



CCSBT-ERS/1905/04 (Rev 3)

Summaries from the 2018 ERSWG Data Exchange

Introduction

This paper presents summaries from the data provided for the [ERSWG Data Exchange](#) (EDE). ERSWG 10 tasked the Secretariat with providing summaries of the exchanged data to ERSWG meetings, noting that the data would be aggregated over Members. The summaries would include at least observed and actual effort, observer coverage rate, observed mortalities and estimated total mortalities. Summaries would be provided separately for CCSBT statistical areas and species/species groups. The tables and figures presented in this paper are mainly an update of those presented in paper [CCSBT-ERS/1703/05](#) at ERSWG 12. However, some additions have been made to comply with requests from participants at ERSWG 12 and with the modified recommendations of the Effectiveness of Seabird Mitigation Measures Technical Group (SMMTG) agreed at ERSWG 11.

The EDE commenced in 2013 with data provided for 2010 to 2012. Data have been submitted yearly since then and now includes information up to and including 2017. The summaries in this paper are for all data held by the Secretariat and include an additional two years data to the summary presented at ERSWG 12, plus some revisions to previously included data. Table 1 summarises the data provided by Members. South Africa has not been able to provide data for 2010 and 2011 due to data quality issues.

CCSBT Circular #2019/023 provided a letter from Japan dated 28 March 2019, which stated: “*In December, 2018, National Research Institute of Far Seas Fisheries (NRIFS) informed FAJ that they have found suspicious and/or inconsistent descriptions on seabird and other species data in certain observer reports recorded on Japanese large-scale longline vessels fishing for southern bluefin tuna in high-latitude areas of the southern hemisphere. Upon this, FAJ started its investigation into such observer reports.*”. Subsequently, in May 2019, Japan provided revised 2016 and 2017 observer data for the EDE. This reduced Japan’s reported 2017 observer coverage by over one million hooks, which is over 50%.

Table 1 – Summary of ERSWG Data Exchange data by Members. The European Union had no reported SBT catch from 2013-2017 and therefore had no data to submit for those years. * Indonesia has provided data for all years but has not been able to provide estimates of total fishing effort or estimates of total mortality.

| | Australia | EU | Indonesia | Japan | Korea | New Zealand | South Africa | Taiwan |
|------|-----------|-----|-----------|-------|-------|-------------|--------------|--------|
| 2010 | ✓ | ✗ | ✓* | ✓ | ✓ | ✓ | ✗ | ✓ |
| 2011 | ✓ | ✗ | ✓* | ✓ | ✓ | ✓ | ✗ | ✓ |
| 2012 | ✓ | ✗ | ✓* | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2013 | ✓ | n/a | ✓* | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2014 | ✓ | n/a | ✓* | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2015 | ✓ | n/a | ✓* | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2016 | ✓ | n/a | ✓* | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2017 | ✓ | n/a | ✓* | ✓ | ✓ | ✓ | ✓ | ✓ |

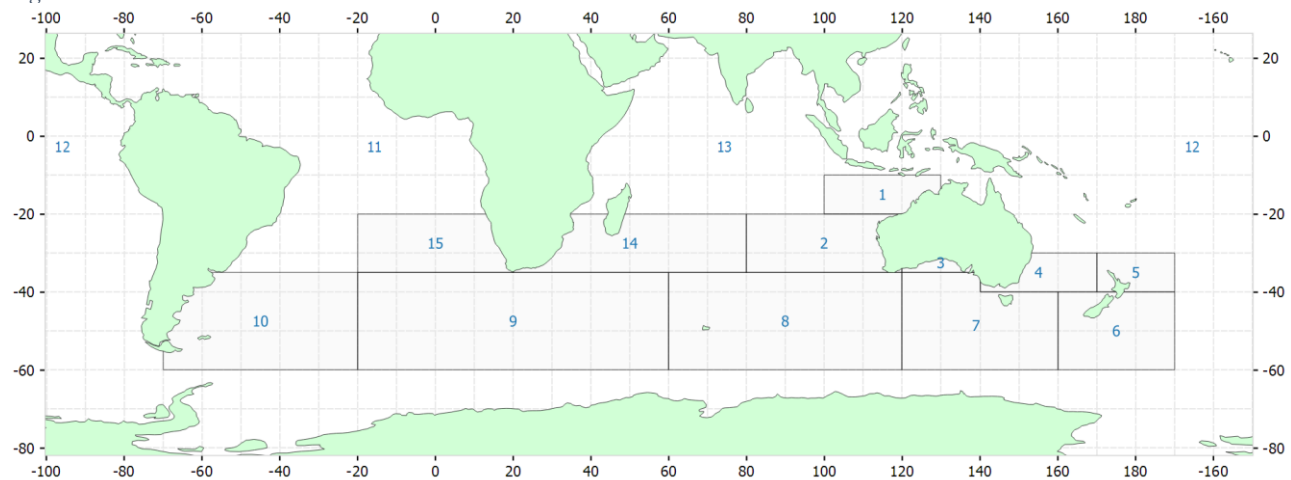
The specifications of the EDE provide a template for the provision of data. The submissions received from Members followed the template but there were substantial differences in the level of species detail provided. Some Members¹ provided species specific data, while others² used the “species/species groups” defined within the EDE as the ‘minimum taxonomic level at which information should be reported’. The summaries in this document are aggregated over Members, so these “species/species groups” are the finest common level of detail that can be presented (the groups are shown in Table 2).

Table 2 - Minimum taxonomic level at which information should be reported for the ERS Data Exchange (providing that such taxonomic detail is available).

| Species/Species Group | Comments |
|---------------------------|--|
| Sharks | |
| Blue Shark | |
| Shortfin Mako Shark | |
| Porbeagle | |
| Other sharks | |
| Turtles | For sea turtles, the number of species is small (approximately 7), so it is feasible to report data by stratum for each species. |
| Species specific | <i>Data should be provided separately for each species</i> |
| Seabirds | For seabirds, there are a large number of species and it is often difficult to separately identify species by pictures only. Reporting of seabird data by species would contain identification errors. |
| Large albatrosses | <i>Including: Wandering, Tristan, New Zealand, Antipodean, Southern Royal, and Northern Royal</i> |
| Dark coloured albatrosses | <i>Including: Sooty and Light-mantled</i> |
| Other albatrosses | <i>Including: Black-browed, Campbell, Grey-headed, Atlantic yellow-nosed, Indian yellow-nosed, Buller's, Shy, Salvin's, Chatham and White-capped</i> |
| Giant petrels | <i>Including: White-chinned petrel, Grey petrel, Flesh-footed shearwater etc.</i> |
| Other seabirds | <i>Including: Skua etc.</i> |

For reference, the CCSBT Statistical Areas are shown in Figure 1 below.

Figure 1 – CCSBT Statistical areas



Effort Summaries

As per the rules of the EDE, the fishing effort provided by Members is defined as being effort by CCSBT authorised vessels for shots/sets where SBT was either targeted or caught.

Longline effort summaries are shown in Table 3 and as maps in Attachment A. On the maps the circle area is proportional to the total number of hooks set in that area, with the yellow slice representing the proportion of hooks that were observed. The scale is the same across years. Note that for 2013, area 6 effort does not include New Zealand (NZ) domestic fleet effort. NZ did not

¹ Australia, Indonesia, Korea, New Zealand, South Africa, Taiwan.

² Japan

submit figures for total or observed effort for the domestic fleet in that area and year and advised that operational issues resulted in very low observer coverage (<1%). The Indonesian domestic fleet is also not included in the maps as Indonesia has not been able to provide estimates of total effort.

Over the 8-year period longline observer coverage was on average 12.4% of total effort, but coverage varied considerably by area and year. The observer coverage from 2012 to 2016 was over 12% for each year, an improvement on 2010 and 2011 where the average coverage was less than 10%. Observer coverage for 2017 was less than 10% due to Japan removing a substantial amount of its observer data.

Attachment M shows observer coverage by flag, gear, fleet, year and CCSBT statistical area. The final column, representativeness, is the proportion of statistical areas fished that reached the target of 10% observer coverage as per the SMMTG Recommendations. There are only two fleets that maintained a representativeness of 100% for all years fished (New Zealand and South African longline charter fleets)

Table 3 – Longline effort by year and statistical area, with observer coverage

| Year | Statistical area | Total effort (1000s of hooks) | Observed effort (1000s of hooks) | Observer coverage |
|------|-------------------|----------------------------------|-------------------------------------|----------------------|
| 2010 | 2 | 12,456 | 1,960 | 15.7% |
| | 4 | 4,007 | 66 | 1.6% |
| | 5 | 1,345 | 88 | 6.5% |
| | 6 | 739 | 408 | 55.2% |
| | 7 | 1,304 | 0 | 0.0% |
| | 8 | 7,396 | 615 | 8.3% |
| | 9 | 19,659 | 1,152 | 5.9% |
| | 14 | 3,978 | 102 | 2.6% |
| | <i>2010 Total</i> | <i>50,884</i> | <i>4,391</i> | <i>8.6%</i> |
| 2011 | 2 | 103 | 0 | 0.0% |
| | 4 | 4,208 | 191 | 4.5% |
| | 5 | 2,539 | 170 | 6.7% |
| | 6 | 683 | 365 | 53.5% |
| | 7 | 1,986 | 147 | 7.4% |
| | 8 | 6,118 | 589 | 9.6% |
| | 9 | 10,515 | 1,066 | 10.1% |
| | | <i>2011 Total</i> | <i>26,151</i> | <i>2,528</i> |
| 2012 | 2 | 1,944 | 623 | 32.0% |
| | 4 | 3,452 | 306 | 8.9% |
| | 5 | 2,269 | 93 | 4.1% |
| | 6 | 1,112 | 498 | 44.8% |
| | 7 | 2,451 | 110 | 4.5% |
| | 8 | 4,214 | 280 | 6.6% |
| | 9 | 11,329 | 1,609 | 14.2% |
| | 14 | 1,254 | 479 | 38.2% |
| | 15 | 40 | 0 | 0.0% |
| | | <i>2012 Total</i> | <i>28,066</i> | <i>3,997</i> |
| 2013 | 2 | 3,704 | 994 | 26.8% |
| | 4 | 2,952 | 200 | 6.8% |
| | 5 | 1,364 | 83 | 6.1% |
| | 6 | 450 | 349 | 77.6% |
| | 7 | 3,216 | 227 | 7.1% |
| | 8 | 6,184 | 670 | 10.8% |
| | 9 | 12,445 | 1,252 | 10.1% |
| | 14 | 7,330 | 1,209 | 16.5% |
| | 15 | 100 | 0 | 0.0% |
| | | <i>2013 Total</i> | <i>37,746</i> | <i>4,984</i> |
| 2014 | 2 | 6,722 | 1,036 | 15.4% |
| | 4 | 2,087 | 251 | 12.0% |
| | 5 | 1,123 | 213 | 18.9% |
| | 6 | 1,137 | 589 | 51.8% |
| | 7 | 2,759 | 426 | 15.4% |
| | 8 | 9,043 | 976 | 10.8% |
| | 9 | 10,394 | 777 | 7.5% |
| | 14 | 5,628 | 1,104 | 19.6% |
| | 15 | 122 | 4 | 3.0% |
| | | <i>2014 Total</i> | <i>39,015</i> | <i>5,375</i> |

| Year | Statistical area | Total effort (1000s of hooks) | Observed effort (1000s of hooks) | Observer coverage |
|--------------|-------------------|----------------------------------|-------------------------------------|----------------------|
| 2015 | 2 | 6,411 | 633 | 9.9% |
| | 4 | 2,387 | 330 | 13.8% |
| | 5 | 1,394 | 209 | 15.0% |
| | 6 | 1,086 | 523 | 48.2% |
| | 7 | 2,770 | 434 | 15.7% |
| | 8 | 10,655 | 942 | 8.8% |
| | 9 | 9,091 | 1,324 | 14.6% |
| | 14 | 5,774 | 917 | 15.9% |
| | 15 | 82 | 0 | 0.0% |
| | 2015 Total | 39,651 | 5,312 | 13.4% |
| 2016 | 2 | 4,971 | 1,224 | 24.6% |
| | 4 | 1,601 | 287 | 17.9% |
| | 5 | 2,153 | 242 | 11.2% |
| | 6 | 539 | 130 | 24.1% |
| | 7 | 3,975 | 956 | 24.0% |
| | 8 | 8,778 | 463 | 5.3% |
| | 9 | 13,857 | 2,797 | 20.2% |
| | 14 | 4,132 | 829 | 20.1% |
| | 15 | 132 | 0 | 0.0% |
| | 2016 Total | 40,139 | 6,928 | 17.3% |
| 2017 | 2 | 6,478 | 866 | 13.4% |
| | 3 | 1 | 0 | 0.0% |
| | 4 | 1,275 | 90 | 7.1% |
| | 5 | 1,610 | 149 | 9.3% |
| | 6 | 565 | 128 | 22.7% |
| | 7 | 4,966 | 565 | 11.4% |
| | 8 | 6,747 | 504 | 7.5% |
| | 9 | 11,814 | 558 | 4.7% |
| | 14 | 5,569 | 811 | 14.6% |
| 15 | 213 | 7 | 3.4% | |
| | 2017 Total | 39,238 | 3,678 | 9.4% |
| Total | | 300,889 | 37,192 | 12.4% |

Table 4 shows the percentage observer coverage of longline effort for areas that are considered to be important for seabirds. Statistical areas 2 and 8 have been combined, as have areas 5 and 6.

Table 4 – Longline observer coverage by year for areas that are important for seabirds.

| Statistical Area(s) | Year | | | | | | | |
|---------------------|------|------|------|------|------|------|------|------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| 2/8 | 13% | 9% | 15% | 17% | 13% | 9% | 12% | 10% |
| 5/6 | 24% | 17% | 17% | 24% | 35% | 30% | 14% | 13% |
| 7 | 0% | 7% | 4% | 7% | 15% | 16% | 24% | 11% |
| 9 | 6% | 10% | 14% | 10% | 7% | 15% | 20% | 5% |

Purse seine effort summaries are shown in Table 5 and as maps in Attachment B. On the maps the circle area is proportional to the total number of sets in that area, with the yellow slice representing the proportion of sets that were observed. Observer coverage averages 15.5% over the 8-year period but was less than 10% in 2015.

Table 5 – Purse seine effort by year and statistical area, with observer coverage.

| Year | Statistical area | Total effort (sets) | Observed effort (sets) | Observer coverage |
|--------------|-------------------|---------------------|------------------------|-------------------|
| 2010 | 3 | 82 | 21 | 25.6% |
| | <i>2010 Total</i> | 82 | 21 | 25.6% |
| 2011 | 3 | 98 | 17 | 17.3% |
| | 7 | 10 | 0 | 0.0% |
| | <i>2011 Total</i> | 108 | 17 | 15.7% |
| 2012 | 3 | 71 | 10 | 14.1% |
| | 7 | 81 | 7 | 8.6% |
| | <i>2012 Total</i> | 152 | 17 | 11.2% |
| 2013 | 3 | 8 | 0 | 0.0% |
| | 7 | 111 | 14 | 12.6% |
| | <i>2013 Total</i> | 119 | 14 | 11.8% |
| 2014 | 7 | 75 | 17 | 22.7% |
| | <i>2014 Total</i> | 75 | 17 | 22.7% |
| 2015 | 7 | 154 | 14 | 9.1% |
| | <i>2015 Total</i> | 154 | 14 | 9.1% |
| 2016 | 7 | 133 | 25 | 18.8% |
| | <i>2016 Total</i> | 133 | 25 | 18.8% |
| 2017 | 7 | 111 | 20 | 18.0% |
| | <i>2017 Total</i> | 111 | 20 | 18.0% |
| Total | | 934 | 145 | 15.5% |

Observed Mortality Summaries

Table 6 shows observed mortalities by year, statistical area, and species/species group for the SBT longline fishery, while attachments C and D map the distribution of observed mortalities for seabirds and sharks respectively. For the pie maps, the area of the pie is proportional to the total number of observed mortalities, with pie slices representing the proportion of each species/species group. The scale is the same across years.

The number of observed bird mortalities by area varies considerably from year to year but appears to be higher in recent years, which in some areas is at least partly due to the increase in observer coverage. The exception to this is 2017 where the number of observed bird mortalities are the lowest of the time series, but the number of observed hooks is also low. Note that a large proportion of mortalities are in the ‘other albatross’ and ‘other seabirds’ categories, some of which are unidentified seabirds that may belong in a different category.

The number of observed shark mortalities by area also varies considerably from year to year but apart from area 9 seems to have decreased overall from 2012 to 2017. This may not actually be the case since a large proportion of shark catch was not given a life status, see the charts and discussion on catch rates (and Attachment E). In addition to this, the Secretariat has learned that some Members have only been including discarded mortalities in their EDE figures, and have not included retained catch, while other Members have included both. This is mainly an issue for data provided in the older EDE format (data provided for calendar years prior to 2017) since the new format specifically includes retained catches, although some Members have not included retained catch when calculating mortality rates. Members should resolve this by agreeing on a standard reporting method. Providing historical data in the new EDE format helps to clarify how data were reported and help to separate commercial catches from bycatch.

Table 6 - Observed mortalities for the SBT longline fishery by year, statistical area and species/species group

| Statistical area | Blue shark | Shortfin mako shark | Porbeagle | Other sharks | Turtles | Large albatross | Dark coloured albatross | Other albatross | Giant petrels | Other seabirds |
|-------------------|---------------|---------------------|------------|--------------|----------|-----------------|-------------------------|-----------------|---------------|----------------|
| 1 | 79 | 0 | 6 | 261 | 2 | 0 | 0 | 0 | 0 | 0 |
| 2 | 404 | 28 | 0 | 69 | 0 | 0 | 1 | 23 | 1 | 1 |
| 4 | 251 | 10 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 0 |
| 5 | 1,272 | 65 | 148 | 2 | 0 | 0 | 0 | 9 | 2 | 1 |
| 6 | 2,547 | 18 | 76 | 28 | 0 | 0 | 0 | 47 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 429 | 16 | 42 | 20 | 0 | 1 | 3 | 8 | 3 | 1 |
| 9 | 1,168 | 65 | 280 | 118 | 0 | 16 | 5 | 74 | 20 | 220 |
| 14 | 51 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2010 Total | 6,201 | 235 | 552 | 500 | 2 | 19 | 9 | 166 | 26 | 223 |
| 1 | 2 | 0 | 0 | 52 | 2 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 247 | 59 | 0 | 22 | 0 | 13 | 0 | 8 | 6 | 33 |
| 5 | 1,152 | 172 | 243 | 16 | 0 | 9 | 0 | 4 | 0 | 1 |
| 6 | 2,357 | 18 | 60 | 60 | 0 | 0 | 0 | 11 | 1 | 0 |
| 7 | 334 | 23 | 22 | 6 | 0 | 1 | 0 | 44 | 11 | 20 |
| 8 | 1,321 | 14 | 177 | 0 | 0 | 4 | 1 | 101 | 12 | 33 |
| 9 | 1,927 | 131 | 115 | 77 | 0 | 11 | 3 | 76 | 7 | 12 |
| 2011 Total | 7,340 | 417 | 617 | 233 | 2 | 38 | 4 | 244 | 37 | 99 |
| 1 | 20 | 0 | 0 | 32 | 3 | 0 | 0 | 0 | 0 | 3 |
| 2 | 1,791 | 10 | 0 | 143 | 0 | 0 | 0 | 16 | 0 | 6 |
| 4 | 29 | 90 | 0 | 7 | 0 | 3 | 0 | 3 | 1 | 3 |
| 5 | 1,880 | 96 | 125 | 2 | 0 | 3 | 0 | 8 | 3 | 0 |
| 6 | 6,254 | 33 | 141 | 90 | 0 | 0 | 0 | 26 | 0 | 0 |
| 7 | 40 | 5 | 2 | 0 | 0 | 1 | 0 | 5 | 3 | 3 |
| 8 | 928 | 3 | 10 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 1,534 | 161 | 366 | 15 | 0 | 9 | 7 | 45 | 21 | 7 |
| 14 | 930 | 73 | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2012 Total | 13,406 | 471 | 644 | 291 | 3 | 16 | 7 | 113 | 30 | 22 |
| 1 | 44 | 0 | 0 | 69 | 6 | 0 | 0 | 0 | 0 | 0 |
| 2 | 729 | 20 | 3 | 51 | 0 | 0 | 2 | 16 | 1 | 0 |
| 4 | 210 | 30 | 1 | 4 | 0 | 4 | 0 | 1 | 2 | 0 |
| 5 | 818 | 38 | 50 | 4 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 3,948 | 45 | 71 | 92 | 0 | 0 | 0 | 2 | 1 | 0 |
| 7 | 16 | 18 | 5 | 2 | 0 | 3 | 0 | 23 | 4 | 0 |
| 8 | 464 | 12 | 26 | 13 | 0 | 7 | 1 | 6 | 0 | 10 |
| 9 | 1,058 | 81 | 203 | 14 | 0 | 11 | 13 | 198 | 79 | 21 |
| 14 | 558 | 151 | 0 | 51 | 0 | 2 | 5 | 3 | 2 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2013 Total | 7,845 | 395 | 359 | 300 | 6 | 27 | 21 | 250 | 89 | 31 |
| 1 | 46 | 2 | 0 | 79 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1,051 | 28 | 3 | 17 | 0 | 0 | 0 | 5 | 0 | 0 |
| 4 | 537 | 141 | 1 | 51 | 0 | 25 | 0 | 18 | 10 | 7 |
| 5 | 333 | 109 | 68 | 39 | 0 | 9 | 0 | 16 | 2 | 0 |
| 6 | 2,425 | 51 | 280 | 142 | 0 | 0 | 0 | 20 | 1 | 0 |
| 7 | 501 | 16 | 85 | 10 | 0 | 32 | 0 | 223 | 25 | 21 |
| 8 | 1,188 | 44 | 241 | 94 | 0 | 2 | 7 | 31 | 4 | 0 |
| 9 | 1,331 | 392 | 105 | 30 | 0 | 5 | 3 | 107 | 26 | 33 |
| 14 | 656 | 96 | 0 | 185 | 0 | 0 | 2 | 7 | 2 | 1 |
| 15 | 68 | 462 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2014 Total | 8,136 | 1,341 | 783 | 647 | 0 | 73 | 12 | 427 | 70 | 62 |

| Statistical area | Blue shark | Shortfin mako shark | Porbeagle | Other sharks | Turtles | Large albatross | Dark coloured albatross | Other albatross | Giant petrels | Other seabirds |
|-------------------|--------------|---------------------|------------|--------------|-----------|-----------------|-------------------------|-----------------|---------------|----------------|
| 1 | 124 | 1 | 0 | 146 | 0 | 0 | 0 | 0 | 0 | 7 |
| 2 | 57 | 20 | 0 | 4 | 0 | 0 | 1 | 4 | 0 | 0 |
| 4 | 302 | 47 | 26 | 39 | 0 | 16 | 1 | 66 | 3 | 0 |
| 5 | 700 | 37 | 99 | 9 | 0 | 2 | 0 | 7 | 1 | 0 |
| 6 | 567 | 27 | 75 | 73 | 0 | 1 | 0 | 11 | 2 | 0 |
| 7 | 279 | 46 | 102 | 9 | 0 | 13 | 6 | 295 | 75 | 7 |
| 8 | 563 | 27 | 108 | 16 | 0 | 1 | 1 | 76 | 11 | 2 |
| 9 | 656 | 74 | 160 | 8 | 0 | 24 | 31 | 245 | 38 | 14 |
| 14 | 280 | 102 | 0 | 9 | 0 | 0 | 5 | 8 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2015 Total | 3,528 | 381 | 570 | 313 | 0 | 57 | 45 | 712 | 130 | 30 |
| 1 | 77 | 1 | 0 | 186 | 11 | 0 | 0 | 0 | 0 | 0 |
| 2 | 262 | 27 | 0 | 1 | 0 | 0 | 1 | 5 | 0 | 0 |
| 4 | 125 | 33 | 3 | 23 | 0 | 14 | 0 | 72 | 0 | 0 |
| 5 | 918 | 92 | 233 | 60 | 0 | 1 | 0 | 15 | 0 | 0 |
| 6 | 326 | 18 | 119 | 6 | 0 | 2 | 0 | 89 | 10 | 0 |
| 7 | 427 | 37 | 121 | 15 | 0 | 23 | 3 | 681 | 118 | 1 |
| 8 | 407 | 25 | 13 | 18 | 0 | 5 | 29 | 61 | 9 | 0 |
| 9 | 2,155 | 64 | 138 | 62 | 0 | 18 | 28 | 456 | 102 | 96 |
| 14 | 641 | 126 | 0 | 8 | 0 | 0 | 1 | 1 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2016 Total | 5,338 | 423 | 627 | 379 | 11 | 63 | 62 | 1,380 | 239 | 97 |
| 1 | 23 | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 644 | 72 | 0 | 70 | 0 | 0 | 1 | 1 | 0 | 20 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 53 | 20 | 1 | 11 | 0 | 0 | 0 | 2 | 0 | 0 |
| 5 | 713 | 47 | 254 | 14 | 0 | 0 | 0 | 2 | 2 | 0 |
| 6 | 305 | 16 | 127 | 16 | 0 | 1 | 0 | 20 | 8 | 0 |
| 7 | 674 | 28 | 31 | 18 | 0 | 1 | 0 | 22 | 4 | 0 |
| 8 | 906 | 13 | 270 | 42 | 0 | 2 | 1 | 10 | 1 | 0 |
| 9 | 990 | 278 | 137 | 107 | 0 | 0 | 0 | 1 | 0 | 0 |
| 14 | 236 | 162 | 0 | 11 | 0 | 0 | 0 | 2 | 1 | 0 |
| 15 | 285 | 144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2017 Total | 4,829 | 780 | 820 | 332 | 0 | 4 | 2 | 60 | 16 | 20 |

Table 7 shows observed mortalities for all seabirds combined, by year and statistical area. 83% of all observed bird mortalities occurred in areas 7, 8, and 9.

Table 7 - Observed mortalities for the SBT longline fishery for all seabirds combined by year and statistical area

| Statistical Area | Year | | | | | | | | All Years | |
|------------------|------------|------------|------------|------------|------------|------------|-------------|------------|-------------|------------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total | Average |
| 1 | 0 | 0 | 3 | 0 | 0 | 7 | 0 | 0 | 10 | 1 |
| 2 | 26 | 0 | 22 | 19 | 5 | 5 | 6 | 22 | 105 | 13 |
| 3 | - | - | - | - | - | - | - | 0 | 0 | 0 |
| 4 | 7 | 60 | 10 | 7 | 60 | 86 | 86 | 2 | 318 | 40 |
| 5 | 12 | 14 | 14 | 1 | 27 | 10 | 16 | 4 | 98 | 12 |
| 6 | 47 | 12 | 26 | 3 | 21 | 14 | 101 | 29 | 253 | 32 |
| 7 | 0 | 76 | 12 | 30 | 301 | 396 | 826 | 27 | 1668 | 209 |
| 8 | 16 | 151 | 0 | 24 | 44 | 91 | 104 | 14 | 444 | 56 |
| 9 | 335 | 109 | 89 | 322 | 174 | 352 | 700 | 1 | 2082 | 260 |
| 14 | 0 | 0 | 12 | 12 | 12 | 13 | 2 | 3 | 54 | 7 |
| 15 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 443 | 422 | 188 | 418 | 644 | 974 | 1841 | 102 | 5032 | 629 |

Table 8 shows observed mortalities by year, statistical area, and species/species group for the SBT purse seine fishery. There were no observed mortalities reported.

Table 8 - Observed mortalities for the SBT purse seine fishery by year, statistical area and species/species group

| Year | Statistical area | Blue shark | Shortfin mako shark | Porbeagle | Other sharks | Turtles | Large albatross | Dark coloured albatross | Other albatross | Giant petrels | Other seabirds |
|--------------|------------------|------------|---------------------|-----------|--------------|----------|-----------------|-------------------------|-----------------|---------------|----------------|
| 2010 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2010 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2011 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2011 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2012 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2012 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2013 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2013 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2014 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2014 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2015 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2015 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2016 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2016 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2017 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2017 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Observed Catch and Mortality Rate Summaries

Attachment E shows observed catch rates (numbers caught per thousand hooks) by year for each species group. The bars are divided by fate; red for observed mortalities, green for observed live releases, and grey for 'unknown life status' (for each species Members provide total numbers caught, the number of individuals observed to be dead, and the number observed to be released alive. The 'unknown life status' number is the calculated discrepancy between 'total caught' – ('observed dead' + 'observed released alive')).

Attachment F shows observed catch rates by species group, year, and statistical area.

Attachments G and H map mortality rates for seabirds and sharks respectively, while attachments I and J map capture rates for seabirds and sharks. The areas of the pies are proportional to the total mortality rate (G and H) or capture rate (I and J) of all species combined, with pie slices representing the proportion of each species/species group. The scale is the same across years for each map series. Note that in attachments H and J the data for statistical area 15 have been removed for 2014 and 2017. These points had extremely high capture and mortality rates for shortfin mako and blue shark but was for less than 10000 observed hooks.

Observed catch and mortality rates for seabirds are similar due to the low proportion of live releases. The overall bird rates were highest from 2014 to 2016 but appear to be lower in 2017.

Observed shark mortality rates appear to have declined from 2012 to 2015 but have increased since then, while overall catch rates by year remain high according to Attachment E. This is possibly due to a large proportion of the observed catch not being given a life status (the middle bar in Attachment E). If a large proportion of these sharks did not survive then the mortality rates for 2015 would not be low.

Summaries of the Estimated Total Number of Mortalities

The ERSWG template includes a column for the estimated total number of mortalities per year/stratum. This particular column was provided for all years by four of the seven Members whose data are used in this report, not provided for any years by one Member, and partly provided for recent years by two Members. Where the estimated total number of mortalities was provided, Members mostly used a simple scaling of the observed number of mortalities according to the observer coverage of the stratum and rounded fractions down to the next integer (even for fractions greater than 0.5).

For the summaries in this paper, the estimated total number of mortalities for the three Members that did not provide the column were calculated by scaling the number of observed mortalities by the observer coverage of the stratum and rounding down to the nearest whole number, to be consistent with the data provided by the other Members.

Due to the simple, non-model based, approach used to estimate the total number of mortalities, and the low level of observer coverage in many strata which results in a high scaling factor, the numbers should be treated with caution.

Table 9 shows estimated total mortalities by year, statistical area, and species/species group for the SBT longline fishery, while attachments K and L map the distribution of estimated total mortalities for seabirds and sharks respectively. As with observed mortalities, the areas of the pies are proportional to the total number of estimated mortalities, with pie slices representing the proportion of each species/species group. The scale is the same across years.

In Table 9, the total shark mortalities for 2015 is estimated to be less than half the yearly average from 2012-2014, but this could be at least partially explained by the high proportion of sharks reported without a life status (see Attachment E). If we were to map the estimated numbers of

sharks that were not 'live releases', then 2015 would show much higher numbers relative to the other years.

The distribution of total estimated bird mortalities by area is similar to the distribution of observed mortalities, and also varies considerably from year to year. There are also relatively large numbers of seabirds in the 'other albatross' and 'other seabirds' categories, some of which are unidentified seabirds that may belong in a different category.

The distribution of total estimated shark mortalities by area is also quite similar to the distribution of observed shark mortalities and also varies considerably from year to year, so the same comment applies that it is difficult to see clear visual patterns other than blue shark being caught in much larger numbers than any other shark species.

While there were observed turtle mortalities in area 1, the total estimated mortalities of turtles could not be calculated because total effort was not provided by the Member concerned.

Table 9 – Estimated total mortalities for the SBT longline fishery by year, statistical area, and species/species group

| Year | Statistical area | Blue shark | Shortfin mako shark | Porbeagle | Other Sharks | Turtles | Large albatross | Dark coloured albatross | Other albatross | Giant petrels | Other seabirds |
|-------------------|-------------------|---------------|---------------------|--------------|--------------|------------|-----------------|-------------------------|-----------------|---------------|----------------|
| 2010 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 2,533 | 175 | 0 | 432 | 0 | 0 | 6 | 142 | 6 | 6 |
| | 4 | 3,448 | 664 | 0 | 132 | 0 | 255 | 0 | 637 | 0 | 0 |
| | 5 | 14,326 | 732 | 1,666 | 22 | 0 | 0 | 0 | 100 | 22 | 11 |
| | 6 | 11,157 | 102 | 313 | 34 | 0 | 0 | 0 | 498 | 0 | 0 |
| | 8 | 4,584 | 131 | 449 | 185 | 0 | 10 | 24 | 80 | 32 | 8 |
| | 9 | 14,774 | 861 | 2,995 | 1,791 | 0 | 189 | 145 | 807 | 572 | 2,920 |
| | 14 | 1,987 | 1,286 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2010 Total | 52,809 | 3,951 | 5,423 | 2,596 | 0 | 454 | 175 | 2,264 | 632 | 2,945 |
| 2011 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 4 | 5,681 | 1,248 | 0 | 539 | 0 | 331 | 0 | 204 | 153 | 820 |
| | 5 | 12,361 | 2,108 | 2,461 | 273 | 0 | 172 | 0 | 60 | 0 | 20 |
| | 6 | 3,204 | 24 | 81 | 81 | 0 | 0 | 0 | 14 | 1 | 0 |
| | 7 | 4,526 | 311 | 298 | 81 | 0 | 13 | 0 | 596 | 149 | 271 |
| | 8 | 6,281 | 66 | 841 | 0 | 0 | 19 | 4 | 480 | 57 | 156 |
| | 9 | 20,966 | 1,702 | 846 | 566 | 0 | 80 | 22 | 559 | 51 | 87 |
| | 2011 Total | 53,019 | 5,459 | 4,527 | 1,540 | 0 | 615 | 26 | 1,913 | 411 | 1,354 |
| 2012 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 4,423 | 30 | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 0 |
| | 4 | 363 | 892 | 0 | 77 | 0 | 37 | 0 | 37 | 12 | 37 |
| | 5 | 20,936 | 1,109 | 1,393 | 22 | 0 | 33 | 0 | 88 | 33 | 0 |
| | 6 | 28,514 | 183 | 1,311 | 106 | 0 | 0 | 0 | 42 | 0 | 0 |
| | 7 | 890 | 111 | 44 | 0 | 0 | 22 | 0 | 111 | 66 | 66 |
| | 8 | 8,351 | 26 | 89 | 17 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 9 | 12,977 | 956 | 3,824 | 135 | 0 | 74 | 73 | 424 | 182 | 69 |
| | 14 | 2,241 | 168 | 0 | 0 | 0 | 0 | 0 | 23 | 4 | 0 |
| | 2012 Total | 78,695 | 3,475 | 6,661 | 357 | 0 | 166 | 73 | 773 | 297 | 172 |
| 2013 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 2,784 | 76 | 3 | 192 | 0 | 0 | 7 | 59 | 3 | 0 |
| | 4 | 931 | 501 | 4 | 17 | 0 | 79 | 0 | 19 | 39 | 0 |
| | 5 | 10,652 | 435 | 703 | 60 | 0 | 0 | 0 | 15 | 0 | 0 |
| | 6 | 5,090 | 58 | 92 | 119 | 0 | 0 | 0 | 2 | 1 | 0 |
| | 7 | 226 | 255 | 70 | 28 | 0 | 42 | 0 | 326 | 56 | 0 |
| | 8 | 5,911 | 163 | 330 | 149 | 0 | 77 | 11 | 39 | 0 | 110 |
| | 9 | 12,621 | 624 | 1,207 | 130 | 0 | 94 | 118 | 1,821 | 744 | 191 |
| | 14 | 3,231 | 274 | 0 | 356 | 0 | 14 | 36 | 21 | 14 | 0 |
| | 2013 Total | 41,446 | 2,386 | 2,409 | 1,051 | 0 | 306 | 172 | 2,302 | 857 | 301 |
| 2014 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 9,311 | 273 | 18 | 103 | 0 | 0 | 0 | 30 | 0 | 0 |
| | 4 | 4,253 | 1,117 | 7 | 366 | 0 | 195 | 0 | 140 | 78 | 54 |
| | 5 | 2,913 | 812 | 635 | 169 | 0 | 34 | 0 | 77 | 12 | 9 |
| | 6 | 4,232 | 388 | 2,097 | 270 | 0 | 0 | 0 | 86 | 67 | 0 |
| | 7 | 3,248 | 103 | 551 | 64 | 0 | 207 | 0 | 1,445 | 162 | 136 |
| | 8 | 13,863 | 616 | 2,982 | 839 | 0 | 22 | 28 | 408 | 45 | 0 |
| | 9 | 10,139 | 2,502 | 627 | 1,018 | 0 | 29 | 17 | 638 | 155 | 197 |
| | 14 | 3,164 | 115 | 0 | 981 | 0 | 0 | 10 | 36 | 10 | 5 |
| | 15 | 2,246 | 15,262 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2014 Total | 53,369 | 21,188 | 6,917 | 3,810 | 0 | 487 | 55 | 2,860 | 529 | 401 | |

| Year | Statistical area | Blue shark | Shortfin mako shark | Porbeagle | Other Sharks | Turtles | Large albatross | Dark coloured albatross | Other albatross | Giant petrels | Other seabirds |
|-------------------|-------------------|---------------|---------------------|--------------|--------------|--------------|-----------------|-------------------------|-----------------|---------------|----------------|
| 2015 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 552 | 193 | 0 | 38 | 0 | 0 | 10 | 40 | 0 | 0 |
| | 4 | 2,049 | 345 | 173 | 265 | 0 | 106 | 6 | 444 | 19 | 0 |
| | 5 | 8,232 | 407 | 1,164 | 107 | 0 | 9 | 0 | 83 | 4 | 0 |
| | 6 | 2,359 | 267 | 879 | 174 | 0 | 22 | 0 | 97 | 23 | 0 |
| | 7 | 1,780 | 293 | 651 | 57 | 0 | 82 | 38 | 1,882 | 478 | 44 |
| | 8 | 6,425 | 303 | 1,245 | 185 | 0 | 8 | 12 | 875 | 127 | 23 |
| | 9 | 5,799 | 350 | 782 | 41 | 0 | 116 | 151 | 1,206 | 184 | 70 |
| | 14 | 1,476 | 244 | 0 | 61 | 0 | 0 | 34 | 62 | 0 | 0 |
| | 2015 Total | | 28,672 | 2,402 | 4,894 | 928 | 0 | 343 | 251 | 4,688 | 835 |
| 2016 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 1,061 | 109 | 0 | 4 | 0 | 0 | 4 | 20 | 0 | 0 |
| | 4 | 669 | 178 | 15 | 123 | 0 | 72 | 0 | 375 | 0 | 0 |
| | 5 | 6,012 | 643 | 1,435 | 695 | 0 | 12 | 0 | 168 | 0 | 0 |
| | 6 | 1,353 | 75 | 494 | 25 | 0 | 8 | 0 | 369 | 42 | 0 |
| | 7 | 1,767 | 151 | 503 | 75 | 0 | 94 | 12 | 2,796 | 484 | 4 |
| | 8 | 10,209 | 788 | 563 | 154 | 0 | 216 | 1,182 | 2,495 | 353 | 0 |
| | 9 | 11,675 | 895 | 489 | 237 | 0 | 64 | 110 | 1,745 | 374 | 335 |
| | 14 | 2,792 | 291 | 0 | 42 | 0 | 0 | 5 | 5 | 0 | 0 |
| | 2016 Total | | 35,538 | 3,130 | 3,499 | 1,355 | 0 | 466 | 1,314 | 7,974 | 1,253 |
| 2017 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 3,809 | 284 | 0 | 329 | 0 | 0 | 0 | 7 | 0 | 15 |
| | 4 | 900 | 171 | 0 | 158 | 0 | 0 | 0 | 34 | 0 | 0 |
| | 5 | 3,996 | 263 | 1,424 | 78 | 0 | 0 | 0 | 12 | 12 | 0 |
| | 6 | 1,346 | 71 | 560 | 70 | 0 | 4 | 0 | 87 | 35 | 0 |
| | 7 | 5,944 | 221 | 212 | 149 | 0 | 161 | 0 | 189 | 35 | 0 |
| | 8 | 18,424 | 199 | 6,310 | 416 | 0 | 47 | 9 | 203 | 23 | 0 |
| | 9 | 8,006 | 3,447 | 754 | 589 | 0 | 0 | 0 | 6 | 0 | 0 |
| | 14 | 1,051 | 227 | 0 | 81 | 0 | 0 | 0 | 10 | 9 | 0 |
| | 15 | 8,384 | 4,236 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2017 Total | | 51,861 | 9,119 | 9,260 | 1,871 | 0 | 212 | 9 | 548 | 114 | 15 |

Table 10 shows the estimated total mortalities for all seabirds combined. As with table 7 regarding observed mortalities, areas 7, 8, and 9 have the highest total mortalities, but area 4 also has appreciable mortalities.

Table 10 – Estimated total mortalities for the SBT longline fishery for all seabirds combined by year and statistical area

| Statistical Area | Year | | | | | | | | All Years | |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|------------|--------------|-------------|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Total | Average |
| 1 | - | - | - | - | - | - | - | - | - | - |
| 2 | 160 | - | 48 | 69 | 30 | 50 | 24 | 22 | 404 | 58 |
| 4 | 892 | 1508 | 123 | 137 | 467 | 575 | 447 | 34 | 4183 | 523 |
| 5 | 133 | 252 | 154 | 15 | 132 | 96 | 180 | 24 | 986 | 123 |
| 6 | 498 | 15 | 42 | 3 | 153 | 142 | 419 | 126 | 1398 | 175 |
| 7 | - | 1029 | 265 | 424 | 1950 | 2524 | 3390 | 385 | 9967 | 1424 |
| 8 | 154 | 716 | 0 | 237 | 503 | 1045 | 4246 | 281 | 7182 | 898 |
| 9 | 4633 | 799 | 822 | 2968 | 1036 | 1727 | 2628 | 6 | 14619 | 1827 |
| 14 | 0 | 0 | 27 | 85 | 61 | 96 | 11 | 19 | 298 | 37 |
| Total | 6470 | 4319 | 1481 | 3938 | 4332 | 6254 | 11345 | 897 | 39037 | 4880 |

Table 11 shows estimated total mortalities by year, statistical area, and species/species group for the SBT purse seine fishery. There were no observed mortalities, so the total estimated mortalities are zero for this fishery.

Table 11 - Estimated total mortalities for the SBT purse seine fishery by year, statistical area and *species/species group*

| Year | Statistical area | Blue shark | Shortfin mako shark | Porbeagle | Other sharks | Turtles | Large albatross | Dark coloured albatross | Other albatross | Giant petrels | Other seabirds |
|------|------------------|------------|---------------------|-----------|--------------|---------|-----------------|-------------------------|-----------------|---------------|----------------|
| 2010 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2010 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2011 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2011 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2012 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2012 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2013 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2013 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2014 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2014 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2015 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2015 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2016 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2016 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2017 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2017 Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Summaries of Observed Effort with Specific Mitigation Measures

After ERSWG11, Members were required to provide the proportion of effort with specific mitigation measures. These have been aggregated over all fleets and statistical areas and are summarised in Table 12 below for 2014 to 2017 (these data are not available for earlier years). The column for 'Mix of 2 measures includes effort where two measures were used at all times but switched from night setting/tori pole to tori pole/branch lines after dawn. 2016 shows the highest proportion of effort with a single, or no, measure being used.

Table 12 - Proportions of observed effort with specific mitigation measures by year.

| | Tori pole + Night setting | Tori pole + weighted branchline | Night setting + weighted branchline | Tori pole + night setting + weighted branchline | None | Single measure | Mix of 2 measures | Other |
|--------------|---------------------------|---------------------------------|-------------------------------------|---|-------------|----------------|-------------------|-------------|
| 2014 | 22.8% | 57.0% | 0.0% | 6.5% | 0.0% | 13.7% | 0.0% | 0.0% |
| 2015 | 35.3% | 27.3% | 2.5% | 10.8% | 0.0% | 0.7% | 23.5% | 0.0% |
| 2016 | 37.1% | 15.0% | 0.3% | 17.0% | 3.2% | 27.5% | 0.0% | 0.0% |
| 2017 | 50.1% | 23.2% | 0.0% | 20.2% | 0.2% | 6.4% | 0.0% | 0.0% |
| Total | 35.3% | 30.1% | 0.7% | 13.3% | 1.1% | 13.7% | 5.9% | 0.0% |

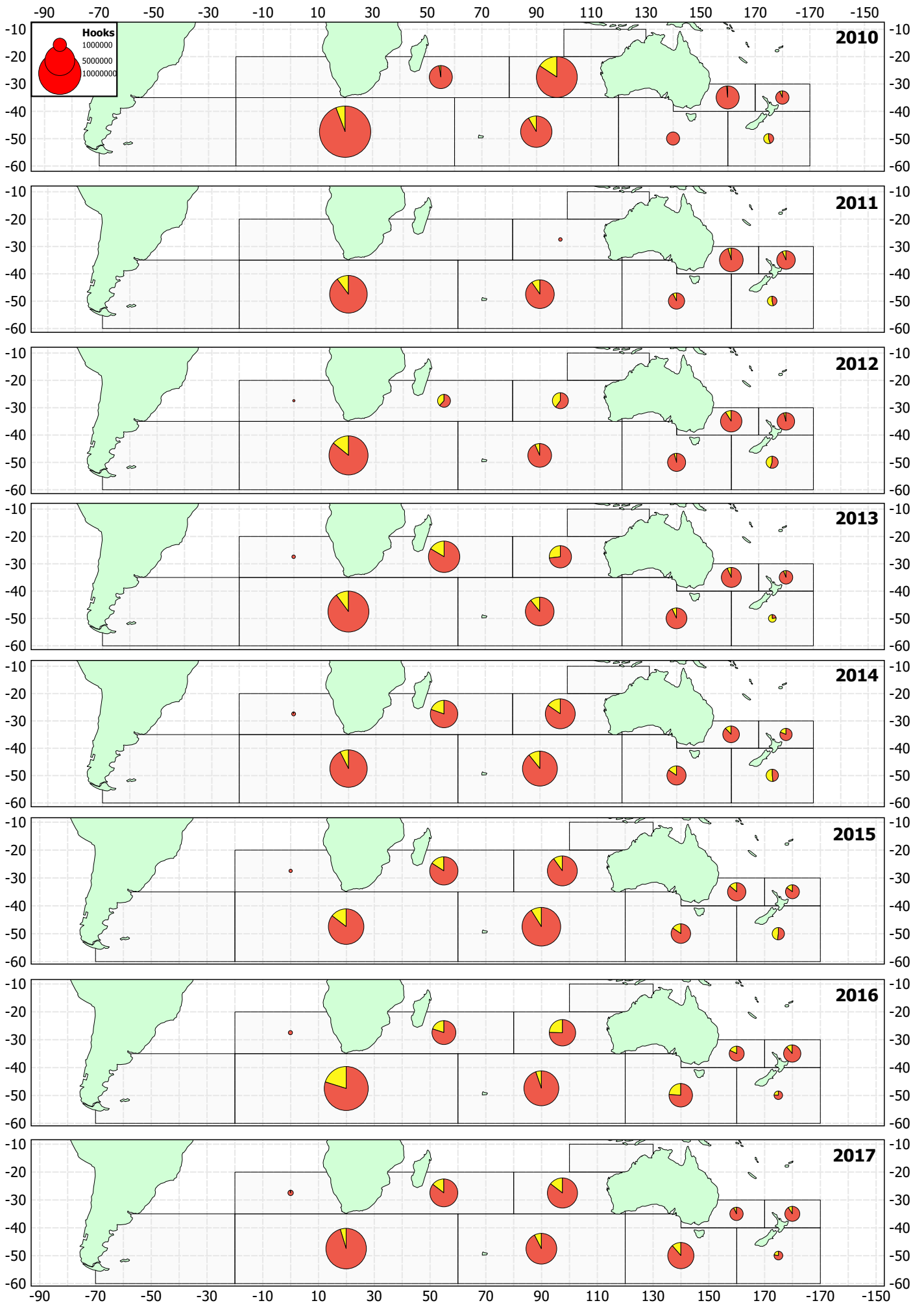
Table 13 summarises the proportion of observed effort with specific mitigation measures by year and statistical area.

Table 13 - Proportions of observed effort with specific mitigation measures by year and CCSBT statistical area.

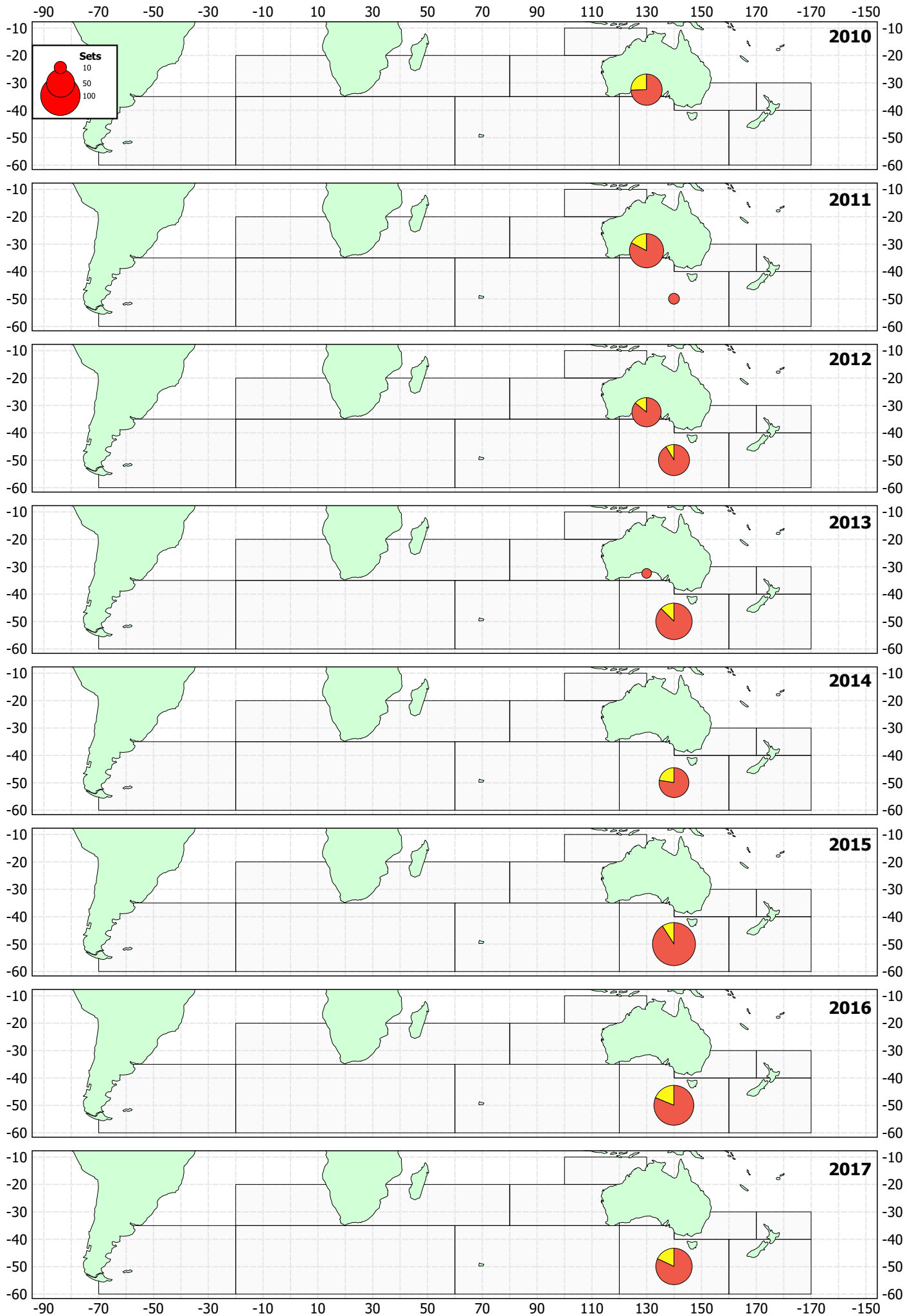
| Year | Statistical Area | Tori pole + Night setting | Tori pole + weighted branchline | Night setting + weighted branchline | Tori pole + night setting + weighted branchline | None | Single Measure | Mix of 2 measures | Other |
|------|-------------------|---------------------------|---------------------------------|-------------------------------------|---|-------------|----------------|-------------------|-------------|
| 2014 | 1 | - | - | - | - | - | - | - | 100.0% |
| | 2 | 21.1% | 78.9% | - | - | - | - | - | - |
| | 4 | 6.2% | 5.2% | - | 0.4% | - | 88.3% | - | - |
| | 5 | 5.8% | 60.6% | - | - | - | 33.6% | - | - |
| | 6 | 99.7% | - | - | - | - | 0.3% | - | - |
| | 7 | 17.3% | - | - | - | - | 82.7% | - | - |
| | 8 | 29.7% | 70.1% | - | - | - | 0.2% | - | - |
| | 9 | 3.6% | 51.2% | - | 33.8% | - | 11.4% | - | - |
| | 14 | - | 92.8% | - | 7.2% | - | - | - | - |
| | 15 | - | - | - | 100.0% | - | - | - | - |
| | 2014 total | 22.2% | 55.6% | - | 6.3% | - | 13.4% | - | 2.6% |
| 2015 | 1 | - | - | - | - | - | - | - | 100.0% |
| | 2 | 59.0% | 25.6% | 7.5% | 7.8% | - | - | - | - |
| | 4 | 1.6% | 68.1% | - | 3.5% | - | - | 26.8% | - |
| | 5 | 8.6% | 74.2% | - | - | - | 17.2% | - | - |
| | 6 | 99.5% | - | - | - | - | 0.5% | - | - |
| | 7 | 0.3% | 31.5% | - | - | - | - | 68.2% | - |
| | 8 | 42.7% | 15.2% | - | 10.3% | - | - | 31.8% | - |
| | 9 | 11.6% | 40.0% | - | 5.8% | - | - | 42.6% | - |
| | 14 | 43.6% | 10.6% | 9.0% | 36.8% | - | - | - | - |
| | 2015 total | 34.3% | 26.6% | 2.4% | 10.5% | - | 0.7% | 22.9% | 2.7% |
| 2016 | 1 | - | - | - | - | - | - | - | 100.0% |
| | 2 | 48.5% | 7.6% | - | 43.9% | - | - | - | - |
| | 4 | 18.2% | 8.9% | - | 6.7% | 1.8% | 64.4% | - | - |
| | 5 | 39.4% | - | - | - | 8.9% | 51.6% | - | - |
| | 6 | 83.6% | - | - | - | - | 16.4% | - | - |
| | 7 | 16.0% | 13.4% | - | 4.6% | - | 66.0% | - | 0.0% |
| | 8 | 37.2% | 3.8% | - | 28.0% | - | 31.0% | - | - |
| | 9 | 28.1% | 25.9% | 0.7% | 9.8% | 6.9% | 28.5% | - | 0.0% |
| | 14 | 73.3% | 5.9% | - | 20.8% | - | - | - | - |
| | 2016 total | 36.6% | 14.8% | 0.3% | 16.8% | - | 27.1% | - | 1.4% |
| 2017 | 1 | - | - | - | - | - | - | - | 100.0% |
| | 2 | 80.1% | 2.0% | - | 9.4% | - | - | - | 8.5% |
| | 4 | - | 57.0% | - | 43.0% | - | - | - | - |
| | 5 | 89.6% | - | - | - | - | 10.4% | - | - |
| | 6 | 99.2% | - | - | - | - | 0.8% | - | - |
| | 7 | 11.1% | 45.0% | - | 29.7% | - | 14.2% | - | - |
| | 8 | 65.9% | 3.2% | - | 2.2% | 1.3% | 27.4% | - | - |
| | 9 | 2.1% | 90.9% | - | 7.0% | - | - | - | - |
| | 14 | 51.4% | 0.5% | - | 48.1% | - | - | - | - |
| | 15 | - | - | - | 100.0% | - | - | - | - |
| | 2017 Total | 48.6% | 22.5% | - | 19.6% | 0.2% | 6.2% | - | 3.0% |

Prepared by the Secretariat

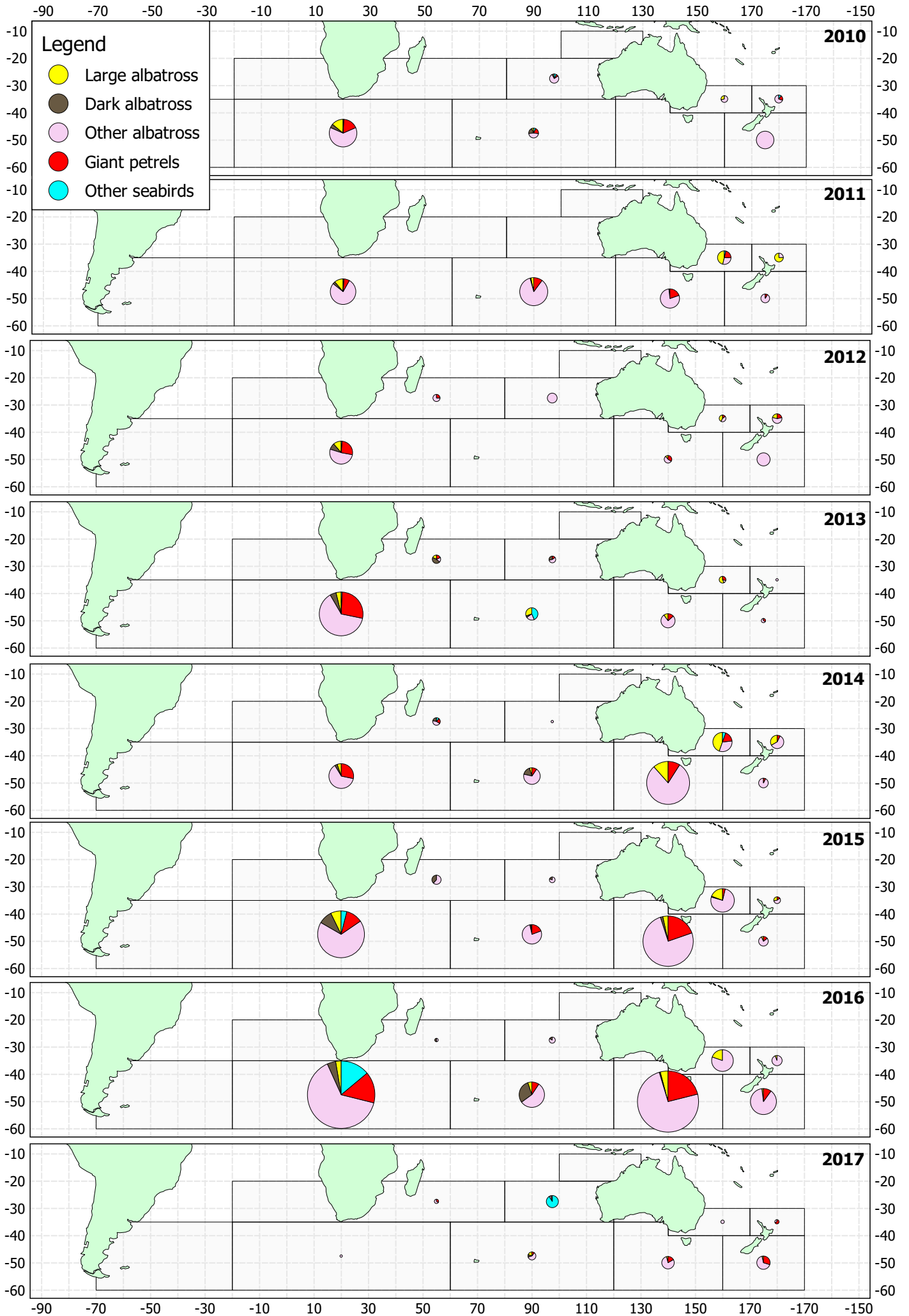
Longline SBT effort showing observer coverage (yellow)



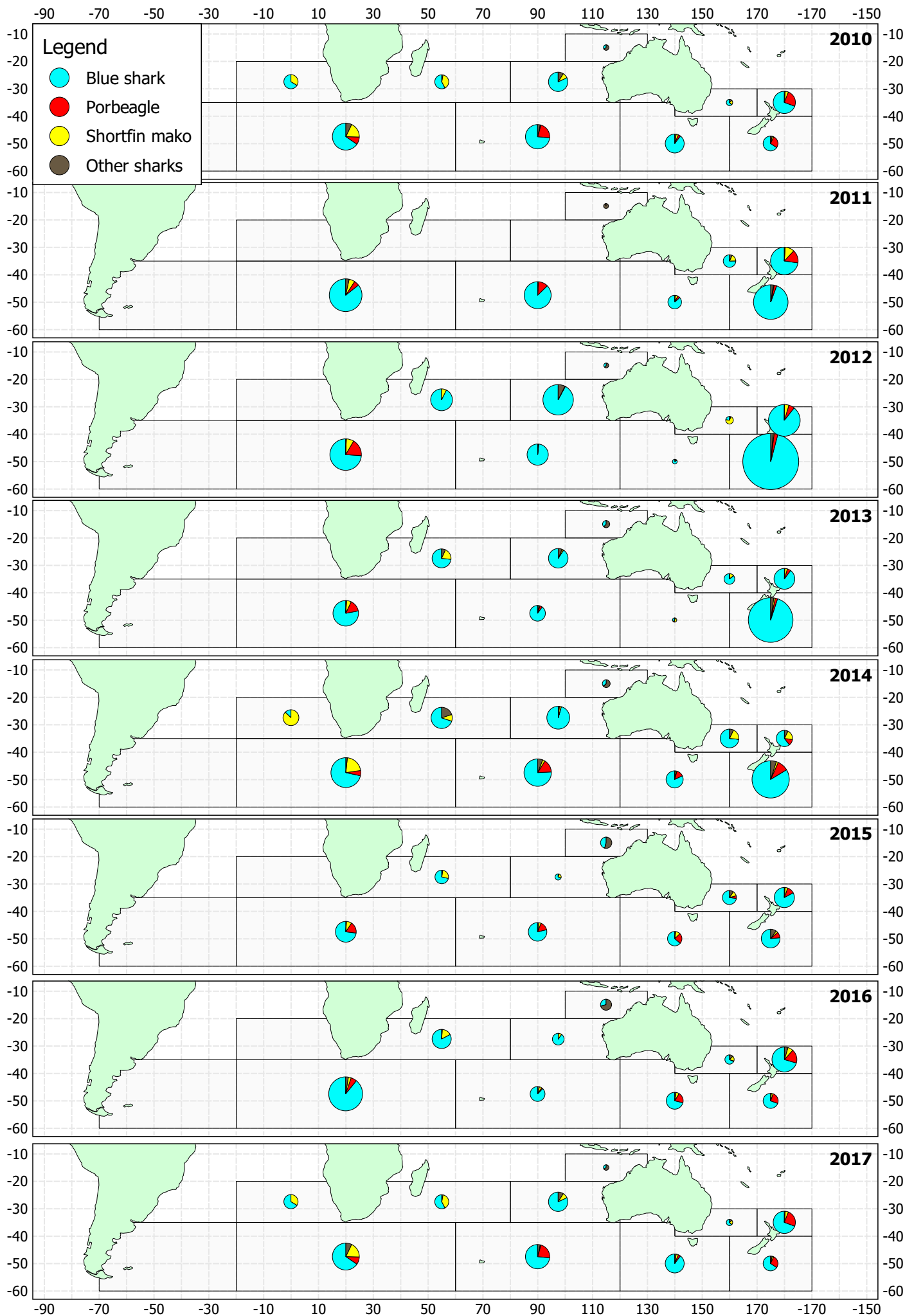
Purse seine SBT effort, showing observer coverage (yellow)



Observed bird mortalities for the SBT longline fishery



Observed shark mortalities for the SBT longline fishery

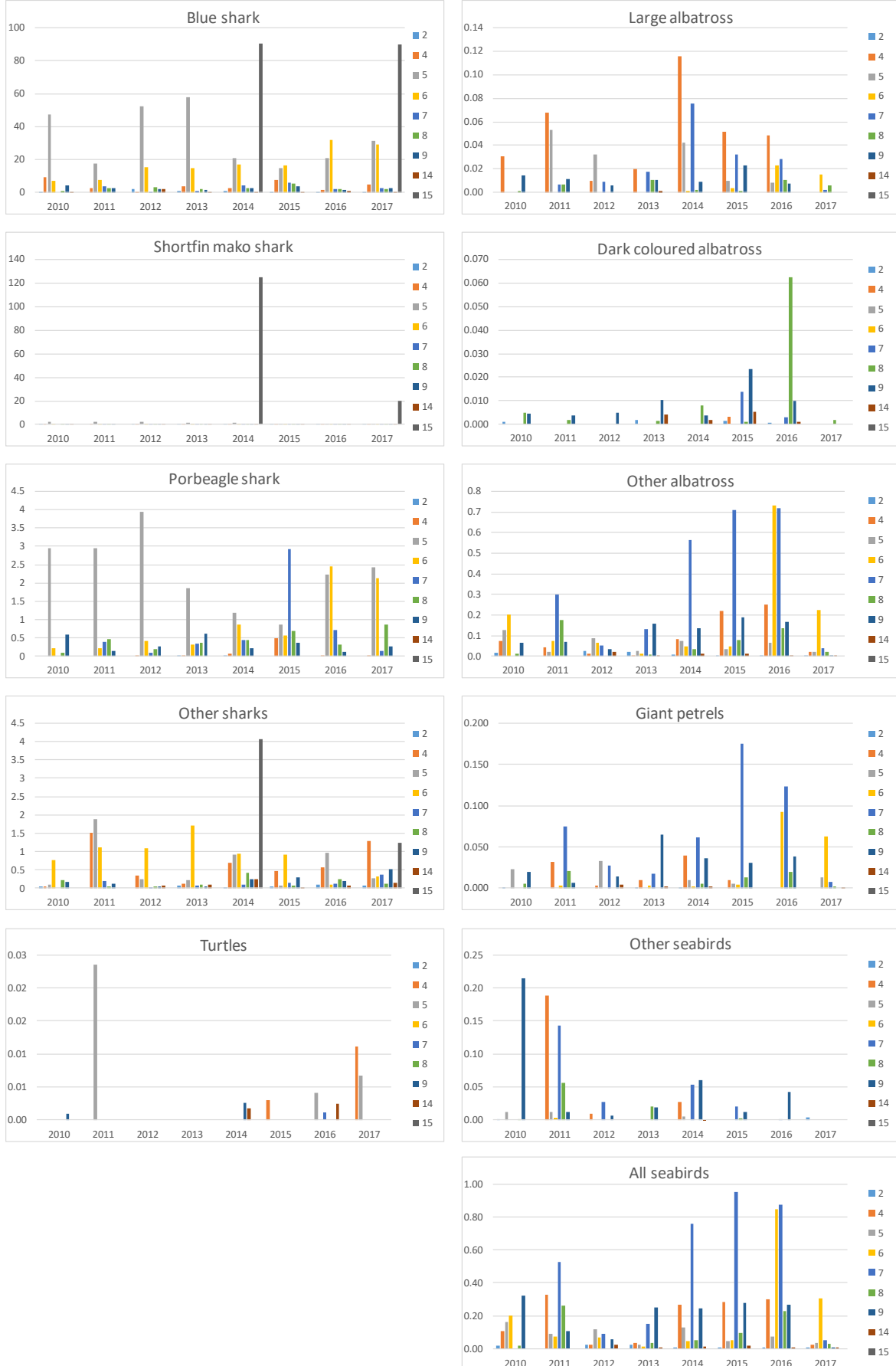


Attachment E

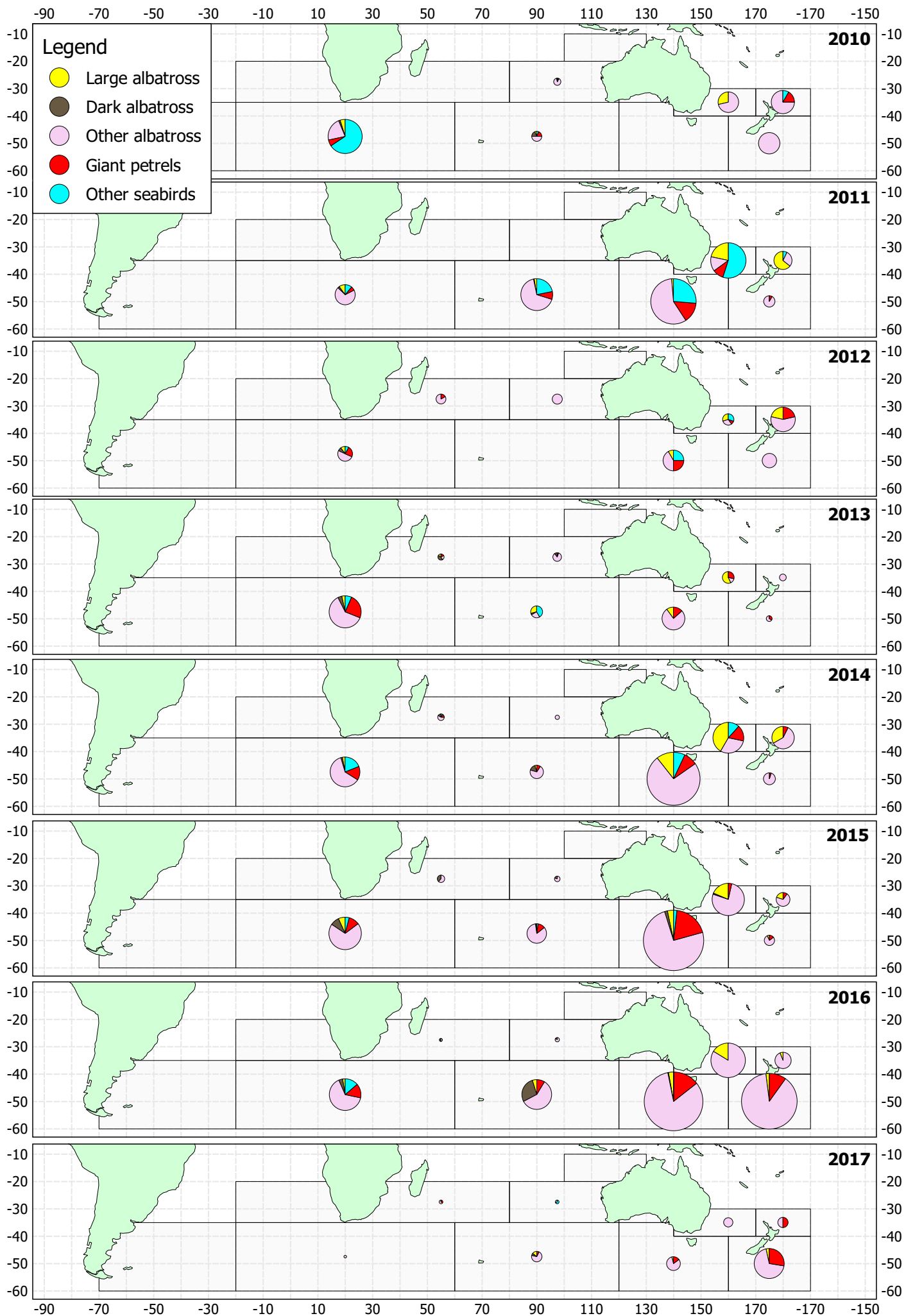
Observed capture rates (numbers per 1000 hooks) with proportions of observed mortalities (red), observed live releases (green) and unspecified life status (grey) for the SBT longline fishery by year and species/species group



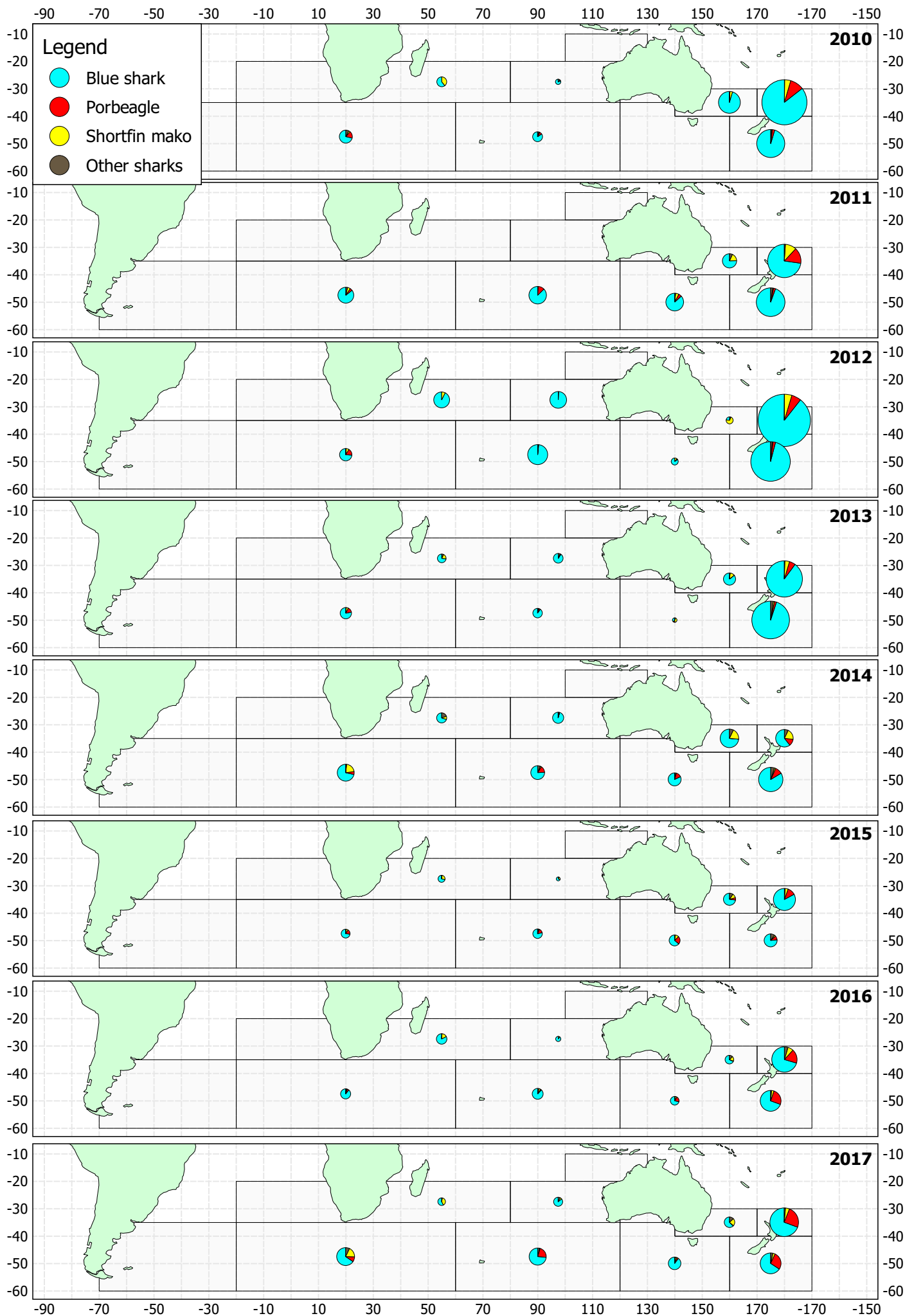
Observed catch rates for the SBT longline fishery by year, statistical area and species/species group



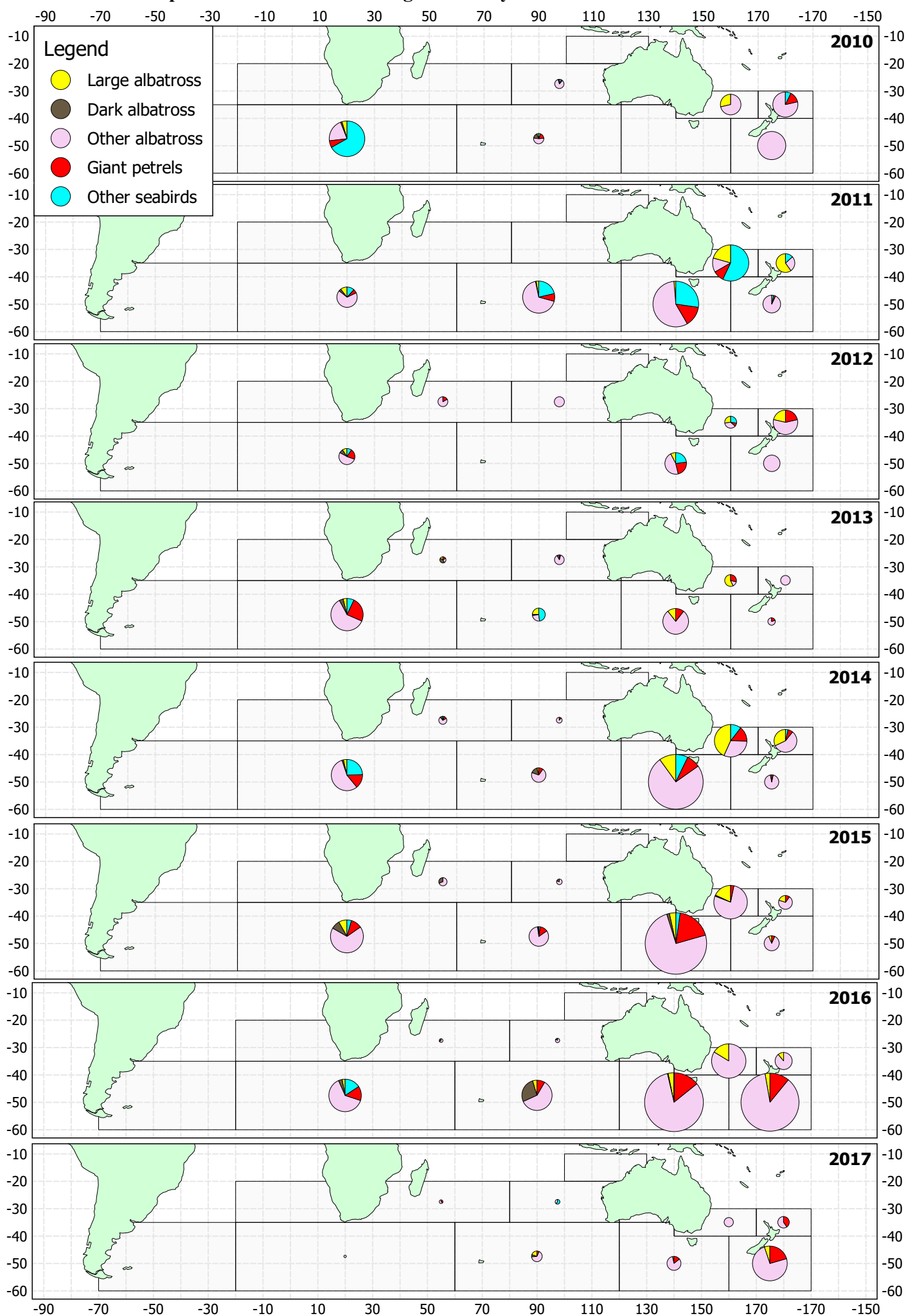
Observed bird mortality rates for the SBT longline fishery



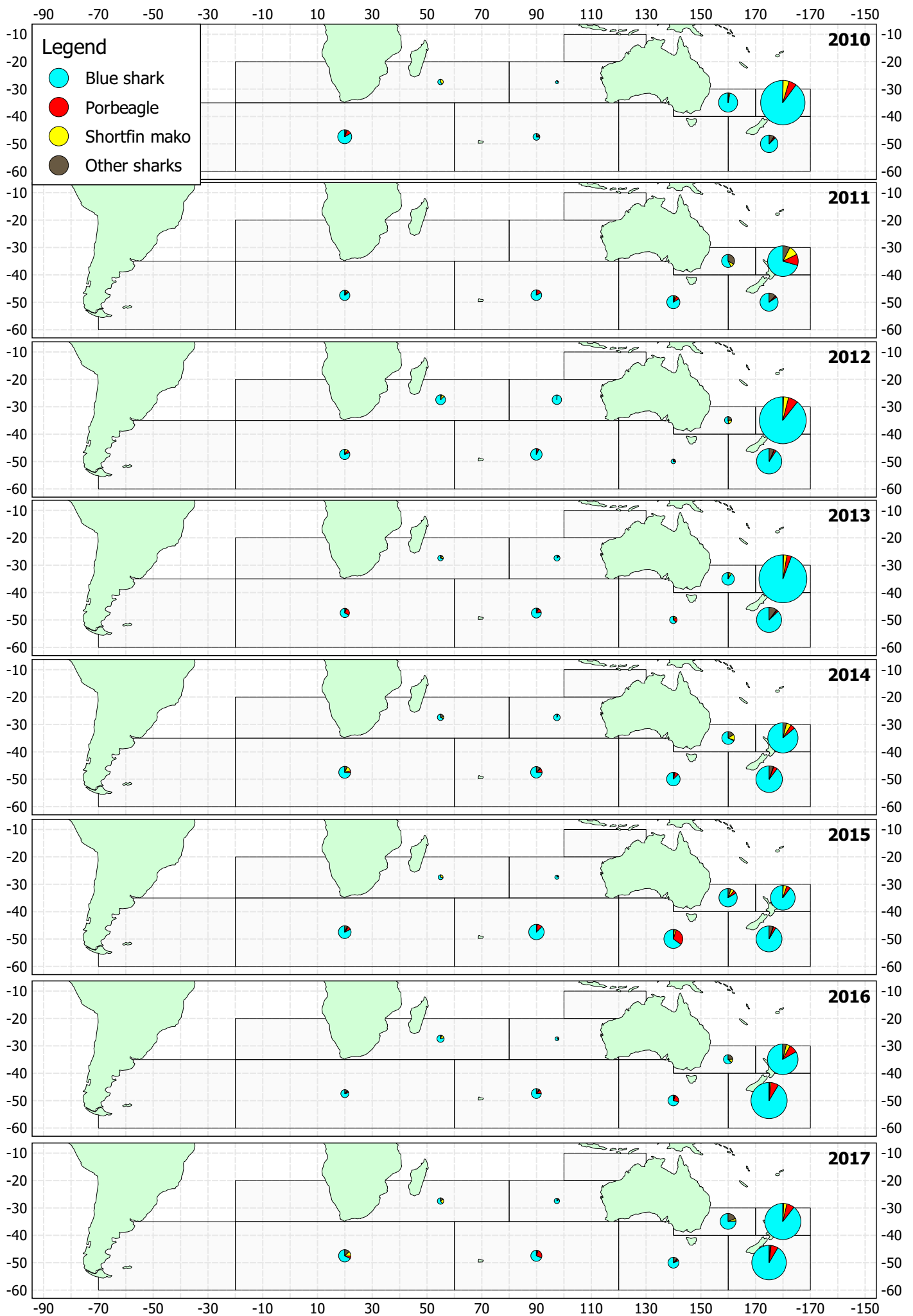
Observed shark mortality rates for the SBT longline fishery



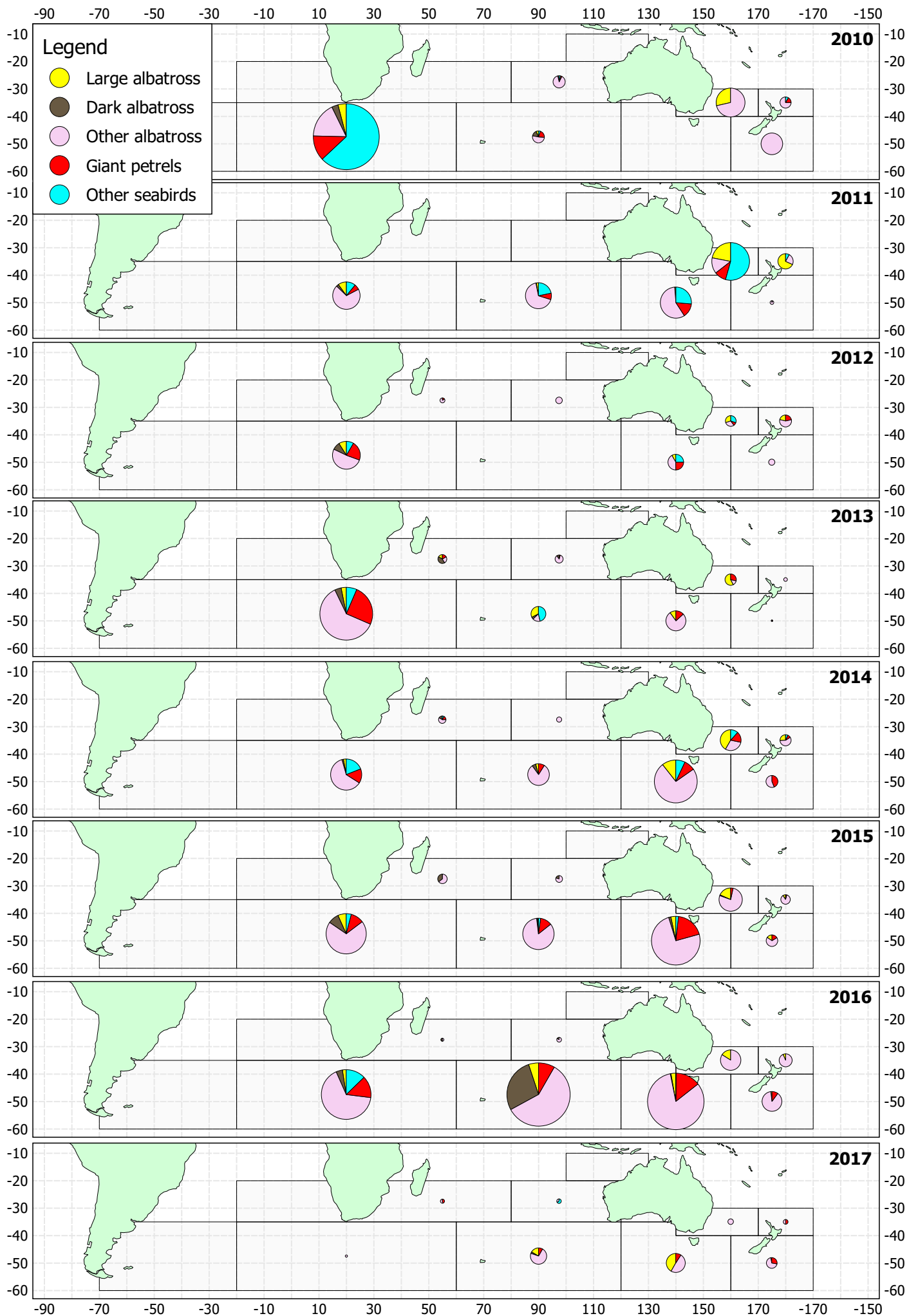
Observed bird capture rates for the SBT longline fishery



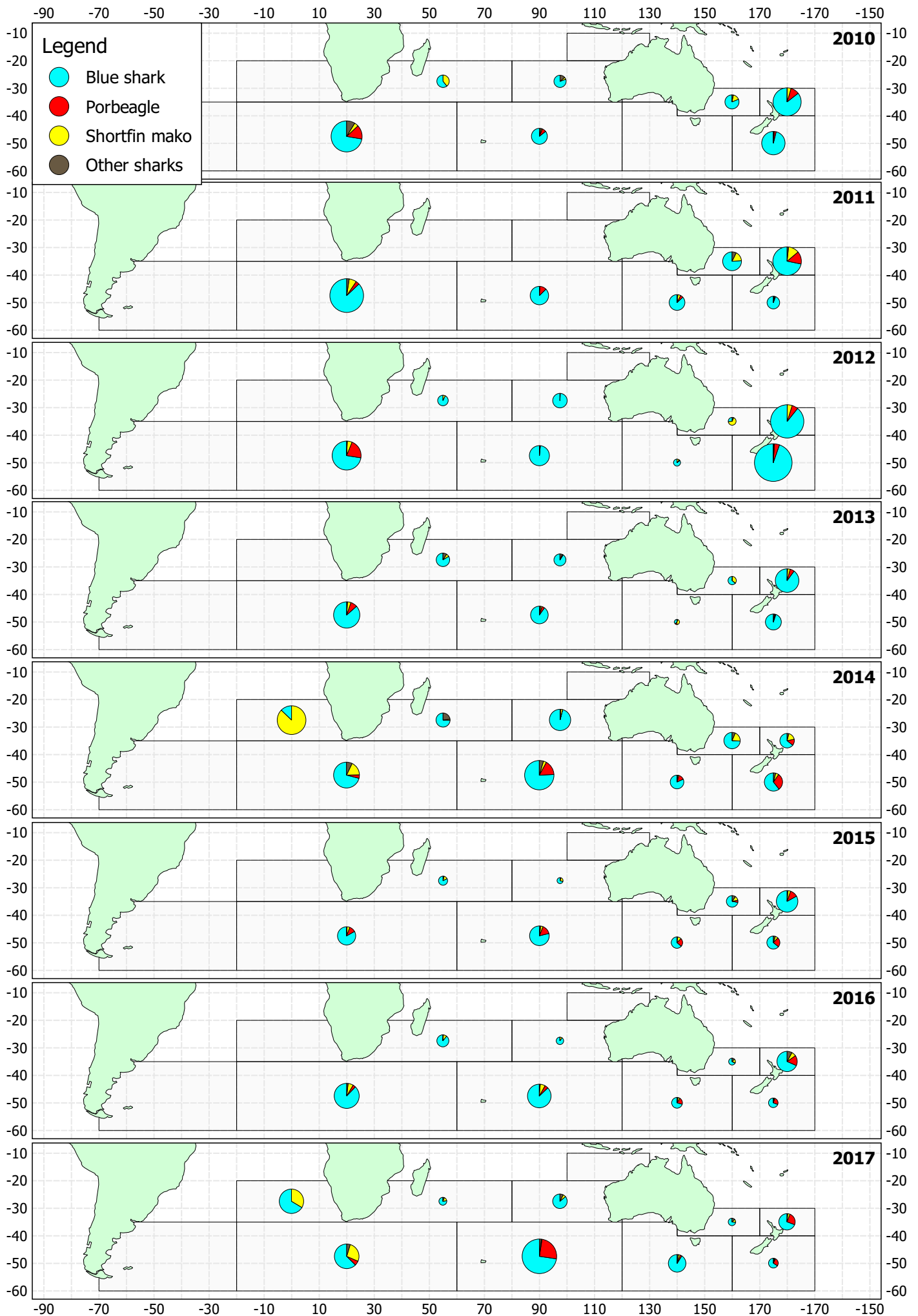
Observed shark capture rates for the SBT longline fishery



Estimated total bird mortalities for the SBT longline fishery



Estimated total shark mortalities for the SBT longline fishery



Observer coverage (observed hooks / total hooks expressed as a percent) by flag, gear, fleet, year and CCSBT statistical area. Representativeness is the proportion of statistical areas fished that reached the target of 10% observer coverage as per the SMMTG Recommendations.

| Member code | Gear code | Fleet code | Year | Statistical area | | | | | | | | | | | Total | Representativeness | |
|-------------|-----------|------------|------|------------------|------|-----|-----|-----|-----|----|-----|------|------|-----|-------|--------------------|------|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 14 | 15 | | | |
| AU | LL | AUD | 2010 | | | | 18% | | | | | | | | | 18% | 100% |
| | | | 2011 | | | | 24% | | | | | | | | | 24% | 100% |
| | | | 2012 | | 8% | | 37% | | | | | | | | | 33% | 50% |
| | | | 2013 | | 0% | | 23% | | | | | | | | | 22% | 50% |
| | | | 2014 | | 0% | | 6% | | | | | | | | | 6% | 0% |
| | | | 2015 | | 22% | | 8% | | | | | | | | | 8% | 50% |
| | | | 2016 | | 0% | | 13% | | | | | 9% | | | | 12% | 33% |
| | | | 2017 | | | 0% | 11% | | | | | 14% | | | | 11% | 67% |
| | PS | AUD | 2010 | | | 26% | | | | | | | | | | 26% | 100% |
| | | | 2011 | | | 17% | | | | | 0% | | | | 16% | 50% | |
| | | | 2012 | | | 14% | | | | | 9% | | | | 11% | 50% | |
| | | | 2013 | | | 0% | | | | | 13% | | | | 12% | 50% | |
| | | | 2014 | | | | | | | | 23% | | | | 23% | 100% | |
| | | | 2015 | | | | | | | | 9% | | | | 9% | 0% | |
| | | | 2016 | | | | | | | | 19% | | | | 19% | 100% | |
| | | | 2017 | | | | | | | | 18% | | | | 18% | 100% | |
| | JP | LL | JPD | 2010 | | | | 1% | 0% | | | 0% | 9% | 7% | | 5% | 0% |
| 2011 | | | | | | | 4% | 5% | | | 7% | 21% | 14% | | 11% | 40% | |
| 2012 | | | | | | | 8% | 1% | | | 4% | 11% | 9% | | 8% | 20% | |
| 2013 | | | | | | | 5% | 3% | | | 7% | 7% | 11% | | 8% | 20% | |
| 2014 | | | | | | | 13% | 26% | | | 15% | 5% | 17% | | 12% | 80% | |
| 2015 | | | | | | | 15% | 20% | | | 16% | 9% | 21% | | 14% | 80% | |
| 2016 | | | | | | | 19% | 8% | | | 24% | 2% | 29% | | 17% | 60% | |
| 2017 | | | | | | | 6% | 0% | | | 11% | 4% | 0% | | 5% | 20% | |
| KR | LL | KRD | 2010 | | 0% | | | | | | | 0% | 25% | | 11% | 33% | |
| | | | 2011 | | 0% | | | | | | | 0% | 0% | | 0% | 0% | |
| | | | 2012 | | 0% | | | | | | | 0% | 16% | | 8% | 33% | |
| | | | 2013 | | 100% | | | | | | | 21% | 27% | | 24% | 100% | |
| | | | 2014 | | 1% | | | | | | | 18% | 0% | | 7% | 33% | |
| | | | 2015 | | 0% | | | | | | | 12% | 17% | | 15% | 67% | |
| | | | 2016 | | | | | | | | | 0% | 21% | | 19% | 50% | |
| | | | 2017 | | | | | | | | | | 18% | | 18% | 100% | |
| NZ | LL | NZC | 2010 | | | | | | 81% | | | | | | 81% | 100% | |
| | | | 2011 | | | | | | 74% | | | | | 74% | 100% | | |
| | | | 2012 | | | | | 67% | 84% | | | | | 84% | 100% | | |
| | | | 2013 | | | | | 88% | 78% | | | | | 78% | 100% | | |
| | | | 2014 | | | | | | 83% | | | | | 83% | 100% | | |
| | | | 2015 | | | | | | 81% | | | | | 81% | 100% | | |
| | NZD | 2010 | | | | | | 9% | 8% | | | | | 9% | 0% | | |
| | | 2011 | | | | | | 10% | 0% | | | | | 8% | 0% | | |
| | | 2012 | | | | | | 9% | 7% | | | | | 8% | 0% | | |
| | | 2013 | | | | | | 7% | | | | | | 7% | 0% | | |
| | | 2014 | | | | | | 11% | 9% | | | | | 10% | 50% | | |
| | | 2015 | | | | | | 9% | 4% | | | | | 7% | 0% | | |
| | | 2016 | | | | | | 16% | 24% | | | | | 19% | 100% | | |
| | | 2017 | | | | | | 18% | 23% | | | | | 20% | 100% | | |
| TW | LL | TWD | 2010 | | 16% | | | | | | | 12% | 2% | 3% | 9% | 50% | |
| | | | 2011 | | | | | | | | | | 3% | | 3% | 0% | |
| | | | 2012 | | 32% | | | | | | | | 20% | 41% | 28% | 100% | |
| | | | 2013 | | 26% | | | | | | | 9% | 7% | 14% | 13% | 50% | |
| | | | 2014 | | 16% | | | | | | | 25% | 1% | 19% | 14% | 75% | |
| | | | 2015 | | 10% | | | | | | | 9% | 5% | 15% | 10% | 50% | |
| | | | 2016 | | 25% | | | | | | | 15% | 10% | 19% | 17% | 75% | |
| | | | 2017 | | 13% | | | | | | | 12% | 0% | 11% | 10% | 75% | |
| ZA | LL | ZAC | 2012 | | | | | | | | | 88% | 43% | | 68% | 100% | |
| | | | 2013 | | | | | | | | | 100% | 84% | | 85% | 100% | |
| | | | 2014 | | | | | | | | | | 94% | | 94% | 100% | |
| | | | 2015 | | | | | | | | | 100% | 97% | | 97% | 100% | |
| | | | 2016 | | | | | | | | | 40% | 63% | | 62% | 100% | |
| | | | 2017 | | | | | | | | | 100% | 100% | | 100% | 100% | |
| | ZAD | 2012 | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | |
| | | 2013 | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | |
| | | 2014 | | | | | | | | | | 16% | 0% | 3% | 7% | 33% | |
| | | 2015 | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | |
| | | 2016 | | | | | | | | | | 2% | 0% | 0% | 1% | 0% | |
| 2017 | | | | | | | | | | 7% | 0% | 3% | 5% | 0% | | | |