

Response of tuna longline fishers to seabird scaring lines (tori lines)

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1. Introduction

In February 1996 the Fishing Industry Board was contracted by the Department of Conservation to provide seabird scaring lines (tori lines) to New Zealand domestic tuna longline fishers. Thirty eight fishers who collectively operated 43 vessels were contacted and provided with tori lines. Information on the design and construction of the tori line is published by Nelson (1998). Early in 1997 it was decided that a survey of the fishermen's experience with the tori lines was required. Between June and August 1997 I attempted to contact (by telephone) the 38 fishermen who had been provided with tori lines. I asked them questions from a simple questionnaire (attached as Appendix 15.1). This questionnaire was designed to be very brief but did leave scope for fishers to make additional comments if they wished.

2. Contacting the fishers

Attempts were made to contact the 38 fishers who had been provided with tori lines. At least 6 attempts were made over a 2 month period to contact each fisher. This included ringing each of the phone numbers listed for each fisher at least 3 times during business hours and at least 3 times after hours.

	Count
Fisher contacted in person	30
Fisher unavailable but contact made with a relative or colleague of the fisher	3
No contact made	5

3. Opportunity to use tori line

Of the 33 fishers who were located, 10 had not been surface longlining for tuna in New Zealand waters since receiving the tori line.

	Count
Fisher had longlined for tuna in NZ waters during the preceding season	23
Fisher had switched to fishing in Australian waters during the preceding season	2
Fisher had not longlined for tuna in preceding season	8

Most of the 10 fishers who were no longer surface longlining for tuna in New Zealand waters said that they had stopped because this fishery was no longer

economic, some had sold their vessels, and others had switched to using other fishing methods or targeting other species.

4. Use of tori line

Of the 23 fishers that had fished in the NZ tuna longline fishery in the preceding season, 14 had used the tori line more than once.

Fishers who had used the tori line more than once	14
Fishers who had used the tori line only once because they believed it was impractical to use	1
Fishers who had not used the tori line, or had used it only once, because they did not believe that they had a bird bycatch problem	6
Fishers who had not used the tori line because they never received it	2

Six of the fishers stated that, as they did not catch seabirds, there was no point in them using a tori line.

Two of the fishers stated that, although they had been approached during the tori line project and had had their vessels measured, they had never received a tori line. It was common practice for the person undertaking the tori line project to make up the tori lines in the evenings and subsequently mail them to the fishers. It is possible that these 2 tori lines were lost in the mail.

Note - One of the 14 fishers who had used the tori line more than once was contacted via a relative. This relative was able to pass on some but not all of my questions. So some of the questions which follow were answered by this fisher, while others were not.

5. Frequency of use

Of the 14 fishers who had used the tori line more than once

Fishers who now always used the tori line.	1
Fishers who now usually used the tori line.	3
Fishers who now used the tori line half of the time.	2
Fishers who now seldom used the tori line.	7
Unknown	1

Of the 7 fishers that seldom used the tori line, 5 stated that this was because they did not like using it. The remaining 2 stated that they only used it when setting their longlines during daylight, and that they always used it when doing this.

The 2 fishers who stated that they used the tori line half of the time did so when setting their longlines during daylight and then always did so.

Two of the fishers also mentioned moon phase as being a factor in determining whether or not they used the tori line. When setting at night these fishers were more likely to use the tori line on moonlight nights.

6. Ease of use

Of the 14 fishers who had used the tori line more than once, plus the one fisher who had used the line once and then stopped using it because he found it impractical

Fishers who had found the tori line easy to use.	6
Fishers who had found the tori line tolerable to use.	4
Fishers who had found the tori line to be impractical.	5

7. Effectiveness of tori lines

Many of the fishers had made modifications to the tori line (these are described later in this report) so it was difficult to judge how effective this particular line was. Instead I have recorded the fishers' comments regarding how effective tori lines in general can be in reducing the rate of seabird bycatch during tuna longline setting.

Fishers who thought that tori lines were very effective at reducing seabird bycatch.	7
Fishers who thought that tori lines were reasonably effective at reducing seabird bycatch.	4
Fishers who thought that tori lines were minimally effective at reducing seabird bycatch.	1
Fishers who thought that tori lines were ineffective at reducing seabird bycatch.	3

It was also difficult to assess whether the fishers believed that the tori line was equally effective under all conditions, as most took the opportunity presented by this question to describe the factors which they believed were important in influencing levels of seabird bycatch in general (regardless of whether a tori line was present). As a result of this, the responses to this question have been integrated into either Section 8 or 9 of this report depending on the nature of the response.

8. Suggested modifications

The 15 fishers who had used the tori line more than once or had used the line once and then stopped using it because it was impractical, were asked to suggest changes that could be made to improve the ease of use and practicality of the tori line, and to improve the effectiveness of the tori line in preventing seabird bycatch during longline setting.

Perceived problem	Suggested modification	Count
Tori line tangled with longline	No modifications suggested	2
Tori line tangled with longline	Add tori pole	2
Tori line tangled with longline	Make tori line & side streamers lighter and less water absorbent	3
Tori line tangled with longline	Add more drag to tori line	2
Tori line didn't hang over baits	Add tori pole	1
Following sea caused tori line to be washed into stern of vessel	No modifications suggested	1
Tori line swivels snagged the hooks	Remove the swivels	2
Tori line lacked aerial coverage	No modifications suggested	2
Tori line was too strong, would break longline if snag occurred	Add a weak point into the tori line	1
Sekiyama side streamers were too heavy, didn't scare birds in light winds.	Make side streamers lighter	1
Sekiyama side streamers were too narrow, didn't scare birds.	Make side streamers wider	1
Tori line was blown aside in cross-winds	No modifications suggested	1

Some of the fishers described tori lines that they had used which they believed were superior to the tori line which they were provided with. These are described in brief below

- 250 m long, 4 mm rope, no side streamers, windy buoy.
- 150 m long, thin rope, no side streamers, windy buoy.
- 380 m long, 4 mm polyprop rope, sekiyama side streamers with no rubber sheath, crown knot.
- 120 m long, 7 mm rope, unravelled rope side streamers, no swivels, windy buoy.
- 220 m long, 5 mm rope, blue packing case strap side streamers, no windy buoy or knot.
- Unknown length, 3 mm line, black polythene side streamers.

9. Factors affecting seabird bycatch

The fishers were also asked to describe what factors other than the presence of a tori line affected the likelihood of seabird bycatch. The fishers were not prompted regarding any topic. The views of the 26 fishers who had the opportunity to comment on this were

Area affects bycatch rates	15
Setting at night reduces bycatch rates	22
When fishing at night more birds are likely to be caught as the moon becomes more full	7
Adding weights to snoods reduces bycatch rates	6
The type of hooks used affects bycatch rates	4
High winds reduce bycatch rates, more birds will be caught in calm conditions	2
The presence of muttonbirds increases bycatch rates for other species	2
Shining a bright light astern at night reduces bycatch rates (confuses the birds)	1
Minimising the amount of light shining astern at night reduces bycatch rates	1
Thawing baits reduces bycatch rates	1
Setting the longline from a low deck (1m above sea level) reduces bycatch rates	1
Dropping hooks into the clown cycle of the propeller wash reduces bycatch rates	1

Area - While many of the fishers claimed that the area being fished was a major influence on the likelihood of seabird bycatch occurring, only 2 were willing to state that areas which they fished (Solander Trough & Bay of Plenty) might have a problem. The others stated that seabird bycatch might be a problem for fishers in other regions but not in the regions that they fished.

Night setting -Twenty two of the fishers stated that setting longlines at night substantially reduced the likelihood of seabird bycatch occurring. One fisher stated that he set half of his hooks during the day, another stated that he set a minority of his hooks during the day, the rest of the fishers stated that they set 95% or more of their hooks at night. Night setting was the seabird bycatch mitigation measure overwhelmingly favoured by New Zealand fishers.

Adding weights to snoods - Some of the fishers do this because they believe that it improves tuna catch rates, but many more were strongly opposed to weighted snoods (either because they believe that this reduces tuna catch or endangers the crew while line hauling). Most of the fishers who did use weighted snoods regarded the exact weight, and the location of the weights on snoods, as commercially confidential information and were clearly nervous about giving this out.

Several of the fishers believed that the type of hooks that they were using made bird bycatch very unlikely. Three fishers mentioned "circle" hooks (e.g. Mustad 16/00) as reducing the likelihood of seabird bycatch while one stated that "big" hooks (40 mm or more throat) would not catch birds.

Two of the fishers stated that when muttonbirds were present they retrieved baits for other species and thereby made seabird bycatch more likely.

10. Seabirds caught

The fishers were not asked how many seabirds they caught but if they volunteered this information their comments were noted.

- 1 muttonbird this year.
- 1 cape pigeon this year, 2 birds last year. Catches far more birds while hauling but most are hooked in the wing and released alive.
- No birds in the whole time that the fisher has been tuna longlining.
- 1 albatross per year on average.
- No birds during line setting but some muttonbirds caught while line hauling.
- A "handful" of birds caught in the whole time tuna longlining.
- Approximately 8 birds a year including 4 mollymawks (hooked on moonlight nights).
- 1 muttonbird in last few years.
- No birds since fisher started using a tori line.
- Only muttonbirds and then only at night around the time of the full moon.
- "Quite a few" muttonbirds, 1 or 2 mollymawks and no albatross in last 4 years.
- 5 to 7 muttonbirds a year.
- An average of 3 birds per set tangled (not hooked) in the longline during hauling and released alive.
- 2 muttonbirds per year, 1 albatross (released alive) in the last 3 years.
- "Mostly" muttonbirds and black-backed gulls caught during hauling and released alive

Two of the fishers stated that they caught far more birds while snapper longlining than tuna longlining. One of the fishers stated that he caught far more birds while bluenose and groper lining than tuna longlining. Another stated that far more birds were caught bottom longlining, although it was not clear whether he was speaking from first hand experience or not.

11. Other matters

One fisher stated that the "Australian book" (*Catching fish not birds*, by Nigel Brothers and the Wildlife Service of Tasmania) on reducing the incidence of bycatch was very useful.

Another requested that the Department of Conservation provide him with more information on tori line design.

Another requested that the Department of Conservation provide him with a progress report on how work on the underwater bait setting devices was proceeding.

12. Conclusions

There is wide range of opinions held by fishers with regards to how useful tori lines are. Opinion on how easy the tori line was to use was evenly divided. The majority of the fishers that used a tori line believed that they were useful in deterring seabird bycatch. But if the views of the 6 fishers who would not use a tori line because they believed that seabird bycatch was not a problem are taken into account, opinions on the usefulness of tori lines are evenly divided.

All but one of the fishers had at least one criticism of the tori line. The most common criticism was that the tori line was too heavy causing it to tangle with the longline and/or lack aerial coverage (it sagged too much to scare birds). Future tori lines should be made out of lighter material which absorbs less water.

Several of the fishers also thought that the sekoyama with a rubber sheath side streamers were too heavy, too narrow and/or did not scare birds. There seems to be a preference amongst New Zealand fishers for using either no side streamers or plastic ribbon side streamers.

Many of the fishers also seem happy to have a buoy on the end of their tori lines despite the probable increased risk of snagging the longline.

The vast majority of the fishers are fishing almost exclusively at night and seem to hold the opinion that this is an adequate means of avoiding seabird

bycatch (although several mentioned the increased risk around the full moon period). Few fishers believe that there is any need to use a tori line while longline setting at night.

Weighting snoods is very controversial as a seabird bycatch mitigation measure. Some fishers use weights, while others are opposed to the idea because of safety issues.

Almost all New Zealand domestic tuna longline fishers seem to regard the practices of thawing baits or timing the release of offal in order to reduce seabird bycatch rates with indifference.

One of the fishers commented that, despite the fact that he did not like the tori line, the project to provide these tori lines had been worthwhile because it had got fishers thinking about, and experimenting with, how tori lines should be constructed.

13. Acknowledgements

The great majority of the fishers contacted participated enthusiastically in this survey and I would like to acknowledge the time and effort that they put into answering my questions, and apologise for interrupting them during dinner, televised rugby matches, line hauling, etc.

14. References

Nelson, D. I. 1998. Construction of tori lines for domestic tuna longline vessels. *Conservation advisory science notes 201*.

15. Appendices

15.1. QUESTIONNAIRE RELATING TO THE TORI LINE PROVIDED TO DOMESTIC TUNA LONGLINE FISHERS IN FEBRUARY/MARCH 1996.

Fisher :

Vessel

Phone Number:

Rung on

-
- Have you used the bird scarring tori line that Don Nelson provided to you ?

(Yes/No)

If yes

- How often have you used the tori line ?

(Always / Usually / Half of the time / Seldom)

- Was the tori line easy to use ?

(Yes / No)

- What problems (if any) did you experience with using it ?

- How often did these occur ?

- What modifications did (would) you recommend to solve these ?

Problem	Frequency	Modifications

- How effective do you believe the tori line was at deterring albatross and petrels from taking baits ?

(Very effective / reasonably effective / minimally effective / ineffective)

- Was the tori line equally effective under all conditions (sea conditions, wind conditions, types of seabird present, time of day, area) ?

Condition	Effect

- What modifications (if any) did / would you carry out to make the tori line more effective in deterring seabirds ?

- Are there any other measures that you use to try to avoid seabird bycatch (night setting, weighted snoods, timed release of offal etc.) ?

(position & weight of weights on snoods =)

If fisher did not use the Don Nelson tori line - What was your reason for not using the tori line ?

15.2 DESIGN OF THE TORI LINE PROVIDED TO FISHERS

The following is a generic example of the tori line provided to fishers. The construction materials that are specified here were used in all of the tori lines provided, but the length of the tori line, and the number and length of side streamers varied depending on the size and line-setting speed of the individual vessel.

