Review of New Zealand SBT Fisheries

1. Introduction

Since the start of New Zealand's domestic southern bluefin tuna (SBT) fishery, handline, trolling and longline have been used to target SBT in the EEZ. In recent years nearly all of the SBT catch has been by surface longline with occasional small catches by trolling and a small bycatch in the mid-water trawl fishery for hoki. The domestic fishery is composed of a wide range of vessel types including many small owner-operated boats and a few large low temperature longliners purchased overseas. Two large low temperature Japanese operated distant water longliners were chartered by a New Zealand company in 2005. Both the chartered vessels and the New Zealand owner-operated vessels fished competitively against New Zealand's SBT catch allocation until 2004.

New Zealand's fishing year starts 1 October and finishes 30 September of the following year. SBT is seasonally present from March/April to August/September. Fishing takes place in two areas, off the east coast of the North Island north of 42 S and off the west coast of the South Island south of 42 S. Longlining off the west coast of the South Island is almost entirely targeted at SBT, yielding higher catch rates of SBT than off the east coast of the North Island.

SBT 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 has seen a change from the "Olympic" race for fish seen in previous years. This introduction has also been associated with a consolidation of the SBT longline fleet.

The most recent fishing season (2004/05) resulted in the lowest NZ catch in 10 years (264 t). This is attributed to two main factors: the absence of new recruitment into the NZ longline fishery leading to decreased vulnerable biomass and the decline in longline effort from the domestic and charter fleets.

2. Operational Constraints on Effort

Voluntary measures

Since 1994 the New Zealand fishing industry has implemented voluntary measures with respect to longline fishing that are detailed in a "Code of Practice". Specific measures include gear specifications, environmental standards, operational practices and closed areas. The intent of the measures is to minimize:

- bycatch (eg of seabirds and marine mammals);
- catch of SBT smaller than 20 kg;
- impacts on other domestic tuna fisheries, and
- gear conflict among SBT longline vessels.

Other voluntary measures that are used but not part of the "Code of Practice" include catch limits by area, changing areas when bird bycatch reaches a specific level, using multiple "tori" lines and longer lines than specified in regulations, night-setting, and the use of pneumatic "bird-scaring" cannons.

Regulatory measures

New Zealand continues to impose the previously agreed national catch limit of 420 t (whole weight) but now applies this limit to all known fishing mortality in New Zealand fisheries. Prior to the 2004/05 fishing season, this catch limit was a competitive limit among all license holders. Regulations specified the annual catch limit and made it an offence to take SBT once the catch limit had been reached. The catch limit applied within and outside New Zealand fisheries waters for the "fishing year" which extends from 1 October to 30 September. In the few years when the catch limit was exceeded, it was reduced in the following year by an equivalent amount.

Until midway through the 2000/01 fishing season the SBT quota applied to the catch of both SBT (*Thunnus maccoyii*) and Pacific bluefin tunas (formerly *Thunnus thynnus*, now recognized as *Thunnus orientalis*). The quota restriction on Pacific bluefin tuna was removed late in the 2000/01 SBT season when Pacific bluefin tuna was identified as a separate species and it was demonstrated that Pacific bluefin could be readily distinguished from SBT in catches based on morphological characteristics and DNA analysis. SBT landings reported prior to June 2001 distinguished between northern and southern bluefin despite the fact the catches of both were counted against the SBT quota. Catches reported as northern bluefin were most likely Pacific bluefin. The quota restriction on northern bluefin tuna (*Thunnus thynnus*) was removed in 2002.

SBT was introduced into the New Zealand QMS effective 1 October 2004. There have been a number of improvements in the management of New Zealand's SBT fishery as a result of this move to QMS management. Three forms of catch reporting are required (catch, effort and landing, catch against quota and reports by receivers of fish) to improve the monitoring of catches. Significant financial penalties apply to fishers who do not cover catch of SBT with quota thereby limiting the potential for over catch. Further, a rationalisation of fishing effort has occurred in conjunction with an extension of the fishing season to focus on periods when SBT are in the best possible condition for capture.

Pacific bluefin tuna were also introduced into the QMS on 1 October 2004 with a total allowable commercial catch of 116 t.

3. Historical Catch and Effort

The New Zealand SBT fishery was initially a handline and troll fishery. With the advent of domestic longline fishing however (starting in 1990), longline effort has almost completely replaced fishing effort by trolling and handline. Small amounts of SBT continue to be caught by trolling, and there is a small SBT bycatch in the mid-water trawl fishery. Total SBT catches are summarised by calendar year and fishing year (1 October to 30 September) in Table 1.

Effort for the charter fleet by calendar year and region are provided in Figure 1. Most effort occurs off the west coast of the South Island. Over the period 2001-2004 there has been no targeting of SBT (and no catches of SBT) off the east coast North Island fishing grounds. In 2005, the two charter vessels did fish the later part of the season off the east coast of the North Island and experienced higher catch rates than they had off the west coast of the South Island. Longline effort for the domestic fleet by calendar year and region are provided in Figure 2. While effort increased dramatically in both regions from 1995 to 2003, it has decreased since then, particularly off the west coast of the South Island.

Nominal CPUE by fleet across all regions is provided in Figure 3. Charter CPUE averaged around 3 SBT per 1000 hooks over 1997-2002. Associated with a lack of new recruitment, CPUE declined dramatically in 2003 and has stayed at these historically low levels in 2004 and 2005. A small increase in CPUE has occurred in 2005, this is attributed to the increased effort on the east coast North Island fishing grounds. The domestic CPUE has followed a similar pattern over time to the charter CPUE, although it is traditionally not as high.

4. Annual Fleet Size and Distribution

The charter fleet primarily operates off the west coast of the South Island south of 42º S while smaller domestic owned and operated vessels primarily operate off the east coast of the North Island north of 42º S. SBT also comprises a bycatch in the bigeye target fishery in the Bay of Plenty. The fishing season for SBT is essentially the same for both areas and begins in March/April and generally finishes in July.

The spatial distribution of fishing effort and SBT catches from the charter fleet are provided in Figures 4 and 5. Most of the charter catch and effort occurs off the west coast of the South Island, though there was some effort off the east coast of the North Island in 2005 due to the low catch rates experienced off the west coast.

The spatial distribution of fishing effort and SBT catches from the domestic fleet are also provided in Figures 4 and 5. While most target effort occurs off the east coast of the North Island, a substantial domestic fishery has previously operated off the west coast of the South Island– mostly due to one large domestic vessel. Historically most of the east coast effort has been south of East Cape, but after the introduction of SBT to the QMS in 2004, the effort was more distributed around the East Cape region and occurred slightly later (a month or so).

There is also a substantial domestic fishery that operates outside the SBT season. The effort in this fishery is more northern in its distribution and has low SBT bycatch. The distribution of catches is similar to that of target effort, though proportionally more catch (compared to effort) was taken in the west coast South Island fishery compared to the east coast North Island fishery prior to 2005.

The number of vessels catching SBT peaked in 2002 and has since declined to only 58 vessels in 2005. We expect that it will have declined even further in 2006 (Table 2). In 2005 only two charter vessels fished for SBT in New Zealand fisheries waters, which is less than recent years.

5. Historical Fleet Size and Distribution

The New Zealand SBT fishery began off the west coast of the South Island as a winter small boat handline and troll fishery in the early 1980s. Most fishing by these vessels was in July and August. Since 1990, however, these methods have comprised only a minor component of the fishery as the SBT quota, when fished competitively, has generally been caught by longline vessels by the time the handline fishery started. During the 1980s to mid-1990s most longlining was conducted by foreign licensed longliners from Japan. However, declining catch rates, shortened seasons of availability and reports of increased operating costs in the EEZ resulted in the foreign licensed fleet ceasing operations in 1995. Domestic longlining began in 1991 and steadily increased to over 150 vessels in 2002 before declining to the current low of 58 vessels.

6. Fisheries Monitoring

Observer coverage

New Zealand has a Scientific Observer Programme that covers both domestic and charter longline vessels. All trips on charter vessels are covered by at least one observer, while the target coverage level for the domestic fleet is 10% of the effort to reflect 10% of the catch.

In 2004, 12 observers were briefed and deployed (4 charter vessel and 10 domestic vessel deployments); in 2005, 10 observers were deployed (2 charter vessel and 9 domestic vessel deployments). Coverage is measured in two ways, proportion of catch (in numbers of fish) observed and proportion of hooks observed. In terms of catches, over 98% of the catch was observed (and measured) in the charter fleet in 2004 and 2005. For the domestic fleet, 15% of the catch was observed in 2004, but only 9% in 2005. In terms of effort, over 90% of hooks were

observed on the charter vessels. For the domestic fleet 15% of the effort was observed in 2004 and 12% in 2005.

RTMP coverage

Prior to the management of SBT in the QMS, MFish operated an in-season catch monitoring system for SBT. This system required that on-shore processing companies and freezer vessels (including all of the chartered fleet) report their catch by e-mail or fax during the season to MFish. Weekly reporting was required once 25% of the catch allocation was reached and daily reporting required when 50% of the catch allocation had been reached. Reports were collated and analysed by MFish with the season being closed as close as possible to reaching our national allocation. All SBT permit holders were then notified that the season was closed and that it would be an offence to take SBT for the remainder of the fishing year.

From 1 October 2004 the catch monitoring and catch balancing systems in place for all other NZ quota species applied to SBT. All fishers are required to furnish monthly returns of catch and these are then matched to individual holdings of quota entitlement. Financial penalties apply to fishers (on a monthly basis) who catch SBT other than under the authority of quota. Fishers have the opportunity to reconcile their catch and quota entitlements up until the end of the fishing year and if they do not do so the financial penalties increase. The total fishery catches are assessed annually and any adjustment will be made to future years to balance the catch from the fishery and the NZ national allocation as required.

Biological information

Observers from the MFish Scientific Observer Programme are responsible for collecting biological data on SBT and bycatch data for catch characterisation. Length, weight (both processed and whole weights) and sex are recorded regularly for SBT and all major fish bycatch species.

Observers onboard the charter vessels also collect otoliths from as many SBT caught as possible. Due to the smaller size of the domestic vessels and the different processing practices, it is not feasible to collect otoliths from the domestic fleet at this time. In 2004, 1153 otoliths were collected from SBT, but only 429 were collected in 2005. The lower number is because only two charter vessels fished in 2005 compared to 2004. A sub sample of the otoliths from 2004 has already been aged while those collected in 2005 are currently archived and will be aged later in the year.

7. Other Factors

Import/export statistics

Statistics on the export of SBT are compiled by Customs and summarized by the Department of Statistics. Export statistics are further summarized by the New Zealand Seafood Industry Council and maintained as a database for economic evaluations of New Zealand fisheries.

Markets

The only market for SBT caught in the EEZ is the Japanese sashimi market and domestic consumption is negligible.

Mitigation

New Zealand regulations specify that all tuna longline vessels shall use seabird-scaring devices ("tori-lines"). The minimum standard for "tori lines" is the same as initially specified by CCAMLR. The domestic fishing industry has a voluntary code of practice advocating night setting for all tuna longlining and for the large tuna longline vessels a limit on total incidental mortality of "at risk" seabirds has been set. New Zealand is currently implementing an approved National Plan of Action for Seabirds in response to the FAO International Plan of Action for Seabirds.

Recreational and Customary Catches of SBT

Recreational fishing for SBT in New Zealand waters is limited. There are records of recreational catch from both the North and South Islands. There are no estimates of SBT catches by Maori non-commercial fishing. However, a proportion of New Zealand's national allocation is provided as an allowance to cover both recreational and customary catches.

Resolution on IUU fishing and establishment of CCSBT Vessel record

New Zealand provides a list of authorised vessels to the CCSBT Secretariat and has put in place routine systems to update the record as required. The list includes all New Zealand flagged and registered fishing vessels all of which are technically authorised to fish for SBT in New Zealand fisheries waters. Any catch of SBT is recorded and monitored by routine systems established as part of the New Zealand Quota Management System and New Zealand has no information to suggest that any of its registered fishing vessels have an involvement in IUU fishing. Procedures have been put in place to ensure that foreign owned vessels fishing under charter to New Zealand companies may only fish for SBT if they are from a member state of the Extended CCSBT. Individual assessments of the compliance history of foreign owned vessels are required prior to the approval of their registration as New Zealand fishing vessels.

Table 1: Recent catches of SBT in New Zealand fisheries waters (tonnes whole weight) by Calendar year and New Zealand fishing year (1 October to 30 September).

Year	Calendar year catches	Fishing year catches
1980	130.0	130.0
1981	173.0	173.0
1982	305.0	305.0
1983	132.0	132.0
1984	93.0	93.0
1985	94.0	94.0
1986	82.0	82.0
1987	59.0	59.0
1988	94.0	94.0
1989	437.2	437.1
1990	529.2	529.3
1991	164.5	164.5
1992	279.2	279.2
1993	216.6	216.3
1994	277.0	277.2
1995	436.4	434.7
1996	139.3	140.4
1997	333.7	333.4
1998	337.1	333.0
1999	460.6	457.5
2000	380.3	381.7
2001	358.5	359.2
2002	450.3	453.6
2003	389.6	391.7
2004	393.3	394.0
2005	263.8	263.8

Table 2. Number of vessels catching SBT in New Zealand fisheries waters (tonnes whole weight) by Calendar year and New Zealand fishing year (1 October to 30 September).

Year	Calendar year vessel numbers	Fishing year vessel numbers
2001	132	132
2002	151	155
2003	132	132
2004	99	101
2005	57	58

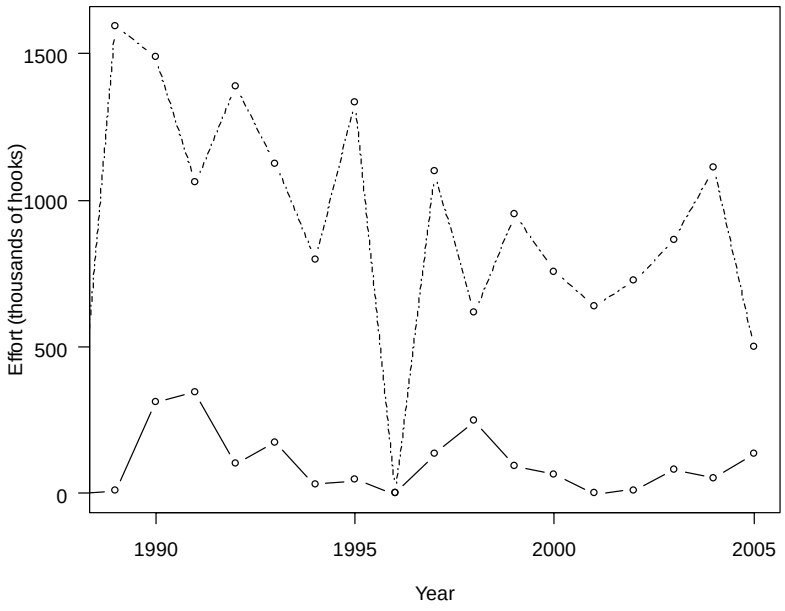

Figure 1. Effort (thousands of hooks) for the charter fleet off the east coast North Island (solid line) and the west coast South Island (dashed line). Note that this includes some non-SBT target effort on the east coast North Island.

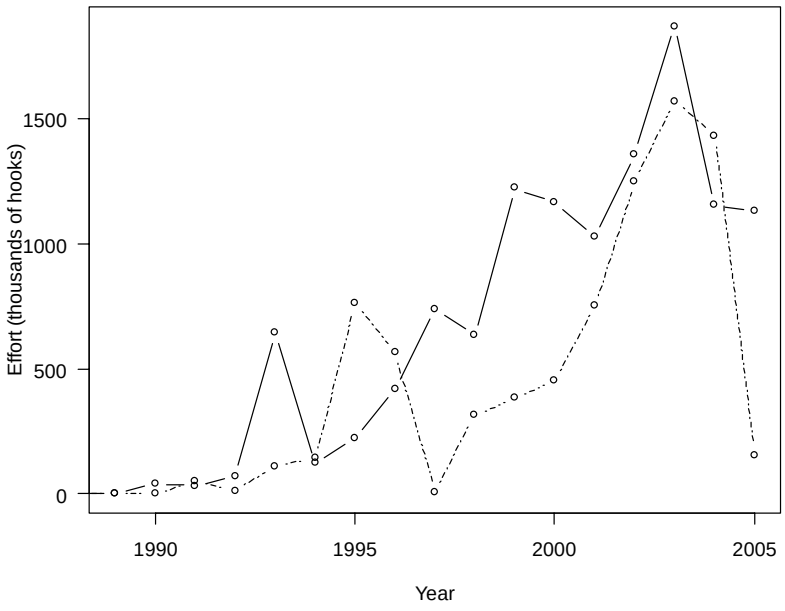

Figure 2. Effort (thousands of hooks) by the domestic fleet off the east coast North Island (solid line) and the west coast South Island (dashed line). Target effort represent hooks from sets that either targeted or caught SBT.

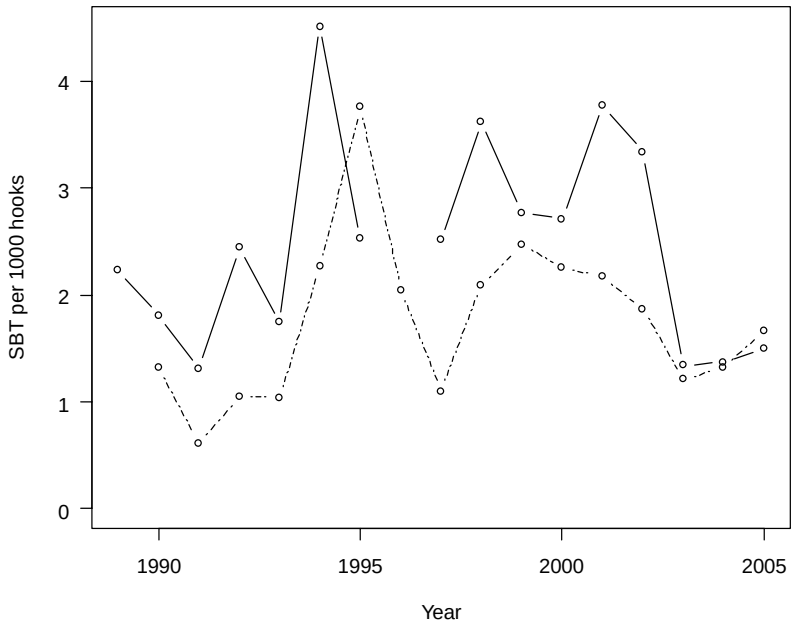

Figure 3. Catch per unit effort (number of SBT per thousand hooks) by calendar year for the charter (solid line) and domestic (dashed line) longline fleets based only on effort from sets that either targeted or caught SBT.

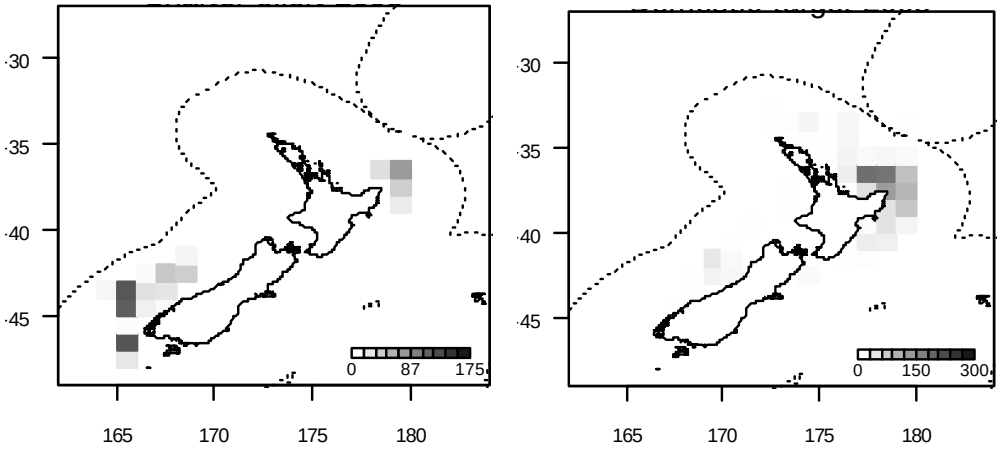

Figure 4. Distribution of longline effort (thousands of hooks per 1 degree square) for the charter fleet (left) and domestic fleet (right) for 2005.

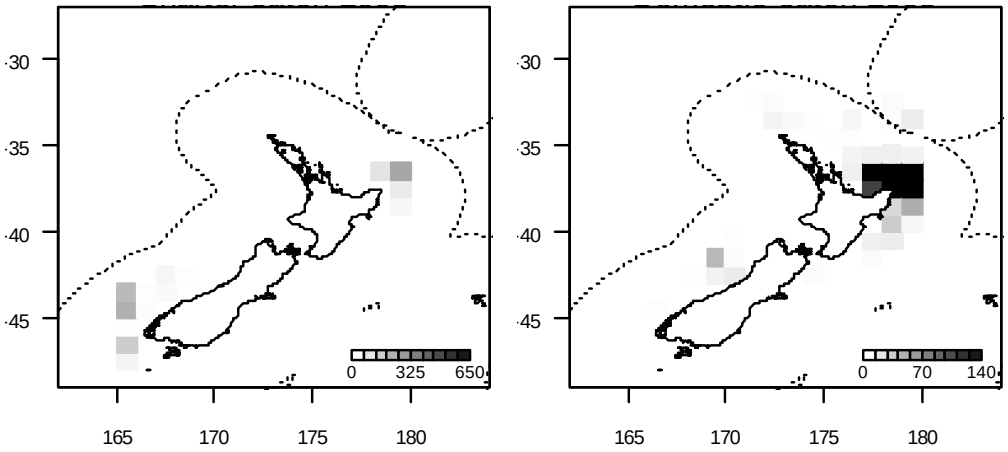

Figure 5. Distribution of longline catches (number of fish per 1 degree square) for the charter fleet (left) and domestic fleet (right) for 2005.