

Trends in the New Zealand southern bluefin tuna fishery to 2002

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INTRODUCTION

In New Zealand waters, SBT have been caught by handline and trolling during winter months off the west coast of the South Island since the early 1980s with the first commercial landings (by trolling off the west coast of the North Island) as early as the 1960s. These methods are still occasionally used but in recent years the catch limit has been taken prior to when these methods would be used (D. Falconer, pers. comm.). The majority of the SBT catch is taken by medium to large (20–50 m) longline vessels in autumn and winter. Southern bluefin catches, restricted to a national competitive catch limit of 420 t since 1989, have usually been below this limit. The New Zealand catch limit has occasionally been exceeded with the subsequent year's catch limit reduced to adjust for the over-catch.

CATCH AND EFFORT

Murray and Richardson (2001) note that nearly all of the SBT caught in the New Zealand domestic fishery is taken by longline with only 4% of the days fished, on average, using other gear types. The domestic longline fishery, comprised of chartered and domestic owned and operated vessels, is easily capable of catching more than the national catch limit of 420 t. The catch in the 2001/02 fishing year (452.3 t) exceeded the national allocation and the 2002/03 catch limit was reduced accordingly.

Table 1. Summary of SBT catch (whole weight, t.) by gear type since 1990, catches are scaled to Licensed Fish Receiver landing reports. The miscellaneous gear type category is primarily handline.

Year	Troll	Longline	Misc.	Total
1990	49.3	314.7	165.2	529.2
1991	8.6	149.7	6.2	164.5
1992	9.5	261.3	8.4	279.2
1993	0.0	215.0	1.7	216.6
1994	0.4	276.1	0.5	277.0
1995	4.2	429.6	2.6	436.4
1996	2.0	136.8	0.4	139.3
1997	2.2	329.6	1.8	333.7
1998	6.8	328.7	1.6	337.1
1999	2.2	456.8	1.7	460.6
2000	0.7	379.6	0.0	380.3
2001	0.2	358.3	0.0	358.5
2002	0.7	449.6	0.0	450.3

Table 1 summarises the total landings of SBT in the New Zealand fishery by gear type since 1990 and shows the importance of longline relative to all other gear types. The start year 1990 was

used because it is the earliest complete year for which electronic records of catch and effort data were available to partition the total catch by gear type.

The longline fishery has expanded rapidly since 1990 as can be seen from Figure 1. However, since SBT catches have been constrained by the national catch limit of 420 t most of this expanding effort has targeted bigeye tuna. Total longline effort increased again in 2002 by about 10% over 2001 to 10.4 million hooks, all of the increase in effort was directed at SBT. While SBT can be caught throughout most of the year in New Zealand waters, most longlining for SBT is done between April and July or until the competitive catch limit is reached. Of the longline effort targeting SBT, more than 90% is done during the months of April to July. The national catch limit in 2002 was reached in June.

Table 2 gives the total landings of SBT in the New Zealand fishery by calendar year and fishing year. It should be noted that prior to June 2001 the legal definition of SBT included landings of *Thunnus thynnus* and *T. orientalis*, species with which it was formerly confused, hence SBT landings before 2001 in Table 2 are considered to be lower than reported.

Table 2. Total SBT landings of SBT (t.) by calendar and fishing year from the Licensed Fish Receiver Reports.

	Cal. Yr. (t)	Fish. Yr. (t)	
1980	130		
1981	173		
1982	305		
1983	132		
1984	93		
1985	94		
1986	82	86/87	60
1987	59	87/88	94
1988	94	88/89	437
1989	437	89/90	529
1990	529	90/91	165
1991	164	91/92	229
1992	229	92/93	216
1993	217	93/94	277
1994	277	94/95	435
1995	436	95/96	140
1996	139	96/97	333
1997	334	97/98	331
1998	337	98/99	458
1999	461	99/00	381
2000	380	00/01	366
2001	358	01/02	452
2002	450	02/03	n/a

NOMINAL CPUE

Sets targeting SBT were partitioned into areas north and south of 40° S, roughly corresponding to the main bigeye (north of 40° S) and SBT fishing areas (south of 40° S), and by fleet (charter

versus domestic owned and operated) for the SBT fishing season (April to July). Figure 3 shows the effects of area and fleet on nominal CPUE. The differences in CPUE between areas and fleets evident in figure 3 are averaged out in the composite CPUE index for the EEZ. Throughout the time series longline sets targeting SBT south of 40° S usually have higher CPUEs than sets in the north but the trend in CPUE differs substantially between fleets. Charter vessels typically realise higher catch rates than do domestic owned and operated vessels. In addition the composite CPUE shows little or no change since 1999. However, this stable CPUE is masking opposing trends in CPUE in the southern and northern areas over this period with a decline in domestic fleet CPUE since 1999 in the northern area being balanced by increasing CPUE in the charter vessel CPUE for the southern area.

SIZE COMPOSITION

Commercial logsheet data collected by the Ministry of Fisheries requires that the catch in number and in processed weight (kg) be recorded for each species caught in an individual set. Groomed logsheet data were used to estimate the average weight of an SBT caught in each set in an area (north or south of 40° S) in a given year during the main SBT fishing season (April to July). Catch information was pooled across domestic fleets and processed weight was converted to whole weight using a conversion factor of 1.15. Figure 4 shows the trends in average whole weight for each area. Figure 4 indicates similar declines in average weight between areas since 1989 in the north (from roughly 83 kg to 60 kg) and since 1990 in the south (from roughly 86 kg to 63 kg). In previous years the declining trend reported for the northern area has been linear, as is the case here, while there was no trend detected for the southern area. While the slope of the trend shown for the southern area in figure 4 is only about half that of the northern area and the R^2 indicates a much weaker trend, the recent decline in average weight should be examined further.

FLEET SIZE AND DISTRIBUTION

While the charter fleet has been stable at 4 to 6 vessels each year, domestic owned and operated longline vessels have linearly increased in number at a rate of about 11 longliners per year from one in 1989 to over 150 vessels fishing in 2002. While most of the increase in vessel numbers has been in northern waters targeting bigeye tuna, most of these vessels also engage in the SBT fishery during the April-July season. Figure 2 shows the trend in longline vessel numbers by size (GRT) since 1989. From this figure it is clear that most of the increase in longline vessels has been in small longliners (< 50 GRT). These vessels primarily work within a few days steaming distance of landing ports air freighting fresh chilled SBT to Japan.

ACKNOWLEDGMENTS

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REFERENCES

Murray, T. and K. Richardson. 2001. Trends in the New Zealand southern bluefin tuna fishery. CCSBT-SC/0108/SBT Fisheries – New Zealand, 13 pp.

Figure 1. Longline fishing effort (millions of hooks set) since 1990 in the New Zealand domestic fishery targeting SBT.

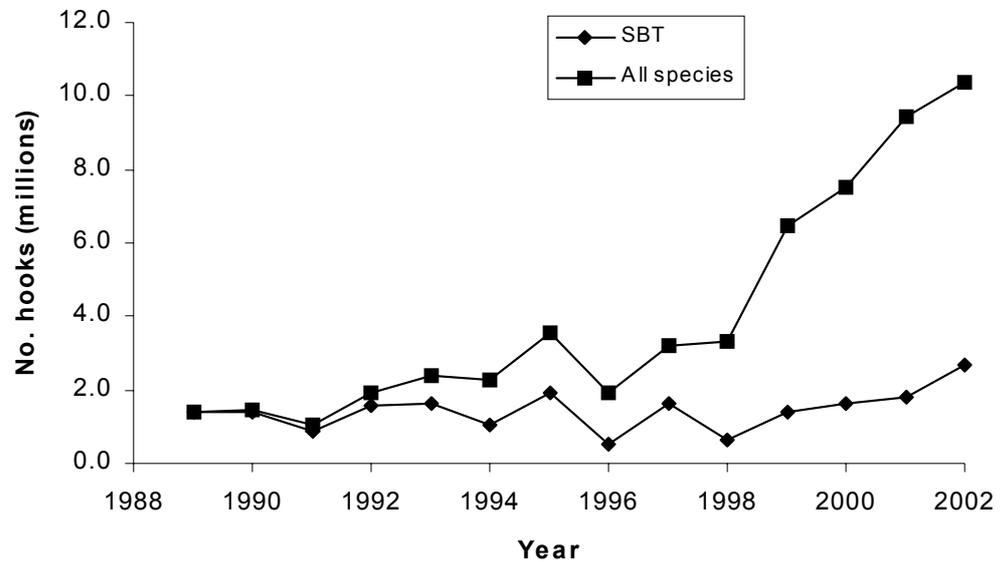


Figure 2. Size composition (GRT) of New Zealand longline fleet

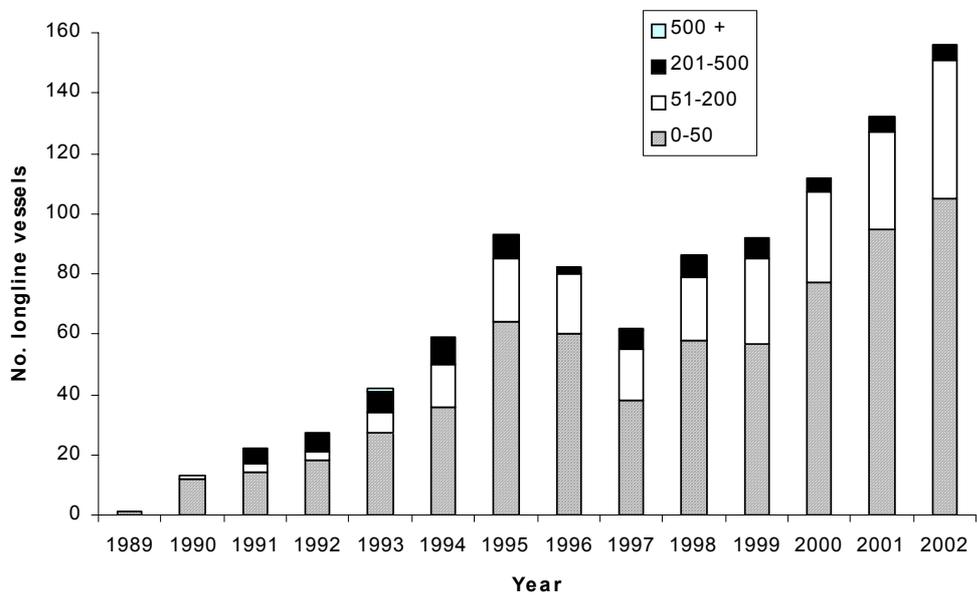


Figure 3. Comparison of nominal CPUE (no. SBT per 1000 hooks) in waters north and south of 40° S in the April to July SBT season for chartered and domestic owned and operated vessels targeting SBT.

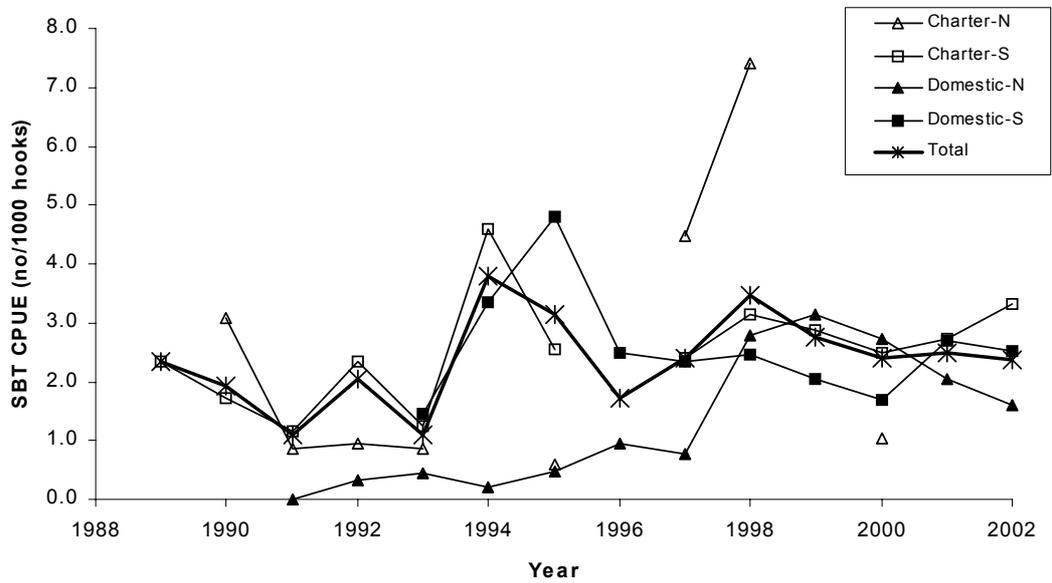
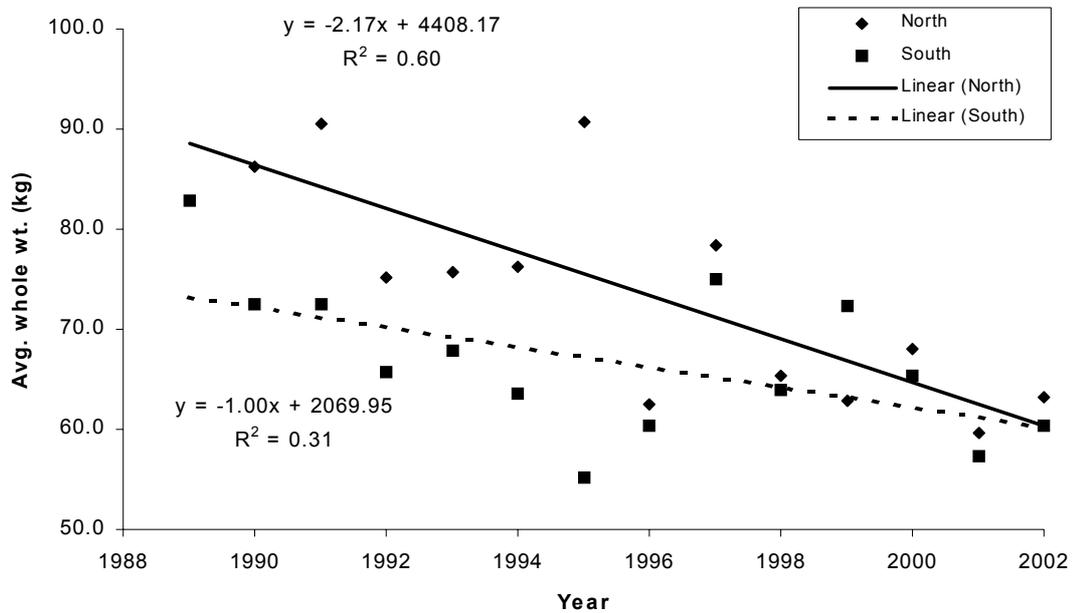


Figure 4: Changes in average whole weight (kg) for SBT caught north and south of 40° S during the April to July SBT season.



CCSBT-ESC/0309/SBT Fisheries – New Zealand (additional figure)

Size Frequency Distributions from Observer Data

