

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 on charter from overseas.

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 is allocated to recreational (four tonnes) and customary fishers (one tonne), and other sources of fishing-related mortality (two tonnes). The introduction to the QMS has seen a change from the "Olympic" race for fish seen in previous years. This introduction has been associated with a consolidation of the SBT longline fleet.

The most recent fishing season (2005/06) resulted in the lowest NZ catch in 10 years (238 t). This is attributed to two main factors: the absence of new recruitment into the NZ longline fishery leading to decreased vulnerable biomass (as illustrated in the continued period of low CPUE in the charter fleet); and the decline in longline effort from the domestic fleet and charter fleets.

Initial indications are that catches for 2006/07 are higher (342 t to end of July 2007).

2. Operational Constraints on Effort

Legislative measures

All New Zealand fishers operating within New Zealand's SBT fishery or on the high seas must hold the relevant domestic or high seas fishing permit and operate from registered fishing vessels. Conditions may be attached to the high seas fishing permit to regulate the activity of the vessels, including catch reporting and transshipment requirements. All New Zealand flagged vessels registered in New Zealand are technically authorised to take SBT, although only a small proportion do so.

New Zealand continues to impose the previously agreed national catch limit for SBT of 420 t (whole weight). 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 the move to QMS management. Three forms of catch reporting for the commercial fishery are required (catch and effort, landings, and reports by receivers of fish). Reports of catch are balanced on a monthly basis against quota to improve the monitoring of catches. Significant financial penalties apply to fishers who do not cover their annual catch of SBT with quota, thereby limiting the potential for over catch. These domestic catch reporting requirements are in addition to CCSBT's Trade Information Scheme (TIS), which is also in place.

Another outcome of QMS introduction has been a rationalisation of fishing effort, in conjunction with an extension of the fishing season to focus on periods when SBT are in the best possible condition for capture.

3. Catch and Effort

The New Zealand SBT fishery was initially a handline and troll fishery. With the advent of domestic longline fishing (starting in 1990), longline effort has almost completely replaced trolling and handline fishing effort. 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 CCSBT region is provided in Figure 1. Most catch and effort occurs in region 6, which covers the west coast of the South Island (WCSI) fishing grounds. Over the period 2001-2004 there was no targeting of SBT (and no catches of SBT) by the charter fleet in region 5, which covers the east coast North Island (ECNI) fishing grounds. In 2005, the two charter vessels did fish for SBT in the latter part of the season in region 5, and experienced higher catch rates than they had in region 6.

Longline effort for the domestic fleet by calendar year and region is provided in Figure 2. A significant longline fishery operates outside the SBT fishing season, with some bycatch of SBT. It is important to separate the domestic and charter data out to better understand the New Zealand SBT fishery.

For catches, the importance of the WCNI and ECNI has varied since 1995. Target effort increased dramatically in both regions from 1995 to 2003, but has decreased since then, particularly in region 6.

Nominal CPUE by fleet across all regions (based on targeted longline effort) is provided in Figure 3. Charter CPUE averaged around 3 SBT per 1000 hooks from 1997-2002. Associated with the lack of new recruitment, CPUE declined dramatically in 2003. CPUE has stayed at these historically low levels until a slight increase in 2006 for the charter fleet. This increase occurred in the core area of the charter fishery (region 6), and may be due to the appearance of some small recruits. The domestic CPUE has followed a similar pattern over time to the charter CPUE, although it is traditionally not as high.

Recreational and Customary Catches of SBT

Since 1 October 2004, New Zealand has allowed five tonnes of its national allocation for non-commercial catches. Due to the locations and seasons during which SBT are now found in New Zealand waters (generally winter months, in areas with little recreational fishing), it is unlikely this allowance has been approached.

There have been some reports of bycatch of SBT in the recently developed sport fishery for Pacific bluefin (*Thunnus orientalis*) off the west coast of the South Island. Generally, SBT are only taken early in the season (July), with the catch being almost entirely Pacific bluefin during August – September, when most of the effort occurs. The overall tonnage of SBT retained is thought to be low. Many of the SBT have been tagged and released.

In order to better estimate the level of recreational catch in relation to the allowance made under our national allocation, New Zealand will monitor the Pacific bluefin fishery during the current season.

There are no estimates of SBT catches by Maori non-commercial fishing. Although one tonne of the non-commercial allowance is for customary catches, actual take is believed to be negligible.

4. Fleet Size and Distribution

The number of vessels catching SBT peaked in 2002 and has since declined to only 56 vessels in 2006 (Table 2). In 2005 and 2006 only two charter vessels fished for SBT in New Zealand fisheries waters, which is less than recent years.

The spatial distribution of fishing effort and SBT catches from the charter and domestic fleets are provided in Figures 4 and 5.

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. SBT catches are taken chiefly off the WCSI and off the ECNI, from March/April to July.

Longlining off the WCSI is almost entirely targeted at SBT. 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 off the WCSI compared to the ECNI means that few of the smaller domestic owned and operated vessels operate in this area.

The longline fishery off the ECNI is dominated by smaller domestically owned and operated “ice boats” that are typically at sea for only a few days. This fishery includes landings of SBT both as a target and as a bycatch of bigeye target sets in the Bay of Plenty.

While most target effort for the domestic fishery occurs off the ECNI, a substantial domestic fishery previously operated off the WCSI – mostly due to one large domestic vessel that has not fished in recent years. Historically, most of the ECNI 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 (by a month or so).

The substantial domestic longline fishery in which SBT is caught in small numbers as a bycatch is more northern in its distribution. This fishery operates outside of the SBT season.

The distribution of SBT catches is similar to that of target effort, though prior to 2005 proportionally more catch (compared to effort) was taken in the WCSI fishery compared to the ECNI fishery.

5. Historical Fleet Size and Distribution

The New Zealand SBT fishery began 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, these methods have comprised only a minor component of the fishery, because SBT quota had 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. 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 56 vessels.

6. Fisheries Monitoring and Compliance

Catch monitoring

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. These returns are then matched to individual holdings of quota entitlement. Financial penalties apply (on a monthly basis) to fishers 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 substantially increase.

Fish taken commercially may only be sold to licensed receivers of fish. Fish receivers are required to furnish monthly returns of their purchases by species and fisher. These reports are used to verify individual fishers' catch returns.

All exported SBT must be accompanied by a CCSBT-TIS. These are provided to the CCSBT Secretariat, who in turn consolidates and reconciles them against NZ reports of catch.

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. The target coverage level for the domestic fleet is 10% of the effort to reflect 10% of the catch.

In 2005 and 2006, observers were deployed on two charter vessels and nine domestic vessels. This involved 10 and 16 observers in 2005 and 2006, respectively.

Coverage is measured in two ways: proportion of catch (in numbers of fish) observed and proportion of hooks observed. Over 98% of the catch was observed (and measured) in the charter fleet in 2005 and 2006. For the domestic fleet, 9% of the catch was observed in 2005, but only 4% in 2006. In terms of effort, 89% of hooks were observed on the charter vessels in 2005, and 94% in 2006. For the domestic fleet 12% of the effort was observed in 2005, and 9% in 2006.

The cost of the observer programme was approximately NZ\$219,500 in total (NZ\$112,500 for the charter coverage, and NZ\$107,000 for the domestic coverage).

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 432 and 444 were collected in 2005 and 2006 respectively. The lower number is because less charter vessels fished in 2005 and 2006. A sub-sample of the otoliths from 2004 and 2005 have been aged, although there are currently concerns regarding the interpretation of these otoliths.

Transshipments

Transshipments by New Zealand flagged vessels, either on the high seas or within New Zealand waters, are subject to specific prior approval by the Ministry of Fisheries and must be monitored by an observer or Fishery Officer with specific requirements including labelling and the transfer of cartons. Transshipments are not a common occurrence. New Zealand currently has no carrier vessels to notify to the Secretariat.

Vessel Monitoring System

New Zealand legislation requires:

- all New Zealand vessels over 28m in length;
- all foreign charter vessels registered to fish in New Zealand waters;
- all New Zealand flagged and registered vessels operating outside of New Zealand waters;
and
- all vessels issued with a foreign licence to fish in New Zealand waters

to fit and continuously operate Automatic Location Communicators. These vessels report to the New Zealand VMS.

The Ministry of Fisheries has recently reviewed the application of VMS to all domestic vessels. There are significant technological problems with applying VMS to small vessels at present. The New Zealand Minister of Fisheries has determined that technological solutions will be developed over the next two years, with a view to applying VMS to all New Zealand vessels fishing for SBT. Since all New Zealand flagged registered vessels are authorised to fish for SBT, the aforementioned group of vessels that fish for SBT will be a subset of all New Zealand vessels authorised to do so.

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. As of February 2007, applications for vessel registration include a tick box that allows applicants to indicate whether or not SBT will be caught by the vessel (either as target or bycatch). Over time, this will allow a specific SBT fleet to be identified (such vessels can currently be identified by analysing their previous catch reporting, but this does not allow for new vessels entering the fleet to be identified immediately).

Any catch of SBT is recorded and monitored by routine systems established as part of the New Zealand QMS. New Zealand has no information to suggest any of its registered fishing vessels have an involvement in IUU fishing. Procedures have been put in place to ensure 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.

Implementation of an IUU vessel register and any further consequential changes to the list of New Zealand authorised vessels awaits the Commission's decisions on IUU vessel registers.

Monitoring and activities undertaken to implement other measures being considered by the Compliance Committee will be incorporated in this report in future years once the measures are agreed by the Commission.

7. Ecologically related species

Seabird mitigation measures

New Zealand implemented its National Plan of Action for Seabirds, in response to the FAO International Plan of Action for Seabirds, in April 2004. The plan is currently being reviewed. As of February 2007, New Zealand regulations require surface longline vessels to:

- use seabird-scaring devices (“tori lines”) when setting surface longlines;
- not set surface longlines between the hours of 0.5 hours before nautical dawn and 0.5 hours after nautical dusk.¹
- provide notice of departure on a fishing trip to the Ministry of Fisheries observer programme at least five days prior to sailing. This provision is to aid in placing observers on surface longline vessels.

The minimum standard for tori lines is based on international best practice drawn from CCAMLR, CCSBT, and WCPFC recommendations.

A variety of voluntary practices are employed in the fishery to assist with seabird bycatch mitigation, including the use of dyed bait, offal management strategies, and line weighting. The charter fleet of large tuna longline vessels sets a voluntary limit on total incidental mortality of “at risk” seabirds as part of their code of practice.

Non-fish bycatch

New Zealand is in the process of making changes to its reporting requirements, so that fishers can more effectively report non-fish bycatch (including turtles, seabirds and marine mammals). Changes will also be made to the regulations that cover any interactions with sea turtles (although sea turtle bycatch in New Zealand’s pelagic longline fisheries is a very rare occurrence).

8. Other matters

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. CCSBT-TIS documents are required for all SBT exports.

Markets

The principal market for New Zealand’s SBT fishery is the Japanese sashimi market. Domestic consumption is small.

Historical management

Prior to the 2004/05 fishing season, the SBT 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

¹ “nautical dawn” means the time at sunrise when the centre of the sun is at a depression angle of 12 degrees below the ideal horizon for the place.

“nautical dusk” means the time at sunset when the centre of the sun is at a depression angle of 12 degrees below the ideal horizon for the place

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 morphological characteristics and DNA analysis could be used to readily distinguish Pacific bluefin from SBT in catches. SBT landings reported prior to June 2001 distinguished between northern and southern bluefin even though 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.

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

Table 1: Recent catches of southern bluefin tuna in New Zealand fisheries (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	264.4	264.0
2006	238.2	238.2

Table 2. Number of vessels catching SBT in New Zealand fisheries waters 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
2006	56	57

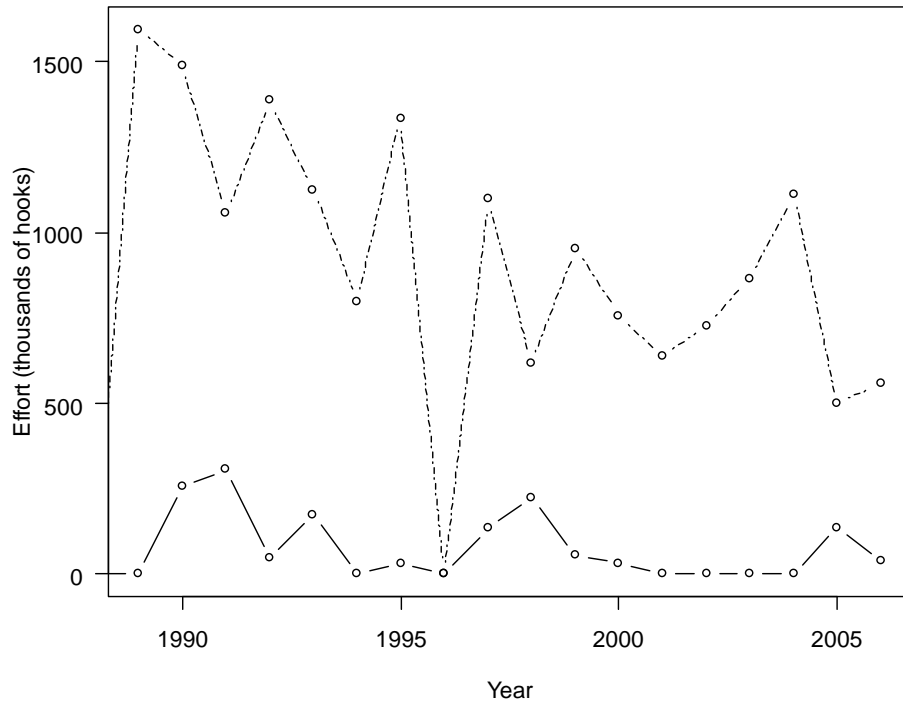


Figure 1: Effort (thousands of hooks) for the charter fleet in Region 5 (solid line – east coast North Island) and Region 6 (dashed line – west coast South Island). Note that this includes some non-SBT target effort in region 5 and that no charter vessels fished in 1996.

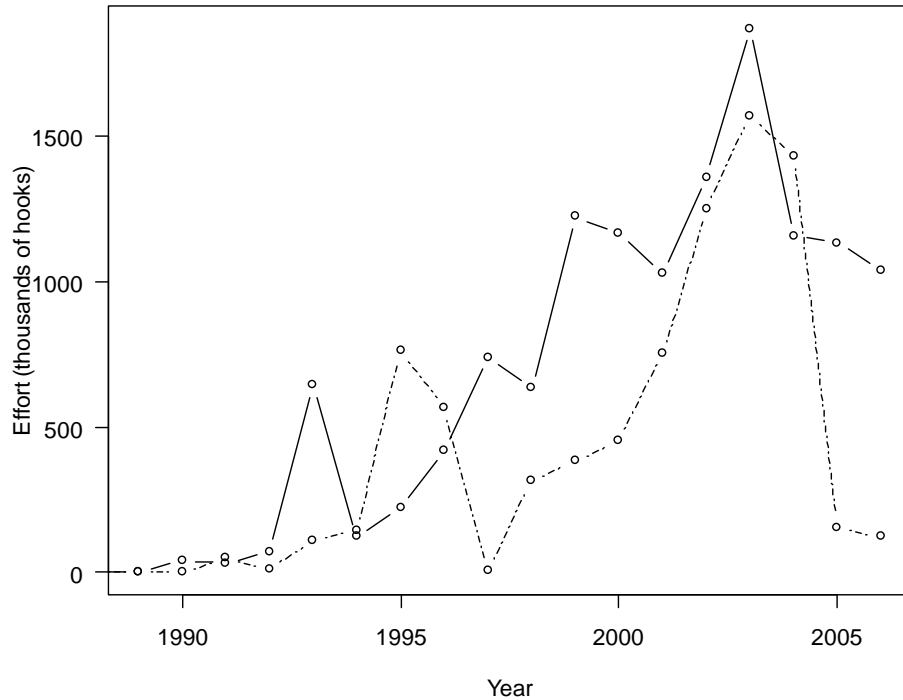


Figure 2: Target effort (hooks from sets that either targeted or caught SBT – thousands of hooks) by the domestic fleet for Region 5 (solid line – east coast North Island) and Region 6 (dashed line – west coast South Island).

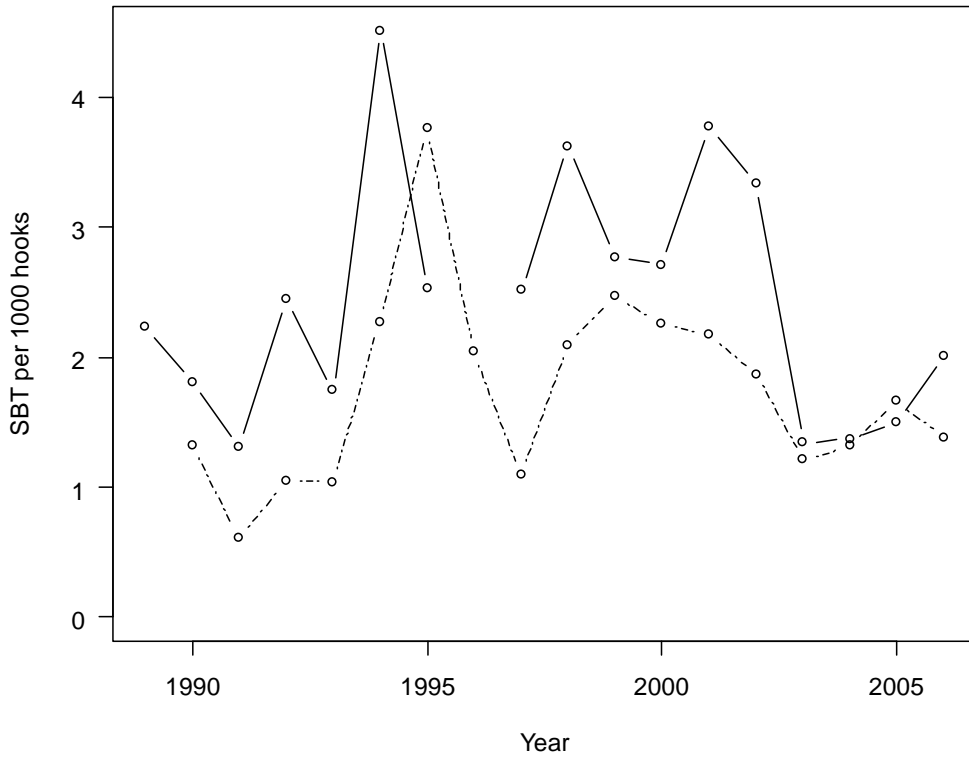


Figure 3: Catch per unit effort (number of SBT per thousand hooks) by calendar year for the charter (solid line) and domestic (dashed line) longline fleets based only on effort from sets that either targeted or caught southern bluefin tuna.

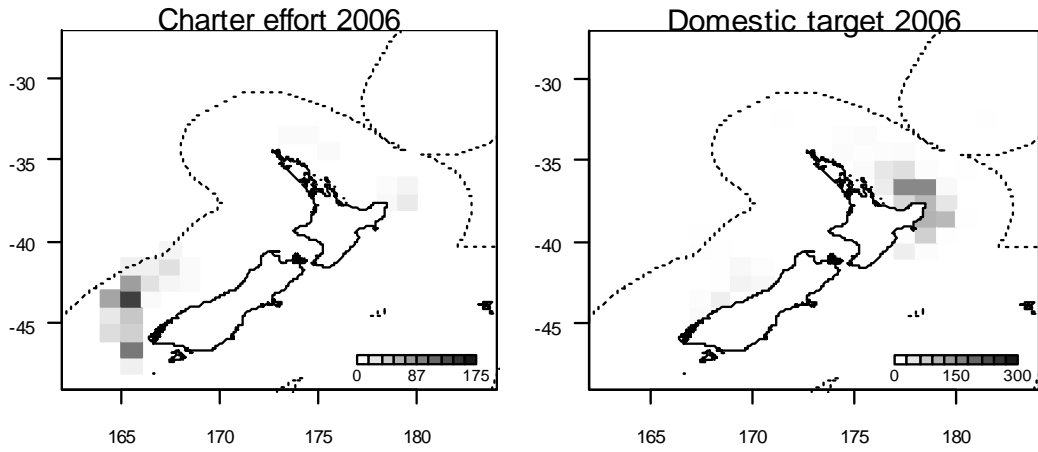


Figure 4. Distribution of longline effort (thousands of hooks per 1 degree square) for the charter fleet (left) and domestic fleet (right) for 2006.

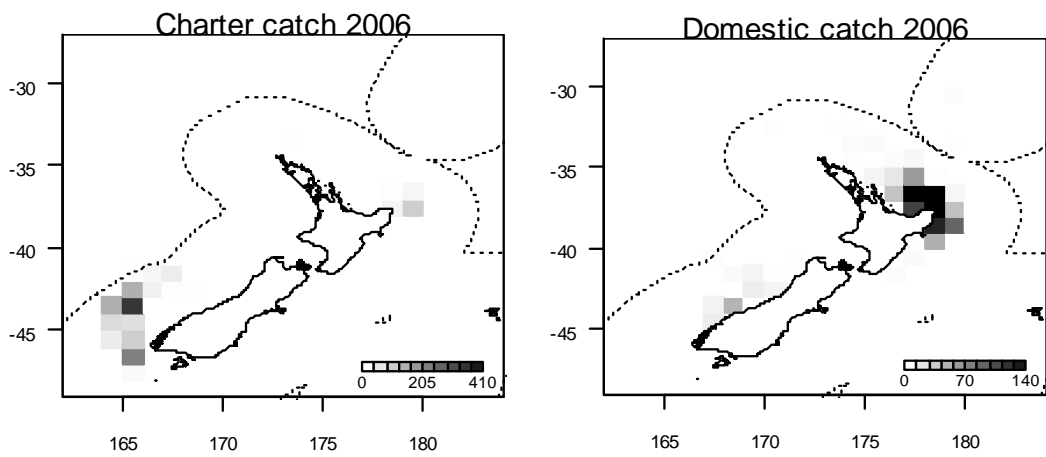


Figure 5. Distribution of longline catches (number of fish per 1 degree square) for the charter fleet (left) and domestic fleet (right) for 2006.