Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

CCSBT-ERS/2203/04

Summaries from the 2021 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/1905/04 at ERSWG 13.

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 2020. The summaries in this paper are for all data held by the Secretariat and include an additional three years data to the summary presented at ERSWG 13, plus some revisions to previously included data. Table 2 summarises the data provided by Members. South Africa has not provided data for 2019 and 2020. Korea provided revised data for 2010 and 2012-2017 in February 2022. It did not revise its 2011 data since it has no observer data to provide for that year. Korea also had no observer coverage for 2020, so it has not provided any observed catch data for 2020. Australia indicated that it would provide revised historical data in January 2022 but has not done so at the time of writing.

At ERSWG 13 Members agreed to a new EDE template with data provided at higher spatial and temporal resolution and agreed to provide data from at least 2019 in the new format. Table 1 below shows the years for which Members have provided EDE data in the new format.

Table 1 - Years for which CCSBT Members have provided ERSWG Data Exchange (EDE) data in the new format with a 5x5 resolution[1].

Year	AU	ID	JP	KR	NZ	TW
2010		✓		✓		
2011		✓				
2012		✓		✓		
2013		✓		✓		
2014		✓		✓		
2015		✓		✓		
2016		✓		✓		
2017		✓		✓		
2018		✓		✓	✓	✓
2019	✓	✓	✓	✓	✓	✓
2020	✓	✓	✓	✓	✓	✓

[1] The European Union and South Africa are not included in this table. The EU does not target SBT and it has reported no catch of SBT and therefore it has no related ERS data to report. South Africa has not provided any EDE data in the new format nor any EDE data for 2019 and 2020.

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 2 – Summary of ERSWG Data Exchange data by Members. The European Union had no reported SBT catch from 2013-2020 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 for 2010-2015. Furthermore, Indonesia has provided data for its entire longline fleet, not just sets where SBT were caught or targeted, and has not provided information on its usage of mitigation measures with its data. Therefore, Indonesia's data are not compatible with that provided by the other Members.

	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	✓	✓	✓	✓	✓	✓
2018	✓	n/a	✓	✓	✓	✓	✓	✓
2019	✓	n/a	✓	✓	✓	✓	×	✓
2020	✓	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 Members[2] provided species specific data, while others[3] 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 3).

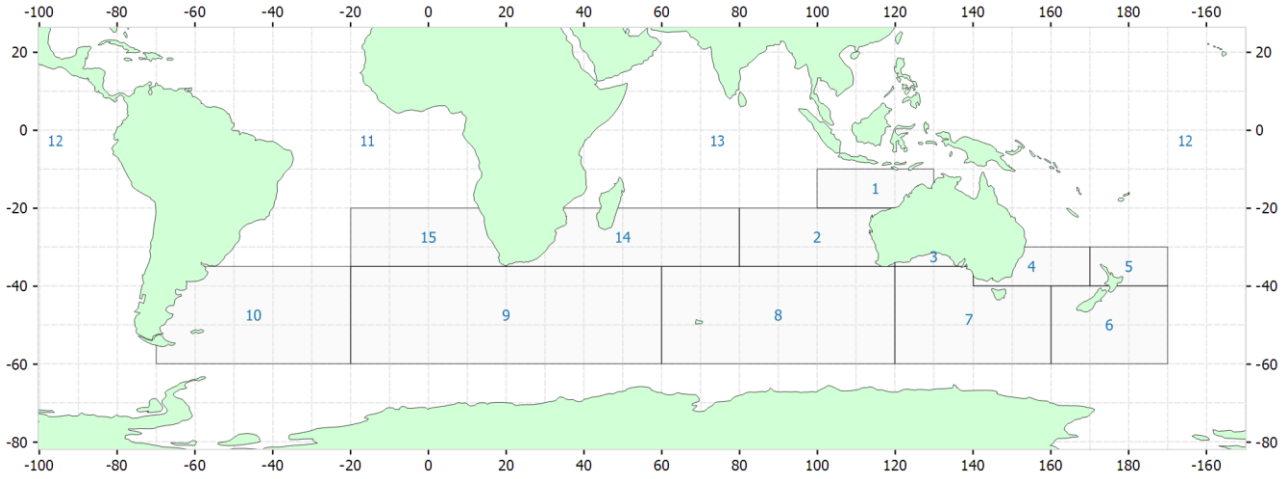
[2] Australia, Indonesia, Korea, New Zealand, South Africa, Taiwan.
[3] Japan

Table 3 - 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	*Data should be provided separately for each species*
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	*Including: Wandering, Tristan, New Zealand, Antipodean, Southern Royal, and Northern Royal*
Dark coloured albatrosses	*Including: Sooty and Light-mantled*
Other albatrosses	*Including: Black-browed, Campbell, Grey-headed, Atlantic yellow-nosed, Indian yellow-nosed, Buller's, Shy, Salvin's, Chatham and White-capped*
Giant petrels	*Including: White-chinned petrel, Grey petrel, Flesh-footed shearwater etc.*
Other seabirds	*Including: Skua etc.*

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.

Attachment A 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, these being the charter fleets for New Zealand and South Africa.

Longline effort summaries are shown in Table 4 and as maps in Attachment B. 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 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 of the domestic fleet (<1%). The Indonesian domestic fleet is also not included in the tables maps as Indonesia has not been able to

provide estimates of total effort for 2010-2016, and where it has provided effort data it is for the entire longline fleet and not effort by CCSBT authorised vessels for shots/sets where SBT was either targeted or caught.

Over the 11-year period longline observer coverage was on average 12.7% 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%. Japan's observer coverage for 2017 and 2018 was less than 10% due to it removing a substantial amount of its observer data. Observer coverage for 2020 was affected by the COVID-19 pandemic with most Members not achieving 10% coverage, and Korea having placed no observers for that year. The observer coverage for areas from 40°S to 60°S, where the most birds are caught, is noticeably lower in 2020.

Table 4 – 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%
	2010 Total	*50,884*	*4,391*	*8.6%*
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%
	2011 Total	*26,151*	*2,528*	*9.7%*
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	4,225	280	6.6%
	9	11,319	1,609	14.2%
	14	1,254	479	38.2%
	15	40	0	0.0%
	2012 Total	*28,067*	*3,997*	*14.2%*
2013	2	3,704	968	26.1%
	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	551	8.9%
	9	12,441	1,249	10.0%
	14	7,330	1,209	16.5%
	15	100	0	0.0%
	2013 Total	*37,741*	*4,836*	*12.8%*
2014	2	6,722	1,032	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%
	2014 Total	*39,015*	*5,372*	*13.8%*
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	1,319	14.5%
	14	5,774	917	15.9%
	15	82	0	0.0%
	2015 Total	*39,651*	*5,307*	*13.4%*

Year	Statistical area	Total effort (1000s of hooks)	Observed effort (1000s of hooks)	Observer coverage
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	2,783	20.1%
	14	4,132	829	20.1%
	15	132	0	0.0%
	2016 Total	*40,139*	*6,913*	*17.2%*
2017	2	6,478	866	13.4%
	3	1	0	0.0%
	4	1,275	90	7.1%
	5	838	149	17.8%
	6	565	128	22.7%
	7	4,966	565	11.4%
	8	6,747	504	7.5%
	9	11,809	563	4.8%
	14	5,568	823	14.8%
	15	213	7	3.4%
	2017 Total	*38,460*	*3,695*	*9.6%*
2018	2	4,480	655	14.6%
	4	1,780	165	9.3%
	5	2,082	158	7.6%
	6	446	77	17.2%
	7	4,822	104	2.2%
	8	6,608	1,052	15.9%
	9	11,235	1,360	12.1%
	14	6,845	1,030	15.1%
	15	417	70	16.8%
	2018 Total	*38,715*	*4,671*	*12.1%*
2019	2	5,978	1,548	25.9%
	4	1,214	163	13.4%
	5	1,338	154	11.5%
	6	814	83	10.2%
	7	3,965	964	24.3%
	8	6,934	1,116	16.1%
	9	9,078	2,025	22.3%
	14	6,040	577	9.6%
	2019 Total	*35,360*	*6,629*	*18.7%*
2020	2	3,838	851	22.2%
	4	955	30	3.1%
	5	1,189	139	11.7%
	6	800	75	9.4%
	7	2,714	129	4.8%
	8	5,933	295	5.0%
	9	10,945	976	8.9%
	12	12	2	18.3%
	14	6,871	680	9.9%
	2020 Total	*33,257*	*3,178*	*9.6%*
Total		**407,440**	**51,517**	**12.6%**

Table 5 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 5 – Longline observer coverage by year for areas that are important for seabirds.

	Year										
Statistical Area(s)	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
2/8	13%	9%	15%	17%	13%	9%	12%	10%	15%	21%	12%
5/6	24%	17%	17%	24%	35%	30%	14%	20%	9%	11%	11%
7	0%	7%	4%	7%	15%	16%	24%	11%	2%	24%	5%
9	6%	10%	14%	10%	7%	15%	20%	5%	12%	22%	9%

Purse seine effort summaries are shown in Table 6 and as maps in Attachment C. 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 15.4% over the 11-year period but was less than 10% in 2015. Some statistical areas with a small number of sets for the year had no observer coverage.

Table 6 – 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%
	2010 Total	*82*	*21*	*25.6%*
2011	3	98	17	17.3%
	7	10	0	0.0%
	2011 Total	*108*	*17*	*15.7%*
2012	3	71	10	14.1%
	7	81	7	8.6%
	2012 Total	*152*	*17*	*11.2%*
2013	3	8	0	0.0%
	7	111	14	12.6%
	2013 Total	*119*	*14*	*11.8%*
2014	7	75	17	22.7%
	2014 Total	*75*	*17*	*22.7%*
2015	7	154	14	9.1%
	2015 Total	*154*	*14*	*9.1%*
2016	7	133	25	18.8%
	2016 Total	*133*	*25*	*18.8%*
2017	7	111	20	18.0%
	2017 Total	*111*	*20*	*18.0%*
2018	*3*	*1*	*0*	*0.0%*
	7	198	40	20.2%
	2018 Total	*199*	*40*	*20.1%*
2019	*3*	*4*	*0*	*0.0%*
	7	169	22	13.0%
	2019 Total	*173*	*22*	*12.7%*
2020	7	127	14	11.0%
	2020 Total	*127*	*14*	*11.0%*
Total		**1,433**	**221**	**15.4%**

Observed Mortality Summaries

Table 7 shows observed mortalities by year, statistical area, and species/species group for the SBT longline fishery, while attachments D and E 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.

Table 7 - Observed 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	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	4,862	132	628	123	0	16	5	74	20	220
	14	51	33	0	0	0	0	0	0	0	0
	2010 Total	*9,816*	*302*	*894*	*244*	*0*	*19*	*9*	*166*	*26*	*223*
2011	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	*7,338*	*417*	*617*	*181*	*0*	*38*	*4*	*244*	*37*	*99*
2012	2	1,435	10	0	0	0	0	0	16	0	0
	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	2,772	289	426	15	0	9	7	45	21	7
	14	930	73	0	0	0	0	0	10	1	1
	15	0	0	0	0	0	0	0	0	0	0
	2012 Total	*14,268*	*599*	*704*	*116*	*0*	*16*	*7*	*113*	*29*	*14*
2013	2	749	21	1	60	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	721	36	54	26	0	7	1	2	0	10
	9	1,797	95	686	16	0	11	13	196	79	23
	14	558	151	0	51	0	2	5	3	2	0
	15	0	0	0	0	0	0	0	0	0	0
	2013 Total	*8,817*	*434*	*868*	*255*	*0*	*27*	*21*	*244*	*89*	*33*
2014	2	1,023	27	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	1,612	57	302	96	0	2	7	31	2	2
	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	*8,486*	*1,351*	*844*	*570*	*0*	*73*	*12*	*427*	*68*	*64*
2015	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	1,735	34	136	20	0	1	1	76	11	2
	9	953	81	171	14	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	*4,873*	*394*	*609*	*177*	*0*	*57*	*45*	*712*	*130*	*23*

	Statistical area	Blue shark	Shortfin mako shark	Porbeagle	Other sharks	Turtles	Large albatross	Dark coloured albatross	Other albatross	Giant petrels	Other seabirds
2016	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	2,993	79	170	76	0	18	28	456	101	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	*6,099*	*437*	*659*	*207*	*0*	*63*	*62*	*1,380*	*238*	*97*
2017	2	509	38	0	44	0	0	0	1	0	2
	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	242	162	0	11	0	0	0	2	1	0
	15	285	144	0	0	0	0	0	0	0	0
	2017 Total	*4,677*	*746*	*820*	*263*	*0*	*4*	*1*	*60*	*16*	*2*
2018	2	166	24	0	4	0	0	0	2	0	0
	4	243	18	5	5	0	1	0	14	2	0
	5	817	64	76	22	0	0	0	1	0	0
	6	209	9	94	9	0	1	0	62	9	0
	7	242	1	10	2	0	0	0	13	4	0
	8	2,026	34	145	20	0	4	4	24	8	1
	9	2,173	202	398	164	0	8	26	195	67	5
	14	471	155	0	23	0	2	3	0	2	0
	15	827	405	0	0	0	0	0	0	0	0
	2018 Total	*7,174*	*912*	*728*	*249*	*0*	*16*	*33*	*311*	*92*	*6*
2019	2	217	38	46	1	0	0	1	6	1	0
	4	48	17	1	3	0	2	1	52	1	0
	5	411	23	38	4	0	0	0	0	1	0
	6	565	14	134	1	0	0	0	33	9	1
	7	307	53	80	8	0	40	1	700	108	0
	8	1,192	50	132	40	0	1	2	29	12	7
	9	3,729	183	445	42	0	49	90	235	290	5
	14	163	18	0	19	0	0	0	2	0	0
	2019 Total	*6,632*	*396*	*876*	*118*	*0*	*92*	*95*	*1,057*	*422*	*13*
2020	2	253	41	11	76	0	0	1	6	0	0
	4	1	2	0	1	0	0	0	0	0	0
	5	406	16	29	9	1	0	0	0	0	0
	6	231	3	43	3	0	0	0	1	2	0
	7	178	15	27	1	0	1	0	6	6	0
	8	258	3	3	65	0	1	0	6	0	3
	9	2,456	53	550	51	0	14	21	56	52	6
	12	0	0	0	0	0	0	0	0	0	0
	14	161	32	2	1	0	0	0	3	0	0
	2020 Total	*3,944*	*165*	*665*	*207*	*1*	*16*	*22*	*78*	*60*	*9*
Grand Total		***82,124***	***6,153***	***8,284***	***2,587***	***1***	***421***	***311***	***4,792***	***1,207***	***583***

The number of observed bird mortalities by area varies considerably from year to year. 2017 and 2020 have the lowest observed bird mortalities in the 11-year period but this may be due to the lower amount of observer data available for those years. 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. Note that a large proportion of shark catch was not given a life status, see the charts and discussion on catch rates (and Attachment F). 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. Korea provided revised historical data in the new EDE format to address this issue. Australia has indicated that it will provide revised historical data but has not yet provided it.

Table 8 shows observed mortalities for all seabirds combined, by year and statistical area. 86% of all observed bird mortalities occurred in areas 7, 8, and 9.

Table 8 - Observed mortalities for the SBT longline fishery for all seabirds combined by year and statistical area

	Year											All Years	
Statistical Area	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**	**Average**
2	26		16	19	5	5	6	3	2	8	7	**97**	10
4	7	60	10	7	60	86	86	2	17	56		**391**	39
5	12	14	14	1	27	10	16	4	1	1	0	**100**	9
6	47	12	26	3	21	14	101	29	72	43	3	**371**	34
7		76	12	30	301	396	826	27	17	849	13	**2547**	255
8	16	151		24	44	91	104	14	41	51	10	**546**	55
9	335	109	89	322	174	352	699	1	301	669	149	**3200**	291
14			12	12	12	13	2	3	7	2	3	**66**	7
Total	**443**	**422**	**179**	**418**	**644**	**967**	**1840**	**83**	**458**	**1679**	**185**	**7318**	665

Table 9 shows observed mortalities by year, statistical area, and species/species group for the SBT purse seine fishery. There were no observed mortalities reported.

Table 9 - 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*
2018	3	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0
	2018 Total	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2019	3	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0
	2019 Total	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2020	7	0	0	0	0	0	0	0	0	0	0
	2020 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 F 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 G shows observed catch rates by species group, year, and statistical area.

Attachments H and I map mortality rates for seabirds and sharks respectively, while attachments J and K map capture rates for seabirds and sharks. The areas of the pies are proportional to the total mortality rate (H and I) or capture rate (J and K) 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 I and K 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 appear to be the lowest in 2020 but this may be due to lower observer coverage in the areas where the most seabirds are caught.

Observed shark mortality rates appear to be relatively low in 2020 but as with birds this may be affected by the lower observer coverage in certain areas.

Summaries of the Estimated Total Number of Mortalities

The older ERSWG templates include a column for the estimated total number of mortalities per year/stratum. For data submitted using the older templates 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 data provided in the older formats, 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.

At ERSWG 13, when Members agreed on a new EDE template, Members also agreed that the Secretariat would calculate the estimated total number of mortalities for data provided in the new format, using the following method:

> "raised mortalities would be estimated by applying a simple scaling ratio of observed mortalities and observed effort at the Statistical Area by fleet and year strata to the total effort. For finer scale estimates (e.g. 5 x 5 degree cell by quarter), the ratio calculated for the Statistical Area by fleet and year strata would be applied at the finer scale."

The Secretariat has used this method for all data provided in the new EDE template (see Table 1). Due to the method of using a raising ratio by year and statistical area on finer scale data it does not seem appropriate to consider estimated total mortalities at the finer scale, so they are not presented in this paper.

Note that 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 10 shows estimated total mortalities by year, statistical area, and species/species group for the SBT longline fishery, while attachments L and M 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.

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.

Table 10 – 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	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	24,074	965	3,703	1,793	0	167	145	682	568	2,892
	14	1,987	1,286	0	0	0	0	0	0	0	0
	2010 Total	*62,109*	*4,055*	*6,131*	*2,598*	*0*	*432*	*175*	*2,139*	*628*	*2,917*
2011	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	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	16,418	1,180	4,010	133	0	62	73	393	177	65
	14	2,241	168	0	0	0	0	0	23	2	2
	2012 Total	*82,136*	*3,699*	*6,847*	*355*	*0*	*154*	*73*	*742*	*290*	*170*
2013	2	2,838	79	2	210	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	7,081	255	403	235	0	77	11	22	0	110
	9	15,598	686	3,004	136	0	93	118	1,810	742	196
	14	3,231	274	0	356	0	14	36	21	14	0
	2013 Total	*45,647*	*2,543*	*4,278*	*1,161*	*0*	*305*	*172*	*2,274*	*855*	*306*
2014	2	6,279	165	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	15,147	664	3,091	847	0	22	28	406	37	8
	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	*51,621*	*21,128*	*7,026*	*3,818*	*0*	*487*	*55*	*2,858*	*521*	*409*
2015	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	15,574	359	1,452	217	0	8	12	875	127	23
	9	8,470	401	870	110	0	112	152	1,178	184	71
	14	1,476	244	0	61	0	0	34	62	0	0
	2015 Total	*40,492*	*2,509*	*5,189*	*1,029*	*0*	*339*	*252*	*4,660*	*835*	*138*

Year	Statistical area	Blue shark	Shortfin mako shark	Porbeagle	Other Sharks	Turtles	Large albatross	Dark coloured albatross	Other albatross	Giant petrels	Other seabirds
2016	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	15,015	962	666	281	0	59	109	1,629	366	334
	14	2,792	291	0	42	0	0	5	5	0	0
	2016 Total	*38,878*	*3,197*	*3,676*	*1,399*	*0*	*461*	*1,313*	*7,858*	*1,245*	*338*
2017	2	3,809	284	0	329	0	0	0	7	0	15
	4	900	237	9	168	0	0	0	34	0	0
	5	3,988	247	1,427	78	0	0	0	12	12	0
	6	1,279	26	560	69	0	4	0	87	35	0
	7	5,944	242	262	149	0	161	0	189	35	0
	8	18,424	199	6,310	416	0	47	9	203	23	0
	9	6,818	3,438	1,304	463	0	0	0	4	0	0
	14	1,084	225	0	79	0	0	0	10	9	0
	15	8,384	4,236	0	0	0	0	0	0	0	0
	2017 Total	*50,630*	*9,135*	*9,873*	*1,751*	*0*	*212*	*9*	*546*	*114*	*15*
2018	2	1,661	233	0	100	0	0	0	12	0	0
	4	2,954	172	61	50	0	16	0	168	24	0
	5	6,055	311	540	209	0	0	0	3	0	0
	6	690	33	374	27	0	1	0	204	27	0
	7	11,298	47	467	93	0	82	0	606	186	0
	8	13,839	176	1,050	124	0	24	28	156	45	7
	9	19,244	1,380	3,551	1,206	0	114	347	2,704	886	76
	14	2,672	393	0	87	0	14	19	0	13	0
	15	5,204	2,548	0	0	0	0	0	0	0	0
	2018 Total	*63,616*	*5,292*	*6,043*	*1,896*	*0*	*251*	*394*	*3,853*	*1,181*	*83*
2019	2	795	161	151	3	0	0	2	21	3	0
	4	255	85	6	19	0	12	6	333	6	0
	5	1,679	141	315	37	0	0	0	0	9	0
	6	3,576	69	716	11	0	0	0	159	62	4
	7	1,280	223	323	33	0	152	3	2,629	406	0
	8	8,239	260	512	253	0	5	6	150	107	156
	9	15,521	998	1,831	129	0	194	375	975	1,480	16
	14	2,045	110	0	61	0	0	0	12	0	0
	2019 Total	*33,390*	*2,047*	*3,854*	*546*	*0*	*363*	*392*	*4,279*	*2,073*	*176*
2020	2	1,017	202	35	237	0	0	3	15	0	0
	4	16	13	0	16	0	0	0	0	0	0
	5	3,205	107	261	64	7	0	0	0	0	0
	6	1,879	29	255	13	0	0	0	5	9	0
	7	3,911	230	415	15	0	15	0	92	325	0
	8	4,812	10	8	242	0	3	0	23	0	11
	9	12,554	525	2,844	328	0	65	106	367	366	34
	14	1,496	296	14	23	0	0	0	65	0	0
	2020 Total	*28,890*	*1,412*	*3,832*	*938*	*7*	*83*	*109*	*567*	*700*	*45*

Table 11 shows the estimated total mortalities for all seabirds combined. As with Table 8 regarding observed mortalities, areas 7, 8, and 9 have the highest total mortalities, but area 4 also has appreciable mortalities. When comparing the mortalities between years, it is important to remember that no mortality data is available for South Africa in 2019 or 2020 and for Korea in 2020.

Table 11 – Estimated total mortalities for the SBT longline fishery for all seabirds combined by year and statistical area

	Year											All Years	
Statistical Area	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**Total**	**Average**
2	160		48	69	30	50	24	22	12	26	18	**460**	46
4	892	1508	123	137	467	575	447	34	208	357		**4748**	475
5	133	252	154	15	132	96	180	24	3	9	0	**998**	91
6	498	15	42	3	153	142	419	126	232	225	14	**1869**	170
7		1029	265	424	1950	2524	3390	385	874	3190	432	**14463**	1446
8	154	716		220	501	1045	4246	281	260	424	37	**7884**	788
9	4454	799	770	2959	1036	1697	2497	4	4127	3040	938	**22321**	2029
14			27	85	61	96	11	18	46	12	65	**421**	47
Total	**6291**	**4319**	**1429**	**3912**	**4330**	**6224**	**11214**	**895**	**5762**	**7283**	**1504**	**53163**	4833

Table 12 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 12 - 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*
2018	3	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0
	2018 Total	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2019	3	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0
	2019 Total	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
2020	7	0	0	0	0	0	0	0	0	0	0
	2020 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 13 below for 2014 to 2020 (these data are not available for most Members 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. The highest proportion of effort with a single or no mitigation measures being used occurred in 2016 and 2019, with over 30% of the effort in these years involving a single or no mitigation measures.

Table 13 - 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	Tori pole	Night setting	Weighted branchline	None	Single measure (unspecified)	Mix of 2 measures	Other
2014	22.8%	57.0%	0.0%	6.5%	0.0%	0.0%	0.0%	0.0%	13.7%	0.0%	0.0%
2015	35.3%	27.2%	2.5%	10.8%	0.0%	0.0%	0.0%	0.0%	0.7%	23.5%	0.0%
2016	37.2%	14.8%	0.3%	17.0%	24.9%	1.4%	0.1%	3.2%	1.1%	0.0%	0.0%
2017	50.4%	23.1%	0.0%	20.0%	5.9%	0.0%	0.0%	0.2%	0.4%	0.0%	0.0%
2018	54.3%	13.4%	0.1%	13.5%	18.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	34.6%	23.5%	2.0%	4.3%	32.5%	0.4%	0.4%	0.0%	0.0%	0.0%	1.3%
2020	63.0%	12.0%	1.0%	10.1%	12.4%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%

Table 14 summarises the proportion of observed effort with specific mitigation measures by year and statistical area.

Table 14 - Proportions of observed effort with specific mitigation measures by year and CCSBT statistical area.

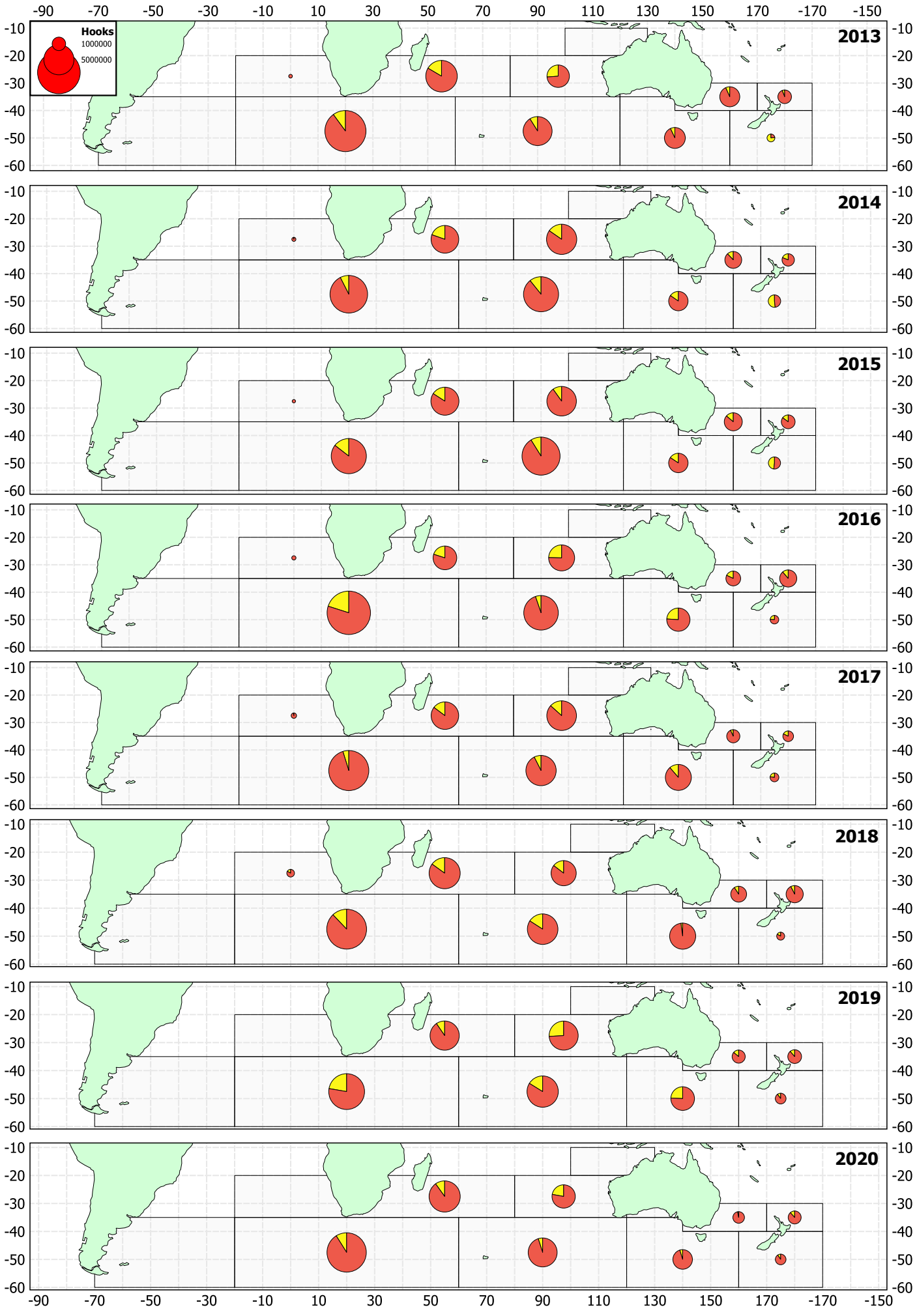
Year	Statistical Area	Tori pole + Night setting	Tori pole + weighted branchline	Night setting + weighted branchline	Tori pole + night setting + weighted branchline	Tori pole	Night setting	Weighted branchline	None	Single measure (unspecified)	Mix of 2 measures	Other
2014	2	21.2%	78.8%	0.0%	0.0%				0.0%	0.0%	0.0%	0.0%
2014	4	6.2%	5.2%	0.0%	0.4%				0.0%	88.3%	0.0%	0.0%
2014	5	5.8%	60.6%	0.0%	0.0%				0.0%	33.6%	0.0%	0.0%
2014	6	99.7%	0.0%	0.0%	0.0%				0.0%	0.3%	0.0%	0.0%
2014	7	17.3%	0.0%	0.0%	0.0%				0.0%	82.7%	0.0%	0.0%
2014	8	29.7%	70.1%	0.0%	0.0%				0.0%	0.2%	0.0%	0.0%
2014	9	3.6%	51.2%	0.0%	33.8%				0.0%	11.4%	0.0%	0.0%
2014	14	0.0%	92.8%	0.0%	7.2%				0.0%	0.0%	0.0%	0.0%
2014	15	0.0%	0.0%	0.0%	100.0%				0.0%	0.0%	0.0%	0.0%
2015	2	59.0%	25.6%	7.5%	7.8%				0.0%	0.0%	0.0%	0.0%
2015	4	1.6%	68.1%	0.0%	3.5%				0.0%	0.0%	26.8%	0.0%
2015	5	8.6%	74.2%	0.0%	0.0%				0.0%	17.2%	0.0%	0.0%
2015	6	99.5%	0.0%	0.0%	0.0%				0.0%	0.5%	0.0%	0.0%
2015	7	0.3%	31.5%	0.0%	0.0%				0.0%	0.0%	68.2%	0.0%
2015	8	42.7%	15.2%	0.0%	10.3%				0.0%	0.0%	31.8%	0.0%
2015	9	11.6%	39.8%	0.0%	5.8%				0.0%	0.0%	42.8%	0.0%
2015	14	43.6%	10.6%	9.0%	36.8%				0.0%	0.0%	0.0%	0.0%
2016	2	48.5%	7.6%	0.0%	43.9%				0.0%	0.0%	0.0%	0.0%
2016	4	18.2%	8.9%	0.0%	6.7%	62.6%	1.8%	0.0%	1.8%	0.0%	0.0%	0.0%
2016	5	39.4%	0.0%	0.0%	0.0%	26.5%	1.5%	0.0%	8.9%	23.7%	0.0%	0.0%
2016	6	83.6%	0.0%	0.0%	0.0%				0.0%	16.4%	0.0%	0.0%
2016	7	16.0%	13.4%	0.0%	4.6%	66.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2016	8	37.2%	3.8%	0.0%	28.0%	31.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2016	9	28.3%	25.6%	0.7%	9.9%	25.3%	3.2%	0.2%	7.0%	0.0%	0.0%	0.0%
2016	14	73.3%	5.9%	0.0%	20.8%				0.0%	0.0%	0.0%	0.0%
2017	2	87.6%	2.2%	0.0%	10.2%				0.0%	0.0%	0.0%	0.0%
2017	4	0.0%	57.0%	0.0%	43.0%				0.0%	0.0%	0.0%	0.0%
2017	5	89.5%	0.0%	0.0%	0.0%				0.0%	10.5%	0.0%	0.0%
2017	6	99.3%	0.0%	0.0%	0.0%				0.0%	0.8%	0.0%	0.0%
2017	7	11.1%	45.0%	0.0%	29.7%	14.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2017	8	65.9%	3.2%	0.0%	2.2%	27.4%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%
2017	9	3.0%	90.1%	0.0%	6.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2017	14	52.4%	0.5%	0.0%	47.1%				0.0%	0.0%	0.0%	0.0%
2017	15	0.0%	0.0%	0.0%	100.0%				0.0%	0.0%	0.0%	0.0%
2018	2	91.4%	3.3%	0.6%	4.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	4	18.9%	11.8%	0.0%	28.8%	40.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	5	66.7%	1.2%	0.0%	25.8%	1.8%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	6	68.9%	0.0%	0.0%	31.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	7	31.2%	0.9%	0.0%	0.0%	68.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	8	59.8%	0.0%	0.0%	0.0%	40.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	9	22.7%	42.3%	0.0%	13.8%	21.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	14	74.7%	0.8%	0.0%	23.6%	0.0%	0.8%	0.0%	0.2%	0.0%	0.0%	0.0%
2018	15	12.0%	0.0%	0.0%	88.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	2	71.3%	18.1%	0.0%	5.0%	5.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	4	18.1%	22.3%	0.0%	21.2%	38.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	5	28.4%	1.3%	5.2%	5.2%	0.4%	10.8%	16.2%	0.0%	0.0%	0.0%	32.4%
2019	6	0.0%	1.0%	1.1%	98.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	7	18.9%	14.2%	0.0%	4.0%	63.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	8	46.8%	22.1%	6.0%	0.3%	24.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2019	9	7.1%	32.2%	0.0%	1.9%	53.0%	0.7%	0.0%	0.0%	0.0%	0.0%	1.7%
2019	14	46.5%	34.8%	9.9%	0.4%	8.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	2	92.5%	4.7%	0.0%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	4	0.0%	37.9%	0.0%	62.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	5	40.1%	5.4%	16.6%	3.2%	0.0%	0.0%	34.8%	0.0%	0.0%	0.0%	0.0%
2020	6	8.7%	0.7%	9.4%	81.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	7	0.0%	31.1%	0.0%	68.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	8	71.7%	3.6%	0.0%	0.8%	23.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	9	58.3%	13.3%	0.1%	4.6%	23.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	12	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2020	14	54.6%	20.3%	0.0%	11.3%	13.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Prepared by the Secretariat

Observer coverage (observed hooks / total hooks or observed sets / total sets 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. Cells shaded in grey are strata with low effort (<25,000 hooks for longline and <5 sets for purse seine).

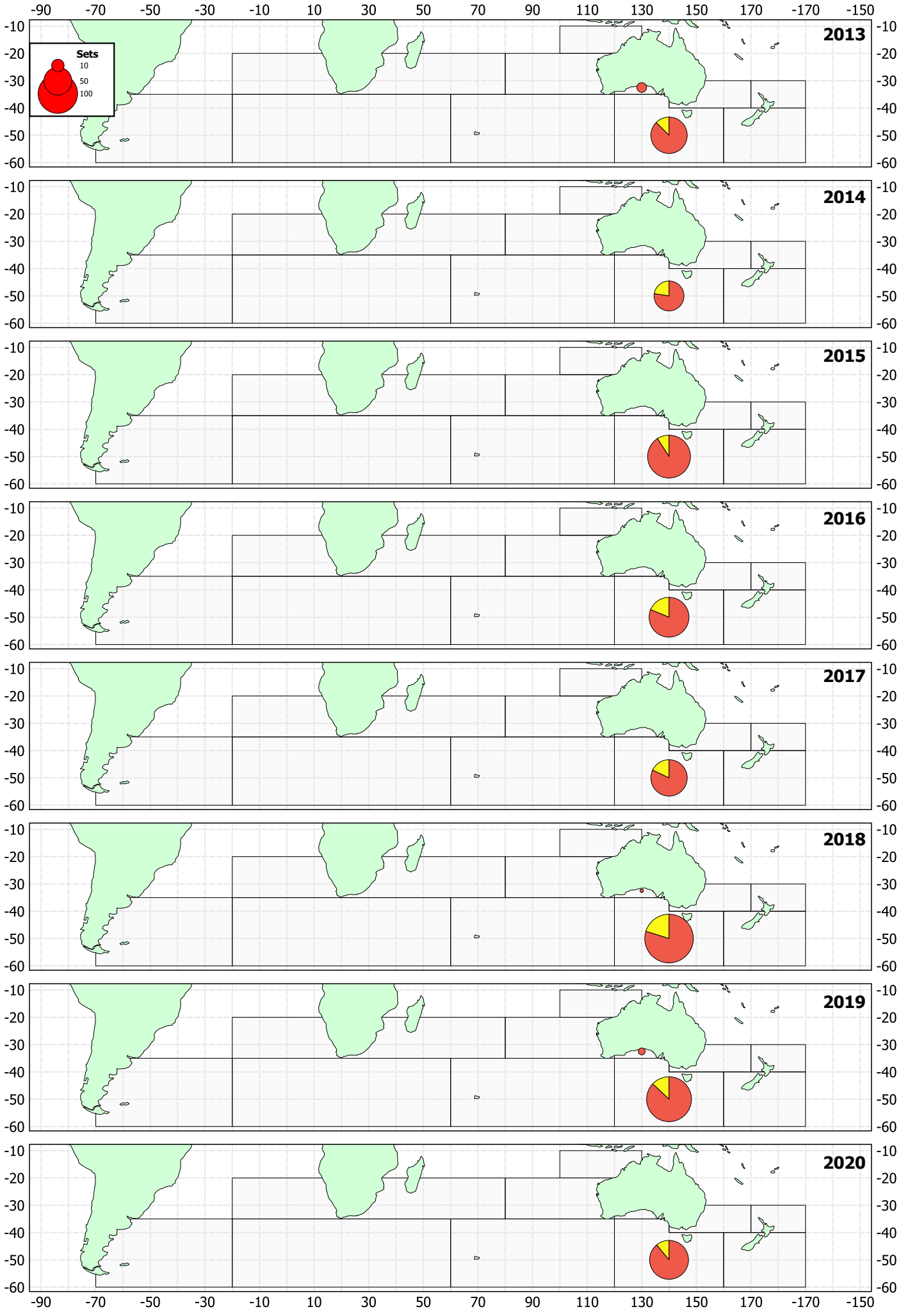
				Statistical area													
Member code	Gear code	Fleet code	Year	1	2	3	4	5	6	7	8	9	14	15	Total	Representativeness
AU	LL	AUD	2010				18%								18%	100%
			2011				24%								24%	100%
			2012		8%		37%								33%	50%
			2013		0%		23%								22%	50%
			2014		0%		6%								6%	0%
			2015		22%		8%								8%	50%
			2016		0%		13%			9%					12%	33%
			2017			0%	11%			14%					11%	67%
			2018		0%		12%			35%					12%	67%
			2019				12%			0%					12%	50%
			2020		0%		8%			7%					8%	0%
	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%
			2018			0%				20%					20%	50%
			2019			0%				13%					13%	50%
			2020							11%					11%	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%			11%	4%	0%			5%	25%
			2018				8%	0%		2%	14%	6%			6%	20%
			2019				14%	16%		24%	13%	26%			22%	100%
			2020				0%	18%	5%	5%	3%	11%			7%	33%
KR	LL	KRD	2010		0%						0%	25%			11%	33%
			2011		0%						0%	0%			0%	0%
			2012		0%						0%	16%			8%	33%
			2013		34%						13%	26%			19%	100%
			2014		0%						18%	0%			7%	33%
			2015		0%						12%	17%			14%	67%
			2016								0%	20%			19%	50%
			2017									18%			18%	100%
			2018									21%			21%	100%
			2019									22%			22%	100%
			2020								0%	0%			0%	0%
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%
			2018				0%	14%	17%						15%	67%
			2019					8%	10%						9%	50%
			2020					9%	10%						9%	50%
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%	12%		10%	75%
			2018		15%						18%	20%	14%	28%	15%	100%
			2019		26%						18%	5%	10%		17%	50%
			2020		22%						10%	10%	10%		13%	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%
			2018									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%
			2018									11%	16%	16%	15%	100%

Longline SBT effort showing observer coverage (yellow)



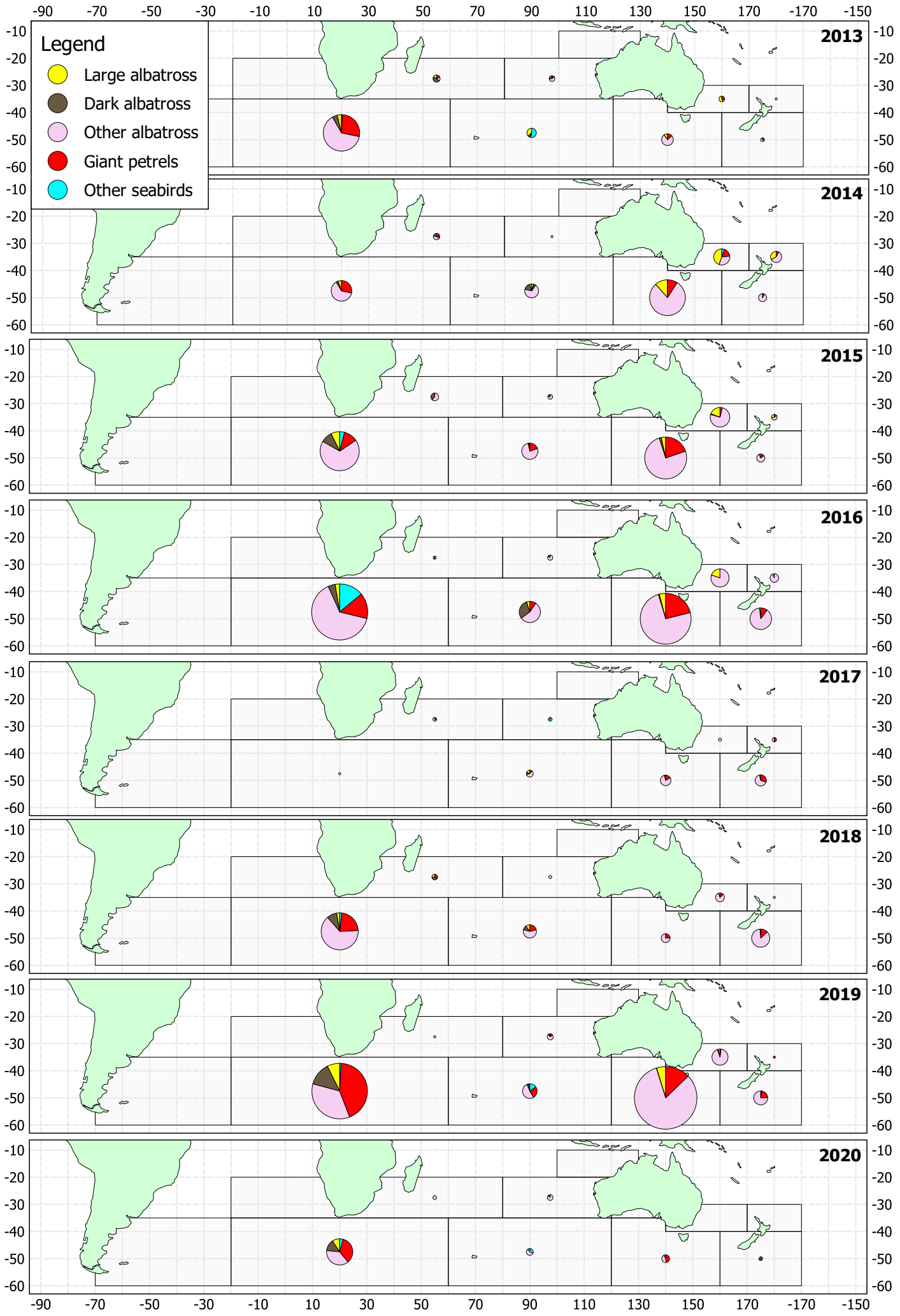
Attachment C

Purse seine SBT effort, showing observer coverage (yellow)

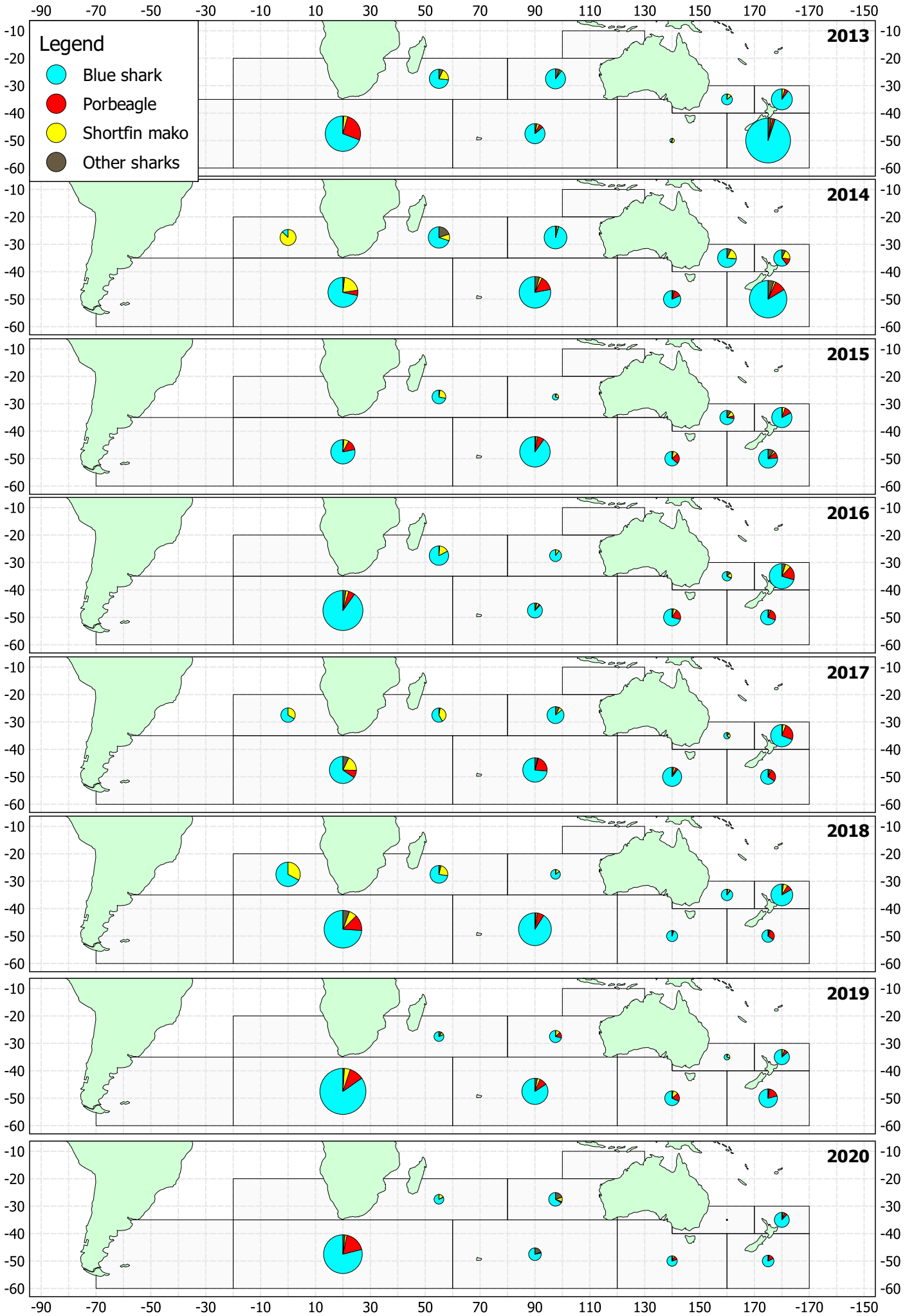


Attachment D

Observed bird mortalities for the SBT longline fishery

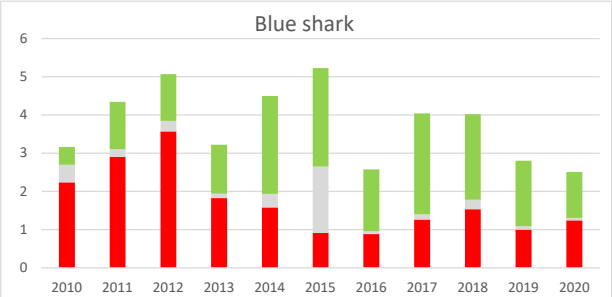


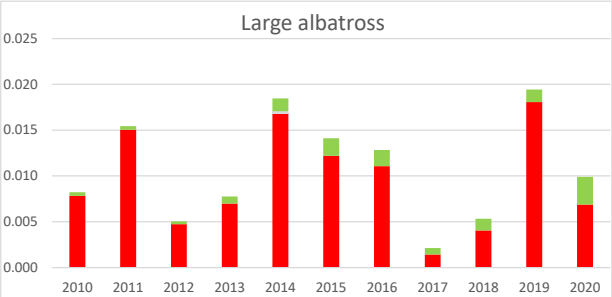
Observed shark mortalities for the SBT longline fishery

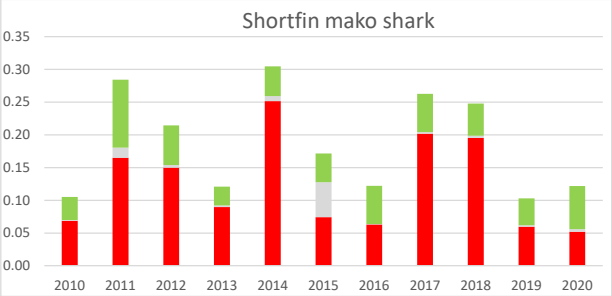


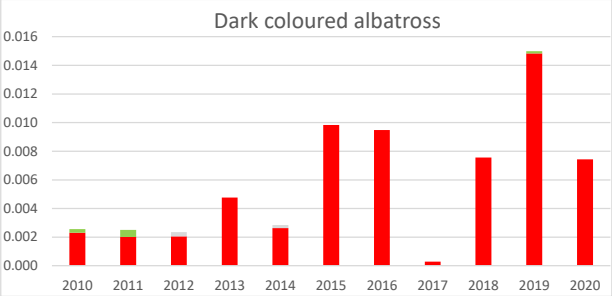
Attachment F

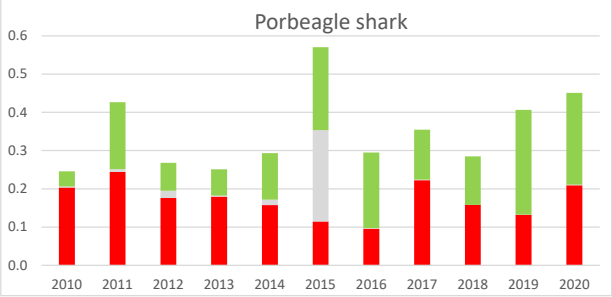
Observed capture rates (numbers per 1000 hooks) with proportions of observed mortalities (red), observed live releases (green) and unspecified life status (grey) for the SBT longline fishery by year and species/species group

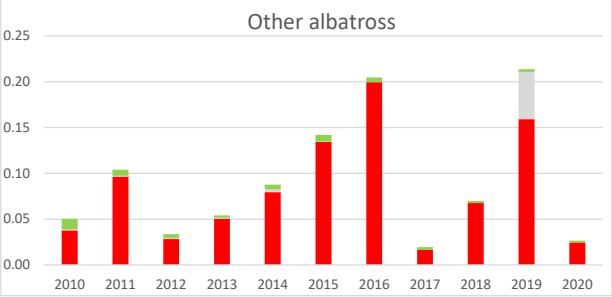


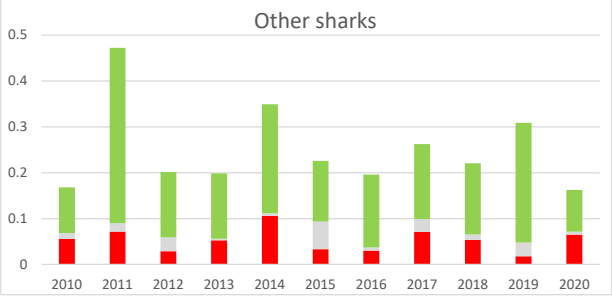


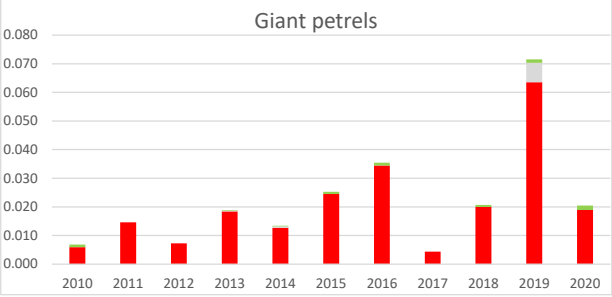


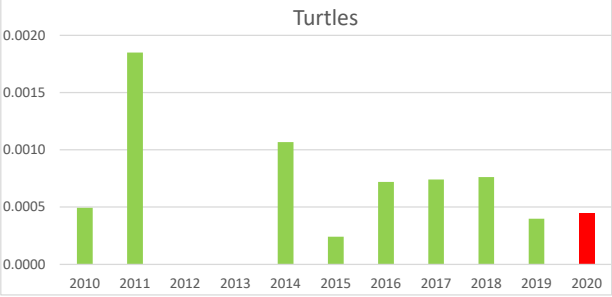


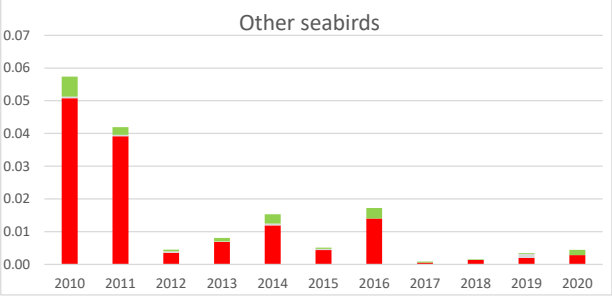


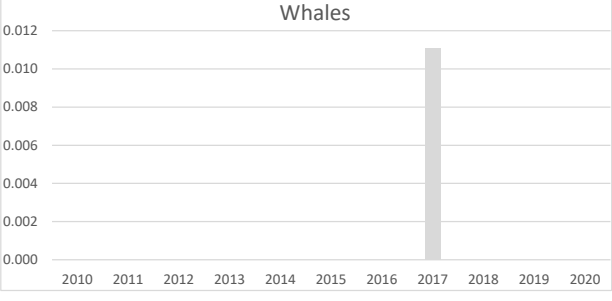


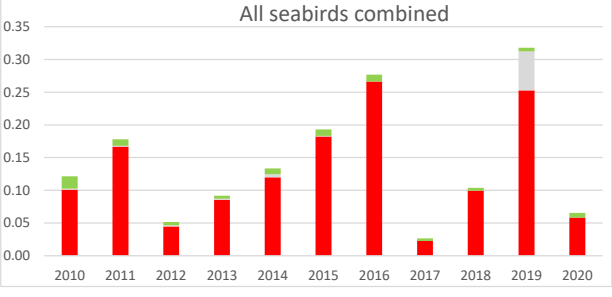






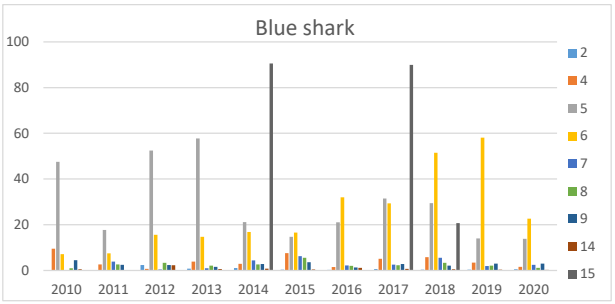


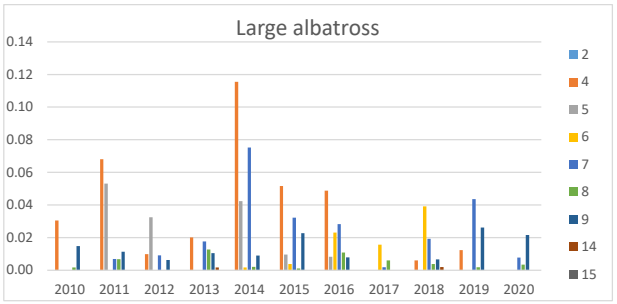


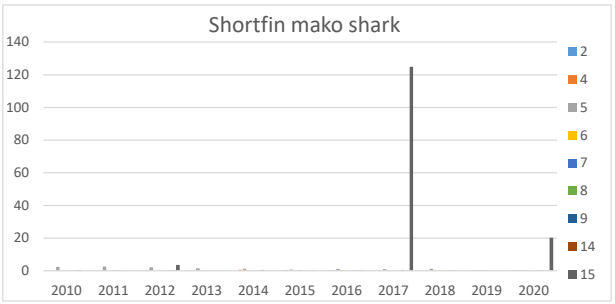


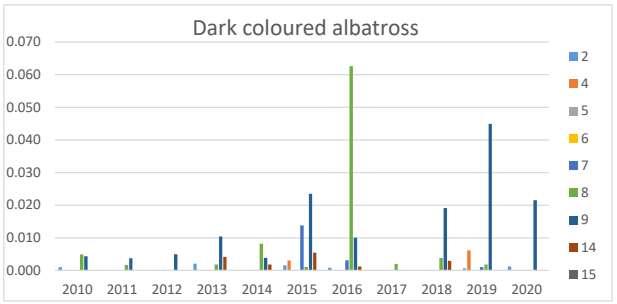
Attachment G

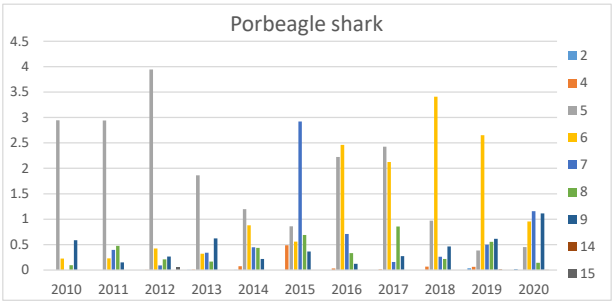
Observed catch rates for the SBT longline fishery by year, statistical area and species/species group

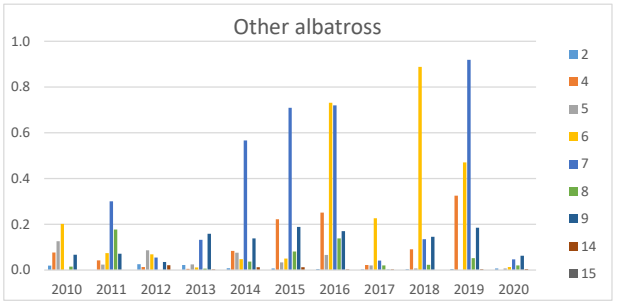


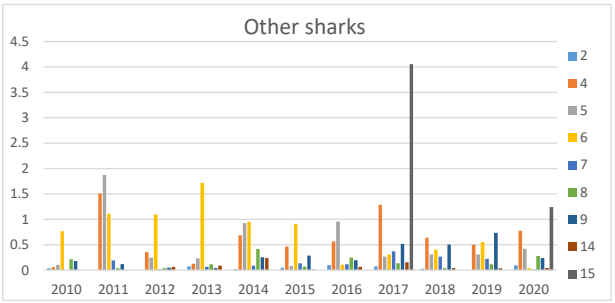


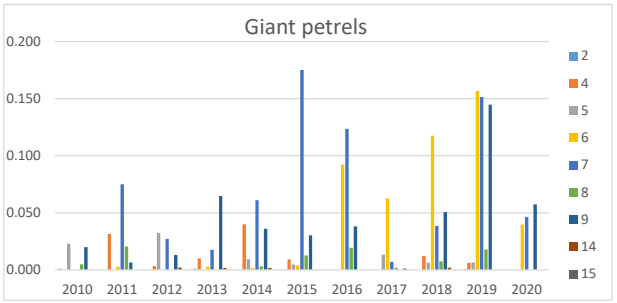


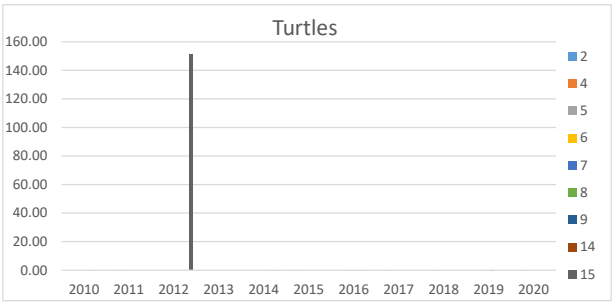


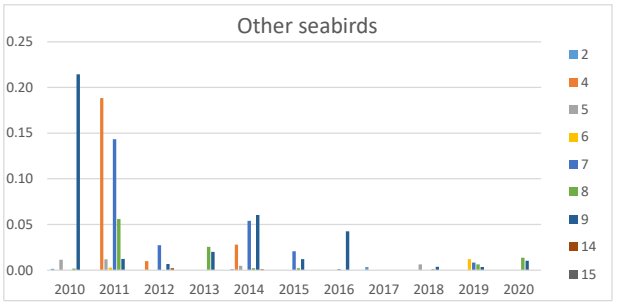


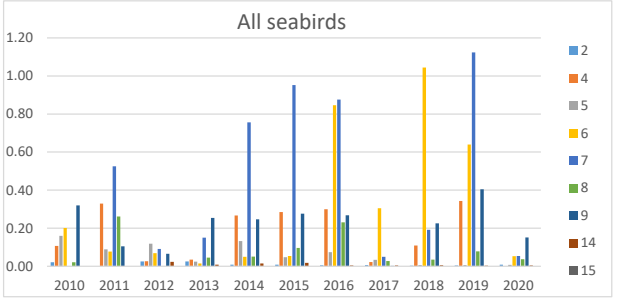




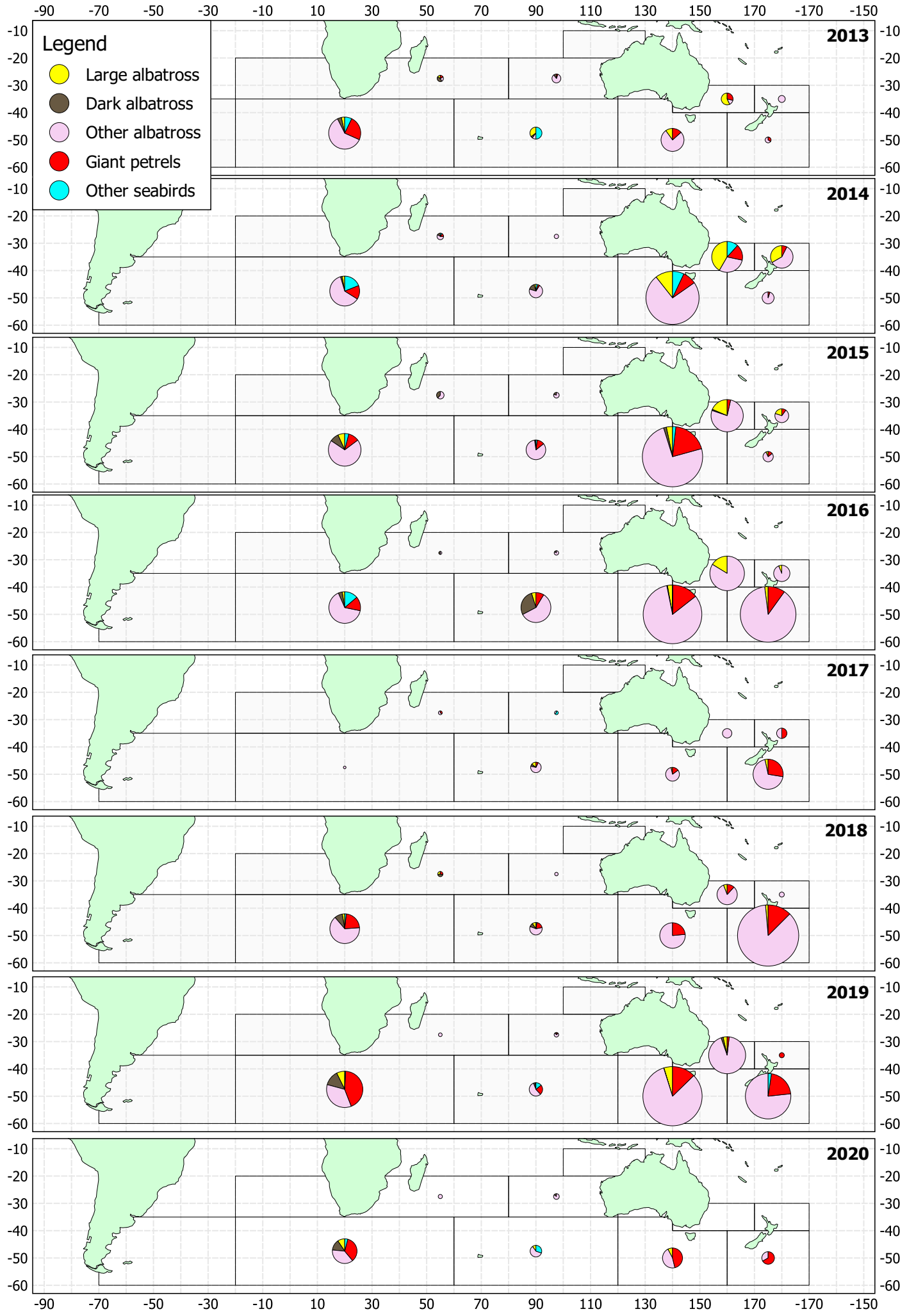




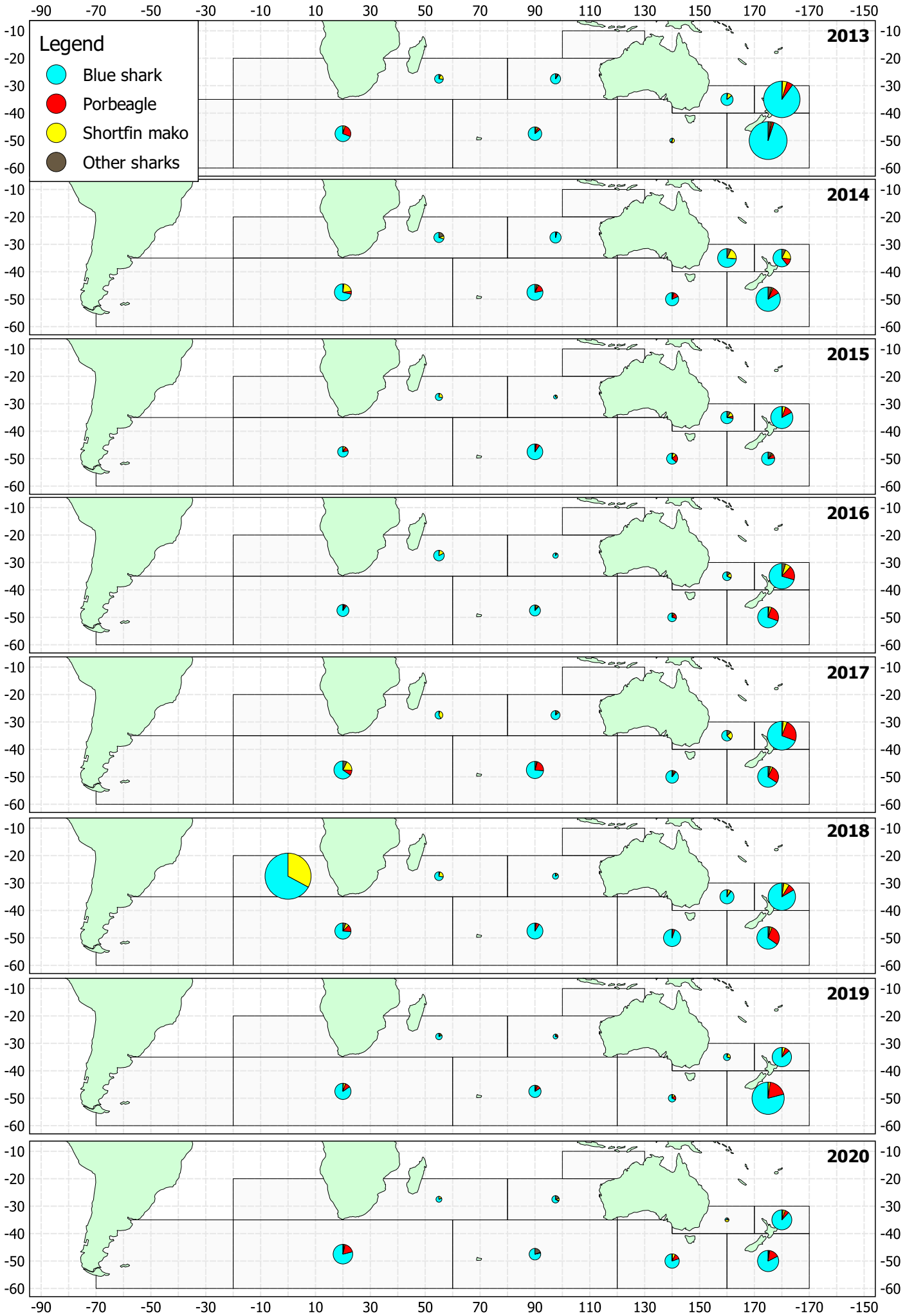




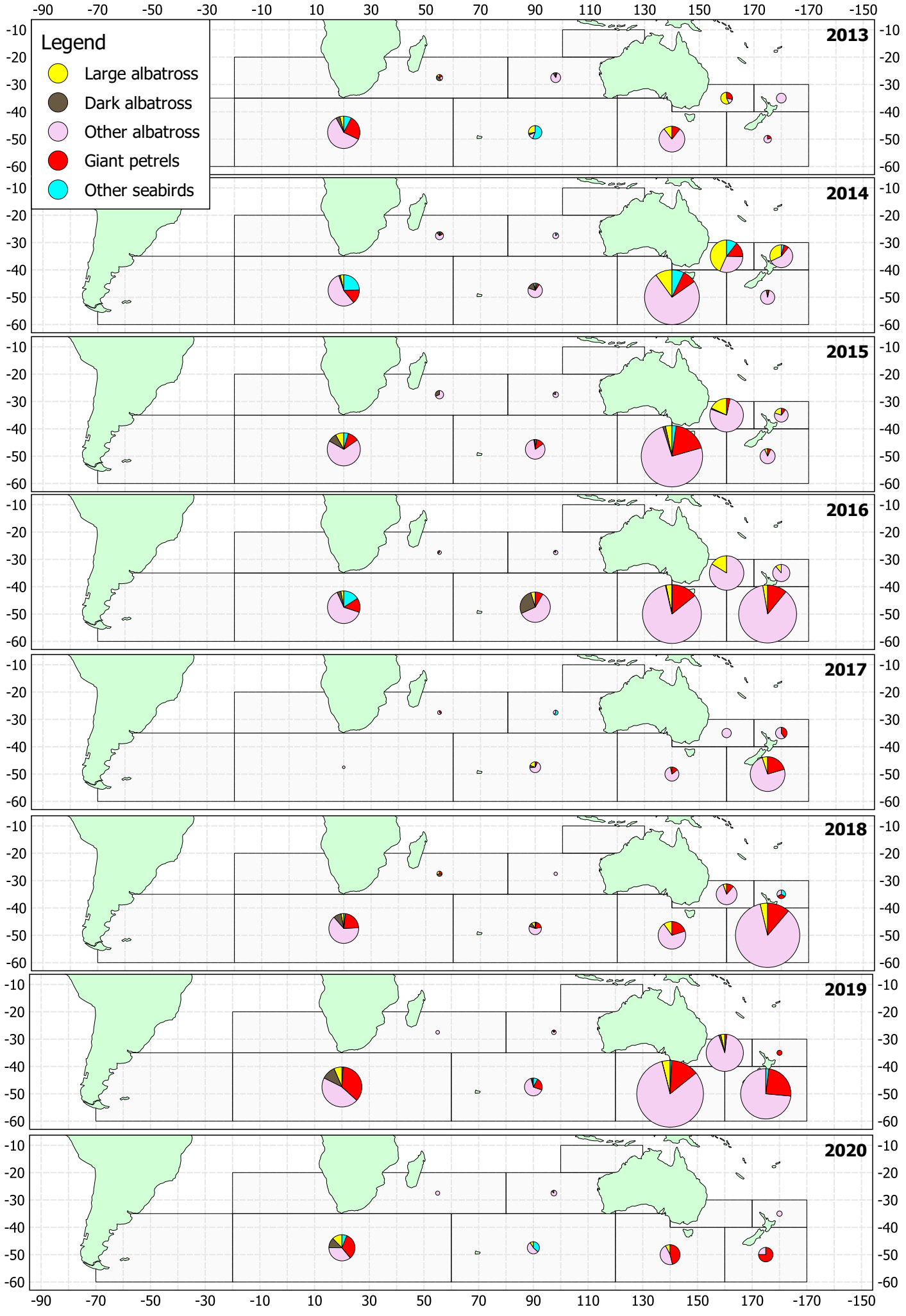
Observed bird mortality rates for the SBT longline fishery



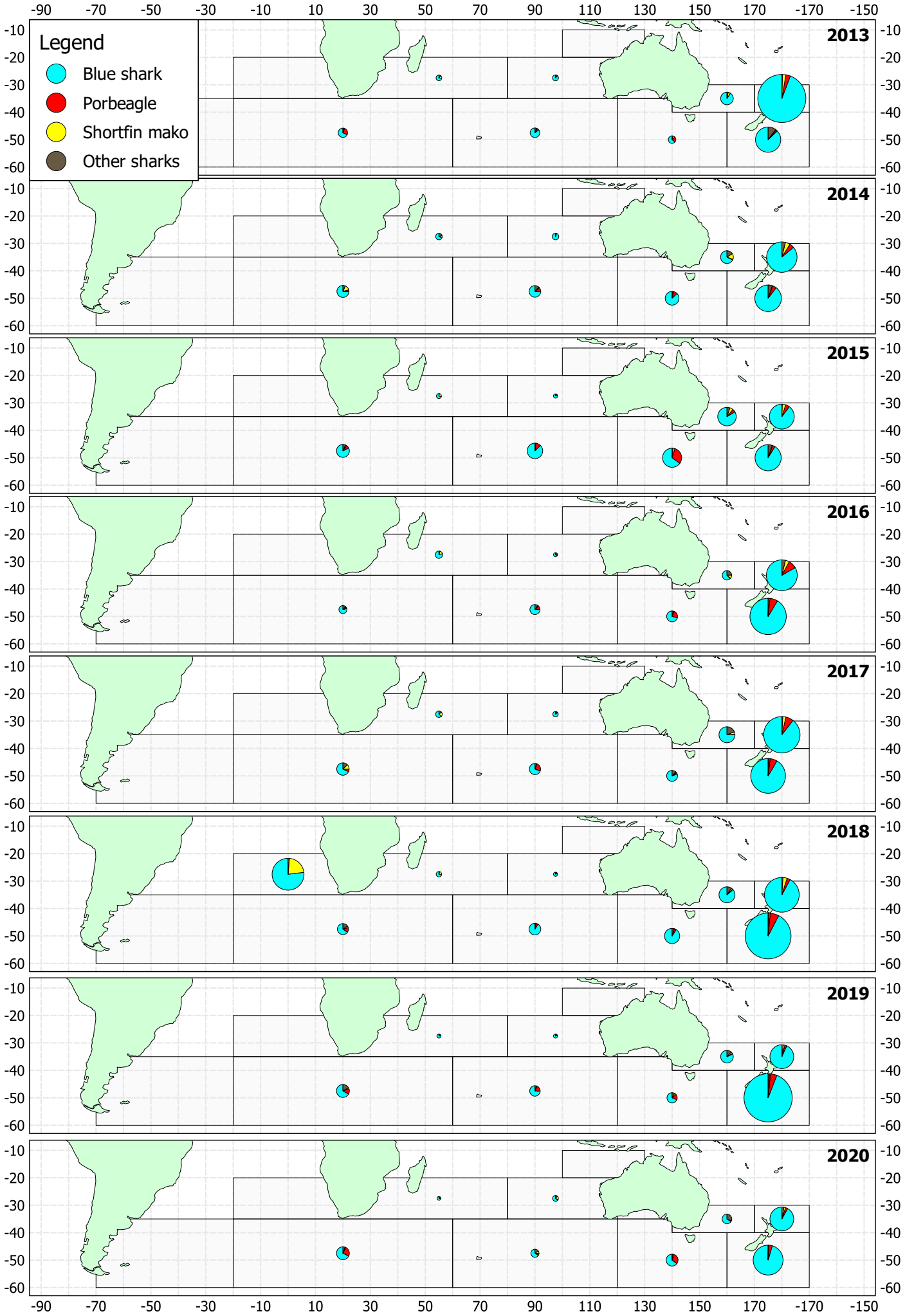
Observed shark mortality rates for the SBT longline fishery



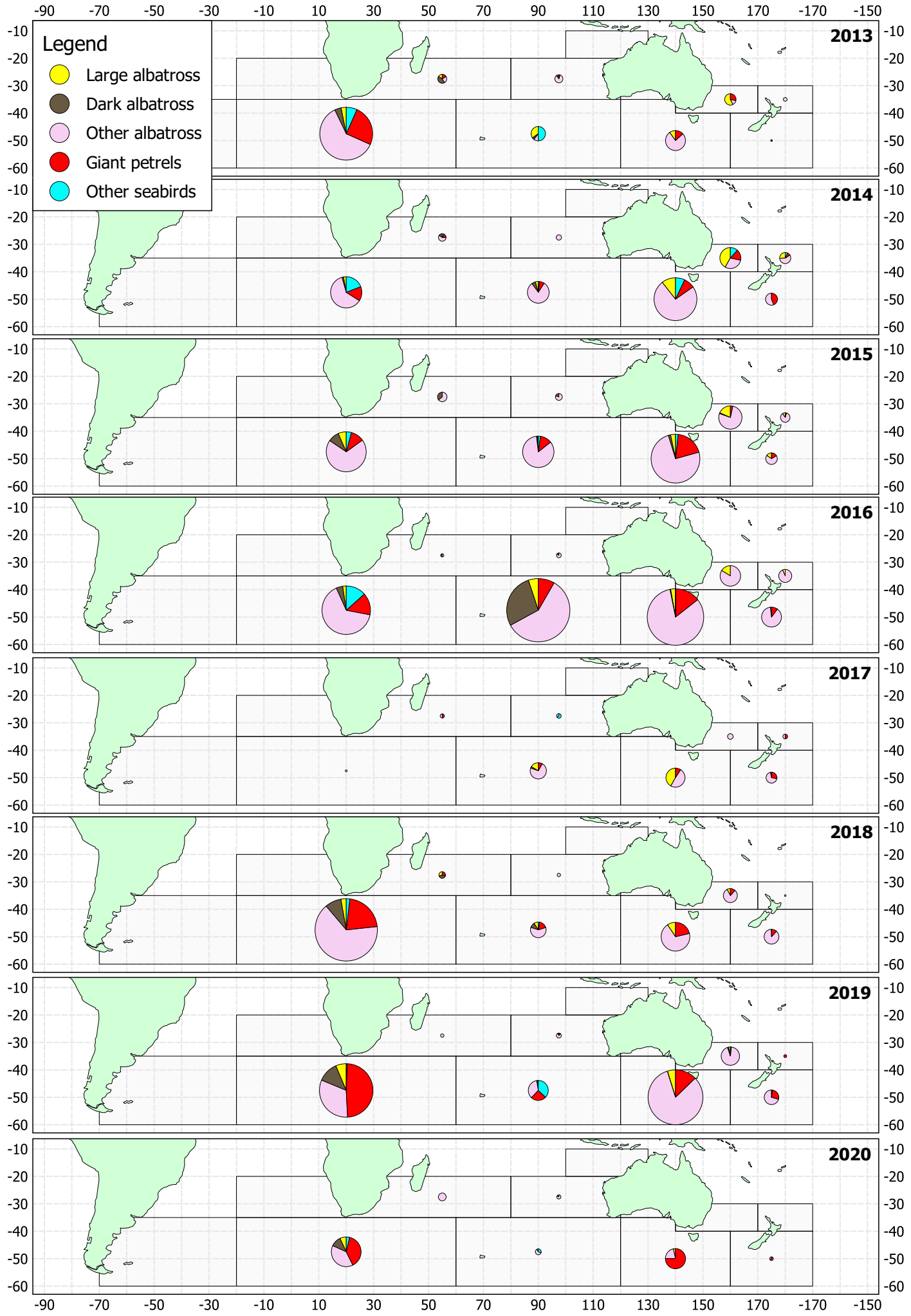
Observed bird capture rates for the SBT longline fishery



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