
Conservation Services Programme
Project MIT2017-01:
Protected Species Liaison Coordination

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Executive Summary

To ensure that captures of marine protected species are minimised on an ongoing basis, fishers must maintain an up-to-date knowledge of bycatch avoidance and reduction measures. To facilitate this, and to assist fishers with practical approaches to reducing protected species bycatch, Liaison Officers were deployed in three fisheries in 2017/18: surface longline, Fisheries Management Area 1 (FMA 1) bottom longline, and Otago coastal trawl. Liaison Officers conducted a series of port calls visiting vessels in their fisheries, sharing information with vessel operators, skippers and crew, and providing advice from shore when bycatch events occurred at sea. A Coordinator supported Liaison Officer activities, communicated with Programme participants and stakeholders and provided whole-of-programme reporting through the year.

The 2017/18 Liaison Programme commenced with a workshop involving Department of Conservation, Ministry for Primary Industries and the liaison team. This created a foundation to progress the year's Programme, including developing systems, processes, and documentation to be used. Liaison Officers then used a variety of sources to develop up-to-date lists of the vessels active in their fleets, and started working with those vessels to produce Protected Species Risk Management Plans (PSRMPs) and document practices in place to reduce protected species bycatch risks. Liaison Officers lodged the information they collected in a bespoke online information management system. PSRMP implementation on vessels was then audited by Government fisheries observers during deployments.

During their visits to vessels in port, Liaison Officers also distributed materials to assist the implementation of mitigation measures (e.g. tori line streamer materials). Further, throughout the term of their contracts, Liaison Officers responded to bycatch trigger events as reported from vessels. Triggers were developed as a risk management tool, to prompt vessel operators to evaluate their mitigation strategies, and seek Liaison Officers' input to work on reducing future capture risks.

In 2017/18, 33, 37 and 12 PSRMPs were developed for surface longline, FMA 1 bottom longline, and Otago coastal trawl vessels respectively. Plans covered both regulatory measures and voluntary approaches to protected species bycatch reduction. In all fisheries, a range of measures are documented, with the content of Plans being most diverse amongst vessels in the FMA 1 bottom longline fishery.

Observer audit information was received from 13 surface longline and 12 bottom longline trips. For surface liners, the majority of differences between practices documented in PSRMPs and those reported from audits related to the management of fish waste discharge. The diversity and relative flexibility in practice that characterised bottom longline PSRMPs, and the fields in the audit form, made audits challenging in some areas. However, similar to the surface longline fishery, there were differences in the management of fish waste discharge between PSRMPs and audit reports in some cases. There were no observer audits conducted in the Otago coastal trawl fishery.

In 2017/18, 25 and 11 trigger events were reported from surface and FMA 1 bottom longline fisheries, respectively. There were no triggers reported from Otago coastal trawl fisheries. Liaison Officers responded to triggers by working with operators to identify and address bycatch risks to reduce the likelihood of future captures when possible.

In 2018/19, the Programme will transition to a regional structure, with Liaison Officers working with all vessels using priority fishing methods in their region. Recommendations are provided to strengthen and continue the evolution and implementation of the Programme.

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Introduction

To ensure that captures of marine protected species are minimised on an ongoing basis, fishers must maintain an up-to-date knowledge of bycatch avoidance and reduction measures. With their activities based from ports around the country and their focus being on the business of catching fish, it may be difficult for vessel operators, skippers and crew to stay abreast of developments in bycatch mitigation, as well as changes in policy and management frameworks that underpin the fisheries they operate in.

Since the early 2000s, fishery-based liaison officers have been one component of the Government's approach to addressing this communication and awareness challenge, and promoting the adoption of robust bycatch mitigation practices (Kellian 2003; Hibell 2005; Johnson 2005). Liaison officers have also been one approach to aiding delivery on the Government's management objectives for at-risk seabird species (e.g., under the National Plan of Action – Seabirds (MPI 2013), the Action Plan for the Black Petrel Working Group, and the black petrel and flesh-footed shearwater Action Plan (MPI and DOC 2014)).

In recent years, liaison officers have worked with the bottom longline fleet in Fishery Management Area 1 (FMA 1), surface longliners, and coastal trawlers (Goad and Williamson 2015; Pierre 2016; Goad 2017; Pierre 2017a, b; Wells and Cleal 2017). In these fisheries, liaison officers have provided ongoing in-person contact with fishers that is intended to address questions, assist implementation of bycatch mitigation measures, share knowledge on bycatch mitigation and protected species issues, and help improve the overall performance of mitigation strategies across target fleets. Liaison Officers have also contacted fishers when particular bycatch events occur (e.g. captures of certain numbers of at-risk species), to collect information that will facilitate an understanding of why captures occurred, and to work with skippers to reduce ongoing risks where possible.

The Liaison Programme currently underway and managed by Department of Conservation's (DOC) Conservation Services Programme (CSP) (project MIT2017-01) has the following objectives:

- To provide Liaison Officers to the relevant inshore and surface longline fishing fleets, to assist those fleets in reducing their protected species bycatch, and,
- To coordinate the Liaison Officer roles with wider efforts targeted at protected species bycatch reduction in relevant fisheries to achieve the greatest reduction in bycatch possible.

In 2017/18, the Liaison Programme was implemented in three parts: FMA 1 bottom longline targeting snapper and bluenose, surface longline nationwide, and coastal trawl around Otago. The Programme was focused in these areas based on an assessment of risks associated with protected species captures (DOC 2017). The Programme team comprised four Liaison Officers (D. Goad, J. Cleal, G. Murman and G. Parker) and the Coordinator (J. Pierre). The programme broadened in scope from being focused on only seabirds in previous years, to covering all protected species in 2017/18.

This report describes the CSP Protected Species Liaison Programme in 2017/18, including:

- Programme structure and documentation
- Liaison activities undertaken, including vessel by vessel findings,
- Linkages with activities in the broader context of protected species interactions with commercial fisheries, and,
- Recommendations to strengthen the programme in 2018/19.

Methods

Programme initiation and roll-out

Initiation workshop

In December 2017, key participants in the liaison programme (the liaison team, DOC and the Ministry for Primary Industries (MPI)) convened for a workshop to establish the foundation for the 2017/18 liaison programme. The workshop involved:

- defining the Liaison Officer and Coordinator roles
- discussing the context of the Programme and team roles, amongst the broader suite of Government and stakeholder activities relating to protected species bycatch
- confirming documentation to support the programme, and how it would be finalised
- clarifying information-sharing rules and processes
- confirming communication pathways amongst Programme participants
- streamlining the information provided to fishers across the Programme
- identifying any new resources that would be useful to support LO activities
- agreeing triggers which, when reached, are expected to be a prompt for operators to contact liaison officers and to evaluate their mitigation and operational strategies, and,
- confirming next steps for the progression of the programme.

The workshop group agreed that Liaison Officers' engagements with vessel operators, skippers and crew would focus on improving the implementation of bycatch reduction measures, with the minimum performance being implementing regulatory measures where those exist. The role could also include going to sea, when short trips would result in the acquisition of critical knowledge or enable mitigation options to be implemented or refined (when this was otherwise not possible onshore). In alignment with past years' work, the liaison role would not involve monitoring or enforcement, with those functions delivered by Government fisheries observers and MPI's compliance team, respectively. The Liaison Officer role description is attached at Appendix 1.

The focus of the coordination role was on collation and management of programme documentation, whole-of-programme reporting, stakeholder engagement, facilitating resource provision to liaison officers, and developing connections between the liaison programme and other relevant initiatives. The Coordinator's role description is attached at Appendix 1.

The context, information sharing, and communications pathways for the Liaison Programme in 2018/18 are summarised in Appendix 2. Note that part-way through the year, MPI was restructured such that a new entity (Fisheries New Zealand (FNZ)) adopted some of the work areas relevant to the Liaison Programme (e.g. fisheries management and observer services). MPI's compliance team continues to provide services across the Ministry, including fisheries compliance services.

Fleet identification

Liaison Officers conducting port-based visits to fishing vessels is central to the Liaison Programme. Given the previous coverage of FMA 1 bottom longline and surface longline fleets by Liaison Officers, updating fleet information to identify vessels to be included in the Programme was relatively straightforward. Liaison Officers used their existing contacts within the industry, including operators, companies, and Licensed Fish Receivers, to identify vessels active in the

relevant fleets. Liaison Officers then contacted vessel operators and/or skippers to coordinate a port visit.

For the coastal trawl component of the Programme, a recent vessel list was not available. Therefore, the Coordinator requested information from MPI's Research Data Management team on trawl vessels < 28 m in overall length that were active in the Canterbury, Otago and Southland regions from 1 October 2016/17 onwards. This request included vessel name, home port and region, FMAs in which vessels had reported trawling, number of tows, target species, and permit holder and company contact information. The Coordinator also compiled a list of Licensed Fish Receivers covering the south of the South Island, and other key contacts who may be able to assist with identifying vessels or operators relevant to the trawl component of the Programme. This information was all provided to the coastal trawl Liaison Officer to create a foundation for his work. He then initiated contact with industry participants to plan vessel visits.

While developing the coastal trawl Programme, an issue was identified regarding overlap between the CSP Liaison Programme and the vessels that are involved in the Deepwater Group's (DWG) environmental liaison work. The DWG work is conducted to support the Marine Stewardship Council's certification of the hoki trawl fleet. While most of the vessels in this fleet are large, there were 15 trawl vessels identified that are < 28 m in overall length and target hoki under the DWG umbrella. These vessels already carried a seabird and marine mammal risk management plan. However, with the Liaison Programme's scope broadening to all protected species, inconsistency emerged across the coastal trawl fleet. This situation was resolved by the DWG environmental liaison officer using the Liaison Programme documentation during his work on vessels within this overlapping group.

Information provided to fishers

To facilitate delivery on the Programme's objectives, each Liaison Officer distributed a compilation of information to fishers (Table 1). In the surface longline and FMA 1 bottom longline fisheries, information distributed to vessels was based largely on the previous years' programme (Goad 2017; Wells and Cleal 2017). For the coastal trawl component of the programme, Fisheries Inshore New Zealand (FINZ) drafted a "10 Commandments" document and a more detailed Operational Procedures document. These were reviewed by DOC, MPI, the Coordinator and the coastal trawl Liaison Officer, then finalised by FINZ for use.

Protected Species Risk Management Plans

PSRMPs were developed by Liaison Officers working with vessel operators, skippers and crew in ports. These plans are vessel-specific. They identify the legal requirements the vessel must follow (that relate to protected species), and document other elements of the vessel's operational practice that are intended to reduce protected species capture risks. Plans also record the Liaison Officer's contact information, the date of issue or review, and triggers that are used to prompt a fisher to evaluate their practice, and report to and seek advice from a Liaison Officer, after bycatch events occur. Information collection processes that result in the production of Plans also inform Liaison Officers' determinations of the robustness of mitigation strategies in place, and when and how these strategies could be improved.

The content of these plans is summarised by vessel for the 2017/18 year, and compared to Seabird Management Plans prepared in the most recent previous year where possible.

Table 1. Information distributed by Liaison Officers working in surface longline, Fisheries Management Area 1 bottom longline, and Otago coastal trawl fisheries. Elements common across fisheries are aligned in the table. (DOC = Department of Conservation, MPI = Ministry for Primary Industries, PSRMP = Protected Species Risk Management Plan)

Surface longline	Bottom longline	Coastal Trawl
PSRMP	PSRMP	PSRMP
Triggers	Triggers	Triggers
10 Golden Rules for reducing protected species captures		10 Golden Rules for reducing protected species captures
Key contacts	Key contacts	Key contacts
Surface longline Operational Procedures		Coastal Trawl Operational Procedures
Surface longline tori line design guide	Tori line information prepared by the Liaison Officer	
Tori line fact sheet		
Black petrel fact sheet	Information on key seabird species prepared by the Liaison Officer	
DOC Fisher's guides to seabirds	DOC Fisher's guides to seabirds	DOC Fisher's guides to seabirds
Marine mammal handling and release information		
Turtle handling information	Turtle handling information	
Information on sharks (MPI Compliance fact sheets 1 - 4)	Information on sharks (MPI Compliance fact sheets 1 - 4)	
Safety guidance (tori lines, line-weighting, deck lighting)		
Surface longline Circular	Bottom longline Circular	

Trigger reports and responses

Triggers are intended to provide an alert on what could be ongoing risks for protected species, and to prompt the skipper and crew to think about what they could be doing differently to avoid future captures. Skippers were instructed to report trigger events to a Liaison Officer whether or not a Government fisheries observer was onboard. Liaison Officers responded to triggers on an ongoing basis through the term of their contracts, and documented their responses and any changes in vessel practice that occurred following trigger events.

In the 2017/18 year, triggers for surface and bottom longline vessels were:

- Any black petrel, flesh-footed shearwater, or turtle;
- In a 24-hour period, three or more large seabirds, or, five or more small seabirds, or, two or more fur seals;
- In a seven-day period, 10 or more seabirds of any type.

For southern coastal trawl fisheries, triggers were:

- Any penguin, dolphin, sea lion, leopard seal, great white or basking shark;
- In a 24-hour period, three or more large seabirds, or, five or more small seabirds, or, two or more fur seals;

- In a seven-day period, 10 or more seabirds of any type, or, five or more fur seals.

During the course of programme, one great albatross was added to this list, as part of the suite of FNZ and DOC responses to the population status of Antipodean albatross.

Trigger reports do not represent the totality of observed or fisher-reported protected species captures that occur during the Liaison Programme. Total captures are monitored separately by FNZ and DOC.

Trigger events and responses during the 2017/18 liaison term were documented by Liaison Officers as part of their work, and are summarised below.

Mitigation resources

As in previous years, Liaison Officers were able to provide some equipment to support mitigation strategies implemented by fishers. As well as its practical use, this gear had value as an “icebreaker” when visiting vessels. Mitigation equipment distributed is summarised below. This was focused on tori lines and their component parts in the longline fisheries.

The surface longline Liaison Officer and Coordinator identified a supplier of turtle dehookers for the surface longline fleet. These are currently under construction by Jessn Marine, and will be available for delivery in the 2018/19 project term.

Observer audits

Throughout the project term, the liaison team maintained contact with FNZ’s Observer Services Unit (OSU). The Coordinator provided OSU with PSRMPs for vessels that observers were to be deployed on. Observers then audited the implementation of PSRMPs during their deployments recording their findings on a dedicated form, which was provided to the liaison team. Findings of PSRMP audits, as documented by Government fisheries observers, are presented alongside PSRMP content.

OSU advised the liaison team, DOC and FNZ fisheries management staff as soon as possible when observers deployed on vessels reported trigger events occurring.

Liaison Officers were also requested to advise OSU prior to going to sea on vessels in the course of their own work. The liaison team requested that OSU provided ongoing updates on their plans for observer deployments on vessels in the Liaison Programme.

Information management system

An information management system to support the Liaison Programme was created in Google Drive, by Jill Gower (of the consultancy Lewes Wells). The purpose of this system was to provide a flexible interface for use by the Programme team, DOC and FNZ, that facilitated information sharing, consistency, storage, version control, continuity and transparency overall as the Programme developed. The new system replaces the Google Docs and Dropbox sites used previously for the liaison project.

The Online Liaison Information Portal (OLIP) currently houses:

- lists of vessels involved in the Liaison Programme by fishing method, with associated location and contact details,
- information collected on questionnaires that fed into the development of Protected Species Risk Management Plans (PSRMPs),

- trigger event records,
- file notes,
- templates for the documents above, should Liaison Officers wish to use to blank hard copies, and,
- Programme resources distributed to fishers (e.g. Operational Procedures documents).

The OLIP system also supports a dashboard facility that presents basic analytics derived from the stored information.

How these documents emerge from Liaison Officer activities is shown in Figure 1.

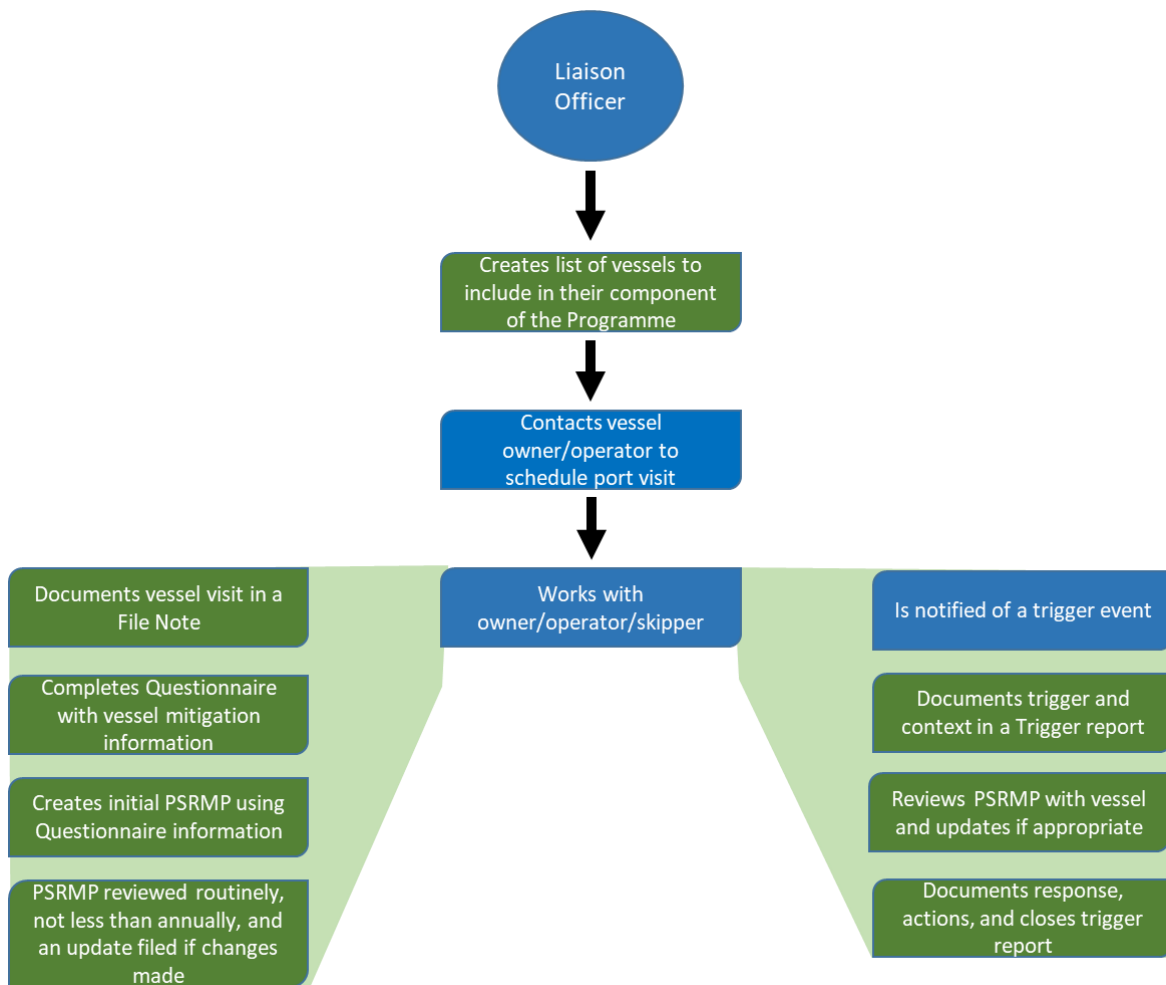


Figure 1. Components of a Liaison Officer’s work that link to documentation stored in the Online Liaison Information Portal. Green indicates a stored record.

Stakeholder engagement

Throughout the year, the Coordinator engaged with a range of stakeholders relevant to the Programme, including groups and individuals. Engagement ranged from providing updates or fielding queries about the role and operations of the Liaison Programme, through to liaising on bycatch reduction responses.

Strategic oversight

In the first months of the Programme, the team, DOC and MPI's focus was on roll-out of the 2017/18 work. Once that work was well underway, DOC, MPI, FNZ and FINZ began to consider the strategic elements of the Liaison Programme and the years ahead. In early June, the Coordinator convened a strategy workshop with DOC, FNZ, FINZ, and the Seafood New Zealand policy manager, to explore a three to five-year outlook for the Liaison Programme. The workshop considered:

- aspirations and roles of each organisation,
- strategic outlook from the present to the medium term (3 – 5 years),
- established versus new and exploratory liaison work,
- timeline for future roll-out across different fisheries,
- resourcing,
- communications, and,
- the Programme's operating context.

At the Federation of Commercial Fishermen's annual conference in mid-2018, FINZ announced its intent that all inshore vessels would have vessel-specific PSRMPs in place by 2020¹. The current mechanism that FINZ has identified for delivery on this goal is the Liaison Programme. Therefore, FINZ's involvement at the strategic level has become focused on this goal, in addition to supporting CSP's delivery of the Programme more generally.

Results and Discussion

Vessel-specific outputs

Surface longline

In 2017/18, PSRMPs were finalised for 33 surface lining vessels. PSRMP measures identified by surface longline vessel operators as forming part of their protected species bycatch mitigation strategies are presented in Table 2. All PSRMPs refer to the legal requirements for surface longline fishing, that relate to protected species bycatch. All vessel operators included tori lines and protected species bycatch reporting as part of their normal operations. Spare parts that could be used to repair tori lines or make another tori line were reportedly carried on all vessels. In 2017/18, 17 vessels reported using weights on some or all snoods (i.e. not weighting solely at the clip). Both weighted swivels and lumo leads were used. One vessel was involved with trialling hook pods, and these provided snood weighting (Table 2). Gear set-ups enabled both night and day fishing in some cases, and operators documented their ability or intention to day-fish with weights in PSRMPs. Discharge management practices were broadly similar across most PSRMPs. In general, no discharge would occur during setting. During hauling, common practices were to retain used baits and batch-discharge offal. Using dim lights or managing stern lighting was common across PSRMPs. Beyond this core suite of measures, others used by a subset of operators included haul mitigation, dyed bait, and laser devices (Table 2).

¹ <http://www.scoop.co.nz/stories/BU1805/S00988/protected-species-mitigation-plan-moves-on.htm> [Accessed 15 July 2018]

Thirteen observer audit reports were provided to the Coordinator by FNZ in 2017/18. In these audits, observers reported that tori lines were in continuous use on all observed surface longline sets except two. In one case, a tori line was not used on a set conducted in 45 knot weather conditions. On another set, the first tori line broke and was replaced during the same set by a second tori line. Spare parts for tori lines were in place on vessels. Discharge management practices were often at variance with practices documented in PSRMPs (9 / 13 audits). In one case, aft light management on setting was not observed to occur as described in the vessel's PSRMP (Table 2).

Differences between Seabird Management Plans updated during the 2016/17 programme (Wells and Cleal 2017) and PSRMPs produced in 2017/18 are shown in Table 2. Plans were identical between years in that tori lines, carrying spare parts for tori lines, and reporting protected species captures were included. Snood weighting practices changed between years, with three vessels adopting and one vessel discontinuing this practice. Noting an intention or willingness to day-set was more common in 2017/18. Twelve vessels newly identified day-setting as possible or part of their normal operations in 2017/18, while PSRMPs for two vessels no longer included day setting. Discharge management practices identified in PSRMPs were more aligned amongst vessels in 2017/18 than in the previous year. Further, not discharging fish waste and/or unwanted bait on setting was identified as a routine operational measure by 27 vessels in 2017/18, compared to 14 vessels in 2016/17 (Table 2).

Trigger reports were received from eight vessels on 25 occasions, from November 2017 through the end of August 2018 (Table 3). There were three reported trigger events due to turtle captures and one due to fur seal captures. All other reports followed seabird captures (both albatrosses and petrels/shearwaters). One report was from an unobserved vessel, while all others were reported from observed vessels (Table 3). The Liaison Officer responded to trigger events by making contact with skippers and/or vessel operators as soon as possible to collect more information on the event, and to identify risks that may have led to captures occurring. The Liaison Officer maintained contact with vessels when there were ongoing issues, with the aim of reducing further captures (Table 3).

Periods of full moon proved to be high risk for seabird captures in the surface longline fishery in the past year, in accordance with the global understanding of bycatch risks (Table 3; Bull 2007). The Liaison Coordinator maintained contact with FNZ, DOC and the FINZ Highly Migratory Species (HMS) Committee representative following several significant capture events in the surface longline fishery over full moon (Table 3). The Coordinator provided feedback from her debrief of an observer present on the first observed vessel to report capture triggers over full moon in 2017/18, to the HMS Committee representative, together with proposed options for a response to reduce the risk of future events of a similar nature (i.e. during periods of heightened capture risk over full moon). The Coordinator proposed that in the first instance, an email or letter was sent out to surface longline operators to:

- Advise them of the capture events and associated circumstances
- Remind them to be vigilant in using mitigation especially around times of high risk, such as full moon
- Encourage a change in fishing strategy if operators are having bird problems, e.g. avoiding setting when birds are around the vessel and moving out of a problem area to fish elsewhere
- Consider additional mitigation measures if operators are having problems (especially around full moon, recognising that this is beyond legal requirements but is common sense for minimising capture risks).
- Communicate with each other at sea if they are in an area with higher levels of seabird activity, in order to find out where birds are less active/absent, and,

- Remind them that the Liaison Officer role (which is supported by industry representatives) includes having contact with them regarding protected species bycatch, including at times when triggers are reached.

The Coordinator was advised by the HMS Committee representative at that time that an industry response to reduce the risks of future captures in similar circumstances was under consideration (O. Wilson, pers. comm.).

There was some pushback when the Liaison Officer followed up on significant capture events, from a small number of surface longline vessel operators. This likely results from the relatively recent increase in active monitoring of protected species captures in this fishery (i.e. Liaison Officer activities in 2016/17 and this year). Further, such responses highlight the value of communicating with fishery participants in advance of the Liaison Programme commencing, regarding Programme activities and the scope and purpose of the Liaison Officer role.

FMA 1 bottom longline

PSRMPs were developed for 37 vessels in 2017/18. Measures comprising bycatch mitigation strategies for bottom longline fishers are shown in Table 4. For this fishery, the Liaison Officer's approach to completing PSRMPs involved him describing measures in place as reported to him in the skippers' own words in the current year, or previous years of the Programme. Across Plans in some cases, there were commonalities in phrases used to describe bycatch risk reduction measures. At other times, there were subtle differences in wording used to both describe measures and their implementation. Overall, mitigation options that vessels may select from are described in these plans, with the implementation of some options occurring on an "as-required" basis. Given the subtle differences between Plans in the description of some measures, mitigation strategies are summarised broadly below. Detailed wording is provided in Table 4.

- **Tori lines**
PSRMPs referred to the legal requirement to use tori lines. Brief descriptions of tori lines used on vessels were documented in PSRMPs (e.g. construction materials for the backbone, streamers and drag section). Of 37 vessels for which PSRMPs were updated in 2017/18, five Plans documented the use of more than one tori line in at least some cases (Table 4).
- **Setting speed**
Setting speeds documented in PSRMPs varied from 2 – 8 knots. Speeds of 4 – 5 knots were most common, amongst Plans in which speeds were specified (Table 4).
- **Line-weighting and float usage**
Weight and float arrangements were diverse amongst vessels. Some vessels reported using more than one gear set-up. The specification of weight spacing by hook numbers provided less information on the potential efficacy of weights in sinking gear than if the distances between weights were also stated. General information was included in Plans on float usage as part of gear setup. More detailed descriptions of float usage would increase understanding of residual bycatch risks and help shed light on opportunities for risk reduction. However, Plans describe variations in float usage (e.g. usage described as "at times", varies with target species), highlighting the inherent diversity in practices in this fishery (Table 4).
- **Fish waste management**
All Plans except one refer to vessel practice being to manage offal, bait and fish waste discharge to minimise risk. In all but three cases, Plans documented no discharging of offal

and bait scraps at or prior to setting. At hauling, discharge management practices were more variable with a range of options presented within some individual Plans. For example, returned baits may be either retained or discarded with that decision being taken on an ongoing basis during fishing (e.g. when baits returned during the haul were documented in Plans as being held, unless they were discarded to distract birds from another risk such as a dropped snood). Overall, Plans document limited offal production, typically arising from shark processing. Conducting processing after the haul meant no offal would be available for discharge when hauling is underway. Offal retention during hauling was also specifically documented in 10 cases (Table 4).

- Haul mitigation
All Plans except one documented the practice of ensuring returning hooks were located well below the surface, should crew take a break during hauling. Other mitigation strategies employed at hauling included stopping hauling if birds are considered likely to be captured, hauling at (unspecified) speeds that deter birds from congregating around the hauling bay, making reasonable attempts to recover floating fish, towing a float, and using a deck hose (Table 4).
- Reactive mitigation
All plans included mitigation measures to be deployed in a reactive manner. When it was identified in Plans, the triggers for deployment of reactive measures included the perception of increased bird capture risk, birds (repeatedly) diving on the line, a bird being caught on the gear, and birds (repeatedly) accessing the bait entry point. Measures included adding extra weight to the line, dyeing bait, stopping setting or hauling, and reducing setting speed (Table 4).

In this fishery, the suites of measures described in Plans highlight that a standard practice does not exist. Overall, the efficacy of mitigation strategies relies heavily on operators monitoring the risk of seabird captures and implementing mitigation approaches when they perceive that capture risks have increased (Table 4). The Liaison Officer considered that the approach of operators reacting to risk was necessary because there is no risk-free way of setting gear for all situations.

FNZ provided documentation of 12 observer audits of management plans conducted on 10 vessels in the FMA 1 bottom longline fishery in 2017/18. In general, PSRMPs documented a wider breadth of vessel practices than could be captured by the form used for audits (carried over from 2016/17 due to time constraints at the start of the Programme). Further, optional and reactive mitigation measures were difficult to audit, e.g. if the observer perceived bycatch risk (and changes in that risk) differently than the skipper/crew. This highlights the need for communication between skippers and observers as risk management measures are implemented, or a clearer definition of the behaviours and conditions that observers should look for in order to be able to assess whether operations are according to Plans (e.g. how operators identify or characterise “birdy areas” to be avoided). Further, being clear about the purpose of Programme PSRMPs with operators may facilitate developing them to reflect measures in an assessable way, i.e. whether Plans are intended to:

- describe the range of practices that may be implemented on a vessel, or,
- characterise mitigation strategies to the extent that these can be understood in detail and implemented (as appropriate) on other vessels, and,
- document vessel practice in a way that can be assessed/audited by an outsider.

A broad description of practice is useful to build understanding (which was a focus in the early years of the Liaison Programme), but does not enable an assessment of residual bycatch risk. In this

and the past year of the Liaison Programme, the emphasis on creating Plans that are auditable and assessable has increased.

In 2017/18, observers documented tori line use on all sets in 10 of 12 audits (Table 4). There were differences in fish waste management practices described during audits and identified in Plans and audit information did not capture all measures in some cases (e.g. practices at setting were not described, but information for hauling was captured during audits). Skippers both confirmed their intention and demonstrated the practice of ensuring hooks were not left near the surface during haul breaks (three cases each, of six audits for which information on this practice was documented). While there was ambiguity in some cases about what observers had actually seen demonstrated on vessels (compared to skipper and crew preparedness to implement measures), there were clear instances reported by observers of the use of reactive mitigation (Table 4). This ambiguity could be addressed by amending the audit form used by observers.

Changes in the information recorded in PSRMPs made between year comparisons difficult in some cases. For example, tori line usage patterns were documented in 2015/16 and 2016/17 and not in 2017/18. Instead, in 2017/18, the legal requirement to use a tori line was identified and some tori line design characteristics described. In older Plans, the distance (and usually also the number of hooks) between weights was recorded. In contrast, in 2017/18 weight spacing (in metres) was recorded on four Plans (together with the number of hooks between weights). More options for fish waste management (with these generally providing greater flexibility in practice) were included in 2017/18 Plans (Table 4). Many of the same individual reactive mitigation measures were identified in 2017/18 Plans as previously (Table 4).

Twelve trigger reports were received from 11 vessels on 25 occasions, from November 2017 through April 2018 (Table 5). All reports followed petrel or shearwater capture events. Five reports were provided from unobserved fishing activity. As in the surface longline fishery, the Liaison Officer responded to trigger events by contacting skippers or vessel operators to collect more information on the event, and to identify risks that may have led to captures occurring. This included working through vessel operations in detail at times (Table 5).

Otago Coastal Trawl

In the 2017/18 year, liaison work in the southern South Island coastal trawl fleet was exploratory in nature. The Liaison Officer established key contacts in the Otago region, including with representatives of the New Zealand Federation of Commercial Fishermen, fishing companies, LFRs and fishers. Twelve PSRMPs were completed (Table 6) and contacts made to continue the development of additional PSRMPs in the 2018/19 year.

Mitigation on these vessels was focused on warp strike mitigation devices and fish waste management. Amongst the 12 vessels for which PSRMPs were finalised, eight use a warp strike mitigation device at some time during fishing. Devices included buoys, floats, road cones, custom-made steel cones, and fish bins (Table 6). Where devices were not in use, this was for a variety of reasons (e.g. it was perceived as unnecessary, too dangerous, or had not been trialled yet).

The Liaison Officer found that fishers were all well aware that without the presence of an attractant in the water, the risk of warp strikes and net captures was reduced. Operators on all 12 vessels reported that they do not discharge fish waste during shooting and hauling. Most operators (75%) reported avoiding discharge during towing, and batch discharge was common practice when discharging did occur. Some fishers managed offal and discards differently, e.g. retaining offal during towing but discharging discards (Table 6). On one vessel, the skipper considered that batch

discharge increased risk of warp captures by causing birds to cluster and compete for food (i.e. becoming less aware of the presence of the warp). Therefore, he did not implement the practice.

In 2017/18, observers were not deployed on coastal trawl vessels with PSRMPs, and therefore no audits were conducted. There were no trigger reports received from vessels included in this part of the Liaison Programme.

Table 2. Summary of protected species bycatch risk reduction measures documented in Protected Species Risk Management Plans completed for surface longline vessels in 2018 (Liaison Officers: J. Cleal and G. Murman). Changes made from Plans completed in 2016/17 (provided by J. Cleal) and the results of audits of PSRMP implementation during Government fisheries observer deployments are shown.

This table is available for download [here](#) due to its size.

Table 4. Summary of protected species bycatch risk reduction measures documented in Protected Species Risk Management Plans completed for bottom longline vessels in 2018 (Liaison Officer: D. Goad). Changes made from the previous version of Plans (provided by K. Ramm) for these vessels, and the results of audits of PSRMP implementation during Government fisheries observer deployments are shown.

This table is available for download [here](#) due to its size.

Table 3. Trigger events by month, reported from the surface longline fishery in 2017/18. Comments reflect information provided by Government fisheries observers, the Liaison Officer (J. Cleal), and vessel operators.

Vessel	Date	Location	Trigger type	Species captured	Fate	Observer onboard	Liaison Officer response	Comments
SLL24	28/11/2018	AKE	Black petrel	3 black petrels	Dead	Y	Contacted vessel owner.	Birds hooked and tangled in snood.
SLL24	25/12/2017	AKE	Black petrel	2 black petrels	Dead	Y		Observer reported that captures mostly occurred near floats, buoys or bite-offs.
SLL24	26/12/2017	AKE	Black petrel	1 black petrel	Dead	Y		
SLL24	29/12/2017	AKE	Black petrel	1 black petrel	Dead	Y	Called skipper twice to discuss these events overall.	Partial implementation of RMP: Baits not consistently retained for batch discharge on hauling; on second and third voyage baits were discharged continuously into the hauling area during hauling. (The observer considered that this was likely unrelated to the seabird captures recorded however).
SLL24	31/12/2017	AKE	Black petrel	1 black petrel	Dead	Y		
SLL24	25/12/18 - 8/01/18	AKE	Large seabird	3 albatross	2 Dead 1 Released alive	Y		
SLL32	2/01/2018	AKE	Black petrel	1 black petrel	Dead	Y	Called vessel owner to discuss.	Bird tangled in line.
SLL32	26/01/2018	AKE	Black petrel	1 black petrel	Dead	Y	Met onboard vessel in port.	Bird had swallowed hook.
SLL32	7/02/2018	AKE	Turtle	1 loggerhead turtle	Released alive	Y	Met skipper at his next port call to discuss.	Tangled in line on soak.
SLL32	11/02/2018	AKE	Turtle	1 leatherback turtle	Released alive	Y	Met skipper in port to discuss.	One hooked in lower jaw, one with flipper entangled in snood. Most likely captured on soak.
			Turtle	1 green turtle	Released alive	Y		
SLL25	30/03/2018	AKE	Flesh-footed shearwater	1 flesh-footed shearwater	Dead	Y	Discussed with skipper.	Tori line used on all sets. Night-setting. 175 hook pods in place, 5% of snoods have weighted swivels. Full moon period.
SLL7	1/04/2018	AKE	Turtle	3 leatherback turtles	1 Dead 2 Released alive	N	Discussed with skipper.	Two foul-hooked in flippers, one hooked in mouth, caught on the soak of one set.
SLL25	2/04/2018	AKE	Black petrel	1 black petrel	Dead	Y	Discussed with skipper.	
SLL25	3/04/2018	AKE	Flesh-footed shearwater	2 flesh-footed shearwaters	1 Dead 1 Released alive	Y	Discussed with skipper.	Tori line used on all sets. Night-setting. 175 hook pods in place, 5% of snoods have weighted swivels. Full moon period.
SLL13	4/04/2018	SOU	Large seabirds	3 albatrosses	Dead	Y	Discussed with skipper.	Vessel using line-weighting, tori lines and dyed bait. Captures occurred during full moon period. Many birds around vessel and actively feeding. One caught on setting, two on soak or haul.
SLL1	24/04/2018	AKW	Large seabirds	9 albatrosses	7 Dead 2 Released alive	Y	Met and discussed with skipper onboard vessel after return to port.	Tori line and line-weighting (60 g at 1.8 m from hook) used. Seabird activity high in bright moonlit conditions. After captures skipper started using longer float ropes (11 m c.f. 6 m).
SLL13	1/05/2018	CHA	Large seabirds and Total seabirds	10 albatross	7 Dead 3 Released alive	Y	Extensive contact with vessel operator and skipper	Tori line, dyed bait, and line-weighting all used. No gear failures. Bright moon. Many birds around the vessel on setting. Tori line aerial extent (50 - 55 m) insufficient to cover gear near surface; streamers suboptimal. Bird abundance increased during setting and hauling. Bait batch discharged on hauling. Offal and discards (mainly sharks) were discharged immediately and directly back into the hauling bay. Observer considered that offal discharge had a visible effect on attracting birds. Additional drag added to tori line in third week of observer deployment, skipper tried setting earlier to reduce moon exposure, sliding weights moved closer to hooks (from 1 - 1.2 m down to the crimp), skipper reduced setting speed by 1 knot, which observer considered did not reduce capture risk.
SLL13	2/05/2018	CHA	Large seabirds	3 albatross	Dead	Y	As above	
SLL13	3/05/2018	CHA	Large seabirds	4 albatross	Dead	Y	As above	
SLL8	1/05/2018	CHA	Large seabirds	3 albatross	Dead	Y	Called vessel owner to discuss, after observer reported trigger event.	Bright moonlit night.
SLL8	29/05/2018	CHA	Large seabirds	5 albatross	4 Dead 1 Alive	Y	Liaison Officer contacted by vessel and working with them	Bright moonlit night, calm conditions on set, tori line used. Tori line aerial extent not sufficient to cover (unweighted) gear for distance astern that it is close to the surface. Bait discarded into hauling bay during haul.
SLL8	30/05/2018	CHA	Large seabirds	9 albatross	8 Dead 1 Alive	Y	Liaison officer contacted by vessel and working with them	Tori line deployed, streamers added. Moonlit but not as bright as 29/05/18 and more cloud cover. Reporting daily to Liaison Officer. Liaison Officer contacted observer after return to port to discuss.
SLL8	1/06/2018	CHA	Large seabirds	3 albatross	Dead	Y	Liaison Officer maintained contact with vessel.	Extra streamers added to tori line before set, night set, weight at clips only. Moonlit night, calm conditions, consistent levels of bird activity observed in drag section of tori line. Additional streamers and backbone added to tori line prior to the following set.
SLL8	5/06/2018	CHA	Large seabirds	4 albatross	Dead	Y	Liaison Officer maintained contact with vessel.	The surface lining gear has been removed from the vessel and it has now left the fishery.
SLL10	1/07/2018	CEE	Fur seals	4 fur seals	3 Alive 1 Dead	Y	Contacted vessel owner.	Gear problems led to a long slow haul, during which the longline backbone broke and the gear sank deeply while repairs were made.

Table 5. Trigger events by month, reported from the bottom longline fishery in Fisheries Management Area 1, during 2017/18. Comments reflect information provided by Government fisheries observers, the Liaison Officer (D. Goad), skippers and vessel operators.

Vessel	Date	Trigger type	Species captured	Fate	Observer onboard	Liaison Officer response	Comments
BLL15	1/11/2017	Flesh-footed shearwater	1 flesh-footed shearwater	Released alive	Y	N/A (pre-programme)	Observer considered that rough weather contributed to this entanglement.
BLL32	15/11/2017	Flesh-footed shearwater	1 flesh-footed shearwater	Dead	Y	Skipper contacted by phone, tori line supplied.	Observer noted that the vessel set with turns, which observer and captain felt may have contributed to capture. Crew added more weight when necessary to the line being set and tried not to clip baits on during turns. Tori line in use for all sets and appeared to work well when vessel fished in a straight line.
BLL23	4/12/2018	Black petrel	1 black petrel	Dead	Y	Contact with skipper on phone, then in person.	Line set at 02:00, full moon. The bird was found dead approx. 15 m from the next weighted float and 12.5 m from the previous unweighted float. Tori line in use. Bird wing-hooked. Skipper thought capture related to a turn, when the tori line may not have been tracking the longline optimally. Line may have been set through or close to an unnoticed group of birds sitting on the water.
BLL4	5/02/2018	Black petrel	1 black petrel	Dead	N	Discussed with skipper	Two tori lines in place, shooting downwind at 6 knots with drum slack and three weights per card. 10 - 15 birds following the vessel, squid and pilchard bait. Liaison Officer discussed using more even weight and setting slower as options that may reduce the risk of future captures. Bird hooked.
BLL5	5/02/2018	Flesh-footed shearwater	1 flesh-footed shearwater	Released alive	Y	Contact with skipper on phone.	Observer reported baits near the surface, and slow-hauling of the line as possible risk exacerbators. There was also a break in the line during hauling. Bird hooked in wing.
BLL9	26/02/2018	Black petrel	2 black petrels	Dead	N	Discussed with skipper	Captures occurred on two separate night sets in February. Liaison Officer reviewed the fishing operation with the skipper, including sink rates, and options for improving sink rates.
BLL36	5/03/2018	Probable flesh-footed shearwaters	4 (probable) flesh-footed shearwaters	Dead	N	Contacted skipper.	Captures considered likely to have occurred due to a change in the angle of the vessel to the wind during setting. The change led to the tori line not tracking the longline as effectively. Birds were all foul-hooked, including one adjacent to a weight. In hindsight, the skipper considered that the set should have been terminated early. Liaison Officer supplied a tori line tension release with the goal of improving the skipper's confidence about towing a larger drag object. Liaison Officer also suggested reducing vessel speed on setting to facilitate bait sinking closer to the vessel.
BLL13	28/03/2018	Flesh-footed shearwater	1 flesh-footed shearwater	Released alive	Y	Contacted skipper on phone.	Foul-hooked in wing during hauling. Released in good condition within 10 seconds of capture. 30 - 40 birds around the vessel at hauling, 10 - 15 close to the line but not attacking returning hooks. Skipper advised that capture happened after a break in the mainline when the crew were hauling the loose end.
BLL33	8/04/2018	Flesh-footed shearwater	1 flesh-footed shearwater	Dead	Y	Contacted skipper, observer.	Hooked in wing. Tori line in use on the set. Day set with little bird activity around (5 birds in total, 2-3 landing on the water). Dives documented beyond tori line's aerial extent in previous sets. Skipper reviewed circumstances with crew, who confirmed they were reactively using extra weigh as/when they deemed necessary. Clipping droppers on sooner may help mitigate risk in future.
BLL21	8/04/2018	Black petrel	2 black petrels	Dead	N	Discussed with skipper	Captured on hooks on two separate sets. Night sets, tori line in use, weighting as in management plan, full moon, prior to storm. 100 black petrels around the vessel during hauling, foraging aggressively. Skipper progressed northwards in due course.
BLL4	14/04/2018	Flesh-footed shearwater	12 flesh-footed shearwater	Dead	N	Discussed with skipper	Setting 05:00 - 06:30. Tori line in use. Set terminated early. After the trip, a second tori line was installed. Birds hooked.
BLL34	17/04/2018	Flesh-footed shearwater	2 flesh-footed shearwaters	Dead	Y	Contacted skipper, observer on phone.	Tori line in use. Captures occurred 06:03 - 06:09 in lightening conditions and apparently increasing numbers of birds around the vessel. (Observer was conducting tori line observations). One bird was caught beside a float, and the second 5 hooks before a weight. One wing-hooked, second hooked in the neck. Setting downwind. Skipper ceased using floats once birds were seen around the vessel. Birds were actively flying into the tori line, and feeding aggressively on returned baits during hauling. Crew deterred them by shouting and waving.

Table 6. Summary of protected species bycatch risk reduction measures documented in Protected Species Risk Management Plans completed for Otago coastal trawlers in 2018 (Liaison Officer: G. Parker). No observer audits occurred.

Vessel	Reporting	Warp protection		Fish waste management		
	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6
T1	Protected species catch reporting	Warp protector baffler used when discharging during towing.		No fish waste discharged during shooting and hauling.	If possible, only discharges when gear is out of the water.	
T2	Protected species catch reporting	Buoy deployed on one or both warps when required to prevent seabird strikes.		No fish waste discharged during shooting and hauling.	Offal retained for batch-discharge from bins at the end of the trawl.	Discards binned and discharged when gear is out of the water.
T3	Protected species catch reporting	Modified road cone or net float clipped to warp to reduce seabird strikes.		No fish waste discharged during shooting and hauling.	Offal and discards binned for batch-discharge during towing or when the net is onboard.	
T4	Protected species catch reporting	None		No fish waste discharged during shooting and hauling. (Vessel is single-crewed so cannot discharge at these times).	Offal binned for batch discharge while trawling, or when gear is out of the water.	Discards discharged astern, interacts with propeller wash, and becomes available to seabirds aft of the warp.
T5	Protected species catch reporting	Vessel's owner-operator reports that seabirds do not enter the warp area (well aft of the stern). Therefore, he concludes there is no warp strike risk.		No fish waste discharged during shooting and hauling.	All offal binned and dumped during towing.	
T6	Protected species catch reporting	None		No fish waste discharged during shooting and hauling.	Flatfish guts are binned for batch dumping during towing or once gear is onboard.	All other fish waste dumped astern where it interacts with propeller wash and generally surfaces aft of where warps enter the water.
T7	Protected species catch reporting	Modified float (or other material, e.g. wood) attached to warp.		No fish waste discharged during shooting and hauling.	Vessel has a rear deck sorting tray with a release chute via a hole in the aft deck. Discards only become available to seabirds aft of the warp-water interface.	
T8	Protected species catch reporting	Steel cone or two fish bins attached to the warp.		No fish waste discharged during shooting and hauling.	Fish waste retained during towing when possible.	
T9	Protected species catch reporting	Custom-made steel cone used on whichever warp has seabird interactions.		No fish waste discharged during shooting and hauling.	Offal and discards binned for discharge when gear is onboard the vessel.	
T10	Protected species catch reporting	None		No fish waste discharged during shooting and hauling.	Offal collected in bins and dumped when net is onboard.	Vessel to trial batch-discharge of other material during towing.
T11	Protected species catch reporting	Two buoys attached to the warp.		No fish waste discharged during shooting and hauling.	Fish waste retained during towing if possible.	
T12	Protected species catch reporting	A fish bin is deployed on each warp.	Warp ropes are yellow braided line, which skipper considers are more visible to seabirds and therefore reduce contact rates.	No fish waste discharged during shooting and hauling.		

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Distribution of mitigation resources

Liaison Officers distributed materials to support fisher implementation of mitigation measures. The bottom longline Liaison Officer distributed 12 tension releases (Figure 2), three entire setups (tori line and pole), two tori lines, and one length of tori line backbone material. These materials were provided to fishers as the Liaison Officer determined was appropriate to support their risk reduction efforts.

The surface longline Liaison Officers provided tori line streamer materials to all vessels visited. Three materials were provided: either Kraton or Beatory for the main streamers in the tori line, and flash tape for intermediate streamers (Figure 3).

In 2017/18, the coastal trawl Liaison Officer did not distribute mitigation equipment, due to the lack of clarity about useful materials for effectively reducing protected species interactions with that fishery, and the diversity of devices and approaches used by the vessels visited.

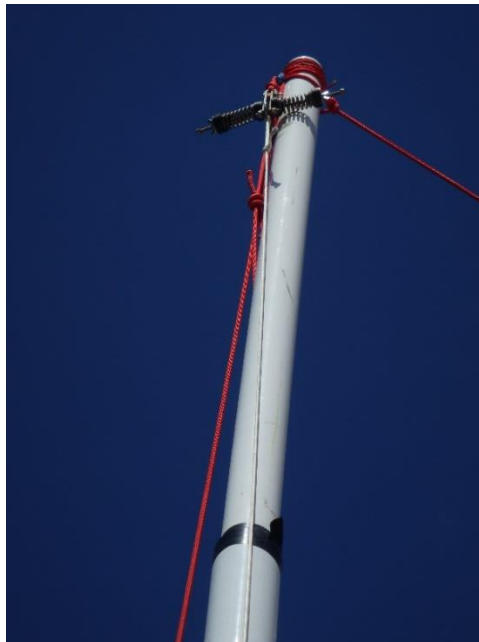


Figure 2. Part of the tori line set up (including the tension release) provided to selected vessels by the Fisheries Management Area 1 bottom longline Liaison Officer. Note: This is the 2017 model of the release, which the Liaison Officer has continued to refine over time. Photo: J. Pierre.



Figure 3. Streamer materials provided to vessels visited by surface longline Liaison Officers. Photo: J. Cleal.

Stakeholder engagement

Communicating with stakeholders was a significant component of the Coordinator's work programme in 2017/18. This included *ad hoc* discussions on the phone and in-person meetings, to ensure all stakeholders, interested groups and individuals were abreast of the Programme's activities and findings (as appropriate given information-sharing frameworks, Appendix 2). In particular, the Coordinator liaised with FINZ (both prior and subsequent to their commitment to all inshore vessels carrying PSRMPs by 2020¹), MPI/FNZ staff, Licensed Fish Receivers, fishing company representatives, Commercial Stakeholder Organisation representatives, the Southern Seabird Solutions Trust convenor, the Seabird Advisory Group, and the Black Petrel Working Group. Examples of stakeholder engagement follow:

- The Seabird Advisory Group discussions focused on documenting an approach to best practice and a mitigation standard as part of the review of the National Plan of Action – Seabirds (NPOA). The Coordinator also participated in some of the workshop sessions used to develop endorsed mitigation standards to underpin the new NPOA.
- Interactions with the Black Petrel Working Group focused on providing results from the Liaison Programme and discussions of the Group's proposed transparency scheme and electronic monitoring.
- For Southern Seabird Solutions (SSS), the Coordinator provided ongoing updates on the Programme's implementation. SSS also requested specific advice from the Liaison Officers in identifying particularly proactive fishers in response to interest from a visiting Fulbright Fellow.
- The Coordinator worked with the Seafood New Zealand policy manager, FINZ and the Chief Executive of Southern Inshore to prepare an item for the Federation of Commercial Fishers' Facebook page, advising fishers about commencement of the coastal trawl programme.
- The Coordinator and the surface longline Liaison Officer developed a presentation for MPI/FNZ's 6-monthly Highly Migratory Species workshop. The Liaison Officer then presented this at the workshop, which was an effective opportunity to increase the Programme's profile, ensure fishers understood its purpose, and to meet several fishers at one time.

Strategic oversight

With the 2017/18 programme operationalised in the third quarter of the (financial) year, the Coordinator's focus shifted to the implementation of the 2018/19 Programme. At the strategy workshop held in June 2018, DOC, FNZ, FINZ and the Seafood New Zealand policy manager discussed that the Liaison Programme should be:

- Just one mechanism for delivering on the management of protected species interactions with commercial fisheries
- Framed with a continuous improvement and real-time management approach
- Developed such that longer term, systems and processes delivering comparable outcomes become business-as-usual for industry
- Defined transparently in a series of standards, systems and processes that anyone can pick up and work with, i.e. any proactive company or individual operator can take the concepts and mitigation options for implementation on their vessel(s), and,
- Progressed with the mindset that regardless of who operates the Programme in future, DOC, MPI/FNZ and FINZ would retain a governance and oversight role.

The group also noted that the NPOA – Seabirds review is also likely to influence the future roll-out of the Liaison Programme as it relates to seabirds, for example, with the development of endorsed mitigation options.

For 2018/19, the group agreed that the Programme should be implemented with a regional focus, to the extent that Liaison Officer capacity and capability allow. That is, Liaison Officers will be charged with interacting with vessels using all prioritised fishing methods in a region. If an appropriate Liaison Officer is not available to cover a region, broader coverage (which would involve more travel costs) by another Officer would be supported by necessity. The regional approach is expected to deliver significant efficiencies in terms of time and operating expenses. In 2018/19, liaison work with set net vessels will begin with an exploratory approach. In future, set net and coastal trawl activities are expected to expand, while FMA 1 bottom longline and surface longline liaison services enter a maintenance phase.

Strategic and operational oversight of the Programme will be maintained on an ongoing basis with quarterly meetings of DOC, MPI/FNZ, FINZ and the Coordinator.

Conclusions and Recommendations

The DOC Protected Species Liaison Programme has grown and evolved considerably, since the Department's first deployment of fishery Liaison Officers in the early 2000s (Kellian 2003; Hibell 2005; Johnson 2005). In its recent history, the Programme has developed in from an exploratory to an established state in two "fisheries" (FMA 1 bottom longline and surface longline) (Goad and Williamson 2015; Pierre 2016; Goad 2017; Wells and Cleal 2017). Work conducted around Otago in 2017/18 builds on previous exploratory work amongst the South Island coastal trawl fleet (Pierre 2017a, b). In the year ahead, transitioning the operating model to a regional one illustrates further maturation.

At this point in time, the Programme has a defined structure, function, framework and process which are emergent from its history. As a result, it currently reflects both the influence of individuals and a broader progression towards a standardised approach that is implemented consistently by all on the team. From the coordination perspective, continuing to facilitate the change from an individual- to a team-focused Programme will require change management and ensuring effective communication amongst the geographically disparate team as changes occur and bed in.

Recommendations for the next year of the Programme follow.

Programme context

- Maintain the Programme's focus on continuous improvement in reducing the bycatch risks associated with interactions between protected species and commercial fisheries.
- Underpin and encourage this ongoing improvement with robust policy, management and monitoring frameworks amongst Government agencies, FINZ, companies and LFRs.

Programme documentation

- Continue building a consistent set of Programme documents by:
 - Creating an Operational Procedures document for the bottom longline component of the Programme, modelled on the OPs being used in surface longline and coastal trawl, and in development for set net.
 - Ensuring a consistent approach to the content of Protected Species Risk Management Plans to ensure these capture on-vessel practices in a way that is:
 - Clear (what happens, when)
 - Auditable (implementation can be unambiguously assessed)
 - Informative (measures in place (both regulatory and voluntary) are described in sufficient detail that they can be implemented on another vessel, based on the information in the PSRMP)
 - Reflective of minimum practice, if there are ranges in operational measures used (e.g. a minimum weighting that can be assessed, recognising that heavier regimes may be used at times)
 - Developing (with FNZ) new observer audit forms for setnet and bottom longline fisheries, in a format that is consistent with the trawl and surface longline audit forms already in place
 - Continuing use of a centralised information storage portal, with the adjustments needed to support the addition of new Liaison Officers and the regional approach.
- Develop an Operations Manual for FNZ's OSU, describing how the Programme interfaces with that team's work, to help ensure that effective engagement between the liaison team and OSU continues despite staff turnover.

Liaison Officer Training

- Hold a two-day training workshop to commence 2018/19 work, to introduce new Liaison Officers to the Programme, and provide a common foundation for all Liaison Officers on the Programme's approach, systems, processes, and requirements, and broader context.
- Produce a concise manual aimed at incoming Liaison Officers, describing the Liaison Officer role, and systems, processes, and resources associated with the Programme.

Supporting resources

- Continue to develop awareness and outreach resources for use across the programme, noting synergies with CSP project MIT2018-01, e.g. a pictorial guide for fishers on protected species handling, and short videos showing effective use of key mitigation measures.
- Continue to distribute materials to support construction of mitigation devices by fishers, where good quality materials are known (e.g. tori line materials), and noting that supplying gear *per se* is not a core objective or function of the Programme.

Communication with the sector

- Prior to the 2018/19 Programme getting underway, access sector communication channels (e.g. Seafood magazine, the Federation Facebook page, Catch Up newsletter, local papers in regions where Liaison Officers operate), augmented with group emails as appropriate, to:
 - inform fishers, companies, and Licensed Fish Receivers about the scope and purpose of the Programme, and what they will be asked to do
 - advise them where Liaison Officers are active, and,
 - profile new Liaison Officers so they are not completely new faces when they make contact.

Monitoring

- Continue to monitor the implementation of PSRMPs at sea, noting that this can be accomplished by human observers and (to some degree) using electronic monitoring (Pierre 2018).
- Operate a feedback loop from Liaison Officers back to vessel operators, when at-sea audits of PSRMP are undertaken.

Oversight and evaluation

- Continue quarterly meetings amongst DOC, FNZ and FINZ to ensure cohesion and a common understanding of the Programme's development and progress.
- Throughout and at the end of 2018/19 year, evaluate the performance of the regional approach to Programme delivery.

Acknowledgements

Thanks to K. Ramm of CSP, who manages the Protected Species Liaison Programme described in this report. The Liaison Officers' work is critical to this programme, and their contribution to increasing awareness of protected species issues and improving mitigation practice is recognised.

Thanks also to FINZ and MPI/FNZ. In particular, FNZ's fisheries management, OSU, and Research Data Management teams are acknowledged, for their contributions in a number of areas, and the ongoing collaboration that has helped deliver and strengthen the programme this year.

Finally, the Programme would not be possible without the involvement of fishers. Their preparedness to work with Liaison Officers on continuous improvement in reducing protected species bycatch risks is vital and valued.

Disclaimer

All species identifications reported in this report are unconfirmed. This includes identifications reported by Government fisheries observers. Similarly, information from vessel-specific Protected Species Risk Management Plans and observer audits of these is reflected as it was originally documented.

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Appendix 1: Role descriptions

Liaison Officers: Role Description

Background:

Protected species Liaison Officers are a key interface between government agencies (DOC and MPI) with responsibility for commercial fishing and its impacts, and commercial fishers. In 2017/18, the liaison programme comprises four Liaison Officers and one Coordinator. Liaison Officers will work with fishers to implement and improve mitigation practices across a range of fisheries, with the overall goal of achieving improvements in mitigation practice that lead to reduced bycatch of protected species.

Scope of work:

Liaison Officers will focus on port-based engagement with skippers and crew to build knowledge and understanding of protected species bycatch issues and risks, including:

- seasonality of bycatch risks in different fishing areas
- characteristics of protected species that make them vulnerable to bycatch (e.g. behaviour, biology)
- impacts (known and potential) of bycatch on protected species populations,
- international context applicable to New Zealand's management of protected species bycatch (e.g. RFMO and FAO requirements), and,
- how to effectively and practically mitigate bycatch risks, through changes in fishing practice and vessel-appropriate application of mitigation approaches.

Liaison Officers will also assist fishers with the development, implementation, and improvement of vessel-specific bycatch risk management plans, and distribute educational resources (e.g. fact sheets and protected species guides) and mitigation equipment (e.g. tori line construction materials). Mitigation practices adopted by fishers and documented in management plans will, in turn, be audited and verified by at sea observation and compliance activity. At-sea monitoring will be provided by Government fisheries observers. MPI Fisheries Officers will undertake any relevant compliance activities. This provides a feedback loop for further response where necessary. (The Coordinator will collect observer paperwork and distribute to LOs as needed). When capture events occur, Liaison Officers will debrief Government fisheries observers, and work with vessels skippers and crew, to document relevant information and contribute to any response.

The role may include sea time (e.g. day trips), but this will not be undertaken at the expense of land-based engagement. Sea time may help Liaison Officers grow their understanding of the fisheries they work in, and facilitate fisher adoption of mitigation measures. (Note that DOC health and safety requirements relevant to working on vessels must be met). Liaison Officers will keep MPI's Observer Services Team informed when they undertake any at-sea work on vessels.

As a key component of the Government's approach to communicating with the commercial fishing sector, Liaison Officers are likely to encounter queries and requests for information that they cannot address. In these cases, they will facilitate communication of queries to an appropriate point of contact (if known), or to the Liaison Coordinator for follow-up.

Documentation:

Liaison Officers will document their activities to enable robust reporting from the Programme overall. This includes documenting vessel visits, vessel operator (e.g. owner, skipper) contact information, resources and mitigation materials distributed, findings, points for follow-up, and next steps for each vessel over time. Liaison Officers will also retain copies of vessel risk management plans relating to protected species bycatch. Documentation will be held in an online repository accessible to the Liaison Officers and Liaison Coordinator. Key points of contact from DOC and MPI will also have access.

Liaison Officers will participate in regular catch-up sessions with the Liaison Coordinator (e.g. weekly phone-calls/Skype), to discuss activities and ensure the ongoing cohesion of the programme and efficient delivery on its objectives.

Liaison Coordinator: Role Description

Background:

The protected species liaison programme is a key component of the broader framework for DOC and MPI's management of protected species interactions with commercial fisheries. In 2017/18, the liaison programme comprises four Liaison Officers and one Coordinator. The Liaison Coordinator is responsible for working with Liaison Officers and stakeholders in the programme, to ensure that the programme delivers maximum "bang-for-buck" for protected species bycatch reduction.

Scope of work:

The Coordinator will liaise on an ongoing basis with government agencies and stakeholders, and:

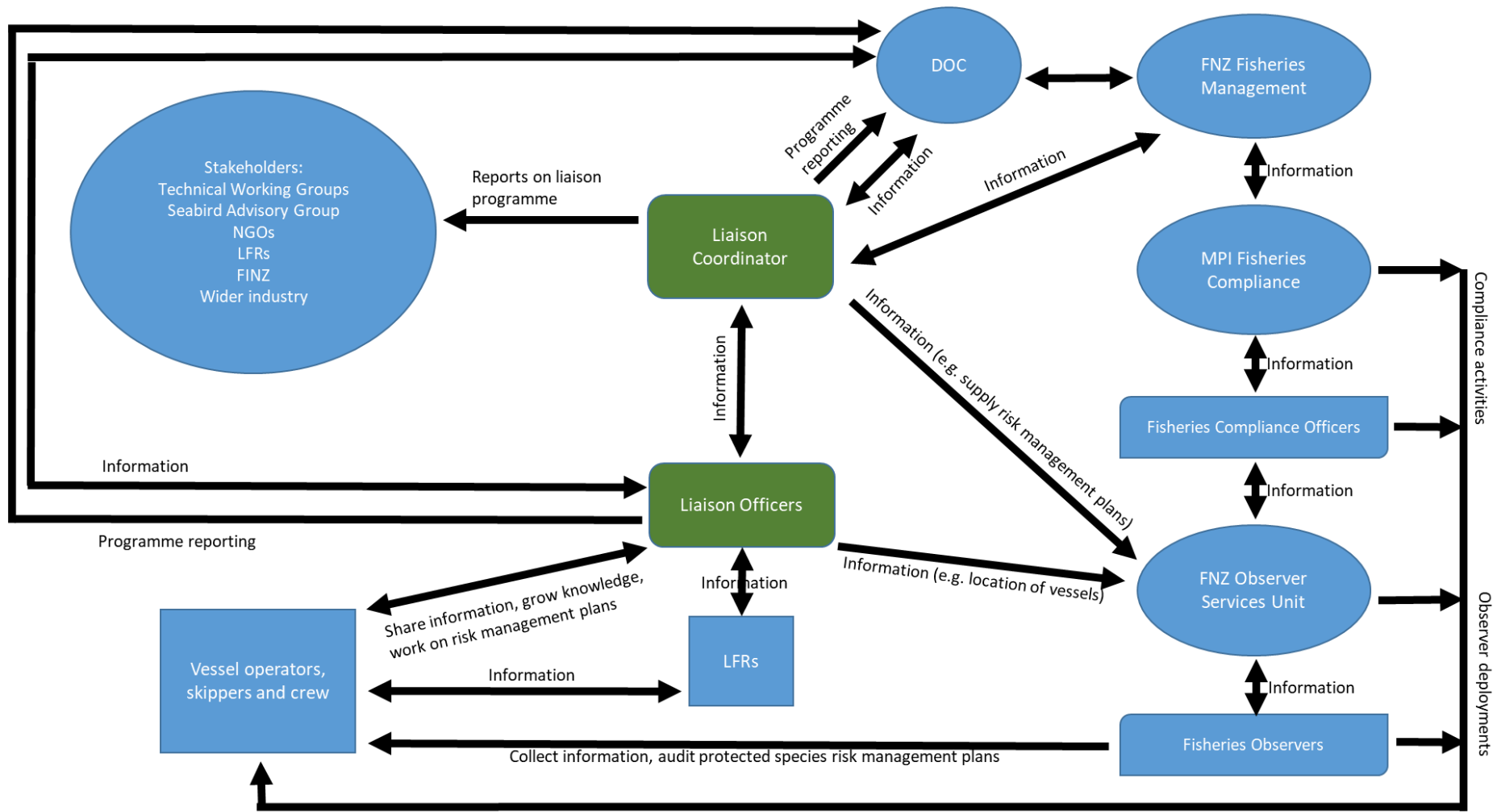
- Work with Liaison Officers and others to finalise the approach to delivering on programme objectives (including prioritising actions)
- Collate and manage programme documentation to ensure information is available and able to be provided to appropriate parties in a timely and transparent way
- Report on the activities and progress of Liaison Officers and outcomes of the programme overall
- Maintain knowledge of other activities and developments relevant to the fisheries that are the focus of the liaison programme, and convey that to Liaison Officers and others as appropriate
- Maintain contact with Liaison Officers via regular communication throughout the programme's term
- Where possible, influence activities of other stakeholders where their objectives overlap with those of the liaison programme, to maximise synergies and progress towards the overall goal of protected species bycatch reduction
- Attend and participate in relevant working and advisory groups
- Coordinate, as needed/appropriate, the provision of resources and other support to Liaison Officers

Documentation:

The Liaison Coordinator will work with Liaison Officers and others to finalise programme documentation, and to ensure that the online repository for programme documentation is well-maintained and up to date. This repository will hold copies of risk management plans, a record of all liaison officer activities (e.g. vessel visits, points of contact, materials distributed, next steps), documentation of key messages for each fishery, paperwork received from MPI's observer services team, etc.

The liaison coordinator will have regular catch-up sessions with liaison officers (e.g. weekly phone-calls/Skype), to discuss activities and ensure the ongoing cohesion of the programme and efficient delivery on its objectives.

Appendix 2: Broader context of the Liaison Programme



FINZ = Fisheries Inshore New Zealand
 FNZ = Fisheries New Zealand
 MPI = Ministry for Primary Industries
 LFRs = Licensed Fish Receivers
 DOC = Department of Conservation

Appendix 3: Protected Species Risk Management Plan templates

Non-Fish Protected Species Risk Management Plan

FV	Home Port	Reg No
Owner-Operator	Skipper	Date

Purpose of this RMP

This RMP documents the required and agreed procedures and actions to be followed by this vessel to reduce risk of Non-Fish Protected Species capture. Skipper and crew must also read and understand the '10 Golden Rules' and the SLL Operational Procedures provided.

Regulated measures for seabird risk reduction

Many seabird risk reduction measures are required by law (*Seabird Mitigation Measures- Surface longlines Circular 2014*). You are required to report all protected species captures on the Lining Trip Catch Effort Return, and the Non-Fish Protected Species Catch Return and/or electronically.

This vessel's measures used to manage the risk of non-fish protected species capture

As required by Law	In use?	What, When, Where or How
Line/Snood -Weighting (weight-device near hook)		
Standard tari line - (fit & proper design & materials) Spare parts onboard - Attachment height -		
Night setting		
Reporting (NFPSC return)		
Other Best Practice		
Use of thawed bait		
Use of blue dyed bait		
Managed discharge of offal and bait Setting & Hauling Used Bait		
Use of line shooter		
Managed Aft spot lights		
Trigger- Reporting to LO		
Increase setting gear sink rate		
Use of other mitigation device (during haul)		

Contact the Liaison Officer if/when trigger point reached:

- Any black petrel, flesh-footed shearwater, or turtle, OR
- In any 24hr period - 3 big (e.g. albatross/mollymawk) or 5 small (e.g. petrel/shearwater) Dead-birds or 2 fur seals, OR
- In any 7-day period - 10 birds of any type, dead or released alive, or 5 fur seals

Contact John Cleal, Ph: 021 305 825 email lo.advice.sll@gmail.com

DOC CSP Surface Longline Risk Mitigation Programme. 2017.18

Non-Fish Protected Species Risk Mitigation Plan

Bottom Longline Fishing

FV EXAMPLE

00000

2018

Skipper: 00000

Crew: 00000

Owner: 00000

Mitigation Required by Law

Tori Line	Tori description
Offal, bait, fish discharge	Managed to minimise risk
Night setting or line weighting	Details of weight spacing and float usage, and which setups are used when.

Refer to the Fisheries Circular, Sustainability Measures — Bottom Longlines (2010).

Requirement to report captures to MPI electronically or on the Non Fish Protected Species Catch Return.

Other Mitigation used on this vessel

Training

All crew are trained to minimise risk to protected species, and to release live captures without causing further harm. Skipper has attended a seabird smart workshop

Setting

Example wording....

No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting

We will reduce lighting to the minimum needed for safe setting.

Extra weighting may be used to increase sink rate.

Setting speed may be reduced to sink gear closer to the boat.

If birds do overcome the tori line and gain access to the bait entry point, a weight will be immediately deployed and clipping on suspended until the birds have left the danger zone.

If all measures above have been employed and are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.

Hauling

Example wording....

Normal practice is to retain baits for the whole haul and discard whilst steaming.

Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).

If we have a break in hauling we will ensure that no baited hooks are left near the surface.

Contact: Dave Goad, NFPS Liaison Officer | LO.Advice.BLL@gmail.com | 027 3643098 with questions or:

If you catch a flesh-footed shearwater, or black petrel, or turtle

If you catch 3 large birds or 5 small birds or 2 fur seals in a day

If you catch 10 birds in a seven day period

Protected Species Risk Management Plan

FV	Home Port	Call sign
Owner-Operator	Skipper	Date

Vessel	Fish waste discharge retention system/equipment	Primary warp mitigation device
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Purpose of this RMP

This RMP documents the required and agreed procedures and actions to be followed on this vessel to reduce risk of protected species captures. Skipper(s) and crew must also read and understand the 10 Golden Rules and the Coastal Trawl Operational Procedures which support this RMP.

Regulated measures for protected species reporting

It is a legal requirement to report all protected species captures using the Non-Fish Protected Species Catch Return or electronically.

This vessel's measures used to manage the risk of non-fish protected species capture

As required by Law	In use?	What, When, Where or How
Report Protected Species Captures (NFPSC return)		
Other Practices		

Contact your Liaison Officer when a trigger point is reached. Triggers are:

- Any penguin, dolphin, sea lion, leopard seal, great white or basking shark
- In any 24 hr period - 3 large (e.g. albatross/mollymawk, giant petrel) or 5 small (e.g. petrel/shearwater) seabirds, or 2 fur seals
- In any 7-day period - 10 birds of any type, dead or released alive, or 5 fur seals.

Contact Graham Parker, Ph: 022 0678 224; Email LO.Advice.Trawl@gmail.com