



SCIENTIFIC COMMITTEE

Fifth Regular Session

10-21 August 2009

Port Villa, Vanuatu

**DESCRIPTION OF NEW ZEALAND'S SHALLOW-SET LONGLINE
FISHERIES**

WCPFC-SC5-2009/EB IP-01 rev1

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Abstract

The Western and Central Pacific Fisheries Commission is tasked with managing the largest industrial tuna fishery in the world. This includes a multi-nation fleet of 4-5,000 longline vessels fishing throughout (but not evenly distributed in) the Western and Central Pacific Ocean. Interactions with sea turtles include incidental bycatch during longline operations, particularly when turtles actively take bait, or become entangled in the fishing gear.

In the context of the concerns surrounding sea turtle conservation, and the extent of the Western and Central Pacific Fisheries Commission's longline fleets, the Commission has recognised mitigation measures may reduce sea turtle captures. The Commission has attempted to reduce sea turtle capture in the fisheries under its jurisdiction, through resolution RES2005-04 and conservation and management measure CMM2008-04.

Conservation and Management Measure CMM2008-04, agreed in December 2008, highlights longline vessels that fish for swordfish in a shallow-set manner as a particular potential risk to turtles. As part of the measure, Commission Members, Cooperating non-Members and participating Territories (CCMs) are required to establish their own operational definition of "longline vessels that fish for swordfish in a shallow-set manner". This paper tables New Zealand's definition for longline vessels that fish for swordfish in a shallow-set manner. The paper also provides information on New Zealand's sea turtle interaction rates for these vessels.

Introduction

The New Zealand longline fishery operates year round in the New Zealand fishery waters. These vessels fish throughout the New Zealand Exclusive Economic Zone (EEZ) but the effort is concentrated primarily off the West Coast South Island and the East Coast North Island (Figure 1). Approximately 170 domestically owned and operated vessels (mostly 15 to 25 m) make up the main part of the domestic commercial New Zealand tuna fishing fleet. These vessels fish using troll or longline gear, with some switching between gear types seasonally or operating for part of the year in non-tuna fisheries (Table 1). All surface longline vessels reported in Table 1 targeted a species complex including tuna and swordfish.

There has been no foreign licensed access for tuna longline fishing in New Zealand fishery waters since 1995. The only foreign licences issued since 1995 for fishing in New Zealand fisheries waters have been to US purse vessels operating under the Multilateral Treaty between the Government of the United States of America and the Governments of certain Pacific Island Countries (commonly referred to as the US Tuna Treaty). A small fleet of foreign owned longline vessels on charter to New Zealand fishing companies have operated in New Zealand fishery waters since the late 1980s. These longliners target southern bluefin tuna although a mixed bag of species including swordfish are landed. In 2006, three Australian flagged vessels entered the longline fishery under charter arrangements, targeting bigeye tuna and swordfish. These vessels had all left New Zealand by August 2007.

In October 2004 bigeye, Pacific bluefin, southern bluefin, and yellowfin tuna were introduced into the Quota Management System (QMS), along with swordfish. At that time swordfish became a legal target species. While southern bluefin and bigeye tuna are the primary reported target species for surface longlining (Table 2), swordfish catches generally exceed the New Zealand catches of the tuna species (with the exception of albacore tuna, which is also caught by trolling) (Table 3).

Table 1: Number of New Zealand surface longline vessels fishing for tuna in the WCPFC Convention Area by vessel size class (GRT) active in the WCPFC Convention Area, for years 2004 to 2008.

Fishing Method	Calendar	Total no.	Vessels size range (GRT)			
	Year	vessels	0 – 50	51 - 200	201 - 500	500+
Surface Longline	2004	99	55	39	5	0
	2005	57	30	25	2	0
	2006	56	30	24	2	0
	2007	44	19	21	3	1
	2008	35	16	15	3	1

Table 2: Annual longline effort (000s of hooks) by target species. The category other includes Pacific bluefin, yellowfin tuna, and swordfish (able to be targeted since 2005/06). It should be noted that fishers record only one target species on their logsheets but are often targeting multiple species such as bigeye and albacore tunas simultaneously.

Year	Southern bluefin	Bigeye	Albacore	Other	Total
2004	3 199	2 908	449	168	6 725
2005	1659	1777	137	286	3860
2006	1495	1814	60	324	3693
2007	1939	1525	14	212	3690
2008	1105	989	1	161	2255

Table 3: Estimated whole weight (t) of tuna and swordfish landed by New Zealand flagged vessels active in New Zealand fishery waters (200nm of the coastline). The 2008 figures are preliminary.

	Calendar year				
	2004	2005	2006	2007	2008
Albacore <i>Thunnus alalunga</i>	4 459	3459	2541	2092	3739
Swordfish <i>Xiphias gladius</i>	532	329	571	392	347
Southern bluefin <i>Thunnus maccoyii</i>	394	264	238	379	318
Bigeye <i>Thunnus obesus</i>	185	176	178	213	133
Pacific bluefin <i>Thunnus orientalis</i>	67	21	21	14	14
Yellowfin <i>Thunnus albacares</i>	20	36	14	25	12

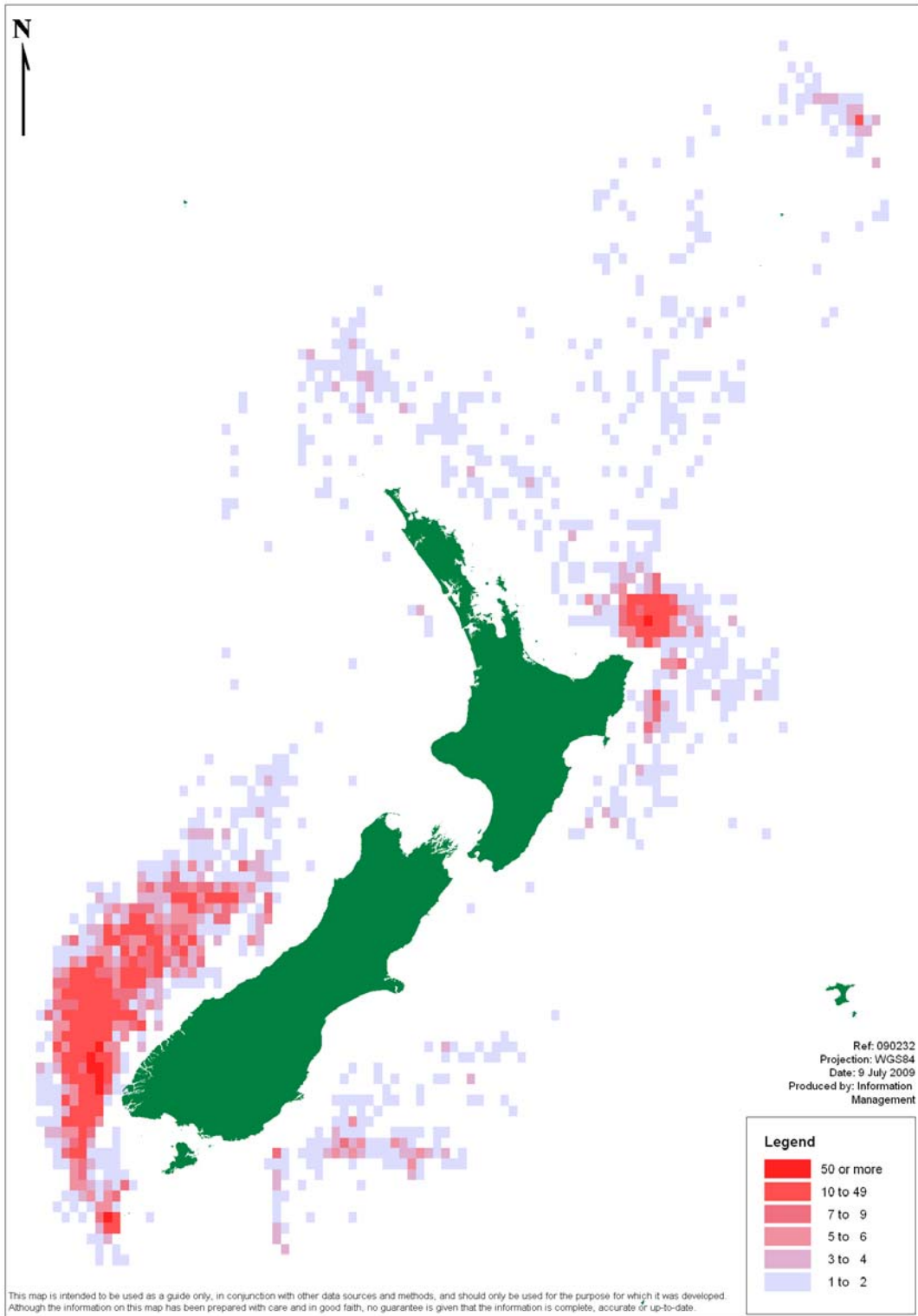


Figure 1: Distribution of New Zealand’s shallow-set (defined below) longline fishery effort.

Statistical data collection systems in use

New Zealand data collection systems in place to monitor fisheries include the following:

- the catch and effort system for all domestic and most high seas fishing
- monthly harvest returns from fishers
- licensed fish receiver returns for fish processors
- a system for collecting information on non-fish bycatch from fishers
- Ministry of Fisheries Observer Programme

More details on catch and effort and observer information are provided below. For information on the other systems, refer to the New Zealand country report.

Catch and effort data

For surface longline fishing, catch, fishing effort, fishing operation data, and vessel information are collected on logsheets provided by each permit holder to the Ministry of Fisheries (Tuna Longline Catch Effort Returns (TLCER)). TLCER forms are filled out only for surface longlining for tunas, and data are recorded for each longline set.

Tuna landings data are compiled from the Licensed Fish Receiver Returns (LFRR) filed monthly by each Licensed Fish Receiver and Monthly Harvest Returns (MHR) filed by the fishing permit holder (see below). Additional information on catch composition, length and weight, sex ratio, discard and on loss rate of fish is collected by the Ministry of Fisheries Observer Services.

Observer Programme

The New Zealand Observer Programme collects detailed operational data as well as catch and effort data, and information on interactions with non-fish and protected species. The target observer coverage rate for longline vessels fishing in New Zealand is 10% of effort, which should reflect approximately 10% of the HMS catch.

Prior to each trip observers receive comprehensive briefings, along with relevant reference material prior to undertaking any at-sea observation of longline vessels. Observers are provided with an observer manual that includes: details of species identification, what to record for each species caught, biological sampling instructions, and details of operational data to record. Observers make detailed records of the fishery operation, e.g. hooks per basket, use of floats, light-sticks, hook types, bait types, and snood setup. Observers also record information on the behaviour of seabirds and other non-fish species in relation to the fishing operation, e.g. whether seabirds were present during setting or hauling.

Longline fisheries in New Zealand

Using the detailed data collected by the Ministry of Fisheries Observer Services and the commercial catch reporting system, the New Zealand longline fleet can be broadly categorised by the species that the vessel is targeting. Fishers fishing for non-HMS species have been excluded from this analysis, furthermore only the observer data are considered here.

While all New Zealand longline fishers are required to nominate a target species for each set, the target species is often recorded as a preferred species while the gear setup is generalised to land a range of target species. Most of the vessels targeting HMS species use relatively short buoy lines (drop lines) irrespective of the target species, albacore target sets being the notable exception (Figure 2).

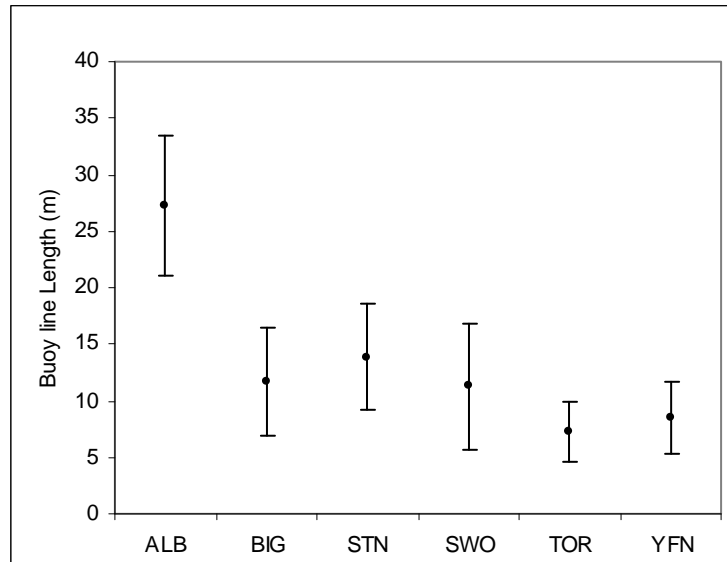


Figure 2: Average buoy line length per target species. ALB – albacore tuna; BIG – bigeye tuna; STN – southern bluefin tuna; SWO – swordfish; TOR – Pacific bluefin tuna; YFN – yellowfin tuna.

Vessels targeting bigeye, yellowfin and Pacific bluefin tuna usually have more hooks.basket⁻¹ than those targeting swordfish and southern bluefin tuna (Figure 3). Most vessels use snoods of a similar length with southern bluefin tuna target sets being slightly longer on average but most falling within the same bounds (Figure 4). Vessels predominantly use three different bait types, squid, fish and artificial lures. Lures are seldom used and only appear on less than 20% of the hooks. Most lines (approximately 65%) use lures on 5% of their hooks or less (Figure 5). The majority of the vessels use 50% squid and 50% fish bait but this can range from 0 to 100% for each (Figure 5).

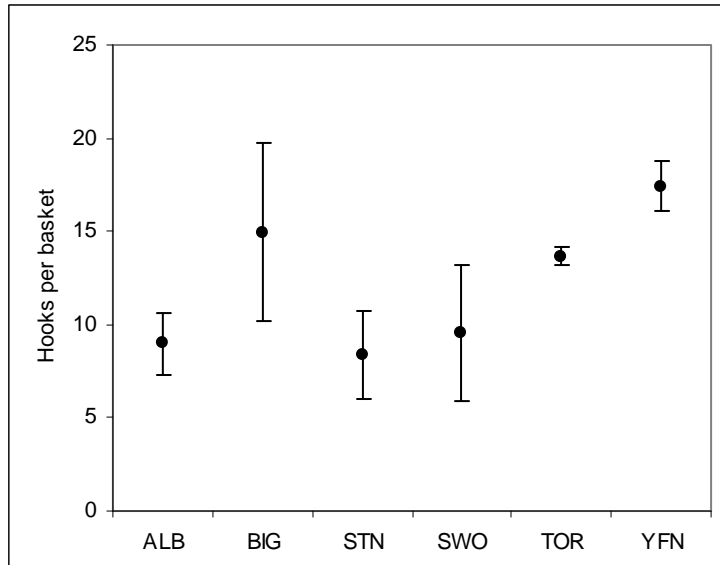


Figure 3: Average hooks per basket per target species. ALB – albacore tuna; BIG – bigeye tuna; STN – southern bluefin tuna; SWO – swordfish; TOR – Pacific bluefin tuna; YFN – yellowfin tuna.

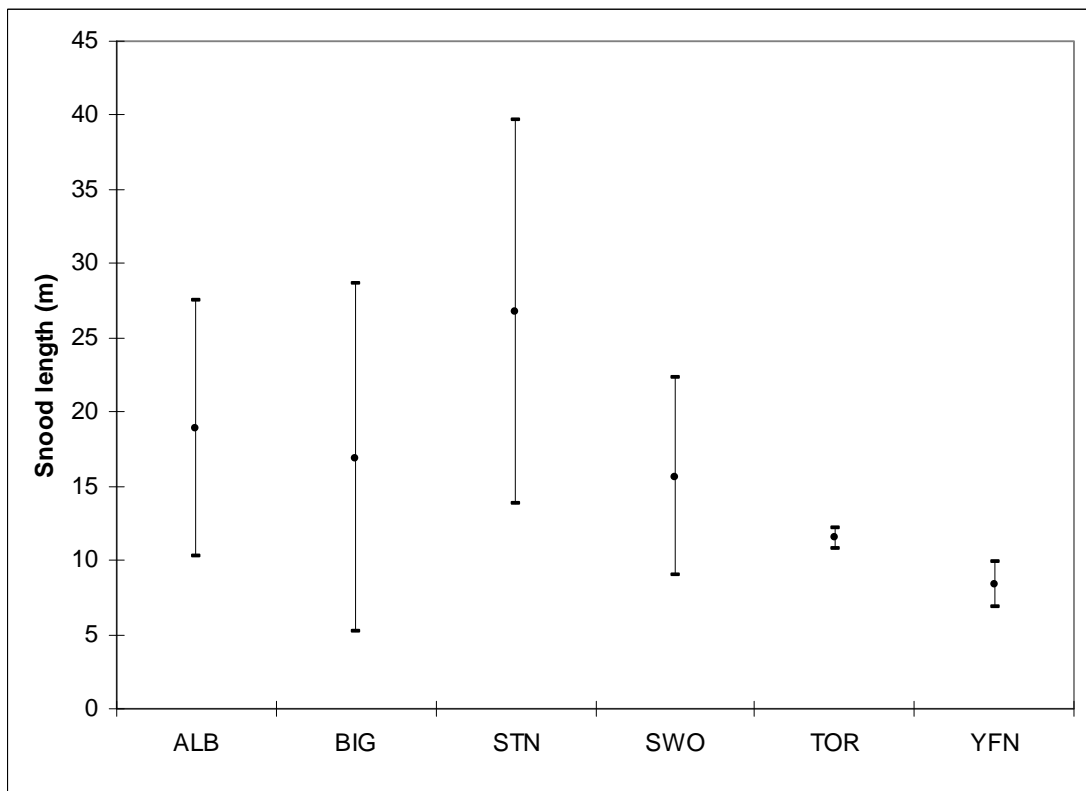


Figure 4: Average snood length per target species. ALB – albacore tuna; BIG – bigeye tuna; STN – southern bluefin tuna; SWO – swordfish; TOR – Pacific bluefin tuna; YFN – yellowfin tuna.

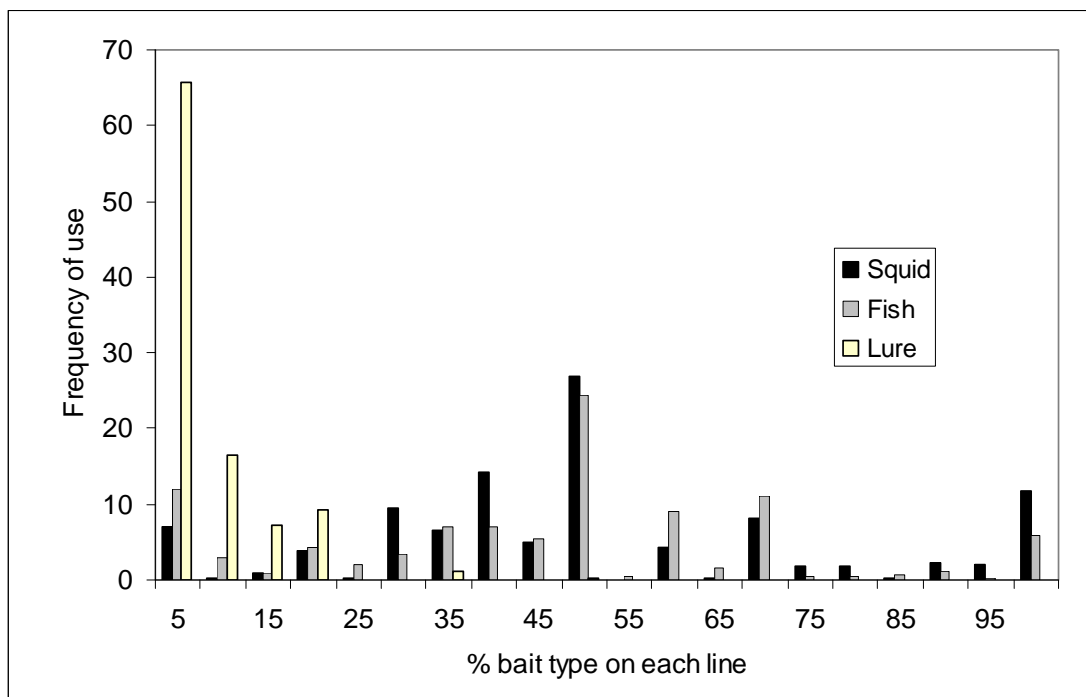


Figure 5: The frequency of bait use plotted against the percentage of each bait type per line for the New Zealand longline fishery.

Hook types

Between 2004 and 2008 New Zealand’s observer coverage of the longline effort within the New Zealand fishery waters has ranged from 18.2 to 25.2%, but that of the shallow-set fishery ranged from 11.2 to 12.6 between 2005 and 2008 (**Error! Reference source not found.**). Hook type has only been recorded by New Zealand observers since 1997. Since that time 67% of the vessels observed used circle hooks, 31.8 % J-hooks and 1.2% tuna hooks.

Table 4: Hooks observed from the New Zealand shallow-set longline fishery as a percentage of hooks set.

Calendar year	Total
2005	12.6
2006	11.2
2007	12.5
2008	12.2

Defining shallow-set swordfish fisheries

Determining the depth that a hook is fishing at is not easily done without placing depth recorders on the hooks. As this has not been done in New Zealand to test fishing depth (but see below) so the gear configuration is used to estimate fishing depth. This paper will broadly characterise longline gear as fishing shallow or deep. This characteristic is considered more useful for identifying a fleet of “shallow-set” vessels (including those that target and/or catch swordfish) that might pose a relatively greater risk to sea turtles than deeper-set longline fisheries.

A number of factors influence the fishing depth of longline gear, but definition of depth used here is based on the three main and measurable components, buoy length,

snood length, and hooks.basket⁻¹. The shallowest hooks will float at a maximum depth of one snood length deeper than the length of the buoy line, while the remainder will sit deeper in the water due to the sag of the main line (Figure 6).

When defining swordfish target sets in the New Zealand longline fishery for the Western and Central Pacific Ocean swordfish stock assessment, Unwin et al. (2008) used <13 hooks.basket⁻¹ for the hook setup of longline vessels fishing for swordfish. Campbell et al. (2008) showed using depth data recorders (TDR's) that the mid point for 13 hooks.basket⁻¹ was approximately 90m deep. They showed that with a gear set up of 10 hooks.basket⁻¹ was likely to result in the majority of the hooks remaining above the 100m depth contour. Similar results were found by Anderson and Mcardle (2002) in New Zealand, however, this work was a sea bird mitigation experiment and the hook timer data were only presented for zero to 150 min and not the whole set. As the Campbell et al. (2008) estimates are based on data collected from TDR's during the entire soak, they are assumed to be most accurate. The New Zealand longline data show that the longline sets can broadly be divided into those that use 10 or less hooks.basket⁻¹ and those using 11 or more (Figure 7). To reduce the overlap between shallow and deep sets we used sets with 10 or less hooks.basket⁻¹ to represent shallow sets.

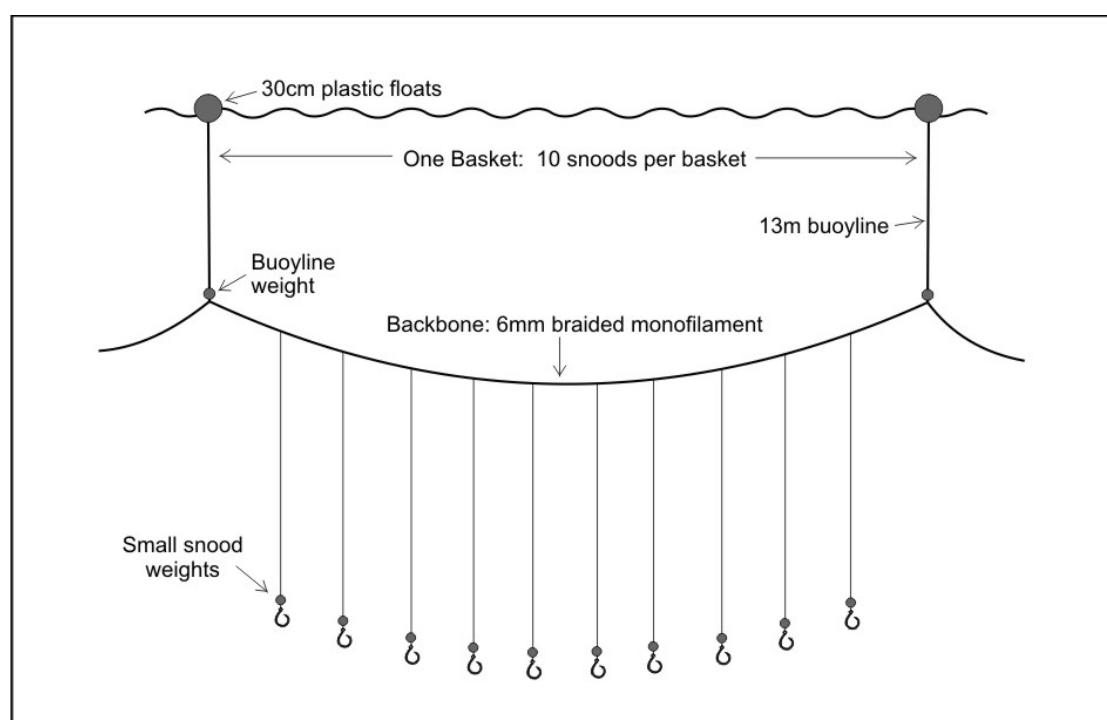


Figure 6: Pictorial description of longline gear setup, showing the sag in the backbone (main line) which results in variable hook depths, and the position of snood weights, when used, is shown.

Buoy line length can readily influence the depth at which gear is set. The New Zealand data shows that the buoy line lengths used in New Zealand are not very variable irrespective of target, with the exception of albacore sets. Therefore, buoy lines of 20m or more will be defined as deep sets. For all other sets, hooks.basket⁻¹ and snood length will be used to define the set depth. The New Zealand longline data show that snood lengths are very variable even within a single set. Furthermore, as a trip progresses snood length can change when lines break or become damaged and get cut. As a result it is difficult to gather accurate information on snood length. As a

result of this, snoods of longer than 40 m it will be considered to be deep target sets possibly resulting in hooks fishing deeper than 100m. For longline setup up where snoods are shorter than 40m the number of hooks per basket will determine the set depth.

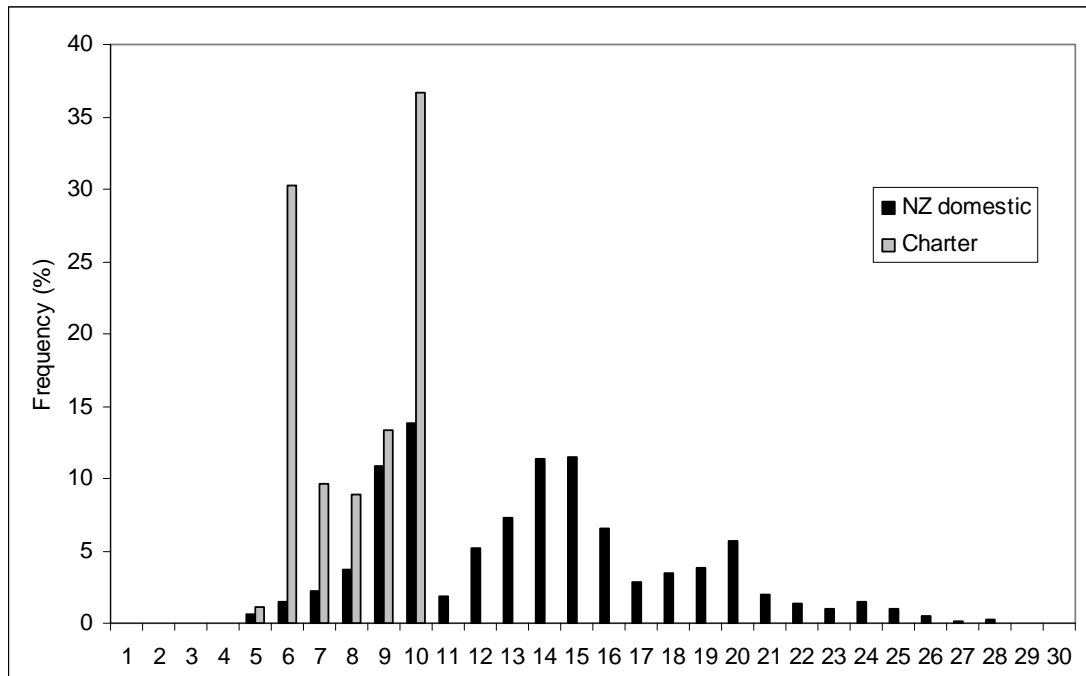


Figure 7: The frequency distribution of the number of hooks.basket⁻¹ for the longline vessels operating in New Zealand fishery waters.

According to CMM2008-03 “shallow-set” fisheries are generally to be considered those in which the majority of hooks fish at a depth shallower than 100 meters; however, pursuant to paragraph 7(c) CCMs are to establish their own operational definitions.

As a result of the information presented above, the New Zealand shallow-set longline fisheries that fish for swordfish are described as those longline gears that use buoy line of 20 m or less, have 10 or less hooks.basket⁻¹ and use snoods of no more than 40m in length. This definition assumes that, with this gear configuration, the sag in the main line will result in at least 50% of the hooks fishing above 100 m depth for more the 50% of the soak time. This definition will be tested experimentally in New Zealand and modified if necessary.

New Zealand Turtle interactions

The Western and Central Pacific Fisheries Commission (WCPFC) has recently (December 2008) agreed a Conservation and Management Measure (CMM2008-03) that focuses on mitigating captures of sea turtles in longline and purse seine fisheries in the Western and Central Pacific Ocean. Under measure CMM2008-03, the Scientific Committee has been charged with determining a “minimal” sea turtle interaction rate for shallow-set longline fisheries. Fisheries with higher than the minimal catch rates will be required to implement measures aimed at reducing sea turtle bycatch. Such measures would be in addition to requirements for longline

vessels to carry and use mitigation equipment including de-hookers, line cutters and, where appropriate, scoop nets.

Since 2000 only 15 sea turtles have been reported by observers on longline vessels within New Zealand fisheries waters. Of these, 11 were leatherback turtles, one was a loggerhead turtle, two were reported as green turtles, and one was unidentified, but probably a leatherback. These have been caught from as far south as Stewart Island (47°S), to the northern most waters within the New Zealand EEZ, the Kermadec Islands but with most being caught north of 40°S (Figure 8).

Overall, sea turtle interactions are very rare in the New Zealand longline fishery. Sea turtles interactions have occurred throughout the year with a slight increase observed during the austral summer (November to March) (Figure 9). All but one of the turtles were released alive. Using the incidental catch and observed effort from the New Zealand shallow-set longline fishery, the nominal sea turtle CPUE is 0.00057 sea turtles.1000 hooks⁻¹ the average (2000-2008) sea turtle CPUE is 0.0013 sea turtles.1000 hooks⁻¹. These values are similar to those estimated by Williams et al. (2009) for the WCPO south of 35°S (nominal and average CPUE 0.0007 and 0.0014 sea turtles.1000 hooks⁻¹ respectively).

Despite the very low sea turtle interaction rate experienced in the longline fisheries of New Zealand, the New Zealand Ministry of Fisheries and Department of Conservation have various measures in place to manage sea turtle interactions, including reporting requirements, which also include guidelines on handling of turtles (see the New Zealand country report and Appendix I for details). Provision is also available in legislation for the Chief Executive of the Ministry of Fisheries to issue handling instructions with which commercial fishers would have to comply. It is expected that these provisions will be used to implement handling instructions to be developed by the WCPFC.

Workshops were carried out in New Zealand in 2008 and early 2009 tailored towards longline fishers covering use of the de-hooking gear, identification of turtles, turtle biology and turtle conservation. At the workshops vessel skippers were supplied with de-hooking equipment and information kits.

De-hooking kit (<http://www.dehooker4arc.com/>):

- A line-cutter and spare blades
- A long-handled de-hooker
- A short-handled de-hooker with bite-blocker
- A large net

Information kit (<http://www.dehooker4arc.com/>):

- 2 DVDs on turtles and using the dehooking gear ("Crossing the line" & "Hooks out & cut the line")
- A waterproof seabird identification book
- A waterproof whale identification card
- Waterproof marine turtle information cards (Figure 10)
- Turtle sightings sheets

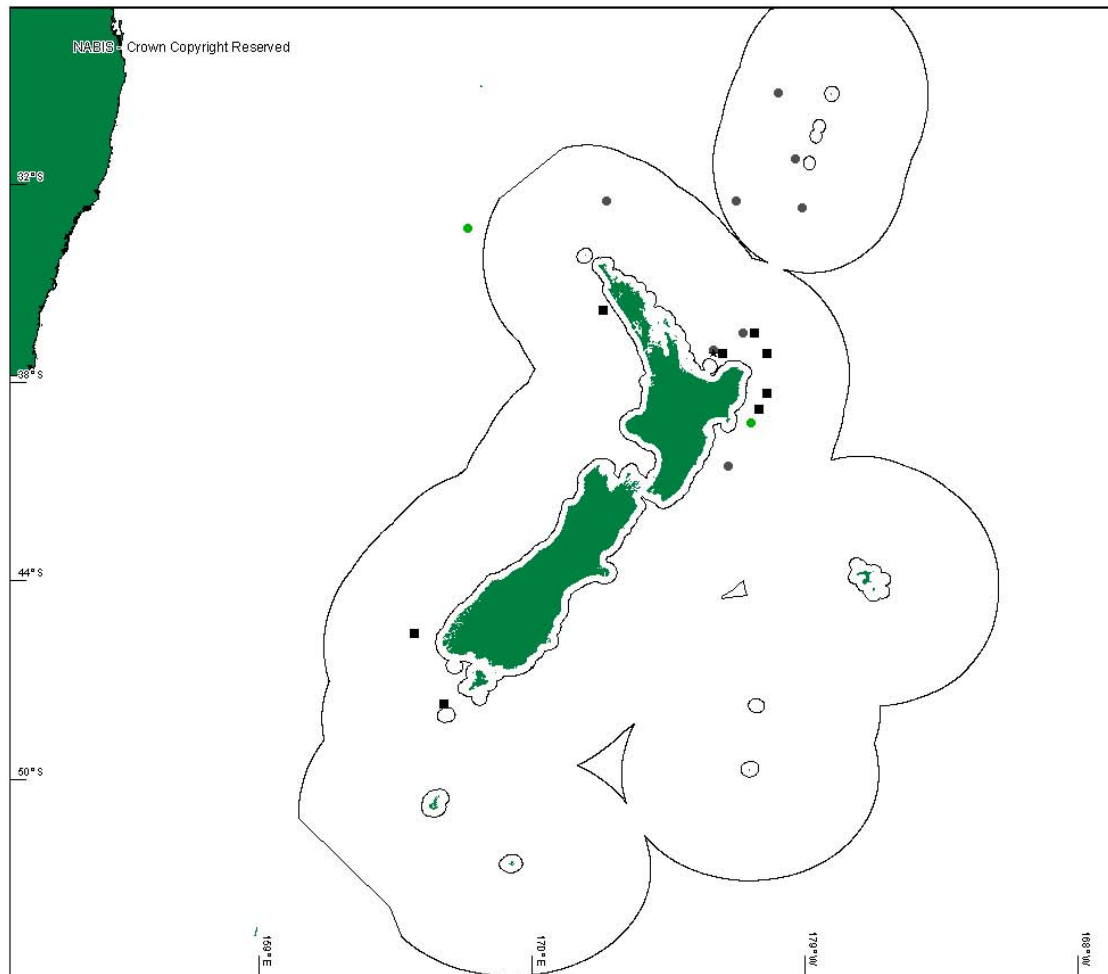


Figure 8: Distribution of sea turtle captures in New Zealand fishery waters, since 1989. Green dots – green turtles; black dots – leatherbacks; black squares – unidentified turtles.

New Zealand longline fishers have also developed a Code of Best Practice (Appendix II) that highlights the importance of releasing sea turtles alive and specifies how fishers should go about ensuring that sea turtles that are incidentally caught can be released in a state that is likely to ensure their survival. Finally, as a seabird mitigation tool longline fishers fishing for swordfish are required to use line weighting or set at night. Night setting is thought by some (Gilman et al. 2006) to result in reduced sea turtle interactions, and this should further reduce the number of interactions that have been seen in New Zealand.

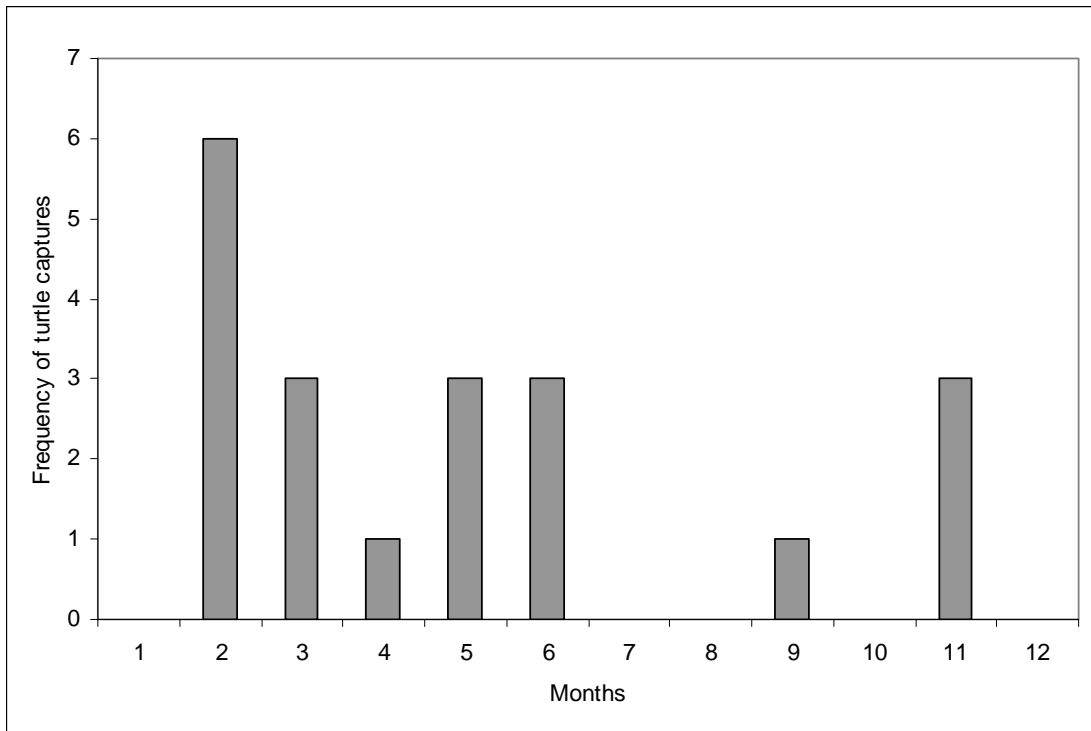



Figure 9: Frequency of sea turtle captures by month.

MARINE REPTILES

TURTLES:

TURTLES

- **Leatherback turtles (LBT)** are up to 2.7 m in length and weigh up to 900 kg. They have 3 prominent ridges running the length of the shell instead of plates. They are dark green to grey in colour with small patches of lighter colour over the body.




Leatherback turtle

HOW TO HANDLE LIVE OR INJURED TURTLES AND SNAKES:


Handling animals correctly is safer for you and gives them a better chance of survival.

- Turtles need to be handled with great care to avoid damaging them.
- Sea snakes are venomous. Don't handle a live animal. To return a live snake to the sea, gently hose it off the deck with water.


RELEASE ANIMAL GENTLY



Gently bring hooked turtles on board with a net.



Place a piece of wood across the mouth to avoid bites. Remove any hook, or lines, cutting off the barb and pulling the hook through to the outside if possible.



Pack up the rear of the turtle to drain it. Keep it moist and shaded while it recovers (4 - 24 hr).

HOW TO HANDLE LIVE OR INJURED TURTLES AND SNAKES

Figure 10: An example of the sea turtle identification page and handling instructions from the New Zealand Ministry of Fisheries guide to species groups for the non-fish/protected species catch return information sheets.

Future Research

As sea turtles are caught infrequently in New Zealand's waters, undertaking mitigation experiments here will not result in data with enough statistical power to assess their effectiveness. However, we do intend to test experimentally the effects of longline gear setup in determining the fishing depth of a hook. The results of this work will be reported to the Western and Central Pacific Fisheries Commission Scientific Committee at future meetings.

Conclusion

It is considered that New Zealand shallow-set swordfish longline fisheries have minimal observed sea turtle interaction rates over a three-year period (for which observer coverage has been over 10% during each of those three years [01-01-2006 to 31-12-2008]). Existing practices and provisions in these fisheries are considered to adequately avoid, minimise, or mitigate the effects of fishing on sea turtle populations.

References

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- Unwin, M., Davies, N. and Wei, F. 2008. Standardised catch per unit effort indices for swordfish (*Xiphias gladius*) caught in the New Zealand longline fishery, 1993-2007. Unpublished Final Research Report. Ministry of Fisheries New Zealand 9pp.
- Williams, P., Kirby, D. S. and Beverly S. SPC. 2009. Encounter rates and life status for marine turtles in WCPO longline and purse seine fisheries. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia. Unpublished report to the Western and Central Pacific Fisheries Commission Scientific Committee. WCPFC-2009-EB-WP-07, 11pp.

Appendix 1

Non-Fish/ Protected Species Catch Return Form and Explanatory notes

Non-fish / Protected Species Catch Return

NPC 1234567

1. Complete **separate returns** for each fishing trip where non-fish / protected species incidental catch occurs.
2. Non-fish / protected species include: corals, sponges, bryozoans, seabirds, marine mammals, marine reptiles and protected fish (see explanatory notes for a detailed list of species).
3. **Non-fish / Protected species incidental catch**
Complete a **separate row** for each non-fish / protected species caught in a fishing event.

Date tow / set began (dd/mm/yy)	Time tow / set began (24-hr clock)	Form number from catch effort return	Species code	Estimated weight of corals, sponges or bryozoans (kg)	Seabirds /Mammals /Reptiles / Protected fish		
					Number alive, uninjured	Number alive, injured	Number dead
/ /	:			.0kg			
/ /	:			.0kg			
/ /	:			.0kg			
/ /	:			.0kg			
/ /	:			.0kg			
/ /	:			.0kg			
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Use additional pages if you run out of space to record non-fish / protected species incidental catch from this trip.

4. Enter a cross in one of the circles to show the MFish catch effort form type used during the trip.

TCEPR CELR LCER TLCER NCELR Other → If other, enter the form type used

5. Permit holder and vessel details

Name of permit holder

Client number of permit holder

Name of vessel

Registration number of vessel

I declare that the information I have given on this return is correct and complete, and that I have read and understood the explanatory notes supplied with this return.

Signature of permit holder or authorised person

Date signed / / 20

Send completed returns to PO Box 297, Wellington 6140.

Non-Fish/ Protected Species Catch Return (NFPSCR)
EXPLANATORY NOTES
(April 2007)

1. You, the permit holder, must provide a completed NFPSCR form if, while fishing, you have an incidental catch of one of the following non-fish/ protected species groups:
 - Seabirds (*for example shags or albatross*); or
 - Marine mammals (*for example dolphins*); or
 - Marine reptiles (*for example turtles or sea snakes*); or
 - Corals; or
 - Sponges; or
 - Bryozoans; or
 - Protected fish species (*for example spotted black grouper*).

You may authorise someone (*for example, the vessel's master*) to fill out the NFPSCR for you.

2. These explanatory notes often use the words “you” and “your”. From this point on, the words “you” and “your” mean you, the permit holder, or any person authorised by you to fill out a NFPSCR for you.
3. The NFPSCR form is only to report catch of non-fish and protected species caught as an incidental catch. Use an appropriate form for reporting other catch.
4. **It is against the law to fail to complete a NFPSCR in accordance with the Fisheries (Reporting) Regulations 2001.** It is also against the law to provide false or misleading information. The penalties for failing to fill out and provide an accurate NFPSCR form to the Ministry of Fisheries are set out in the Fisheries Act 1996 and the Fisheries (Reporting) Regulations 2001. These include fines of up to \$250,000.
5. These explanatory notes have been written to explain and elaborate on the Fisheries (Reporting) Regulations 2001 and to help you to fill out NFPSCRs. The explanatory notes do not include all of the requirements of those Regulations. It is also possible that the Fisheries (Reporting) Regulations 2001 may have changed since these notes were printed. **Therefore, it is very important that you read and understand those Regulations.**
6. These explanatory notes use the word “Regulations” to mean the Fisheries (Reporting) Regulations 2001.
7. Contact FishServe to find out how to get a copy of the current Regulations. If, after reading the explanatory notes and the Regulations, you need further information or are unclear on how to fill out the NFPSCR form, you should contact FishServe or seek legal advice.
8. The NFPSCR form and these notes use the words “permit holder”. “Permit holder” means a person who currently holds a fishing permit issued under section 91 of the Fisheries Act 1996.

Section 1

You must fill out a separate NFPSCR for each fishing trip where non-fish/ protected species incidental catch occurs. A non-fish or protected species has been caught when it has become fixed, entangled or checked so that it is prevented from moving freely.

- Do not record sightings on this form
- Do not record birds that strike the warps unless they are actually caught on the warp
- Do not record birds that are snagged momentarily, but then manage to free themselves, because they have not been caught.

Section 2

Non-fish/ protected species include:

- seabirds (for example seagulls, petrels) or
- marine mammals (for example dolphins, whales, seals or sealions), or
- marine reptiles (for example turtles or sea snakes) or
- corals or
- sponges or
- bryozoans or
- protected fish species (for example spotted black grouper).

Section 3: Non-fish/ Protected species incidental catch

You must fill out a new row for each different non-fish/ protected species or species group caught in a fishing event. . *For example if two petrels and one type of sponge were caught in one set or tow then you need to write two lines – one for the petrels and one for the sponge species.*

For each fishing event, fill out the following information as soon as hauling for that set or tow is completed.

1. **Date tow/set began (dd/mm/yy):** Write the date the tow or set started. Write the date as day/month/year. *For example, if the tow started on the 14th of January 2007, write “14/01/07” even if you believe that the non-fish incidental catch actually occurred on the 15th of January.*
2. **Time tow/set began (24-hr clock)** Write the time at the start of the tow or set in NZST (or NZDT if daylight saving applies) using the 24 hour clock. Write the time between 00:00 and 23:59. *For example, if the set started at nine o'clock in the evening write “21:00” even if you believe that the non-fish incidental catch actually occurred at one o'clock the next day.*
3. **Form number from catch effort return** Write the form number of the catch effort return that you used to report the catch and effort for the same tow or set. *For example if the incidental catch occurred on a tow that you reported on TCEPR number 515304 then write “515304” in this box.*
4. **Species code** Write the 3-letter species code for the non-fish/ protected species that was caught. A table of Individual Species codes is printed with these explanatory notes. If you can identify the species that was caught, then enter the

species code from the Individual Species Codes list. If you cannot identify the species, then report the code for the most appropriate group of species from the Species Group list. *For example, if you cannot identify what species of seabird was caught, but you know it is some kind of albatross, then write XAL for albatross.*

5. **Estimated weight of corals, sponges or bryozoans** If the species that was caught was some kind of coral, sponge or bryozoan then write your estimate of the quantity of the species in kilograms. For other species you should leave this box blank. *For example if about 40kg of some kind of sponge was caught then write "40".0 kg.*

Do not record fractions of a kilogram on a NFPSCR form. You must round weights down to the next lower whole kilogram. *For example, record 17.6kg as "17". Record weights of less than 1kg as "0".*

6. **Seabirds/Mammals/Reptiles/Protected fish - Number alive, uninjured** If the species that was caught was a seabird, mammal, reptile or protected fish then write the number that were released alive and uninjured. For other species (ie corals, sponges and bryozoans) you should leave this box blank.
7. **Seabirds/Mammals/Reptiles/Protected fish - Number alive, injured** If the species that was caught was a seabird, mammal, reptile or protected fish then write the number that were released alive but injured.

A seabird is defined as "injured" if it has one or more of the following:

- Broken or drooping wing (i.e. the seabird cannot fold the wing up)
- Broken beak or leg
- Open wound
- Hook in bird (whether removed or not).

A Marine Mammal or reptile is defined as "injured" if it has one or more of the following:

- Open wound
- A hook in the animal (whether removed or not)
- Broken flipper, fin or tail
- Broken shell (turtle)

A Protected Fish is defined as "injured" if it has one or more of the following:

- Open wound
- A hook in the fish (whether removed or not) or
- It has been removed from the water

For other species (ie corals, sponges and bryozoans) you should leave this box blank.

8. **Seabirds/Mammals/Reptiles/Protected fish - Number dead** If the species that was caught was a seabird, mammal, reptile or protected fish then write the number that were dead (ie showing no signs of life). For other species (ie corals, sponges and bryozoans) you should leave this box blank.

For example, if there were four petrels, two alive and uninjured, one alive but with a hook in it and one dead then you would write:

Estimated weight of corals, sponges or bryozoans (kg)	Seabirds/Mammals/Reptiles		
	Number alive, uninjured	Number alive, injured	Number dead
.0kg	2	1	1

Section 4: Catch effort form

Fill out the following information immediately on landing.

Enter a cross in ONE of the circles to show the catch effort form type that you used during the trip to report the fishing. If you used a form other than a TCEPR, a CELR, a LCER, a TLCER, or a NCELR then tick the circle headed “Other” and write the initials of the form in the box. *For example, if you did squid jigging and reported your catch and effort on a Squid Jigging Catch Effort Return then tick the circle beside “Other” and write “SJ CER” in the box beside the words “Enter the form type used”.*

Section 5: Permit holder and vessel details

Fill out the following information immediately on landing.

1. **Name of permit holder:** Write the name of the permit holder.
2. **Client number of permit holder:** Write the client number given to the permit holder by the Ministry of Fisheries or FishServe.
3. **Name of vessel:** Write the name of the vessel as recorded on its certificate of registration or licence. If no vessel was used then leave this blank.
4. **Registration number of vessel:** Write the vessel’s registration number. For a N.Z. fishing vessel this is the registration number on its certificate of registration. For a foreign fishing vessel this is the vessel’s international call sign. If no vessel was used then write “NONE”.
5. **Signature of permit holder or authorised person:** The permit holder, or a person authorised by the permit holder, must sign the form. *For example, the permit holder may authorise the master of the vessel to fill out and sign the NFPSCR.*
6. **Date signed:** The person who signed this NFPSCR form must write the date that they signed it here. Write the date as day/month/year. *For example, if the NFPSCR was signed on the 15th of January 2007, write “15/01/07”.*

Notes about the collection of NFPSCR information

1. Information on NFPSCR forms is being collected for reasons relating to: Lets check the aquatic environment refs in the Act.
 - 1.1 the conservation and management of fisheries and fisheries resources; and
 - 1.2 the administration and enforcement of the Fisheries Act 1996 and the regulations made under this Act.

2. The agency that will collect and hold this information is called FishServe (see address below).
3. This information is then sent to the Ministry of Fisheries.
4. Some personal information is being collected.
5. Under Principles 6 and 7 of the Privacy Act 1993 you have the right to access and correct any personal information that has been provided.
6. You must send your completed NFPSCR forms to FishServe (Commercial Fisheries Services Ltd). Their postal address is:

**PO Box 297,
Wellington,
New Zealand.**

6. You must make sure that your NFPSCR forms arrive at FishServe by the due date. The due date for the NFPSCR is the same as the due date for the catch effort return that you used to report the fishing during the trip. If the forms are late you may have to pay a late fee.

TCEPR – If you are required to report using a Trawl Catch Effort and Processing Return then the NFPSCR is due 15 days after the last day of the fishing trip.

LCER – If you are required to report using an Lining Catch Effort Return then the NFPSCR is due 15 days after the last day of the fishing trip.

TLCER – If you are required to report using a Tuna Longlining Catch Effort Return then the NFPSCR is due by the 15th day of the month after the fishing trip ended.

NCELR – If you are required to report using a Netting Catch Effort Landing Return then the NFPSCR is due by the 15th day of the month after the fishing trip ended

CELR – If you are required to report using a Catch Effort Landing Return then the NFPSCR is due by the 15th day of the month after the fishing trip ended.

7. If you are unsure about how to fill out a NFPSCR form you should consult FishServe (09 430 1955) or seek legal advice.

Appendix II

Code of Best Practice

For the Mitigation of
the Effects of Fishing in
New Zealand Pelagic
Longline Fisheries



December 2008

Version 2.0

Summary of the Code of Best Practice

The signatories to the Code of Best Practice ('the Code') are committed to minimising the incidental capture of protected species during their commercial fishing operations. To ensure success, signatories to the Code have committed to abide to the following measures:

- Accurate records of protected species capture are to be recorded on the MFish 'Non-Fish and Protected Species Catch Return'.
- To accurately identify seabirds, all vessels operating under this code will have on board the booklet "A fisher's guide to New Zealand seabirds". DOC 2007.

[A fisher's guide to New Zealand seabirds \(PDF, 1200K\)](#)

- Fishermen will carry and know how to operate the turtle dehooker.
- If MFish Observers are on a trip, they will provide independent verification that this Code is being adhered to.
- Signatories of this Code will train all their crew using this Code, to ensure that the crew is able to effectively employ the mitigation measures.
- Signatories to this Code will encourage non-members to (a) join the pelagic longline working group* and (b) be proactive in using mitigation techniques.
- Where parties to this document (signed up members to the code) transfer tuna ACE to third parties, then the contracted third party will also be required to comply with this Code.



* The Pelagic Longline Working Group consists of pelagic longline fishermen, who meet with the Ministry of Fisheries and the Seafood Industry Council twice a year.

SIGNATORIES

“We accept the challenge of protected species captures by implementing proactive mitigation measures to ensure that pelagic longline fishing is a sustainable activity.”

The purpose of the Code of Best Practice:

This Code sets out principles and standards of behaviour for responsible practices and acts as an agreed guide to existing and improved fishing practices by pelagic longline fishermen within the New Zealand Exclusive Economic Zone. It is a demonstration of the long-term commitment to ensuring we maintain a well managed sustainable fishery. This will ensure the effective management and development of the fishery with due respect for the ecosystem, biodiversity, economics, community benefits and other users of the resource.

The Code will enable us to self regulate and keep up with legal obligations and avoid the need for legislation to take control of industry activities.

The main purpose of this Code is to provide a suite of mitigation measures that will help minimise the incidental capture of protected species. They are measures that are practical, sensible and are known to work. In addition, the Code helps pelagic longline fishermen manage their activities in accordance with best practice and consistent with obligations arising from National Plans of Action.

The Code will evolve over time, incorporating new knowledge, research results, and technology to mitigate protected species capture. Signatories to the code will actively support research and the development of new mitigation techniques. A watching brief will be kept on international research in this area. The Code will be reviewed in 2010.

The code will improve over time as it evolves, feedback and new ideas are very welcome.

The contact person for any issues surrounding this code and other matters:

Contact: Greg Lydon (SeaFIC) on 027) 244 9070

email: greg@seafood.co.nz



Introduction

Any actions that threaten endangered marine species is now a global concern. The NZ seafood industry is constantly reviewing its operating standards to ensure that its fishing practices are environmentally responsible. The Fisheries Act 1996 provides for the utilisation of fisheries resources while ensuring sustainability. Fishermen must take into account the effects of fishing on the environment and on associated species by avoiding, remedying or mitigating any adverse effects of fishing on the aquatic environment.

Having a clean green fishery is crucial not only for the ecosystem but in today's global market. By keeping protected species away from our lines we will have more hooks available to catch fish.

Scope of the fishery

The tuna fishery in New Zealand is complex and dynamic with many factors changing within and between fishing seasons. The fishery operates across several geographic areas and the presence, abundance and behaviour of tuna and the protected species that interact with the fishery are constantly changing in response to the environment. Similarly, vessels and fishing techniques vary widely within the fishery, as does fishing effort in response to market demand.

In general, tuna are seasonal in their distribution in New Zealand waters, and this distribution is governed to a large degree by temperature, and the distribution of food. While there are known fishing grounds for species such as bigeye and southern bluefin, the timing and detail of their distribution can vary from year to year.

Pelagic longline fisheries overlap with the known ranges of various seabird species, marine mammals and turtles, including some ranked 'Critically Endangered'. The overlap of fishing operations with protected species inevitably leads to occasional fisheries interactions.



Role of Pelagic Longline Working Group

The Pelagic Longline Working Group will:

- Be the Industry group responsible for the environmental performance of pelagic longline fisheries within the NZ EEZ.
- Be a forum for discussion and communication within Industry.
- Interact constructively with Government agencies.
- Review and update the Code at specific intervals.
- Have representatives take part in protected species Working Groups.
- Support research on protected species mitigation measures.
- Educate crews on protected species issues.
- Keep up to date with international developments on mitigation.
- Monitor the effectiveness of mitigation measures used by Code signatories.

Objectives of the Code:

1. Protected species captures in target tuna fisheries will be minimised and will reduce over time.
2. The effectiveness of mitigation measures will be monitored and improved over time.
3. New mitigation measures will continue to be investigated and reported to the Tuna Working Group. Where new measures prove to be effective and safe they will be included in the Code.
4. Mitigation measures will not cause unsafe working conditions. The health and safety of the crew is paramount at all times.

Review

The Code will be reviewed from time to time by the Pelagic Longline Working Group.



photo by: North Pacific Longline Association

Seabirds

The islands that make up New Zealand support the world's most diverse community of seabirds. 47 albatross and petrel species breed or forage in New Zealand waters, 20 of which only breed here. They are all protected. This hotspot of seabird biodiversity is often called 'the seabird capital of the world'. Unfortunately, interactions between seabirds and fishing vessels are inevitable. Some seabird species are particularly vulnerable and now have a threatened status.

Seabirds are incidentally caught in a variety of fisheries and by all fishing methods each year. For some seabird species, fishing activity is a major threat, while for others the main threats are from other sources, such as loss of habitat, competition for breeding sites with fur seals and predation by introduced predators. Pollution, plastic ingestion, human disturbance on land, boat strikes and hunting are lesser threats. In addition some species have a small breeding population but a wide oceanic range which exposes them to many fisheries in different countries jurisdiction.

In New Zealand, 13 albatross and 17 petrel species have been recorded as having been caught during commercial fishery operations since 1996. Incidental mortality through interactions with fisheries operations has been linked with global declines of some albatross and petrel species. Nearly half of the world's 125 petrel species and 16 of the 21 albatross species are classified as threatened, so effective measures to mitigate against seabird bycatch are urgently needed.



The Problem:

The type and abundance of seabirds attending fishing vessels will differ depending on; the number of fishing vessels present in the same fishing grounds, the location, time of day, and season. Whether or not seabird species get caught depends on their feeding method, how deep they dive, and the size of the seabird. Smaller birds are unable to swallow large food items such as longline baits, and so are rarely found captured in this way. However, large scavenging seabirds often have wide bill gapes and are able to swallow large food items whole; this increases their likelihood of getting caught on longline hooks.

Seabirds that forage behind longline fishing vessels risk getting caught on the hook or entangled in the line if baited hooks are within the range they would normally dive to retrieve food. In some cases they are also at risk when deeper diving species are present that can bring a baited hook to the surface. For instance, shallow diving albatrosses can take a baited hook from a smaller deeper diving petrel, putting themselves at risk when baits are well beyond their own diving depth.

Seabirds are natural scavengers and appear to learn that fishing vessels provide a reliable easy meal during fishing operations and when used baits and offal are discarded at sea. Seabirds can become hooked during line setting and less frequently during the haul. Seabirds can get caught by either swallowing baited hooks or by being foul hooked. They are at risk not just from the New Zealand fishery, but from other international fisheries as well.

Mitigation Measures to be Used to Minimise Incidental Seabird Captures

There's no silver bullet for seabird conservation in longline fisheries – it generally involves a range of different measures, and some experimentation. In general mitigation technologies work in one of five ways:

- Shrink the window of time in which seabirds can access baits, either by line weighting or delivering baits below the area where birds can access baits;
- Scare bird away when baits are deployed or retrieved;
- Make baits 'cryptic' using blue dye or wrapping baits up so they are unrecognizable as food;
- Manage offal from fish processing in a way that minimizes interactions during line setting and hauling; and
- Time area-closures, which generally aim to minimize fishing at times and in areas when birds are breeding and most aggressive.

The following mitigation methods will help to reduce the likelihood of accidentally catching a seabird. Using a combination of methods improves the likelihood of preventing birds from taking baited hooks.



1. Tori Lines

It is mandatory to always use a bird scaring line(s) when setting a longline.

Regulation 58 of the Fisheries (Commercial Fishing) Regulations 2001 makes it mandatory use a streamer/tori line when setting a longline when fishing for tuna or swordfish. The line has to comply with specifications issued by the Chief Executive – most recently in November 2007 (see Appendix 1).

Tori lines are designed to trail out behind the fishing boat to deter birds from entering the area where the fishing lines are set and hauled. They need to be deployed so they adequately protect your vessel's 'Danger Zone' – i.e. the area where birds can access baited hooks.

Seabirds sit on, or fly low over the water behind a boat when diving and attacking baits. A bird-scaring line or lines (originally designed by the Japanese, hence 'Tori') are suspended some distance above the deck, and are positioned over or in the area where baited hooks enter the water. They are relatively cheap to make and install and are designed to trail out behind the fishing boat to create a 'moving fence' that deters birds from entering the area where the fishing lines are set and hauled i.e. the 'scarecrow' effect prevents seabirds accessing baited hooks.

NB. Each vessel's Tori line will be slightly different, or specific to each vessel, to increase the effectiveness in reducing interactions with seabirds. The length of your tori line relates to your setting speed - setting faster generates a larger aerial distance for the tori line (however slower setting speed allows the line to sink at a faster rate which is also good). So an effective tori line will take time to perfect for your vessel and is a juggling act between aerial length, setting speed and crucially the ability to keep it above your hooks while not getting entangled with your backbone. It's not easy but once you have the tori line working well it will keep birds away from your line.

Research worldwide has shown that tori lines significantly reduce seabird bycatch – by up to 70% in comparison to vessels not using them. Research in Alaskan Longline Fisheries has shown that paired streamer lines are more effective and significantly reduce incidental seabird capture. This is also the case in NZ trials as paired tori lines are robust in a wide range of wind conditions and require little adjustment as physical conditions change.

Tori line design specifications vary by vessel, fishing operation, and location, however the tori line needs to:

- Have a minimal risk of entanglement with fishing gear
- Be simple to construct and repair
- Have streamers that move freely, unpredictably and not wrap around the backbone of the tori line.
- Set and retrieve with ease (its an advantage to use a small winch).

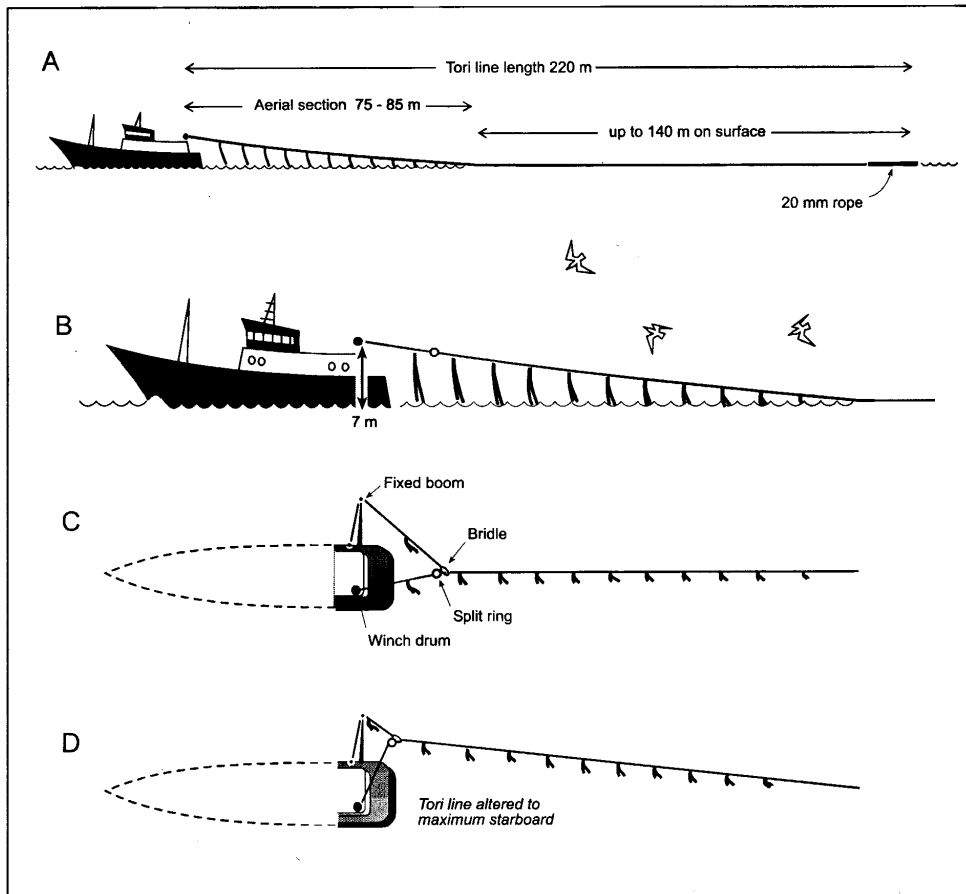


Figure An example of a Tori Line with Bridle and Boom system (Smith 2001)

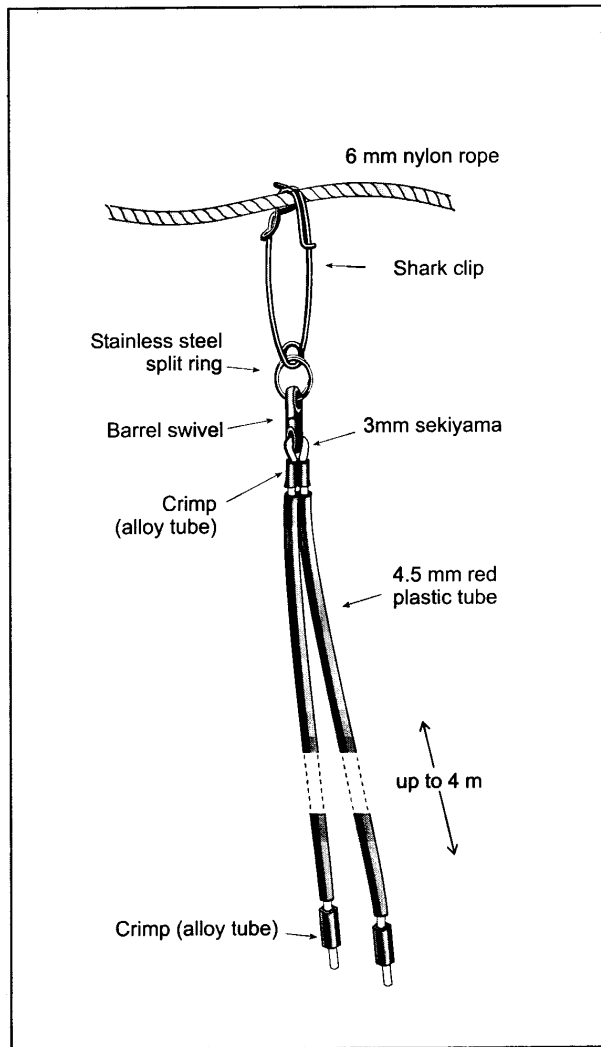


Figure An example of Materials Used in a Tori Line (Smith 2001)

2. Disposal of Waste, Baits and Offal

Offal will not be discharged during setting and will be discharged only on the opposite side to the hauling station when hauling.

Seabirds can benefit from fishing activities due to the increase in food supply from discarded fish and waste. However, disposal of waste attracts seabirds to the longlining operation.

Line setting is the danger time for seabird capture – the disposal of waste overboard during this time attracts seabirds to the longlining operation and puts seabirds in danger from baited hooks.

- **Offal is only allowed to be released when the vessel is steaming or on the opposite side of the hauling station when hauling.**
- Offal will not be discharged during setting - this includes the bait that is missed during setting.
- If offal or missed baits are drifting into the area where the line is being set – then steps must be taken immediately to prevent this happening.
- All efforts must be made to remove embedded hooks from offal.

3. Night Setting

Setting longlines at night is mandatory practice* at present because the visibility of the bait is reduced for most seabirds

(*unless using an approved line weighting regime – see item 6)

Night = 0.5 hours after nautical dusk to 0.5 hours before nautical dawn

- Research indicates that more seabirds are caught on longlines set during the day.
- Setting lines at night reduces the visibility of the bait for most seabirds. However care must be taken:
 1. In the hour after sunset and the hour before sunrise. This is when many seabirds are most actively feeding so are danger times; and
 2. In the three days before and after a full moon. Additional mitigation measures may be required at such times.
- The effectiveness of setting longlines at night depends on various factors e.g. fishing method, season, seabird species behaviour, weather, mitigation measures already in place etc.
- Vessel lighting needs to be shielded to avoid shining out onto the longline, less light on the longline helps reduce the ability of the bird to see the baited hooks.
- Crew safety is paramount so light levels must be safe on board the vessel.
- The stern deck lights should be switched off when not required for shooting and hauling as lights attract seabirds to the vessel

4. Thawing of Bait

The use of totally frozen bait is to be avoided.

- Generally, totally frozen bait sinks at a slower rate.
- Bait must be taken out of the freezer or ice several hours before the set.

5. Blue Dyed Bait



Fishermen in the United States during the mid-1970s were the first to experiment with dyed baits to improve swordfish fish catch in the Atlantic Ocean longline fishery. The dyes that have been used internationally are commercially available non-toxic food colouring dyes. Dyed bait is considered by fishermen to be more visible to target fish. The dyeing of bait with an environmentally safe blue dye has been shown to reduce seabird interactions in experiments in Hawaii, Australia and Japan. Birds either find it harder to see blue baits or distrust the unusual appearance of the bait. The catch rate of fish when using blue bait is not reduced.

Method:

Squid bait turns a darker blue than sanmar or pilchard (due to their oily skin and large scales). It is recommended that blue is the only colour of dye used and squid bait is used to obtain best results.

Bait is dyed blue at sea using 30 grams (five heaped standard teaspoons) of *Brilliant Blue* dye placed in a one litre container in the sheltered wheelhouse and then thoroughly mixed with 800 millilitres of freshwater. The concentrated dye mixture is poured into a 200 litre plastic drum on deck which contains 40 litres of seawater and 400 squid (the process is repeated for a second drum containing another 400 baits). To ensure that all the bait surfaces had maximum exposure to the dye and that the bait had thawed, the bait and dye mixture is regularly stirred with a broom over the course of one hour before the longline set commences. The result is a consistent dye uptake by the squid bait (i.e. an even blue colour).



Blue dyed squid compared to normal squid bait.

6. Weighting of Hooks or Longline Gear

Weighting of longline gear increases the sinking speed of baited hooks. This reduces the exposure time of baited hooks to seabirds.

Setting in the daytime is permitted ONLY if line weighting is used i.e.

“A metal weight of 45g or more must be attached to every hook deployed. The position of the weight must correspond to one of the following:

- (a) Weights less than 60g must be within 1m of the hook or
- (b) Weights of 60-98g must be within 3.5m of the hook or
- (c) Weights greater than 98g must be within 4m of the hook”

More info: see gazette notice 1185, February 2008

- Weights can also be added to the line if other mitigation measures are not being effective. Avoid jerking the line to the surface and exposing the hooks to birds.

N.B. Care must be taken - this procedure can be very dangerous especially during the hauling operation when weights can “fly” over the overboard roller.

The weighting regime depends on:

- the diameter of the backbone (thinner backbones generally sink more rapidly),
- the weather (large swells create more line jerks and slow sink rate), and
- the vessels setting speed (slower setting speeds allow the line to sink to greater depths in shorter over ground distances).

Branch lines with weights at or near the hook cause baits to begin sinking instantly, removing the visual cue for seabirds. They also increase sinking speeds, and shorten the time that seabirds are vulnerable to being caught.

Using weighted swivels at the hook end of branch lines can be dangerous under certain circumstances. When sharks are hooked, they tend to swim to the surface; if they turn while on the surface the branch line can run across their teeth and break. If at the time the branch line is under tension, the swivel can become a projectile and travel at high speed towards the vessel, creating a danger to crew. The following practices are used to mitigate risks:

- In Australia, some fishers clip their branch lines between pairs of crimps fitted at regular intervals on the mainline. This prevents the branch lines sliding along the backbone and tangling. However, in some situations this could increase the risk (if the branch line comes under tension from a shark, the clip cannot slide along the backbone). This could shorten the amount of time crew has to unclip the branch line to reduce the risk of injury.
- Hauling the line through a ring at waist height is considered to reduce the risk of serious injuries to the head and upper body (in comparison to hauling fishing lines through a block at or above head height).
- The risk of injury can be reduced through good coordination between the person driving the boat and those unclipping the branch lines from the mainline. For instance the forward speed of the vessel along the fishing line needs to match the pace at which crew can work, so that as soon as a branch line arrives at the ring, it is unclipped and hauled in. Under these circumstances, if a shark is caught, crew will see this sooner and can quickly clip the branch line to a low point on the vessel to reduce the chance of it hitting someone.
- In Australia, some crew wear lightweight safety helmets with face visors to protect themselves if a hook or swivel does fly back towards the boat.
- A UK company has developed a “Smart Lead” that falls off the branch line if the weight reaches dangerous speeds. This is currently being tested in New Zealand.

7. Careful Handling of Live Seabirds

If seabirds are caught alive, every reasonable effort should be made to ensure that birds are released alive and unharmed.

The Department of Conservation can supply a DVD by Johanna Pierre:

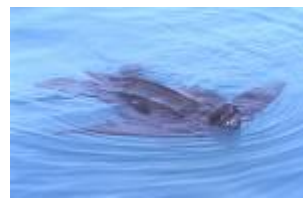
“Seabird Handling after Captures in Fisheries” – how to help yourself and the birds.

- When you see a bird caught on your line, stop drag on the gear (take vessel out of gear/reverse to bring bird alongside).
- You will need gloves, long sleeves, a dip net, and another crewman to help you.
- When you can reach the bird, bring it gently onboard by hand or with the long-handled dip net.
- Once the bird is onboard, keep it calm, move slowly around the bird - covering the bird's eyes and head with a cloth can help calm it.
- Hold the wings gently but firmly to the bird's body, support the head/neck and feet, gently but securely.
- Your crewmate then needs to gently isolate the hooked or tangled area.
- Carefully cut all line off the bird.
- To remove hooks – if hooking is through a body part, trim the line and cut barbs off the hook. Use bolt-cutters or cut the hook in two and thread the hook out.
- If the hook has been swallowed do not pull on the visible line. Cut the line as close as possible to the swallowed hook and leave the hook in place.
- After removing the bird from fishing gear, if the bird is waterlogged, put it in a safe space, e.g. an empty fish crate, box, or an open, safe area on deck.
- Let the bird dry out. When the bird is dry or active again ease the bird back into the water as close to the water surface as possible.
- Do not throw seabirds into the air!

Reporting information:

- Accurate records of seabird capture (dead or alive) are to be recorded on the new 'Non-Fish and Protected Species Catch Return'.

Turtles



Although sea turtles are typically thought of as tropical animals living around Hawaii and northern Australia, there are five species that we think visit New Zealand waters from time to time. These are Leatherback, Loggerhead, Hawksbill, Green and Olive Ridley turtles. All these turtles lay eggs in nest holes dug on sandy beaches overseas. When the eggs hatch, the little turtles dig their way to the sand surface, and scuttle down the beach to reach the ocean. Globally, sea turtles are in trouble. All species in New Zealand waters are threatened with extinction, and two of these are critically endangered. Only one in a thousand turtles is thought to survive from hatching to breeding age.

Turtles are amazing creatures and have been on this planet for over 200 million years. Unfortunately they are critically endangered and face threats from hunting, egg collection, boat strike, pollution, climate change and accidental capture by fishing. Fortunately they are usually caught alive when they get entangled in pelagic longlines and can be safely released by the careful use of line cutters.

The following two DVDs have been supplied to you with the dehooking kit, they are excellent guides on how to release turtles alive. Please make sure your crew has also watched them.

‘Crossing the Line’ – Sea Turtle Handling Guidelines

‘Hooks Out and Cut the Line’ – dehookers and linecutters

Large circle hooks (18/0) and setting deeper (below 40m) helps to avoid interactions with turtles.

N.B. turtles may appear lifeless but are not necessarily dead – they may just need time on board to recover.

In summary, if a turtle is caught by being hooked or more commonly entangled in your longline:

1. If a turtle is noticed on the line, slow down to reduce trauma to the animal.
2. If the turtle is too large to bring on board, bring it as close to the boat as possible without putting strain on the line – then cut the line as close to the turtle as possible. Don’t jump in the water to untangle the line.
3. If the turtle is small – use the supplied dip net to lift on board the boat. Make sure you don’t use a gaff or pull on the line, or grasp the eye sockets of the turtle.
4. Place a piece of round wood (a broom handle) in the turtles mouth so that it cannot bite you – bites can be nasty.
5. If the hooks barb is visible use bolt cutters to cut off the point. Then remove the two parts of the hook separately.
6. If the hook is not visible remove as much line as possible without pulling too hard. Then cut the line close to the turtle.
7. If the turtle is active then you can carefully release it after noting tag numbers (if it has tags).

8. If the turtle is not active then it may have water in its lungs. Raise the rear flippers by 20cm while it is recovering.
9. Place the turtle in a shaded location on the boat. Cover the turtle's body with wet towels, avoiding the nostrils. Spray the towels with salt water, again avoiding the face.
10. Keep the turtle on board for at least 4 hours. Assess its recovery – it can be released when it is lively again – this can take up to 24 hours.
11. Carefully return the turtle to the water when it has recovered. Release it headfirst while the boat is stopped and the engine is out of gear.
12. Ensure the turtle is well clear of the boat before starting your engine.

Do not land animals on board if there is the possibility this will cause further injury and stress. Hauling animals to the deck using the line may result in increased tissue damage by the hook, possibly piercing the oesophagus or stomach or pulling organs from connective tissue and killing the animal. Cut the line off as close as possible to the animal.

Where practical use the DOC supplied line cutters to cut as much line as possible off an entangled animal. Where practical use de-hooking devices to remove hooks from internally (eg. throat hooked) or externally hooked animals.



Line cutter

Where practical use dip-nets (long enough to reach the animal from the fish door) to retrieve small animals that require further treatment. For animals that can be brought aboard, land them gently to avoid damage. If you're using the dehooking or line cutting gear for fish, remember rough handling will increase the amount of damage and create a greater risk of fungal and bacterial infection that can cause death after release. As a fish's skin is particularly prone to injury, handling that causes a loss of scales and damage to the skin's mucus producing cells should be avoided. Use wet gloves when handling fish.



Dehooking device

Sharks



Some of the world's shark stocks are at risk from over-fishing. We now know that as a top predator, sharks play an important role in maintaining healthy ocean ecosystems. The New Zealand EEZ is home to over 100 species of shark, and New Zealand has a global responsibility to manage and conserve our shark species. The Ministry of Fisheries has produced a National Plan of Action for Sharks (2008) to address this responsibility. The overarching goal of the NPOA-Sharks is '*to ensure the conservation and management of sharks and their long-term sustainable use*'. The Great White shark became fully protected in 2007.

If you intend to retain the shark, it must be killed humanely before being processed. To ensure that the shark is dead, cut through the backbone behind the head and then behind the dorsal fin.

Live finning of sharks constitutes ill-treatment and is an offence under the Animal Welfare Act.

Porbeagle, blue, and mako sharks can be released alive under the 6th Schedule. Returning live sharks to the sea – particularly juveniles and large females – helps protect the species from becoming overfished, which is of global concern. All sharks released under 6th Schedule provisions need to be recorded on landing returns (not just catch effort returns). There is a special code ('destination X') so that released catch doesn't count against ACE.

The 6th Schedule also applies to rough and smooth skates and spiny dogfish. Conditions require all these species to be released as soon as practicable after capture; the fish must be alive at the time of release and considered likely to survive on return to the sea. Spiny dogfish is the exception – they may be returned to the sea alive or dead (but all releases must be recorded, and count against ACE). When releasing sharks, make sure that the hook is carefully removed. If you cannot safely remove the hook – cut the nylon as close to the shark as possible.

Marine Mammals

Marine mammals include whales, dolphins and seals.



New Zealand fur seals (*Arctocephalus forsteri*) are protected under the Marine Mammals Protection Act 1978, and are listed by DOC (2005) as 'not threatened' and are currently increasing in numbers and expanding their breeding distribution northwards around the New Zealand coast.

Fur seals are occasionally caught alive. Gently pull the animal alongside the boat and use line cutters to cut off all of the line as close to the animal as possible. All material needs to be cut away or untangled because any line left can result in a slow death for the animal. Be very careful as a bite from a fur seal is nasty. Never jump in the water to untangle line.

Dolphins, Small Toothed Whales and Pilot Whales

Dolphins and small whales are very occasionally caught alive (it is a rare event). Gently pull the animal alongside the boat and use line cutters to cut off all of the line as close to the animal as possible. All material needs to be cut away or untangled because any line left can result in a slow death for the animal. This must be done quickly or the animal will drown. It is best to support the head above the water at the side of the boat using a thick piece of rope placed under the body. Never hang the dolphin or whale up by its tail as it may suffer spinal injury. Never jump in the water to untangle line.

Loss of Gear

All reasonable precautions will be taken to prevent the loss of longline fishing gear.

Appendix 1 Gazette Notice for Tori Lines

15 NOVEMBER 2007

NEW ZEALAND GAZETTE, No. 123

3237

Fisheries (Commercial Fishing) Regulations 2001

Fisheries (Seabird Scaring Devices Minimum Standard and Procedures) Notice 2007 (No. F414)

Pursuant to Regulation 58 of the Fisheries (Commercial Fishing) Regulations 2001, the Chief Executive of the Ministry of Fisheries gives the following notice.

Notice

1. **Title**—This notice is the Fisheries (Seabird Scaring Devices Minimum Standard and Procedures) Notice 2007.

2. **Commencement**—This notice shall come into effect the day after the date of its notification in the *New Zealand Gazette*.

3. **Interpretation**—In this notice:

“streamer line” means the type of bird scaring device, also known as a tori line, as described in clause 5 of this notice.

4. **Seabird scaring devices (streamer lines) approved by the Chief Executive of the Ministry of Fisheries**—(1) All vessels taking tuna by using longlines from a vessel in New Zealand fisheries waters are required to carry a seabird scaring device in accordance with the specifications set out in this notice.

(2) A seabird scaring device contained in this notice must be deployed while setting surface longlines at all times, in accordance with Regulation 58 of the Fisheries (Commercial Fishing) Regulations 2001.

(3) Streamer lines are currently the only approved seabird scaring device for surface longline vessels.

5. **Seabird scaring device (streamer line) specifications**—(1) The seabird scaring device must meet the following specifications:

- The streamer line must be attached to the vessel so that when deployed the baits are protected by the streamer line, even in cross winds;
- The streamer line must be a minimum of 150 metres in length;
- The streamer line must achieve a minimum aerial extent of 50 metres;
- Streamers must be brightly coloured, and must be spaced at a maximum of 5 metres, commencing not more than 5 metres from the stem of the vessel and extending thereafter along the aerial extent of the line. When a streamer line is deployed, each of the streamers must reach the sea surface in the absence of wind and swell. Streamer length will therefore vary depending on the height of their attachment point above the water;
- The streamer line of the seabird scaring device must be suspended from a point on the vessel at least 5 metres above the water in the absence of swell;
- If the streamer line that is in use breaks or is damaged, it must be repaired or replaced so that it meets these specifications before any further hooks enter the water.

(2) The specifications do not apply to additional or secondary seabird scaring devices fishers may choose to use (such as a second tori or streamer line).

6. **The Schedule**—(1) The Schedule provides further guidelines on the design and deployment of streamer lines as seabird scaring devices.

(2) The Schedule is not part of the specifications.

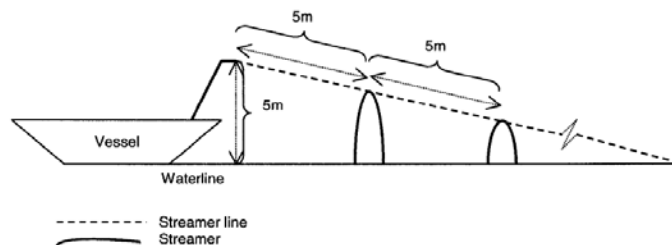
(3) If there is any inconsistency between the guidelines in the Schedule and the specifications, the specifications prevail.

(4) This notice is to be read in addition to the Fisheries (Seabird Sustainability Measures) Notice 2007, published as a Supplement to the *New Zealand Gazette*, 26 January 2007, No. 8, page 176.

Seabird Scaring Device (Streamer line)

Diagram not to scale

Not all specifications illustrated



- The streamer line needs to protect baited hooks from seabirds. This means that the streamer line should be positioned in such a way that streamers are flapping in an unpredictable fashion, above the area in which the baited hooks enter the sea, so that seabirds are deterred from attempting to take bait from the hooks. In order to achieve this even during cross-winds, it is expected fishers will have to make adjustments to the configuration of the streamer line depending on the conditions.

- (ii) It is generally recognised as best practice to maximise the aerial extent of the streamer line, because this maximises the area in which the baited hooks are protected from seabirds. Best practice would be to achieve an aerial extent of 100 metres. In order to maximise aerial extent, it is necessary to create tension in the streamer line. This can be achieved by:
- towing an object on the terminal end of the streamer line; or
 - towing extra length of streamer line; or
 - increasing the diameter of the in-water section of the streamer line.
- (iii) In order to be effective at scaring seabirds away from the line of baited hooks, the streamer lines should not become tangled, either with each other or with the branchline. Each streamer shall be attached to the streamer line in a manner to prevent fouling of individual streamers with the streamer line, and to ensure individual streamers reach the waterline in the absence of wind or swell. Swivels or a similar device can be placed in the streamer line in such a way as to prevent streamers being twisted around the streamer line. Each streamer may also have a swivel or other device at its attachment point to the streamer line to prevent fouling of individual streamers.
- (iv) Streamers are to be spaced at 5-metre intervals along the aerial extent of the line. The total number of streamers in use will vary depending on how the line is configured. Streamers that are hanging in the water can be prone to tangling. Because the far end of the streamer line will frequently be in the water, fishers may not wish to have streamers the whole way down the line. However, it is important that streamers are present to deter birds from taking baited hooks all along the part of the line that remains above water, as outlined in the specifications.
- (v) To ensure streamers are visible to birds, they should stand out against the surroundings. Streamers should be made of brightly coloured fluorescent plastic tubing or other material. Bright colours such as red, yellow, orange or pink are most effective during day setting. For night setting, the streamers should be of a colour that contrasts with the surroundings. Colours such as blue and green are less likely to be effective, because they are less likely to be highly visible to birds.
- (vi) In order to comply with the regulations, a seabird scaring device (streamer line) must be used when setting surface longlines. If the streamer line that is in use breaks or is damaged, it must be repaired or replaced so that it meets these specifications before any further hooks enter the water. For this reason, a complete additional streamer line should be carried as a spare.

7. Revocation—All previous minimum specifications are revoked.

Dated at Wellington this 5th day of November 2007.

STAN CROTHERS, Acting Chief Executive, Ministry of Fisheries.

40/565
