

## The New Zealand southern bluefin tuna fishery in 2004

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### INTRODUCTION

During the 1960s and 1970s catches of southern bluefin tuna (SBT) were limited to occasional small catches off the west coast of the South Island. However, from the late 1970s and early 1980s, a concerted effort to develop a domestic fishery to service the Japanese market was undertaken. By 1982 the handline fishery was established with the catch frozen onboard a former Japanese –50° longliner. The handline fishery continued, albeit at a reduced level, following the record 1982 season (305 t landed) into the early 1990s when longlining came to dominate as a fishing method for SBT.

The New Zealand SBT fishery has been constrained by a national catch limit of 420 t year based on the New Zealand fishing year (1 October to 30 September) since 1989 and during this time has exceeded its quota on a few occasions. When the catch limit has been exceeded, the subsequent year's catch limit has been reduced to adjust for the over-catch. New Zealand's catch of SBT by fishing year since 1986/87 is shown in Figure 1, in the two most recent fishing years (2002/03, 2003/04) the SBT catch was 392 t and 394 t respectively.

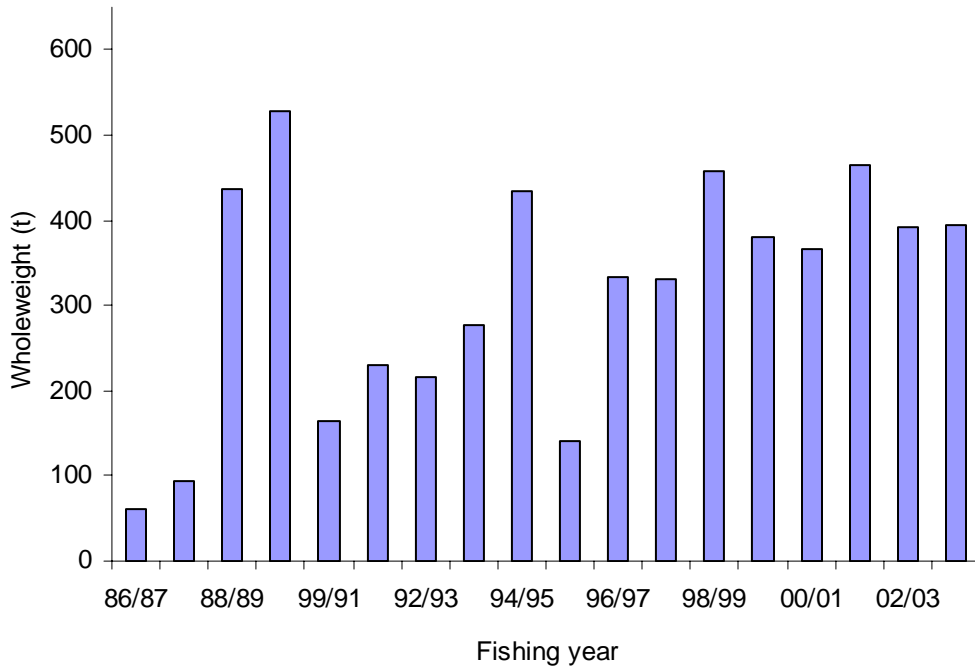
All but a few tonnes of the domestic SBT catch is now taken by longline (Table 1), and SBT catches are chiefly off the southwest coast of the South Island and off the east coast of the North Island in April to June. Longlining off the southwest coast is almost entirely targeted at SBT, yielding higher catch rates of SBT than off the east coast. The fleet operating off the southwest coast is primarily composed of the larger –60° freezer vessels of the charter fleet. The generally heavier weather conditions in the southwest compared to the east coast means that few of the smaller domestic owned and operated vessels operate in this area.

The longline fishery off the east coast is the domain of the smaller domestically owned and operated “ice boats” that are typically at sea for only a few days, and includes landings of SBT both as a target and as a bycatch of bigeye target sets.

Longline effort in these two areas has increased since 1999, peaking in 2003 in the northeast area at 2.2 million hooks and subsequently declining by 40 % in 2004. In the southeast area, effort increased in 2004 to peak at 1.8 million hooks (around 1.5 times the 1999 level). In contrast, in both areas CPUE has declined substantially in longline sets targeting SBT: by 65% (relative to the peak in 1999) in the northeast and by 60% in the southwest (relative to the peak in 2001).

In 2004, most SBT was caught in targeted longline sets, slightly more than 20 tonnes was taken as bycatch of longline fisheries for other tuna species (primarily bigeye tuna), and almost six tonnes as bycatch of non-tuna fishing (Table 1), mostly mid-water trawl targeting hoki (*Macruronus novaezealandiae*).

Southern bluefin tuna was introduced into the Quota Management System (QMS) effective 1 October 2004 with a Total Allowable Commercial Catch (TACC) of 413 t, the remainder of New Zealand’s TAC of 420 t being allocated to recreational and customary fishers, and other sources of mortality. The introduction to the QMS will see a change from the “Olympic” race for fish seen in previous years. We are anticipating a consolidation of the fleet and changes in the timing of the SBT fishery as a result – there are early indications of these changes in the fishery in 2005, however other factors may also be influencing the fishery in the current season.



**Figure 1: Recent catches of southern bluefin tuna in New Zealand fisheries waters (tonnes whole weight) by fishing year. Annual total catch is from Licensed Fish Receiver returns for 1998/99 to 2000/01, and from Monthly Harvest Returns from permit holders since 2001/02.**

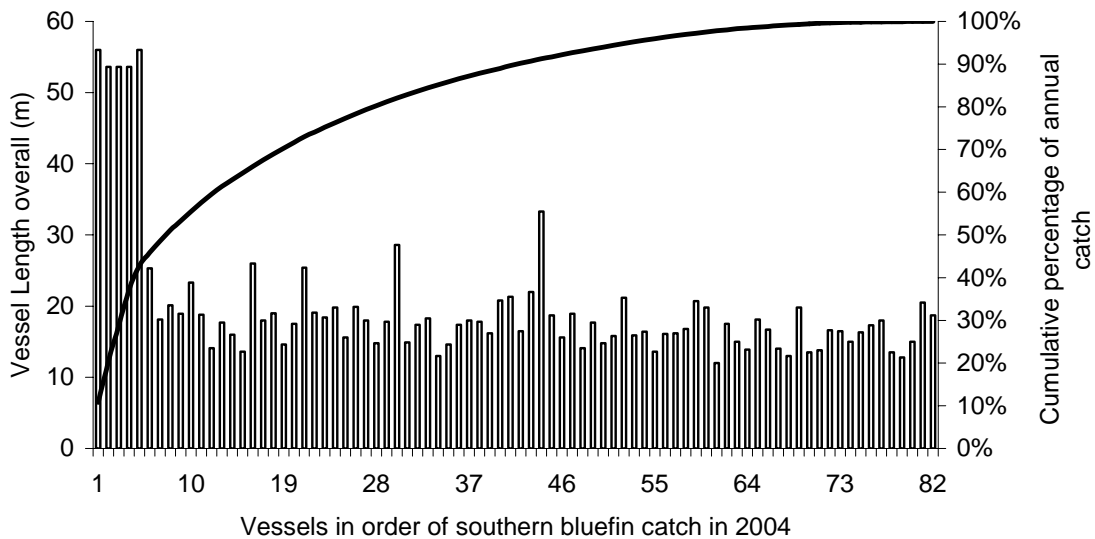
**Table 1: The annual catch (tonnes whole weight) for calendar years 1999 to 2004, by fishing method. Annual total catch estimates are scaled to Licensed Fish Receiver returns for 1999 to 2001, and to Monthly Harvest Returns since 2002, 0.0 = less than 100 kg. (See Annex 1 for time series of SBT catches by calendar and fishery year).**

Fishing method	1999	2000	2001	2002	2003	2004
Longline	453.3	375.6	355.8	460.0	387.2	384.4
Troll	4.3	2.2	0.1	0.5	0.1	1.7
Handline	2.0	0.3	0.0	0.0	0.0	1.3
Other	1.1	2.3	2.5	2.1	1.4	5.8
Total (t)	460.6	380.3	358.5	462.6	388.7	393.3

**FLEET SIZE AND DISTRIBUTION**

The domestic longline fleet operating in New Zealand waters has declined in numbers from a peak of 152 vessels in 2002 to 99 vessels in 2004. Of these, 80 vessels reported targeting SBT during the year, and 82 reported catching southern bluefin tuna. Five large vessels (over 50 m LOA) including four charter and one New Zealand owned and operated vessel fished in 2004 and accounted for 43% of the catch of SBT in weight (Figure 2). The domestic fleet of smaller vessels took the remainder of the catch.

Six other vessels caught SBT using either handline or troll gear caught 3.0 tonnes of SBT, and six large trawlers reported small catches 5.8 t of southern bluefin as a bycatch of the hoki mid-water trawl fishery (Table 1).

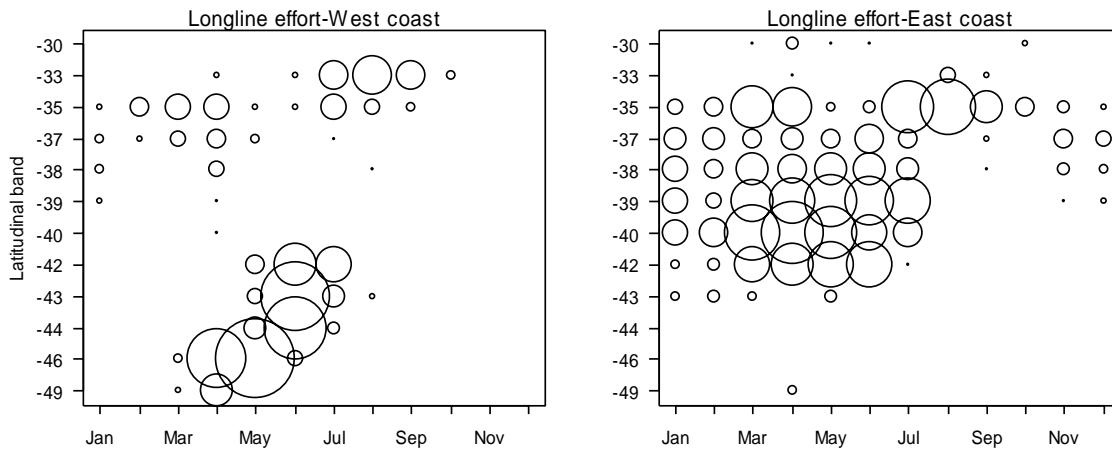


**Figure 2: Longline fleet composition (LOA of each vessel) catching southern bluefin tuna in 2004, in order of SBT catch (by weight), together with the cumulative percentage of the total catch.**

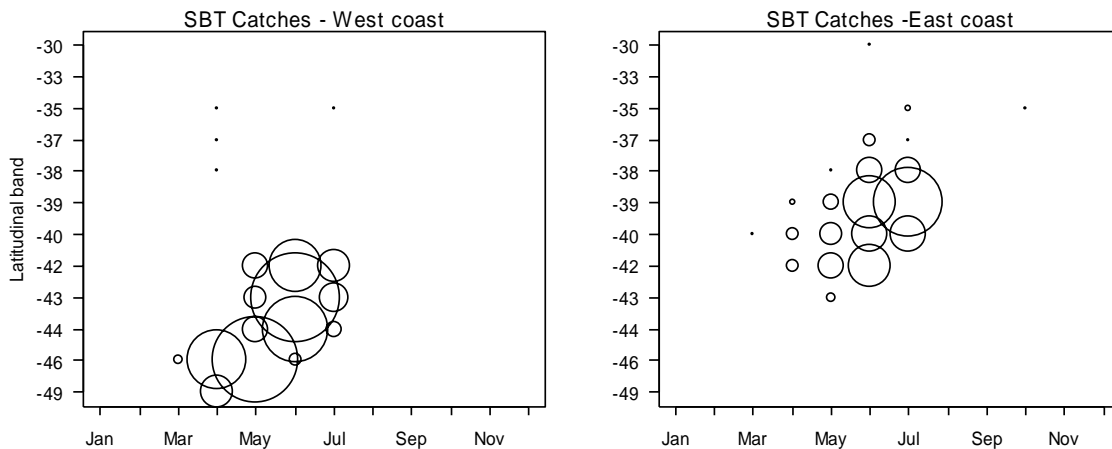
**Catch and effort in 2004**

In New Zealand waters longline effort is targeted mainly at bigeye and southern bluefin, with many vessels changing their target depending on season. Nearly all of the SBT caught in the New Zealand fishery in recent years has been taken between April and July from latitudes south of 35°S. There are two main areas of fishing activity, south of 40°S, off the west coast of the South Island, and north of 40°S, off the east coast of the North Island (Figure 4). In 2004 (the last year a competitive catch limit applied), effort shifted north after closure of the 2003/04 season on 12 July when the quota was expected to be caught. Movement of the fleet northwards after this date was to avoid SBT and to target bigeye tuna (Figure 3).

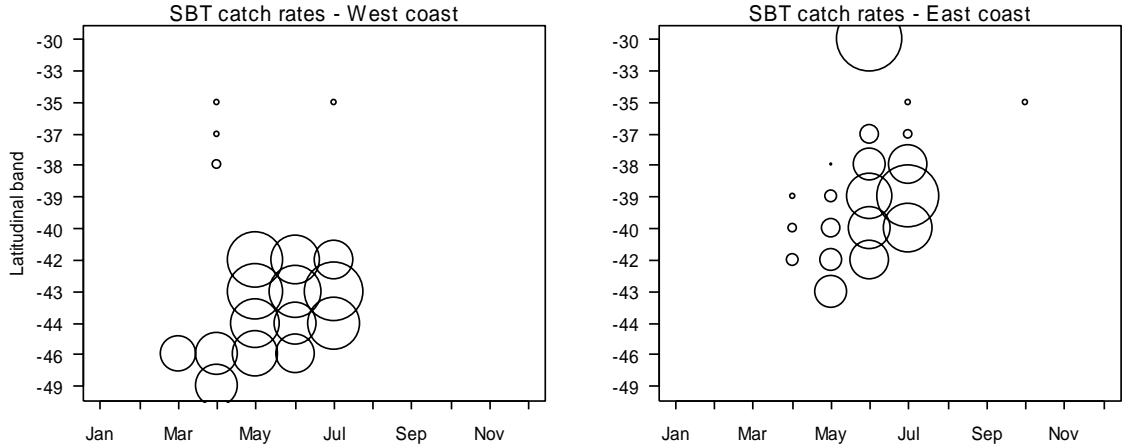
In 2004, the five larger longliners, fished almost exclusively off the southwest coast, where catch rates of SBT were higher and more consistent (Figure 5) than off the northeast coast. The smaller owner-operated vessels that also fished off the southwest coast achieved higher catch rates than the charter vessels, but similar daily catches of southern bluefin owing to their setting fewer hooks per set.



**Figure 3: The spatial and temporal distribution of total surface longline effort (number of hooks) targeting all tunas in New Zealand waters in 2004. The largest circle, (west coast, in May) represents 462,000 hooks set.**



**Figure 4: The distribution of southern bluefin tuna longline catches (whole weight, tonnes) in 2004. The largest circle, (west coast, in June) represents 64 tonnes of southern bluefin tuna.**



**Figure 5: The distribution of southern bluefin longline catch rates (number of fish per 1000 hooks) in 2004. The largest circle, (east coast, in June) represents 3 fish per 1000 hooks.**

**Trends in effort and CPUE from 1999 to 2004**

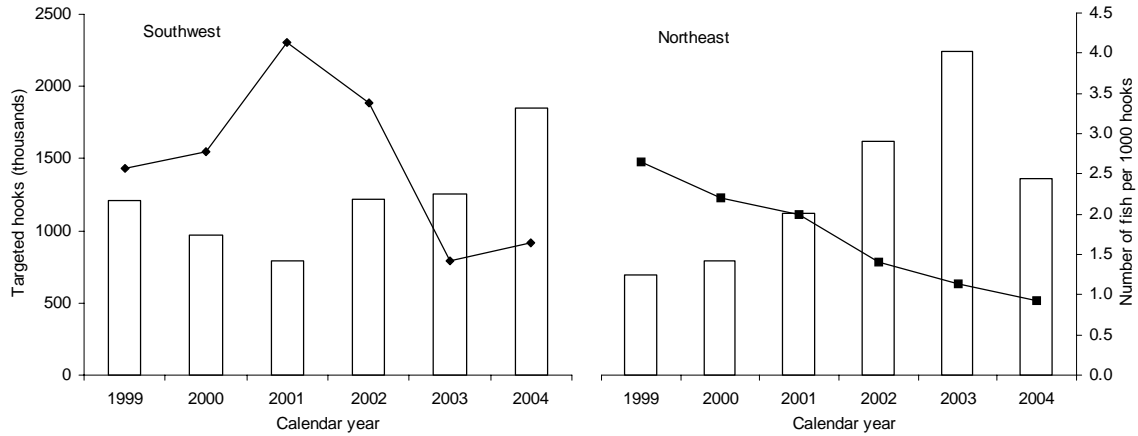
The annual longline effort targeting SBT has risen over the last three years to represent 47% (in 2004) of all tuna longlining, almost all of this effort is from April to July. Total effort targeting SBT in New Zealand longline fisheries peaked in 2003 at 3.5 million hooks and declined slightly in 2004 to 3.2 million hooks (Table 2).

The different pattern in effort between the southwest and northeast areas is shown in Figure 6. In 2004, there was a sharp (40 %) decline in longline effort targeting SBT in the northeast area, which is the domain of the smaller domestically owned and operated vessels, and a 50 % increase in effort in the southwest area (Table 2; Figure 6). Prior to 2004, effort had been relatively stable off the southwest coast while it had been steadily increasing off the northeast coast.

**Table 2: Longline effort (thousands of hooks) targeting SBT in New Zealand waters for calendar years 1999 to 2004.**

Calendar year	Thousands of hooks		
	NZ longline Total effort	Southwest Targeted SBT	Northeast Targeted SBT
1999	7687	1212	690
2000	8171	966	789
2001	9910	796	1114
2002	10742	1217	1611
2003	10014	1254	2234
2004	6804	1848	1356

The change in longline effort distribution in 2004 does not seem to be related to catch rates as both areas have shown declines in CPUE for several years (since 2001 for the southwest and since 1999 for the northeast coast). Off the northeast coast CPUE has steadily declined by 55–70% while off the southwest coast, CPUE in 2004 was about 60% lower than in 2001.



**Figure 6: New Zealand longline effort (number of hooks set) targeting SBT and nominal CPUE (number of SBT per 1000 hooks) in each year 1999 to 2004 by main fishing areas.**

### FISH SIZE AND AGE COMPOSITION

There are three sources of information available to describe the size and age composition of the catch: raised catch at length data which is estimated using processed weights and observer measured lengths, raised catch at age data which is calculated from the length data using proportional ageing (cohort slicing) with an assumed growth curve, and direct age estimation of the catch determined through ageing otoliths collected from the catch by observers. Due to inadequate observer coverage, these data are not estimated for the domestic tuna fleet in a way that makes them useful for examining patterns or trends. Here we focus on data for the charter fleet that fishes for SBT in our waters.

For length and proportional ageing, we consider data collected from 1998 to 2005. The data collected in 2005 is only partial, representing 100% of the data for half the fleet and 50% of data for the remainder. Nonetheless is considered useful. For direct ageing, estimates are only available for the period 2001 to 2004.

#### Size composition data

There has been a very clear reduction in the range of sizes of SBT taken in the New Zealand fishery since 2001 (Figure 7). There is evidence of the growth (progression of modes) over this period, but there is no evidence of recruitment of smaller fish to the New Zealand fishery.

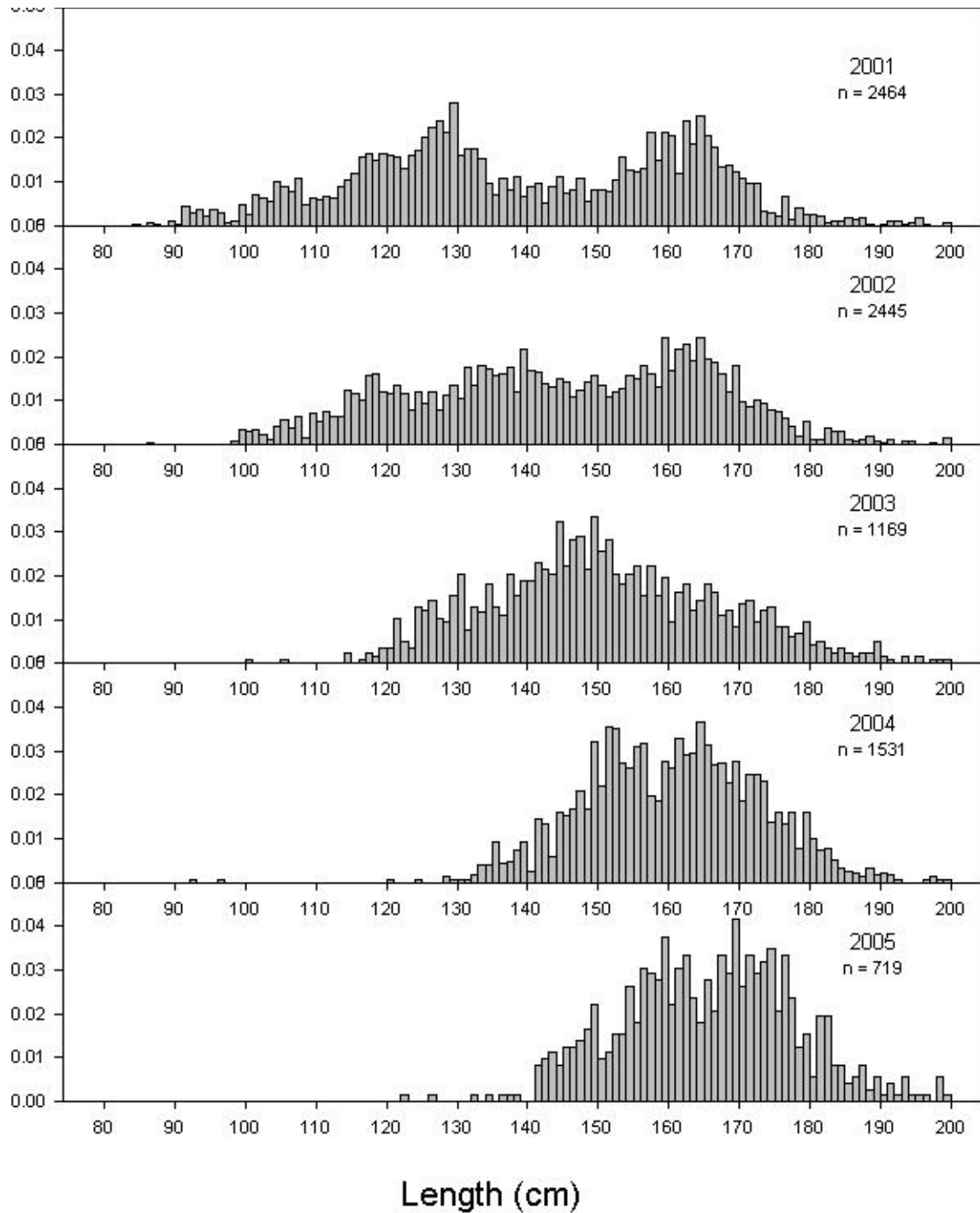
An examination of the proportion of the catch under a given size indicates that fish under 130 cm do not form a large part of the New Zealand fishery (Table 3), but that these proportions have declined rapidly since 2001 with the proportion of fish under 130 cm in the past two years being less than 0.005. The most recent years are the lowest in the time series, the previous time that the proportions were close to these levels was in the 1989. The proportions do fluctuate in a way consistent with periods of above and below average recruitment (e.g. two to three year cycles).

**Table 3: Proportion of the charter fleet for 1989 to 2005 under a given size. Data for 2005 is based on about 75% of the catch and there was no charter fishery in 1996.**

Year	> 110 cm	> 120 cm	> 130 cm
1989	0.01	0.03	0.06
1990	0.04	0.10	0.13
1991	0.11	0.16	0.27
1992	0.05	0.24	0.39
1993	0.22	0.32	0.47
1994	0.03	0.12	0.23
1995	0.02	0.05	0.16
1996	NA	NA	NA
1997	0.04	0.06	0.10
1998	0.09	0.21	0.25
1999	0.03	0.08	0.15
2000	0.07	0.19	0.28
2001	0.09	0.20	0.38
2002	0.04	0.14	0.25
2003	0.00	0.01	0.09
2004	0.00	0.00	0.00
2005	0.00	0.00	0.00

**Proportional ageing data**

The lack of small fish reflected in the length data corresponds to a series of weak (or absent) cohorts in the proportional ageing data (Figure 8). The data suggest at least three consecutive extremely weak year classes during 1999 to 2001. In addition no fish from the 2002 cohorts were taken in 2005, though the vulnerability of three year old fish to the New Zealand longline fishery is likely low and variable.



**Figure 7: Proportion at length for the charter fleet for 2001 to 2005. Data for 2005 is based on about 75% of the catch.**



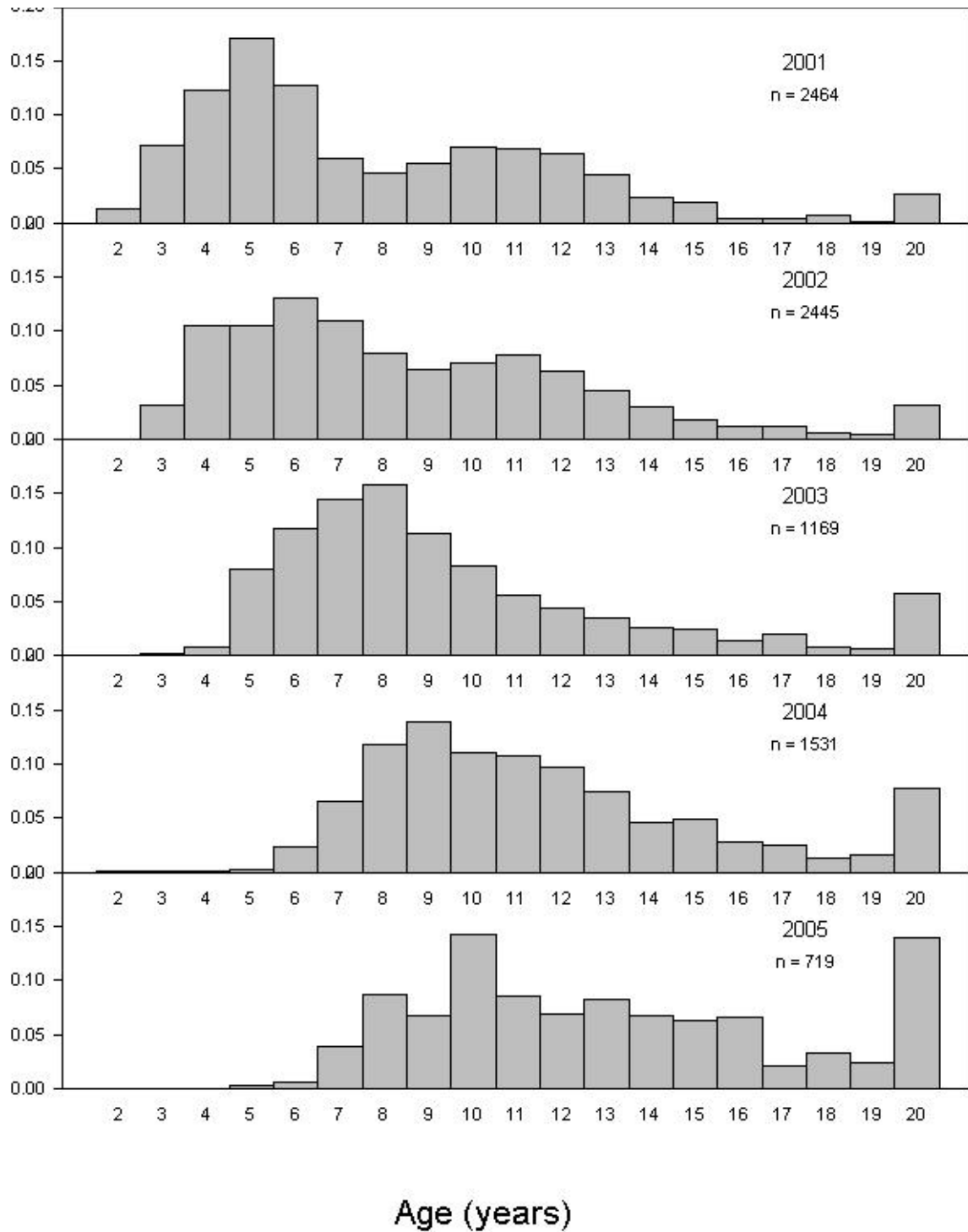
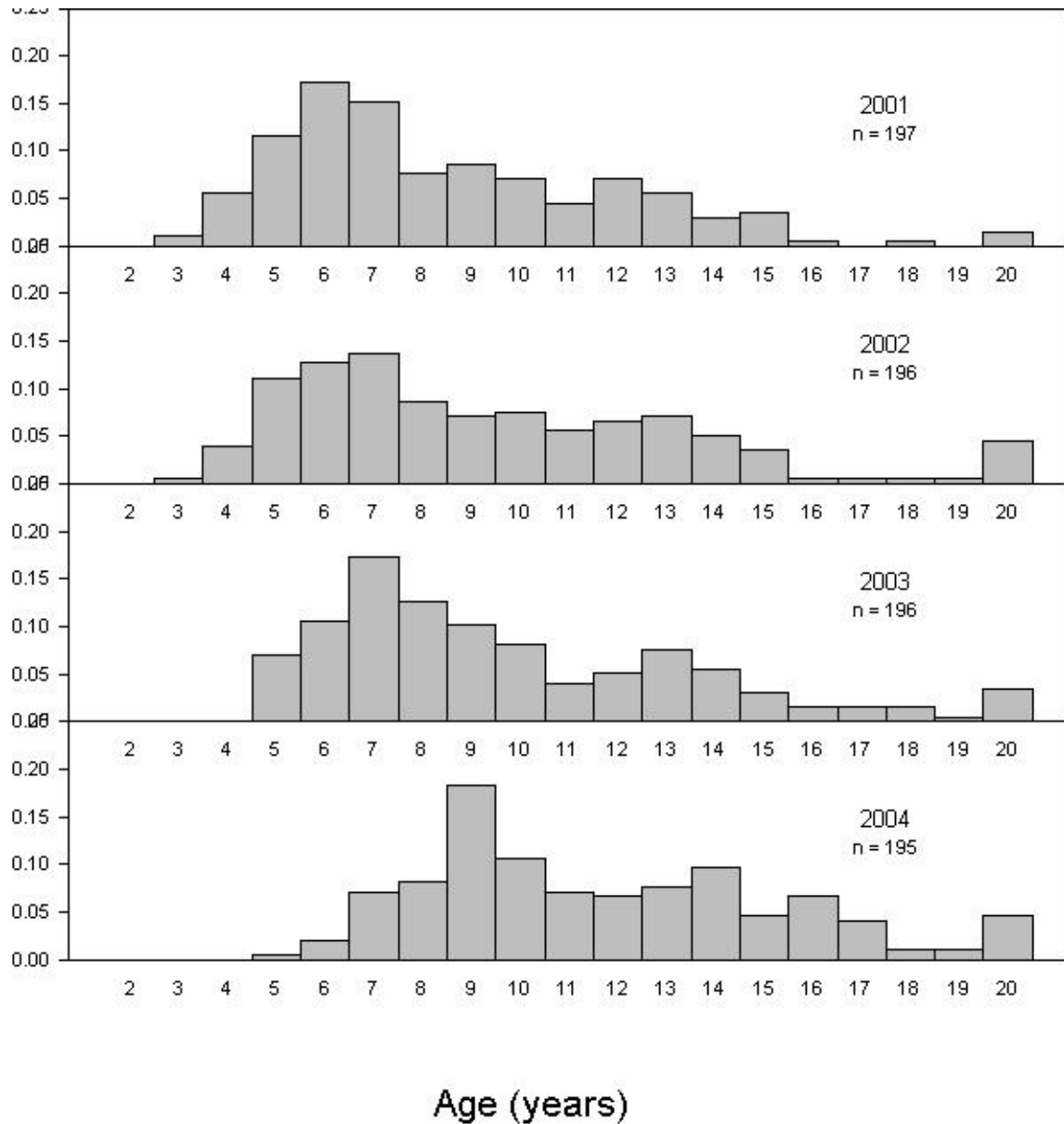


Figure 8: Proportion at age for the charter fleet for 2001 to 2005 based on cohort slicing using the SC(2001) growth curve. Data for 2005 is based on about 75% of the catch.

**Direct ageing data**

Notwithstanding concerns over the assignment of ages to fish taken in the middle of the year, the direct ageing data show very similar patterns to the proportional ageing data (Figure 9). The direct ageing data does show fewer fish from the 1999 cohort when compared to the proportional ageing data as well as fewer fish in the plus group (Figure 8), but given the relatively small samples sizes of the aged fish it is possible that this is an artefact.

The dominant cohorts in the longline catch in 2001 were 1994-1996 (ages 5 to 7) and these cohorts are still the dominant cohorts in 2004, though there dominance is less. The direct ageing data suggest that the 1999 to 2001 cohorts are very weak and the 1998 cohort may also be weaker than those proceeding it.



**Figure 9: Proportion at age for the charter fleet for 2001 to 2004 based on direct ageing.**

## **OBSERVER PROGRAMME**

A full report of New Zealand's observer programme is provided in Appendix 2, but is briefly summarised below.

The target for observer coverage was 10% of longline sets in each fleet and area, and 10% coverage of the catch. As in previous years, observers were deployed on all Charter vessels. Candidate Domestic vessels for observer coverage were selected on the basis of ability to accommodate an observer (e.g., some small vessels were excluded) and vessels fishing plans.

The coverage of hooks was almost 100% for the Charter vessels. The differences reflect periods of the hauling that the observer did not observe due to breaks etc. The level of Domestic coverage varied by region with over 20% of the hooks observed in Area 6, but only 2% coverage in Area 5. The overall level of effort coverage for the Domestic fleet was 6%.

For the Charter fleet, 100% of the catch was observed and 98% measured. For the Domestic fleet, there were again differences by area. For Area 6, over 20% of the catch was observed and measured, but only 4% was observed and measured and Area 5. The overall catch coverage of the Domestic fleet was 15%.

A large number of biological samples were taken from the observed SBT. Almost all SBT were sexed (98%) and over 50% had otoliths removed. A subsample of the otoliths collected in 2004 have been aged and results are provided in CCSBT-ESC/0509/12.

## **TAGGING PROGRAMME**

A full report of New Zealand's tagging programme is provided in Appendix 3, but briefly, the near complete absence of small fish from the New Zealand longline fishery in 2004, meant that it was not possible to achieve the targets of this project. While we are looking at ways to improve the success of the tagging programme for 2005, the near complete absence of small fish from the New Zealand longline fishery continues to call the successful continuation of this programme into question.

## **CONCLUSIONS**

New Zealand has a national allocation for SBT of 420 tonnes. Catches for the 2003 and 2004 season were below the national allocation being 392 and 394 tonnes respectively. For 2003 the regulatory limit was reduced to take account of over catch in the previous year and for 2004 the season was closed prematurely resulting in an under catch of the national allocation.

Vessel numbers in the New Zealand fishery declined during 2003 and 2004 relative to the peak in 2002 however effort (hook numbers) peaked during this period. Both areas of the New Zealand fishery have shown declines in catch per unit in recent years, with a steady decline of 55-70% in the northeast fishery and a 60% reduction in the southwest fishery since 2001.

There has been a very clear reduction in the range of sizes of southern bluefin tuna taken in the New Zealand fishery since 2001. The proportion of fish less than 130 cm in length has declined rapidly since this time. The lack of small fish reflected in the length data corresponds to a series of weak cohorts in the proportional ageing data for the New Zealand fishery. The data suggests at least three consecutive weak year classes during 1999 to 2001.

There has been a significant change in the management arrangements for the New Zealand southern bluefin tuna fishery. On 1 October 2004 the fishery moved from a competitive fishery

to one managed within the New Zealand Quota Management System as an individually allocated quota species. This has resulted in a process of fleet rationalisation for the fishery both leading up to and during the current fishing year (2005). A further significant change is that allowances have been made for non-commercial and fishing-related mortality within the national allocation when setting the catch limit for the commercial fishery of 413 tonnes. This is the regulatory limit that will apply to the commercial fishery in 2005.

## **ACKNOWLEDGMENTS**

This report is based on work done for project TUN2003-02 on contract to the Ministry of Fisheries, New Zealand. The “thumb-nail” sketch of the early years of the New Zealand fishery is based on an unpublished report by Mr. Charles Hufflett for which the authors are grateful. Guy Pasco provided details of the observer programme for 2004 and 2005.

**APPENDIX 1. NEW ZEALAND SOUTHERN BLUEFIN TUNA CATCHES BY CALENDAR YEAR AND FISHING YEAR (1 OCTOBER TO 30 SEPTEMBER).**

**Table A1.1: New Zealand southern bluefin tuna catches by calendar year and fishing year (1 October to 30 September).**

<b>Calendar year</b>	<b>t.</b>	<b>Fishing year</b>	<b>t.</b>
1980	130		
1981	173		
1982	305		
1983	132		
1984	93		
1985	94		
1986	82	1986/87	60
1987	59	1987/88	94
1988	94	1988/89	437
1989	437	1989/90	529
1990	529	1990/91	165
1991	164	1991/92	279
1992	279	1992/93	216
1993	217	1993/94	277
1994	277	1994/95	435
1995	436	1995/96	140
1996	139	1996/97	333
1997	334	1997/98	331
1998	337	1998/99	458
1999	461	1999/00	381
2000	380	2000/01	362
2001	358	2001/02	452
2002	463	2002/03	388
2003	389	2003/04	397
2004	393	2004/05	394

## **APPENDIX 2. IMPLEMENTATION OF THE NEW ZEALAND OBSERVER PROGRAMME IN 2004.**

### **Observer Training**

The New Zealand Observer Programme (administered by The Ministry of Fisheries) runs training courses for new recruits, generally once or twice a year. The frequency is dependent upon attrition of observers and the number of sea-days forecast for the coming fishing year. New recruit training is focussed mainly on deep-water trawl fishery operations, although there is reference to other fisheries and fishing methods in the general course content. All observer training is being aligned to fall within the New Zealand Qualifications Authority framework and completion of shore-based training, along with some at sea assessment will result in an internationally recognised qualification.

As observers gain experience in trawl fisheries, those with particular aptitudes are selected for other fisheries, including surface longlining for southern bluefin tuna. Observers receive comprehensive briefings, along with relevant reference material prior to undertaking any at sea observation of longline vessels prior to each trip. Similarly, all observers are required to send in examples of all forms early on in the trip (preferably, if communications equipment allows, data from the first set). Both Ministry of Fisheries and NIWA staff check these forms, and any problems identified are addressed immediately to eliminate data errors from compounding throughout the trip. Observers selected to conduct tagging (both archival and dart) also attended a 1-day training course run by CSIRO, MFish and NIWA.

Every effort is made to place experienced Tuna observers on vessels, but invariably due to turnover and requirements in other fisheries, it will be necessary to place observers on surface long line vessels that have not worked in this fishery before. These observers are selected on both their competency in other fisheries, as well as on their nature and personality. This latter requirement is included, as observers need to be able to work with fishers and crews effectively. Qualifications vary depending on the individual but range from extensive at-sea experience on fishing vessels to individuals with an MSc in zoology. Of the charter vessels covered in 2004, all observers involved had done at least one previous trip on a similar vessel, with one observer having covered these vessels, as well as the domestic tuna fleet for a period of over 13 years. Of the observers covering the domestic fleet, experience ranged from observers with 10+ years working with the programme through to Observers that were taken on in the previous year.

An electronic copy of the most recent version of the MFish Observer manual has been deposited at CCSBT Headquarters.

### **Observer Programme Design and Coverage**

The New Zealand southern bluefin fishery is almost exclusively a surface long line fishery. Thus, all observer coverage is aimed at surface longline vessels, spread across two fleets, charter vessels and domestic owned and operated vessels. The Ministry of Fisheries Science Group, in conjunction with external clients, particularly the Department of Conservation, determines requirements in terms of observer sea days by fleet.

The main purpose of observer activity on longliners in New Zealand waters is to characterize the catch with respect to species caught (both fish and non-fish species) and size composition of the main tuna and bycatch species.

Observer coverage in 2004 and was restricted to longline vessels since troll and handline catches only represents a minor component of the SBT catch by New Zealand vessels. Stratification was by fleet (charter vs. domestic owned and operated) and area fished (west coast South Island and east coast North Island) coinciding with the main areas of SBT fishing.

The target for observer coverage was 10% of longline sets in each fleet and area, and 10% coverage of the catch. As in previous years, observers were deployed on all Charter vessels. Candidate Domestic vessels for observer coverage were selected on the basis of ability to accommodate an observer (e.g., some small vessels were excluded) and vessels fishing plans.

### Observer Coverage and Data Collected in 2004

In 2004, 12 observers were briefed and deployed (4 charter vessel and 10 domestic vessel deployments).

**Table A2.1: The amount of effort observed (vessel days, sets, hooks, etc), by area and coverage of effort for 2004. Note that coverage of hooks is based on those actually observed by the observer, e.g. it does not include hooks that may have been retrieved during the observers break.**

	Area 5		
	Charter	Domestic	All
No. fishing days	18	113	131
No. sets	16	89	105
No. hooks observed	51 550	109 925	161 475
Total no. of hooks fished	61 200	5 336 921	5 398 121
% hooks observed	84.2	2.1	3.0
	Area 6		
	Charter	Domestic	All
No. fishing days	345	118	463
No. sets	334	110	444
No. hooks observed	1 124 780	320 290	1 445 070
Total no. of hooks fished	1 157 283	1 486 800	2 644 083
% hooks observed	97.2	21.5	54.7
	Total		
	Charter	Domestic	All
No. fishing days	363	231	594
No. sets	350	199	549
No. hooks observed	1 176 330	430 215	1 606 545
Total no. of hooks fished	1 218 483	6 823 721	8 042 204
% hooks observed	96.5	6.3	20.0

The amount of effort observed by area and fleet is provided in Table A2.1. The coverage of hooks was almost 100% for the Charter vessels. The differences reflect periods of the hauling that the observer did not observe due to breaks etc. The level of Domestic coverage varied by region with

over 20% of the hooks observed in Area 6, but only 2% coverage in Area 5. The overall level of coverage for the Domestic fleet was 6%.

The observed catches are provided in Table A2.2. Only a small number of SBT were observed in the Domestic fishery in Area 5. Overall, the most commonly observed tuna species was albacore followed by SBT and bigeye tuna.

**Table A2.2: The observed catch (in number) of SBT and other species, by area and fleet in 2004.**

	Area 5		
	Charter	Domestic	All
albacore	733	2 606	3 339
bigeye tuna	205	31	236
Pacific bluefin tuna		1	1
skipjack tuna	2	10	12
<b>southern bluefin tuna</b>		<b>56</b>	<b>56</b>
yellowfin tuna		9	9
swordfish	49	293	342
	Area 6		
	Charter	Domestic	All
albacore	280	545	825
bigeye tuna			
Pacific bluefin tuna	6	1	7
skipjack tuna		1	1
<b>southern bluefin tuna</b>	<b>1 525</b>	<b>482</b>	<b>2 007</b>
yellowfin tuna			
swordfish	22	32	54
	Total		
	Charter	Domestic	All
albacore	1 013	3 151	4 164
bigeye tuna	205	31	236
Pacific bluefin tuna	6	2	8
skipjack tuna	2	11	13
<b>southern bluefin tuna</b>	<b>1 525</b>	<b>538</b>	<b>2 063</b>
yellowfin tuna		9	9
swordfish	71	325	396

Coverage of catch is provided by both catch observed and catch measured (Table A.2.3). For the Charter fleet, 100% of the catch was observed and 98% measured. For the Domestic fleet, there were differences by area. For Area 6, over 20% of the catch was observed and measured, but only 4% was observed and measured and Area 5. The overall coverage of the Domestic fleet was 15%.



**Table A2.3: Coverage of southern bluefin tuna catch – observed and measured, by fleet and area in 2004.**

	% Observed		% Measured	
	Charter	Domestic	Charter	Domestic
Area 5		4		4
Area 6	100	23	98	22
Overall	100	16	98	15

A large number of biological samples were taken from the observed SBT (Table A2.4). Almost all SBT were sexed (98%) and over 50% had otoliths removed. A subsample of the otoliths collected in 2004 have been aged and results are provided in CCSBT-ESC/0509/12.

**Table A2.4: Biological information collected by observers on longline sets targeting southern bluefin tuna during 2004.**

Biological data type	Area 5	Area 6	Total
number SBT observed	56*	2007	2063
measured for length			2007
number of SBT discarded	2	2	4
sex determined	46	1915	1961
otoliths collected			1140
maturity			0
gonadosomatic index			0
* includes 6 SBT caught when targeting bigeye at the end of the season			

In 2004 six SBT were recovered on observed longliners with tags (Table A2.5). The tag type, area and fish sizes were as follows:

**Table A2.5: Tag type, area and fish sizes for tagged southern bluefin tuna observed on longline sets in 2004.**

Tag type	Statistical area	Fork length (cm)
CSIRO, dart tag	5	159
CSIRO, dart tag	5	164
CSIRO, dart tag	6	169
CSIRO, Mk 9 archival tag	6	154
CCSBT, dart tag	6	150

All tags and tag details were returned to the agency responsible and fishers notified of the release and recovery details and given the appropriate reward for return of the tags. The 2004/05 fishing year is still underway at the time of writing this report and observers will continue to be deployed, but as of the end of July 2005 (with fishing expected to continue to the end of September) a total of 4 tags have thus far been recovered (one tag is reported to have been recovered last year but only handed to the observer this year).

## **Problems Experienced**

The domestic fleet can be problematic in terms of observer placement. A fleet of approximately 50 domestic vessels fish for southern bluefin tuna, with peaks in effort occurring from March-July. Accommodation is not always available on a large proportion of the domestic fleet, as many vessels do not have additional bunk space for an observer. Also, the uncertain start date to the fishery (e.g. the 2005 season was very late starting and observer days were spent when SBT before SBT catches started) makes planning coverage difficult, as does bad weather reducing effective sea days. As the observers are not dedicated to tuna longline fisheries, changes to the season of the fishery or unscheduled changes to fishing plans can be difficult to account for.

## **Brief update for 2005**

Due to a late start, the 2005 fishing season was not complete at the time of this meeting so it is not possible to provide many details of programme for this year.

Again, the target for observer coverage was 10% of longline sets in each fleet and area, and 10% coverage of the catch. Particular emphasis has been placed on getting observer coverage in the northeast Domestic fishery. The two Charter vessels to fish this season carried observers throughout their time here. Preliminary length frequency data collected by observers in 2005 is described in the main report.

A number of domestic vessels were covered for the first time in 2005 and we are hopeful of increased the coverage of this fishery. Observer placement in this fishery is ongoing and will continue through the end of the fishing year.

### **APPENDIX 3. SUMMARY OF ARCHIVAL TAGGING OF SBT IN NEW ZEALAND WATERS IN 2004 AND DESIGN CHANGES FOR 2005 TO INCREASE THE NUMBER OF SBT RELEASES.**

#### **Project Objectives**

1. To tag up to 50 SBT smaller than 40 kg whole weight with archival tags off the West Coast of the South Island in April/May from commercial tuna longline vessels within the 'season'.
2. To tag up to 10 SBT larger than 64 kg whole weight with satellite tracked pop-up tags off the east coast of the North Island in June/July from commercial tuna longline vessels.
3. To opportunistically tag SBT of all sizes after closure of the fishing season with standard CCSBT dart tags.

#### **Summary of tagging in 2004**

Four Ministry of Fisheries observers were trained in the deployment of archival tags in 2004 with the intent of deploying internal archival tags early in the season and pop-off satellite archival tags after the season closed. Tagging was conducted from domestic tuna longline vessels off the west coast of the South Island and off the east coast of the North Island during May to July (the southern bluefin tuna season closed 12 July 2004). The owners, operators and crew of four domestic owned and operated tuna longliners helped with the tagging.

Due to budgetary considerations tagging was restricted to fish smaller than 40 kg whole weight during the season, with an expectation that about 20% of the catch would be of suitable size. However, in 2004 less than 2% of the catch was smaller than 40 kg and hence the goal of tagging 50 fish with archival tags was not reached. In the end six SBT were tagged and released, five off the west coast of the South Island and one in the Bay of Plenty. Tagged SBT ranged in size from 16 to 64 kg, and demonstrated that SBT larger than those typically tagged in related programmes by Australia and Japan can effectively be tagged. Tags not deployed in 2004 can be used in tagging in 2005.

Deployment of pop-off satellite archival tags, scheduled for release after the fishery closed, did not take place owing to longliners leaving the fishing grounds to either return to port or fish elsewhere for other species. For the same reason opportunistic tagging of SBT with CCSBT dart tags did not take place. Since it was not possible to carry out the tagging with pop-off satellite archival tags and CCSBT dart tags, none of the CCSBT Research Mortality Allowance (5 t) allocated to the project was used.

#### **Programme Design Changes in 2005**

With the entry of SBT into the Quota Management System, fishers have the ability to target fish when they are in optimum condition. It was expected therefore that, given appropriate compensation, fishers could target small SBT when they were available (provided they had a trained observer able to tag SBT) and the release of these fish would not count against their quota. SBT that, when landed, were gauged to be in good physical condition but not of good size or fat content would be purchased from the fisher (at \$NZ 400 per fish) and released. From previous

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seasons, it was expected that most if not all of the archival tags could be released early in the season with observers on four vessels. As of the end of July, this has not happened. The normal SBT season, which usually begins in March or April, was delayed until mid-June and fishers are focused on catching their quota before the end of the fishing year. To date one SBT has been tagged and released. In addition, the almost complete absence of SBT smaller than 40 kg whole weight, noted last year is a continuing feature of the New Zealand fishery.