



## **Australia's 2007–08 Southern Bluefin Tuna Fishing Season**

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## Executive Summary

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### **The 2009 update**

The 2009 Fishing Season Report summarises catches and fishing activities in the Australian Southern Bluefin Tuna (SBT) Fishery up to and including the 2007–08 quota year (Dec–Nov) and some preliminary results for the 2008–09 season. It also provides a summary of the history of the Australian SBT Fishery and fishing by Japan in the Australian Fishing Zone under bilateral access agreements.

### **The fishing season**

A total of 22 commercial fishing vessels landed SBT in Australian waters in 2007–08 for a total catch of 5234 t. A total of 99.6% of the catch was taken by purse seine with the remainder taken by longline. Seven purse seiners fished during the 2007–08 quota year, but live bait, pontoon-towing and feeding vessels were also involved. Purse seine fishing commenced in early December 2007 and finished in early March 2008.

The 2007–08 quota year catch was 5234 t, the same as in the previous quota year catch (5234 t in 2006–07). Length frequency data from the purse seine fishery from 2003–04 to 2005–06 indicated a shift to smaller fish, but this trend showed signs of reversal in 2006–07 and 2007–08, possibly due to the targeting of larger fish.

### **Observers**

In the 2008–09 quota year, observers monitored 7.9% of purse seine sets where fish were retained and 15.3% of the estimated SBT catch. In 2008, observers also monitored 47.9% of longline hook effort in the Eastern Tuna and Billfish Fishery during the months and in the areas of the SBT migration through that fishery. Observers monitored 16.7% of longline sets in the entire Western Tuna and Billfish Fishery, where only one vessel operated in the fishery during this period.

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## Introduction

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This report summarises catches and fishing activities in the 2007–08 quota year<sup>1</sup> of the Australian Southern Bluefin Tuna (*Thunnus maccoyii*; SBT) Fishery. It also provides preliminary data on the 2008–09 surface fishery and a summary of the history of the Australian SBT Fishery. Caton *et al.* (1995) provide a more detailed historical description of the fishery.

## History

Troll catches of SBT were reported as early as the 1920s off the east coast of Australia, but significant commercial fishing for SBT commenced in the early 1950s with the establishment of a pole-and-live-bait fishery off New South Wales (NSW), South Australia and (SA), later (1970), Western Australia (WA). Purse seine gear overtook pole as the predominant method and catches peaked at 21 500 t in 1982. The bulk of this early Australian catch of SBT was canned. Following quota reductions in 1983–84, the Western Australian pole fishery for very small juveniles closed down and the south-eastern fishery began to target larger juveniles to supply the Japanese sashimi market. Surface catches were further reduced between 1989 and 1995 when about half of the Australian total allowable catch (TAC) was taken by Australia–Japan joint venture longliners in the Australian Fishing Zone (AFZ). The joint venture ceased in late 1995. From 1992 to 1998, domestic longliners operating off Tasmania (Tas) and New South Wales also took around 5–10% of the total Australian catch.

In 1990–91 about 20 t of SBT tuna were transferred to fattening cages in Port Lincoln, South Australia, to enhance their value. Utilisation of the Australian SBT TAC in ‘ranching’ operations increased from 3% of the TAC in 1991–92 to 98% in 1999–00 and it has remained at similar high levels since.

Following declaration of the Australian Fishing Zone (AFZ) in 1979, Japanese longliners fished under a range of bilateral conditions, real-time monitoring program and joint-venture arrangements until 1997 when Japanese longliners were excluded from all AFZ fishing operations following failure to reach agreement on a global TAC within the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Caton and Ward (1996) provided copies of annual subsidiary agreements for the operations of bilateral-licensed longliners in the AFZ from 1979–80 to 1994–95.

## Recent seasons

The Australian domestic SBT catches for the 2007 and 2008 calendar years were 4813 t and 5051 t, respectively. The 2006–07 and 2007–08 quota year catches were both 5234 t (Table 1).

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<sup>1</sup> Various time periods, such as ‘calendar years’, ‘fishing seasons’ and ‘quota years’, can be used when describing Australia’s SBT fishery. Unless otherwise indicated, we have used quota years in this report, but note that fishing seasons of the various fishery components often span quota years. The start and end dates of Australian quota years have varied and are presented in Appendix 1.

**Table 1. Australian Catch by Gear and State for Quota Years 1988–89 to 2007–08**

Quota Year	Western Australia			Total	South Australia			Total	New South Wales			Tasmania			Large Longliners			Australia Total			RTMP	Total All Gears
	Albany Pole	Esperance Pole	Long- line		Pole & Purse Seine	Ranch Cages	Long- line		Pole & Purse Seine	Long- line	Troll	Long- line	Total	Aust. Charter	Joint- venture	Total	Domestic Surface	Domestic Long- line	Total Long- line			
1988–89	204	221	0	425	4872	0	0	4872	0	1	1	2	0	2	0	684	684	5299	1	685	0	5984
1989–90	133	97	0	230	4199	0	0	4199	0	6	6	14	0	14	0	400	400	4443	6	406	0	4849
1990–91	175	45	0	220	2588	0	0	2588	0	15	15	57	0	57	255	881	1136	2865	15	1151	300 <sup>b</sup>	4316
1991–92	17	0	0	17	1629	138	14	1781	34	90	124	36	20	56	59	2057	2116	1854	124	2240	800	4894
1992–93	0	0	0	0	716	722	68	1506	16	238	254	23	44	67	0	2735	2735	1477	350	3085	650	5212
1993–94	0	0	0	0	621	1294	55	1970	0	286	286	7	105	112	0	2299	2299	1922	446	2745	270	4937
1994–95	0	0	0	0	908	1954	2	2864	0	157	157	4	109	113	0	1295	1295	2866	268	1563	650	5080
1995–96	0	0	0	0	1447	3362	0	4809	28	89	117	0	262	262	0	0	0	4837	351	351	0	5188
1996–97	0	0	0	0	2000	2498	0	4497	7	229	236	2	242	244	0	0	0	4507	472	472	0	4978
1997–98	0	0	0 <sup>b</sup>	0	916	3488	0 <sup>b</sup>	4403	0 <sup>c</sup>	475	475	0 <sup>d</sup>	219	219	0	0	0	4433	664	664	0	5097
1998–99	0	0	0 <sup>b</sup>	0	28	4991	0 <sup>b</sup>	5018	0 <sup>c</sup>	97	97	0 <sup>d</sup>	116	116	0	0	0	5016	216	216	0	5232
1999–00	0	0	0 <sup>b</sup>	0	0	5130	13	5143	0	114	114	0	0 <sup>d</sup>	0	0	0	0	5130	127	127	0	5257
2000–01	0	0	0 <sup>b</sup>	0	0	5162	6	5168	0	32	32	0	0 <sup>d</sup>	0	0	0	0	5162	38	38	0	5247
2001–02	0	0	7	7	0	5234	0	5234	0	22 <sup>e</sup>	22 <sup>e</sup>	0	0 <sup>d</sup>	0	0	0	0	5234	29	29	0	5262
2002–03	0	0	0 <sup>f</sup>	0	0	5375	0	5375	0	17	17	0	0	0	0	0	0	5375	17	17	0	5391
2003–04	0	0	0 <sup>f</sup>	0	0 <sup>h</sup>	4874	0 <sup>g</sup>	4874	0	226 <sup>e</sup>	226 <sup>e</sup>	0	20	0	0	0	0	4874	247	247	0	5120
2004–05	0	0	0	0	0	5214	0	5214	0	35	35	0	0	0	0	0	0	5214	35	35	0	5248
2005–06	0	0	0	0	0	5302	0	5302	0	6	6	0	0	0	0	0	0	5302	6	6	0	5308
2006–07	0	0	0	0	0	5230	0	5230	0	4	4	0	0	0	0	0	0	5230	4	4	0	5234
2007–08	0	0	0	0	0	5211	0	5211	0	23	23	0	0	0	0	0	0	5211	23	23	0	5234

<sup>a</sup>Note that a further 700 t of Australian quota was ‘frozen’ (not allocated) in 1990–91.

<sup>b</sup>1997-98 and 1998-99 WA and SA non-ranch catches are included in SA pole and purse seine catch, and in 1999–00 and 2000–01 WA longline catch is included in SA longline due to confidentiality guidelines.

<sup>c</sup>1997-98 to 1998-99 NSW pole and purse seine catches are included in NSW longline catch due to confidentiality guidelines.

<sup>d</sup>1997-98 and 1998-99 Tas troll catches are included in Tas longline, and in 1999–00, 2000-01 and 2001-02 Tas longline catch is included in NSW longline due to confidentiality guidelines.

<sup>e</sup>2001-02 and 2003-04 NSW longline catch also includes QLD longline catch due to confidentiality guidelines.

<sup>f</sup>2002-03 and 2003-04 WA longline catch is included in NSW longline due to confidentiality guidelines.

<sup>g</sup>2003-04 SA longline catch is included in NSW longline due to confidentiality guidelines.

<sup>h</sup>2003-04 additional SA purse seine catch that did not go into ranch cages is included in SA ranch cages catch due to confidentiality guidelines.

## Catch and effort

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In the 2007–08 quota year, 99.6% of the Australian catch of SBT was taken by purse seine with the remainder taken by longline. Australian catch by gear and state for the quota years 1988–89 to 2007–08 is shown in Table 1. Catch by fishing season with number of vessels and vessel search hours is in Appendix 3. The Australian catch of SBT for the calendar years 2007 and 2008 is mapped in Figure 1 and Figure 2, respectively.

## Nominal CPUE

Nominal catch-per-unit-effort (CPUE) indices for the Australian surface or longline fisheries are not viewed as indicative of stock status. The ranch operations use purse seines to catch SBT, with assistance from former pole-and-line vessels as bait vessels and spotter planes. This makes the development of a reasonable measure of nominal fishing effort difficult and complicates the interpretation of catch rates.

Australian longliners generally target more than one species in the fishing season and the targeted effort (number of hooks targeting SBT) is not distinguishable from logbooks. For information, nominal SBT CPUE for all Australian longline effort is provided at Appendix 4.

No SBT have been landed by troll vessels since 1998–99.

## Size composition

In the South Australian surface fishery there has been reduced competition for SBT among fishers following the introduction of individual transferable quotas (ITQs). Since the late 1980s, the fishery has the very small (<80 cm) SBT, which were previously taken in bulk for canning (Caton *et al.* 1995). This resulted in an increase in the average length of SBT landed for fresh-chilled export. As the ranch component of the fishery increased in the 1990s, the average length of SBT landed in South Australia decreased from a peak of 103.2 cm in 1995 to a low of 90.7 cm in 2006 (Table 2). This is primarily due to selective targeting of schools to catch the best sized fish for ranching. The average length of SBT landed in South Australia has since increased and was 93.9 cm in 2008.

Length frequency data from the purse seine fishery for the 2004–05 and 2005–06 fishing seasons showed a marked shift to smaller fish, with the average length reducing slightly from 91.0 cm in 2004–05 to 90.7 cm in the 2005–06 fishing season (Figure 3). This trend reversed in 2006–07 and 2007–08, with the average length in the purse seine fishery increasing to 94.0 cm and 93.9 cm, respectively. Observer reports for 2008–09 indicated a number of shots were aborted owing to the small size of fish, and it appears purse seiners are now targeting schools of larger fish possibly because of the higher prices obtained at harvest.

The size trends in the Tasmanian fishery reflect the change in orientation of the fishery from trolling to longlining operations since 1993. In the later years, the fishery was dominated by longlining operations that tend to target larger fish.

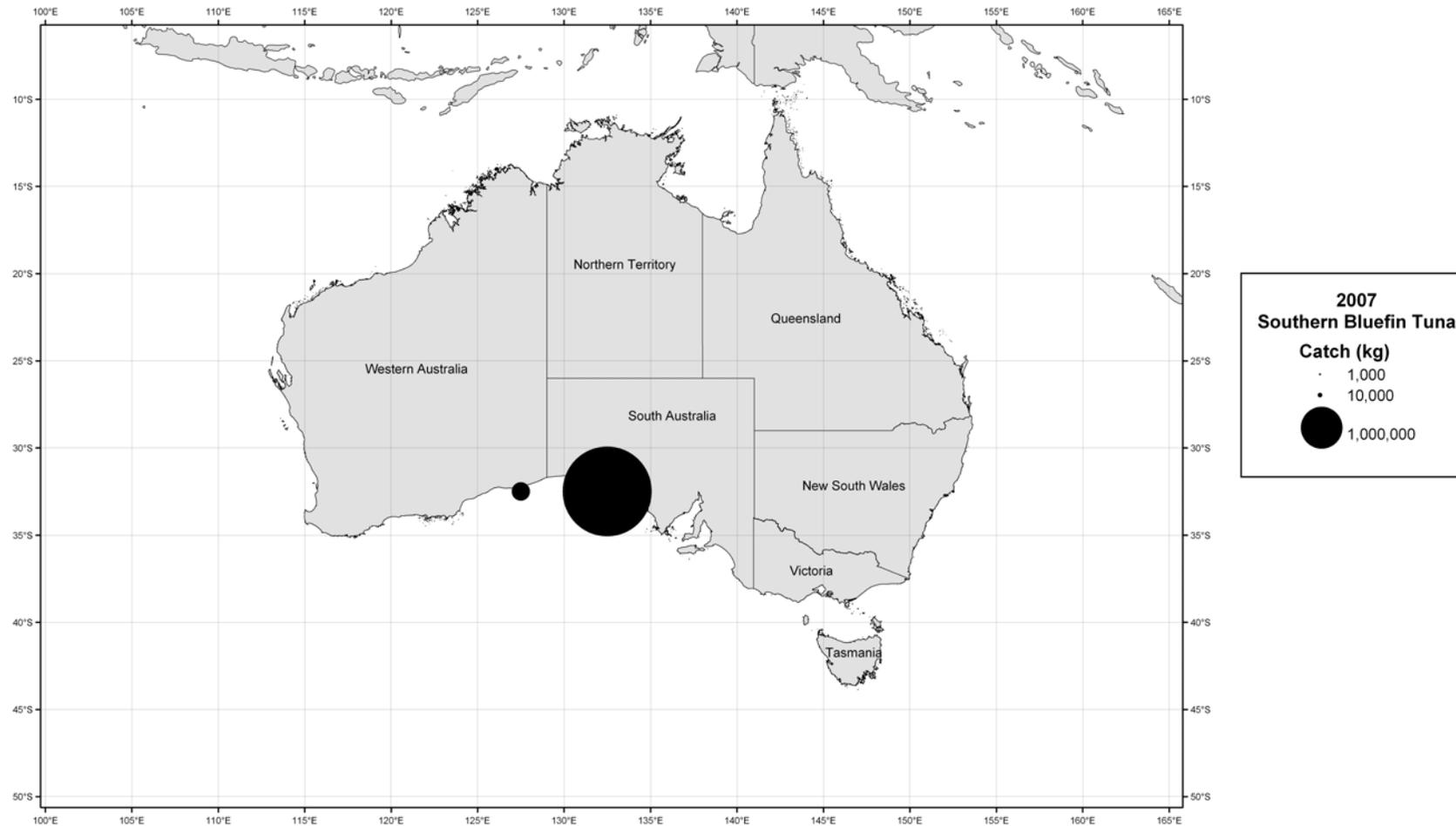
Since the late 1980s, the average length of SBT landed in NSW has varied considerably because of the varying contribution of longline and sporadic surface catches to the overall catch levels. However, longline-caught SBT off NSW have, in general, been considerably larger than SBT previously taken in this fishery (Figure 4).

The percentage representation by length in the winter catches of Japanese longliners off eastern Tasmania from 1988 to 1997 showed substantial changes (Figure 5). Initially, there were two groups representing a group of pre-adults (<130 cm) and older adult SBT (>150 cm). A progressive increase in the representation of younger ages was evident until 1992, and there was also a steady

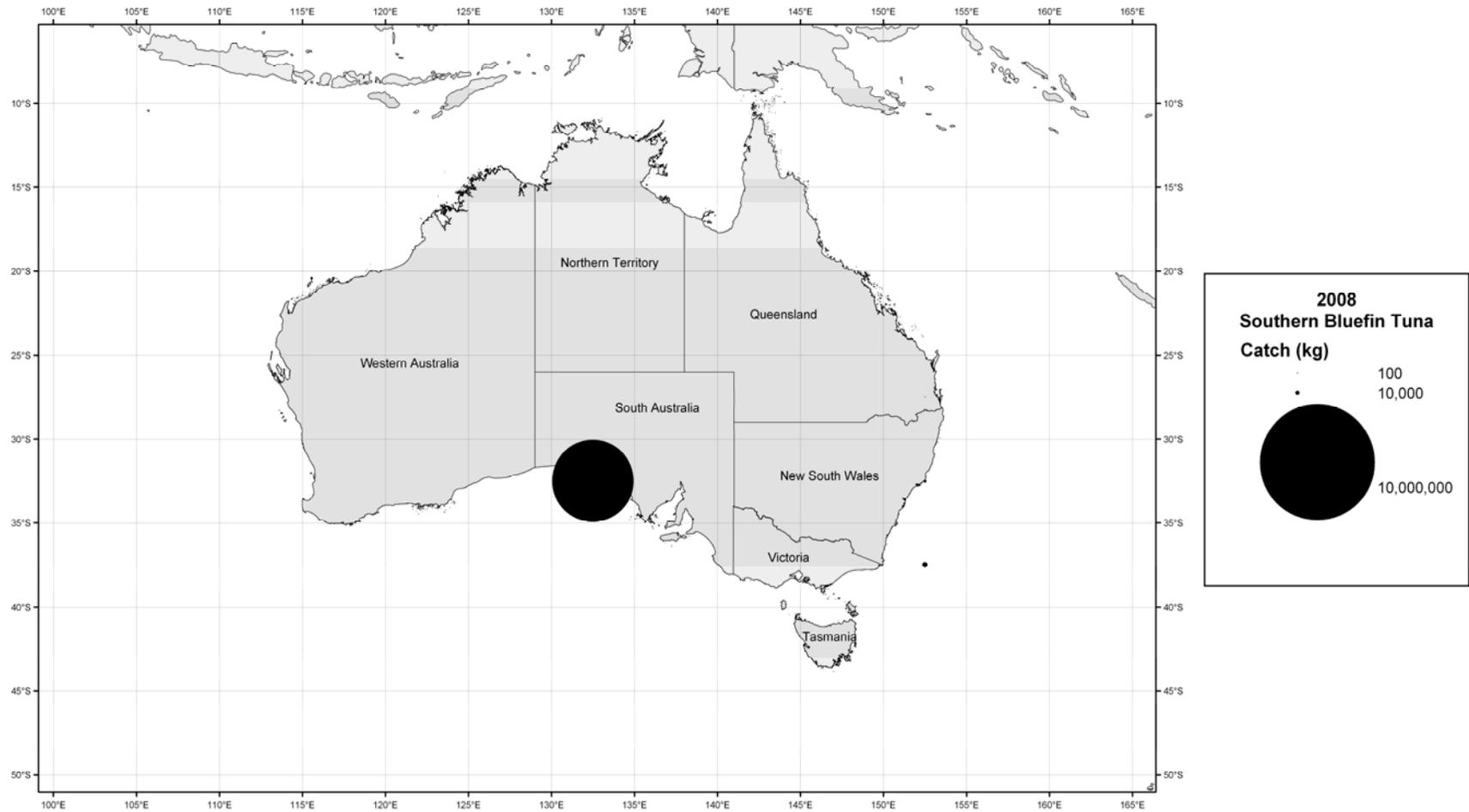
increase in the average length of the SBT comprising the larger mode. The “trough” between the modes was consistent with intensive removals of small SBT in the early 1980s by Australia’s surface fishery. The increasing representation of small SBT in the eastern Tasmania longline fishery after 1988 was consistent with the escapement of smaller SBT as a result of the 1988 and 1989 quota reductions in Australia’s surface fishery. The reversal of this trend from 1993 was apparent by the reduced presence of SBT <105 cm in 1994, then of SBT <120 cm in 1995, and SBT <135 cm in 1996. This needs careful attention because one explanation could be reduced overall abundance of three-year-old SBT in 1994, three- and four-year-old SBT in 1995 and three-, four- and five-year-old SBT in 1996. The reduced representation of those sizes was also noted in the reduced abundance of small SBT (<100 cm) in the Tasmanian troll fishery in 1994 and 1995, and the failure of the troll fishery (which depended upon small SBT) in 1996 and 1997.

In 1997, the troll fishery results were poor and the observer data from Japanese longliners for the Tasmanian winter season showed a scarcity of SBT less than 105 cm. However, the 1997 data showed an increased representation of 105 cm SBT compared with 1996. In the absence of Japanese and joint-venture longline operations in the AFZ since 1998, no subsequent comparison is possible.

While the successive reduction in small SBT did not persist in 1997, the previous decreases may signal several weak year classes in the early 1990s. The changed representation of 105 cm SBT in 1997 does not appear to have been associated with any change in fishing or reporting practices.



**Figure 1.** Australian SBT catch in the 2007 calendar year

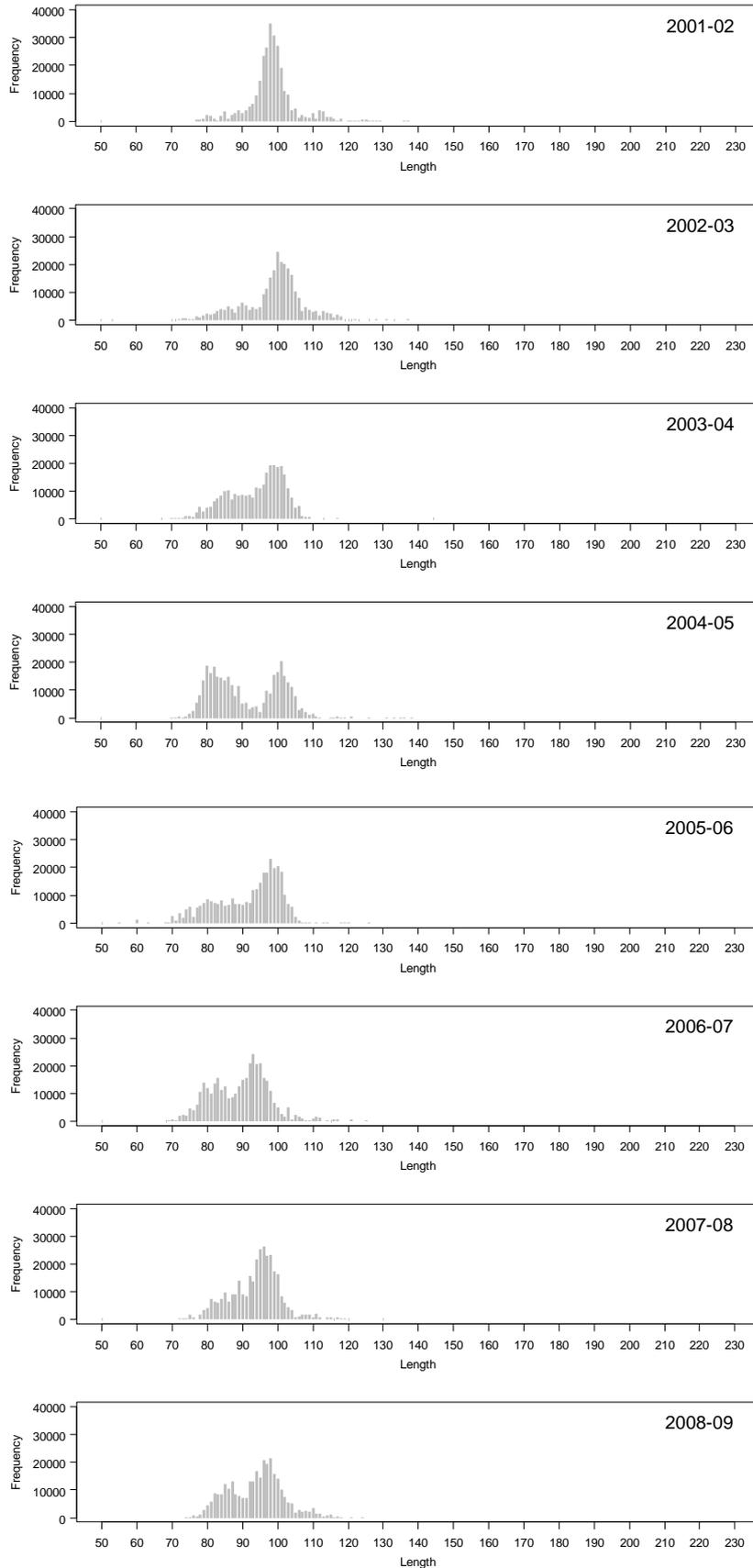


**Figure 2.** Australian SBT catch in the 2008 calendar year

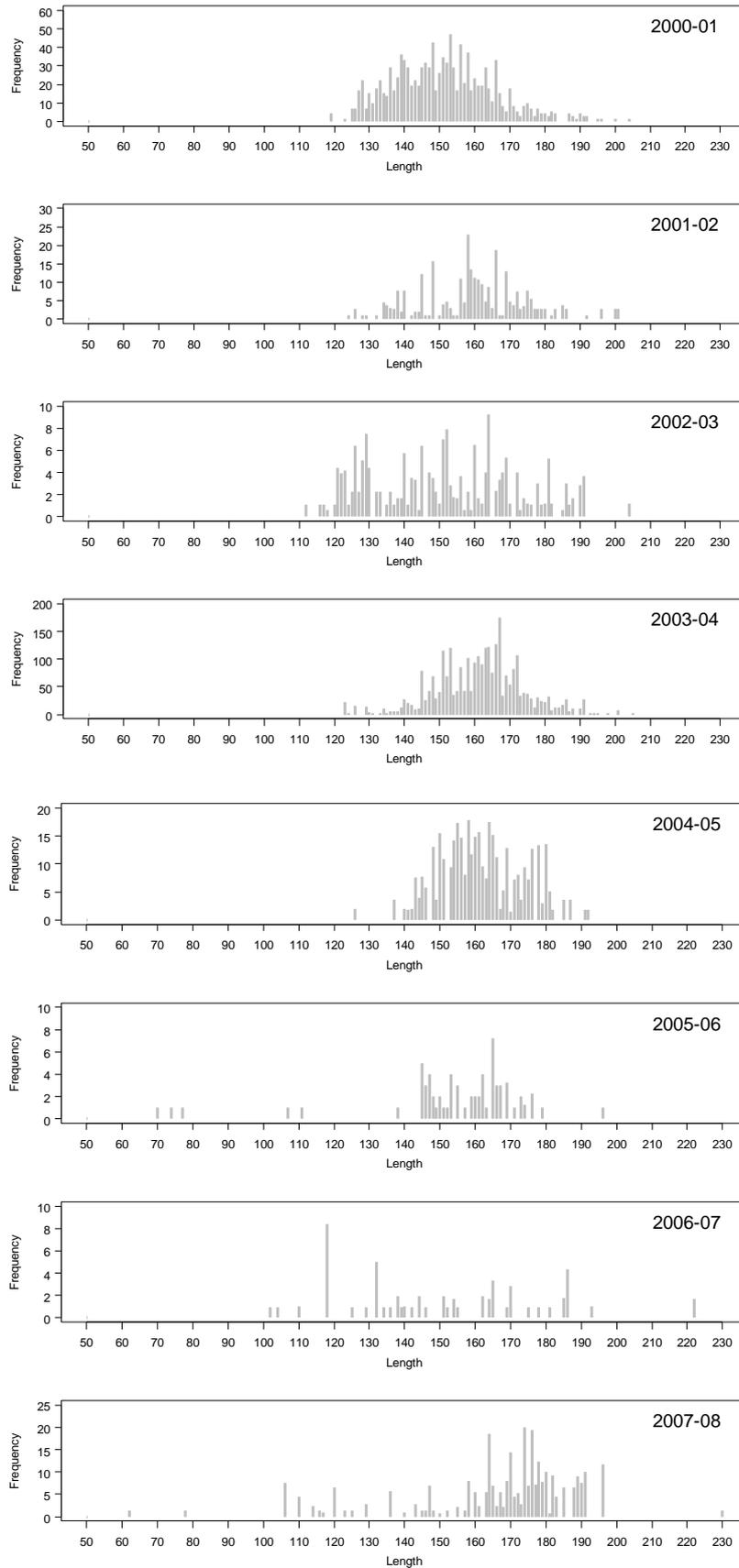
**Table 2.** Average fork length (cm) of SBT landed in each Australian state, 1989 to 2008  
(source: tow cage size monitoring database)

Calendar Year	Western Australia <sup>a</sup>	South Australia <sup>a</sup>	Tasmania	NSW	Joint- venture
1989	65.4	88.8	–	–	–
1990	65.6	89.3	96.0	112.8	–
1991	67.2	95.5	94.9	154.8	114.5
1992	66.1	97.0	93.4	109.2	108.0
1993	65.2	101.1	99.7	117.8	116.5
1994	–	97.4	125.5	121.3	124.8
1995	–	103.2	127.9	125.0	125.0
1996	–	102.7	132.7	139.7	–
1997	–	97.7	133.2	134.6	–
1998	–	94.9	134.5	136.1	–
1999	–	97.6	134.2	138.5	–
2000	–	97.0	–	154.3	–
2001	154.3	98.1	–	149.7	–
2002	–	98.4	–	159.9	–
2003	–	98.7	–	154.1	–
2004	–	93.6	–	161.9	–
2005	–	91.0	–	161.7	–
2006	–	90.7	–	154.1	–
2007	–	94.0	–	150.5	–
2008	–	93.9	–	166.7	–

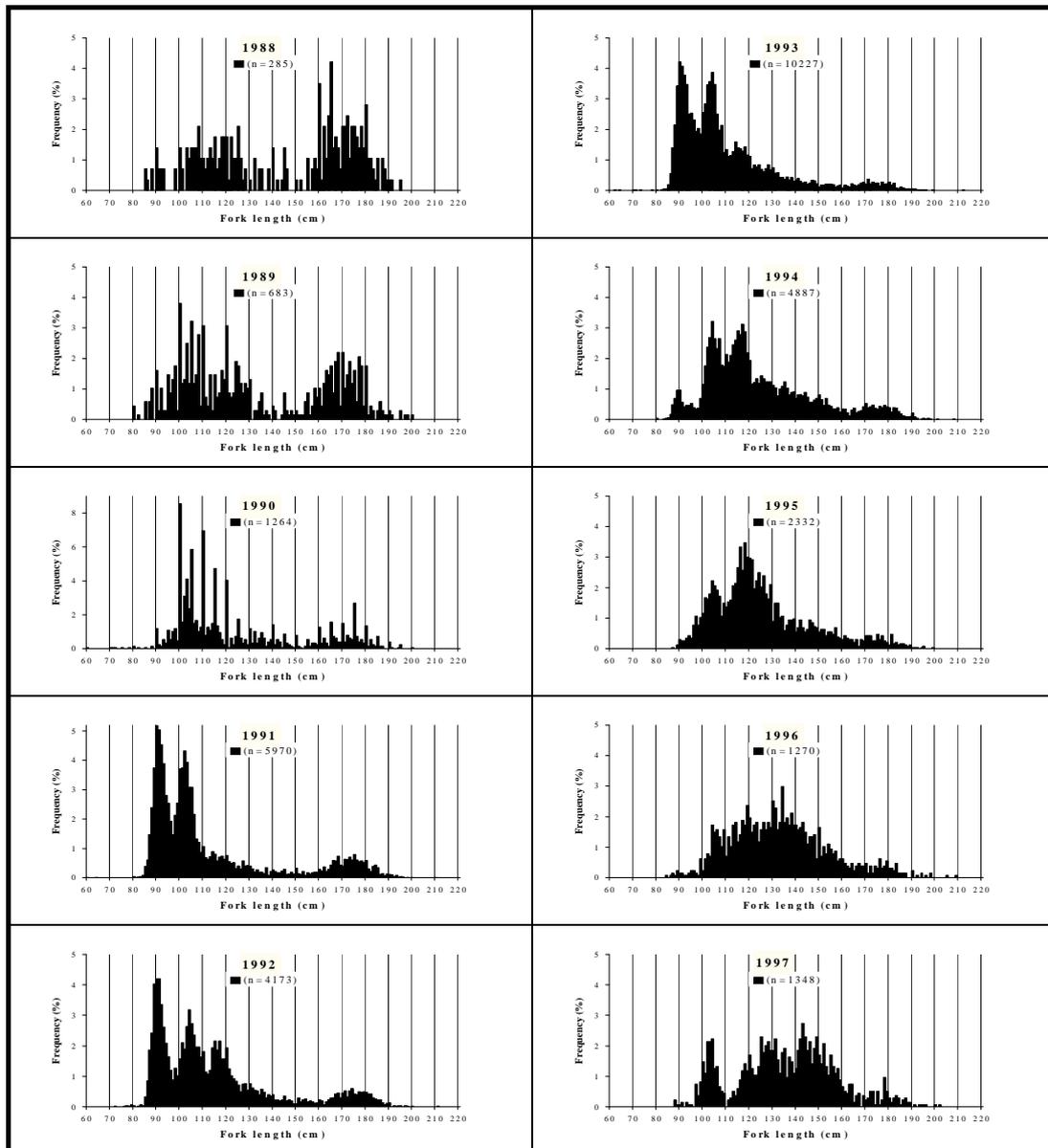
<sup>a</sup>Lengths are reported by calendar year, except for Western Australia and South Australia, which are by financial year (e.g. 1998 represents the financial year 1998–99) to cover the summer season



**Figure 3.** Length frequency of SBT purse seine catch in Australian waters raised to total catch, 2001–02 to 2008–09 quota years (source: tow cage size monitoring database)



**Figure 4.** Length frequency histograms for retained SBT longline catch in Australian waters raised to total catch, 2000–01 to 2007–08 quota years (source: AFMA observer data and processor monitoring data)



**Figure 5.** Length frequency of SBT measured by Australian observers on Japanese longliners fishing in the Tasmania region, 1988 to 1997. The data include small SBT tagged and released by observers

## Fleet size and distribution

In the 2007–08 quota year, a total of 22 commercial fishing vessels landed SBT in Australian waters.

### South Australia

The one- to five-year-old SBT, which school from late spring to autumn in surface waters of the eastern Great Australian Bight, South Australia, were fished by seven purse seiners during the 2007–08 quota year, but various live bait, pontoon-towing and feeding vessels were also involved. Fishing commenced in early December 2007 and finished in early March 2008 for the season.

## Western Australia

There were no SBT caught off Western Australia in the 2007–08 quota year.

## New South Wales

During the 2007–08 quota year, 15 domestic longliners reported landing SBT from the area of the fishery for older juveniles and adults in deeper waters off NSW.

## Tasmania

There were no SBT caught off Tasmania in the 2007–08 quota year.

## Queensland

There were no SBT caught off Queensland in the 2007–08 quota year.

## Other relevant information

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### Recreational catch

The number of SBT tag releases by Australian recreational fishers is provided in Table 3. These data do not include recreational tag releases using CCSBT tags.

**Table 3.** Tag releases by Australian recreational fishers, 1990 to 2008 (source: Game Fish Tagging Program, NSW Department of Primary Industries)

Year	Percentage of total releases					No. of Releases
	Tas	NSW	SA	Vic	WA	
1990	7.1	0.0	14.3	57.1	21.4	14
1991	5.8	44.7	23.2	25.6	0.7	293
1992	5.6	18.5	48.1	24.1	3.7	54
1993	3.5	6.9	87.9	0.0	1.7	231
1994	0.0	14.3	76.2	0.0	9.5	63
1995	0.0	25.0	25.0	0.0	50.0	12
1996	0.0	25.8	74.2	0.0	0.0	159
1997	0.0	3.7	87.0	0.0	9.3	54
1998	4.8	0.8	52.5	40.6	1.3	377
1999	0.0	0.0	70.9	29.1	0.0	117
2000	0.0	0.4	99.1	0.4	0.0	224
2001	38.8	1.9	23.8	30.6	5.0	160
2002	39.4	2.6	25.9	25.4	6.7	193
2003	14.3	0.0	71.4	0.0	14.3	21
2004	31.8	0.0	45.5	0.0	22.7	22
2005	0.0	2.1	93.7	0.0	4.2	96
2006	7.2	0.2	84.7	0	7.9	584
2007	29.3	0.1	66.2	1.3	3.1	1303
2008	0.9	0	96.6	0.5	2.0	972

Overall the data available on recreational catch of SBT are poor, but an initial review revealed high year-to-year variability in catches and locations in which SBT were taken (Rowse *et al.* 2008). Previous estimates of annual recreational catches ranged between 3 t and 85 t, with the highest catches occurring around Tasmania (Table 4). These data are indicative estimates only and are based on a range of different data sources. For recent seasons there are insufficient data to quantify the total recreational catches of SBT.

**Table 4.** Indicative estimates of recreational catch (t) by Australian recreational fishers, 1994 to 2008

Calendar year	Recreational Catch (t)
1994	16
1995	insufficient data
1996	insufficient data
1997	insufficient data
1998	38
1999	3
2000	10
2001	60
2002	85
2003	insufficient data
2004	insufficient data
2005	insufficient data
2006	insufficient data
2007	insufficient data
2008	insufficient data

## Discards in the commercial fishery

During the 2008–09 quota year, no discarding of SBT was observed or reported in logbooks collected in the purse seine fishery in the Great Australian Bight. However, eight observed sets were aborted and all fish released alive.

In 2004, the Australian Fisheries Management Authority (AFMA) observers monitored longline operations in the Eastern Tuna and Billfish Fishery (ETBF) during the months and areas in which SBT were most likely to be taken incidentally (i.e. south of 30°S from May to September). Observer data showed that 61% of longline caught SBT were discarded during the observed operations. In contrast, the level of SBT discards recorded in logbooks from other vessels fishing during the same period south of 30°S was only 10%. In response to this new information, AFMA implemented tighter access controls, as well as increased observer coverage for the 2005–06, 2006–07, 2007–08 and 2008–09 quota years in areas and at times where there is a high risk of SBT being caught.

In 2008, in the ETBF, south of 30°S and during the months of May to September, 31 observers monitored 404 000 hooks of a total of 844 000, representing 47.9% observer coverage of longline effort during the SBT migration. For the fishery as a whole, 11.4% of hooks were observed in the season. The total catch number of SBT caught while observers were on board was 486 of which 102 were retained, 384 were discarded (375 of which were released alive) and none were tagged. Individual retained fish ranged from 62–230 cm in length. The size distribution of the discarded ETBF longline catch of SBT from 2002 to 2006 is shown in Figure 1 of Attachment 1. ETBF logbooks for 2008 showed 19.0 t (434 fish) of SBT were retained in the ETBF and 331 (43.3%) were discarded. Note that Catch Disposal Records for 2008 reported 300 SBT retained and landed in the ETBF; misidentification of SBT in logbooks possibly accounts for this discrepancy. Further details on discarding are provided in Attachment 1.

During 2008, observers monitored 16.7% of longline operations in the Western Tuna and Billfish Fishery (WTBF). Only one vessel participated in this fishery in 2008, and no SBT were observed caught in 2008.

## Fish release trials

In response to the operational characteristics of the SBT fishery, AFMA and the fishing industry agreed to undertake a two-year trial commencing in the 2007–08 quota year to investigate a mechanism to allow a single release of live fish to avoid exceeding Australia's national allocation of SBT. The first release of the trial was conducted on 6 April 2008. No trial was undertaken in 2009. Under the 2008 Southern Bluefin Tuna Plan Amendment (No. 1), 2010 is the last year that a single, end of season release of live fish can be trialled.

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## **Appendix 1. SBT fishing season dates 1988–89 to 2008–09**

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Quota Year	Start Date	End Date
1988–89	1 Oct 1988	30 Sep 1989
1989–90	1 Oct 1989	30 Sep 1990
1990–91	1 Oct 1990	30 Sep 1991
1991–92	1 Oct 1991	31 Oct 1992
1992–93	1 Nov 1992	31 Oct 1993
1993–94	1 Nov 1993	31 Oct 1994
1994–95	1 Nov 1994	15 Dec 1995
1995–96	16 Dec 1995	15 Dec 1996
1996–97	16 Dec 1996	30 Nov 1997
1997–98	1 Dec 1997	30 Nov 1998
1998–99	1 Dec 1998	30 Nov 1999
1999–00	1 Dec 1999	30 Nov 2000
2000–01	1 Dec 2000	30 Nov 2001
2001–02	1 Dec 2001	30 Nov 2002
2002–03	1 Dec 2002	30 Nov 2003
2003–04	1 Dec 2003	30 Nov 2004
2004–05	1 Dec 2004	30 Nov 2005
2005–06	1 Dec 2005	30 Nov 2006
2006–07	1 Dec 2006	30 Nov 2007
2007–08	1 Dec 2007	30 Nov 2008
2008–09	1 Dec 2008	30 Nov 2009

## Appendix 2. Purse seine fishing season duration

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Quota Year	First Day of Season	Last Day of Season	1st Day	50%	75%	90%	Last Day	Duration
1993-94	1 Nov 93	31 Oct 94	49	113	127	138	175	127
1994-95	1 Nov 94	15 Dec 95	36	106	133	160	410 <sup>a</sup>	375 <sup>a</sup>
1995-96	16 Dec 95	15 Dec 96	1	67	87	131	365	365
1996-97	16 Dec 96	30 Nov 97	2	66	85	95	141	140
1997-98	1 Dec 97	30 Nov 98	19	67	84	98	364	346
1998-99	1 Dec 98	30 Nov 99	10	52	73	78	113	104
1999-00	1 Dec 99	30 Nov 00	4	56	65	79	118	115
2000-01	1 Dec 00	30 Nov 01	4	60	80	88	97	94
2001-02	1 Dec 01	30 Nov 02	9	61	75	80	121	113
2002-03	1 Dec 02	30 Nov 03	11	60	82	97	116	106
2003-04	1 Dec 03	30 Nov 04	9	66	87	102	115	107
2004-05	1 Dec 04	30 Nov 05	5	61	83	98	119	115
2005-06	1 Dec 05	30 Nov 06	18	70	92	99	358	341
2006-07	1 Dec 06	30 Nov 07	1	74	93	104	125	125
2007-08	1 Dec 07	30 Nov 08	10	58	91	94	99	90
2008-09	1 Dec 08	30 Nov 09	3	76	103	113	130	128

'1<sup>st</sup> Day' = Day of First Capture, '50%', etc denote the day of the season on which that percentage of the catch had been taken, 'Last Day' = the Day of Last Capture. Note that the 2008-09 figures provided are preliminary as the fishing season does not finish until November 2009.

<sup>a</sup>These figures are greater than the expect 365 days in a year because the season dates changed for this season and extended it for longer than one year.

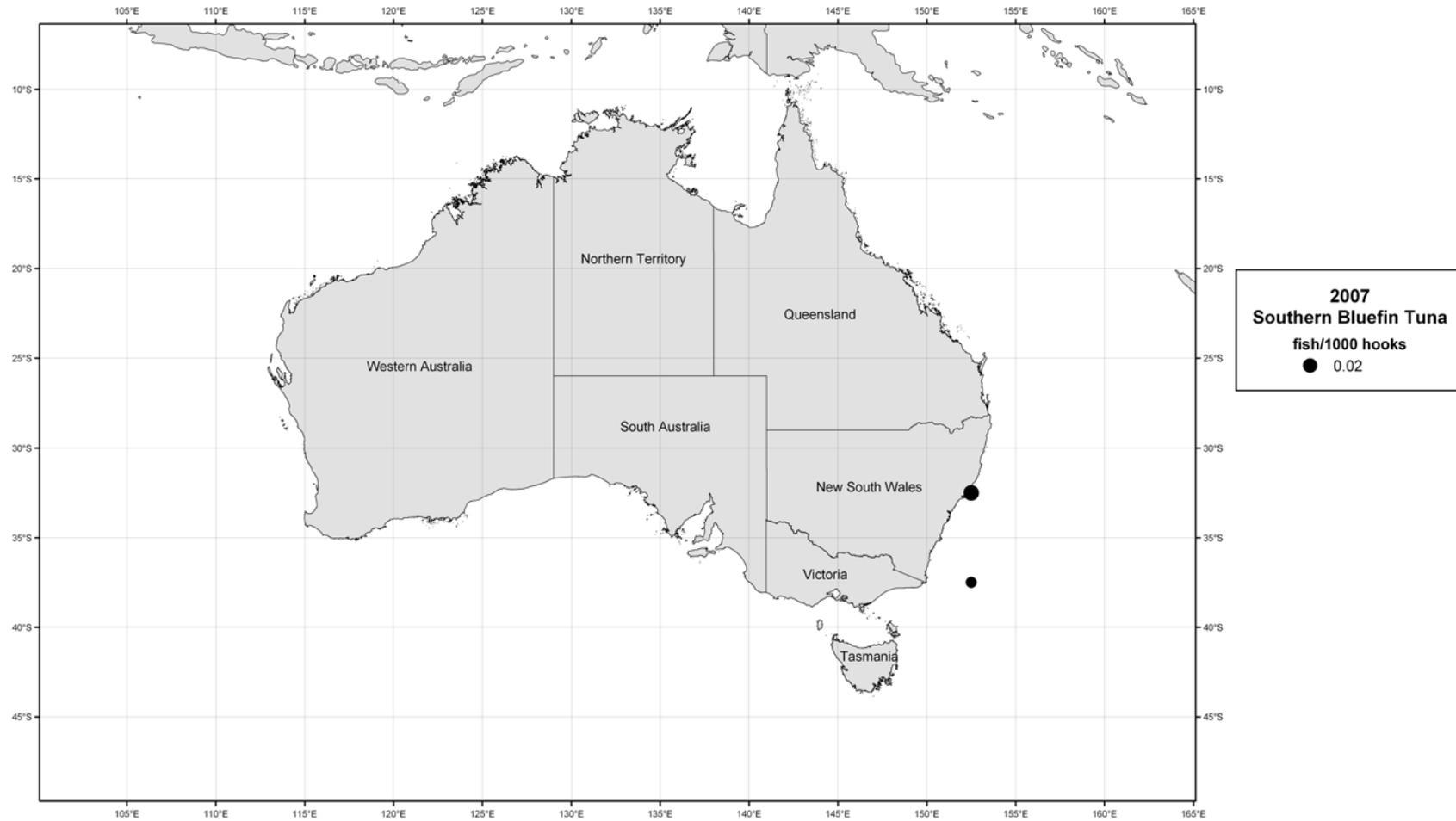
### Appendix 3. Australian surface catch, 1994–95 to 2008–09

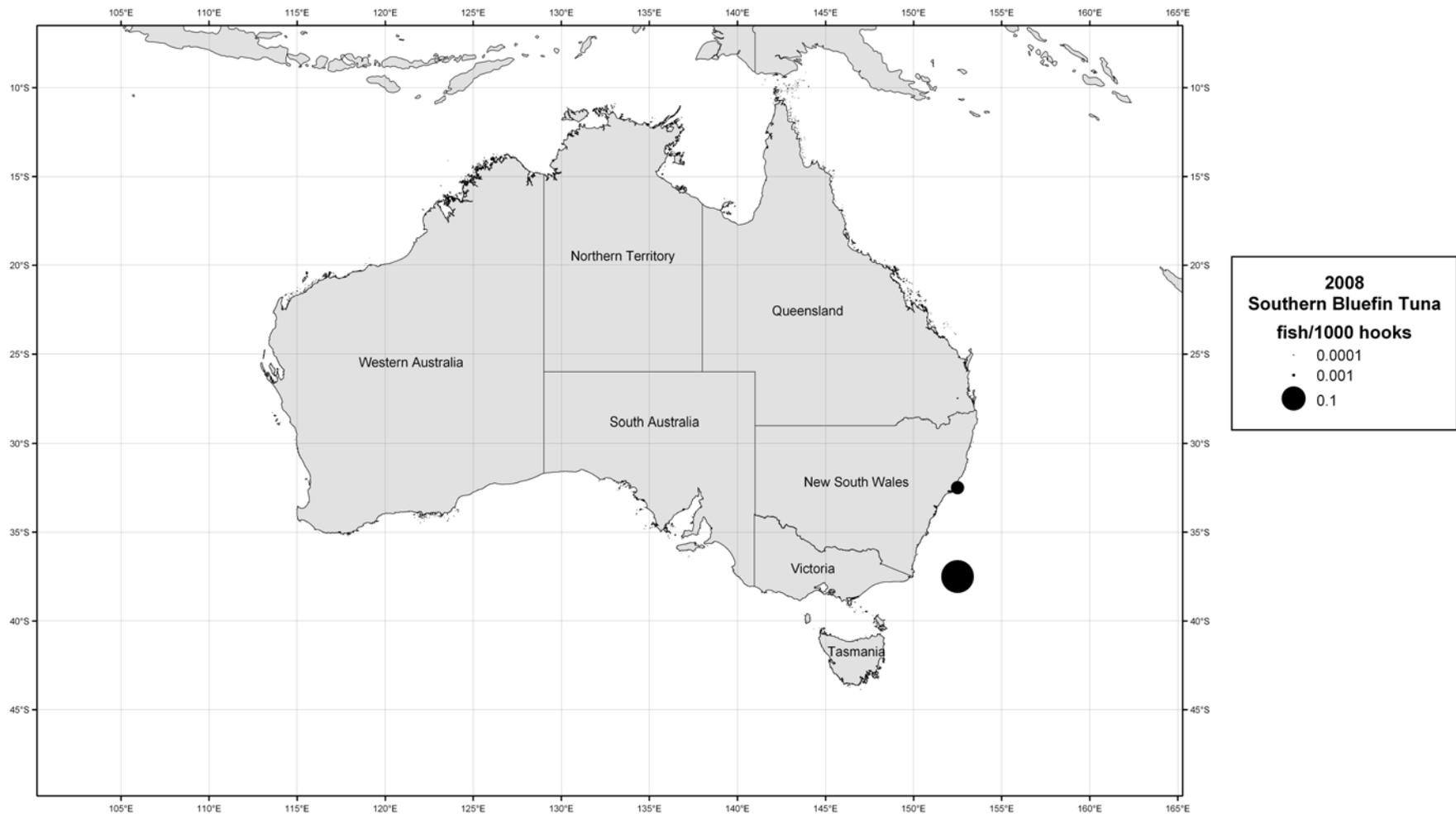
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Season	Estimated catch (t)	Actual catch (t)	Catcher vessels	Vessel search hours	Sets	No. 1° squares fished
1994–95	2179	2009	5	526	104	5
1995–96	2859	3442	6	631	89	11
1996–97	3134	2505	7	769	118	13
1997–98	3916	3629	7	671	143	8
1998–99	4418	4991	7	972	129	3
1999–00	4746	5131	8	764	107	5
2000–01	5100	5162	8	799	129	2
2001–02	5400	5234	7	1309	159	3
2002–03	5188	5375	7	1276	150	5
2003–04	5299	4874	6	1202	160	4
2004–05	5225	5215	8	1168	139	4
2005–06	5463	5302	7	1304	156	6
2006–07	5091	5230	6	1459	160	8
2007–08	4530	5211	7	1217	134	2
2008–09	4348	5015	7	1156	139	7

Note that the 2008–09 figures provide are preliminary as the season does not finish until end November 2009.

## Appendix 4. Nominal CPUE for all Australian longliners, 2007 and 2008 calendar years





## Appendix 5. Summary of observed catch and effort by year and sector

Country	Year	Sector	Observers Deployed	Sea Days	Sets/Tows Observed	Observed Vessels	Observed Effort (% , units)	Observed Catch (% , units)	Total Cost
Australia	2002–03	Purse Seine <sup>a</sup>	N/A	47	24		11% (sets)	11% (est. total weight)	60,000 (A\$)
Australia	2002–03	Towing <sup>a</sup>	N/A	19	1		2.6% (tows)		(included above)
Australia	2002	East Coast Longline	17	323	198		14.4% (hooks)	35.5% (no. retained catch)	NA
Australia	2002	West Coast Longline	N/A	N/A	N/A		N/A (hooks)	N/A (no. retained catch)	NA
Australia	2003–04	Purse Seine <sup>a</sup>	2	27	21		13% (sets)	12.8% (est. total weight)	60,000 (A\$)
Australia	2003–04	Towing <sup>a</sup>	2	30	2		5.6% (tows)		(included above)
Australia	2003	East Coast Longline	10	242	168		14.9% (hooks)	55.2% (no. retained catch)	303,000 (60,000 A\$ SBT component)
Australia	2003	West Coast Longline	4	72	54		2.0% (hooks)	4.5% (no. retained catch)	42,247 (A\$)
Australia	2004–05	Purse Seine <sup>a</sup>	2	36	15		11.2% (sets)	8.5% (est. total weight)	60,000 (A\$)
Australia	2004–05	Towing <sup>a</sup>	2	24	2		5.7% (tows)		(included above)
Australia	2004	East Coast Longline	11		68		11.7% (hooks)	5.4% (no. retained catch)	966,000 (150,000 A\$ SBT component)
Australia	2004	West Coast Longline			59		3.9% (hooks)	0% (no. retained catch)	57,384 (A\$)
Australia	2005–06	Purse Seine <sup>a</sup>	2	47	14		9.2% (sets)	10.1% (est. total weight)	78,000 (A\$)
Australia	2005	East Coast Longline	14		128		37.5% (hooks)	62.8% (no. retained catch)	723,289 (160,000 A\$ SBT component)
Australia	2005	<b>West Coast Longline</b>			<b>47</b>		<b>9.1% (hooks)</b>	<b>(no observed catch)</b>	<b>0</b>

Country	Year	Sector	Observers Deployed	Sea Days	Sets/Tows Observed	Observed Vessels	Observed Effort (% units)	Observed Catch (% units)	Total Cost
Australia	2006–07	Purse Seine <sup>a</sup>	2	50	9		5.6% (sets)	12.1% (est. total weight)	
Australia	2006–07	Towing <sup>a</sup>	2	41	2		6.5% (tows)		
Australia	2006	East Coast Longline	20		138		22.1% (hooks)	88.9% (no. retained catch)	
Australia	2006	West Coast Longline	1		8		17.4% (hooks)	(no observed catch)	
Australia	2007–08	Purse Seine <sup>a</sup>	2	19	16		11.8% (sets)	5.6% (est. total weight)	68,000 (A\$)
Australia	2007–08	Towing <sup>a</sup>	2	38	2		6.0% (tows)		(included above)
Australia	2007	East Coast Longline	17		156		30.2% (hooks)	23.2% (no. retained catch)	180,000 (A\$)
Australia	2007	West Coast Longline			10		1.9% (hooks)	No SBT caught	15,589 (A\$)
Australia	2008–09	Purse Seine	2	27	11 (fish retained) 8 (aborted)	3	7.9% (sets, fish retained)	15.3% (est. total weight)	77,215 (A\$)
Australia	2008–09	Towing	1	15	1	1	3.2% (tows)		(included above)
Australia	2008	East Coast Longline	31		676		47.9% (hooks)	34% (no. retained catch)	694,500 (A\$ - 08/09 fin year)
Australia	<b>2008</b>	<b>West Coast Longline</b>	<b>3</b>		<b>25</b>		<b>16.7%</b> (sets)	<b>No SBT caught</b>	<b>16,800 (A\$ - 08/09 fin year)</b>

<sup>a</sup>Australian purse seine and towing observer statistics are for the SBT fishing year December–November

## Appendix 6. Number of biological samples taken in observer programs (year and sector)

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Country	Year	Sector	Otoliths	Sex	Tags	Stomach contents	Length measurement
Australia	2002	Longline	0	124	165	0	300
Australia	2003	Longline	0	51	229	1	388
Australia	2004	Longline	5	62	0	5	187
Australia	2004–05	Purse seine	2	2	0	0	3
Australia	2005	Longline	63	189	19	12	264
Australia	2005–06	Purse seine	46	46	0	0	23
Australia	2006	Longline	0	4	1	0	32
Australia	2006–07	Purse seine	9	17	0	16	19
Australia	2007	Longline	9	41	0	0	42
Australia	2007–08	Purse seine	4	4	0	0	4
Australia	2008	Longline	0	84	0	1	99
<b>Australia</b>	<b>2008–09</b>	<b>Purse seine</b>	<b>14</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>14</b>

# Attachment 1: An overview of the Australian southern bluefin tuna observer program

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## Observer sources and training

The Australian Fisheries Management Authority (AFMA) has recruited and trained observers since its establishment in 1992. Approximately 20 observers are currently employed in the AFMA observer program. They are sourced from universities and the maritime industries from around Australia and require the ability to live and work at sea, have demonstrated experience in collecting biological data at sea, and have experience in fisheries research methodologies and collection of associated scientific data. Observers also hold marine radio operators certificate of proficiency (or similar qualifications and/or experience), a sea safety certificate and medical certificate, and have completed an AFMA observer training course.

In 2009, in addition to the independent AFMA observers, an international observer from South Africa (Capricorn Fisheries Monitoring) was deployed for one trip. This was the same international observer that was used in 2008.

## Summary

### Purse seine fishery—Great Australian Bight 2008–09

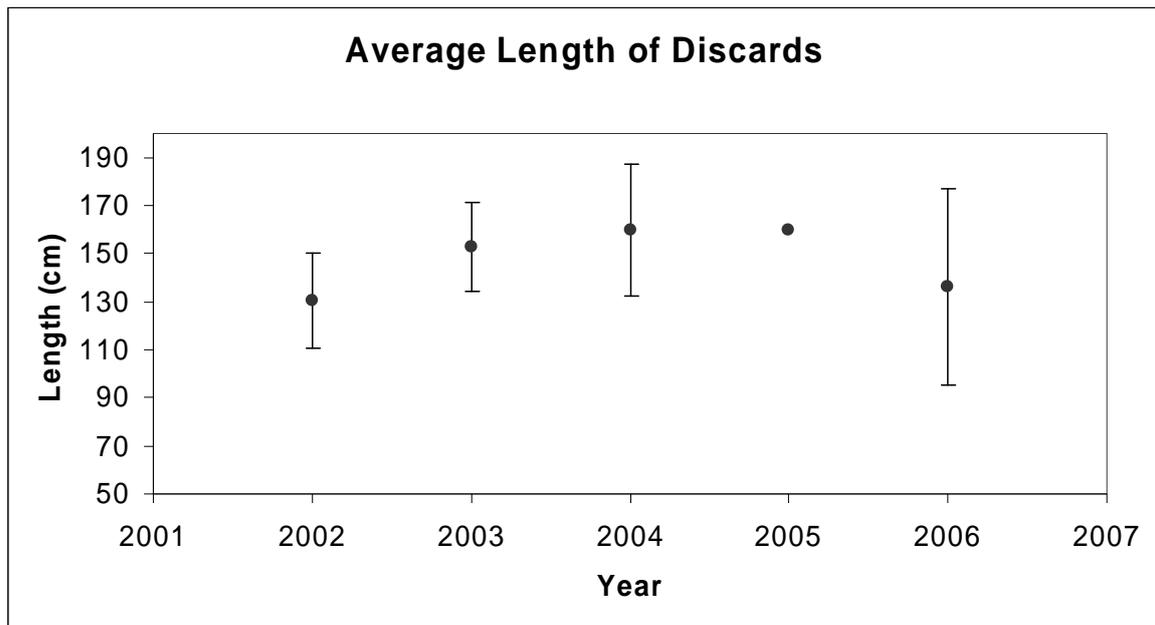
The purse seine observer program for the 2008–09 Australian SBT fishing season monitored fishing and tow operations in 33°20'–33°30'S and 131°57'–132°58'E in December 2008 and January, February, March and April 2009. One Australian and one South African observer monitored 11 purse seine sets where fish were retained and eight sets that were aborted and fish were released alive. This represents 7.9% of the total sets in which fish were taken in 2008–09. From these observations an estimated 667 t of SBT were caught during observed sets, representing 15.3% of the estimated tonnage caught for the 2008–09 season.

One observer also monitored and recorded SBT mortalities on a towing operation.

### Longline fishery

In 2008, in the Eastern Tuna and Billfish Fishery (ETBF), south of 30°S and during May to September (where SBT are usually caught), 31 observers monitored 404 000 hooks of a total of 844 000, representing 47.9% observer coverage of longline effort. For the fishery as a whole, 11.4% of hooks were observed in the fishing season. The total catch number of SBT caught while observers were on board was 486 of which 102 were retained, 384 were discarded (375 of which were released alive) and none were tagged. Individual retained fish ranged from 62–230 cm in length. The size distribution of the discarded ETBF longline catch of SBT from 2002 to 2006 is shown in Figure 1. ETBF logbooks for 2008 showed 19.0 t (434 fish) of SBT were retained in the ETBF and 331 (43.3%) were discarded. Note that Catch Disposal Records for 2008 reported 300 SBT retained and landed in the ETBF; misidentification of SBT in logbooks possibly accounts for this discrepancy.

In 2008, 16.7% of operations were observed in the Western Tuna and Billfish Fishery (WTBF). Only one vessel participated in this fishery in 2008, and no SBT were observed caught.



**Figure 1.** Average length of observed discards by year for 2002 to 2006 in the Eastern Tuna and Billfish Fishery (n = 30 for 2002, n = 13 for 2003, n = 28 for 2004, n = 1 for 2005 and n = 15 for 2006, total not recorded = 480)

## Scientific observer program design and coverage

The target coverage for the SBT purse seine fleet operating out of Port Lincoln is 10% of the total catch and effort for the fishery and 100% of all operations while an observer is on board. Most of the Australian SBT purse seine effort has historically taken place in an area between 33–35°S and between 131–133°E.

Observers in the purse seine fishery in the 2008–09 quota year spent 48 days at sea, and observed purse seiner activities for 27 days and tow activities for 15 days. The remainder of the days were spent in transit.

Typically, less than 7% of total effort in the purse seine sector of the Australian SBT fishery occurs in December; hence, AFMA decided not to conduct observations in that month on the basis that such coverage is not cost-effective or representative of the period when most of the catch occurs.

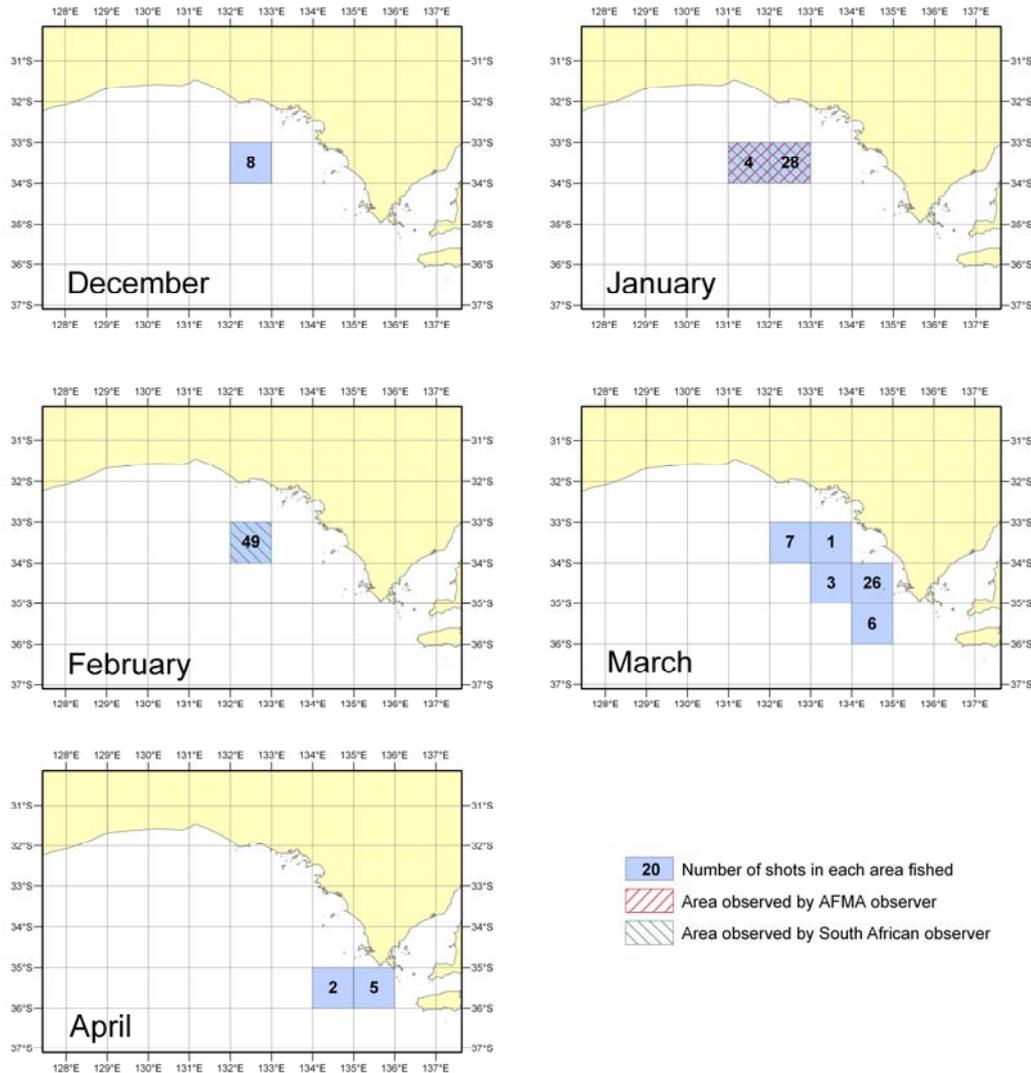
## Observer data

### Effort data

In 2009, observers monitored 11 purse seine sets where fish were retained, and eight sets that were aborted and fish released alive because they were too small or because the catch contained mixed species (SBT and skipjack tuna, *Katsuwonus pelamis*). Fishing operations observed in the purse seine sector were based in the Great Australian Bight area between 33°20'–33°30'S and 131°57'–132°58'E (see Figure 2). The observed sets where fish were retained represent 7.9% of all sets in the fishery where fish were retained for the 2008–09 quota year.

Data were gathered on vessel characteristics, fishing gear and equipment. Comprehensive operational and environmental information were recorded for each set that occurred while the observer was on board. This included information on searching, chumming, setting and hauling activities. Information on chumming operations by the fishing vessel and associated chumming

vessels was also recorded. In addition, observers recorded information on the movement of some spotter aircraft and their time in the area preceding sets.



**Figure 2.** The number of sets recorded in the SBT purse-seine fishery from December 2008 to April 2009. The hatching represents areas where observations took place

Two tows were observed and data collected on the number of SBT mortalities, the date they occurred and whether they were retained or discarded. Data were also collected on:

- Towing methods
- Average towing speed
- Cage number and diameter
- Maximum cage depth
- Average weight of SBT transferred
- Estimated number of SBT
- Methods of counting and verifying fish counts

## Catch data

Observers recorded catch composition and fate of target and bycatch species where possible during all observed sets. The time at start and end of observation, the observed catch in estimated number and estimated weight for SBT and all other species were recorded where possible.

Because fish are taken alive for ranching purposes in the purse seine sector, it is not possible to obtain actual weight or length information at the time of catching the SBT. Consequently, both catch data and observed catch data are estimates only and these are reported below.

In total, an estimated 667 t of SBT were caught during observed sets. This observed catch accounted for 15.3% of the total estimated catch of 4348 t. The actual tonnage caught by purse-seine vessels in 2008–09 of 5015 t.

Observers monitored and made records of bycatch species where possible during all sets. Bycatch data were collected from visual observation of the catch before transfer to tow cages and through observation of any species meshed during hauling of the purse seine net. In 2008–09, observers reported a small non-target catch of skipjack tuna and leatherjackets (Monacanthidae).

## Length frequency data

It is not possible for onboard observers to obtain length measurements for the live SBT catch, but observers are required to take biological samples from all SBT mortalities. During purse seine operations, the observers recorded 17 SBT mortalities of which 11 were sampled (caudal fork lengths [LCF] 102 to 148 cm). During towing operations, the observer recorded 9 SBT mortalities of which 3 were sampled (LCF of these fish were 108 to 113 cm).

## Biological data

Otoliths were obtained from all sampled mortalities in the purse seine operations and tow operations. There is also an ongoing project to collect otoliths from ranch mortalities.

Weight samples were obtained for all SBT mortalities observed. The average weight for the 11 mortalities sampled by the observers during purse seine operations was 27.4 kg. The average weight for the 3 mortalities observed during towing operations was 24.7 kg.

## Tag return monitoring

There were no tagged SBT reported by the observers.

## Conclusions

Eleven purse seine sets, representing 7.9% of the total sets in which fish were retained during 2008–09 were observed. Reports, observations and data collected by the Australian and overseas observers did not reveal significant differences between the activities or results reported by the two observers. Observer coverage of longline effort in the ETBF was 47.9% of hooks, while 16.7% of sets were observed in the WTBF.

## References

- Hobsbawn, P.I., Phillips, K. and Begg, G. 2008. Australia's 2007–08 Southern Bluefin Tuna Fishing Season. Working Paper CCSBT-ESC/0909/SBT Fisheries-Australia, fourteenth meeting of the Scientific Committee of the Commission for the Conservation of Southern Bluefin Tuna, Busan, Korea, September 2009.