

New Zealand Tuna Fishery Advisory Officer Report

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¹ This report expresses the views of the author and does not represent the position of the Department of Conservation.

Table of Contents

1.	Executive Summary	3
2.	Introduction	3
3.	The domestic tuna long line fishery	4
4.	The 2003 bigeye tuna season	4
5.	The bluenose fishery	5
6.	North Island site visits	6
7.	Installing an effective tori line	7
8.	The Seabird National Plan of Action and Codes of Conduct.....	8
8.1	Setting in the Dark.....	8
8.2	Lighting.....	8
8.3	Tori Lines.....	8
8.4	Treatment of baits.....	9
8.5	Retention of baits.....	9
8.6	Weighted clips and hooks.....	9
8.7	Operating close to the sea surface.....	9
8.8	Discharging fish oil.....	10
8.9	Water sprays.....	10
8.10	Underwater setting devices.....	10
8.11	The Seabird NPOA	10
9.	Education	10
10	Other observations	11
10.1	General observations.....	11
10.2	Fishing companies	11
10.3	Observations from 2004	11
10.4	Plastics and other effects on seabirds	12
10.5	Incentives for fishers	12
10.6	Observers	13
10.7	Set-nets, trawlers and crayfish pots, and their effects on other species	13
10.7.1	<i>Crayfishermen.....</i>	<i>14</i>
10.7.2	<i>Turtles and other species.....</i>	<i>14</i>
10.8	Trips to Sea	14
11.	Tasks and directions	15
11.1	Identifying fishing methods of interest.....	15
11.2	Possible solutions and areas of concern.....	15
10.	Closing remarks	16
	ANNEX A ADVISORY OFFICER REPORTING SUMMARY	18

New Zealand Tuna Longline Fishery Advisory Officer Report 2003/04

1. Executive Summary

The Conservation Services Programme (CSP) employed Dave Killian and Patrick Hibell as Advisory Officers for the New Zealand tuna longline fishery, with particular emphasis on small, domestic vessels during 2003 and 2004. The role of these officers was to provide advice and support to fishers on developing and installing mitigation measures and best practice to reduce protected species bycatch. Advisory Officers visited many ports around the North and South Islands to meet with fishers and discuss mitigation. Vessels targeting southern bluefin tuna, bigeye tuna, and bluenose were the primary ones contacted but contact was also made with those in other fisheries. Information about seabirds and mitigation techniques were provided to fishers through discussions, books, videos, and information sheets. Most vessels visited already had a code of practice with a view to reducing bycatch and many had already implemented good mitigation practices. Tori lines and night setting (95% of vessels) were the most common mitigation methods but other methods used included the weighting of swivels, dribbling a film of fish oil on the sea surface, water sprays, keeping deck lighting to a minimum, or using a powerful narrow-beam light. As many of the vessels visited were small, it was necessary to modify the tori line so that it would not get tangled in the mainline. Fishers were aided in developing tori lines to suit their vessel and fishing method. In general the fishery appeared to be declining with many of the smaller operators either leaving the fishery or selling out. Over the course of the year, the number of vessels involved in the fisheries reduced considerably. Overall, fishers reported that there were very few interactions with seabirds and that many of the mitigation measures they had put in place over the last few years had been successful in reducing bycatch.

2. Introduction

Knowledge of the potential impacts of fishing on non-target species has developed and continued to increase since the 1980s. Awareness and understanding by fishers of the nature of these impacts and ways to mitigate them are crucial, because these fishers are in the best position to reduce these impacts. To help increase awareness of protected species issues in fisheries, the Conservation Services Programme (CSP) embarked on advisory officer programmes (CSP Annual Plan 2002/03) which contracted advisory officers to work with fishers, giving advice on best practice and mitigation techniques, and working with fishers to implement mitigation methods. Advisory officers were contracted to work with a specific fishery, in this case the domestic tuna long line fishery.

Advisory Officer objectives are to work with fishers to reduce protected species bycatch at sea through:

- Development of suitable bycatch mitigation measures.
- Installing mitigation devices on fishing vessels and advising vessel operators of best practice.
- Responding to requests for advice from fishers.
- Identifying and mitigating specific problem areas as they arise.

This report by the Protected Species Advisory Officer (Tuna fishery) covers the work of the previous Advisory Officer, Dave Kellian and the present Advisory Officer Patrick Hibell. Patrick Hibell liaised closely with Grant Johnson, Advisory Officer for the snapper fleet in Auckland and North Auckland.

3. The domestic tuna long line fishery

This fishery was once a thriving one, with up to 160 domestic vessels throughout the country. The vessels involved were mainly inshore trawlers, bottom long-liners, set netters and crayfish boats. In boom years vessels were also brought in from Australia and other parts of the world.

Traditionally in New Zealand, surface longlining was carried out by vessels from 12 to 45m in length. It started as a method of taking southern bluefin tuna off Westland in the late 1970's by hand-line. The practice at that time was to steam out from Greymouth, locate the hoki trawl fleet, pull up alongside a trawler that was hauling a bag of hoki and lower a hand line in the hope of catching one large tuna. Even though there were thousands of birds about, drawn by offal dumped by the trawler, the chances of catching a seabird with a hand line were very low as the line was controlled by the person holding it. In addition to the West Coast fishery, a surface longlining tuna fishery also began off East Cape, based at Gisborne, which had about 160 vessels during the boom times.

These early founders of the bluefin tuna fishery started the first measures to stop the seabirds from getting to their baits before the fish. This included simple things like spraying the birds with water, pulling the hook out of their way, waving the gaff in the air and steaming forward of the main mass of birds clustered around the net at the surface. In those days it was thought that the tuna only took a hook in the daytime. The importance of restricting fishing to the hours of darkness was also realised at this. In the early years there was an acceptance of seabird bycatch as a necessary evil but now there is widespread awareness of the need to reduce seabird captures to minimal levels.

Many factors have impacted on the size of the tuna longlining fleet. Various opinions for the decline have been stated including a noticeable decline in tuna numbers, fluctuating prices for the fish owing to changes in the value of the New Zealand dollar, increases in Government levies, and the increasing cost of bait, fuel, ice, and replacement gear. Add to these factors the inclusion of southern bluefin tuna, bigeye tuna, swordfish and other pelagic species into the quota management system and it is the common perception among fishers that surface longline tuna fishing in New Zealand waters is in recession. During his term as advisory officer, Dave Kellian visited about 120 vessels but by April 2003, there were only about 90 left. This number had dwindled to some 60 vessels by June 2004. Fishers expected that numbers would continue to decline through to late in 2004 when most fishers would sell their quota and leave the industry.

4. The 2003 bigeye tuna season

The bigeye tuna season in 2003 was an average year with the warm water moving north at a rapid rate and most fishers moving large distances to keep up with the fish that followed this warmer water. As weather patterns changed, many vessels took up other types of fishing, some simply tied up, many were for sale, and a number of the better, more capable vessels and skippers went off to fish in the Pacific islands.

In November 2003 there were about twenty boats left targeting bigeye tuna. Many vessels from Tauranga north to Houhora, Whangaroa, Opuia and Mangonui were visited. About a dozen domestic vessels were working out of the small northern ports. Two sea trips were undertaken and a few trips into the harbours were made to test different types of bycatch reduction measures. It is noteworthy that some fishers had detailed records of the seabirds they had caught over the previous two years and had worked out why they caught the birds and tried to adjust their avoidance measures to suit. Ministry of Fisheries

(MFish) observers had been on some of the larger vessels but placement of observers on small vessels was a problem as living and working space is so limited. There was also some resentment of the cost of having an observer onboard.

Good progress was made in the area of consultation with fishers and boat owners over the seabird issue but fishers generally believed that DOC could do more to publicise the efforts of tuna fishers to reduce the effects of their fishing practices on New Zealand seabird populations. Attitudes changed markedly during the course of the Advisory Officer contract period. Intense efforts were made by fishers to reduce seabird captures with different types of tori lines that could be easily deployed and retrieved. In addition, fishers consistently shot the gear in the dark, and practiced bait retention routinely. Further details on mitigation methods are provided later in this report.

5. The bluenose fishery

As the big-eye tuna fishing in the north tailed off, South Island ports were visited to investigate the bluenose fishery as well as working with any remaining tuna fishers. The first port of call was Nelson where most fishers were involved in scallop dredging or trawling. Time was spent talking with those who converted to tuna during the season. The Advisory Officer attended a fishers meeting about the tuna and other fisheries. The Advisory Officer also visited the Deep Sea School of Fishing at Westport and discussed the seabird programme.

In Hokitika and Greymouth fishers raised current issues rather peripheral to the tuna and bluenose fisheries but nevertheless of concern to them. Marine reserves and the protection of Hector's dolphin were two areas of interest where the fishers and DOC held differing views. While accepting the hazard that set-netting presents to Hector's dolphin, fishers maintained that they had effective codes of practice in place and that bans on set-netting were unnecessary.

At Jackson's Bay one vessel was found to be targeting bluenose and effective seabird bycatch mitigation measures suggested to them by Dave Kellian were in use.

There were three vessels at Milford Sound working in the bluenose fishery, one of them using drop-lining. Most of these fishers take bluenose as a side line to crayfishing and are more active in March than in November. All three vessels were laid up and the owners and skippers were away at the time and so no contact was able to be made with them.

At Riverton and Bluff it was found that there were no bluenose fishers given the distance to travel to fishing grounds. Most of the vessels were involved in crayfishing, taking blue cod, or trawling. Some were laid up awaiting the forthcoming oyster season. In discussions with local fishers the question of seabird bycatch and mitigation was canvassed.

Returning north up the east coast of the South Island every port was visited and it was noted that there were fewer fishers than twenty years previously. Trawlers, set netters, blue cod fishers and crayfishers were found, but no bluenose or ling fishers until Lyttleton. The owners of the two vessels there were prospecting the bluenose fishery off the south east coast.

At Kaikoura no longlining vessels were found, only set-netters and crayfishers, which was rather surprising given the amount of deepwater and fishable ground in that area. In Picton there were mainly charter vessels for the public but few commercial vessels. A

number of longline vessels had been sold and there were no longer any bluenose fishers based in of Picton for reasons which included a lack of quota and competition from large trawlers.

It would seem that the involvement of small fishing vessels in the South Island bluenose fishery is of a limited nature. Reasons given for this included the pressure exerted by the larger vessels that work the Chatham rise and whose owners have acquired most of the inshore quota to cover their bycatch for hoki and ling. Also, prices for bluenose and ling have apparently been poor and thus fishing for these species has been supplementary to crayfishing. Many of the fishers spoken to were practising various bycatch mitigation methods and generally they were receptive to the aims of the CSP.

6. North Island site visits

The next leg of the trip was from Palliser Bay to the East Coast. At Ngawi in Palliser Bay bulldozers are used to launch and haul out a fleet of about twenty small vessels up to about 12m in length. All these vessels were involved in the crayfish industry with a few changing to set netting at certain times of the year and none were engaged in bottom longlining.

Further north at Tora there were six small vessels, again on tractor trailer units, and only one was engaged in bottom longlining. This vessel routinely set in the daytime (making only day-long trips) and had never used a tori line. However, other seabird deterrent methods were in use and appeared to be working.

Castlepoint had nothing other than a few crayfishing boats that spend the off-season as fishing charter boats. These vessels are only day boats and are pulled ashore at the end of each trip. Porangahou was the same as Castlepoint.

At Napier two vessels were found which work out of the port, with a third one tied up. As the two surface longliners had been visited before and were well up to date with bird bycatch mitigation methods, only a brief call was made to see how they were getting on. Two other longliners were called on but both were about to leave for the Pacific Islands. In general, the attitude of fishers towards setting lines such that seabirds are not caught has been very positive as have their attitudes towards the efforts of CSP to educate them on the whole question of reduction of seabird bycatch.

While most fishers in this area do use a tori line, they also report that they haven't caught a seabird of any description in the last twelve months to two years. This is probably because setting at night has now become common practice. It is known that nearly all fishers out of Napier and Gisborne shoot their line at dusk and pick up again in the dark the next night then shoot again before daylight. This method of fishing ensures that both the morning and night periods of fish 'bites' are covered and that the chances of catching seabirds are very low.

However, on bright moonlit nights with a calm sea and little cloud (happening about three times a year), it has been found that on rare occasions birds have been caught even with the fisher using a tori line. Longline fishers are constantly coming up with new ideas to prevent this from happening, especially by seeking more effective tori lines. A particular technique of setting low to the water and at a slower speed so that the baits disappear more quickly is being currently adopted by many fishers. Other innovative deterrents being tried are towing a white rag that represents a dead bird, dribbling a film

of fish oil on the water, keeping deck lighting to a minimum, or using a powerful narrow-beam light on moonlit nights to disrupt the seabirds' night vision.

This latter method is still in the trial stage, but it would appear that the birds get quite nervous and try to avoid the light. While doing so, they lose interest in the baited hooks and by the time they recover, the baits have gone, sinking out of their reach or disappearing astern of them. Unfortunately for this particular technique, most vessels in the domestic fleet don't have a big enough generator to power a light or lights that would be effective enough to disrupt the seabirds' pattern of behaviour.

Weighting the swivels which attach the snoods to the main-line to sink the line faster is another mitigation method. However, placing a weight at the hook end of a snood is not favoured because if the line breaks with a fish of any size then the weight can be flung back very fast, a potential danger to a person in its path.

Some fishers admit that they still like to lift the set in the late afternoon, but state that seabirds are not a problem because fishers have learned to keep the line down and close to the boat instead of allowing it to come to the surface at a distance. This serves a double purpose. Firstly, with the baited hooks coming straight up to the boat from below the ten-meter mark the snoods have less chance of getting tangled around the mainline. Also, with the mainline so close to the boat the rare captured seabird would be immediately unhooked and released unharmed. Birds caught this way have no time to get hooked seriously as the hooks used are too big to swallow, and if birds are caught they generally come aboard unharmed and can be released.

7. Installing an effective tori line

The installation of a tori line can be a problem for the vessels of the inshore tuna fleet. Most boats are too small, having no gantry or similar high fixture to which a tori line can be attached. Tori lines have been snapped off and have become entangled in beacons mainly because the position at which the tori line was attached was too low.

Fishers do not like climbing up the gantry or any structure in a rolling, pitching vessel to deploy a tori line and so with the help of another fisher, I came up with the flagpole method of getting the tori line up safely and in an effective manner while still standing on deck. This method requires a pulley at the top of the mast through which a rope is threaded then run down to the deck, forming a continuous line when the two ends are joined and if an eye is placed in it the tori line can be attached to the loop and hoisted to the top of the mast similar to the hoisting of a flag. Fishers are now adopting this method but state that tori lines irrespective of design or length still get caught up in the fishing gear. Sooty shearwaters and small black petrels but have learned that it is no threat to them and fishers are finding that these birds are now working around the line to get to the baits. It would appear that this problem occurs only when fishers are working rough weather with the tori line being blown off course and when gear is being shot in daylight. In practice, better-designed tori lines are being sought, different types of strapping are being tried, and more swivels, floats and weights are being added or deleted to find the right line that suits the vessel and works most effectively against the seabirds.

Another method of seabird deterrence that has recently been trialled and is still being refined is the towing of two empty twenty-litre containers twelve meters apart out to one side and twenty-five meters back from the vessel. This method is a crude one but the fisher concerned assured me that the petrels disliked these black objects bouncing around at the back of the vessel and avoided them as much as possible. This method

needs more trialling to see if it can be refined or altered to suit all vessels and to see what percentage of birds are affected by it.

8. The Seabird National Plan of Action and Codes of Conduct

The necessity for formal codes of practice to reduce seabird bycatch, endorsed by companies and individual skippers, has become more urgent with the advent of the National Plan of Action for Seabirds (NPOA). A range of techniques that are being used to deter seabirds is described here.

8.1 Setting in the Dark

This is the most effective way of preventing incidental seabird capture as it cuts down the chances of catching seabirds by about 95%. The best shooting time appears to be in the early hours of the morning or at times when there is no moon or the moon is still low in the sky. Fish and seabirds are known to be more active when the moon is high and it is in the interests of the fishers to have the hooks in the water before the bite time arrives.

8.2 Lighting

The use of strong lights is a deterrence method that is used in conjunction with night setting. The correct use of lights placed in the right areas can be very effective. Extensive experiments with lighting have been done by some skippers and it has been concluded that controlling deck lighting such that the area over the line being set remains in darkness deters birds as they cannot see the line. More directional control of lights can be achieved by fitting shades. Flashing bright lights vertically has also been tried with the intention that the birds would be dazzled such that they could not see baited hooks at the sea surface. Maintaining a dark area over the mainline is vital. More experiments should be done with lights, for instance flashing lights and lights of different colours and strength, noting that lights must not interfere with navigation lights or cause hazardous shadows around work areas. It has been pointed out on several occasions that navigational regulations require fishers to provide a bright light in the direction of the fishing gear when the fishing gear is being set.

8.3 Tori Lines

These have been distributed to most of the fleet and because vessels can be configured differently tori lines have been altered to suit. Some vessels have cut off the end line and added a length of nylon backbone, the idea being that this causes less entanglement with the mainline. Others have devised types of tori lines with the streamers being of luminous material.

Tori lines are considered to be about 75% effective in the right conditions, but rough seas and a contrary wind can reduce effectiveness drastically. For example, while setting in 30 knots-plus with a beam-on sea the tori line can become entangled with the mainline or it may be blown so far to the side of the mainline line that birds would easily fly around it, making it useless.

There can be no doubt that the deployment of a tori line does reduce the incidental capture of seabirds but other mitigation techniques are also necessary. Some fishers have not only adjusted their tori line to suit the particular circumstances of their vessel but have adopted the practice of towing a couple of twenty litre containers out to one side behind the vessel. One container will pull on the other such that they jump all over the

sea surface and they also make a slapping noise on the water. Both of these effects are thought to deter seabirds

8.4 Treatment of baits

Frozen baits are not used as they are too difficult to attach to a hook and they sink slowly so baits are always thawed to some degree. Dyed baits while not widely used are considered to be a very useful bycatch mitigation measure by those who do use them. It is reported that squid can be dyed successfully but the dye does not take so well to pilchard or sanmar. In trials it was found that albatrosses much preferred pilchard and sanmar to squid and thus the dyed squid was an effective deterrent.

8.5 Retention of baits

Fishers have been slowly convinced that the retention of used baits is to their advantage. Retaining used baits is a messy business and most crews don't like the idea at all because it is easier to toss a bait over the side rather than into a bin. Any bait that misses the bin becomes a dangerous piece of slippery matter that has the potential to cause an accident on deck. Baits in a bin on deck can get in the way especially when a fish is being played, and the crew are using gaffs, lines, knives and hooks. On a rough day the problem can be much worse. If, however, used baits were to be kept and used as chum at night while setting then this practice would achieve two things. The chumming would attract fish and the stopping of the practice of baits being thrown back onto the water would lessen the numbers of birds congregating around the vessel. While the difficulty of baits in a bin on deck and a change of attitude in regard to feeding the seabirds is now being addressed, most vessels have limited room, some crew members like to feed seabirds and nearly all fishers like to see an albatross frequenting the boat - some even believe it brings them luck. Trials with different types of bins and other methods of retaining baits on board safely are continuing on different vessels and it is hoped that in the near future a safe and sure method can be found.

8.6 Weighted clips and hooks

Most fishers use weighted clips. Based on discussions with fishers, it would seem that there are definite benefits including potentially increased fishing catch combined with the advantage of sinking the line and hooks faster onto deeper water. However, weighted hooks are not favoured as they are a potential hazard during hauling operations.

8.7 Operating close to the sea surface

Shooting and hauling the mainline as close to the sea surface as is practicable seems to be a useful method of lessening seabird captures. Being close to the water, the line sinks faster and if the line is kept deep and close to the side of the vessel when hauling the baits come up from an angle that makes it more difficult for seabirds to get hold of them. A mechanism that would bring snoods onboard faster than is possible by hand-hauling would be advantageous as exposure of the baits to seabirds is then minimised.

Some fishers have changed their method of setting, dropping the baited snoods in the downwash side of the propeller wash so that they are sucked down and out of sight before the mainline moves away from the vessel.

8.8 Discharging fish oil

A film of fish oil discharged astern during shooting appears to discourage seabirds feeding around inshore snapper vessels. Preliminary experience to date suggests that it could become one of the best mitigation measures available for inshore fisheries. It is possibly less applicable to working offshore where the conditions are a lot rougher with bigger seas and greater wind speeds. However some fishers are working on different methods of application and perhaps in the future fish oil will be used as a mitigation measure in pelagic and bottom-line fishing.

8.9 Water sprays

A simple water sprinkler adapted to shoot spurts of water over the stern to stop the birds getting to baits is used by one fisher, and it works because he says no birds have been caught in two to three years. Seabirds do indeed react to being sprayed with water and all that would be necessary in a larger vessel would be a pump of sufficient capacity to deliver a powerful spray.

8.10 Underwater setting devices

There has been much experimentation with devices which enable the mainline to be shot well under the surface but none has been perfected.

8.11 The Seabird NPOA

This requires that measures be put in place to avoid the incidental capture of seabirds. While there are already regulations that require a tori line to be used at all times in the chartered tuna fishery, there is some scepticism that a purely regulatory regime will be sufficient. Fishers consider that education and a self policing policy could be much more effective. Voluntary measures from the fishers working within the fishery with observers, CSP and other agencies would be a much more co-operative measure to put in place.

9. Education

The dissemination of general information on New Zealand seabirds and other protected species was an important part of the job. A seabird identification manual was given to interested fishers as was a set of small seabird information sheets designed to be hung on a wheelhouse bulkhead. Tori lines, constructed by the advisory officer team, were also made available to those requiring them. Other materials such as a record book for protected species bycatch were given to those prepared to keep them up to date. Unfortunately there was a perception by some fishers that information they voluntarily provided could be used against them.

The seabird videotape produced by Southern Seabird Solutions was distributed and was commented on very positively. Already there are numerous fishing clubs and organisations around the country that have the opportunity to put codes of practice in place and to educate their members in importance of these. The members themselves then become promoters of seabird welfare within the community. CSP could play a major part in promoting this by a vigorous educational programme.

10 Other observations

10.1 General observations

A lot of vessels have gone from the surface longlining (SLL) industry but a few have come back in mainly for the bluefin season. At the end of the bluefin season, it is likely that over half these vessels will diversify into other fisheries and within the next few short months over half of the rest will dwindle away. By October 2004 the end of the surface longlining industry as we know it in NZ will be in serious decline. When the quotas are introduced in October 2004 for pelagic species most fishers will sell out if they already haven't done so. Fishers have commented that the figures no longer stack up and those who have obtained their quota by legal and proper means now find themselves in a difficult position. There is a perception among some fishers that with the 40% quota cut to accommodate Maori fishing claims and government buy back system, the remainder of their quota is not enough to make a sustainable living, hence the need for most to sell or lease to companies.

10.2 Fishing companies

Fishing companies are obviously one of the major driving forces in the fishing industry. Accordingly, they can influence factors such as the allocation of quota and the price paid for fish product to the fisher. While some companies have gone to great lengths to ensure that their fishers have put codes of practices in place, others have been less proactive. The relationship between fishers and the companies can be complex. It is particularly important to consider whether the obligation for the introduction and enforcement of mitigation methods lies with the companies, the fishers or both. Is it the quota owner who should require tuna to be caught with specified mitigation methods or is it the fisher who must demonstrate that they have been using the best and most effective methods available to catch the company's quota? Obviously the ideal situation would be for both parties to work closely together to ensure appropriate mitigation techniques are developed and used. Based on discussions with fishers and companies, it is clear that companies must take a bigger role in ensuring that the fishers are using the most effective mitigation methods available to minimise the numbers of protected species caught. This would best be done by a company requiring all vessels that fished for them to follow a code of practice that prescribed setting in the dark and using a tori line, and required dyed bait and the retention of offal. One of the roles of CSP is to support companies in developing codes of practice and also to monitor both company and fisher compliance with a code of practice.

10.3 Observations from 2004

For the last few months of the 2003/04 contract (e.g. April – July), the emphasis was on the ports of Napier, Gisborne and Tauranga with frequent trips being made to Auckland and Onehunga. With the start of the bluefin season most of the fishing fleet began arriving in these ports and although I visited a lot of vessels twice, there were still others which had I not visited before.

Generally the fishing fleet in Napier was in a depressed state as many fishers were in a difficult financial position due to the poor fishing in early winter. It is also worth noting that the albacore troll season (e.g. December – March) was worse than most fishers were expecting. Early in the season, when there were about 40 vessels working out of

Onehunga, fishing was reasonable even though the price of albacore was not that high at around \$2 per kilogram. However, about the start of February the weather turned nasty and a lot of fishers failed to get to sea, resulting in a poor season for many.

The fishing season in Napier started slowly with a small amount of northern bluefin being caught although the water pattern and water temperatures were not favourable. The expected bycatch of swordfish and albacore did not eventuate. Because the conditions were cooler, a large number of blue sharks were caught, and by the end of April a few fishers decided to head for the west coast of the South Island in search of the southern bluefin. Gisborne fared little better for the fishers and by the end of April there were boats going north to Tauranga and south to the west coast. Some fishers concentrated on catching albacore off East Cape and Tauranga rather than battle the weather conditions and the blue sharks between Gisborne and the south of the East Coast. In May and June fishing got to the stage in this area that many fishers were striving very hard just to make a living and working in atrocious conditions to do so. Due to the rough conditions, some fishers damaged their vessels which impacted on their ability to finish the season. Under these conditions it was very hard to get fishers interested in seabird mitigation, especially when fishers were losing gear and sustaining severe storm damage. Issues such as adjusting a tori lines or introducing other more effective bird mitigation ideas tended to be put 'on the back burner'. Despite these ongoing problems for the fishers, most still had time to talk and their concern for the safety of the seabirds from getting caught on their gear was still a high priority.

At the end of June, there were about 15 vessels working out of Napier, about 15 out of Gisborne, about 10 out of Tauranga, and up to five out of Auckland. Thus was the state of the East coast fleet at the end of June with some 150 tonne of bluefin quota left to catch. On the positive side the vessels that steamed the 500 miles from the East coast and around to the west coast of the South Is were starting to pick up a few fish and the signs looked quite positive for the 15 odd vessels that had gone around. The downside of tuna fishing of Greymouth and Westport is the changeable weather, the river mouth bar conditions and concern that the hoki trawlers would run over the surface longline gear. There is also the seabird problem as the birds on the west coast are more numerous and active at the time when the hoki fleet turn up. Most of the fishers who went to the west coast were some of the most successful operators in surface longlining. They also appear to be the best at avoiding incidental bycatch of seabirds. At the end of June this year it was estimated that there were approximately 60 surface longline vessels left in the industry.

10.4 Plastics and other effects on seabirds

Some fishers identified the potential effects of discarded plastic debris on seabirds. Other issues of concern included global warming and pollution. Some fishers believed that the reported decline in seabirds was not caused by fishing alone but acknowledged that as pressures on fisheries have increased globally, there could be a flow-on effect for seabirds. Fishers in New Zealand are receiving advice about how to reduce seabird bycatch but it was identified that there is also a need for research into what can be done to reduce the number of seabirds caught or killed by other adverse affects and to determine how these other factors affect the seabirds.

10.5 Incentives for fishers

One possible mechanism to encourage fishers to implement mitigation would be to use some form of incentive for fishers. This could take the form of some sort of program

that could be run to encourage fishers to improve their methods of mitigation. A New Zealand-wide contest for the best mitigation method of the year could be run which would involve the companies and could generate positive media exposure which would be of benefit to both the industry and CSP.

Another possible way to encourage fishers would be through a series of seminars held in Napier, Gisborne, and Tauranga during the bluefin tuna season. Selection of an appropriate time when many or all fishers were concentrated in the one place could serve for information transfer but also for the provision of promotional material such as T-shirts, seabird friendly stickers, and possible identification of companies promoting 'seabird friendly' fish. One fisher suggested that we should have a T-shirt with, 'Spread the word and save the seabirds' written on it.

At present giving a fisher a package with books and videos along with information required is not enough and most fishers haven't heard of the NPOA or don't really show a lot of interest in CSP's new strategic plan. If we want the best bird mitigation practice in the world then incentives have to be put in place so that the fishers themselves have got something to go for and be proud of. This applies to all types of fishing in NZ.

10.6 Observers

In the past it has been difficult to get observers on vessels but it was found that if fishers were approached in the right way then there were a large number of skippers and owners that were willing to take observers. In some instances, assistance was given to get observers on vessels. Some fishers suggested that they train their own crew members to become observers so that they could supply the information that the Government requires. A perceived problem with this idea is the issue of transparency involved in the provision of accurate data from the fishers themselves. While useful data is generously provided by some fishers, the independence of the data would need to be verified. This resulted in frustration and a lack of trust from fishers who felt that their integrity had been challenged. Note that the fishers who suggested training their own crew members are amongst the best bird mitigation fishers in the fleet and the most honest. This is certainly an issue that requires further consideration.

However, all is not lost, and in future the provision of data from fishers may well be a useful way of supplying information about smaller vessels that are unable to take observers to sea. The other method of observation that may be accepted in the industry is the camera surveillance system and although it is still in the pioneer stages definite advantages for smaller vessels are seen. However, this would need to be explored fully as there could be some negative repercussions if the information was used in the wrong way. After cautious consideration it is thought that cameras could only be used in a limited capacity and only in the right conditions and in selected fisheries.

10.7 Set-nets, trawlers and crayfish pots, and their effects on other species

During the course of this contract there was an opportunity to work with both DOC and Greymouth fishers over the use of set-nets and the effects they may have on Hector's dolphin. Although only a limited amount of work was done, good progress between these groups was made. There are three or four set-netters working out of Greymouth at various times of the year and their mitigation measures were reported on (see below). Also in this report the potential dangers of small and large trawlers working within the Hector's dolphin area have been outlined.

10.7.1 *Crayfishermen*

The humble crayfish pot may catch the odd shag at times but in general it is a reasonably friendly fishing method in respected of seabirds and other protected species. Two potential issues of concern were identified. The first relates to the ropes and floats that attach the pot to the surface as there is the potential for whales to become entangled, as has been reported over the last few years. The second relates to the number of pots lost that become debris on the sea floor and could pose a problem for marine life. The solution to these problems can only be discovered by the users of the pots themselves but CSP could play a part here in advising fishers of the problem.

For example a deterrent device (e.g. electronic ‘pinger’) could be fitted to floats to warn a whale of an obstruction and pots could be fitted with a trip rope that enables them to be disentangled from the bottom on coral or rugged ground. Perhaps lines to pots should be put on a cord that unrolls itself like a vacuum cleaner so that no loops were available for endangered species to get caught in. Again encouragement and advice from CSP could play a major role in establishing a solution to this potential problem.

10.7.2 *Turtles and other species*

At times in the warmer months of the year there have been rare incidents where turtles have been caught on surface long lines. Nobody spoken to had ever brought one up dead and all fishers that have reported catching a turtle noted that the animal was alive and that the line was usually wrapped around a flipper and not in the mouth as would be expected. Most fishers have not caught a turtle nor even know much about them and a limited amount of information about marine reptiles was distributed. Based on the limited number of reports from fishers, it is not thought that the capture of turtles is a major concern.

It is known that the occasional fur seal is caught but these appear to be very rare occasions and there was only one report last year when the fisher managed to cut the hook out with a bolt-cutter.

Note that recreational fishers have reported more interactions with sea snakes, turtles, and whales than any commercial fisher.

10.8 Trips to Sea

As most of the surface longlining fleet had already outfitted with tori lines, little point was seen in going to sea for up to ten days in a vessel that was already set up with good seabird mitigation gear. However time was spent on a variety of vessels steaming up and down harbours and bays, testing and modifying tori lines and experimenting with other mitigation devices such as lights, types of bait, shooting height of lines, and other things. It is thought that more was achieved by doing this in a few hours than on a vessel taking long trips to sea.

However, three sea trips were undertaken over the twelve months. The first was on a vessel from Napier where six sets were completed, all of which were in the dark on moonless nights and a tori line was used. Seabird-wise it was very uneventful as everything ran smoothly and no problems were encountered. The sea was calm with up

to twenty- five knots of wind at times during the day. The tori line was that of a standard CSP design and in the flat conditions no problems were encountered.

The second trip was out of Whangaroa harbour where two sets were achieved before the weather caused a return to port. On the first night it blew about thirty knots while setting was underway under a half moon. As the vessel was beam-on to the wind the tori line swung out to one side and its effectiveness was completely lost. However no birds were encountered and on the second night it blew even harder, so the tori line was abandoned for safety reasons and the line was set with a minimal amount of lighting over the stern. On this particular night it was pitch black with 100% cloud cover and very rough seas. The duration of the set was from circa 0100 to 0400. No further sets were made as the weather continued to deteriorate and we returned to port.

The third trip was undertaken in the bluefin tuna season - June of 2004. Again the adverse weather conditions dominated the trip which in the end resulted in only six fishing days out of the ten. A tori line was used four times during the full moon in six sets. Tori lines were not used for two sets as conditions were rough and the nights were very dark and cloudy. There had already been a tangle with the tori line the night before and the skipper declined to use the line as he believed that it could have turned into a dangerous situation. Instead of rigging a tori line the deck lights were set up so that there was practically no light over the outgoing line, then the top deck lights were turned around so that any bird flying over the line would be blinded and unable to see into the dark void where the line was being set. During the set very little seabird activity occurred and no seabirds were caught during the haul the next day.

On the next night when use of the tori line resumed, in somewhat calmer conditions, a Salvin's mollymawk was caught. The bird certainly never got the bait as the line was around its wing. The skipper stated that that was his first bird for the year. There were no other interactions with seabirds although a definite lack of birds in that area was noticed.

11. Tasks and directions

11.1 Identifying fishing methods of interest

Based on discussion with fishers and companies, fisheries that have potential or actual bycatch problems were identified. These are fisheries which should be considered for further or new research on threats and mitigation, summarised as:

- Trawlers: dolphins and seabirds
- Set nets: dolphins, seabirds and penguins
- Surface long liners: seabirds and turtles
- Bottom long liners: seabirds
- Crayfish pots: whales and shags

11.2 Possible solutions and areas of concern

The trawl nets such as those employed by the average inshore trawler appear to pose a minor threat to protected species as they have a small headline height and are towed at a slow speed that allows dolphins and seabirds to escape. By contrast, large trawl nets with very high headline heights, a higher towing speed, and with warps that extend far from the water have the potential to cause problems for protected species and other oceanic

life. Some of these larger vessels are monitored by observers and therefore there is some understanding of the problem and potential avenues for mitigating the effects.

Set-nets are the deadly demon of the sea, indiscriminately killing all species that are a concern of CSP and although they have been banned in certain areas it would be fair to say that the problem still exists. Awareness programmes have been put in place for commercial fishers and a certain amount of progress has been made in recent times, but in the future an alternative method must be found. No programme has been put forward that would educate the recreational fisher who places nets indiscriminately in areas where endangered species are common.

One possible solution to this problem is not only to educate the people concerned but to get them to change their method of fishing in the areas that are of the most concern. It is believed that fish traps designed to suit the areas concerned could have some positive effects for the affected species and the fishers concerned. CSP could have a role here in promoting an education program for both amateur and commercial fishers and in assisting and assessing any improved fishing methods that came to light. These successful methods could then be promoted throughout the rest of the industry.

Clearly CSP must take on a stronger educational role throughout the entire fishing industry and encourage fishers to promote different types of mitigation measures. CSP also has a role to play in supporting and promoting the people who devise mitigation methods and encouraging the use of these methods.

The issue of more public awareness needs to be addressed and credit should be given to those fishers who work hard at reducing incidental by catch. Environmental and other organisations should be working with fishers to solve problems rather than simply identifying problems in the media. Such organisations need to be educated in what is really happening in the industry today if they are to establish any credibility with those that are involved. CSP could play a major role in supplying the right information so that the correct message gets through.

We need to be focused in the right direction as there is little profit or reward in counting dead birds or creating more bureaucracy. There is a clear need to collect information as a necessary part of the equation but that information must be put to good use and passed on to those that need it to reduce the incidental bycatch of protected and other species.

10. Closing remarks

Throughout the year a great deal of progress was made by working alongside the fishing industry. The work over the last few years has resulted in a positive structure for working with fishers that is improving all the time with the support of CSP. As a result of this work, mitigation practices have improved and it is believed this has resulted in a reduction in the number of protected species caught.

Setting in the hours of darkness is considered to be the most effective mitigation method at present and many fishers think that it should become mandatory. Most, if not all, of the industry now have a code of practice in place to manage fishing practices, although there is considerable variation in codes. The industry is well on the way to meeting compliance targets of the NPOA.

The industry has changed considerably over the course of the year with only a handful of vessels remaining out of approximately ninety vessels visited this year. Most fishers will

sell or lease their quota to the companies and the companies will bring in joint venture or charter vessels to catch it at a more economic rate than the NZ domestic fishers can. It will probably be as it was years ago when overseas longliners last worked in NZ waters only this time there will be observers on board and more and better mitigation methods will be used to avoid incidental captures. Those fishers that remain will be the best fishers with the best mitigation measures available and any bycatch will be small. As one fisher put it, the 'cowboys' have gone from the industry and those that remain will be in for the long haul. They respect the fishery and look after it and that means using all the methods they can to avoid incidental capture of seabirds and other species.

It may be asked - what will become of the boats and the fishers themselves? Well a good number of the vessels within this industry are getting on and although some will go back to trawling and other forms of fishing many may be sold into the private sector. Others will go overseas and some will be scrapped. The pay out for the fishers that sell or lease their quota will put some fishers into other industries and those that don't get enough will simply go broke. Crews and skippers will be forced to find work else where or go broke as well as some of the people they have worked for.

For any further inquiries or information sought please contact me on 021-238-7075 or email me at peandel@ihug.co.nz

ANNEX A ADVISORY OFFICER REPORTING SUMMARY

The following is a summary of information collected by the Advisory Officers:

- Vessel Details: name, number, port, owner, type (e.g. wood, steel), length, skipper, number of crew, permit holder, company that fish were landed to, number of years experience in tuna fishing.
- Gear details: backbone length, time taken to set, snood length, description of extras on snoods, line shooter used, type of deck lighting on water, how is deck lighting controlled, shooting in the dark, preferred time to have gear in water and why, bait used and % composition.
- Fishing routine: description of bird problems with hauling, hauling and setting speed, height of line above water when shooting and hauling.
- Mitigation measures: description of tori line and any modifications made, description of when cannot use tori lines and why (e.g. bad weather), opinions about carrying observers, details of code of practices (e.g. shooting in dark, retaining baits and offal, thawed bait).
- Concerns: concerns about seabirds, should seabirds be protected, possible fishery measures to protect seabirds.
- Attitudes: is information provided by Advisory officers of benefit, awareness of Southern Seabirds Solutions, support for a public awareness programme to support fishers with best mitigation practices, rating effectiveness of codes of practice and tori lines and other mitigation measures, numbers of seabirds caught, how were seabirds caught