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AUSTRALIA'S 2003–04
SOUTHERN BLUEFIN TUNA FISHING SEASON

by

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Abstract

The 2005 Season Report summarises catches and fishing activities in the Australian Southern Bluefin Tuna Fishery up to and including the 2003–04 quota year and some preliminary results for the 2004–05 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.

A total of 55 commercial fishing vessels landed SBT in Australian waters in 2003–04. 95.2% of the catch was taken by purse seine with the remainder taken by longline. Six purse seiners fished during the 2003–04 quota year, but live bait, pontoon-towing and feeding vessels were also involved. Purse seine fishing commenced in early December 2003 and finished in late March 2004.

The 2003–04 quota year catch was 5120 t compared with the previous quota year catch of 5391 t. The 2003–04 catch is under the previously agreed national allocation to Australia to account for an over-catch of 128 t in the 2002–03 season taken by two quota holders. This was dealt with by deducting the over-catch from their 2003–04 allocation. Length frequency data from the purse seine fishery for the 2003–04 and 2004–05 seasons shows a shift to smaller fish. Australian industry attributes this shift to mixing of two- and three-year-old fish in recent seasons, low prices and weather.

In the 2004–05 quota year, observers monitored 11% of purse seine sets and 8.5% of the estimated SBT catch. In 2004, observers also monitored 11.7% of longline sets in the Eastern Tuna and Billfish Fishery during the months and in the areas of the SBT migration through that fishery. Observers monitored 4.5% of longline sets in the entire Southern and Western Tuna and Billfish Fishery.

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1. Introduction

This report summarises catches and fishing activities in the 2003–04 quota year[1] of the Australian Southern Bluefin Tuna (*Thunnus maccoyii*; SBT) Fishery. It also provides preliminary data on the 2004–05 surface fishery and a summary of the history of the Australian SBT Fishery. Caton *et al.* (1995) provides 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, South Australia and, later (1970), Western Australia. 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 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 'farming' 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 global TAC within the CCSBT. Caton and Ward (1996) provide 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 2003 and 2004 calendar years were 5827 t and 5062 t, respectively. The 2003 calendar year catch is larger than the previously agreed national allocation to Australia of 5265 t because it represents the aggregation of catches from periods in two quota years. The 2002–03 quota year catch was 5391 t while the catch for the 2003–04 quota year was 5120 t. The 2003–04 figure is under the previously agreed national allocation to Australia because in the 2002–03 season two quota holders caught over their allocation. This was dealt with by deducting the over catch from their 2003–04 allocation. Adding this overcatch of 128 t to the 2003–04 quota year catch gives a figure of 5248 t, which is under the agreed national allocation to Australia.

[1] 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.

Quota Year	Western Australia				South Australia				New South Wales			Tasmania			Large Longliners			Australia Total				Total All Gears
	Albany Pole	Esperance Pole	Long-line	**Total**	Pole & Purse Seine	Farm Cages	Long-line	**Total**	Pole & Purse Seine	Long-line	**Total**	Troll	Long-line	**Total**	Aust. Charter	Joint-venture	**Total**	Domestic Surface	Domestic Long-line	Total Long-line	RTMP	
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	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	0	916	3488	^0	4403	~0	475	475	!0	219	219	0	0	0	4433	664	664	0	5097
1998–99	0	0	^0	0	28	4991	^0	5018	~0	97	97	!0	116	116	0	0	0	5016	216	216	0	5232
1999–00	0	0	^0	0	0	5130	13	5143	0	114	114	0	!0	0	0	0	0	5130	127	127	0	5257
2000–01	0	0	^0	0	0	5162	6	5168	0	32	32	0	!0	0	0	0	0	5162	38	38	0	5247
2001–02	0	0	7	7	0	5234	0	5234	0	*22	*22	0	!0	0	0	0	0	5234	29	29	0	5262
2002–03	0	0	≈0	0	0	5375	0	5375	0	17	17	0	0	0	0	0	0	5375	17	17	0	5391
2003–04	0	0	≈0	0	‡0	4874	†0	4874	0	*226	*226	0	20	0	0	0	0	4874	247	247	0	5120

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

^ 1997-98 and 1998-99 WA and SA non-farm 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.

~ 1997-98 to 1998-99 NSW pole and purse seine catches are included in NSW longline catch due to confidentiality guidelines.

! 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.

* 2001-02 and 2003-04 NSW longline catch also includes QLD longline catch due to confidentiality guidelines.

≈ 2002-03 and 2003-04 WA longline catch is included in NSW longline due to confidentiality guidelines.

† 2003-04 SA longline catch is included in NSW longline due to confidentiality guidelines.

‡ 2003-04 additional SA purse seine catch that did not go into farm cages is included in SA farm cages catch due to confidentiality guidelines.

Table 1: Australian Catch by Gear and State for Quota Years 1988–89 to 2003–04

Figure 1: Australian SBT Catch in 2003

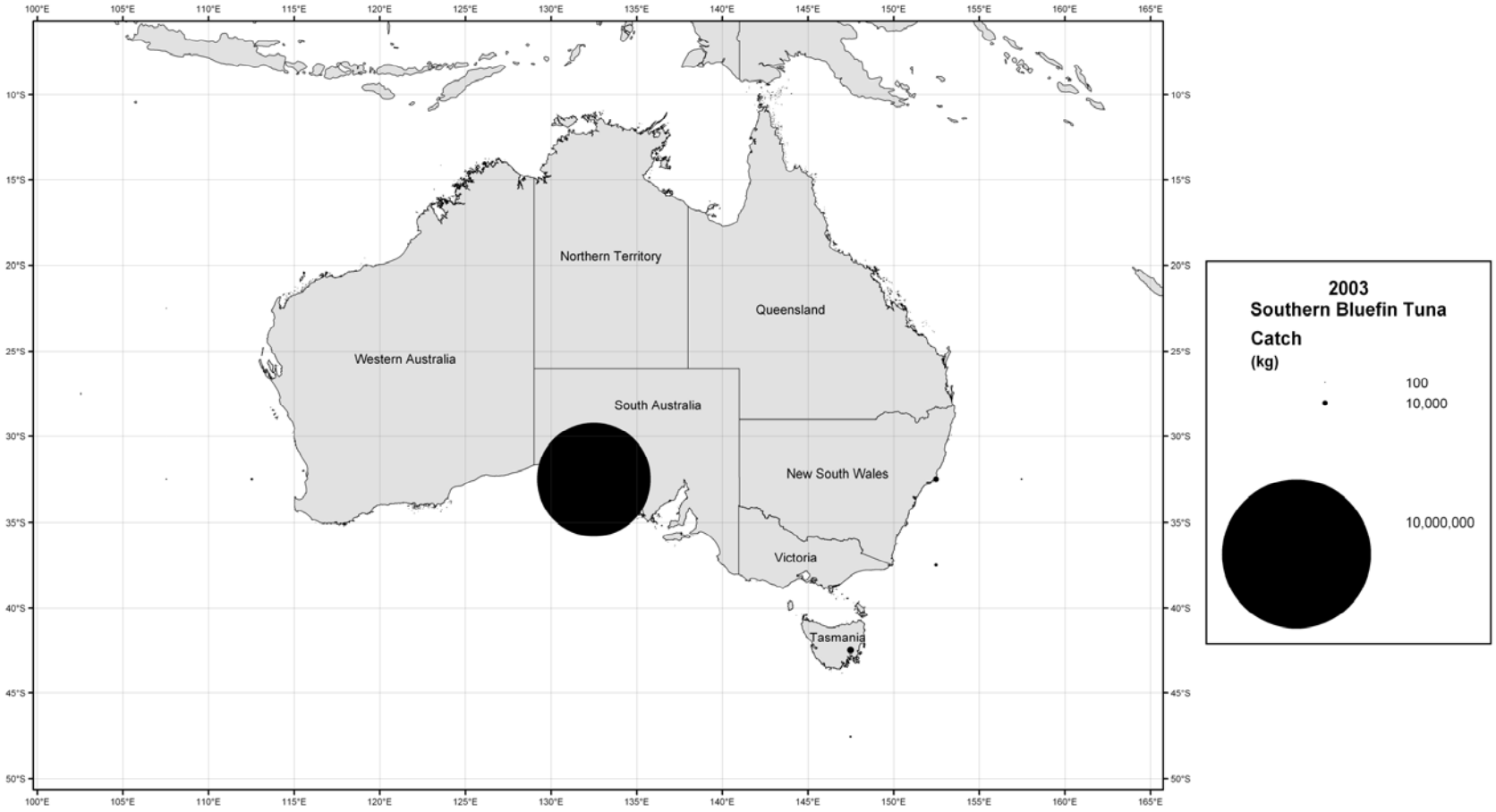
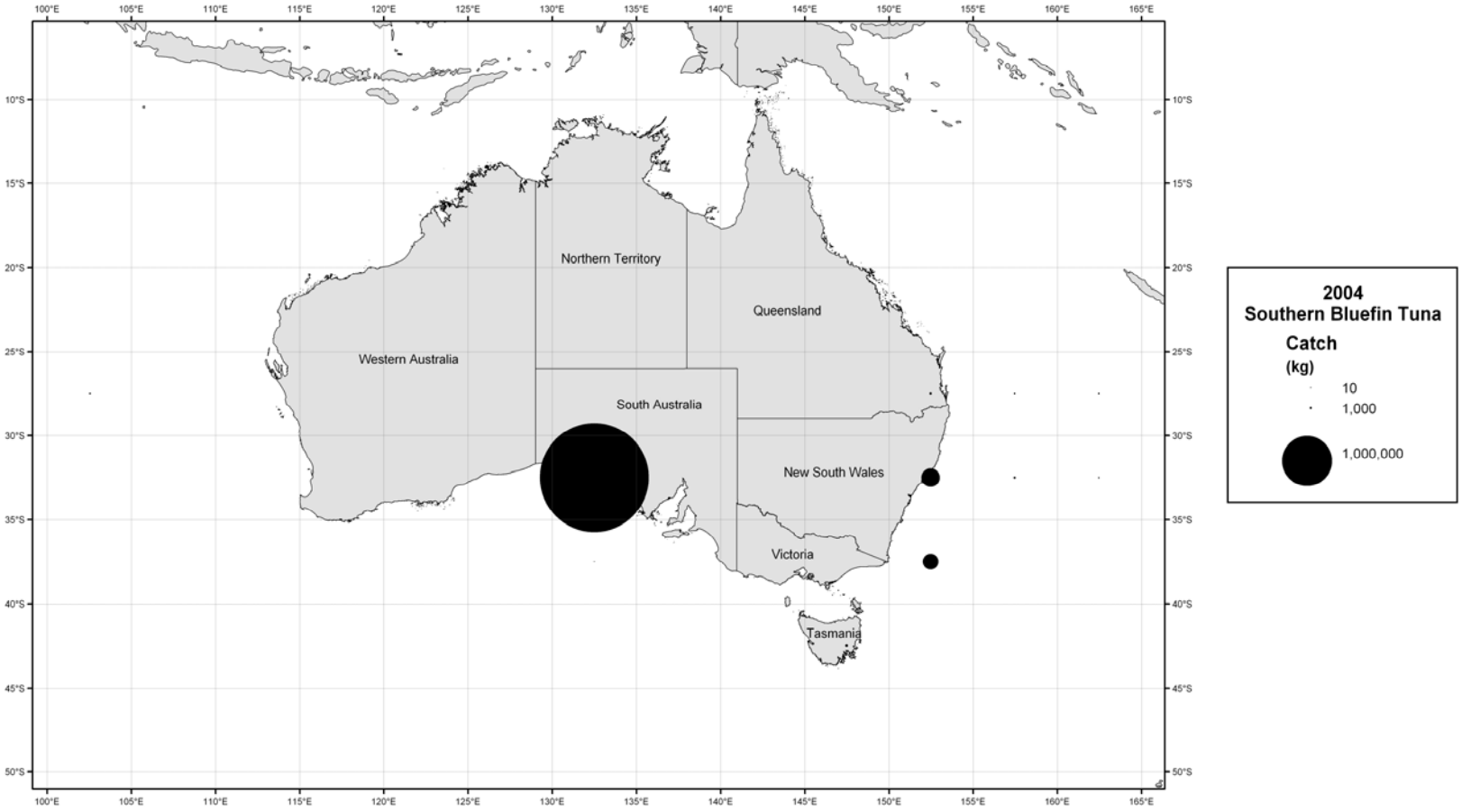


Figure 2: Australian SBT Catch in 2004



2. Catch and effort

In 2003–04, 95.2% 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 2003–04 is shown in Table 1. Catch by season with vessel number and search hours is at Appendix 3. The Australian catch of SBT for the calendar years 2003 and 2004 is mapped in Figure 1 and Figure 2 respectively.

3. Nominal CPUE

Catch-per-unit-effort (CPUE) indices are not readily applicable for the Australian SBT Fishery. The farm operations use purse seines to catch SBT, with assistance from former pole-and-line vessels as bait boats and the support of spotter planes. This makes it impossible to calculate a reasonable measure of nominal effort.

Australian longliners generally target more than one species in the 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.

4. Size composition

In the South Australian surface fishery there has been reduced competition for SBT among fishers following the introduction of individual transferable quotas. Since the late 1980s the fishery has avoided the very small (<80cm) 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 farm component of the fishery increased in the 1990's the average length has decreased. This is primarily due to selective targeting on schools to catch the best size fish for the farm, rather than an indication of decreased availability of large SBT (Table 2).

Table 2. Average fork length (cm) of SBT landed in each Australian state, 1989 to 2004.

Calendar Year	*Western Australia	*South Australia	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	–

* Lengths are reported by calendar year, except for Western Australia and South Australia, which are by financial year (e.g. 1999 represents the financial year 1998–99) to cover the summer season

Length frequency data from the purse seine fishery for the 2003–04 and 2004–05 seasons shows a marked shift to smaller fish. Australian industry attributes this shift to a range of factors including mixing of two- and three-year-old fish in recent seasons, low prices prompting fishers to reduce search time to reduce costs, and some weather constraints in 2003–04.

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 catch was dominated by longlining operations that tend to target the 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.

In recent years it is debatable whether an analysis of average lengths in the longline fishery is meaningful. This is due to the small numbers of fish now caught in the WA, NSW and TAS components of the Australian SBT fishery and changes in fishing operations (Figure 4).

The percentage representation by length in the winter catches of Japanese longliners off eastern Tasmania from 1988 to 1997 shows substantial changes (Figure 5). Initially there were two groups representing a group of pre-adults (<130 cm) and older adult SBT (>150 cm). Progressive increase in 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 is 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 had been 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 is apparent as reduced presence first of SBT <105 cm in 1994, then of SBT <120 cm in 1995, and subsequently of 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 has depended upon small SBT) in 1996 and 1997.

In 1997, the troll fishery results were poor and, for the fourth successive year, 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 their representation in 1996. In the absence of Japanese and joint-venture longline operations in the AFZ in 1998, no subsequent comparison is possible.

While the successive reduction in small SBT representation 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 does not appear to have been associated with any change in fishing or reporting practices. Since about 1994, the Japan Tuna Federation apparently instructed all Japanese longliners to return SBT less than 25 kg to the sea, reportedly to protect small SBT.

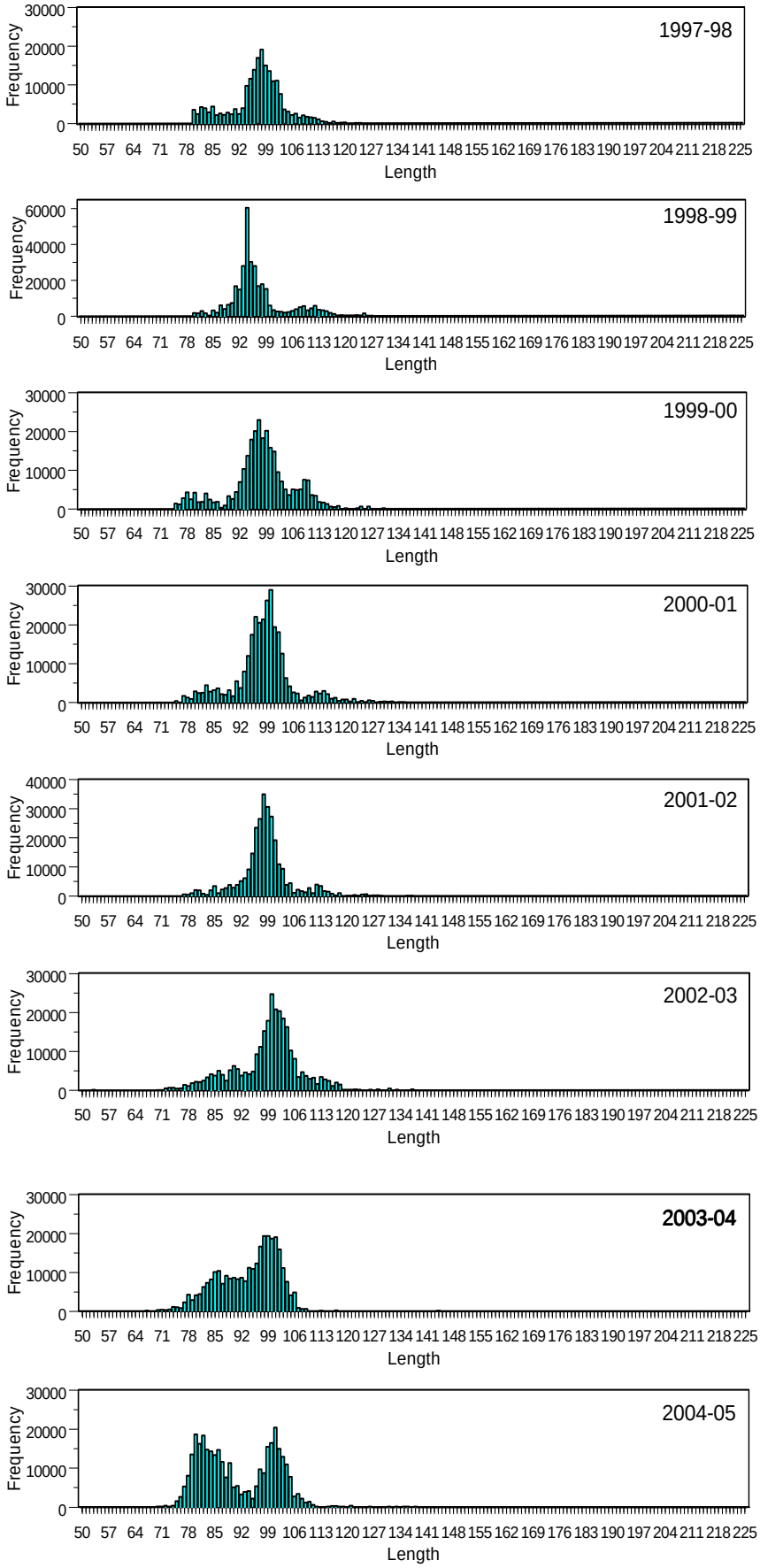


Figure 3: Length frequency of SBT purse seine catch in Australian waters raised to total catch, 1997–98 to 2004–05 quota years.

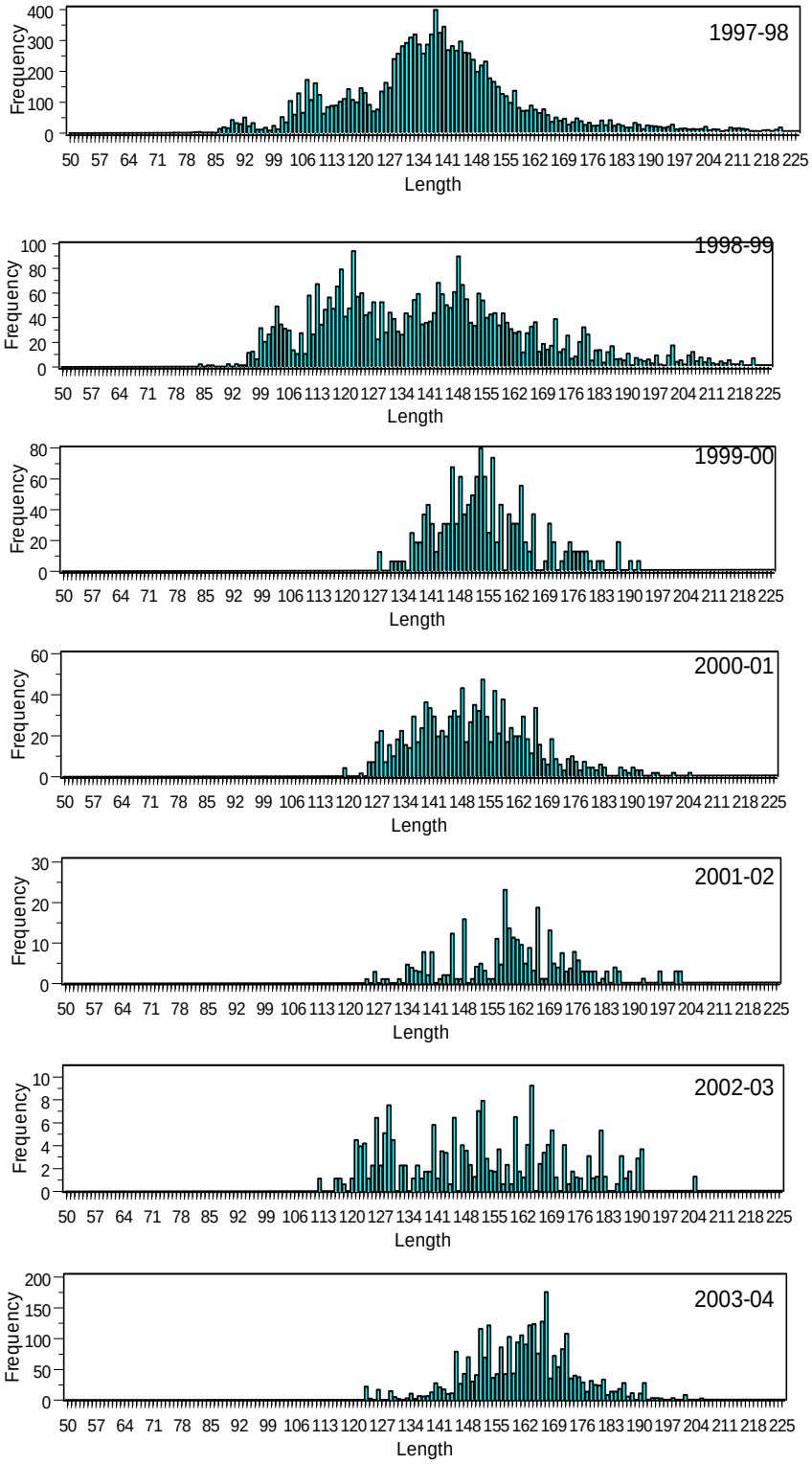


Figure 4: Length frequency histograms for retained SBT longline catch in Australian waters raised to total catch, 1997–98 to 2003–04 quota years.

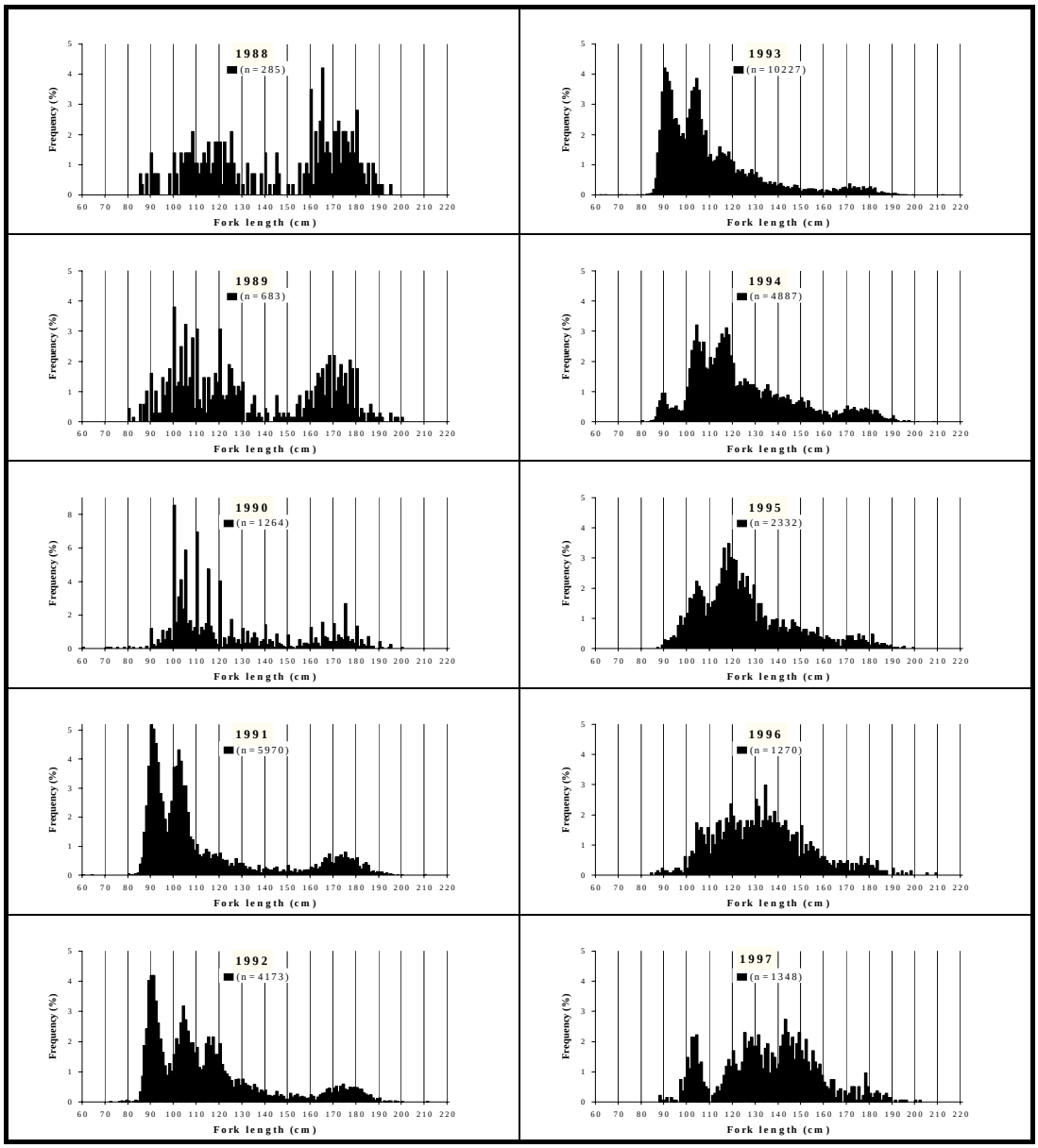


Figure 5: Length frequency of SBT measured by Australian observers on Japanese longliners fishing in the Tasmania region, 1988 to 1997. The data include small SBT tagged and released by observers.

5. Fleet size and distribution

In 2003–04, a total of 55 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 six purse seiners during the 2003–04 quota year, but various live bait, pontoon-towing and feeding vessels were also involved. Some older fish were also caught. Fishing commenced in early December 2003 and finished in late March 2004.

Western Australia

Two longliners caught SBT off the WA coastline in 2003–04. For confidentiality reasons all catches are incorporated in the NSW longline catch. Longline fishing in WA commenced in March 2004 and finished in December 2004.

New South Wales

During 2003–04, 40 domestic longliners participated at some time in the area of the fishery for older juveniles and adults in deeper waters off NSW. Longline fishing off NSW commenced in May 2004 and finished in September 2004.

Tasmania

Nine longliners caught SBT off south-eastern Tasmania between late November 2003 and early January 2004.

Queensland

Four longliners caught SBT off the coast of south-eastern Queensland between July and September 2004. For confidentiality reasons, Queensland catches are incorporated in the NSW longline catch.

6. Other relevant information

6.1 Recreational catch

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

Table 3. Tag releases by Australian recreational fishers, 1990 to 2004 (Source: NSW Fisheries).

	Percentage of total releases					No. of
Year	Tas	NSW	SA	Vic	WA	Releases
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**

Overall the data available on recreational catch of SBT is poor but an initial review revealed high year-to-year variability in catches and the locations in which SBT were taken. For the past ten years, indicative estimates of annual recreational catches ranged between 3 and 85 tonnes 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. Over the next twelve months Australia will work to improve these estimates including estimates for the period prior to 1994.

While there are insufficient data at present to quantify the total recreational catches of SBT for 2003–04 and 2004–05, high spatial catch variability was evident from anecdotal reports. 2003–04 was a good season for recreational SBT catches, especially

around Pedra Branca, south of Tasmania. 2004–05 was a good season in South Australia but poor elsewhere, especially in Tasmania where the annual southern bluefin tuna tournament produced very disappointing catches of SBT (i.e. no SBT were caught) .

Table 4. Indicative estimates of recreational catch (toones) by Australian recreational fishers, 1994 to 2004 (Source: NSW Fisheries).

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

6.2 Discards in the Commercial Fishery

During the 2003–04 and 2004–05 seasons, no discarding of SBT was observed or reported in logbooks collected in the purse seine fishery in the Great Australian Bight.

In 2004, AFMA observers monitored longline operations in the Eastern Tuna and Billfish Fishery during the months and areas in which SBT are most likely to be taken incidentally (i.e. south of 30^{o}S from May to September). Observer data showed that 61% of longlined 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^{o}S was only 10%. In response to this new information the Australian Fisheries Management Authority has implemented tighter access controls and implemented 100% observer coverage for the 2005 season.

Over 2004 and 2005, BRS observers monitored longline operations in the Southern and Western Tuna and Billfish Fishery. 100% of all SBT hooked were discarded during observed operations but it should be noted that levels of effort in this fishery are very low at present (i.e. only 1 or 2 vessels are operating).

Further details on discarding are provided in Attachment 1.

Appendix 1: SBT Season Dates 1988–89 to 2004–05

Quota Year	Start Date	End Date
1988–89	1 October 1988	30 September 1989
1989–90	1 October 1989	30 September 1990
1990–91	1 October 1990	30 September 1991
1991–92	1 October 1991	31 October 1992
1992–93	1 November 1992	31 October 1993
1993–94	1 November 1993	31 October 1994
1994–95	1 November 1994	15 December 1995
1995–96	16 December 1995	15 December 1996
1996–97	16 December 1996	30 November 1997
1997–98	1 December 1997	30 November 1998
1998–99	1 December 1998	30 November 1999
1999–00	1 December 1999	30 November 2000
2000–01	1 December 2000	30 November 2001
2001–02	1 December 2001	30 November 2002
2002–03	1 December 2002	30 November 2003
2003–04	1 December 2003	30 November 2004
2004–05	1 December 2004	30 November 2005

Appendix 2: Purse Seine Fishing Duration

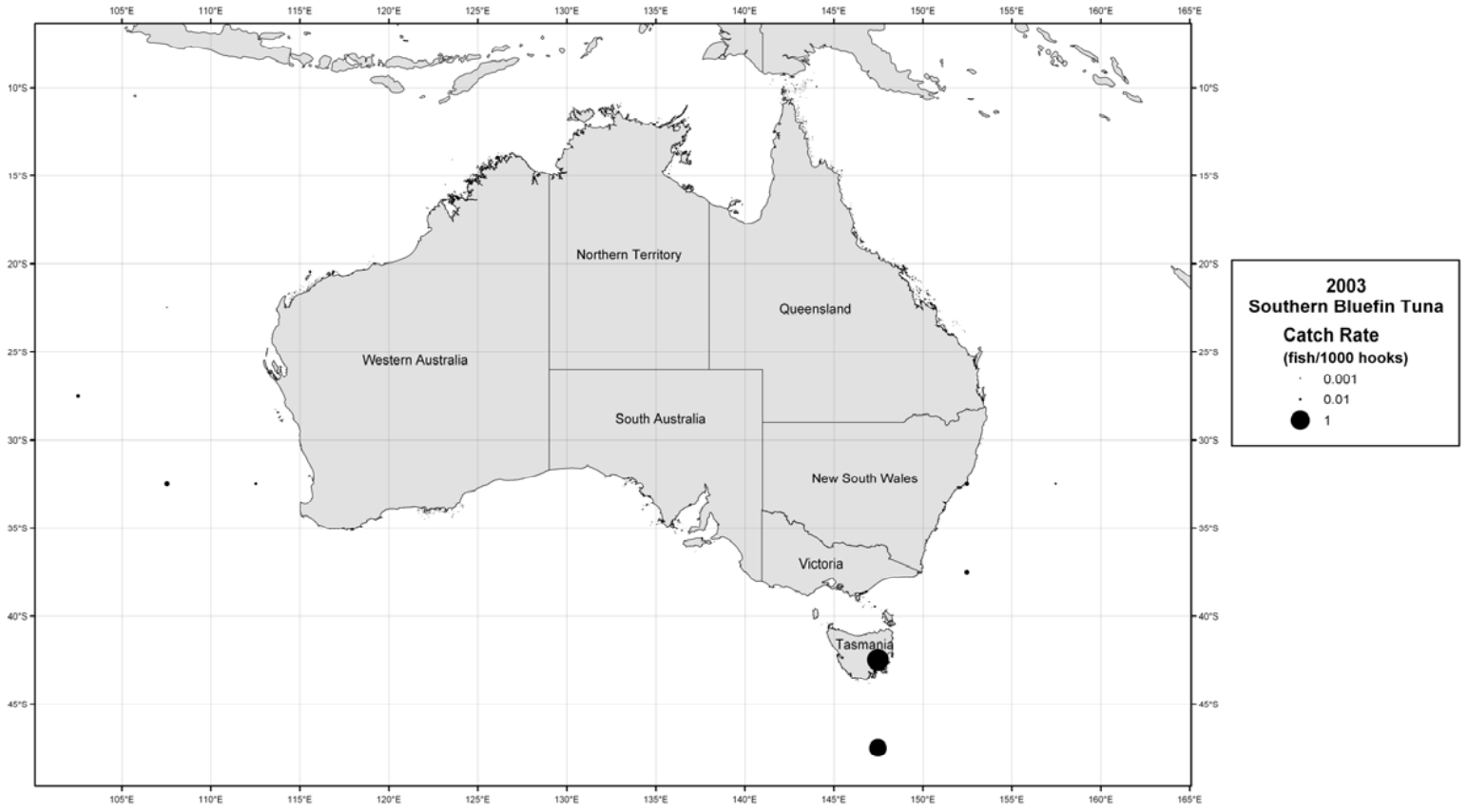
Season	1st Day	50%	75%	90%	Last Day	Duration
1993-94	18	82	96	107	144	126
1994-95	5	71	102	123	140	135
1995-96	11	79	91	114	146	135
1996-97	1	79	96	108	121	120
1997-98	18	65	83	95	108	90
1998-99	1	51	74	79	112	111
1999-00	3	48	64	76	117	114
2000-01	3	67	79	84	151	148
2001-02	8	60	74	79	120	112
2002-03	10	59	81	96	115	105
2003-04	8	65	86	101	117	109
2004-05*	4	60	82	97	118	114

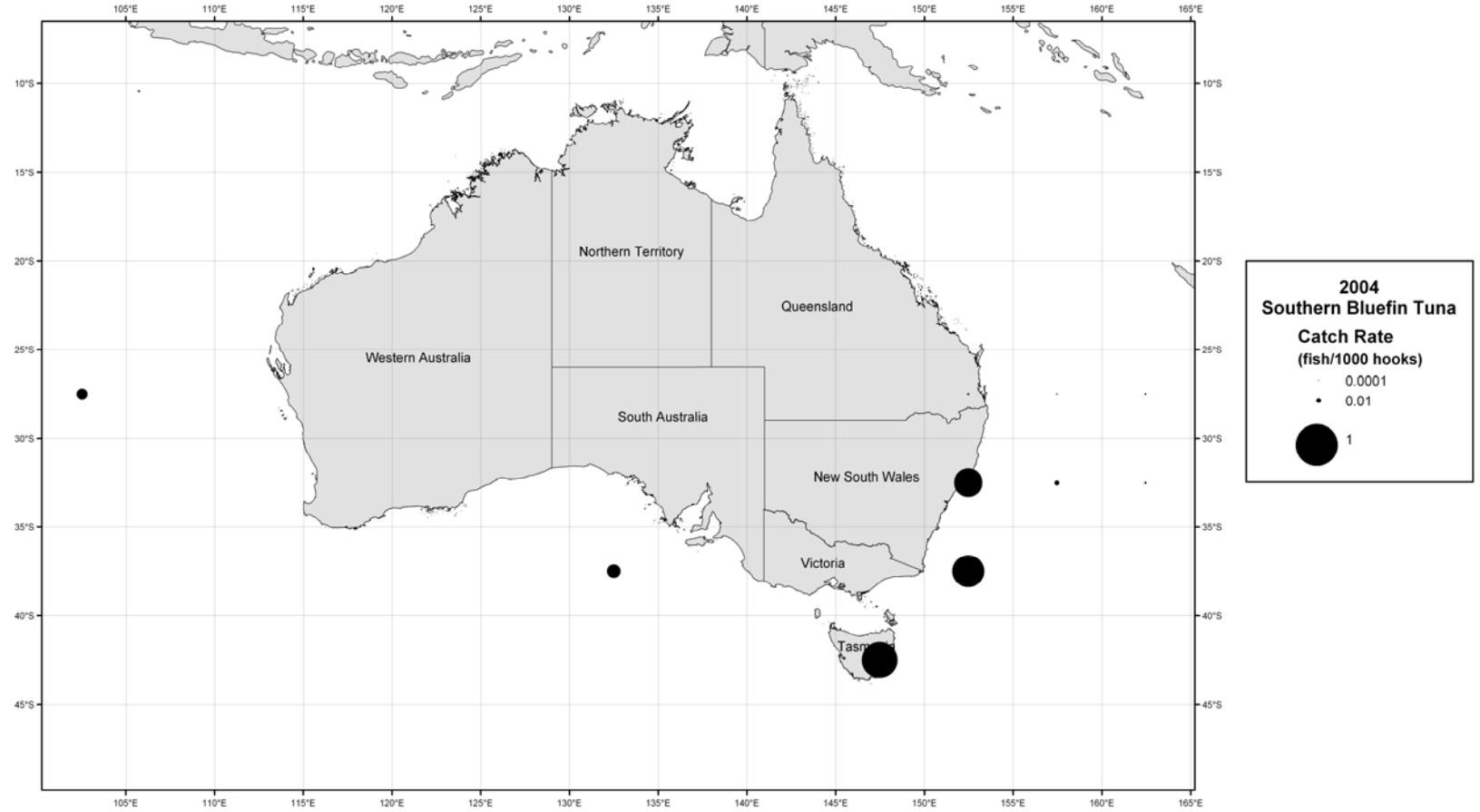
'1st Day' = Day of First Capture, '50%' etc denote the day of the season on which that percentage of the catch had been taken, 'Last Day' = the Day of Last Capture.

Appendix 3: Australian Surface Catch by Season 1994–95 to 2004–05

Season	Estimated Catch	Catch (tonnes)	Boats	Vessel search hrs	Sets	1^o sqs 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

Appendix 4: Nominal CPUE for all Australian longliners in 2003 and 2004




105°E
110°E
115°E
120°E
125°E
130°E
135°E
140°E
145°E
150°E
155°E
160°E
165°E
10°S
15°S
20°S
25°S
30°S
35°S
40°S
45°S
Northern Territory
Queensland
Western Australia
South Australia
New South Wales
Victoria
2004
Southern Bluefin Tuna
Catch Rate
(fish/1000 hooks)
0.0001
0.01
1

Attachment 1

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AN OVERVIEW OF

THE AUSTRALIAN SOUTHERN BLUEFIN TUNA OBSERVER PROGRAMME 2005

Observer Sources and Training

The Australian Fisheries Management Authority has recruited and trained observers since its establishment in 1992. Approximately 23 observers are currently employed in the AFMA observer programme. They are sourced from universities 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 experience), a sea safety certificate and medical certificate, and have completed an AFMA observer training course.

In 2005, in addition to an independent AFMA observer, BRS engaged a contract observer from the USA (North-West Observers) for one trip. Successful observations and data collection were achieved by both the AFMA and the US observers. However, the US observer reported that some operational aspects of his deployment were made difficult due to his lack of experience in the fishery.

Summary

Purse Seine Fishery – Great Australian Bight 2004–05

The purse seine observer programme for the 2004–05 Australian SBT fishing season monitored fishing and tow operations between 33 and 34^{o}S and 132 and 133^{o}E in January and February 2005. One Australian and one American observer monitored 15 purse seine sets representing 11% of the total sets in which fish were taken in 2004–05. From these observations an estimated 443 tonnes of SBT were caught during observed sets representing 8.5% of the estimated tonnage caught for the 2004–05 season. Observers also monitored and recorded SBT mortalities on two towing operations. Observer coverage on purse seine vessels was limited to January hence the data is not necessarily representative of the entire fleet over the December to April purse seine fishing season.

Longline Fishery

The 2004 observer programme for the Eastern Tuna and Billfish Fishery (ETBF) south of 30º S commenced in May and concluded in September, the months in which SBT are usually caught. In those months 11 observers monitored 183 thousand hooks of a season total of 1.57 million (May-Sept, south of 30^{o}S), representing 11.7% observer coverage of longline effort. The total catch number of SBT caught while observers were on board was 355 of which 137 were retained, 215 (61%) were discarded and 3 escaped. The total retained weight of SBT observed was 14,446 kg and individual retained fish ranged from 97–200 kg in whole weight. The size distribution of the discarded ETBF longline catch of SBT from 2002 to 2004 is shown in Figure 1. In contrast to observer data, ETBF logbooks for 2004 showed 423 tonnes (2778 fish) of SBT were retained in the ETBF fishery and only 279 (10%) were discarded.

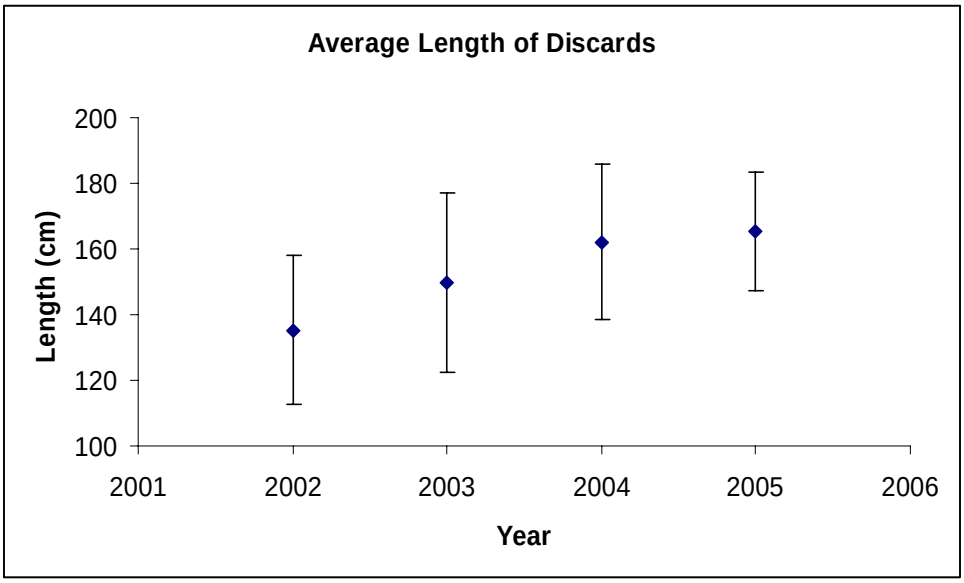

Figure 1: Average length of observed discards by year for 2002 to 2005 in the Eastern Tuna and Billfish Fishery (n=95, not recorded = 435)

In the Southern and Western Tuna and Billfish Fishery, eight voyages and 59 sets out of a season total of 1321 were observed for a total catch of 31 SBT with a weight range of 152–186 kg. Observer coverage of hook sets for the whole season was 4.5%. No SBT were retained during observed longline operations in the SWTBF and observers reported about half were alive when the longlines were retrieved. According to logbook data, four SBT with an estimated total weight of 386 kg were retained during the 2003–04 season.

Scientific Observer Programme 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 to 35^{o}S and between 131 and 133^{o}E. In addition to the target 10% observer coverage of catch and effort by SBT purse seine vessels, observers monitored two tows in 2005, representing about 5% of all tows.

Observers in the purse seine fishery in 2005 spent 60 days at sea and observed fishing operations for 12 days and tow operations for 24 days. The remainder of their time in the fishery was spent positioning, steaming and searching, or was lost to bad weather.

Typically, less than 7% of total effort in the purse seine sector of the Australian SBT fishery occurs in December and hence AFMA decided not to conduct observations in that month on the basis that such coverage is not cost-effective. The initial intention was to have one observer randomly assigned to the operation of several vessels during the months of January and February, as the majority of fishing effort typically occurs in those months. However due to crewing and other vessel issues raised by the industry, all observations of purse seine fishing in 2005 took place in January, with tow operations observed in February and March (Figure 2).

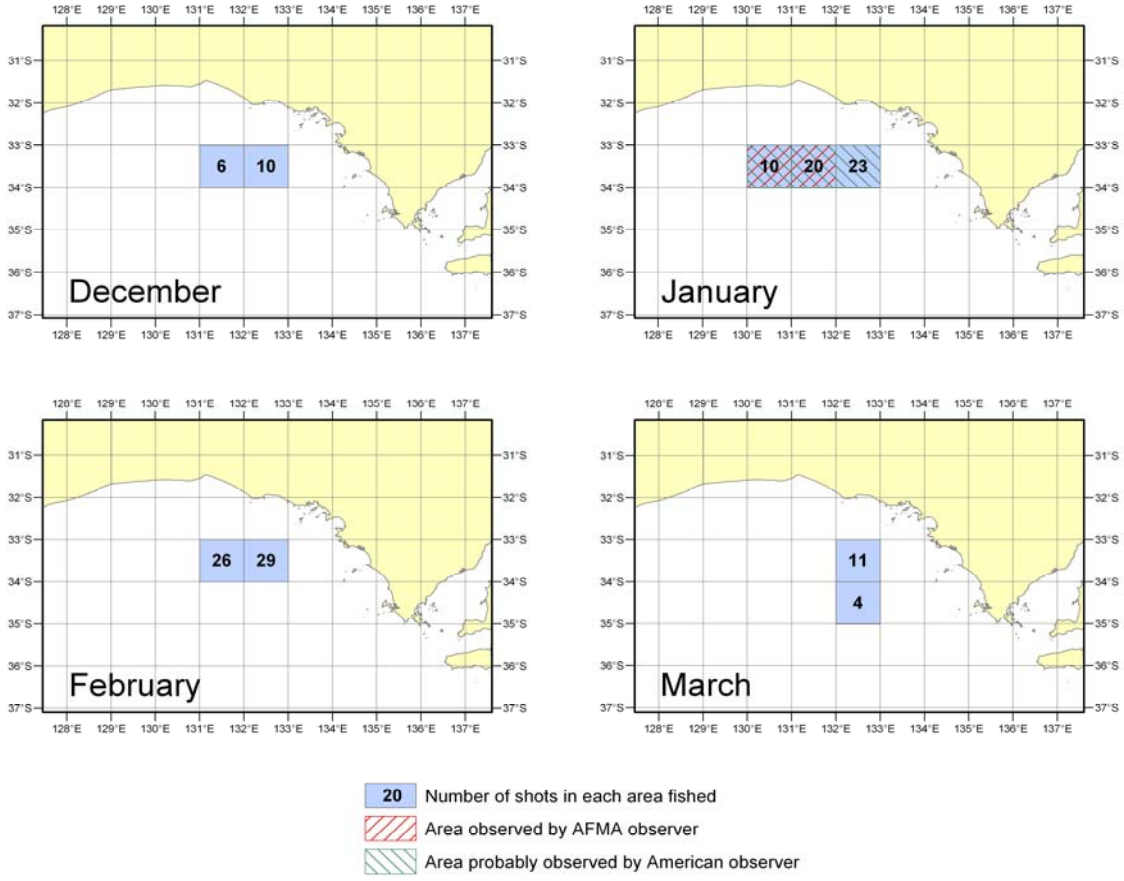

Figure 2: The number of sets recorded in the SBT purse-seine fishery from December 2004 to March 2005. The hatching represents areas where observations took place.

Observer Data

Effort Data

In 2005, there were 15 purse seine sets observed. Fishing operations observed in the purse seine sector were based in the Great Australian Bight area between 33°01' and 35°00' South and 132°24' and 132°39' East (see Figure 2). Of these, 100% of completed sets were observed from the purse-seine vessel. The observed sets were 11% of all sets in the fishery for the 2004–05 season.

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 recording 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.

Two tows were observed and quantitative data were 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.

As fish are taken alive for farming 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, observers estimated 443 tonnes of SBT were caught during observed sets. This observed catch accounted for 8.5% of the total estimated and actual tonnage caught (5225 and 5215 tonnes respectively) by purse-seine vessels in 2004–05.

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. The two main bycatch species were skipjack tuna and ocean jackets. Few biological data were collected for bycatch species due to the small number taken.

Length Frequency data

It is not possible to obtain length measurements for the live SBT catch, but observers are required to take biological samples from all SBT mortalities. However, after one SBT mortality was sampled for biological data in one of the observed tow operations, divers were instructed by the skipper not to bring dead fish to the tow vessel, so further mortalities were not recorded or sampled by the observer. Only three length measurements were obtained from SBT mortalities that occurred in purse seining operations and during observed tows.

Hobsbawn *et al*. (2005) conducted a length frequency analysis from measurements taken from the farmed SBT. This analysis is more robust and more likely to be representative of the entire SBT catch.

Biological data

Observers collected weight data from the three dead SBT sampled. As mentioned above a weight of 55kg was taken on the single mortality that occurred during one of the observed tows, but as further mortalities were not delivered to the tow boat, that fish cannot be considered representative of the size of fish in the tow cage.

Two sets of SBT otoliths were collected during observed tows, and there is also an ongoing project to collect otoliths from farm mortalities.

Tag Return Monitoring

There were no tagged SBT returned in the presence of an observer for the purse-seine fishery.

However, observers noted sightings of approximately 30 tagged fish reported by divers involved in estimating the catch and the transfer of SBT to tuna cages in January. Tags in purse seine caught SBT are typically reclaimed during harvesting at Port Lincoln tuna farms and returned to CCSBT.

Problems Experienced

With the exception of the SBT mortality sampling issue mentioned above under the *Length Frequency* heading, observers were extremely satisfied with the cooperation they received from skippers and crews on purse seine and tow vessels.

Conclusions

The purse seine and longline observer programmes in the fisheries in which SBT are taken in Australia satisfied the intended levels of effort coverage with observations having been made of 11% of sets, but fell short in catch coverage. Reports, observations and data collected by the Australian and overseas observers did not reveal significant differences between the activities or results of the two. However, the American observer did report that he did not collect some wildlife abundance data due to his lack of knowledge of some of the observer requirements, and he experienced some communication and decision-making difficulties that he considered were the result of his inexperience in the fishery.

References

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