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

Final Report

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ENVIRONMENTAL CONSULTING

Executive Summary

To ensure that the risk of captures of marine protected species is minimised on an ongoing basis, fishers must maintain an up-to-date knowledge of bycatch avoidance and reduction measures. Further, these measures must be implemented routinely during fishing operations. To facilitate this, liaison officers were deployed in inshore fisheries around New Zealand from 2017 – 2019. In 2017/19, focal fisheries were surface longline, Fisheries Management Area 1 (FMA 1) bottom longline, and Otago coastal trawl. In 2018/19, work in these fisheries continued, and was augmented by broader coverage of coastal trawlers, preliminary work on set net vessels in the north of the North Island and southeast of the South Island, and opportunistic coverage of vessels using other methods (Danish Seine, jig, dredge/trawl). To reduce travel costs in 2018/19, Liaison officer work was structured into regions with all fishing methods included in the Programme covered by each regionally-focused liaison officer. The number of liaison officers increased from four in 2017/18 to five in 2018/19.

Liaison officers conducted a series of port calls visiting vessels and sharing information with vessel operators, skippers and crew. They also provided information relevant to protected species and bycatch mitigation, and mitigation materials. Liaison officers gave advice from shore in response to some bycatch events, when notified that vessels had reached specified bycatch triggers at sea. (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). A coordinator supported liaison officer activities, communicated with Programme participants and stakeholders and provided whole-of-programme reporting throughout the project term.

Prior to starting work in each of the two project years, the coordinator convened a workshop involving Department of Conservation, Ministry for Primary Industries/Fisheries New Zealand and the liaison team. This created a foundation to progress the year's Programme, including developing (or confirming) 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) which 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 when Government fisheries observers were deployed on vessels included in the liaison programme.

In 2017/18, PSRMPs were developed for 34 surface longline, 37 FMA 1 bottom longline, and 12 Otago coastal trawl vessels. In 2018/19, 54 plans were reviewed and updated from previous versions (21 surface longline, 24 bottom longline, and nine trawl RMPs), and new plans were developed for 72 vessels (five surface longline, four bottom longline, 58 trawl, two set net, one Danish seine, one dredge and one jig PSRMPs). Overall, plans had been developed for 155 vessels by the end of this project. Plans covered both regulatory measures and voluntary approaches to protected species bycatch reduction.

Observer audit information was received from 13 surface longline and 10 bottom longline trips in 2017/18. Most of the differences between practices documented in surface longline PSRMPs and practices reported from audits related to the management of fish waste discharge. The diversity and flexibility in practice that characterised bottom longline PSRMPs, and relating practices to the fields in the audit form, made collecting the information required for audits challenging at times. 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 other fisheries in 2017/18, therefore no information was available to compare onboard practice with PSRMP content.

In 2018/19, 19 observer audit forms were received by the liaison coordinator after observer placements on longline vessels (seven surface longline and 13 bottom longline vessels). For one surface longline vessel, the audit information showed conformance with the vessel's PSRMP. In two cases, non-conformance was recorded but practice differed in a positive direction, to further reduce bycatch risk (e.g. heavier snood weights). Five vessels were reported not conforming with PSRMP fish waste discharge practices. Among bottom longline vessels, the main area of non-conformance was with fish waste management measures, and eight vessels conformed with PSRMP measures (to the extent that these were auditable during trips).

In 2017/18, 25 trigger events were reported from surface longline vessels and 11 from FMA 1 bottom longline fisheries. There were no triggers reported from Otago coastal trawl fisheries. In 2018/19, 16 trigger events were reported from surface longline, eight from bottom longline, and 2 from trawl vessels. Liaison officers responded to triggers by working with operators to identify and address bycatch risks to reduce the likelihood of future captures when possible.

The Liaison Programme has evolved considerably since its inception, and its scope and the size of the team continues to grow. It is recommended that efforts to ensure consistency among the work of liaison officers continue as this programme develops further in future years. Confirming the Programme objectives (and ensuring fit with policy drivers) ahead of the 2019/20 year is also recommended, especially given the review of the National Plan of Action – Seabirds in 2019. From there, confirming the purpose of PSRMPs and (if appropriate to purpose) ensuring that measures included in these plans are auditable, will improve the collective understanding of operational practices at sea and ways to further reduce bycatch risks.

The efficacy of the liaison programme depends on fishers and liaison officers connecting, and the implementation of bycatch mitigation practices being monitored at sea. Both of these components are essential for the programme to deliver the best return on investment, that is, reducing the risk of protected species bycatch.

Contents

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 effectively implement bycatch reduction measures. With their activities based from ports around the country and their focus on the business of catching fish, it may be difficult for vessel operators, skippers and crew to stay abreast of developments in bycatch mitigation. Further, remaining informed about changes in policy and management frameworks that underpin the fisheries they operate in may be challenging.

Since the early 2000s, liaison officers have been one component of the Government's approach to addressing this communication, knowledge and awareness challenge. Liaison officers have also been tasked with promoting the adoption of effective bycatch mitigation practices (Kellian 2003; Hibell 2005; Johnson 2005). Further, liaison officers support 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[1] 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 conducted from 2017 - 2019 and managed by the Department of Conservation's (DOC) Conservation Services Programme (CSP) (project MIT2017-01) had the following objectives (DOC 2017):

- 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. Programme activities focused in these areas and fisheries given the 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.

In 2018/19, the programme scope broadened again, to include two new liaison officers such that five were involved overall (J. Cleal, D. Goad, N. Hollands, B. Leslie and G. Parker). Fishing methods and geographic areas in which liaison officers were active also expanded to include set net and trawlers in the North Island and other parts of the South Island.

[1] For scientific names of protected species referred to in this document, see Appendix 1.

This is the final report on the CSP Protected Species Liaison Programme MIT2017-01, and includes:

- Programme structure and documentation
- Liaison activities undertaken
- Liaison officer findings, and,
- Recommendations for the programme's next steps.

The annual progress report for this project previously described the 2017/18 year in detail, and can be found here (Pierre 2018a). Both years of the MIT2017-01 project term are presented in this final report.

Methods

Programme initiation and roll-out

Initiation workshops

In December 2017 and October 2018, key participants in the liaison programme (the liaison team, DOC and the Ministry for Primary Industries (MPI)) convened workshops to establish the foundation for the liaison programme for the year ahead. Workshops 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
- developing documentation to support the programme
- 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.

Programme roles

The liaison officer role was focused on port-based engagements with vessel operators, skippers and crew to improve 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). The liaison role does 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 2.

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 ensuring connections were in place between the liaison programme and other relevant bycatch reduction initiatives. The coordinator's role description is attached at Appendix 2.

Information sharing

The context, information sharing, and communications pathways for the Liaison Programme are summarised in Appendix 3. Note that part-way through the project term, 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 continued to provide services across the Ministry, including fisheries compliance services.

Fleet identification

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 (LFRs), to identify vessels active in the relevant fleets. Liaison officers then contacted vessel operators and/or skippers to coordinate a port visit.

For the surface longline and the FMA 1 bottom longline methods, all vessels were encompassed in the programme. For the Otago coastal trawl component of the Programme, work was exploratory in nature and not intended to capture a specific component or proportion of the fleet. 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.

As the programme expanded regionally in 2018/19, the DOC Programme Manager worked with liaison officers to identify focal fishing methods, regions and vessels. Liaison officers also worked together to ensure that vessels moving between ports (and that could therefore potentially be covered by more than one liaison officer) were encompassed in the programme. This was particularly relevant to surface longline vessels. In 2018/19, liaison officers continued working with LFRs to facilitate vessel coverage as appropriate to fishing methods and regions, and in accordance with their contractual obligations.

While developing the coastal trawl Programme in 2017/18, an issue was identified regarding overlap between the CSP Liaison Programme and the vessels 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 and therefore out of scope for CSP's liaison work, 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 in terms of the scope of the plans onboard vessels. 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; Pierre 2018a). Fisheries Inshore New Zealand (FINZ) drafted "10 Golden Rules" and Operational Procedures documents that were core components of this information compilation. These documents were reviewed by DOC, MPI, and some members of the liaison team, then finalised by FINZ before use.

Protected Species Risk Management Plans

PSRMPs were developed by liaison officers working with vessel operators, skippers and crew in ports. These plans were vessel-specific. They identified the legal requirements the vessel must follow (that relate to protected species) and documented other elements of the vessel's operational practice that are intended to reduce protected species capture risks. Plans also recorded the liaison officer's contact information, the date of issue or review, and triggers 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 that resulted in the production of Plans informed 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 and year of this project.

Trigger reports and responses

Triggers were created to provide an alert on what could be ongoing capture risks for protected species, and to prompt vessel skippers and crew to consider what they could be doing differently to avoid additional captures. Skippers were instructed to report trigger events to a liaison officer whether or not a Government fisheries observer was onboard their vessel when captures occurred. Liaison officers responded to the triggers reported on an ongoing basis through the term of their contracts and documented their responses. Triggers were updated throughout the project to reflect government interests and species for which there were known mitigation options that could be implemented to reduce capture risks (Table 2). Triggers became nationally consistent in 2018/19, and liaison officers were tasked with highlighting which were most likely for their vessels/regions in PSRMPs.

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.

Table 1. Information distributed by liaison officers working in surface longline, Fisheries Management Area 1 bottom longline, coastal trawl and set net 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). Ongoing version control for these documents was managed in the online information portal used by the liaison programme, and liaison officers were able to distribute additional information relevant to vessels in their regions.

Surface longline	Bottom longline	Coastal Trawl	Set net
PSRMP	PSRMP	PSRMP	PSRMP
Triggers	Triggers	Triggers	Triggers
10 Golden Rules for reducing protected species captures		10 Golden Rules for reducing protected species captures (North Island; South Island)	
Surface longline Operational Procedures	Operational Procedures: North Island bottom longline	Coastal Trawl Operational Procedures: North Island; South Island	Coastal Set Net Operational Procedures: Lower South Island
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, protected reptiles and fish[2]	DOC Fisher's guides to seabirds, protected reptiles and fish	DOC Fisher's guides to seabirds, protected reptiles and fish	DOC Fisher's guides to seabirds, protected reptiles and fish
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		

[2] https://www.doc.govt.nz/our-work/conservation-services-programme/csp-identification-guides/ [Accessed 26 April 2019]

Table 2. Triggers in use in the liaison programme 2017 – 2019. In 2018/19, a national, method-wide set of triggers was identified on Protected Species Management Plans. Liaison officers were tasked with highlighting on Plans which triggers were most likely to occur on vessels using particular fishing methods in their regions. FMA = Fisheries Management Area. 'Large seabirds' include albatross, mollymawk, giant petrel and gannet.

2017/18		
FMA1 bottom longline	Surface longline	Otago coastal trawl
• Any black petrel, flesh-footed shearwater, or turtle; • In a 24-hour period, 3 or more large seabirds, or, 5 or more small seabirds, or, 2 or more fur seals • In a 7-day period, 10 or more seabirds of any type		• Any penguin, dolphin, sea lion, leopard seal, great white or basking shark; • In a 24-hour period, 3 or more large seabirds, or, 5 or more small seabirds, or, 2 or more fur seals; • In a 7-day period, 10 or more seabirds of any type, or, 5 or more fur seals.
• During the 2017/18 year, one great albatross was added as a trigger across all methods.		
2018/19		
All fishing methods and regions		
• Any great albatross, penguin, dolphin, sea lion, leopard seal, basking shark, turtle, black petrel or flesh-footed shearwater • In any 24-hr period, 3 large or 5 small seabirds, or 2 fur seals • In any 7-day period, 10 seabirds of any type, or 5 fur seals		

Mitigation resources

In 2017/18, liaison officers working in longline fisheries provided tori line components to support mitigation strategies implemented by fishers. As well as its practical use, this gear had value as an "icebreaker" when visiting vessels. In 2018/19, this distribution continued to the extent that the available supply allowed (no new materials were purchased, for the project term reported here).

Part-way through 2018/19, turtle dehooking kits were made available to the surface longline fleet, with distribution facilitated by liaison officers.

Observer audits

Throughout the project term, information sharing occurred between the liaison programme and FNZ's Observer Services team (OS). The liaison coordinator requested that OS provided ongoing updates on their plans for observer deployments on vessels involved in the liaison programme. On receipt, the coordinator then shared updates with liaison officers.

On request, the coordinator provided OS with the current PSRMP for vessels that observers were to be deployed on. Observers audited the implementation of PSRMPs during their deployments recording their findings on dedicated forms, which were provided (by OS) to the liaison coordinator, who then shared this information with the appropriate liaison officer. Findings of PSRMP audits were followed up as appropriate by liaison officers, for example discussing with skippers when it appeared that practices observed diverged from those recorded in PSRMPs. Liaison officers could then help resolve issues that may have prevented conformance with PSRMPs.

OS 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 OS prior to going to sea on vessels in the course of their own work.

Programme manual

A programme manual was created to facilitate stakeholder and participant understanding of the scope and approach of the programme (Pierre 2018b). It was also drafted to help ensure consistency, e.g. supporting the induction of new liaison officers, and to provide a "point-in-time" description of the programme that can be built on in future years. Further, to help address issues created by high staff turnover in OS, the programme manual provided an induction tool for Fisheries Observer Officers (FOOs), when new FOOs started roles that required connecting with 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 as the Programme developed. The new system replaces the Google Docs and Dropbox sites used previously by liaison officers.

The Online Liaison Information Portal (OLIP) houses:

- a list of vessels included in the Liaison Programme by fishing method, with associated location and contact details,
- Protected Species Risk Management Plans (PSRMPs),
- trigger event records,
- file notes created when liaison officers visit vessels,
- templates for the documents above, should liaison officers wish to use to blank hard copies, and,
- programme resources available for distribution to fishers (e.g. Operational Procedures).

How these documents emerge from liaison officer activities is shown in Figure 1.

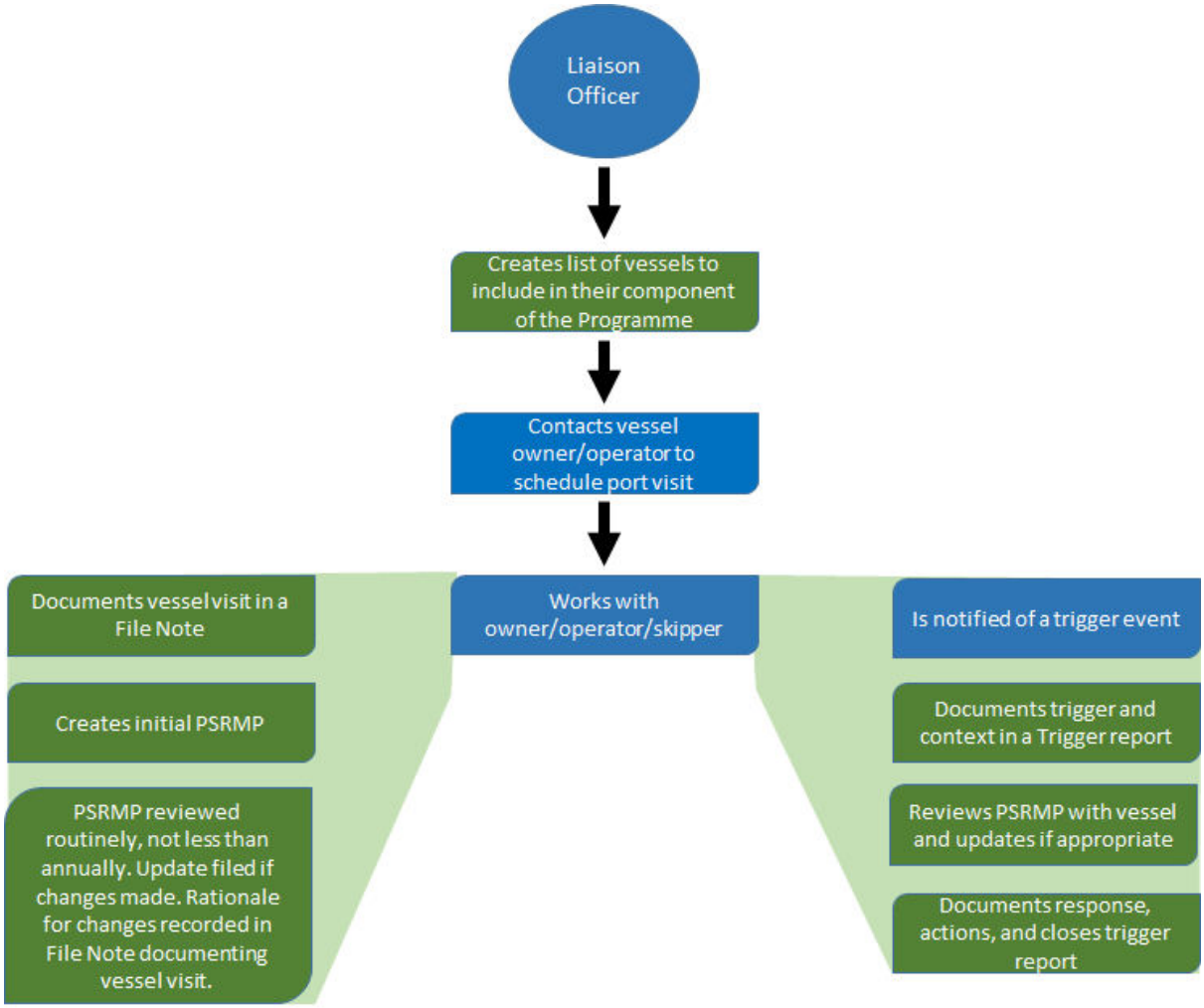

Figure 1. Components of a liaison officer's work that link to documentation stored in the Online Liaison Information Portal. Green indicates a stored record.

Stakeholder engagement

Throughout the project term, the coordinator engaged with a range of stakeholders, 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 initial months of this project's term, the 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 2018, 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 2020[3]. The current mechanism that FINZ has identified for delivery on this goal is the Liaison Programme. Therefore, FINZ's involvement at the strategic level became focused on this goal.

In 2018/19, growing the programme to encompass more fishing methods and liaison officers was the priority. Implementation of the regional model also progressed. Strategic discussions were focused on which areas and regions would be brought into the programme and when, and trade-offs between increasing the number of visits per year per vessel in the programme, compared to increasing the total number of vessels visited.

Results and Discussion

Overview

In 2017/18, PSRMPs were prepared for 37 bottom longline, 34 surface longline and 12 trawl vessels. Through to 1 June 2018/2019, the majority of these plans were reviewed (24, 21 and 9 plans respectively) (Table 3). New PSRMPs were also developed in 2018/19, including for four and five bottom and surface longline vessels, and for 58 trawl vessels (Table 3). For a detailed description of measures included in PSRMPs for each vessel (including weight and float arrangements for bottom longline vessels), see Appendices 4 - 9.

Table 3. Number of Protected Species Management Plans (PSRMPs) created and reviewed between 1 December 2017 - 1 June 2019. FMA = Fisheries Management Area. Methods marked * were not prioritised for the programme, and PSRMPs were completed opportunistically by liaison officers during port visits. Note that in 2017/18, PSRMPs superseded Seabird Management Plans present on some vessels from earlier liaison work (Pierre 2018a).

Fishing method	PSRMPs developed 2017/18	PSRMPs reviewed 2018/19	New PSRMPs developed 2018/19
Bottom longline (FMA1)	37	24	4
Surface longline	34	21	5
Trawl	12	9	58
Trawl/dredge*			1
Danish seine*			1
Set net			2
Jig*			1

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

Measures most often included in PSRMPs for bottom longline vessels included tori lines, fish waste management, increased line-weighting, cessation of line-setting in response to elevated seabird capture risk, ensuring hooks were not present near the surface during haul breaks, and reducing deck lighting during line-setting (Table 4). Weighting regimes were also documented in PSRMPs (Appendices 4, 5). Other measures used by single vessels included circle hooks, removing hooks from offal prior to discharge, and reducing hook spacing to increase line-weighting. Measures included in PSRMPs reflected the retention of some flexibility in practice (e.g. around fish waste discharge at hauling), regulatory requirements (e.g. for tori line use) and the intent for PSRMPs to be auditable by observers onboard vessels.

On surface longline vessels, PSRMPs most frequently included measures such as tori line use, thawed bait, fish waste management, and reducing deck lighting at night (Table 5). Snood weighting regimes were also documented in PSRMPs (Table 6). In 2017/18, 14 vessels reported using 60 g snood weights, including lumo leads and swivels. Another four vessels used lumo leads, swivels and hook pods, for which the mass was not reported. In 2018/19, 16 vessels used 60 g lumos or swivels, and 4 vessels used 30 – 40 g weights on snoods. In both years, there were vessels that weighted some snoods (and not all) (Table 6). Beyond this core suite of measures, others used by a smaller number of operators included haul mitigation, dyed bait, and laser devices (Table 5, Appendices 6, 7).

For trawl vessels, PSRMPs focused on mitigation strategies to reduce protected species interactions with trawl warps and the trawl net (Table 7, Appendices 8, 9). These included fish waste management (e.g. not discharging fish waste at specific times), minimising the time trawl gear is on the surface (e.g. when nets are being mended), wrapping warp splices or towing with splices below the surface, and using warp strike mitigation devices. In 2017/18, devices deployed on vessels with the aim of reducing warp strikes included floats, buoys, fish bins, road cones, and custom-fabricated steel cones. In 2018/19, the majority of trawlers used floats or buoys, or one or more baffler arms with or without a curtain or streamers attached (Table 8).

Across other fishing methods for which PSRMPs were developed, measures applied to reduce protected species capture risks were focused on managing fish waste and reducing the exposure of these species to the fishing gear (e.g. by avoiding setting gear among large numbers of marine mammals) (Table 9).

Trigger events were reported from observed vessels more often than unobserved vessels in both 2017/18 and 2018/19 (Table 10). Trigger events reported from bottom longline fisheries involved black petrels and flesh-footed shearwaters. Trigger events in surface longline fisheries involved these seabird species as well as albatrosses, marine turtles and fur seals. In trawl fisheries, one penguin and one dolphin trigger were reported during the project term. Liaison officer responses to triggers included making contact with skippers to seek further information on captures and work with skippers to identify possible ways to ameliorate future capture risks. This contact sometimes occurred over multiple days (e.g. when surface longline vessels reported triggers during the days around full moon).

The coordinator received information on the implementation of PSRMPs that was collected during observer deployments on 10 and 12 bottom longline vessels in 2017/18 and 2018/19, respectively, and 13 and seven surface longline vessels in 2017/18 and 2018/19. In general, fish waste management was most often observed to differ in terms of what observers documented as actual practice and what was documented in PSRMPs (Tables 11 and 12).

Table 4. Summary of measures listed in bottom longline Protected Species Management Plans (PSRMPs) created and updated between 1 December 2017 - 1 June 2019. * = Measures may include carrying extra weight onboard, attaching more weight when birds gain access to bait entry point, when birds are diving around the tori line, or if it is perceived that there is a capture risk. Note that the exact wording specifying measures varies between plans. Liaison officers working with vessel operators to develop plans were D. Goad (2017 – 2019) and N. Hollands (2018/19).

	Number of PSRMPs created or updated	Single tori line in use	Multiple tori lines may be used	Tori line spares onboard	Night sets	Night and day sets	Discharge of fish waste (incl. during hauling) based on perceived risk	Fish waste retained 1 h or more before and during setting	Fish waste retained throughout haul	Fish waste batch-discharged during hauling	Fish waste discharged away from hauling bay during hauling	Live fish discards released alive ASAP	Baited hooks not left at/near surface during haul breaks	Increased weighting carried/used during periods perceived as higher risk*	Haul mitigation device deployed at times deemed high risk	Stop setting (temporarily or abandon set) if measures in place have not addressed capture risk	Set weights and/or buoy lines and/or longlines slack	Deck lights managed/ minimised during setting
2017/18	37	37	6	1	2	13	37	26	25	6	9		37	37	4	36	5	35
2018/19	28	28	2	28	3	19	27	28	17	3	9	4	25	15	3	15	1	27

Table 5. Summary of measures listed in surface longline Protected Species Management Plans (PSRMPs) created or updated between 1 December 2017 - 1 June 2019. Note that the exact wording specifying measures varies between plans. Liaison officers working with vessel operators to develop plans were J. Cleal (2017 – 2019), G. Murman (2017/18), and D. Goad and N. Hollands (2018/19).

	Number of PSRMPs created or updated	Single tori line in use	Tori line spares onboard	Night sets	Day sets	Snood weighting	Thawed bait used for setting	Fish waste retained during setting	Old bait retained throughout haul	Fish waste batch-discharged during hauling	Discharge during hauling based on perceived risk	Fish waste batch-discharged from off-side	Haul mitigation device	Laser	Side-shooting	Line shooter	Deck lights managed/ minimised during setting
2017/18	34	34	34	33	13	19	34	29	26	22	1	2	1	2	1	4	33
2018/19	26	26	26	17	8	15	26	21	14	20		3		1		4	24

Table 6. Snood weighting documented in Protected Species Management Plans on surface longline vessels in 2017/18 and 2018/19.

Year	Weight	Type	In use on # vessels	Weight distance (m) from hook when known (# vessels)	Comments
2017/18	60 g	Lumo leads	7	3, 3.5 (2)	In place on 50% of snoods on one vessel.
		Swivels	2	3 (1)	
		Unknown	5	1.2 (1), 2 (2), 3 (1)	
	Mixed	40 g and 60 g	1		
	Unknown mass	Swivel	1		
		Lumo	1		In place on 50% of snoods
		Lumo leads and hook pods	1		Each device in place on 50% of snoods
2018/19	60 g	Lumo leads	11	0 – 2 (2), 3.5 (1)	In place on 30% of snoods on one vessel. Lumos and swivels used on one vessel, with relative proportions unknown.
		Swivels	5	1.8 (2), 2 (1), 3 (1), 3.5 (1)	Lumos and swivels used on one vessel, with relative proportions unknown.
		Unknown	1	2 (1)	
	30 – 40 g	Lumo leads	3	0 – 2 (1)	
		Lead	1	0 (1)	In place on 30% of snoods on one vessel.
		Unknown	1	0 (1)	In place on 80% of snoods on one vessel.
	Unknown mass	Lumo lead	1		In place on 50% of snoods on one vessel.

Table 7. Summary of measures listed in coastal trawl Protected Species Management Plans (PSRMPs) created or updated between 1 December 2017 - 1 June 2019. Liaison officers working with vessel operators to develop plans were G. Parker (2017 – 2019) and J. Cleal (2018/19). Examples of devices deployed to reduce the risk of seabird strikes on trawl warps include buoys, cones, and fish bins (Table 8).

	Number of PSRMPs created or updated	Warp strike mitigation approach	No fish waste discharged during shooting	No fish waste discharged during hauling	Fish waste batch-discharged during towing	Fish waste discharged when gear is on vessel	Fish waste retained or batch discharged during tow	Surface time of gear minimised	Net cleaned prior to mending or shooting	No shooting around large numbers of marine mammals	No splices within 2 m of water surface when towing or splices are smooth	Live fish returned to the sea immediately / while still alive
2017/18	12	8	12	12	1	3	6					
2018/19	67	44	55	54	41	7	4	48	40	36	12	39

Table 8. Approaches used by inshore trawl vessel skippers to reduce the risk of seabird strikes on trawl warps, as documented during the preparation of Protected Species Risk Management Plans in 2017/18 and 2018/19.

Device	In use on # vessels	
	2017/18	2018/19
Boom(s) or baffler arm(s) with or without a curtain or streamers	1	13
Float(s) or buoy(s) on one or both warps	2	17
Road cone		1
Road cone or net float	1	
Fish bins	1	2
Road cone or fish bin		1
Steel cone or two fish bins	1	
Modified float or other material (e.g. wood) attached to warp	1	
Steel cone or roller	1	1
Stabiliser arm(s)		3
Twin tori lines		1
Bright yellow warps	1	2
Unspecified device		3

Table 9. Summary of measures listed in jig, set net, Danish seine and dredge/trawl Protected Species Management Plans (PSRMPs) created between 1 July 2018 - 1 June 2019. Liaison officers working with vessel operators to develop plans were J. Cleal and D. Goad. Exact wording of measures varies between plans. *Discharge on opposite side of vessel to jig machine.

	Method	Number of PSRMPs created	Partially or fully thawed bait used	Used bait held for batch discharge	Fish waste held for batch discharge	Mitigation device around hauling area	Net cleaned before shooting	No discharge while shooting	No discharge during hauling	Fish waste discharged when gear is on vessel	Fish waste batch-discharged during hauling	Fish waste batch-discharged during towing	No fish waste discharged into warp path	Gear surface time minimised	Shooting into large numbers of marine mammals avoided	Fish discards released alive ASAP as law allows
2018/19	Jig	1	1	1*	1*	1										1
	Set net	2					2	1		1	1					
	Danish seine	1					1	1	1			1		1	1	1
	Dredge	1					1	1	1			1	1	1	1	1

Table 10. Summary of trigger events reported by fisheries observers and/or vessel operators during the 2017 – 2019 years of the liaison programme. When a capture event meets more than one trigger (e.g. three great albatross reported as caught in one event), a single event is tallied.

Fishing method	Year	Trigger type										Observer aboard?	
		Black petrel	Flesh-footed shearwater	Great albatross	Large seabirds	Small seabirds	Penguin	Total seabirds	Turtle	Fur seals	Dolphin	Y	N
Bottom longline	2017/18	4	8									7	5
	2018/19	3	5									5	3
Surface longline	2017/18	8	2		11				3	1		24	1
	2018/19	4	5	3	2				1	1		15	1
Trawl	2017/18	No reports											
	2018/19						1				1	1	1

Table 11. Summary of conformance with bottom longline Protected Species Management Plans (PSRMPs), as assessed by government fisheries observers during their deployments in 2017/18. (Y = Measure implemented, N = Measure not implemented). During observer deployments, implementation of some measures was not observed because situations relevant to those measures did not arise. In addition, in some cases information collected during audits did not enable a yes/no determination about conformance. Note that the exact wording specifying measures varies between plans.

	Vessel	Single tori line in use on all sets	Multiple tori lines may be used	Tori line spares onboard	Night sets	Night and day sets	Thawed bait used for setting	Discharge of fish waste based on perceived risk	Fish waste retained 1 h or more before setting	Fish waste retained during setting	Fish waste retained throughout haul	Fish waste batch-discharged during hauling	Discharge during hauling based on perceived risk	Fish waste discharged away from hauling bay during hauling	Fish discards released alive ASAP as law allows	Baited hooks not left at/near surface during haul breaks	Increased weighting carried/used during periods perceived as higher risk*	Haul mitigation device deployed at times deemed high risk	Stop setting (temporarily or abandon set) if measures in place have not addressed capture risk	Set weights and/or buoy lines and/or longlines slack	Deck lights managed/ minimised during setting
2017/18	5	Y							Y	Y	N										
	15	Y							Y	Y											
	23	Y								Y	Y					Y					
	24	Y			Y				Y		Y										Y
	28	Y							Y		Y						Y				
	29	Y							Y	Y	Y						Y				
	32	Y									Y					Y					
	33	N							Y	Y	N						Y				
	34	Y							Y		Y										
	37	N	Y						Y	Y						Y					
2018/19	4	Y	Y								N								Y		
	5	Y								Y	Y										
	8	Y				Y				Y	Y										Y
	13	Y			Y					Y		Y					Y				
	17	Y							N		N										
	21	Y				Y															
	22	Y								Y	Y										Y
	23	Y								Y	N										Y
	30	Y												Y							
	31	Y			Y					Y	Y										Y
	32	Y								Y	Y										Y
	33	Y							Y	Y	N						N		N		
	37	Y			N					Y	Y										

Table 12. Summary of conformance with surface longline Protected Species Management Plans (PSRMPs), as assessed by government fisheries observers during their deployments. (Y = Measure implemented as per PSRMP, N = Measure not implemented as described in PSRMP). During observer deployments, implementation of some measures was not observed because situations relevant to those measures did not arise. In addition, in some cases information collected during audits did not enable a yes/no determination about conformance. Note that the exact wording specifying measures varies between plans. *In this case, snood weighting had increased above the level described in the PSRMP (from 40 g sliding weights on approximately 50% of snoods at 0 – 2 m from the hook, to 120 g sliding weights at 1 m from the hook). %Snood weight position was closer to the hook (1.5 m in practice c.f. 1.8 m documented in PSRMP).

	Vessel	Single tori line in use on all sets	Multiple tori lines may be used	Tori line spares onboard	Night sets	Day sets	Snood weighting	Thawed bait used for setting	Fish waste retained during setting	Old bait retained throughout haul	Old bait discarded during hauling	Offal retained during hauling	Fish waste batch-discharged during hauling	Offal discarded	Discharge during hauling based on perceived risk	Fish waste batch-discharged from off-side	Haul mitigation device	Laser	Side-shooting	Line shooter	Deck lights managed/ minimised during setting
2017/18	1	Y		Y	N		Y	Y	Y	N											Y
	7	N			Y			Y	Y	N		N									Y
	8	Y		Y	Y			Y	Y	N											Y
	10	Y		Y	Y			Y	Y	Y		Y									N
	13	Y		Y	Y			Y	Y	Y		N									Y
	14	Y		Y	Y			Y	Y				N								Y
	17	Y		Y				Y	Y	Y		Y									Y
	19	Y		Y	Y			Y	Y				N								Y
	24	Y			Y			Y	Y	N											Y
	25	Y		Y	Y			Y	N	N											Y
	27	Y		Y	Y			Y	Y	Y											Y
	33	Y		Y	Y			Y	Y	Y			Y								Y
	34	Y		Y	Y			Y	Y	Y			Y								Y
2018/19	5	N		Y	Y			Y	Y	N			N								Y
	18	Y		Y				Y	Y	N			N								Y
	21	Y		Y	Y		N	Y	Y				N								Y
	22	Y		Y	Y		N*	Y	Y				Y								Y
	24	Y			Y			Y					N								N
	29	Y		Y			N%	Y	N		Y		N	Y							Y
	31	Y		Y	Y			Y	Y	Y											Y

Distribution of mitigation resources

Liaison officers distributed materials to support fisher implementation of mitigation measures. In 2017/18, 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 bycatch risk reduction efforts, and within the project's budget. Liaison officers provided tori line streamer materials to all surface longline vessels visited in 2017/18. Three materials were provided: either Kraton or Beautory for the main streamers in the tori line, and flash tape for intermediate streamers (Figure 3).

In 2018/19, the focus was on supporting fisher construction of tori lines, rather than providing entire tori line set-ups. Liaison officers carried any materials they retained from 2017/18 but had not yet distributed. Also in 2018/19, turtle dehooker sets were purchased by DOC and made available to surface longline vessels. Liaison officers coordinated the distribution of these kits. Some vessels retained kits from the previous DOC distribution of dehookers in 2008 (to bottom and surface liners), such that by the end of this project term, 17 surface longline and six bottom longline vessels were equipped with dehookers and line-cutters. Dehooker distribution is ongoing.

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.

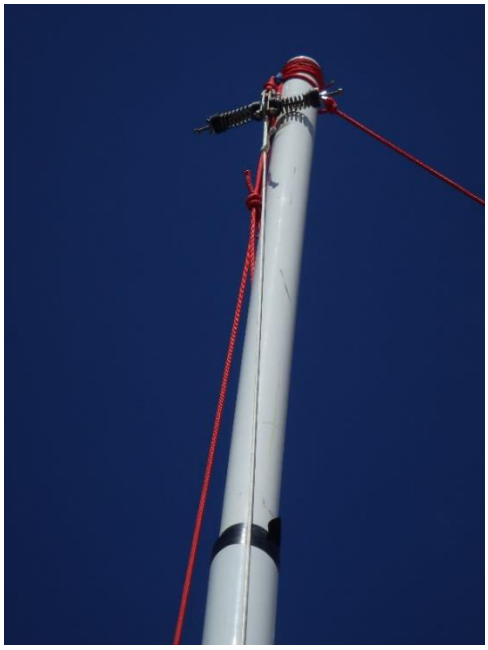

Figure 2. Part of the tori line set up (including the tension release) provided to selected vessels by the Fisheries Management Area 1 bottom longline liaison officer. Note: This is the 2017 model of the release, which the liaison officer has continued to refine over time. Photo: J. Pierre.

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 during the project term. 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 3). In particular, the coordinator liaised with FINZ, MPI/FNZ staff, LFRs, fishing company representatives, Commercial Stakeholder Organisation representatives, the Southern Seabird Solutions Trust convenor, the Seabird Advisory Group, and the Black Petrel Working Group. The coordinator, liaison officers, and DOC also attended and presented on the programme at MPI/FNZ's six-monthly surface longline workshops.

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 workshop participants also noted that the NPOA – Seabirds review was likely to influence the future roll-out of the Liaison Programme as it relates to seabirds.

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 from an exploratory to an established state in two "fisheries" (FMA 1 bottom longline and surface longline), and in 2018/19 expanded significantly across coastal trawl vessels (Goad and Williamson 2015; Pierre 2016; Goad 2017; Wells and Cleal 2017). The 2018/19 transition to a more regional operating model illustrates further maturation. With five liaison officers now involved in the programme, consistent practice among liaison officers is important for overall programme integrity.

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.
- Grow LFR engagement with the programme, and support this with effective information sharing.
- Determine how the liaison programme fits in the broader assessment of fleet performance on bycatch mitigation and reduction (e.g., integrating liaison programme findings with other information sources, such as the full set of observer and compliance data).
- Review the purpose and content of PSRMPs, to determine appropriateness for the next year for the programme, in terms of programme objectives and policy drivers (noting that the current purpose of these is to be auditable documents that reflect the practices used on vessels to reduce protected species capture risks).
- Determine if the programme should focus on increasing the number of vessels covered, or another approach (such as a risk-based effort allocation of liaison officer time to vessels).
- Increase effort allocated to monitoring the implementation of PSRMPs in all fisheries (e.g. by observers or electronic monitoring). Without effective monitoring, the efficacy of the programme cannot be determined.

Liaison officer training

- Hold a training workshop to commence 2019/20 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 (including the revised NPOA and OLIP). DOC and MPI/FNZ would present relevant policy context at this session, to prepare liaison officers for questions they may receive from fishers during their work.

Supporting resources

- Confirm the resources that are to be distributed to fishers in 2019/20.
- Continue to develop awareness and outreach resources for use across the programme, noting synergies with CSP project MIT2018-01, e.g. a 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.

Acknowledgements

Thanks to T. Hellesland and K. Ramm of CSP, who managed the Protected Species Liaison Programme described in this report. The liaison officers' work is critical to this programme, and this report.

Thanks also to FINZ, MPI/FNZ, fishing companies and licensed fish receivers involved in this work. In particular FNZ's fisheries management and OS teams are acknowledged, for their contributions in a number of areas, and the ongoing collaboration that has helped deliver and strengthen the programme over time.

Finally, the Programme would not be possible without the involvement of vessel operators, skippers and crew. Their preparedness to share their knowledge and work with liaison officers is vital and valued.

Disclaimer

All species identifications reported in this report are unconfirmed. 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. Scientific names of species referred to in the text

Black petrel	*Procellaria parkinsoni*
Flesh-footed shearwater	*Ardenna / Puffinus carneipes*
New Zealand fur seal	*Arctocephalus forsteri*
Leopard seal	*Hydrurga leptonyx*
New Zealand sea lion	*Phocarctos hookeri*
Basking shark	*Cetorhinus maximus*
Great white shark	*Carcharodon carcharias*

Appendix 2. 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:

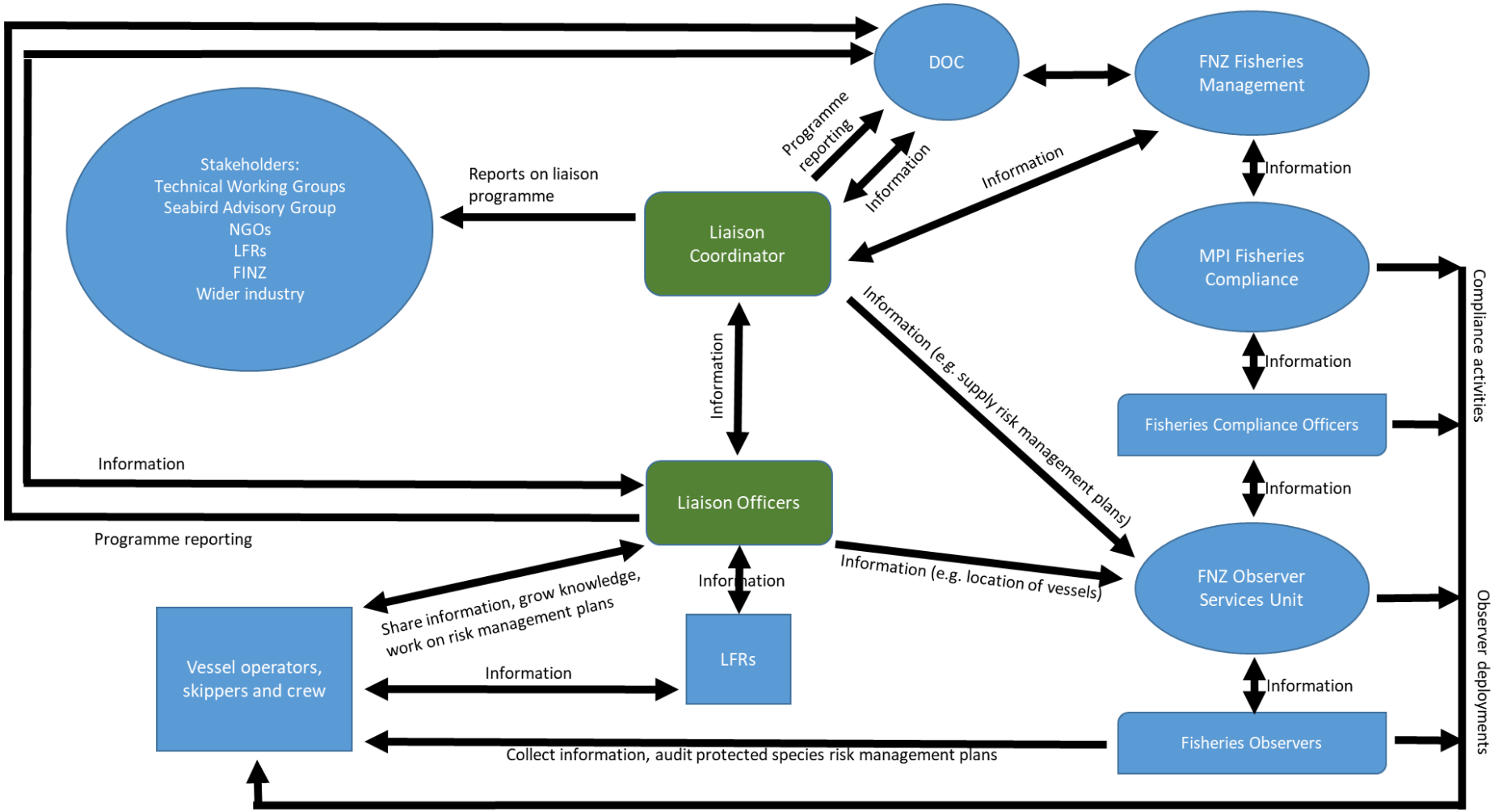
- Work with liaison officers and others to finalise the approach to delivering on programme objectives (including prioritising actions)
- Collate and manage programme documentation to ensure information is available and able to be provided to appropriate parties in a timely and transparent way
- Report 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 3. 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 4. Summary of measures included in Seabird Management Plans and Protected Species Risk Management Plans for bottom longline vessels, 2017/18.

Appendix 5. Summary of measures included in Protected Species Risk Management Plans for bottom longline vessels in the liaison programme, 2018/19.

Appendix 6. Summary of measures included in Protected Species Risk Management Plans for surface longline vessels, 2017/18.

Appendix 7. Summary of measures included in Protected Species Risk Management Plans for surface longline vessels, 2018/19.

Appendix 8. Summary of measures included in Protected Species Risk Management Plans for coastal trawl vessels, 2017/18.

Appendix 9. Summary of measures included in Protected Species Risk Management Plans for coastal trawl vessels, 2018/19.

Appendix 4. Summary of measures included in Seabird Management Plans and Protected Species Risk Management Plans for bottom longline vessels in the liaison programme, 2017/18. *Line setups used when birds considered to be at risk of capture (e.g. interacting with the setting operation). hks = hooks. (Liaison officer: D. Goad).

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
1	1.5 - 1.95 kg, steel / 15 hks Floats used at times	Tori line used on all sets with a second one deployed as necessary.	A spare tori line must always be carried.	Extra weight used as necessary.	Bait must be taken out of the freezer or ice several hours before the set.	Offal released only when steaming.	Offal not released during setting - including bait that is missed during setting.	If offal or missed baits are drifting into the area where the line is being set – then steps must be taken immediately to prevent this happening.	Kitchen and other wastes are not to be discharged.	Offal and fish waste must not be discharged during hauling.	All efforts must be made to remove embedded hooks from offal.	Extra weight is used as necessary.	Skipper is prepared to stop setting if risk to birds is high.	Dyeing bait may be used as a reactive mitigation measure.	All mitigation measures in Plan to be deployed at times of heightened risk (2 days before and after full moon; in the hour after sunset and hour before sunrise).
2	**Setup 1:** 1 kg steel / 12 hks **Setup 2:** 2 kg steel Intermediate floats	5 or 6 mm rope with tubing streamers and thick rope as drag.	Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	Majority of fishing conducted before the first light of dawn.	Majority of fishing conducted close to port.	Lighting reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	All returned baits are retained and discarded on the steam back to port.	Baits may be discarded to minimise risk to birds (for example distracting birds from a dropped snood).	No baited hooks are left near the surface during breaks in hauling.	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 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.	Weights may also be used in a reactive "free-style" manner.	
3	**Setup 1:** 2.5 kg steel / 12 hks **Setup 2:** 2.5 kg steel / 25 hks 2 floats / weight	Dyneema aerial section with tubing and tape streamers. 9 mm rope, floats and cone as drag.	We don't tend to fish any 'birdy' areas.	Generally lines are set in the dark but we will shoot late afternoon and soak overnight during the spawn.	Lighting reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We hold old baits onboard during the haul, or discard them on the opposite side of the vessel.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	No baited hooks are left near the surface during breaks in hauling.	Extra weights are available and bird abundance and behaviour are monitored so we can increase the line sink rate if birds are thought to be at risk.	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.			
4	**Setup 1:** 3 or more kg steel /25 hks **Setup 2:** 3 or more kg steel /50 hks 1 float / weight	Dyneema, tubing and tape streamers, then 9 mm rope floats and road cone as drag.	Lighting reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Offal and baits retained during hauling.	Baits retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	If birds gain access to the bait entry point, a weight will be deployed and clipping on suspended until birds have left the danger zone.	If all measures are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.	If a bird is visibly observed caught on the surface we will immediately deploy a 2kg+ weight onto the mainline to prevent further captures.			

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
5		3 mm Dyneema with tubing and tape streamers, 9 mm rope, floats and cone as drag.	Lighting reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold baits and offal and discard when not hauling.	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.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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 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.				
6	2 kg steel / 25 hks Subsurface floats	3 mm Dyneema aerial section with tubing streamers, 9 mm rope, floats and cone as drag.	Extra weighting will be carried to cover increased usage such that if no birds were present, and no extra weighting took place, these weights will be left at the end of setting.	Often sets in the evening.	Mitigation strategy is based around avoidance of at risk times and places.	Lighting reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	Most baits are recycled during the haul.	Baits may be retained or discarded so as to minimise risk to birds.	If birds continually cause a problem during a haul and are deemed likely to be captured we will stop hauling for some time.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	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.		
7	1 – 15 kg depending on depth and area fished Varies with target	Rope, tubing streamers	Lines set before dawn or after dusk.	We will reduce lighting to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Used baits retained during hauling.	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.	We will monitor bird activity and will add extra weight if birds are seen diving near the line.	If birds are still diving then we will stop clipping on and wait for birds to leave the danger area before continuing.	If all the measures above have been employed and are visibly not working then we will stop setting.			
8	0.75 - 2 kg / 8 hks (32 m)	Multiple tori lines employed.	At times we will tow a short tori line when hauling.	We will reduce lighting to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Used baits and offal retained during hauling.	At times baits may be discarded to reduce risks to birds (e.g. to distract them from dropped snoods).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	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 birds have left the danger zone.					

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
9	**Setup 1:** 2 kg steel / 25 hks Floats used on some sets **Setup 2:** 3 or more kg steel / 25 hks Floats used with extra weights **Setup 3:** 3 or more kg steel / 50 – 75 hks Floats every 25 hks	Dyneema aerial section with tubing and tape streamers, 9mm rope cone and floats as drag. Deployed from adjustable poles.	An intermediate float may also be towed as a secondary tori device.	Extra weighting will be carried to cover increased usage such that if no birds were present, and no extra weighting took place, these weights will be left at the end of setting.	Lighting will be reduced to the minimum needed for safe setting through the use of shades and separate lighting.	Offal, bait and fish waste discharge managed to minimise risk.	No offal, baits or bait pieces will be discarded at least one hour prior to setting.	Baits may be retained or discarded to minimise the risk to birds (for example distracting them from a dropped baited snood).	The vessel hauls at a vessel speed which discourages congregations around the hauler.	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	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 birds have left the danger zone.	If all measures have been employed and are visibly not working i.e. birds are continually overcoming the tori line and getting to the bait entry point the vessel will stop setting.	Weights may also be used in a reactive "free-style" manner over and above the regimes described.	If problems occur in the future other methods will be looked at.	
10	**Setup 1:** 2 - 5 kg steel / 25 hks **Setup 2:** 2 - 5 kg steel / 50 hks Float with each weight	Thin rope, tubing streamers, floats and cone and thicker rope as drag.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Used baits retained.	Sharks processed after hauling.	At times baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	We usually haul straight through but if we have a break in hauling we will ensure that no baited hooks are left near the surface.	Extra weight can be used at times, in response to bird activity.	If birds overcome the tori line, gain access to the bait entry point, and are seen repeatedly diving on baits then we will stop clipping on until they have left area immediately astern.	If birds are continually overcoming the tori line and getting to the bait entry point and diving repeatedly on the line we will stop setting.			
11	**Setup 1:** 1.5 - 2 kg steel / 25 hks **Setup 2:** 2 or more kg steel / 50 hks Weight with float **Setup 3*:** 1.5 - 2 kg steel / 12 hks	Thin rope, tubing streamers, intermediate float for drag.	Weights may also be used in a reactive "free-style" manner over and above the regimes described.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Used baits retained.	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.	Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	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 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.			

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
12	**Setup 1:** 0.75 kg lead / 28 hks **Setup 2*:** 0.75 kg lead / 14 hks	Basic tori line, tubing streamers, float for drag.	Generally overlap with birds at the set, particularly diving birds, is rare.	Lighting during the set is minimal and largely contained within the vessel.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will discard returned baits away from the hauling station, which has been sufficient to keep birds out of the danger area to date.	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.	We will reduce weight spacing to every 14 hooks if birds are present and showing interest in the line.	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.				
13	**Setup 1:** 1 or more kg steel / 12 – 25 hks (50 – 100 m) **Setup 2:** 1 or more kg steel / 17 hks (51 m) **Setup 3:** 1 or more kg steel / 25 hks (50 m) **Setup 4:** 3 - 5 kg / 50 – 100 hks 4 gillnet floats with each weight	3 mm mono with tubing streamers. rope, floats, and cone as drag.	Typically set before dawn.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We hold returned baits and will batch discard them, if it is thought to reduce risk to birds we can hold baits until the end of the haul.	At times baits may be discarded to reduce risks to birds (e.g. to distract them from dropped snoods).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	We will deploy larger weights and / or reduce weight spacing when the risk to birds is thought to be high.	We may reduce setting speed to sink the gear closer to the boat.	If birds overcome the tori line, gain access to the bait entry point, and are seen repeatedly diving on baits then we will stop clipping on until they have left the area immediately astern.	If birds are continually overcoming the tori line and getting to the bait entry point and diving repeatedly on the line we will stop setting.		
14	3 - 14 kg steel / 33 – 83 hks Weight with float, 1 – 4 floats between weights	Thin rope with tubing streamers, thicker rope as drag. Deployed from tori pole with monofilament nylon breakaway.	All weight strings are unwound and weights deployed before clipping on so the weight has an immediate effect.	We generally set buoy ropes slack to maximise sink rate.	We will consider bird abundance and behaviour when deciding whether to set in the afternoon.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will discard returned baits away from the hauling station.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	We will make all reasonable efforts to recover floaters.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	We will monitor the sink rate of the line and increase weighting if the risk of capture is thought to be high.	Double weighting is employed for afternoon sets if a higher sink rate is required.	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.
15	0.7 kg / 12 hks (24 m)	5 mm aerial section with tubing streamers, 30 mm rope as drag tapered gradually into aerial section.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold offal / old baits during the haul and discard on completion of the haul.	At times baits may be discarded to reduce risks to birds (e.g. to distract them from dropped snoods).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	If all measures are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.						

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
16	3 weights per card / 50 hks (200 m)	Dyneema, tubing and tape streamers, then 9 mm rope floats and road cone as drag.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	Used baits retained.	At times 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 pay out some line to ensure no baited hooks are near the surface.	We may increase weighting when the risk to birds is thought to be high.	We may reduce setting speed to sink the gear closer to the boat.	If birds overcome the tori line, gain access to the bait entry point, and are seen repeatedly diving on baits then we will stop clipping on until they have left area immediately astern.	If birds are continually overcoming the tori line and diving repeatedly on the line we will stop setting.	Other options for reducing risk include: Shooting downwind Dyeing baits Using squid / octopus bait Multiple tori lines			
17	<u>Setup 1:</u> 2.2 kg / 50 hks <u>Setup 2:</u> 2.2 kg / 55 hks	3 mm Dyneema aerial section with tubing streamers, 9 mm rope, floats and cone as drag.	An intermediate float may also be used as a secondary tori particularly if cross winds are blowing the tori line off the mainline.	Weights may also be used in a reactive "free-style" manner over and above the regimes described.	Majority of setting done before dawn. This gear setup used if birds turn up and show interest in the setting operation	Avoid higher risk times and areas based on experience.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Baits retained during the haul and these are batch discarded on the opposite to the hauler.	Baits may be discarded at times to reduce risk to birds – for example distracting them from dropped snoods.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	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.	If birds continually cause a problem around the hauling point, and are thought to be a risk from capture, a buoy will be towed near to the hauling point and / or the deck wash used as a deterrent.	
18	<u>Setup 1:</u> 700 g rock (average) / 8 hks Occasional floats <u>Setup 2*:</u> 700 g rock (average) / 6 hks	Thin rope, tubing streamers and road cone as drag.	Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	If birds are around and showing interest all old baits will be retained.	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.	Setting speed may be reduced to sink baits closer to the boat.	Weights may also be used in a reactive "free-style" manner over and above the routine listed.	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.		
19		Short tori with tubing streamers and float for drag.	Typically setting occurs pre-dawn.	Line set from side of vessel, at low tension.	Reduced lighting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal discarded ≥ one hour before or during, setting.	I will hold baits onboard if discarding them poses a risk to birds.	Baits may be retained or discarded to minimise risk (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.	A float is towed at times to deter birds from the hauling station.	I will add extra weight to the line in response to bird behaviour and the potential for capture.	If all measures are visibly not working i.e. birds are continually diving close to the line, then I will stop setting.		

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
20	8 kg steel on 1 - 10 Fm suspender 2-3 floats / weight	Dyneema aerial section, tape and tubing streamers, 9 mm rope, floats and cone as drag, composite pole.	Normally gear set before dawn.	Day sets conducted occasionally.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We hold returned baits on board during the haul and then batch discard at intervals over the stern or hold them for the whole haul.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	We are currently trialling haul mitigation and will also, at times, employ a deck hose or gaff handle to deter birds from entering the danger zone when hauling.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	We will employ a combination of adding extra weight and or reducing the use of floats if birds are showing an interest in the line during the set.	If birds are seen consistently diving on baits then we will stop setting.		
21	5 - 15 kg on 2 - 20 m ropes / 54/72 hks Float every 18 hks	8 mm rope, red and black plastic streamers and windy buoy and weight as drag	Setting usually occurs between 0230 - 0430.	We will occasionally set during the day if weather conditions and bird abundance and behaviour combine to provide a low risk of interactions.	Offal, bait and fish waste discharge managed to minimise risk.	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.	We will increase weighting and / or reduce the number of floats between weights if the risk of capture is thought to be high.	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.						
22	**<u>Setup 1:</u>** 1 or more kg lead / 30 hks 1 float / weight **<u>Setup 2*:</u>** 1 or more kg lead / 15 hks 1 float / weight	8 mm rope with flapper boards, adjustable tow point.	A larger than normal weight will be deployed when turning, to sink the line rapidly whilst the tori line comes back on track.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	We will hold old baits in a fish bin during the entire haul and/or discard away from the hauling station.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	If the vessel is fishing in an area where they expect to encounter diving birds, and / or the tori line is blown away from the longline, then one or two further tori lines, each with a single flapper board, will be towed beside the main tori line.	Extra 3kg weights are carried by the vessel and will be used reactively in response to bird activity near the line.	If a bird is visibly observed caught on the surface a 3 kg+ weight will be immediately deployed onto the mainline to prevent more captures.	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 overcoming the tori lines and getting to the bait entry point the vessel will stop setting.	Other measures may be employed as necessary including deck hose, noise, and suspending hauling.	

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
23	**Setup 1:** 4-5 kg steel with float on 10 Fm suspender / 30 hks Floats between weights **Setup 2:** 4-5 kg steel with float on 1 Fm suspender / 2 floats between weights	3 mm Dyneema with tubing and tape streamers. 9mm rope and road cone as drag. Deployed from composite pole.	We use circle hooks.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	Offal, bait and fish waste discharge managed to minimise risk.		At times baits may be discarded to reduce risks to birds (e.g. to distract them from dropped snoods).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	We will, at times, choose not to set if there are large numbers of birds present.	We can change the setup to one float between weights to increase the sink rate, in response to bird activity.	We will stop setting if birds if birds are seen repeatedly diving near the line.				
24	**Setup 1:** 4 kg steel / 25-50 hks Occasional floats **Setup 2:** 4-8 kg steel / 33 hks 2 floats / 33 hks	8 mm rope, tubing streamers and thick rope for drag	Any deck lighting during the set is reduced to the minimum for safe operation of the vessel.	We will hold offal / old baits in a fish bin during the entire haul.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Returned baits are routinely retained onboard and dumped at the end of the day, away from the area fished.	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.	Extra weighting will be used to increase the sink rate if birds are thought to be at risk.	If birds do overcome the tori line, and repeatedly dive on the line, then a weight will be deployed and clipping on of hooks will be suspended.	Clipping on will be resumed when birds have left the area immediately behind the boat. If birds are consistently gaining access to and diving on the line then we will consider stopping setting.		
25	**Setup 1:** Chain weights / 25 hks **Setup 2:** 3 kg / 50 hks 1 float / weight	Run from slightly upwind of the mainline. Funnel towed object with thick rope and lead weight. Streamers attached on separate swivels to avoid tangles.	Normally setting is finished in the dark.	Setting is generally conducted pre-dawn.	Minimal tension is on the longline at setting.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Returned baits are held on board and batch discarded.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	We haul reasonably fast which results in fewer interactions.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	We would stop setting if birds are seen diving on the line but haven't had to yet.		
26	3 or more kg steel / 25-50 hks 1 float / weight	3 mm rope, tubing streamers, floats and cone.	Most sets conducted pre-dawn.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Baits and offal from processing sharks will be held onboard and batch discarded when not hauling gear.	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.	If all measures listed have been employed and are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.					

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
27	**Setup 1:** 8 - 10 kg steel / 32 hks 1 float / weight + 2 floats between weights **Setup 2:** 3 - 4 kg concrete 1 floats between weights	Thin rope and tubing streamers	Normally gear set pre-dawn.	Occasional day sets.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Retain baits and offal during hauling.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	We make all practical efforts to retrieve floaters quickly.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	If all measures listed have been employed and are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.			
28	**Setup 1:** 1.4 kg rock (average) / 50 hks **Setup 2*:** 2 or more kg rock / 25 hks	3 mm Dyneema aerial section with tubing streamers. 9 mm rope, floats and cone drag section. Purpose built adjustable tori pole.	An intermediate float maybe used as a secondary tori line, particularly if cross winds are blowing the tori line off the mainline.	Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Baits are discarded well away from the hauling point.	Batch discarding if possible on the opposite side.	Baits may be discarded at times to reduce risk to birds, for example to distract them from a dropped snood.	So far we have not had any captures on the haul. If birds do present a problem in the future other methods will be developed.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	Weights may also be used in a reactive "free-style" manner over and above the routine listed.	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.
29	1 or more kg lead / 50 hks	3 mm Dyneema with tubing streamers. 9 mm rope, floats, and road cone as drag. Deployed from mast at approximately 6 m height.	Lighting will be reduced to the minimum needed for safe setting.		Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Baits and offal are retained and discarded after hauling.	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 pay out some line to ensure no baited hooks are near the surface.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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 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.	If a bird is visibly observed caught on the surface we will immediately deploy a 2kg+ weight onto the mainline to prevent further captures.		
30	**Setup 1:** 1 + kg steel / 25 hks **Setup 2:** 1 or more kg steel / 12 hks 3 bobbin floats on 3 m rope used sometimes	Thicker rope at boat then 6mm with strapping and tubing streamers, large road cone as drag. Pole on aft end of shelter deck to keep it central.		Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Baits may be retained or discarded to minimise risk to birds (for example distracting birds from a dropped snood).	The speed of hauling is discouraging to birds gathering around the hauler.	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	Weights may also be used in a reactive "free-style" manner over and above the routine above.	If birds 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.		

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
31	**Setup 1:** 1 kg lead / 30 hks Floats used occasionally **Setup 2*:** 1 kg lead / 15 hks	3 mm Dyneema aerial section with tubing streamers. 9 mm rope, floats and cone as drag. Deployed from tori pole.	Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	The areas and times where there is likely bird interaction are well known to us; which influences the subsequent actions.	Set before dawn (identified as the vessel's principle mitigation method).	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	Returned baits will be retained in a fish bin when either shearwaters or petrels are around.	On this vessel we encourage red billed gulls during hauling as they out compete the petrels and shearwaters causing them to lose interest.	Baits may be discarded at times to reduce risk to birds (for example distracting them from dropped snoods).	If we have a break in hauling we will ensure that no baited hooks are left near the surface.	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.	
32	**Setup 1:** 3 or more kg steel / 12-13 hks (more at night)	Thin rope with tubing streamers and low drag float.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul.	At times baits may be discarded to minimise risk to birds (for example distracting birds from a dropped snood).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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 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.				
33	**Setup 1:** 5 kg steel / 25 hks **Setup 2:** 5 kg steel / 25 hks 1 float / weight **Setup 3:** 10 kg steel / 50 hks 2 floats / weight	8 mm rope, tubing streamers, then 12 mm rope and road cone as drag	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul.	At times baits may be discarded to minimise risk to birds (for example distracting birds from a dropped snood).	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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 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.	If a bird is visibly observed caught on the surface we will immediately deploy a 2 kg+ weight onto the mainline to prevent further captures.			
34	**Setup 1:** 3 or more kg / 50 hks Floats with and between weights **Setup 2:** 3 or more kg / 25 hks Floats with each weight	Thin rope with tape and tubing streamers. Road cone and floats as drag with intermediate floats added as well.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold old baits in a fish bin during the entire haul and/or discard away from the hauling station.	Baits may be retained or discarded to minimise risk to birds (e.g. 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	Extra weights and will be used reactively in response to bird activity near the line.	Setting speed is reduced to sink the line closer to the boat and so improve tori line coverage if necessary.	If birds gain access to the bait entry point a weight will be deployed and clipping on suspended until birds have left the danger zone.	If all measures are visibly not working i.e. birds are continually overcoming the tori line and getting to the bait entry point the vessel will stop setting.			

Vessel	Measure 1: Gear setup	Measure 2: Tori line	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14	Measure 15
35	**Setup 1:** Four 0.9 kg weights / 50 hks **Setup 2:** 1 larger weight/ 50 hks Floats with weights	Dyneema, tubing and tape streamers, then 9 mm rope floats and road cone as drag	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	If we feel that the risk to birds will be reduced we will hold returned baits onboard until the end of the haul.	We will discard returned baits away from hooks being hauled.	At times 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.	We may increase weighting when the risk to birds is thought to be high.	We may reduce setting speed to sink the gear closer to the boat when the risk to birds is thought to be high.	If birds overcome the tori line, gain access to the bait entry point, and are seen repeatedly diving on baits then we will stop clipping on until they have left area immediately astern.	If birds are continually overcoming the tori line and diving repeatedly on the line we will stop setting.		
36	**Setup 1:** 3 kg steel / 25/50 hks 1 float / 60 m **Setup 2:** 3 kg steel / 25/50 hks 1 float / 25 hks	Floating braided rope with tubing streamers and polystyrene float as towed object.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul.	At times 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 pay out some line to ensure no baited hooks are near the surface.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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 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.	If a bird is visibly observed caught on the surface we will immediately deploy a 2kg+ weight onto the mainline to prevent further captures.			
37	**Setup 1:** 3 or more kg steel / 25 or 50 hks **Setup 2:** 3 or more kg steel / 25 or 50 hks Floats with every weight	3 mm Dyneema with tubing and tape streamers. 9 mm rope, floats, and road cone as drag. Twin toris can be deployed from two composite poles at approximately 6 m height.	Twin tori lines may be used.	Lighting will be reduced to the minimum needed for safe setting.	Offal, bait and fish waste discharge managed to minimise risk.	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting.	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul.	At times 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 pay out some line to ensure no baited hooks are near the surface.	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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 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.	If a bird is visibly observed caught on the surface we will immediately deploy a 2kg+ weight onto the mainline to prevent further captures.		

Appendix 5. Summary of measures included in Protected Species Risk Management Plans for bottom longline vessels in the liaison programme, 2018/19. Vessel numbering follows 2017/18. Vessels with * did not have a PSRMP update in 2017/18. (Liaison officers: D. Goad, N. Hollands; hks = hooks)

Vessel	Measure 1: Gear setup	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13
1	10.5-12.5kg steel every 74 hooks (150 m) with 150 mm bombie at each weight and two in between weights	Tori line	Spare parts onboard	Night-setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Light during set is minimal and largely contained within the vessel	Extra weight can be used at times to respond to bird activity	Returned baits are held until the end of the haul then batch discharged.					
3	1-2kg steel or lead 12 hks (50 m) 120mm floats placed according to terrain	Tori line	Spare parts onboard	Night and day sets	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	Old baits and offal held during the haul, or discarded on opposite side of vessel, or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	Increase line sink rate (add extra weights) if birds thought to be at risk.	If we have a break in hauling we will ensure no baited hooks are near the surface	If all measures have been employed and are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.			
4	<u>Setup 1:</u> 3 kg+ steel / lead 25 hks / 75m <u>Setup 2:</u> 3 kg+ steel / lead 50 hks / 150 m 100mm float with weight Setup 3: 3kg+ steel / lead 17 hks / 50 m	Tori line	Tori line spare parts carried	Night and day sets	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	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface				
5	<u>Setup 1:</u> 2kg steel every 25 hooks (110 m) <u>Setup 2:</u> 2kg steel every 25 hooks (110 m) with egg floats every 12 hooks (55 m) on the foul	Tori line	Spare parts onboard	Night-setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Light during set is minimal and largely contained within the vessel	More weight can be used if a faster sink rate is required (e.g. perceived risk of bird capture)	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.	During hauling, baits may be batch discharged to minimise risk to birds (e.g. distract birds from dropped snood).	Hold baits and offal and discharge when not hauling	If we have a break in hauling we will ensure no baited hooks are near the surface.		
7		Tori line	Tori line spare parts carried	Night and day sets	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	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface				
8	0.75 – 2 kg Metal 8 hks / 32 m	Multiple tori lines used	Tori line spare parts carried	Night and day sets	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	Old baits retained for the duration of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface	Sharks processed and offal discarded at end of hauling			

Vessel	Measure 1: Gear setup	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13
10	5-6kg steel 25-50 hks 150mm floats every 25 hks	Tori line	Spare parts onboard	Night-setting	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	Old baits and offal held during the haul, or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	Extra weight can be used at times in response to bird activity.	If we have a break in hauling we will ensure no baited hooks are near the surface	If birds overcome the tori line, gain access to the bait entry point, and are seen repeatedly diving on baits then we will stop clipping on until they have left the area immediately astern.	If birds are continually overcoming the tori line and getting to the bait entry point and diving repeatedly on the line we will stop setting.		
12	0.75kg steel or lead Every 28 hks	Tori line	Spare parts onboard	Night-setting	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	Old baits and offal held during the haul, or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	We will reduce weight spacing to every 14 hooks is birds are present and showing interest in the line.	If we have a break in hauling we will ensure no baited hooks are near the surface	Discard returned baits away from the hauling station.	If all measures are in place and birds are still diving close to the line, we will stop setting.		
13	<u>Setup 1:</u> 3-5kg steel every 16 hooks (40 m) <u>Setup 2:</u> 2-5kg steel every 16 hooks (40 m), 4 small eggs/2 large eggs with one float every second weight <u>Setup 3:</u> 5-9kg steel every 33-66 hooks (66 – 132 m), one 150 mm float every second weight	Tori line	Spare parts onboard	Night-setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduce lighting to minimum needed for safe setting	More weight can be used if a faster sink rate is required (i.e. perceived risk of bird capture observed)	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.	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul.	During hauling, at times 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 no baited hooks are near the surface.	
14	3-14kg steel every 33/66 hooks (66-132 m), 1-3 150 mm floats between weights	Tori line	Spare parts onboard	Night and day setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Light during set is minimal and largely contained within the vessel	All weight strings are unwound and weights deployed before clipping on so the weight has an immediate effect.	We generally set buoy ropes slack to maximise the sink rate.	We will monitor the sink rate of the line and increase weighting if the risk of capture is thought to be high.	Double weighting is employed for afternoon sets if a higher sink rate is required.	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.	We will discard returned baits away from the hauling station. 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 pay out some line to ensure no baited hooks are near the surface.
15	0.7 kg Metal 12 hks / 48 m	Tori line	Tori line spare parts carried	Night and day sets	No bait pieces, whole fish or offal discarded ≥ 1 h before, or during, setting	We will reduce lighting to the minimum needed for safe setting	Offal / old baits held during the haul and discarded on completion of the haul	Baits may be retained or discarded to minimise risk (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface				

Vessel	Measure 1: Gear setup	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13
17	<u>Setup 1:</u> 2.2kg steel 50 hks (4.5 knots/100m) <u>Setup 2:</u> 2.2kg steel 25 hks (4.5 knots/50m)	Tori line used. An intermediate float may also be used as a secondary tori particularly if cross winds are blowing the tori line off the mainline.	Spare tori line onboard	Night and day sets	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	The vessel retains baits during the haul and these are batch discarded on the opposite to the hauler.	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface	Weights may also be used in a reactive "free-style" manner. 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 birds have left the danger zone.	Extra weighting will be carried to cover increased usage such that if no birds were present and no extra weighting took place, these weights will be left at the end of setting.	If birds continually cause a problem around the hauling point, and are thought to be a risk from capture, a buoy will be towed near to the hauling point and / or the deck wash used as a deterrent.	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.
19	1kg rock, lead or steel Every 12 hks	Tori line	Spare parts onboard	Night and day sets	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduced lighting on setting	Will hold baits if discarding creates risk to seabirds	Add extra weight in response to bird behaviour and capture risk	If we have a break in hauling we will ensure no baited hooks are near the surface	A float is towed at times to deter birds from the hauling station.	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.		
22	<u>Setup 1:</u> 1+ kg Lead 30 hks / 120 m 100 mm float with weight <u>Setup 2:</u> 1+ kg Lead 15 hks / 60 m 100 mm float with every second weight	Tori line with flapper boards used	Tori line spare parts carried	Night and day sets	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	Offal / old baits held during the haul and discarded away from the hauling station	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface	A larger than normal weight will be deployed when turning, to sink the line rapidly until the tori line is back on track.			
23	<u>Setup BNS:</u> 4-5 kg steel 30 or 45 hks / 60 or 90 m 150 mm floats Either with weight or 1 or 2 floats between weights <u>Setup LIN:</u> 4-5 kg steel 30 hks / 60 m 150 mm float either with weight or 1 between weights	Toi line	Tori line spare parts carried	Night and day sets	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	Old baits held during the haul and discarded away from the hauling station	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface	Processing carried out at end of haul.			

Vessel	Measure 1: Gear setup	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13
24	**Setup 1:** 6.5kg steel every 50 hooks (150 m) with 150 mm floats every weight and eggs in between weights **Setup 2:** 6.5kg steel every 50 hooks (100 m) with 150 mm floats every weight and eggs in between weights **Setup 3:** 11kg steel every 50 hooks (100 m) with 150 mm floats every weight, eggs in between weights	Tori line	Spare parts onboard	Night-setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduce lighting to minimum needed for safe setting	More weight can be used if a faster sink rate is required. i.e. a perceived risk of bird capture is observed.	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.	We will hold offal / old baits in a fish bin during the entire haul and discard on completion of the haul.	At hauling times, baits may be discarded to minimise risk to birds (for eg: distracting birds from a dropped snood)	If we have a break in hauling we will pay out some line to ensure no baited hooks are near the surface.	
25	**Setup 1:** 3kg+ steel Every 25 or 50hks None or 150 mm float placed with weight **Setup 2:** 3kg steel Every 50 hks, 150 mm float placed with weight	Tori line	Spare parts onboard	Night and day sets	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduced lighting on setting	Old baits and offal held during the haul, or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	Stop setting if birds diving on the line	If we have a break in hauling we will ensure no baited hooks are near the surface				
30	**Setup 1:** 1kg+ steel 50 hks / 60 m **Setup 2:** 1 kg+ steel 12 hks / 24 m **Setup 3:** 1kg+ steel 50 hks / 60m 120mm float **Setup 4:** 2 kg+ steel 40 hks / 40m 150mm	Tori line	Spare parts onboard	Night and day sets	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	Old baits and offal held during the haul and discarded at the end of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface	Weights may be used reactively. If birds access the bait entry point, a weight will be deployed and clipping on suspended until birds have left the danger zone.	Extra weighting will be carried to cover increased usage.	If all measures have been employed and are visibly not working i.e. birds are continually diving close to the line, then we will stop setting.	
32	**Setup 1:** Day 3-5kg steel every 12 hks (25 m) **Setup2:** Night 3-5kg steel every 50 hks (75 m) 150 mm floats every 50 hks (75 m) **Setup 3:** Day 3-5kg steel every 25 hooks (75 m) **Setup 4:** Night 3-5kg steel every 50 hks (150 m) 150 mm floats every 50 hks (150 m)	Tori line	Spare parts onboard	Night and day sets	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduced lighting on setting	Old baits and offal held during the haul, or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	More weights used if a risk of bird capture observed	If we have a break in hauling we will ensure no baited hooks are near the surface (by letting our line with no hooks)	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.			

Vessel	Measure 1: Gear setup	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13
33	**Setup 1:** 3-5kg steel every 12-25 hks (35-75m) **Setup 2:** Night 5kg steel every 50 hks 150 mm float per weight **Setup 3:** 5kg steel every 25 hks 150 mm float with weight/eggs btwn floats	Tori line	Spare parts onboard	Night and day sets	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduced lighting on setting	Old baits and offal held during the haul, or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	More weights used if a risk of bird capture observed	If we have a break in hauling we will ensure no baited hooks are near the surface (by letting our line with no hooks)		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.		
34	**Setup 1:** 3kg+ steel 50 hks / 150 m 150 mm float with weight or 3 at 90 x 60 mm between weights **Setup 2:** 3kg+ Steel 25 hooks / 75 m 150 mm with weight	Tori line	Tori line spare parts carried	Night and day sets	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	Old baits held during the haul and discarded at the end of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface				
35	**Setup 1:** 1-4kg steel, 13/25/38 hooks (60/110/170 m) **Setup 2:** 1-4kg steel, 13/25/38 hooks (40/75/115 m) with 2 small eggs every 25 hooks (75 m) and bombie every 50 hooks (150 m)	Tori line	Spare parts onboard	Night-setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Light during set is minimal and largely contained within the vessel	Overlap with birds at the set is generally rare due to fishing pattern.	Reduce weight spacing to every 14 hooks	During hauling, baits retained or discarded to minimise risk to birds (e.g. distract birds from dropped snood).	Returned baits discarded away from hauling station.	If we have a break in hauling we will ensure no baited hooks are near the surface.		
36	**Setup 1:** 3kg steel every 25 hks **Setup 2:** 3kg steel and 150 mm float every 25-50 hks **Setup 3:** 3kg steel and 150 mm float every 50 hks	Tori line	Spare parts onboard	Night and day sets	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduced lighting on setting	Old baits and offal held during the haul and discarded when birds are not visible	More weights used if a risk of bird capture observed	If we have a break in hauling we will ensure no baited hooks are near the surface		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.		
37	**Setup 1:** 3 kg+ steel 25 hks / 90 m **Setup 2:** 3 kg+ steel 25 hks / 90 m 100 mm float with weight	Tori line	Tori line spare parts carried	Night and day sets	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	Old baits and offal held during the haul and discarded at the end of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface				

Vessel	Measure 1: Gear setup	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13
7*	6 kg + steel 50 hks / 100 m 100 mm floats 4 between weights	Tori line	Tori line spare parts carried	Night and day sets	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	Old baits held during the haul and discarded at the end of the haul	Baits may be retained or discarded to minimise risk to birds (e.g. distracting birds from a dropped snood)	If we have a break in hauling we will ensure no baited hooks are near the surface	Processing occurs and offal is discarded after hauling completed	Whole fish discards are discharged during hauling	Circle hooks are used	
20*	1kg rocks every 12 hooks (36 m)	Tori line	Spare parts onboard	Night and day sets	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Reduced lighting on setting	Old baits held during haul; discarded at end of each line or end of day's fishing	Baits may be batch discharged to minimise risk to birds (e.g. distract birds from dropped snood)	Live fish discards released immediately at hauling station	Whole dead fish discharged on off-side or when not fishing	Shark offal discharged when not fishing	If we have a break in hauling we will ensure no baited hooks are near the surface	
24*	4kg concrete every 32 hooks (64 m) 150 mm float every 16 hooks (32 m)	Tori line	Spare parts onboard	Night-setting	No bait pieces, whole fish or offal will be discarded for at least one hour before, or during, setting	Light during set is minimal and largely contained within the vessel	Extra weight is available to add to the line if the perceived bird risk is high, i.e. diving on baits and increased abundance.	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.	During hauling, baits may be retained or discarded to minimise risk to birds (e.g. distract birds from dropped snood)	We will discard returned baits away from the hauling station, if at all.	If we have a break in hauling we will ensure no baited hooks are near the surface.		

Appendix 6. Summary of measures included in Protected Species Risk Management Plans for surface longline vessels, 2017/18. (Liaison officers: J. Cleal, G. Murman)

Vessel	Measure 1	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14
1	Tori line used (deployed from tuna poles).	Spare parts for tori line onboard.	60 g lead swivels	Lines set at night.	Thawed bait used.	Bait and offal retained during setting.	Used bait retained during hauling.	Line shooter present onboard.	Managed aft spotlights.				
2	Tori line used.	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No discharge when setting and hauling.	Used bait retained.	Managed aft spotlights.						
3	Tori line used.	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No offal discharge during setting.	Used bait retained during hauling.	Managed aft spotlights.	Increase gear sink rate on setting using slower setting speed.					
4	Tori line used.	Spare parts for tori line onboard.	60 g leads 3 m from hook.	Lines set at night.	Day sets undertaken with weights on traces.	Thawed bait used.	No discharge during setting.	Offal batch-discharged.	Lights kept low and aft spotlights managed.	Increase gear sink rate on setting using trace/snood weights.			
5	Tori line used.	Spare parts for tori line onboard.	Weight at clip.	Lines set at night.	Thawed bait used.	Offal retained at setting.	Used bait retained at hauling.	Fish waste batch discharged.	Managed aft spotlights.				
6	Tori line used. (Adjustable with a lazy line).	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights.	Aim to increase gear sink rate on setting when required (using slower setting speed).				
7	Tori line used. (Supplied by D. Goad).	Spare parts for tori line onboard. Spare tori line also onboard.	60 g 2 m from the hook	Lines set at night.	Lines set in day with weights on snoods.	Thawed bait used.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Aft light focused down onto deck.			
8	Tori line used.	Spare parts for tori line onboard.	60 g at clip.	Lines set at night.	Thawed bait used.	Blue-dyed bait used as / when required.	No discharge when setting.	Used baits retained.	Offal batch discharged during hauling.	Managed aft spotlights. Reduce lighting when setting.	Aim to increase gear sink rate on setting when required.		
9	Tori line used.	Spare parts for tori line onboard.	50% of snoods have 60 g lumo leads at 3.5 m from the hook.	Lines set at night.	Can set in day with lumo leads.	Thawed bait used.	Dyed bait used.	Managed aft spotlights.	Small hand-held laser device				
10	Tori line used. Rope used for the drag component.	Spare parts for tori line onboard.	Weight at clip.	Lines set at night.	Thawed bait used.	Has onboard. Blue-dyed bait used when required.	Hold used baits and discharge on opposite side to hauling bay.	Managed aft spotlights.	Aim to increase gear sink rate on setting if/when required (by reducing setting speed).				
11	Tori line used.	Spare parts for tori line onboard.	60 g lumo lead near hook.	Lines set at night.	Can set in day with lumo leads.	Thawed bait used.	Blue-dyed bait used.	No discharge on setting.	Batch discharge offal.	Used baits retained on hauling.	Managed aft spotlights. Aft spotting dim.		

Vessel	Measure 1	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14
12	Tori line used.	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No discharge on setting.	Batch discharge offal during hauling.	Used baits retained on hauling.	Line shooter used when required.	Managed aft spotlights - lights dimmed.	Aim to increase gear sink rate on setting if/when required (by reducing setting speed).			
13	Tori line used.	Spare parts for tori line onboard.	60 g lumo leads.	Lines set at night.	Can set in day with lumo leads if required.	Thawed bait used.	Blue-dyed bait used when required.	No discharge on setting.	Batch discharge offal during hauling.	Used baits retained on hauling.	Managed aft spotlights.	Aim to increase gear sink rate on setting if/when required (by reducing setting speed).	Small hand-held laser device
14	Tori line used.	Spare parts for tori line onboard.	50% of snoods have weight at clip. 50% lumo leads on traces.	Lines set at night.	Thawed bait used.	Blue-dyed bait used.	Retain used baits.	Batch discharge during hauling.	Managed aft spotlights.	Aim to increase gear sink rate on setting (lumo leads).	Trialling a laser device.		
15	Tori line used.	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No discharge on setting.	Managed discharge of offal and bait.	Managed aft spotlights.	Increase gear sink rate on setting (by reducing setting speed).					
16	Tori line used. Monofilament approx. 300 m in length.	Spare parts for tori line onboard.	60 g lead swivel at 3 m from hook.	Lines set at night.	Lines set in day.	Thawed bait used.	Carries dye onboard. Blue-dyed bait used when required.	No discharge on setting.	Used baits retained on hauling.	Increase gear sink rate on setting: side shooting			
17	Tori line used.	Spare parts for tori line onboard.	Thawed bait used.	No discharge on setting.	Used baits retained on hauling.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).						
18	Tori line used.	Spare parts for tori line onboard.	Lead swivel	Lines set at night.	Thawed bait used.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).			
19	Tori line used.	Spare parts for tori line onboard.	60 g at clip	Lines set at night.	Thawed bait used.	Blue-dyed bait sometimes used as required.	No discharge when setting.	Fish waste batch discharged.	Waste thrown offside.	Managed aft spotlights.	Aim to increase gear sink rate on setting: weight off drum and reduce vessel speed.		
20	Tori line used.	Spare parts for tori line onboard.	60 g at 1.2 m from hook.	Lines set at night.	Lines set in day with weights.	Thawed bait used.	Managed discharge when required.	Managed aft spotlights.	Aim to increase gear sink rate on setting: weights as described.				
21	Tori line used.	Spare parts for tori line onboard.	100% of snoods fitted with 60 g lumo leads.	Lines set at night.	Can set in day with lumo leads.	Thawed bait used.	Blue-dyed bait used when required.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights.		

Vessel	Measure 1	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12	Measure 13	Measure 14
22	Tori line used.	Spare parts for tori line onboard.	50% of snoods have lumo leads.	Lines set at night.	Thawed bait used.	No discharge when setting.	Distract seabirds from hooks with used baits.	Fish waste batch discharged.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).			
23	Tori line used.	Spare parts for tori line onboard.	Weight at clip.	Lines set at night.	Thawed bait used.	No discharge on setting.	Used baits retained on hauling.	Offal batch discharged.	Managed aft spotlights. (Aft lights dimmed).	Aim to increase gear sink rate on setting when required (by reducing setting speed).			
24	Tori line used.	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No offal discharge on setting.	Used baits retained on hauling.	Offal batch-discharged on hauling.	Line shooter used when required.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).			
25	Tori line used. D. Goad design with pole/mast.	Spare parts for tori line onboard.	50% of snoods with hook pods.	Lines set at night.	Thawed bait used.	Used baits retained.	Managed aft spotlights.						
26	Tori line used.	Spare parts for tori line onboard.	Snoods fitted with 40 g and 60 g weights.	Lines set at night.	Lines set in day.	Thawed bait used.	No discharge on setting.	Used baits retained on hauling.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).			
27	Tori line used.	Spare parts for tori line onboard.	60 g at 3 m from the hook.	Lines set at night.	Lines set in day with weights.	Thawed bait used.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights (minimal lighting).			
28	Tori line used.	Spare parts for tori line onboard.	60 g lumo leads	Lines set at night.	Can set in day if required.	Thawed bait used.	Blue-dyed bait used on moon if/when increased risk of seabird captures.	No discharge on setting.	Used baits retained on hauling.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).		
29	Tori line used.	Spare parts for tori line onboard.	Weighted traces, swivels. Snood weights 60 g.	Lines set at night.	Lines set during day with trace weights.	Thawed bait used.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights.	Aim to increase gear sink rate on setting. Snood weights 60 g.		
30	Tori line used. D. Goad model.	Spare parts for tori line onboard.	60 g at 2 m from hook.	Lines set at night.	Lines set in day with weights.	Thawed bait used.	Blue-dyed bait used occasionally.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights. Lights are low and not on the line. Focused on the deck.	Aim to increase gear sink rate on setting. Snood weights 60 g.	
31	Tori line used.	Spare parts for tori line onboard.	Weight at clip.	Lines set at night.	Thawed bait used.	Carries dye onboard. Blue-dyed bait used when required.	No discharge on setting.	Used baits retained on hauling.	Managed aft spotlights.	Aim to increase gear sink rate on setting (by reducing setting speed).	Rope and float used as haul mitigation.		
32	Tori line used.	Spare parts for tori line onboard.	Lines set at night.	Thawed bait used.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Line shooter used at times.	Managed aft spotlights.				
33	Tori line used.	Spare parts for tori line onboard.	100% of snoods fitted with 60 g lumo leads.	Lines set at night.	Can set in day with lumo leads.	Thawed bait used.	Blue-dyed bait used when required.	No discharge when setting.	Used baits retained.	Fish waste batch discharged.	Managed aft spotlights.		

Appendix 7. Summary of measures included in Protected Species Risk Management Plans for surface longline vessels, 2018/19. Vessel numbering follows 2017/18. Vessels with * did not have a PSRMP issued in 2017/18. (Liaison officers: J. Cleal, D. Goad, N. Hollands)

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12
2	Unweighted	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Hold used baits until haul completed or hold and batch discharge when hauling.	Increase setting gear sink rate if multiple captures on setting (high risk periods)	Dim aft lights to safe standard.			
4	60 g lead swivels 3 m from hook	Tori line	Spares onboard	Night setting	Thawed bait	Blue dyed bait used	No discharge when setting	Batch discharge during hauling or held until after haul	Minimised lighting for shooting			
6	Unweighted	Tori line (adjustable)	Spares onboard	Night-setting	Thawed bait	No discharge when setting	Baits held on hauling	Batch discharge of fish waste (at haul)	Increase setting gear sink rate by reducing setting speed when required (high risk of increased captures)	Spotlights not brightly shining astern.		
7	60 g at 2 m from hook (SWO) Unweighted (Tuna)	Tori line	Spares onboard	Day or night set (SWO) Night set (Tuna)	Thawed bait	Managed fish waste discharge						
11	60 g lumo leads	Tori line	Spares onboard	Night-setting and can day set	Thawed bait	Blue-dyed bait	Batch discharge offal at hauling.	Hold baits at hauling.	No discharge when setting.	Aft spotlights dimmed.		
12	Unweighted	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Hold and batch discharge offal when hauling.	Hold used baits for discharge at end of haul.	May slow setting speed to increase setting gear sink rate during high risk periods or after trigger reached.	Dim aft lights to safe standard.		
13	60 g lumo leads	Tori line	Spares onboard	Night-setting and can day-set if required	Thawed bait	Blue-dyed bait when required	No discharge on setting	Baits held on hauling	Offal batch discharged.	No bright spotlights shining astern on setting.	Laser (small handheld)	
14	50% of traces fitted with lumo leads	Tori line	Spares onboard	Night setting	Thawed bait	Blue dyed bait used	Batch discharge during haul or after haul	Minimised lighting for shooting	Increase setting gear sink rate (50% snoods have 60g weights at clip)			
15	Unweighted	Tori line	Spares onboard	Night setting	Thawed bait	No discharge on setting	Baits and offal discarded as hauling	Managed aft spot lights	Increase setting gear sink rate			
18	60 g lead swivel at 1.8 m from hook (SWO) Hook unweighted; 60 g lead swivel at clip (Tuna)	Tori line	Spares onboard	Day or night set with weighted gear Night setting unweighted (i.e. tuna) gear	Thawed bait	No discharge on setting	Whole fish discarded at hauling station	Offal held and batch discharged on leeward side	Returned baits held and discharged at end of haul	Line shooter used	Blue bait used at times	Lights contained under shooting shelter and switched off when not in use
21	30% of snoods have 30/40 g lead weight at the hook	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Hold and batch discharge offal on opposite side when hauling.	Hold used baits for discharge at end of haul.	May increase setting gear sink rate by reducing setting speed during high risk periods.	Dim aft lights to safe standard.		
22	Approx. 50% of snoods with 40 g sliding weight 0 – 2 m from hook	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Whole fish discarded immediately at hauling station	Offal batch discharged on off-side	Baits batch discharged, or discharged away from hauling station to distract birds	Lighting contained to during set and switched off when not in use		
23	Unweighted	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Hold in pound or bins and batch discharge when hauling.	Hold used baits for discharge at end of haul.	Increase setting gear sink rate during high risk periods if required.	Dim aft lights to safe standard.		
24	Unweighted	Tori line	Spares onboard	Night setting	Thawed bait	No discharge during setting	Used bait retained during hauling	Batch discharge during hauling	Managed aft spotlights	Line shooter used when required	Slow vessel to increase sink rate of gear on set	

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10	Measure 11	Measure 12
25	Approx 30% of gear 60 g lumo leads ≤ 2 m from hook	Tori line	Spares onboard	Night setting	Thawed bait	Hold and batch discard used bait	Offal discarded when processing	Managed aft spot lights				
26	Snood set 1: 60 g swivel or 60 g lumo at 3.5 m from hook Snood set 2: Unweighted	Tori line	Spares onboard	Day set with weighted gear Night setting unweighted gear	Thawed bait	Bait and offal batch discharged	No discharge on setting	Managed aft spot lights	Increase setting gear sink rate			
28	60 g lumo leads	Tori line	Spares onboard	Night-setting and can day-set if required	Thawed bait	Blue-dyed bait on moon / if increased risk	No discharge on setting	Baits held on hauling	Increase setting gear sink rate by reducing setting speed during high risk periods.	Light brightness at stern reduced.		
29	Fixed 60 g swivels at 1.8 m from hook	Tori line	Spares onboard	Day and night setting (day mostly)	Thawed bait	No discharge on setting	Whole fish discarded immediately at hauling station	Offal discarded or held and batch discharged	Returned baits discarded or held and batch discharged	Light brightness at stern reduced.		
30	60 g swivels 2 m from hook (SWO) Unweighted (Tuna)	Tori line	Spares onboard	Day or night set with weighted gear Night setting unweighted gear	Thawed bait	Bait and offal batch discharged	Offal discarded when processing	Increase setting gear sink rate	Blue dyed bait used occasionally			
31	Unweighted	Tori line	Spares onboard	Night setting	Thawed bait	Carries blue dye and will use if necessary	No discharge of offal during setting	Baits held at haul and batch discharged	Minimised lighting for shooting	Increase setting gear sink rate (60g weights at clip)		
32	Unweighted	Tori line	Spares onboard	Night setting	Thawed bait	Managed fish waste discharge	Managed aft spotlights	Line shooter may be used				
33	60 g lumo leads near hook	Tori line	Spares onboard	Night-setting and can day set	Thawed bait	Blue-dyed bait when required	No discharge on setting	Baits held on hauling	Hold or batch on hauling.	Lights not shone brightly astern.		
L*	Weight at clip only	Tori line	Given new materials by LO (a new vessel)	Night-setting	Thawed bait	No discharge when setting	Baits held during hauling	Fish waste batch discharged at haul	Increase setting gear sink rate by reducing vessel speed when required (high risk periods)	No bright spotlights shining astern when setting.		
T*	80% of snoods with 38 g weight at hook	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Hold and batch discharge offal when hauling.	Hold used baits for discharge at end of haul.	Reduce lighting astern when setting.	May increase setting gear sink rate by reducing setting speed during high risk periods.	During high risk periods or after trigger point, may change set direction to set downwind.	
W*	Unweighted	Tori line	Spares onboard	Night-setting	Thawed bait	No discharge on setting	Hold and batch discharge offal when hauling.	Hold used baits for discharge at end of haul.	Increase setting gear sink rate if multiple captures on setting	Dim aft lights to safe standard.		
X*	Unweighted	Tori line	Spares onboard	Night-setting	Thawed bait	Blue dyed bait when required by skipper at high risk times.	No discharge on setting	Hold in pound or bins and batch discharge offal from opposite side when hauling.	Hold used baits for discharge at end of haul.	Line shooter keeps tension steady (helps with even sink rate).	May slow setting speed to increase setting gear sink rate during high risk periods if required.	Reduced light astern when setting.

Appendix 8. Summary of measures included in Protected Species Risk Management Plans for coastal trawl vessels, 2017/18. (Liaison officer: G. Parker)

Vessel	Measure 1	Measure 2	Measure 3	Measure 4
1	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.	
2	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.
3	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.	
4	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.	
5	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.	
6	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.	
7	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.	
8	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.	
9	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.	
10	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.	
11	Two buoys attached to the warp.	No fish waste discharged during shooting and hauling.	Fish waste retained during towing if possible.	
12	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.	

Appendix 9. Summary of measures included in Protected Species Risk Management Plans for coastal trawl vessels, 2018/19. Numbering of vessels shown with T# is consistent with 2017/18. (Liaison officers: J. Cleal, D. Goad, N. Hollands, G. Parker)

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
T2	All offal binned and dumped at end of tow.	Discards into bin and discharged from scupper when no gear in water.	Two buoys deployed when needed (not always both sides)							
T3	No discards while shooting and hauling	Batch discharge during towing until no gear in water, then dump	Running float clipped to warp for warp protection							
T4	Guts collected, batched	All other discards off stern – interacts with prop wash and becomes available to birds aft of warps								
T5	Hold offal in fish bins for dumping during towing									
T6	No discarding during shooting or hauling	Skates thrown aft of warps	Guts (flats) in a bin	All other waste dumped into stern area and generally surfaces aft of warps						
T8	Batch discard when towing	Cone or fish bin on warp for protection								
T9	Only discard when all gear onboard vessel	Vessel uses cones on warp								
T10	Bin offal for discharge when gear not in water	Will trial batching other non-commercial discards								
T12	Deploys one fish case on each warp as warp protection	Uses highly visible bright yellow warp rope	No discard management as skipper found batch discharge attracts birds to warp/water interface							
1	No material is discarded when shooting or hauling	Offal (shark processing) is held and batch discarded	Whole fish are discarded off the starboard side when towing	Five inch mesh minimises discards	All warp splices are smooth to minimise the chance of snagging birds	Nets are cleaned and stickers are removed as far as practical before shooting	Where nets must be towed on the surface (e.g. for mending) they will be cleaned as far as practical first	Surface time for nets is minimised to extent practical		
2	No material is discarded when shooting or hauling	Sharks are processed after sorting and offal is batch discarded	Live fish are discarded as soon as practical	Dead whole fish discards are discarded towards the end of sorting	A mitigation device is deployed in front of the warps all trip	All wire splices are wrapped	Nets are cleaned and stickers are removed as far as practical before shooting	Where nets must be towed on the surface (e.g. for mending) they will be cleaned as far as practical first	Surface time for nets is minimised to extent practical	
3	Live fish and fish that must be RTS are discarded when hauling and during sorting, as soon as practical once bag opened	Other whole fish discarded during sorting, when not shooting or hauling	Sharks processed when not shooting or hauling; offal discarded directly overboard	Stabiliser arms on both sides of vessel; in front of trawl warps when fishing	Baffler booms deployed from gantry when fishing	No wire splices within 2 m of water surface when towing	Nets are cleaned and stickers are removed as far as practical before shooting	Where nets must be towed on the surface (e.g. for mending) they will be cleaned as far as practical first	Surface time for nets is minimised to extent practical	
4	No continuous discharge while towing. Held in fish bins and batch discharge at intervals or after tow ends.	No discharge during shooting and hauling.	Discharge away from path of warp.	If discharge occurs in warp area and birds are present, a warp mitigation device is deployed.	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Return fish to sea alive as required		

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
5	No continuous discharge while towing. Batch discharge from fish bins or fish pound, at intervals or end of tow.	No discharge during shooting and hauling.	Discharge away from path of warp.	If discharge occurs in warp area and birds are present, a warp mitigation device is deployed.	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Return fish to sea alive as required		
6	No continuous discharge while towing. Batch discharge at intervals or end of tow. (Fish waste held in bins mostly on truck deck).	No discharge during shooting and hauling.	Discharge over stern away from path of warp.	If discharge is required in warp path and birds are present, a warp mitigation device is deployed.	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Return fish to sea alive as required		
7	No continuous discharge while towing. Batch discharge at intervals.	No discharge during shooting and hauling.	Discharge away from path of warp.	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Return fish to sea alive as required			
8	No continuous discharge while towing. Batch discharge at intervals. Fish waste held in fish pound or bins.	No discharge during shooting and hauling.	Discharge over stern away from path of warp.	If discharge into warp path and birds are present, a warp deflector (steel roller/tube) is used.	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Return fish to sea alive as required.		
9	No continuous discharge while towing. Batch discharge at intervals or after tow. Fish waste held in fish pound or bins.	No discharge during shooting and hauling.	Minimise time fish waste enters path of warp.	Warp mitigation used continuously while towing. (Side poles / booms with warp droppers and side curtain with streamers).	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.				
10	No continuous discharge while towing. Batch discharge at intervals.	No discharge during shooting and hauling.	Aft baffler deployed at all times (24/7).	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Return fish to sea alive as required.			
11	No continuous discharge while towing. Batch discharge at intervals or after tow ends. Fish waste held in fish pound or bins.	No discharge during shooting and hauling.	Minimise time fish waste enters path of warp.	Warp mitigation deployed if a warp capture has occurred, when cutting/gutting bycatch, or if discharging continuously.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.				
12	No continuous discharge while towing. Batch discharge at intervals.	No discharge during shooting and hauling.	Aft baffler with droppers and side curtain deployed 24/7 outside of hoki season.	Net stickers removed as practicable before shooting.	Time gear on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.				
13	No continuous discharge while towing. Batch discharge during tow, from port fish pound.	No discharge during shooting and hauling.	Minimise time fish waste enters path of warp.	Twin tori lines deployed for all tows.	Time gear open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.				

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
14	No continuous discharge while towing. Batch discharge during tow. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Minimise time fish waste enters path of warp.	Windy buoy/float attached to warp on side of offal discharge if has been a warp capture, or if continuous discharge occurring and birds are in warp path.	Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.				
15	No material is discarded when shooting or hauling or when net on surface	Surface time for nets minimised as practicable	Whole fish discarded in batches down stern ramp between warps	Warp splices smooth	Mitigation devices used on warps when towing					
16	Whole fish discarded when sorting catch (not shooting or hauling)	Sharks processed when not shooting hauling, offal discarded directly overboard	No splices on warps		Stabiliser arm moved through water in front of trawl warp	Nets are cleaned and stickers are removed as far as practical before shooting	Net cleaned as far as practical before being towed on surface (e.g. for mending)	Return fish to sea alive as required.		
17	Whole fish discarded when sorting catch (not shooting or hauling)	Sharks processed when not shooting hauling, offal discarded overboard in batches	No splices on warps within 2 m of water		Surface time for nets minimised	Nets are cleaned and stickers are removed as far as practical before shooting	Net cleaned as far as practical before being towed on surface (e.g. for mending)	Return fish to sea alive and as required.		
18	No continuous discharge while towing. Batch discharge during tow. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Discharge at end of tow or during tow over stern.	If discharge over side into warp pathway, use windy buoy if needed.	Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
19	No continuous discharge while towing. Batch discharge during tow. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Warp mitigation during towing (single side pole/baffler and side curtain)		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
20	No continuous discharge while towing. Batch discharge during tow. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Discharge mostly over stern.	If discharge over side into warp pathway, use windy buoy if needed (i.e. if discharge over side in warp path).	Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
21	No continuous discharge while towing. Most often can hold for entire tow. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Deploy windy buoy if fish waste discharged into path of warp and birds present.		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
22	No continuous discharge while towing. Hold or batch discharge at intervals over stern. Fish waste held in pound or bins.	No discharge during shooting and hauling.			Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
23	No continuous discharge while towing. Hold or batch discharge at intervals over stern. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Deploy windy buoy if fish waste discharged into path of warp and birds present.		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
24	No continuous discharge while towing. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Warp mitigation during towing (single side pole/baffler and side curtain)		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
25	No continuous discharge while towing. Hold or batch discharge at intervals over stern. Fish waste held in pound or bins.	No discharge during shooting and hauling.			Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
26	No continuous discharge while towing. Discharge mostly over stern. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Warp deflector (pinky) used if discharging over side into path of warps and birds present in warp area.		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
27	No continuous discharge while towing. Discharge mostly over stern. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Warp deflector (pinky) used if high volumes of discharge or discharging over side into path of warps and birds present in warp area.		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
28	No continuous discharge while towing. Discharge mostly over stern. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Warp deflector (string of floats) used if high discharging into path of warps and birds present in warp area.		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
29	No continuous discharge while towing. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Discharge all waste away from path of warp.		Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
30	No continuous discharge while towing. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Minimise discharge into warp pathway.	Warp mitigation used continuously when towing (poles/booms with droppers and side curtain, both sides of vessel)	Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.		Return fish to sea alive as required.		

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
31	No continuous discharge while towing. Hold or batch discharge at intervals from discharge chute. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Minimise discharge into warp pathway.	Warp mitigation used if fish waste enters warp path while towing (windy buoy deployed off stabiliser arm)	Time gear is open on/near surface minimised as practicable.	Shooting avoided among large number of marine mammals.		Return fish to sea alive as required.		
32	No material is discarded when shooting or hauling	Catch is sorted before re-shooting gear and when towing	Live fish discarded during sorting	Dead whole fish batch discharged during sorting	Fish cut after sorting and offal discharged as single batch	All wire splices are wrapped	No wire splices left close to surface when towing	Nets cleaned and stickers removed as practicable before shooting	Nets cleaned to extent practicable before towed on surface (e.g. when mended)	Net surface time minimised
33	No material is discarded when shooting or hauling	Catch is sorted before re-shooting gear and when towing	Live fish discarded during sorting	Dead whole fish batch discharged during sorting	Fish cut after sorting and offal discharged as single batch	All wire splices are wrapped	No wire splices left close to surface when towing	Nets cleaned and stickers removed as practicable before shooting	Nets cleaned to extent practicable before towed on surface (e.g. when mended)	Net surface time minimised
34	No material is discarded when shooting or hauling	Catch is sorted before re-shooting gear and when towing	Live fish discarded during sorting	Dead whole fish batch discharged during sorting	Fish cut after sorting and offal discharged as single batch	All wire splices are wrapped	No wire splices left close to surface when towing	Nets cleaned and stickers removed as practicable before shooting	Nets cleaned to extent practicable before towed on surface (e.g. when mended)	Net surface time minimised
35	No continuous discharge while towing. Hold or batch discharge at intervals. Fish waste held in pound or bins.	No discharge during shooting and hauling.	Most often discharge over stern away from warps; sometimes from starboard fish pound during heavy fishing.	Warp mitigation deployed 24/7 when towing.	Side (port and starboard) bafflers: hose droppers off stabiliser arms.	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.	Handle birds and mammals carefully and release alive.	
36	Live fish and fish that must be returned to the sea are discarded after hauling the net and during sorting, as soon as practical once the bag is opened	Other whole fish are discarded when sorting the catch, when not shooting or hauling	Sharks are processed only when not shooting or hauling and offal is discarded directly overboard.	Stabilizer blades are fitted on both sides of the vessel, in front of the warps during all fishing operations	No wire splices are left within two metres of the water surface when towing.	Nets are cleaned and stickers are removed as far as practical before shooting.	Where nets must be towed on the surface (e.g. for mending) they will be cleaned as far as practical first.	Surface time for nets is minimised as far as practical.	Shooting avoided among large number of marine mammals.	
37	All fish waste binned and dumped when not fishing.	No warp protection (discard management primary mitigation measure)								
38	No discharge during shooting and hauling	Batch discharge during towing								
39	Dump fish waste while towing, starting with small amount in prop wash to draw birds away. Rest of fish waste dropped in prop wash. Fish waste doesn't interact with warp area at water surface	Warp protection is two floats clipped onto warp with lazy line for adjusting depending on depth and retrieval								

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
41	Discard continuously in centre of vessel and discards do not interact with warps	Warps are yellow Dyneema – birds appear to avoid	Was using road cones for warp protection but not considered necessary now							
42	Hold all offal onboard until gear onboard	No discarding while fishing	Was using road cones for warp protection but not considered necessary now							
44	Bin all dsicards and offal and only dump when no gear in water	Warp protection is windy buoys with carabiner attached to both warps								
48	Guts dumped at stern and available to birds aft of warp	Heads and frames dumped at anchorage or at night	Warp protection is one buoy on each warp with a D-shackle							
49	Offal and fish waste held aboard until at anchorage or steaming	Warp protection not considered necessary as not dump offal/waste								
53	Bin all discards, offal and locker on the stern	Shark clip with a float on each warp for warp protection								
55	Live fish discarded as soon as practical after bag opened	Dead fish discarded while sorting the catch	Offal discarded while processing the catch	Arrangements for holding/batching under development	Wire splices wrapped	Bafflers under consideration	Nets cleaned to extent practical when they are to be towed on the surface (e.g. for mending)	Surface time for nets minimised as practical		
56	Live fish discarded as soon as practical after bag opened	Dead fish discarded while sorting the catch	Offal discarded while processing the catch	Arrangements for holding/batching under development	Wire splices wrapped	Streamers will be fitted to stabiliser arms and tested with view to incorporating bafflers into the design for a new cage to be fitted to the gantry in July	Nets cleaned to extent practical when they are to be towed on the surface (e.g. for mending)	Surface time for nets minimised as practical		
57	No discharge when shooting, hauling	Sub-MLS SNA binned for camera, batch discharged	Whole fish discarded in single batch away from warps after sorting	Sharks and ELE processed after sorting; offal binned and discarded in single batch	Wire splices wrapped and/or not left close to surface	Nets cleaned, stickers removed as practical before shooting	Nets cleaned as far as practical before being towed on surface (e.g. for mending)	Net surface time minimised as practical		
58	No continuous discharge while towing.	No discharge during shooting and hauling.	Discharge fish waste away from path of warp (over stern)	Hold for the tow or batch discharge (from fish bins) at intervals	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
59	No continuous discharge while towing.	No discharge during shooting and hauling.	Discharge fish waste away from path of warp (over stern)	Hold for the tow or batch discharge (from fish bins or deck fish pound) at intervals	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
60	No continuous discharge while towing.	No discharge during shooting and hauling.	Hold fish waste and batch discharge at intervals during the tow.	Fish waste held on deck conveyor (100 – 150kgs) and batch discharged port-side via overboard chute.	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
61	No continuous discharge while towing.	No discharge during shooting and hauling.	Hold fish waste and batch discharge at intervals during the tow over stern away from path or warp. Fish waste held in bins or fish deck pound.	Windy buoy deployed on warp if discharging into path of warp and birds are in warp area.	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		

Vessel	Measure 1	Measure 2	Measure 3	Measure 4	Measure 5	Measure 6	Measure 7	Measure 8	Measure 9	Measure 10
62	No continuous discharge while towing.	No discharge during shooting and hauling.	Hold fish waste in pound or bins and batch discharge at intervals during the tow over stern away from warps.	Windy buoy deployed on warp if discharging into path of warp and birds are in warp area.	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
63	No continuous discharge while towing.	No discharge during shooting and hauling.	Hold fish waste in pound or bins and batch discharge over stern away from warps.	Windy buoy deployed on warp if discharging into path of warp and birds are in warp area.	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
64	No continuous discharge while towing.	No discharge during shooting and hauling.	Hold fish waste and batch at intervals.	Aft baffler with curtain droppers deployed 24/7.	Time gear is on/near surface minimised as practicable	Shooting avoided among large number of marine mammals.	Net stickers removed as practicable before shooting.	Return fish to sea alive as required.		
65	No continuous discharge while towing.	No discharge during shooting and hauling.	Hold fish waste for duration of tow if possible and batch discharge from fish bins or over stern from truck deck is required due to catch volume.	Minimise time fish waste enters the path of trawl warps.	Baffler pole deployed off aft gantry over discharge port side (deployed 24/7).	Shooting avoided among large number of marine mammals.	Time gear is on/near surface minimised as practicable	Return fish to sea alive as required.		
66	No continuous discharge while towing.	No discharge during shooting and hauling.	No continuous discharge when towing. Hold and batch discharge from discharge chute.	Minimise time waste enters path of trawl warps.	Twin side bafflers deployed if waste going into path of trawl warp or 24/7 in most weather conditions.	Shooting avoided among large number of marine mammals.	Time gear is on/near surface minimised as practicable	Return fish to sea alive as required.		
67	No continuous discharge while towing.	No discharge during shooting and hauling.	No continuous discharge when towing. Hold and batch discharge from discharge chute.	Minimise time waste enters path of trawl warps.	Starboard side baffler with side curtain to reduce bird access to discharge. Deployed if waste going into path of trawl warp or 24/7 in most weather conditions.	Shooting avoided among large number of marine mammals.	Time gear is on/near surface minimised as practicable	Return fish to sea alive as required.		