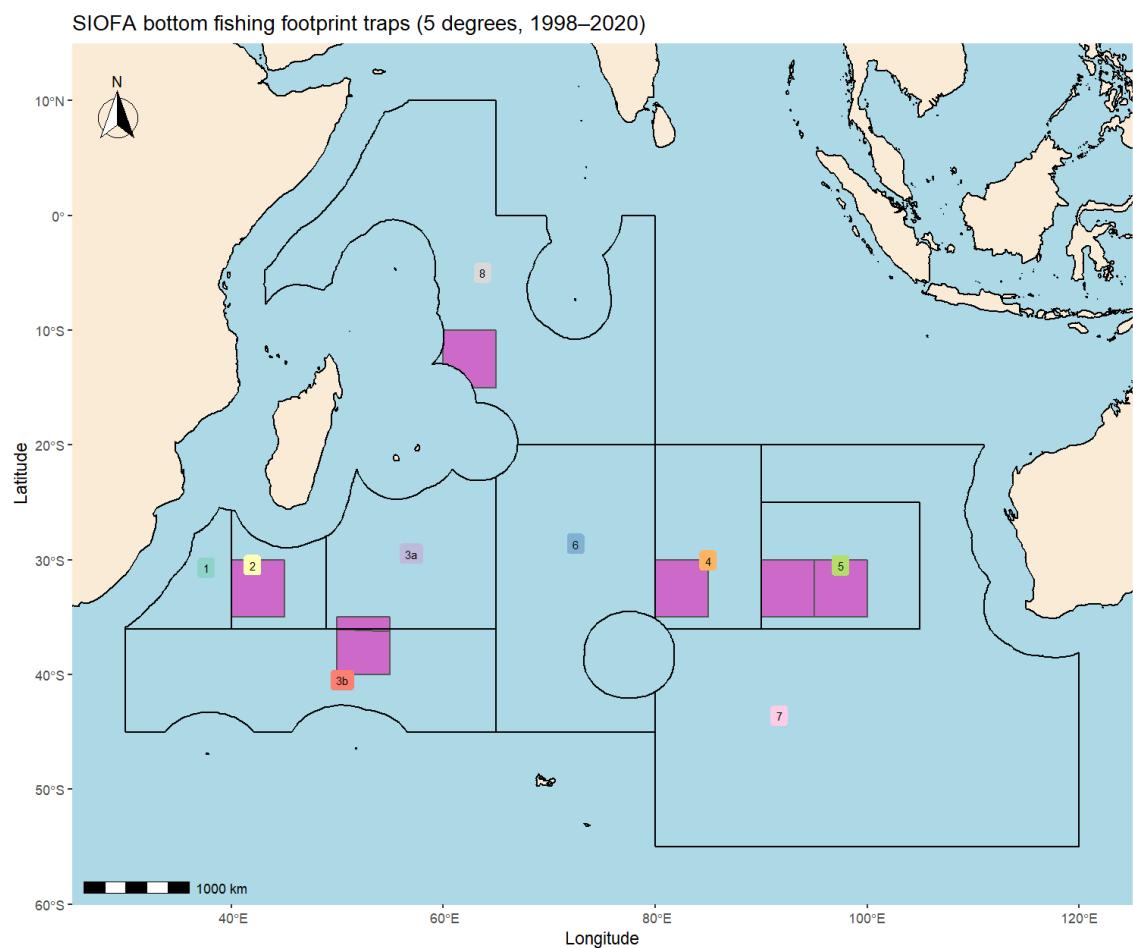


Figure 21 – Spatial distribution of SIOFA bottom fishing effort for traps (nei) derived from recent set level and historical fishing data from 1998–2020, at a 5 degrees square resolution (sources: SIOFA HBHCatchEffort 1998–2020, and SIOFA spatial layers). Note that due to the coarse spatial resolution of these data, the area of the non-zero-effort cells will greatly exceed the actual area of the fishing footprint.

10.3 Bottom fishing footprint by Subarea

The revised bottom fishing footprint was disaggregated to produce Subarea-specific maps of bottom fishing. Figure 22 details the revised combined-method fisheries footprint (at 20'+30' resolution), for each of the SIOFA Subareas.



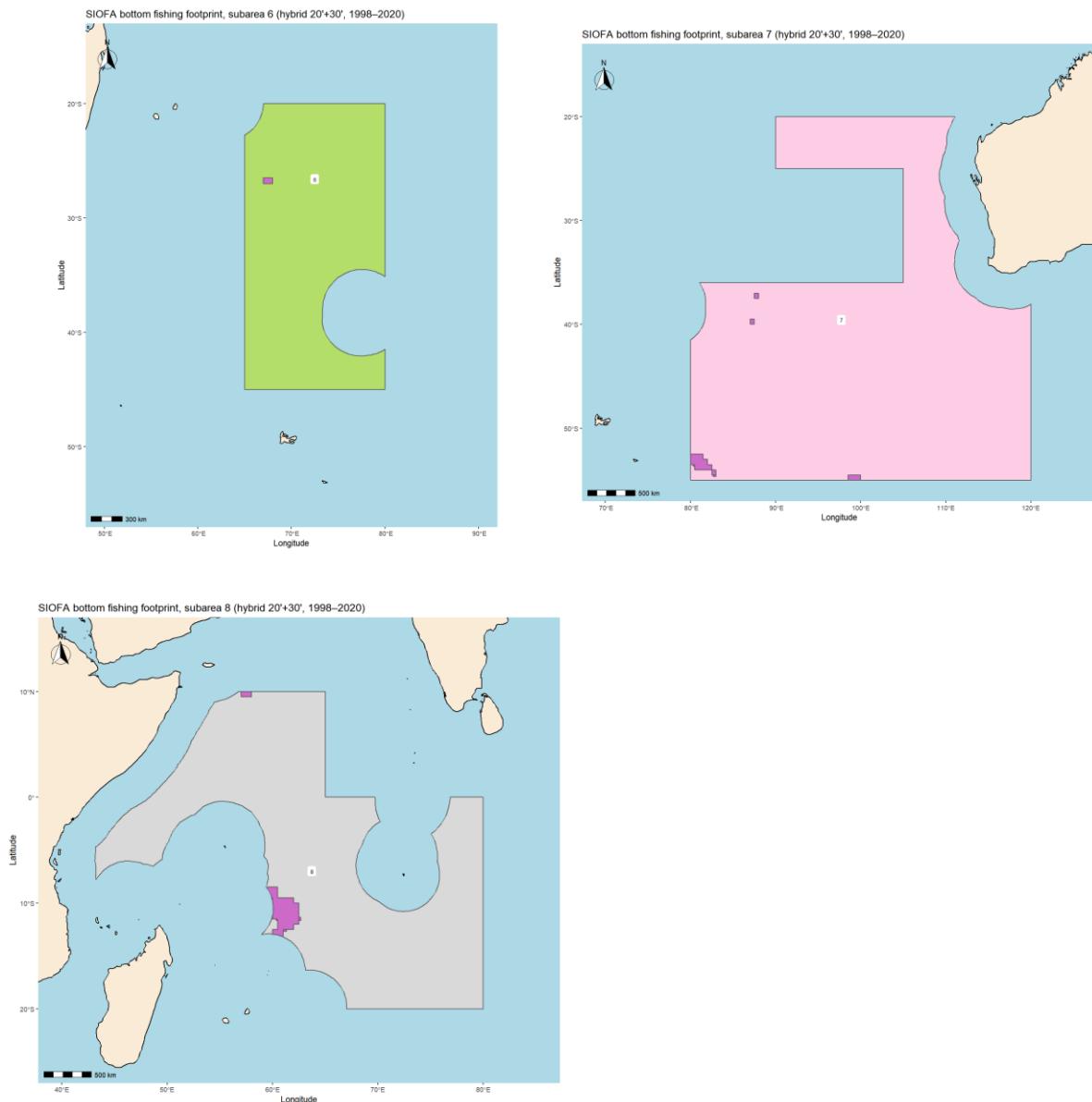


Figure 22 – Bottom fishing footprint by each SIOFA Subarea. These are the same as Figure 16 above (i.e., not including midwater trawling or handlining, and using updated data since adoption of the interim footprint in Figure 15) but represented at the scale of individual SIOFA Subareas. Cell sizes are at a hybrid 20' x 30' square resolution. As for other figures, because actual fishing events are narrower than the spatial resolution at which the data are summarised, the combined area of the cells will exceed the area of the actual fishery footprint.

10.4 Bottom Fishing Impact Assessment

In 2022, SIOFA adopted its first Bottom Fishing Impact Assessment (BFIA) (Mormede 2022), as provided for in its Conservation and Management Measure for the Interim Management of Bottom Fishing in the Agreement Area (CMM 01).

A bottom fishing impact assessment method was developed and applied for trawl and longline gears including all reported effort in 1998–2020 in the SIOFA Area. Summary statistics show the proportion of cells that were fished by at least one fishing event at the designated spatial scale.

To quantify impact and status, a relative benthic status (RBS) method was used, which considered both the actual width of the fished footprint (i.e., the area contacted by fishing gear, independent of

cell size), and the fragility to damage of benthic organisms inside the footprint, and their potential for recovery.

When considering only cells within the fishable area (i.e., to 2000 m depth) at the 0.1° cell resolution, 48% of cells in Subarea 3b and 45% of cells in Subarea 2 have had at least one fishing event (including both trawl and/or longline gears) since 1998). At fishable depths in the 1° cell resolution, 88% of cells in Subarea 8 have been fished at least once. At both scales, the number of fished cells has expanded between 1998 and 2020.

Because the size of cells used in the analysis were larger than the actual width of the fishing events, these ‘proportional area fished’ summary statistics overestimated the size of the actual fished footprint and were sensitive to the size of the cell used in the calculation. In contrast, impact assessment methods such as RBS estimate proportional impact per cell as a function of actual footprint width and the fragility of the benthic taxa contacted by fishing gear inside the footprint. Because the total area of the footprint and the area of the assessed domain did not depend on cell size, estimates of cumulative impact and VME taxon status under the RBS method were relatively insensitive to the use of different cell sizes.

The final BFIA calculation in Mormede (2022) was carried out at a 0.1° resolution south of 20° S (SIOFA Subareas 1 to 7) and 1° resolution north (SIOFA Subarea 8) for both trawl and bottom longline gears. The analysis estimated that the cumulative bottom fishing impact of trawl and longline gears on stony corals, *Demospongiae* and *Hexactinellida*, and on *Anthiparia* in the assessed area ranged from 0.4% to 1% in different Subareas (i.e., the intact status of each taxon per Subarea ranged 99%-99.6%) in 2020.

The distribution of this impact was not uniform within each Subarea. Summarised per Subarea, mean impact varied from 0.4–1%, but impact in the most heavily impacted cell in each Subarea ranged from 0.7–12.7%. When considering only fishable depths (< 2000 m), mean impact ranged from 0.5–3.5% in the different Subareas, and impact in the most heavily impacted cell per Subarea ranged 1.4–100%.

The Subareas most impacted was Subarea 2 followed by Subareas 3a, 3b and 4 (Figure 23).

Sensitivity analyses showed that in the estimation of relative benthic status (which combined both impact and recovery), biological characteristics of the VME taxa were the most influential parameters (i.e., steepness of the stock-recruit curve and recovery parameters), followed by factors affecting uncertainty about impact (i.e., VME fragility and the width of the bottom impact associated with individual fishing events).

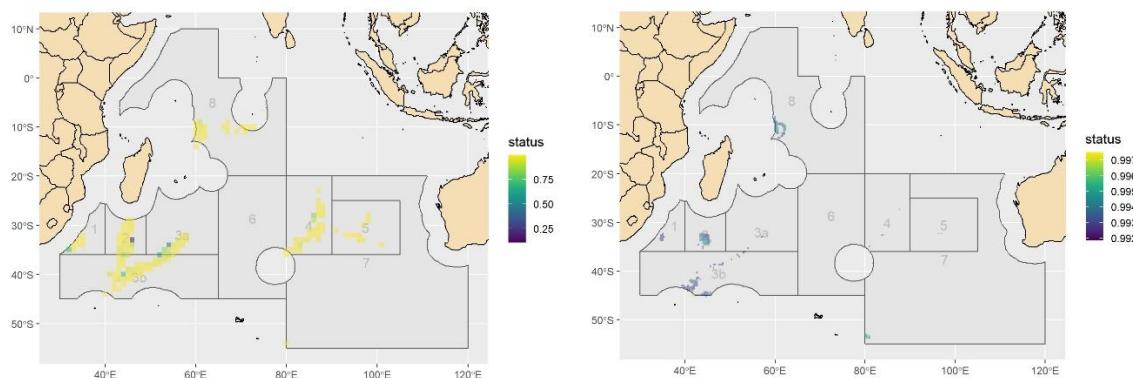


Figure 23 – Relative benthic status as affected by cumulative bottom trawl (left panel) and bottom longline (right panel) impacts within the SIOFA Area. Note unimpacted cells are at 100% status by definition, but these values are not shown. Reproduced from Mormede (2022).

10.5 Bottom fisheries interaction with VME indicator taxa

The incidental capture of VME indicator taxa during fishing operations were recorded by Scientific Observers on board of vessels and reported by SIOFA CCPs in their annual data submissions. Additionally, the Observer database also includes VME taxa captures that have been recorded occasionally in the Catch and Effort database.

While fishing operations and effort have not significantly changed, reporting of incidental captures of VME indicator taxa has been inconsistent over this period, with reports being supplied at the beginning and at the end of the time series but missing from several years in the middle (Figure 24). The species that were most reported (by weight) include precious corals nei (COR), hard corals, madrepores nei (CSS), Demospongiae (DMO), Porifera (PFR) and Spongiidae (SPO).

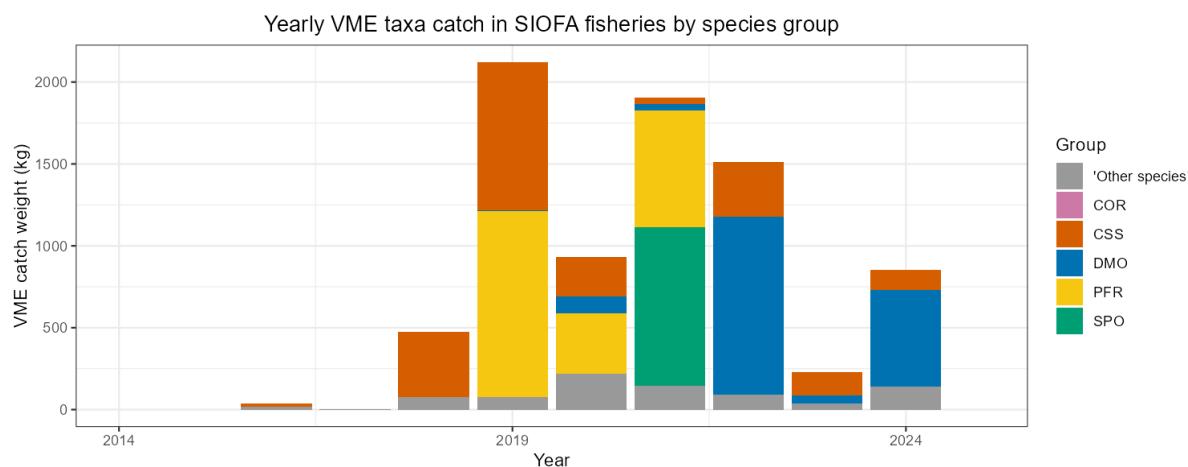


Figure 24 – Yearly incidental catch of VME indicator taxa in the SIOFA Area by taxa group (source: SIOFA Observer and HBHCatchEffort databases 2015–2024). Only the top 5 taxa by weight (cumulatively in the full database) are represented, indicated by their FAO species code (see Appendix C) and all other taxa are grouped in a separate category. Table D.8 in Appendix D provides a full account of taxa caught.

Incidental captures of VME indicator taxa were reported predominantly in trawls (Figure 25) and especially in bottom trawls, with occasional records being reported for midwater trawls.

Occurrences of captures are reported for line fishing gear, but usually these had small weights compared to those reported in trawls. Table D.4 in Appendix D gives the results by taxon, weight and gear.

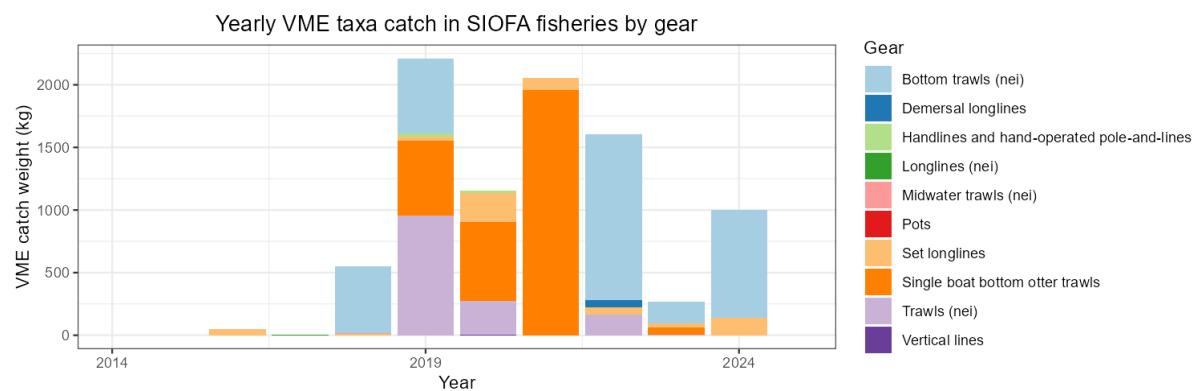


Figure 25 – Yearly incidental catch of VME indicator taxa in the SIOFA Area by fishing gear (source: SIOFA Observer and HBHCatchEffort databases 2015–2024).

Hard corals (*Scleractinia*) were commonly caught by fisheries operating at higher latitudes, while sponges (*Porifera*) were caught by fisheries operating throughout the SIOFA Area (Figure 26).

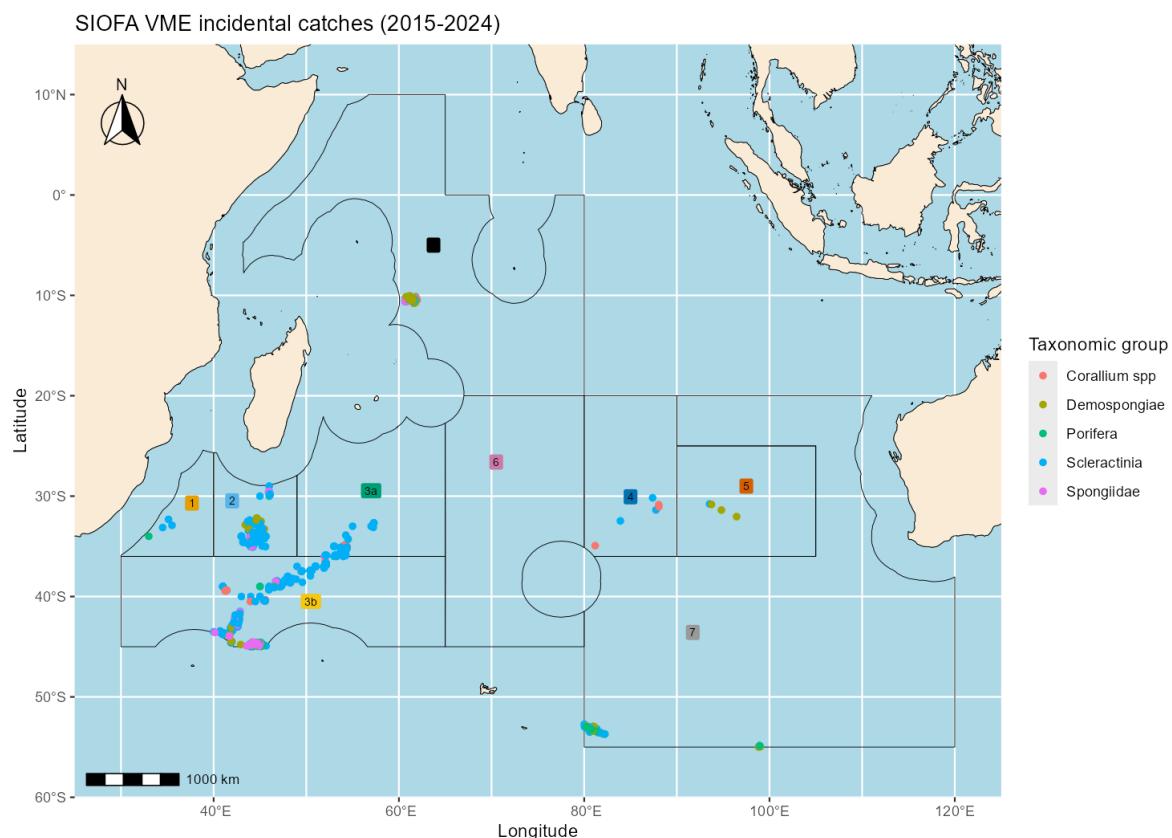


Figure 26 – Reported incidental catch of VME taxa in the SIOFA Area, mapped by taxonomic group (source: SIOFA Observer and HBHCatchEffort databases 2015–2024). Only the top 5 taxa by weight (cumulatively in the full database) are represented in this map. Figure D.2 in Appendix D provides a more detailed map at the highest taxonomic resolution.

11. Habitats of significance

This section has been left empty, pending discussions by the SIOFA Scientific Committee on habitats of significance.

12. Fishing activities in Benthic Fishery Closures (CMM 18(2025))

Annex 3 of SIOFA [CMM 01\(2024\)](#) listed five Interim Protected Areas (IPAs) and their coordinates. These areas were first instituted in 2018 through SIOFA [CMM 2018/01](#) and entered into force on 10 August 2018. CCPs are provisionally required to abide by the specified fisheries restrictions to fisheries inside these areas until the adoption of a dedicated research and management plan, referred to in paragraph 6 e, SIOFA [CMM 01\(2024\)](#).

According to SIOFA [CMM 01\(2024\)](#), when the Meeting of the Parties adopts a revised SIOFA protocol for protected area designation after advice from the Scientific Committee arising from its review referred to in paragraph 6 d., the Meeting of the Parties shall also review Annex 3 of [CMM 01\(2024\)](#), taking into account advice of the Scientific Committee. According to this process, in 2025 SIOFA revised CMM 01 and established a new CMM for Benthic Fishery Closures ([CMM 18\(2025\)](#)), which superseded previous definitions contained in CMM 01, and established new benthic fisheries closures (BFCs, Figure 27).

Current restrictions to fisheries in BFCs include a prohibition for CCPs to engage in any bottom fishing within 9 of the 12 established closures. In the remaining 3 closures line and trap fishing is permitted, with an obligation to have a Scientific Observer onboard at all times while fishing in those areas.

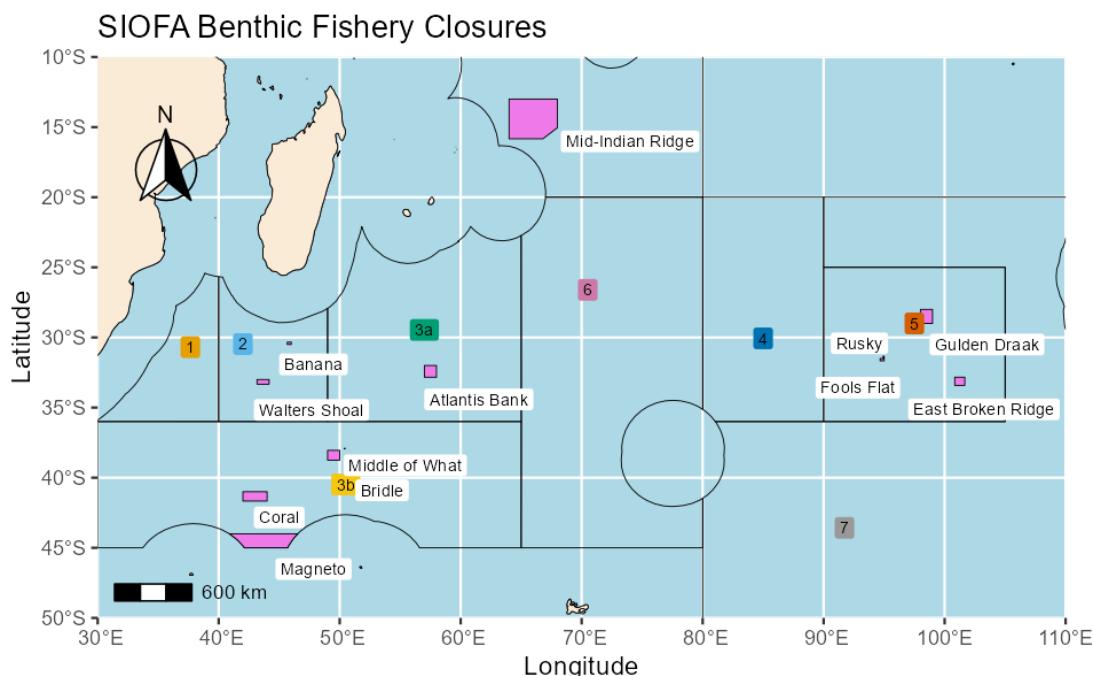


Figure 27 – Map of the SIOFA Benthic Fishery Closures (in magenta) as defined in [CMM 18\(2025\)](#) (Source: Table 1 and 2 of SIOFA [CMM 18\(2025\)](#)). Each area has been labelled by name for easier recognition, as some are barely visible on a map of this large scale.

Figure 28 showcases the full number of fishing events in BFCs by fishing gear, including those events that occurred before the institution of BFCs. Before the institution of the BFCs multiple gear types were used, but after adoption of the IPAs in 2018 only lines and traps were used, consistent with the gear restrictions in [CMM 01\(2024\)](#) (Figure 28).

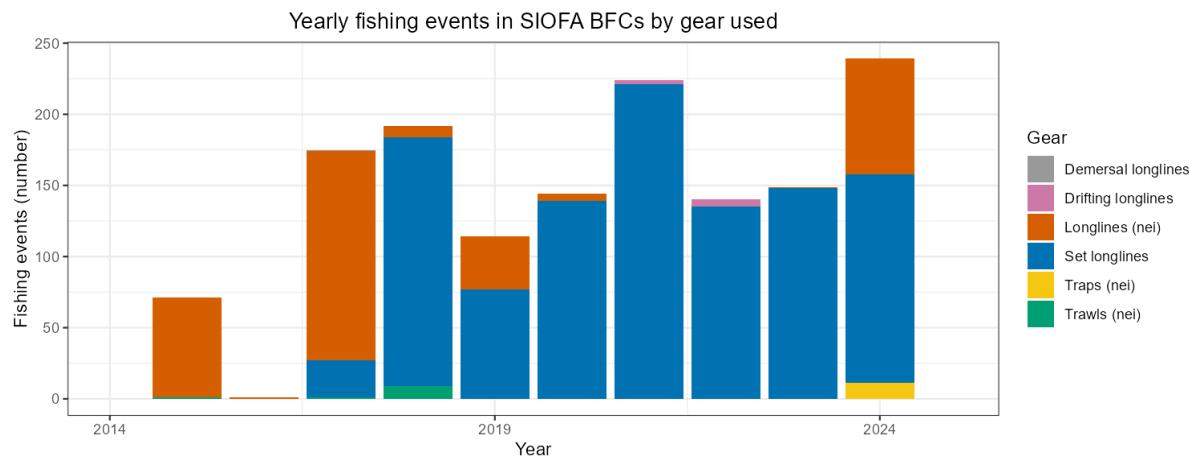


Figure 28 – Number of fishing events by gear in the SIOFA Benthic Fishery Closures per year (including from years before the BFCs were implemented) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024).

These fishing events caught a range of species, but total catch weights in these locations have been relatively low (Figure 29). Patagonian toothfish (TOP) and Splendid alfonsino (BYS) were the species that made the largest contribution to total catches in years when catch in BFCs was highest (2017 and 2018, Figure 29).

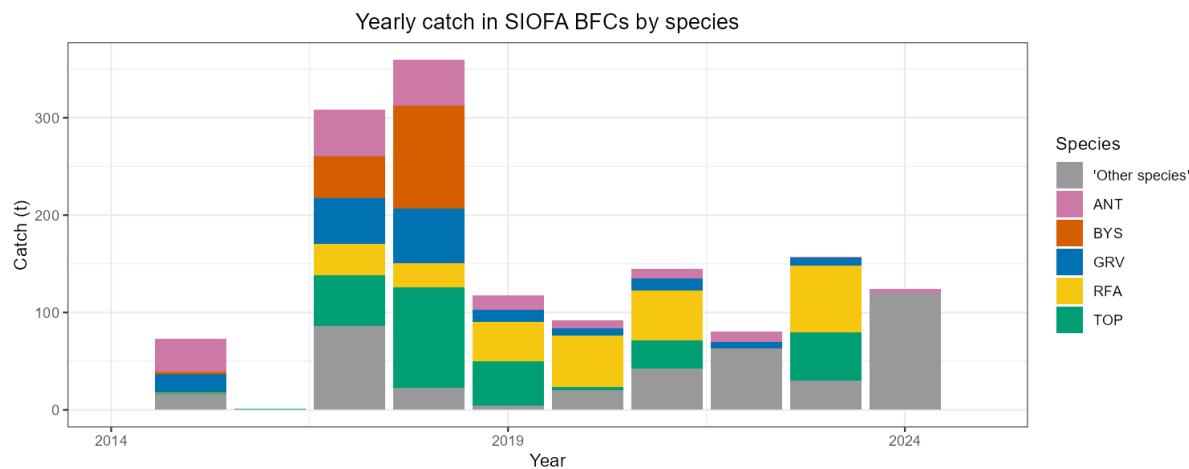


Figure 29 – Total catch (t) by species in SIOFA Benthic Fishery Closures (BFCs) per year (including in years before the BFCs were implemented) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Only the top 5 species by weight (cumulatively over the history of the fisheries) are shown, indicated by their FAO species code (see Appendix C); other taxa are grouped and collectively labelled 'other species'. Table D.6 in Appendix D provides a more detailed account of other species caught.

13. Interactions with larger ecosystem processes

13.1 Climate change and environmental variability

No information is currently available on the impacts of climate change or environmental variability on SIOFA fisheries.

13.2 Trophic and ecosystem level effects

No information is currently available on the trophic interactions or other larger ecosystem effects of SIOFA fisheries.

14. References

Mormede, S. 2022. Calculating bottom fishing impact for trawl and longline gears in SIOFA. Pages 1–22.

15. Appendix A – List of species identified by the SIOFA SC as primary and secondary species in SIOFA fisheries and considered as target species for the purposes of this report

| FAO Code | Common name | Scientific name |
|----------|-------------------------|-----------------------------------|
| BYS | Splendid alfonsino | <i>Beryx splendens</i> |
| ORY | Orange roughy | <i>Hoplostethus atlanticus</i> |
| CDL | Cardinal fishes | <i>Epigonus spp</i> |
| OIL | Oilfish | <i>Ruvettus pretiosus</i> |
| HAU | Hapuka | <i>Polypriion spp</i> |
| LIB | Brushtooth lizardfish | <i>Saurida undosquamis</i> |
| RUS | Indian scad | <i>Decapterus russelli</i> |
| KZJ | Thredfin bream | <i>Nemipterus bipunctatus</i> |
| UPM | Goldfin goatfish | <i>Upeneus moluccensis</i> |
| DCC | Shortfin scad | <i>Decapterus macrosoma</i> |
| LTQ | Sky emperor | <i>Lethrinus mahsena</i> |
| TOP | Toothfish | <i>Dissostichus eleginoides</i> |
| NGU | Yellow spotted trevally | <i>Carangoides fulvoguttatus</i> |
| NGY | Bludger | <i>Carangoides gymnostethus</i> |
| NGX | Carangoides species | <i>Carangoides spp</i> |
| LEC | Escolar | <i>Lepidocybium flavobrunneum</i> |
| BYS | Splendid alfonsino | <i>Beryx splendens</i> |
| SSO | Smooth oreo dory | <i>Pseudocyttus maculatus</i> |
| BIS | Bigeye scad | <i>Selar crumenophthalmus</i> |
| YBS | bigeye barracuda | <i>Sphyraena forsteri</i> |
| EMN | Marbled coral groper | <i>Plectropomus punctatus</i> |
| LTQ | Sky emperor | <i>Lethrinus mahsena</i> |
| LUB | Emperor red snapper | <i>Lutjanus sebae</i> |
| LJB | Two-spot red snapper | <i>Lutjanus bohar</i> |
| BOE | Black oreo | <i>Allocyttus niger</i> |
| ORD | Oreos nei | <i>Oreosomatidae</i> |
| GRV | Macrourids | <i>Macrourus spp</i> |
| ANT | Violet cod | <i>Antimora rostrata</i> |
| BIL | Billfish* | <i>Istiophoridae</i> |

| FAO Code | Common name | Scientific name |
|-----------------|--------------------|--------------------------|
| TUN | Tuna * | <i>Thunnini</i> |
| YFT | Yellowfin tuna | <i>Thunnus albacares</i> |

16. Appendix B – Common names, FAO species codes, and scientific names of sharks, referred to in this summary

| FAO code | FAO common name | Scientific name |
|----------|--------------------------------|------------------------------------|
| AML | Grey reef shark | <i>Carcharhinus amblyrhynchos</i> |
| ALS | Silvertip shark | <i>Carcharhinus albimarginatus</i> |
| ASK | Angelsharks, sand devils nei | <i>Squatinidae</i> |
| BHY | Bathyraja rays nei | <i>Bathyraja spp</i> |
| BSH | Blue shark | <i>Prionace glauca</i> |
| BYR | Kerguelen sandpaper skate | <i>Bathyraja irrasa</i> |
| CAR | Cartilaginous fishes nei | <i>Chondrichthyes</i> |
| CLD | Sliteye shark | <i>Loxodon macrorhinus</i> |
| CVX | Ground sharks | <i>Carcharhiniformes</i> |
| CWM | Ghost sharks | <i>Chimaera spp</i> |
| CWO | Gulper sharks nei | <i>Centrophorus spp</i> |
| CWZ | Carcharhinus sharks nei | <i>Carcharhinus spp</i> |
| CYO | Portuguese dogfish | <i>Centroscymnus coelolepis</i> |
| CZI | | <i>Centroscymnus spp</i> |
| DCA | Birdbeak dogfish | <i>Deania calcea</i> |
| DGX | Dogfish sharks nei | <i>Squalidae</i> |
| DGZ | Dogfishes nei | <i>Squalus spp</i> |
| DOP | Shortnose spurdog | <i>Squalus megalops</i> |
| ETE | | <i>Etmopterus compagnoi</i> |
| ETF | Blackbelly lanternshark | <i>Etmopterus lucifer</i> |
| ETM | Southern lanternshark(Lucifer) | <i>Etmopterus granulosus</i> |
| GTF | Guitarfishes, etc. nei | <i>Rhinobatidae</i> |
| GUP | Gulper shark | <i>Centrophorus granulosus</i> |
| GUQ | Leafscale gulper shark | <i>Centrophorus squamosus</i> |
| HAG | Mud catshark | <i>Halaelurus lutarius</i> |
| HCM | Hooktooth shark | <i>Chaenogaleus macrostoma</i> |
| HOL | Chimaeras, etc. nei | <i>Chimaeriformes</i> |
| HXT | Sharpnose sevengill shark | <i>Heptranchias perlo</i> |
| JFB | Bigmouth skate | <i>Raja robertsi</i> |
| NTC | Broadnose sevengill shark | <i>Notorynchus cepedianus</i> |
| ORZ | Tawny nurse shark | <i>Nebrius ferrugineus</i> |
| PTM | False catshark | <i>Pseudotriakis microdon</i> |
| QUK | Shortspine spurdog | <i>Squalus mitsukurii</i> |
| RAJ | Rays and skates nei | <i>Rajidae</i> |
| RBI | | <i>Rhinobatos irvinei</i> |
| RBY | Butterfly rays nei | <i>Gymnura spp</i> |
| RFA | Whiteleg skate | <i>Amblyraja taaf</i> |
| RME | Longhorned mobula | <i>Mobula eremoodootenkee</i> |
| RMV | Mobula nei | <i>Mobula spp</i> |
| RRY | Bowmouth guitarfish | <i>Rhina ancylostoma</i> |
| RSK | Requiem sharks nei | <i>Carcharhinidae</i> |
| RTE | Round ribbontail ray | <i>Taeniura meyeni</i> |

| FAO code | FAO common name | Scientific name |
|----------|--------------------------------|--------------------------------------|
| RYE | Ornate eagle ray | <i>Aetomylaeus vespertilio</i> |
| RZZ | Southern sleeper shark | <i>Somniosus antarcticus</i> |
| SBL | Bluntnose sixgill shark | <i>Hexanchus griseus</i> |
| SCK | Kitefin shark | <i>Dalatias licha</i> |
| SDV | Smooth-hounds nei | <i>Mustelus spp</i> |
| SHL | Lanternsharks nei | <i>Etomopterus spp</i> |
| SKA | Raja rays nei | <i>Raja spp</i> |
| SKH | Various sharks nei | <i>Selachimorpha (Pleurotremata)</i> |
| SKX | Sharks, rays, skates, etc. nei | <i>Elasmobranchii</i> |
| SMA | Shortfin mako | <i>Isurus oxyrinchus</i> |
| SON | Pacific sleeper shark | <i>Somniosus pacificus</i> |
| SOR | Little sleeper shark | <i>Somniosus rostratus</i> |
| SPK | Great hammerhead | <i>Sphyrna mokarran</i> |
| SPN | Hammerhead sharks nei | <i>Sphyrna spp</i> |
| SRX | Rays, stingrays, mantas nei | <i>Rajiformes</i> |
| SUN | Ocellated angelshark | <i>Squatina tergocellatooides</i> |
| TIG | Tiger shark | <i>Galeocerdo cuvier</i> |

17. Appendix C – Common names, FAO species codes, and scientific names of VME taxa reported as incidental captures in SIOFA fisheries

| FAO code | FAO common name | Scientific name |
|----------|--------------------------------|-----------------------------|
| ADQ | Black coral | <i>Antipathes dichotoma</i> |
| AJZ | Soft corals | <i>Alcyonacea</i> |
| AQZ | Black corals and thorny corals | <i>Antipatharia</i> |
| ATX | Sea anemones | <i>Actiniaria</i> |
| AXT | Hydrocorals | <i>Stylasteridae</i> |
| AZN | Hydroids, hydromedusae | <i>Anthoathecata</i> |
| BVH | Brachiopods, lamp shells | <i>Brachiopoda</i> |
| BWV | | <i>Paragorgiidae</i> |
| BWY | | <i>Bathylasmatidae</i> |
| BZN | Bryozoans | <i>Bryozoa</i> |
| CNI | Cnidarians nei | <i>Cnidaria</i> |
| COR | Precious corals nei | <i>Corallium spp</i> |
| CSS | Hard corals, madrepores nei | <i>Scleractinia</i> |
| CVD | Pencil urchins | <i>Cidaridae</i> |
| CWD | Feather stars and sea lilies | <i>Crinoidea</i> |
| DMO | Siliceous sponges | <i>Demospongiae</i> |
| GGW | Gorgonians | <i>Gorgoniidae</i> |
| HQZ | Hydrozoans | <i>Hydrozoa</i> |
| HYX | Glass sponges | <i>Hexactinellida</i> |
| IQO | | <i>Isididae</i> |
| KRH | Wire coral | <i>Cirrhipathes spp</i> |
| NTW | Sea pens | <i>Pennatulacea</i> |
| NYZ | 0 | <i>Nephtheidae</i> |
| OEQ | Basket stars | <i>Euryalida</i> |
| PFR | | <i>Porifera</i> |
| QFY | | <i>Chrysogorgiidae</i> |
| SPO | Sponges | <i>Spongiidae</i> |
| SSX | Sea squirts nei | <i>Asciidae</i> |
| SZS | Serpulid tube worms | <i>Serpulidae</i> |
| ZOT | Zoanthids | <i>Zoantharia</i> |

18. Appendix D – Data included in figures and additional figures

Table D.1 – Total annual target and bycatch weight (t) in the SIOFA Area (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024)

| Year | Catch (t) | Shark catch (target/non-target, t) | Bycatch (t) |
|------|-----------|---------------------------------------|-------------|
| 2015 | 10414.6 | 2069.5 | 24320.1 |
| 2016 | 12751.8 | 2724 | 12389.2 |
| 2017 | 15840.3 | 2056.6 | 3274.3 |
| 2018 | 11435.8 | 2071.5 | 856.6 |
| 2019 | 10915.4 | 1832.6 | 1980.8 |
| 2020 | 12834.2 | 1207.2 | 1820.3 |
| 2021 | 8836 | 1717.3 | 3634.8 |
| 2022 | 9421 | 1949.5 | 3631.3 |
| 2023 | 15111.9 | 1724.6 | 2584.9 |
| 2024 | 12820.3 | 2449.1 | 1583 |

Table D.2 – Total annual target catch weight (t) in the SIOFA Area, by Subarea. (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024)

| Year | 1 | 2 | 3a | 3b | 4 | 5 | 6 | 7 | 8 |
|------|--------|--------|--------|--------|--------|-------|------|-------|-------|
| 2015 | 231 | 2293.3 | 935.3 | 5619.8 | 1057.7 | | 30.9 | 3.6 | 25.8 |
| 2016 | 673.2 | 1857.6 | 1415.7 | 8015.6 | 26.3 | | 13.2 | | 55.2 |
| 2017 | 4965.3 | 1970.2 | 838 | 7075.2 | 382.6 | 500.2 | 18.1 | | 42.9 |
| 2018 | 3634.8 | 1407.4 | 827.2 | 4076.8 | 898.7 | 100.6 | 28.4 | 362.4 | 23.4 |
| 2019 | 1758.2 | 2179.5 | 983.1 | 4818.5 | 542.2 | 0.9 | 62 | 194 | 374.2 |
| 2020 | 4269.7 | 1528.8 | 1124.3 | 4247.7 | 809.5 | 214.6 | 29.4 | 80.5 | 523.3 |
| 2021 | 1721.4 | 1369.1 | 733.6 | 3936.2 | 397.5 | 102.2 | 23.6 | 34.1 | 480.3 |
| 2022 | 2376.7 | 1599.3 | 641.7 | 3924.5 | 343.1 | 49.3 | 11.3 | 33.1 | 433 |
| 2023 | 1505 | 1987.2 | 1274.7 | 9649.8 | 175.8 | 1.5 | 24.9 | 3.7 | 454.8 |
| 2024 | 2895.9 | 2279.9 | 808.7 | 5746.2 | 99.7 | 35 | 56.6 | 35.4 | 751.9 |

Table D.3: Total catch of sharks (t) per year and Subarea (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2013–2021). Total catch includes both target catch and bycatch of all species.

| Year | 1 | 2 | 3a | 3b | 4 | 5 | 6 | 7 | 8 |
|------|-------|--------|------|-------|-------|-------|------|-----|-------|
| 2015 | 7.5 | 1685.4 | 10.5 | 95.7 | 4.7 | 0 | 32.2 | 3 | 200.2 |
| 2016 | 184.4 | 1878.1 | 3.2 | 387.8 | 1.1 | 0 | 5 | 0 | 70.4 |
| 2017 | 436.1 | 1044.1 | 5.2 | 454 | 1.4 | 0.4 | 9.8 | 0 | 102.8 |
| 2018 | 286.7 | 1456.1 | 18 | 199.9 | 0 | 0 | 38.2 | 0.2 | 71 |
| 2019 | 204.4 | 1055.3 | 28 | 263.5 | 1.2 | 5 | 51.5 | 9.2 | 213.9 |
| 2020 | 231.9 | 619.6 | 23.7 | 166 | 5.1 | 1.2 | 15.1 | 0.5 | 143.4 |
| 2021 | 252.5 | 1120 | 27.9 | 193.9 | 4.4 | 0 | 14.8 | 0.4 | 100.2 |
| 2022 | 186.5 | 1460 | 13.5 | 168.8 | 2.4 | 2.9 | 9.5 | 8.8 | 96.5 |
| 2023 | 776.6 | 280.8 | 15.1 | 593.4 | 4.4 | 3.2 | 11 | 1.3 | 36.5 |
| 2024 | 479.7 | 540.9 | 24.9 | 390.6 | 427.3 | 398.1 | 46.3 | 5.6 | 125.2 |

Table D.4 – Total incidental catch (in kg) of VME taxa by fishing method and gear (source: SIOFA Observer and HBHCatchEffort databases 2015–2024).

| Taxon | Bottom trawls (nei) | Demersal longlines | Handlines and hand-operated pole-and-lines | Longlines (nei) | Midwater trawls (nei) | Pots | Set longlines | Single boat bottom otter trawls | Trawls (nei) | Vertical lines |
|----------------------|---------------------|--------------------|--|-----------------|-----------------------|------|---------------|---------------------------------|--------------|----------------|
| Actiniaria | 1.87 | 4.79 | | 0.11 | | | 27.855 | 1.45 | | |
| Anthoathecata | 13 | | | | 0.2 | | 0.377 | 1 | 1 | |
| Antipatharia | 3.892 | | | | 1 | | 13.2 | 45.9 | 7.91 | |
| Antipathes dichotoma | 1.3 | | | | | | | 0.02 | 31.66 | |
| Asteroidea | 0.14 | | | | | | | 12.53 | 0.5 | |
| Brisingidae | 0.025 | | | | | | | | | |
| Chrysogorgiidae | 0.055 | | | | | | 0.001 | | | |
| Cidaridae | 4.2 | 0.76 | | | | | 0.102 | | | |
| Cirrhipathes spp | 0.1 | | | | | | | | | |
| Cnidaria | 5 | 3.24 | 22.8 | | | | 3.34 | 28.97 | | |
| Crinoidea | 0.005 | | | | | | 4.69 | | | |
| Demospongiae | 1876.12 | 14.82 | | | 3 | | 34.756 | 175.1 | 1.08 | |
| Echinodermata | 0.4 | 0.55 | | | | | 12.225 | | | |
| Echinoidea | 0.4 | | | | | | 0.05 | 15.31 | 3.15 | |
| Euryalida | 0.5 | 3.8 | | | | | 9.395 | | | |
| Gorgoniidae | 12.925 | | | 0.531 | 2.57 | | 136.7433 | 70.57 | 13.84 | |
| Hexactinellida | 25.63 | 5.76 | | 0.03 | 0.5 | | 15.71 | | 2.85 | |

| Taxon | Bottom trawls (nei) | Demersal longlines | Handlines and hand-operated pole-and-lines | Longlines (nei) | Midwater trawls (nei) | Pots | Set longlines | Single boat bottom otter trawls | Trawls (nei) | Vertical lines |
|------------------------|---------------------|--------------------|--|-----------------|-----------------------|--------|---------------|---------------------------------|--------------|----------------|
| Hydrozoa | 10.422 | | | | | | 0.305 | 2 | 0.77 | |
| Isididae | 15.57 | | | | | | | | 51.37 | |
| Lepidisis olapa | 0.7 | | | | | | | | | |
| Nephtheidae | 0.1 | | | | | | | | | |
| Ophiurida | 4 | 2.55 | | | | | 8.058 | 1 | | |
| Paragorgia arborea | 0.15 | | | | | | | | | |
| Paragorgiidae | 0.09 | | | | | | 2.18 | | 2.215 | |
| Pennatulacea | 3.68 | 0.66 | | | | | 6.715 | 0.05 | 0.05 | |
| Porifera | 625.67 | 1.8 | | 0.5 | | | 6.286 | 1848.7 | 6 | |
| Rhopilema spp | 1.65 | | | 5.2 | | | | 14.4 | | |
| Scleractinia | 826.13 | 14.2 | | 3.8 | 0.2 | 192.81 | 751.93 | 1210.537 | | |
| Serpulidae | 0.05 | | | | | | 1.34 | | | |
| Spongidae | 27.6 | | | 0.645 | | | 16.39 | 1112.35 | 61.99 | |
| Strongylocentrotus spp | 0.14 | | | | | | | | | |
| Stylersteridae | 15.325 | | | 0.3 | | | 26.676 | 7 | 5 | 0.6 |
| Xenophyophora | 2.8 | | | | | | | | | |
| Bryozoa | | 3.13 | | | | | 6.44 | | | |
| Acropora formosa | | | 22.2 | | | | | | | |
| Heliopora coerulea | | | 4.5 | | | | | | | |
| Alcyonacea | | | | | | | 24.596 | 1.12 | 1.005 | |
| Animalia | | | | | | | 1.21 | 1000 | | |
| Ascidacea | | | | | | | 2.325 | | | |
| Bathybiaster loriopes | | | | | | | 81.376 | | | |

| Taxon | Bottom trawls (nei) | Demersal longlines | Handlines and hand-operated pole-and-lines | Longlines (nei) | Midwater trawls (nei) | Pots | Set longlines | Single boat bottom otter trawls | Trawls (nei) | Vertical lines |
|-----------------------|---------------------|--------------------|--|-----------------|-----------------------|------|---------------|---------------------------------|--------------|----------------|
| Bathylasmatidae | | | | | | | 0.767 | | | |
| Brachiopoda | | | | | | | 0.28 | | | |
| Chaceon spp | | | | | | | 5.155 | | | |
| Corallium spp | | | | | | | 0.31 | 4459.35 | | |
| Crustacea | | | | | | | 0.281 | | | |
| Desmophyllum dianthus | | | | | | | 0.01 | | | |
| Eunice spp | | | | | | | 0.003 | | | |
| Galatheidae | | | | | | | 0.04 | | | |
| Holothuria spp | | | | | | | 0.4 | | | |
| Holothuroidea | | | | | | | 0.18 | | | |
| Invertebrata | | | | | | | 6.43 | | 0.9 | |
| Lithodidae | | | | | | | 1.52 | | | |
| Primnoidae | | | | | | | 0.004 | | | |
| Pycnogonida | | | | | | | 0.07 | | | |
| Zoantharia | | | | | | | 2.905 | | | |
| Gorgonocephalus spp | | | | | | | | 2.83 | | |
| Ophiuroidea | | | | | | | | 1.51 | | |

Table D.5 – Total catch of sharks in the SIOFA Area by species (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Species are indicated by their FAO species code (see Appendix B).

| Species | Total weight (t) |
|---------|------------------|
| AML | 0.1 |
| ASK | 2 |
| BHY | 0.1 |
| BSH | 0 |
| BYR | 42.3 |
| CAR | 3.1 |
| CLD | 0.3 |
| CVX | 38.1 |
| CWM | 0 |
| CWO | 0 |
| CWZ | 49.7 |
| CYO | 8247.3 |
| CZI | 0 |
| DCA | 578.1 |
| DGZ | 0.7 |
| DOP | 2.3 |
| ETE | 3.7 |
| ETF | 0.5 |
| ETM | 199 |
| GTF | 8.8 |
| GUP | 253.9 |
| GUQ | 541.7 |
| HAG | 0 |
| HCM | 0 |
| HOL | 1.2 |
| HXT | 0.3 |
| NTC | 1.4 |
| ORZ | 7.1 |
| PTM | 0.2 |
| QUK | 1.5 |
| RAJ | 0.1 |
| RBI | 0.8 |
| RYB | 1 |
| RFA | 377.2 |
| RME | 0.1 |
| RMV | 0 |
| RRY | 1.1 |
| RSK | 0 |
| RTE | 0 |
| RYE | 0.2 |

| Species | Total weight (t) |
|---------|------------------|
| RZZ | 0.9 |
| SBL | 0 |
| SCK | 1369.7 |
| SDV | 33.3 |
| SHL | 740.9 |
| SKA | 0.1 |
| SKH | 0.2 |
| SKX | 7071.5 |
| SMA | 0.2 |
| SON | 2.2 |
| SOR | 120.8 |
| SPK | 0 |
| SPN | 2.3 |
| SRX | 11.7 |
| SUN | 83.6 |
| TIG | 0.1 |

Table D.6 – Total discards in the SIOFA Area by species (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Species are indicated by their FAO species code.

| Species | Total weight (t) |
|---------|------------------|
| ACC | 25 |
| AJH | 0 |
| AJZ | 0 |
| ALX | 0 |
| ANT | 95.9 |
| APX | 0 |
| AQZ | 0 |
| ATX | 0 |
| AXT | 0 |
| AZN | 0 |
| BDX | 0 |
| BHY | 0.1 |
| BOE | 0.2 |
| BRA | 0 |
| BRF | 1.6 |
| BSF | 2.1 |
| BSH | 0 |
| BTH | 0 |
| BWY | 0 |
| BXD | 0.1 |
| BYS | 34.7 |
| BZN | 0 |
| CBH | 0 |
| CDL | 9.7 |
| CGZ | 0.1 |
| CHP | 0 |
| CMO | 1.7 |
| CNI | 0.1 |
| COE | 0 |
| COX | 1.2 |
| CRA | 0 |
| CRU | 0 |
| CSF | 0 |
| CSS | 0 |
| CUS | 0 |
| CVD | 0 |
| CVY | 0 |
| CWD | 0 |
| CWM | 0 |

| Species | Total weight (t) |
|---------|------------------|
| CWO | 0 |
| CWZ | 0 |
| CYO | 0 |
| CZI | 0 |
| DCA | 0 |
| DGS | 0 |
| DGZ | 0.4 |
| DHO | 0 |
| DMO | 0.4 |
| DOP | 2.3 |
| DOT | 0 |
| DPT | 0 |
| DQD | 0 |
| EDR | 1.5 |
| EMM | 2.1 |
| EMT | 0.1 |
| EPI | 67.9 |
| ETF | 0.5 |
| ETM | 0 |
| EXV | 0 |
| EZT | 0 |
| FVG | 0 |
| GEM | 0 |
| GER | 0 |
| GES | 0 |
| GGW | 0 |
| GOX | 0.4 |
| GRV | 47.1 |
| GSK | 0 |
| GSS | 0 |
| GTF | 0 |
| GUP | 0.3 |
| HAG | 0 |
| HAU | 0 |
| HFR | 1.7 |
| HIB | 0 |
| HOL | 1.2 |
| HXN | 0 |
| HXT | 0.3 |
| HXY | 0 |
| HYD | 0.2 |
| HYW | 0 |
| IQV | 0 |
| wdx | 0 |
| JEL | 0 |

| Species | Total weight (t) |
|---------|------------------|
| KAW | 0.2 |
| KCS | 0 |
| KCU | 0 |
| LDI | 0 |
| LEC | 0 |
| LEV | 0.5 |
| LXX | 0 |
| MAI | 0 |
| MOR | 0 |
| MOX | 0 |
| MRL | 0 |
| MSD | 0 |
| MZZ | 2367 |
| NCV | 0 |
| NEN | 0 |
| NLT | 0 |
| NTC | 1.4 |
| NTW | 0 |
| OCT | 0 |
| OEO | 1 |
| OEQ | 0 |
| OFE | 0.1 |
| OIL | 10 |
| ONV | 207.6 |
| ONY | 2 |
| OOY | 0 |
| OPH | 0.2 |
| ORY | 24 |
| OTH | 10.4 |
| PAZ | 0 |
| PCX | 0.2 |
| PEL | 0 |
| PFR | 1.6 |
| PQR | 0 |
| PRC | 0 |
| PSC | 0 |
| PTH | 0.2 |
| PTM | 0.2 |
| PUX | 0.1 |
| RAJ | 0.1 |
| RAT | 0 |
| RFA | 19.1 |
| RIB | 0.2 |
| RME | 0.1 |
| RMK | 0 |

| Species | Total weight (t) |
|---------|------------------|
| RMV | 0 |
| ROK | 0 |
| RRY | 1.1 |
| RSK | 0 |
| RTE | 0 |
| RYE | 0.2 |
| RYG | 2.6 |
| RZZ | 0.9 |
| SBL | 0 |
| SCK | 0.1 |
| SDC | 0.1 |
| SDX | 27.6 |
| SEY | 0 |
| SFS | 7 |
| SHL | 0.3 |
| SKA | 0.1 |
| SKH | 0.2 |
| SKJ | 0 |
| SKX | 2.2 |
| SMA | 0.2 |
| SNK | 0.4 |
| SON | 2.2 |
| SOR | 120.8 |
| SPK | 0 |
| SPL | 0 |
| SPN | 2.3 |
| SPO | 0 |
| SPZ | 0 |
| SRX | 0.4 |
| SSO | 2.2 |
| STF | 0 |
| STT | 0.1 |
| SVY | 0.1 |
| SWO | 0 |
| SXH | 0 |
| TDO | 0 |
| TIG | 0.1 |
| TOP | 0.5 |
| TRK | 0 |
| TST | 0 |
| TTH | 0 |
| UBU | 0.1 |
| UNC | 0 |
| UPM | 0.1 |
| VLO | 0 |

| Species | Total weight (t) |
|---------|------------------|
| WBX | 0 |
| WHA | 0 |
| WRF | 0 |
| XAX | 0.4 |
| YFT | 0 |
| YHB | 0 |
| YMO | 0 |
| ZOT | 0 |

Table D.7 – Total incidental catch of VME taxa in the SIOFA Area by species group (source: SIOFA Observer and HBHCatchEffort databases 2015–2024). Species are indicated by their FAO species code.

| TAXON | TOTAL WEIGHT (kg) |
|-------|-------------------|
| ADQ | 32.98 |
| AJZ | 26.72 |
| AQZ | 71.9 |
| ATX | 36.07 |
| AXT | 54.9 |
| AZN | 15.58 |
| BFU | 0.15 |
| BHZ | 0.03 |
| BVH | 0.28 |
| BWJ | 81.38 |
| BWV | 4.48 |
| BWY | 0.77 |
| BZN | 9.57 |
| CNI | 63.35 |
| COR | 4459.66 |
| CRU | 0.28 |
| CSS | 2999.61 |
| CUX | 0.18 |
| CVD | 5.06 |
| CWD | 4.7 |
| DEJ | 0.01 |
| DMO | 2104.88 |
| ECH | 13.18 |
| FXX | 0 |
| GER | 5.16 |
| GGW | 237.18 |
| HKQ | 4.5 |
| HQZ | 13.5 |
| HXY | 50.48 |
| INV | 7.33 |
| IQO | 66.94 |
| JEL | 21.25 |
| KCX | 1.52 |
| KQM | 22.2 |
| KRH | 0.1 |
| LOQ | 0.04 |
| LZO | 0.7 |
| NTW | 11.16 |

| TAXON | TOTAL WEIGHT (KG) |
|-------|-------------------------|
| NYZ | 0.1 |
| OEQ | 13.7 |
| OOY | 15.61 |
| OTH | 1001.21 |
| OWP | 1.51 |
| PFR | 2488.96 |
| PWJ | 0.07 |
| QCX | 2.83 |
| QFY | 0.06 |
| QON | 0 |
| SPO | 1218.97 |
| SSX | 2.33 |
| STF | 13.17 |
| SZS | 1.39 |
| URC | 0.14 |
| URX | 18.91 |
| WBX | 0.4 |
| XEF | 2.8 |
| ZOT | 2.91 |

Table D.8 – Total fish catch (t) by species in SIOFA Benthic Fishery Closures (BFCs) (including years before the BFCs were implemented) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024).

| Species | Total weight (t) |
|---------|------------------|
| ANF | 1.7 |
| ANT | 178.2 |
| AQZ | 0 |
| ATX | 0 |
| AXT | 0 |
| AZE | 0 |
| AZN | 0 |
| BWA | 0.1 |
| BXD | 0 |
| BYR | 42.3 |
| BYS | 151.3 |
| BZN | 0 |
| COX | 0 |
| CRU | 0 |
| CSS | 0 |
| CVY | 0.2 |
| CWD | 0 |
| CYO | 146 |
| DCA | 4.9 |
| DMO | 0 |
| EDR | 19.2 |
| EPI | 0.1 |
| ETF | 0 |
| ETM | 4.8 |
| EZT | 0 |
| GGW | 0 |
| GRV | 179 |
| GUP | 2.6 |
| GUQ | 19.8 |
| HOL | 0.3 |
| HXY | 0 |
| wdx | 0 |
| JEL | 0 |
| JSX | 0 |
| KCU | 0 |
| LEC | 16.2 |
| LEV | 0.5 |
| MZZ | 0 |
| NTW | 0 |
| OEQ | 0 |
| OIL | 6.4 |

| Species | Total weight (t) |
|---------|------------------|
| OOY | 0 |
| ORY | 0.2 |
| OTH | 0 |
| PAZ | 0 |
| PEL | 13.8 |
| PQR | 0 |
| RFA | 353.5 |
| RIB | 21.4 |
| RZZ | 0.9 |
| SCK | 73.8 |
| SEY | 4.7 |
| SHL | 5.1 |
| SKA | 0.1 |
| SKX | 18.8 |
| SPO | 0 |
| SRX | 0.2 |
| SVY | 0 |
| TOP | 596.2 |
| WRF | 2.5 |

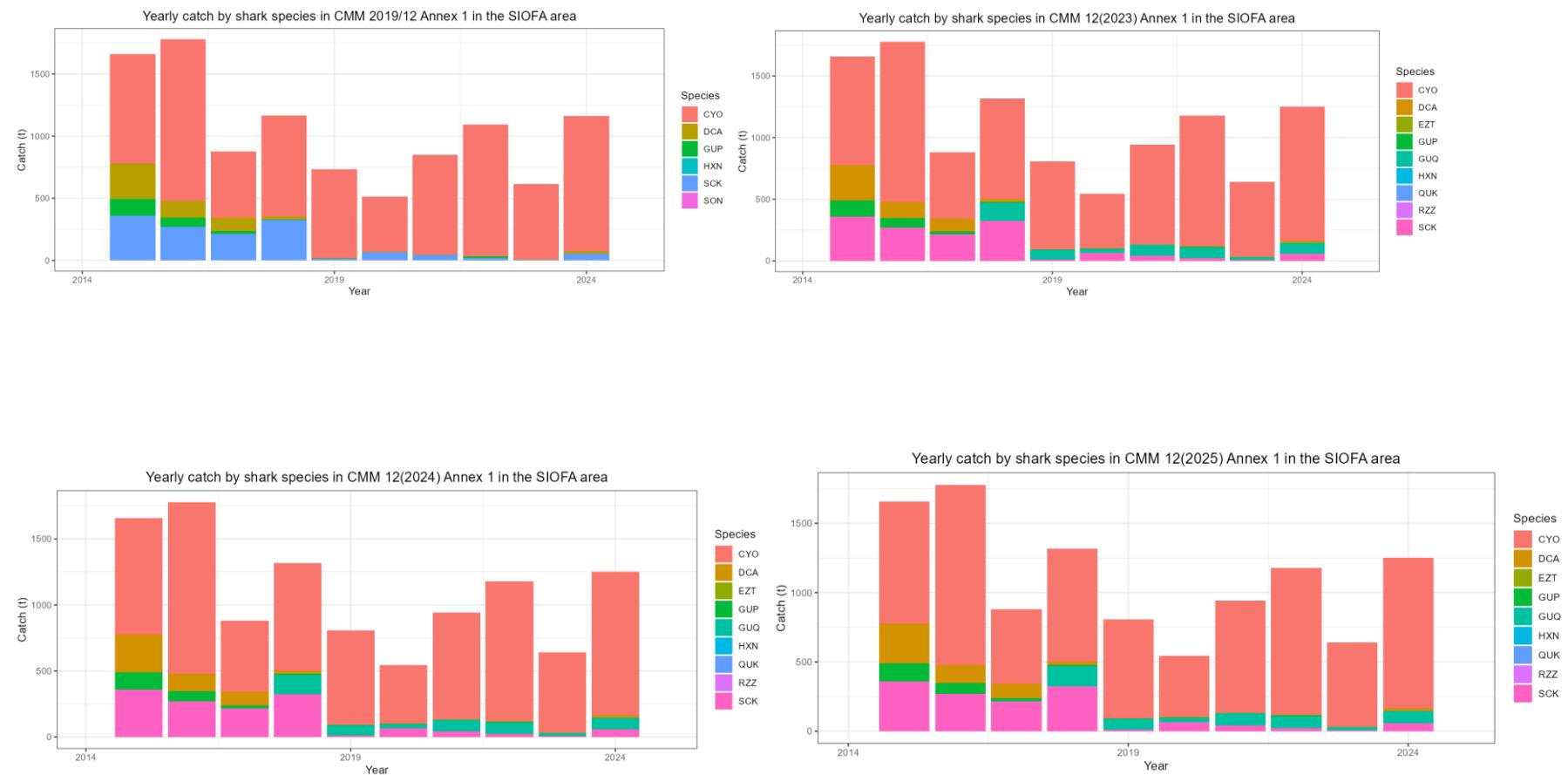


Figure D.1a, b, c, d – Yearly catch in the SIOFA Area of sharks considered to be at “high risk” and/or “of concern” as included in Annex 1 of SIOFA CMM 12 (Conservation and Management Measure for Sharks). Catches are summarised by species in different versions of the CMM Annex 1, 2019/2022 (a), 2023 (b), 2024 (c) and 2025(d) (source: SIOFA AggregatedCatchEffort and HBHCatchEffort databases 2015–2024). Species are identified by their FAO species code (see Table 3 for disambiguation).

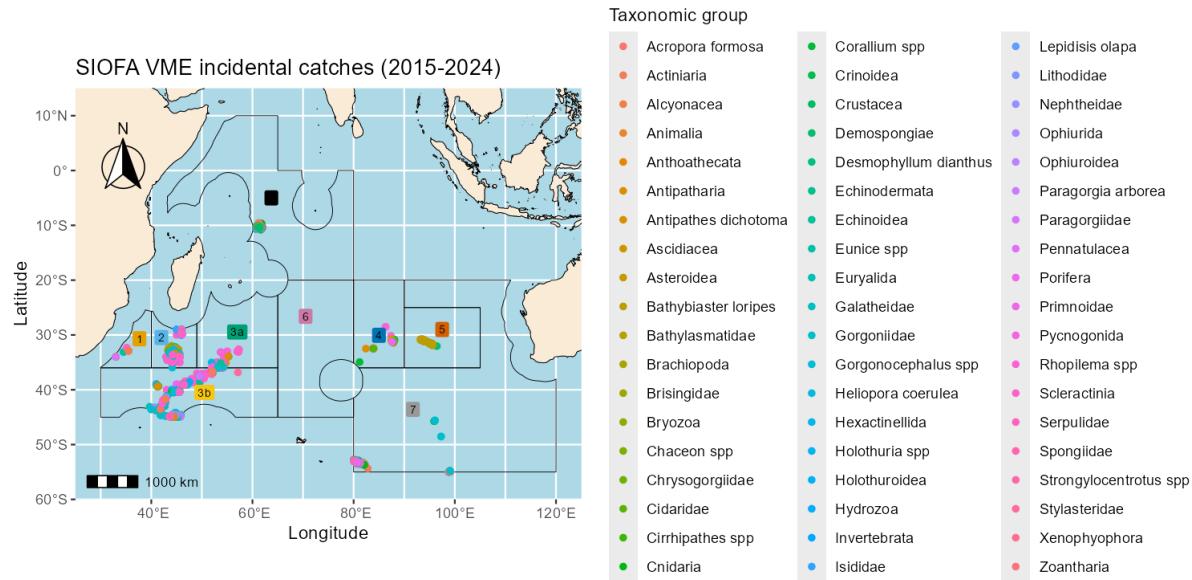


Figure D.2 – Incidental catch of VME taxa reported in the SIOFA Area, mapped by taxonomic group (source: SIOFA Observer and HBHCatchEffort databases 2015–2024).