



**Fisheries New Zealand**

Tini a Tangaroa



Department of  
Conservation

*Te Papa Atawhai*

# National Plan of Action - Seabirds 2020

## Seabird Annual Report 2021/22

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## Foreword

The National Plan of Action for Seabirds 2020 (NPOA Seabirds 2020) was approved by the Ministers of Fisheries and Conservation in May 2020. It sets out the vision, goals and objectives that guide the management of interactions between New Zealand seabirds and fisheries.

Progress towards meeting the objectives of the NPOA Seabirds 2020 is measured using 36 performance measures. This Annual Report is structured around the goals and objectives of the NPOA Seabirds 2020, with quantitative information provided (where possible) on the status of each performance measure as at the end of the 2021/22 fishing year.<sup>1</sup>

The report also contains appendices that provide other information pertinent to the management of interactions between seabirds and fisheries, such as fisher and observer-reported seabird captures and observed mitigation use.

This report represents year two of the NPOA; 2021/22 was the second fishing year that the NPOA Seabirds 2020 was operational for the whole year.

Annual actions to meet the goals and objectives of the NPOA Seabirds 2020 are set out in the Seabird Implementation Plan, which is updated at least annually.<sup>2</sup> This Annual Report also includes updates on progress towards meeting management actions set out in the version of the Seabird Implementation Plan that was published in July 2021.

This Annual Report highlights once again the significant amount of work that took place during 2021/22. Particular highlights identified in this report include:

- Almost all trawl and longline vessels now have a Protected Species Risk Management Plan (PSRMPs)
- As a consequence, almost all effort by trawl and longline vessels is undertaken by vessels with a PSRMP
- The ongoing increase in alignment of PSRMPs developed for vessels that come under the DOC liaison programme with the relevant Mitigation Standards
- The increased focus of Fisheries Compliance on seabird mitigation devices when inspecting vessels for which use of devices is mandatory
- The increase on the information available on mitigation devices / operational practices following the introduction on mandatory reporting requirements
- The amount of work undertaken in relation to Goal 6 (international Engagement)
- The continued sustained decrease in the estimated seabird capture rate in the squid target fishery.

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<sup>1</sup> 1 October 2021 – 30 September 2022

<sup>2</sup> The current version of the Seabird Implementation Plan is available [here](#)

# 1. Introduction

The National Plan of Action for Seabirds ([NPOA Seabirds 2020](#)) sets out the vision, goals and objectives that guide the management of interactions between New Zealand seabirds and fisheries (Figure 1). The NPOA Seabirds 2020 is New Zealand’s third iteration of the NPOA, and builds on the achievements of the [2004](#) and [2013](#) documents, whilst responding to lessons learned from implementing these plans. More information on the NPOA Seabirds 2020 can be found in its accompanying [supporting document](#).



Figure 1 – Vision and goals of the NPOA Seabirds 2020.

The primary purpose of this Seabird Annual Report is to provide an update for the 2021/22 fishing year on the status of the performance measures used to measure progress towards meeting the objectives of the NPOA Seabirds 2020.

The 2021/22 fishing year is termed year two for the purposes of the NPOA Seabirds 2020 and the Seabird Implementation Plan. It represents the second year that the NPOA Seabirds 2020 was operational for a full fishing year.

All information on fishing effort, observer coverage, and observed seabird captures for the 2020/21 and 2021/22 fishing years may be subject to change.<sup>3</sup>

<sup>3</sup> To be consistent between years, the intention is that where possible, information on fishing effort and observer coverage is obtained from the [protected species capture](#) website. Prior to being made available on this website, the data is subject to various grooming procedures. Issues with the timely availability of this information means that data from the 2021/22 and 2020/21 fishing years was not available to inform this report. For these two fishing years, Fisheries New Zealand obtained the observer and fisher-reported data used in this report directly from the databases that store that information. The data has therefore not been subject to the same checking processes that it would undergo prior to being made available on the protected species capture website. However, any differences are not expected to be significant.

Activities that contribute towards the goals and objectives of the NPOA Seabirds 2020 are specified in the Seabird Implementation Plan, a living document that is updated at least once a year and operates on a financial year basis.<sup>4</sup> As well as reporting on the status of performance measures, this Annual Report also provides updates on the activities set out in the version of the Seabird Implementation Plan that was published in July 2021 for the 2021/22 financial year (1 July 2021 – 30 June 2022).

Reporting on activities in the Seabird Implementation Plan uses a ‘traffic light’ system to indicate progress.

Indicates the activity has been achieved	Indicates the activity has partially been achieved	Indicates activity has not been achieved
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<sup>4</sup> The current version is available [here](#).

## 2. Governance and management

This section summarises progress on the cross-objective work activities set out in the July 2021 version of the Seabird Implementation Plan.

<b>Activity 1</b>	<b>Publish Seabird Annual Report (reporting on 2020/21 Implementation Plan)</b>
	The <a href="#">2020/21 Seabird Annual Report</a> was published in July 2022. Additionally, a shorter and less technical <a href="#">2020/21 Progress Summary</a> was published at the same time.
<b>Activity 2</b>	<b>Use the Annual Report for 2020/21 to update the Seabird Implementation Plan for 2022/23</b>
	An updated version of the Seabird Implementation Plan was published in September 2022, following consideration of the 2020/21 Seabird Annual Report, which was published in July 2022.
<b>Activity 3</b>	<b>Hold Seabird Advisory Group meetings at least twice each year to monitor the implementation of NPOA Seabirds 2020 and to update the implementation and monitoring plans</b>
	Two Seabird Advisory Group meetings were held during the 2020/21 financial year (23 November 2021 and 27 April 2022).
<b>Activity 4</b>	<b>Develop process for review and updating of Mitigation Standards (including consideration of effectiveness and other options)</b>
	A draft process was developed and presented to the Seabird Advisory Group at the 27 April 2022 meeting.



### 3. Avoiding Bycatch

Goal 1 of the NPOA Seabirds 2020 is that **effective bycatch mitigation practices are implemented in New Zealand fisheries.**

Goal 1 will be achieved through two measurable objectives; Objective 1, which relates to the use of effective mitigation practices in commercial fisheries, and Objective 2, which relates to the provision of information regarding seabird mitigation measures to non-commercial fishers.

This section of the report provides an update on the status, as at the end of the 2021/22 fishing year, of the eleven performance measures used to track progress towards meeting Goal 1 of the NPOA Seabirds 2020. It also includes an update on the activities specified in the Seabird Implementation Plan under Objective 1 and 2 respectively for the 2021/22 financial year.

Information on observed and fisher-reported seabird captures, and mitigation use, is also provided in Appendices 1, 2 and 3 respectively.

Information on trigger events in deepwater fisheries can be found in Annual Review Reports for Deepwater fisheries, which are available [here](#).<sup>5</sup> Information on trigger events for inshore and surface longline fisheries can be found in Liaison Programme Annual Reports, which are available on the [Conservation Services Programme](#) section of the DOC website.

#### 3.1. Objective 1

<b>Objective 1</b>	<b>Ensure all New Zealand commercial fishers are using practices that best avoid the risk of seabird bycatch, enabled by appropriate regulations<sup>6</sup></b>
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Seven performance measures are used to track progress towards meeting Objective 1.

##### 3.1.1. Protected species risk management plans

<b>Performance measure 1</b>	<b>Proportion of each relevant fishing fleet with vessel-specific protected species risk management plans for seabird capture mitigation</b>
Target	100%

This performance measure relates to the process of developing a protected species risk management plan (PSRMP) for relevant fishing fleets. In this context '*relevant fishing fleet*' refers to a fleet to which a Mitigation Standard applies.<sup>7</sup> The intent of this performance measure is that all vessels in a fleet to which a Mitigation Standard applies should have a PSRMP.<sup>8</sup>

The status of performance measure 1 for the 2018/19 to 2021/22 fishing years is shown in Table 1. Fishing fleet groupings for trawl and longline fisheries are those used for the Mitigation Standards. The set net fleet is further broken down into those vessels <7 m in length, and those >7 m in length,

<sup>5</sup> All PSRMPs or equivalent documents contain protected species triggers. For example, the seabird triggers for trawl vessels >28m in length are three dead large birds or five dead birds of any type over a 24 hr period, or 10 birds (alive or dead) over a 7-day period. If a trigger is reached, the relevant liaison programme must be notified immediately. The point of real time trigger reporting is so that liaison officers can determine whether additional mitigation measures should be taken.

<sup>6</sup> '*Enabled by appropriate regulations*' means that any seabird-related legislative requirements that apply to commercial fishers should support the relevant Mitigation Standard.

<sup>7</sup> Mitigation Standards are developed on a fishing method / vessel size basis. Their key purposes are to ensure consistency in application of bycatch mitigation practices and to help the development of PRSMPs. More detail on Mitigation Standards is available in the [NPOA Seabirds 2020 Supporting Document](#).

<sup>8</sup> On trawl vessels >28 m in length, and scampi trawl vessels, PSRMPs are known as vessel management plans (VMPs).



as smaller set net vessels tend to exclusively fish in enclosed waters such as estuaries or harbours where there may be a lower risk of seabird capture.

Rather than PSRMPs, bottom longline vessels used to target ling in quota management areas (QMAs) LIN 2 – LIN 7 are subject to the fleet wide [Ling Bottom Longline – Operational Procedures](#) (BLL-OPs).

Since 2018/19, the Deepwater Group Environmental Liaison Officer programme has focused on bottom longline vessels that target ling in QMAs 2-7 and undertake sufficient fishing effort to be of interest to the programme. For the purposes of Table 1b below, a manual bottom longline vessel was included in the ‘vessels with PSRMP’ category if either it had a PSRMP or targeted ling in QMAs 2-7.

The intention is that the ling bottom longline fleet will transition to PSRMPs over the life of the NPOA Seabirds 2020 as PSRMPs can be tailored to better reflect individual vessel operations than the more generic OPs. Developing PSRMPs for bottom longline vessels will begin during 2022/23.

Several inshore vessels use multiple fishing methods during the course of a fishing year. Such vessels were only included as having a PSRMP if one had been developed for that specific method. Some vessels therefore have multiple PSRMPs and may be included in more than one fleet.

**Table 1a – Proportion of trawl fleets with PSRMPs. Effort is measured as number of tows.**

Trawl vessel category	Fishing year	# of vessels that fished	Vessels with PSRMP	% with PSRMP	% effort conducted by vessels with PSRMP
>28 metre	2018/19	35	35	100%	100%
	2019/20	34	34	100%	100%
	2020/21	34	34	100%	100%
	2021/22	31	31	100%	100%
<28 metre	2018/19	133	99	74%	83%
	2019/20	123	102	83%	86%
	2020/21	120	114	95%	97%
	2021/22	111	108	97%	99%
Scampi	2018/19	11	11	100%	100%
	2019/20	12 <sup>9</sup>	11	92%	>99%
	2020/21	10	10	100%	100%
	2021/22	10	10	100%	100%

<sup>9</sup> The vessel that did not have a PSRMP conducted only seven scampi target tows during 2019/20.

**Table 1b – Proportion of longline fleets with PSRMPs. Effort is measured as number of hooks set.**<sup>10</sup>

Longline vessel category	Fishing year	# of vessels that fished	Vessels with PSRMP	% with PSRMP	% effort conducted by vessels with PSRMP
Autoline bottom longline	2018/19	7	7	100%	100%
	2019/20	7	7	100%	100%
	2020/21	7	7	100%	100%
	2021/22	5	5	100%	100%
Manual bottom longline	2018/19	92	67	73%	96%
	2019/20	81	65	80%	98%
	2020/21	95	74	78%	99%
	2021/22	82	76	93%	>99%
Surface longline	2018/19	30	30	100%	100%
	2019/20	28	28	100%	100%
	2020/21	28	28	100%	100%
	2021/22	24	24	100%	100%

**Table 1c – Proportion of set net fleets with PSRMPs. Effort is measured as metres of net set.**

Set net vessel category	Fishing year	# of vessels that fished	Vessels with PSRMP	% with PSRMP	% effort conducted by vessels with PSRMP
>7 metre	2018/19	72	19	25%	48%
	2019/20	64	21	33%	58%
	2020/21	51	19	37%	69%
	2021/22	52	29	56%	86%
<7 metre	2018/19	156	-	-	-
	2019/20	130	-	-	-
	2020/21	134	-	-	-
	2021/22	124	5	4%	6%

PSRMPs can also be developed for vessels in fleets that do not have an agreed Mitigation Standard. As of the end of the 2022/23 fishing year, PSRMPs had been developed for five Danish seiner and four purse seiner vessels. However, until a Mitigation Standard is agreed, there is no specific target to develop PSRMPs for such vessels or fleets.

Performance measure 2	Proportion of vessel-specific protected species risk management plans that meet the Mitigation Standards and regulations for the relevant fishery
Target	100%

Mitigation Standards incorporate regulatory requirements and other agreed (but non-mandatory) mitigation practices. They set out the regulatory measures (minimum requirements) as well as the additional options that are available to vessel operators to reduce the risk to seabirds.

As a minimum, PSRMPs must contain the applicable regulatory requirements. Over time, they should evolve such that they also contain the majority of the non-regulatory practices set out in the relevant Mitigation Standards. This approach is summarised in Figure 2.

<sup>10</sup> This total includes autoline and manual lining vessels subject to the LIN BLL OP

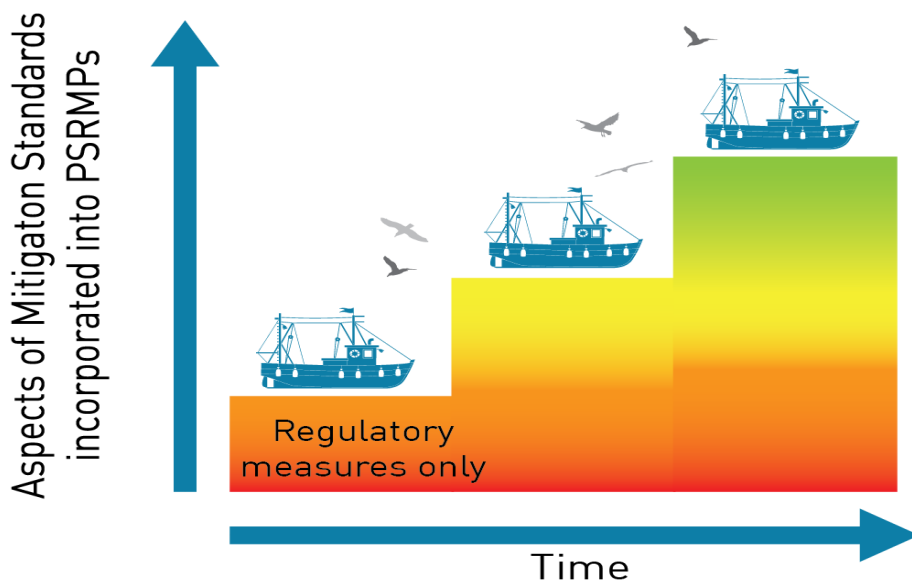


Figure 2. Diagram showing relationship between Mitigation Standards, PSRMPs and regulatory measures

PSRMPs are developed using templates in order to ensure consistency. For vessels that come under the Deepwater Group liaison programme, the current PSRMP templates for >28m trawl and scampi trawl vessels are available [here](#) and [here](#) respectively. The current PSRMP template for the coastal trawl hoki fleet is available [here](#) with further details on what PSRMPs for this fleet should include available in the [Coastal Trawler Fisheries - Hoki - Operational Procedures](#) (page 7).

The template approach also enables auditing against Mitigation Standards. However, it is important to note that PSRMP development began well before Mitigation Standards were agreed. Prior to the NPOA Seabirds 2020 being approved, PSRMPs had not been developed with the objective of consistency with Mitigation Standards in mind.

To set a baseline for this performance measure, PSRMPs for vessels operating under the DOC liaison programme were assessed against the Mitigation Standards during 2019/20. They were reviewed in 2020/21 and 2021/22 (noting that setnet PSRMPs did not have a finalised set of Mitigation Standards at the time of the 2019/20 baseline assessment). The degree of alignment between PSRMPs and the relevant Mitigation Standard was reported in the 2019/20 and 2020/21 Seabird Annual Reports.<sup>11</sup>

Following the reviews, and in order to better align PSRMPs with Mitigation Standards, PSRMP templates for <28 m trawl, surface longline, bottom longline vessels, and set net vessels were subsequently updated following approval of the NPOA Seabirds 2020. The PSRMP templates that were implemented during 2020/21 are available in Appendix 5 of the [2020/21 Liaison Programme Annual Report](#).<sup>12</sup>

<sup>11</sup> Available [here](#)

<sup>12</sup> The previous version of these PSRMP templates is available in Appendix 6 of the [2018/19 Liaison Programme Manual](#)

**Table 2: Alignment of DOC liaison programme PSRMPs with the Mitigation Standards. Year 2019-20 is a baseline and includes an assessment of all PSRMPs on file, while 2021-22 is an assessment of PSRMPs for only vessels that were active within that fishing year. Mitigation Standards with a dash (-) indicate those that could not be assessed due to the absence of specific criteria within the plan.**

		2019-20 baseline			2021-22		
		Yes (%)	No (%)	Unclear (%)	Yes (%)	No (%)	Unclear (%)
<b><u>Surface Longline Mitigation Standards</u></b>		(n= 42)			(n= 25)		
MS 1.1	Fish waste is not discharged from the vessel immediately before or during setting	86	14	0	100	0	0
MS 1.2	Bait and fish waste is held on board during hauling, when possible; any discharge must be batched and meet mandatory requirements	90	10	0	100	0	0
MS 2.1	Effective tori line throughout setting (unless hook-shielding devices used)	100	0	0	100	0	0
MS 2.2	Either hook-shielding devices used OR hooks set at night and weighted in accordance with ACAP minimum standards	12	83	5	12	72	16
MS 2.3	Bait is sufficiently thawed	100	0	0	80	0	20
MS 3.1	Hook surface time is minimised	-	-	-	64	16	20
MS 3.2	Seabirds are actively deterred from approaching hooks during hauling	10	90	0	52	44	4
MS 3.3	Seabirds caught and released alive are handled to maximise their chance of survival	-	-	-	68	0	32
MS 4.1	Deck lighting does not unnecessarily attract or disorientate seabirds	95	5	0	100	0	0
MS 4.2	Seabirds are not induced to land on the deck due to the presence of fish waste	-	-	-	20	0	80
MS 4.3	Live birds that land on deck or impact with the vessel are handled in ways to maximise survival	-	-	-	68	0	32
<b><u>Bottom Longline Mitigation Standards (hand-baiting)</u></b>		(n= 55)			(n= 54)		
MS 1.1	Fish waste is not discharged from the vessel immediately before or during setting	98	2	0	100	0	0
MS 1.2	Bait and fish waste is held on board during hauling, when possible; any discharge must be batched and meet mandatory requirements	80	20	0	100	0	0
MS 2.1	A tori line effective at deterring birds from hooks is deployed throughout setting	-	-	-	98	0	2 <sup>13</sup>
MS 2.2	Hooks set during high-risk periods protected by the tori line until hooks 10m deep. Sink rate test records kept.	-	-	-	-	-	-
MS 2.3	Hooks set outside of high-risk periods protected by the tori line until hooks 5m deep. Sink rate test records kept.	-	-	-	-	-	-
MS 2.4	Bait is sufficiently thawed	9	91	0	94	0	6
MS 3.1	Hook surface time minimised	82	18	0	100	0	0
MS 3.2	Seabirds are actively deterred from hooks during hauling	85	15	0	92	4	4
MS 3.3	Seabirds caught and released alive are handled to maximise chance of survival	96	4	0	100	0	0
MS 4.1	Deck lighting does not unnecessarily attract or disorientate seabirds	93	7	0	100	0	0
MS 4.2	Seabirds are not induced to land on the deck due to the presence of fish waste	-	-	-	17	0	83
MS 4.3	Live birds that land on deck or impact with the vessel are handled in ways to maximise survival	96	4	0	100	0	0

<sup>13</sup> For one vessels that is under 7m, a tori line is recommended but not required

		2019-20 baseline			2021-22		
		Yes (%)	No (%)	Unclear (%)	Yes (%)	No (%)	Unclear (%)
<b><u>Under 28m Trawl Mitigation Standards</u></b>		(n= 105)			n= 107)		
MS 1.1	Fish waste is not discharged from the vessel immediately before or during shooting or hauling	97	1	2	99	1	0
MS 1.2	Fish waste discharged whilst the net is being towed is batch discharged	89	9	3	99	1	0
MS 2.1	Warp protection is located at the warp on the discharge side	54	44	2	79	21	0
MS 2.2	Condition of trawl warps does not increase the risk of seabird captures	-	-	-	73	14	13
MS 3.1	All practicable stickers are removed from the net before each shot	84	1	15	98	0	2
MS 3.2	Time gear is at the surface is minimised	77	0	23	97	0	3
MS 3.3	Gear maintenance and repairs is conducted in a way to minimise risk to seabirds	-	-	-	71	20	9
MS 3.4	Live birds caught in the net are handled in ways to maximise survival	72	0	28	96	0	4
MS 4.1	Deck lighting does not unnecessarily attract or disorientate seabirds	-	-	-	80	4	16
MS 4.2	Seabirds are not induced to land on the deck due to the presence of fish waste	-	-	-	8	0	92
MS 4.3	Live birds that land on deck or impact with the vessel are handled in ways to maximise survival	71	0	29	96	0	4
<b><u>Set Net Mitigation Standards</u></b>		n/a			(n= 29)		
MS 1.1	Fish waste is not discharged from the vessel immediately before or during setting	-	-	-	100	0	0
MS 1.2	Any fish waste discharged during hauling must be batch discharged	-	-	-	100	0	0
MS 2.1	Nets are not set in the vicinity of known or observed bird colonies or known foraging areas	-	-	-	97	0	3
MS 2.2	Nets are not set in an area when there is active bird activity, such as feeding/diving	-	-	-	17	59	24
MS 3.1	All practicable stickers are removed from the net before each shot	-	-	-	100	0	0
MS 3.2	Time gear is at the surface is minimised	-	-	-	100	0	0
MS 3.3	Nets are not stalled <sup>14</sup>	-	-	-	86	0	14
MS 3.4	Gear maintenance and repairs is conducted in a way to minimise risk to seabirds	-	-	-	84	10	3
MS 3.5	Live birds caught in the net are handled in ways to maximise survival	-	-	-	93	7	0
MS 4.1	Deck lighting does not unnecessarily attract or disorientate seabirds	-	-	-	90	3	7
MS 4.2	Seabirds are not induced to land on the deck due to the presence of fish waste	-	-	-	17	0	83
MS 4.3	Live birds that land on deck or impact with the vessel are handled in ways to maximise survival	-	-	-	93	7	0

For commentary regarding the alignment of PSRMPs to Mitigation Standards for 2021/22, refer to the Liaison Programme Annual Report for 2021/22 (available [here](#)).

<sup>14</sup> As defined by the Fisheries (Commercial Fishing) Regulations 2001, stalling is the process of setting a net so that fish enclosed or entangled by the net are left stranded by the falling tide or are enclosed or entangled so that, at any stage of the tide, there is an insufficient depth of water at either end of the net to enable the fish to pass from the waters above the net to the waters below the net.

<b>Performance measure 3</b>	<b>Rate of adherence to vessel-specific protected species risk management plans (based on available monitoring data)</b>
Target	100%

At-sea observer auditing is currently the primary source of information on vessel adherence to PSRMPs. Observers audit adherence to PSRMPs at the level of the trip, rather than the individual fishing event.

Most of the PSRMP audit forms that observers used for the majority of 2021/22 are available online. This includes ling bottom longline (page 19 of [the ling bottom longline operational procedures<sup>15</sup>](#)), [surface longline](#), [inshore bottom longline](#), set net (the last page in this [package](#) of Liaison Programme documents), and <28m trawl (page 17 in this [package](#) of Liaison Programme documents). The audit form used for >28m trawl and scampi was updated during 2020/21 but at the time of publishing was not available online. It is included, however, as Appendix 10 to this document. The previous version, used at the start of 2020/21, is available on page 18 of [deepwater trawl seabirds operational procedures](#)).

The number, and outcome, of observer audits of PSRMPs for the four years between 2018/19 and 2021/22 is shown in Table 3. Bottom longline vessels that primarily targeted ling in QMAs LIN 2 – LIN 7 during this period generally operated under fleet-wide [operational procedures](#) (OPs), rather than vessel-specific plans. For such vessels, Table 3 shows the number, and outcome, of observer audits relative to the BLL-OPs.

Observer trips sometimes straddle fishing years. In this scenario, information is included in the table below regardless of when the observer trip ends. This may lead to some information being duplicated between different fishing years.

**Table 3a – The number, and outcome, of observer PSRMP audits of trawl vessels for the four years between 2018/19 and 2021/22.**

Trawl vessel category	Fishing year	# of vessels audited	% of fleet audited during year	% of effort conducted by audited vessels	# of PSRMP audits	% of audits adhering to PSRMP
>28 metre	2018/19	34	97%	97%	162	91%
	2019/20	32 <sup>16</sup>	94%	97%	142	87%
	2020/21	30	88%	93%	130	93%
	2021/22	30	97%	99%	131	95%
<28 metre	2018/19	16	12%	21%	16	88%
	2019/20	29	24%	33%	49	67%
	2020/21	41	34%	46%	54	76%
	2021/22	39	35%	43%	46	83% <sup>17</sup>
Scampi	2018/19	10	91%	99%	12	92%
	2019/20	9	75%	82%	9	90%
	2020/21	6	60%	64%	6	100%
	2021/22	10	100%	100%	10	80%

<sup>15</sup> The ling bottom longline operational procedures were updated in 2021. The current version can be found [here](#).

<sup>16</sup> One >28m trawl vessel operates as both a scampi trawler and a fresh fish trawler and is included in both vessel categories. It was audited by an observer after a scampi trip in 2019/20 but was not audited as a fresh fish trawler.

<sup>17</sup> A further two audits could not be fully assessed due to some fields being recorded as 'Unknown'

**Table 3b – The number, and outcome, of observer PSRMP audits of longline vessels for the four years between 2018/19 and 2021/22. One audit corresponds to an observer’s trip on a vessel.**

Longline vessel category	Fishing year	# of vessels audited	% of fleet audited during year	% of effort conducted by audited vessels	# of PSRMP audits	% of audits adhering to PSRMP
Autoline bottom longline	2018/19	3	43%	56%	3	67%
	2019/20	4	57%	77%	4	75%
	2020/21	2	29%	27%	2	50%
	2021/22	3	60%	93%	4	100%
Manual bottom longline	2018/19	25	27%	54%	25	48%
	2019/20	28	35%	63%	35	49%
	2020/21	20	21%	49%	23	70% <sup>18</sup>
	2021/22	13	16%	44%	14	50%
Surface longline	2018/19	14	46%	52%	18	50%
	2019/20	13	46%	59%	13	31%
	2020/21	13	46%	68%	14	29% <sup>19</sup>
	2021/22	3	13%	21%	3	0% <sup>20</sup>

**Table 3c – The number, and outcome, of observer PSRMP audits of set net vessels for the four years between 2018/19 and 2021/22. One audit corresponds to an observer’s trip on a vessel.**

Set net vessel category	Fishing year	# of vessels audited	% of fleet audited during year	% of effort conducted by audited vessels	# of PSRMP audits	% of audits adhering to PSRMP
>7 metre	2018/19	-	-	-	-	-
	2019/20	6	9%	19%	7	100%
	2020/21	11	22%	62%	20	57% <sup>21</sup>
	2021/22	8	15%	48%	11	36% <sup>22</sup>
<7 metre	2018/19	-	-	-	-	-
	2019/20	-	-	-	-	-
	2020/21	-	-	-	-	-
	2021/22	-	-	-	-	-

Further information on the outcome of observer audits of PSRMPs can be found in Fisheries New Zealand’s deepwater fisheries annual review reports (available [here](#)) and in DOC liaison programme reports (available [here](#)).

<sup>18</sup> This includes five audits where the observer noted one or more specific aspects of the PSRMP audit as being ‘unknown’. The ‘unknowns’ related to aspects of tori lines (e.g. whether spare parts were carried, whether the attachment point could be adjusted or whether the aerial extent was sufficient to reduce access to hooks. There were no issues with other all aspects of the audit. Eleven audits were recorded as adhering to a PSRMP.

<sup>19</sup> Over half the vessels recorded as ‘not adhering to PSRMP’ in the SLL fleet were because of offal management and continuous discarding of baits.

<sup>20</sup> Refer to the Liaison Programme report for 2021/22 for more details, available [here](#). The reasons why none of the three audits were fully adherent in all criteria included documentation not being available, issues around fish waste management (including used baits), and tori line specifications not being met.

<sup>21</sup> Six audits could not be fully assessed due to some fields being recorded as ‘Unknown’.

<sup>22</sup> Two audits could not be fully assessed due to some fields being recorded as ‘Unknown’. The reasons why around 2/3 of audits were not fully adherent in all criteria included fish waste management issues and it being unknown whether vessel operators demonstrated awareness in avoiding high risk areas.

A review of the PSRMP observer audit forms was initiated in the 2019/20 fishing year. The purpose was to ensure all forms align with Mitigation Standards and the new PSRMP templates developed for vessels that come under the DOC Liaison Programme,<sup>23</sup> and that consistent and relevant information is captured. The review, which did not include the recently developed PSRMP audit form for purse seine vessels, was completed in the 2020/21 fishing year, with the amended forms rolled out at various times during 2020/21.

The observer Protected Species Interaction (PSI) form was amended during the 2019/20 fishing year.<sup>24</sup> The amendment involved adding an attribute (field) for observers to record whether a vessel was adhering to its PSRMP at the time of each observed protected species interaction. The amended form was rolled out towards the end of the 2019/20 fishing year, and this attribute was completed for 98% of observed seabird interactions recorded during the 2020/21 fishing year. The resulting information is summarised in Appendix 1.

### 3.1.2. Mitigation Standards and mandatory mitigation measures

<b>Performance measure 4</b>	<b>Regulations and Mitigation Standards are reviewed, updated and developed to reflect the best available information</b>
Target	Annual Review

An outcome of the April 2022 Seabird Advisory Group (SAG) meeting was an agreement to further develop the draft process for annual review and revision of the Mitigation Standards, which was a commitment under the NPOA Seabirds. An intersessional meeting of the SAG was held for interested participants to provide additional feedback. A finalised framework was presented and subsequently adopted at the November 2022 SAG meeting. It is available online [here](#).

### 3.1.3. Capture rate reduction targets

<b>Performance measure 5</b>	<b>Number of fisheries that have enough information to set reduction targets</b>
Target	Increasing

<b>Performance measure 6</b>	<b>Rates of seabird capture relative to agreed reduction targets (where enough information is available)</b>
Target	Decreasing in line with reduction targets

Work on capture rate reduction targets has been paused until ongoing delays with protected species capture data becoming available are resolved.

### 3.1.4. Compliance

<b>Performance measure 7</b>	<b>Number, and proportion, of compliance inspections that assess compliance against the relevant regulations</b>
Target	Increasing

This performance measure reflects the role of Fisheries Compliance in ensuring compliance with the relevant seabird mitigation regulations.

<sup>23</sup> The new PSRMP templates referred to are available in the [2019/20 Liaison Programme Final Report](#)

<sup>24</sup> The PSI form is used by observers to record specific information on all protected species interactions



Table 4 summarises Fisheries Compliance inspections of seabird mitigation devices in relation to New Zealand flagged >28m trawl vessels and longlining vessels (all types) during the 2021/22 fishing year.

**Table 4 – Summary of Fisheries Compliance inspections that incorporated seabird mitigation devices during the 2021/22 fishing year**

Fleet	Number of vessels that fished	Number of inspections of SBM	Number of vessels covered by inspections of SBM	% of fleet inspected for SBM
<i>Trawl</i>				
>28 m trawl	31	3	3	10
<i>Longline</i>				
All types	102	61	43	42

Notes: Number of inspections of SBM includes both in port and at sea inspections (excludes aerial overflights). SBM = Sea Bird Mitigation.

#### **Inspections of the >28 m trawl fleet: 31 vessels**

Three inspections of seabird mitigation devices were conducted on trawl vessels >28 m during the 2021/22 fishing year. No offences were detected in relation to seabird scaring devices.

#### **Inspections of the longline fleet: 102 vessels (all types)**

A total of 61 inspections of seabird mitigation devices were conducted across 43 longlining vessels during the 2021/22 fishing year, which represented 42% of that fleet. Most inspections were conducted in port with nine conducted at sea. Nine instances of non-compliance were detected with seabird mitigation measures. In most cases non-compliance related to minor breaches associated with the configuration of tori lines. All tori lines were remediated, following instruction from FOs, either at the time of inspection or prior to the vessels next fishing trip. Two inspections identified non-completion of sink rate tests by bottom longlining vessels. In both cases fishers were reminded of their obligations to carry out and record testing.

#### **Domestic aerial flights conducted during the 2021/22 fishing year**

Ministry for Primary Industries utilised aerial assets of the New Zealand Defence Force for 12 flights that observed fishing activity in the EEZ during the 2021/22 fishing year. These flights are a highly visible overt monitoring tool utilised to gather basic information on obvious activity occurring at the time.

A total of 266 fishing vessels were detected during the surveillance, with 75 (28%) subject to regulatory requirements to have bird mitigation devices in place for certain fishing activities. Of those 75 a total of 73 (97%) were photographed by the aircrew (Table 5).

As a result of subsequent analysis MPI Compliance detected only 1 instance of non-compliance with bird mitigation requirements. At the time the vessel was overflown they were actively setting BLL gear and did not have a tori line deployed. The skipper made immediate contact with the local Fishery Officer and claimed that the tori line became snagged and had to be cut off just prior to the vessel being flown over. The fisher advised that he did not have a spare tori line to deploy. Following an investigation both the fisher and the permit holder were issued with formal warnings for failing to use a seabird scaring device. The remaining fishing vessels were either in transit, stationary, hauling with appropriate mitigation, hauling with no required mitigation, or trawling with required mitigation in place. No surface longline vessels were observed during setting.

**Table 5 – Summary of domestic aerial surveillance operational activity conducted during 2021/22**

Month	Area of operation	Purpose for flight	All FVs Detected	Trawl (>28m) FVs observed	Surface Longlining FVs observed	Bottom Longlining FVs observed	Vessels Imaged	No bird mitigation device when required
Oct-21	Kermadec EEZ	Compliance patrol	2	0	2	0	0	0
Nov-21	Auckland Harbour	Compliance patrol	14	0	1	4	13	1
Dec-21	Otago/Southland Inshore	Compliance patrol	18	2	0	1	18	0
Feb-22	West Coast Albacore Fleet	Compliance patrol	56	0	0	3	54	0
Feb-22	Northland - BOP	Compliance patrol	10	0	3	4	10	0
Mar-22	Auckland - Stewart Islands	Compliance patrol	16	9	0	1	16	0
Mar-22	West Coast both islands	Compliance patrol	47	0	0	1	46	0
Apr-22	Otago Coast	Compliance patrol	29	9	5	1	29	0
Apr-22	Taranaki - Cook St - Chathams - ECNI	Compliance patrol	33	1	2	6	30	0
Jun-22	East Coast North Island	Compliance patrol	23	0	6	9	23	0
Sep-22	Auckland and Campbell Islands	Compliance patrol	9	3	0	0	9	0
Sep-22	Northland - BOP	Compliance patrol	9	0	1	1	9	0
<b>Total:</b>			<b>266</b>	<b>24</b>	<b>20</b>	<b>31</b>	<b>257</b>	<b>1</b>

### 3.1.5. Progress against Seabird Implementation Plan

This section summarises progress on the Objective 1 work activities set out in the July 2021 version of the Seabird Implementation Plan.

<b>Activity 1</b>	<b>Audit existing Protected Species Risk Management Plans against Mitigation Standards</b>
	This is reported in section 3.1.1. under performance measure 2

<b>Activity 2</b>	<b>Continued roll out, supported by other communications channels with fishers, of Protected Species Risk Management Plans</b>
	This is reported in section 3.1.1. under performance measure 1

<b>Activity 3</b>	<b>Report on at-sea audits of adherence to Protected Species Risk Management Plans</b>
	This is reported in section 3.1.1. under performance measure 3

<b>Activity 4</b>	<b>Report capture and capture rate data for the previous year</b>
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	The <a href="#">2020/21 Seabird Annual Report</a> includes the capture rate data available at the time the report was compiled
<b>Activity 5</b>	<b>Collaboratively developing feedback loop to communicate risk to fishers, both when notable incidents occur and for static risk (e.g. yearly arrival of black petrels to New Zealand waters)</b>
	Partially achieved but work on a more robust framework is ongoing
<b>Activity 6</b>	<b>Review and update of bycatch trigger events and response strategies as appropriate</b>
	Review of internal protocols commenced but not finalised
<b>Activity 7</b>	<b>Review and update mitigation regulations as appropriate</b>
	A review process was developed during 2021/22 but not finalised
<b>Activity 8</b>	<b>Maintain and enhance deepwater fleet liaison programme for deepwater trawl, scampi and bottom longline</b>
	The Deepwater Group fleet liaison programme continued during 2021/22. Details of fleet liaison engagement are available in the deepwater fisheries Annual Review Report for 2021/22, which is available <a href="#">here</a> .
<b>Activity 9</b>	<b>Finalise and distribute mitigation standard one pagers</b>
	Documents completed and available <a href="#">here</a> .
<b>Activity 10</b>	<b>Use the findings of a social research project funded by the Department of Conservation in 2020/21, to understand the barriers and drivers relating to the uptake of mitigation standards in the surface longline fleet</b>
	The final report was published on the DOC webpages <a href="#">here</a> . The results have been used to shape outreach activities by DOC Liaison Officers and future research considered by DOC's Research Advisory Group.
<b>Activity 11</b>	<b>Hold the Seabird Smart Awards 2021, to encourage and acknowledge leadership around seabird smart fishing</b>
	The awards ceremony was held virtually in March 2022 and were presented by Hon David Parker (Minister for Oceans and Fisheries) and Hon Kiritapu Allan (Minister of Conservation). The ceremony was recorded and is available <a href="#">here</a> .
<b>Activity 12</b>	<b>Seek funding to produce interactive 360° videos of the main mitigation measures in deepwater trawl, deepwater bottom longline, inshore bottom longline and surface longline, (with tagged captions describing key features) for education, training and advocacy.</b>
	After further discussions with several providers, 360° videos were found to be unsuitable for this purpose. Instead a series of short videos on seabirds and key mitigation measures were produced (see <a href="https://www.youtube.com/c/southernseabirds">https://www.youtube.com/c/southernseabirds</a> ). These are also on display at Taiaroa Head Albatross Centre.

## 3.2. Objective 2

<b>Objective 2</b>	<b>Practices that effectively avoid the risk of seabird bycatch are supported and promoted to non-commercial fishers</b>
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The objective acknowledges that non-commercial fishers also interact with seabirds. Understanding more about these interactions and developing mitigation for non-commercial fisheries are focus areas for the NPOA Seabirds 2020.

Performance measures 8-11 of the NPOA Seabirds 2020 track progress towards meeting Objective 2. The four performance measures are outlined below.

### 3.2.1. Dissemination of seabird-awareness material

<b>Performance measure 8</b>	<p><b>Outreach is directed to non-commercial fishers and measured by:</b></p> <ol style="list-style-type: none"> <li><b>1. The number of social media hits for seabird-related outreach campaigns (target: increasing)</b></li> <li><b>2. The amount of seabird-awareness material and mitigation guidance that is distributed (target: increasing)</b></li> <li><b>3. The proportion of registered amateur charter vessel operators who have been provided with material and mitigation guidance (target: 100%) and</b></li> <li><b>4. New seabird-awareness material and mitigation guidance available in Te Reo Māori and other languages.</b></li> </ol>
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<b>Performance measure 9</b>	<b>The number of organisations involved in messaging and geographical areas covered</b>
Target	Increasing

These performance measures are described in the [2019/20 Seabird Annual Report](#).

During 2020/21, amateur charter vessel (ACV) operators in the Hauraki Gulf were provided with guidance material and seabird release kits containing items to assist with the successful release of seabirds. The Hauraki Gulf was the focus of the initiative due to the number of ACV operators in that area together with the area being important for species such as black petrel and flesh-footed shearwater. Funding for this was obtained as a one-off trial and has not been extended.

Fisheries New Zealand and DOC envisage that going forward, reporting on other elements of this performance measure will involve seeking input from SAG members.

### 3.2.2. Seabird interactions and mitigation use in non-commercial fisheries

<b>Performance measure 10</b>	<b>Information that is available to understand seabird captures and the use of bycatch mitigation measures in non-commercial fisheries</b>
Target	Increasing

<b>Performance measure 11</b>	<b>Increased use of mitigation practices and safe handling techniques amongst non-commercial fishers (based on available data)</b>
Target	Increasing

Performance measure 10 recognises that we need more information on how seabirds are captured by non-commercial fishers, as well as how these fishers can avoid catching seabirds. In 2020/21, the process of forming a steering group of recreational fishers and ACV operators continued for the

purpose of getting more information on these areas. A short list of potential members was developed along with draft Terms of Reference. The short list includes ACV operators as well as representatives from a number of recreational groups from around the country. Fisheries New Zealand is planning a workshop for those on the short list to be held in 2023 to revise the Terms of Reference and determine how the steering group can be most effective in the recreational seabird interactions space.

DOC has been running a work programme to better understand the nature and extent of seabird interactions and mitigation use in recreational fisheries. This includes development of an app to allow users to investigate anonymously reported incidental catch of marine protected species, including seabirds, by recreational fishers. The app is available [here](#).

Performance measure 11 recognises the need to consider how information could be collected to enable monitoring and reporting on mitigation and safe handling technique use by non-commercial fishers. This will be a function of the steering group referred to above, in collaboration with external entities such as Southern Seabird Solutions.

The focus of the DOC work programme mentioned above has been on quantifying the issue. Work relating to mitigation use by recreational fishers is scheduled to begin in 2023.

### 3.2.3. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Identify regional engagement opportunities with recreational fishers about seabirds in particular areas and reporting of interactions</b>
	FNZ continues to have a stand at the HutchWilco NZ Boat Show to engage with recreational fishers about seabird interactions. Results from the DOC reporting app are available <a href="#">here</a> .

<b>Activity 2</b>	<b>Targeted communications to communities in areas with high risk of interactions with seabirds through local media outlets e.g. local newspapers and social media pages</b>
	An article on black petrels went out to communities in the region during the 2021/2022 black petrel breeding season to educate people on the risk of catching these birds. Fisheries New Zealand continues to regularly release media seabird articles through targeted channels.

<b>Activity 3</b>	<b>Design an informed communications campaign for mitigating interactions between seabirds and recreational fishers</b>
	The social research project commissioned to inform the campaign has been completed. The report has been reviewed internally at Fisheries New Zealand and socialised with the Department of Conservation. Fisheries New Zealand will now work with the Department of Conservation and external stakeholders to decide on the best approach and messaging.

<b>Activity 4</b>	<b>Establish a recreational steering group to assist delivery of the recreational strategy – focussing on FMA1</b>
	Members have been approached and those who have expressed interest have been selected for the recreational steering group. Fisheries New Zealand intends to formalise the group in 2023.

<b>Activity 5</b>	<b>Pilot voluntary seabird bycatch data collection on amateur charter vessels</b>
	This was a process being considered for electronic reporting for Amateur fishing charters. However, the project has been stalled due to funding.

Activity 6	<b>Provide resources on seabird capture and release for FNZ personnel attending fishing shows or competitions</b>
	FNZ has received reprints of The Responsible Fishing Guidelines information booklet that includes the handling and safe releasing of seabirds. Personnel attending fishing competitions have been, and are dependent on, current fishing competition scheduling. Depending on what comes out of the workshop (see activity 4) there may be new ideas of further ways of engaging or updates to the materials.

## 4. Healthy Seabird Populations

Goal 2 of the NPOA Seabirds 2020 is that the *direct effects of New Zealand fishing do not threaten seabird populations or their recovery*.

Goal 2 will be achieved through two objectives; Objective 3 which relates to prioritising management actions, research and monitoring towards seabird populations of particular concern, and Objective 4 which relates to reducing the estimated number of fishing-related deaths.<sup>25</sup>

This section of the report provides an update on the status, as of the end of the 2021/22 fishing year, on the four performance measures used to track progress towards meeting Goal 2 of the NPOA Seabirds 2020. A summary of progress towards achieving the management actions specified in the Seabird Implementation Plan under Objectives 3 and 4 respectively is also included.

### 4.1. Objective 3

Objective 3	<b>Research, monitoring and management actions are prioritised for seabird populations of particular concern, and their risk ratios reduce</b>
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There are two components to this objective. The first identifies that available resources should be directed towards those seabird populations where the need is greatest. The second component reflects the desire to see risk ratios reduce over time for populations of particular concern. Reduction in risk ratios reflects a reduction in estimated impacts of fishing on a given seabird population. Three performance measures will be used to track progress towards meeting Objective 3.

A key aspect of this objective is the ‘populations of particular concern’ qualifier and its associated definition. Particular concern means those species considered to be at a ‘High’ or ‘Very High’ risk from fishing by the 2020 iteration of the [seabird risk assessment](#), or those populations identified through some other process (e.g. population monitoring indicating a significant population decline), and taking into account threat status.

At the end of the 2021/22 fishing year, nine seabird species or populations were considered to be of particular concern. These are black petrel, Salvin’s albatross, Westland petrel, flesh-footed shearwater, southern Buller’s albatross, Gibson’s albatross, the mainland & Stewart Island population of hoiho (yellow-eyed penguin), Antipodean albatross and the northern North Island population of spotted shag.

<sup>25</sup> The number of fishing-related deaths that is used as the reference is the average between 2014/15 and 2016/7 as determined by the [seabird risk assessment](#). Refer also to section 4.2

The proportion that different fisheries contribute towards the risk score for seabird populations of particular concern, and monitoring levels in these fisheries can be found in Appendices 4 and 5 respectively.

#### 4.1.1. Research and management actions

<b>Performance measure 12</b>	<b>Research and/or management actions are undertaken specifically for species or populations of particular concern</b>
Target	100% of identified populations of particular concern

##### *Management actions*

There are currently species-specific management approaches in place for Antipodean albatross, black petrel, and mainland & Stewart Island hoiho.

##### **Antipodean albatross (Toroa)**

Work continued to implement the Conservation of Migratory Species (CMS) [Concerted Plan of Action](#). DOC hosted three Toroa hui to facilitate open discussion among treaty partners and stakeholders and share ideas and opportunities for domestic and international conservation of Toroa. The 2021/22 sub-Antarctic field seasons was affected by COVID-19. However, a visit was made to Antipodes Island by independent researchers, allowing for the collection of key population demographic data, continued deployment of satellite trackers, and collection of blood samples for a genomic study.

The intensive satellite tracking programme initiated in 2019 was continued with annual tag deployments up until 2022. New collaborations were established with Oxford University and Sunshine Coast University that aim to provide insights into estimation of fine-scale fisheries interactions and environmental predictors of future bycatch risk, respectively. Additionally, a range of samples have been collected, with Victoria University of Wellington aiming to shed new light on the taxonomic status of the Antipodean albatross using genomic analyses. A collaboration with the University of Tsukuba is aiming to assess the exposure of the Antipodean albatross, alongside a range of other taxa, to mercury pollution.

##### **Black petrel**

The Black Petrel Working Group (BPWG) met twice during the 2021/22 fishing year. Discussion focused on various projects, including the black petrel electronic monitoring project and the black petrel population research project. Updates were given various matters including the Protected Species Liaison Programme, recent capture events, and trialling of Time Depth Recorders (TDRs) and bottle testing. The group discussed whether there is an ongoing need for the BPWG, given the role of the NPOA implementation plan, and on reflection that the group had successfully implemented several work programmes that addressed the original objectives. Fisheries New Zealand is currently assessing whether there is value in reforming the group with a broader regional focus, also supporting other species' interactions with fisheries.

Accomplishments from the 2021/22 year include the continuation of the black petrel electronic monitoring trial up until its conclusion at the end of the 2021/22 fishing year. The wider roll out of electronic monitoring should see cameras on bottom longline vessels in FMA1 from November 2023.

## Hoiho

[Te Kaweka Takohaka mō te Hoiho](#) (a strategy to support the cultural and ecological health of hoiho) was released in August 2020 along with [Te Mahere Rima Tau](#), the accompanying five-year action plan, which supports the strategic aims of the strategy.

2021/22 represented year three of implementing actions in Te Mahere Rima Tau. The Hoiho Technical Group has reported back regarding progress made during the 2021/22 season as part of their [2022 Progress Report](#).

### CMS

Final research reports from previously contracted work that were published during the 2021/22 financial year, and the current status of research planned/undertaken during 2021/22 specifically focusing on seabird populations of particular concern, are shown in Tables 6 and 7 respectively.

Seabird research reports not specifically focused on seabird populations of particular concern that were published, planned, or undertaken during the 2021/22 financial year are listed in Appendix 6.

**Table 6 – Research reports relevant to seabird populations of particular concern published during the 2021/22 financial year.**

DOC bycatch programme reports	
POP2021-01	<a href="#">Black petrel monitoring on Aotea/Great Barrier Island 2021/2022</a>
	<a href="#">Antipodean wandering albatross satellite tracking and population study 2021 and 2022</a>
	<a href="#">Gibson’s albatross and white-capped albatross in the Auckland Islands 2021–22</a>
POP2019-04	<a href="#">Population studies of southern Buller's albatross on The Snares</a>
POP2020-05	<a href="#">Utilisation of the marine habitat by hoiho/yellow-eyed penguins from Rakiura/Stewart Island</a>
Fisheries New Zealand Aquatic Environment and Biodiversity Reports (AEBRs)	
PRO2017-15	<a href="#">Use of innovative tag technology to examine foraging patterns of seabirds and association with fishing vessels</a>
PSB2020-01	<a href="#">Population trends and breeding population size of black petrels (<i>Procellaria parkinsoni</i>) – 2020/2021 operational report.</a>





**Table 7 – Current status of research relevant to seabird populations of particular concern that was planned for or undertaken during the 2021/22 financial year.**

<b>DOC projects</b>		
POP2021-01	Black petrel monitoring on Aotea/Great Barrier Island 2021/2022	<a href="#">Complete</a>
POP2019-04	Population studies of southern Buller's albatross on The Snares	<a href="#">Complete</a>
POP2020-05	Utilisation of the marine habitat by hoiho/yellow-eyed penguins from Rakiura/Stewart Island	<a href="#">Complete</a>
BCBC	Antipodean wandering albatross satellite tracking and population study 2021 and 2022	<a href="#">Field research undertaken independently</a>
BCBC	Gibson's albatross and white-capped albatross in the Auckland Islands 2021–22	<a href="#">Field research undertaken independently</a>
<b>Fisheries New Zealand projects</b>		
<b>PRO2021-06</b>	Identification of seabird capture 'hotspots' in the CCSBT RFMO	Ongoing
<b>PRO2021-04</b>	Comparing results of protected species captures interactions using different data collection methods	Completed
<b>PRO2021-07</b>	Review, cataloguing and continuation of footage collected from the 2020/21 Black Petrel Electronic Monitoring project	Completed
<b>PRO2021-03</b>	Antipodean albatross multi-threat risk assessment	Ongoing
<b>PRO2021-02</b>	Estimation of warp capture cryptic mortality multipliers with seabird corpse catcher devices	Ongoing
<b>PSB2020-01</b>	Continued population monitoring of Black Petrels	Completed
<b>PSB2020-04</b>	Spatial distribution modelling for hoiho	Completed
<b>PSB2020-05</b>	Grooming and preparation of the hoiho database	<a href="#">Completed</a>
<b>PSB2020-06</b>	Characterisation of all fishing activity that overlaps with hoiho including fish bycatch	<a href="#">Completed</a>
<b>PSB2020-07</b>	Factors affecting protected species captures in domestic surface longline fisheries	<a href="#">Completed</a>
<b>PSB2020-08</b>	Desktop update of estimation of seabird cryptic mortality in trawls, via warp and net captures in the NZ domestic fleet using standard mitigation	Completed
<b>PSB2020-09</b>	Southern hemisphere seabird risk assessment	Ongoing
<b>PSB2020-10</b>	Review and continuation of footage collection from the 2020/21 Black Petrel Electronic Monitoring project	Ongoing
<b>PSB2019-09</b>	Aerial survey of white-capped albatross on the Auckland Islands	Cancelled
<b>PSB2019-08</b>	Feasibility trial and of underwater baitsetter	Delayed
<b>PSB2019-01</b>	Estimation of total captures of seabirds using standardised estimation methods	Ongoing

<b>PRO2019-10</b>	Refine SEFRA model parameterisation for at-risk protected species <sup>26</sup>	Completed
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#### 4.1.2. Risk assessment outputs

<b>Performance measure 13</b>	<b>Level of uncertainty in risk assessment outputs</b>
Target	Decreasing

The seabird risk assessment was not updated during 2021/22. Refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

<b>Performance measure 14</b>	<b>Risk ratios for seabird populations of concern</b>
Target	Decreasing

The seabird risk assessment was not updated during 2021/22. Refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

#### 4.1.3. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Review seabird species of particular concern and report this in the Seabird Annual report for 2020/21</b>
	At the SAG meeting of 27 April 2022, a paper was presented to the Group by DOC to review the species of concern. SAG endorsed the addition of the northern North Island population of spotted shag as a species of concern.

<b>Activity 2</b>	<b>Report updated risk ratios for relevant seabird populations</b>
N/A	The seabird risk assessment was not updated during 2020/21.

<b>Activity 3</b>	<b>Update Conservation Services Programme Seabird Medium Term Research Plan</b>
	The plan was updated in <a href="#">Feb 2022</a> to reflect the 2021 New Zealand Threat Classification update.

<b>Activity 4</b>	<b>Implement new research programme along with Observer Services on hook sink rates utilising time-depth recorders</b>
	The research methods, preliminary findings, and proposed trip-by-trip reports were presented to the AEWG on 11 April 2023. <sup>27</sup> Once published, the results of the research will help inform a review of the bottom longline circular. The intention is to continue to monitor bottom longline sink rates through observer testing using time-depth recorders.

<sup>26</sup> SEFRA refers to Spatially Explicit Fisheries Risk Assessment

<sup>27</sup> AEWG = Aquatic Environment Working Group

## 4.2. Objective 4

<b>Objective 4</b>	<b>The estimated number of fishing-related mortalities is decreasing towards zero</b>
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Fishing-related mortalities is the estimated number of seabird deaths caused by fishing, including cryptic mortality. This is estimated in the seabird risk assessment, which uses the term '*fishery-related deaths.*'

<b>Performance measure 15</b>	<b>Estimated fishing-related deaths, from the seabird risk assessment, relative to the average number of fishing-related deaths between 2014/15 and 2016/17</b>
Target	Decreasing for all species

The seabird risk assessment was not updated during 2020/21. Refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

### 4.2.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Report updated fishing-related deaths for each seabird population</b>
N/A	The seabird risk assessment was not updated during 2020/21

<b>Activity 2</b>	<b>Lead a stakeholder process to seek agreement between industry and eNGOs on interpretation of bycatch and seabird population data for use in the public domain</b>
	Southern Seabirds interviewed Government, industry and NGO communication managers, as well as journalists to find out what seabird bycatch information they routinely seek, and how they currently access it. A stakeholder steering group has used this feedback to consider how simplified bycatch information could be presented. The intention is this high level data will supplement the FNZ Protected Species Capture website.



## 5. Research and Information

Goal 3 of the NPOA Seabirds 2020 is that *information to effectively manage fisheries impacts on seabirds is continuously improved*.

Goal 3 will be achieved through four measurable objectives relating to improving mitigation measures, the monitoring of commercial fishing effort (including developing and improving monitoring methods) and reducing uncertainty in estimates of the risk fishing poses to seabirds.

This section of the report provides an update on the status, as of the end of the 2021/22 fishing year, on the 12 performance measures that will be used to track progress towards meeting Goal 3 of the NPOA Seabirds 2020. This section also summarises progress towards achieving the management actions specified in the Seabird Implementation Plan under Objectives 5, 6, 7 and 8 respectively.

### 5.1. Objective 5

<b>Objective 5</b>	<b>Research is undertaken to improve bycatch mitigation across sectors, especially where there are high bycatch rates and no known effective mitigation (note: mitigation may include spatial and temporal closures)</b>
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This objective relates to both the commercial and non-commercial sectors. It acknowledges the importance of continuously improving mitigation practices.

Three performance measures will be used to track progress towards meeting Objective 5. Research reports regarding seabird bycatch mitigation that were published, planned, or undertaken during the 2021/22 financial year are shown in Appendix 7.

<b>Performance measure 16</b>	<b>Number of mitigation practices assessed</b>
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<b>Performance measure 17</b>	<b>Number of mitigation practices improved, where applicable</b>
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Performance measures 16 and 17 are complementary. In support of moving towards zero fishing-related seabird mortalities, continuous improvement of mitigation is a key aspect of the NPOA Seabirds 2020. Where mitigation practices that apply to the commercial sector are improved, Mitigation Standards, PSRMPs or other components of the mitigation process will be updated to reflect the best available information.

During 2021/22:

- In 2021/22, the Net Capture Programme continued to investigate new mitigation tools and approaches to reduce risk of net captures in the in the southern squid fishery. Following on from previous engagement, the group met twice during the 2021-22 year to update on progress. Many of the mitigation trials were discontinued due to ineffectiveness and operational challenges. However, operations to close the mouth of the net during hauling showed promise as an effective approach, particularly for reducing risk of internal net captures. The work is expected to result in a paper to ACAP.
- Department of Conservation completed projects on the development of an [underwater line setting device](#) for small bottom longline vessels and on [sink rates of line weighting configurations in the snapper longline fishery](#). The distribution of Hookpods to surface longline fishers and associated data collection was also continued.

- During 2021/22, the time depth recorders (TDRs) purchased by Fisheries New Zealand during the previous year were used by observers deployed on longline vessels to collect data on sink rates. Results will be reported in future annual reports.
- The collaborative trial of an underwater bait setting device for surface longline fishers continued. However, issues with obtaining observer coverage during 2021/22, as well as limited success with the alternative option of cameras, mean that the trial was extended into 2022/23 at no extra cost to any party

<b>Performance measure 18</b>	<b>Number of fisheries without available or known effective mitigation</b>
Target	Decreasing

This performance measure recognises the need to identify or develop mitigation options for those fisheries with a risk of seabird capture, but that do not currently have recognised or effective mitigation.

It is acknowledged that effective mitigation for non-commercial fisheries is not well known. As noted in section 3.2.2. the process of forming a steering group of recreational fishers and amateur charter vessel (ACV) operators remains ongoing. It is anticipated that one of the functions of the group will be to collect information on effective mitigation for non-commercial fishers.

#### 5.1.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Continue trials of underwater bait/line setting devices in relevant fisheries</b>
	Trialling of an underwater bait setting device on small bottom longline vessels continued. However, various issues have meant that the project was not completed, and it has been extended into 2022/23.

<b>Activity 2</b>	<b>Continue development and trial of options for mitigating capture of seabirds in trawl nets</b>
	This is described under performance measures 16 and 17.

<b>Activity 3</b>	<b>Identify and develop options for improving sink rates in bottom longline fisheries</b>
	Research <a href="#">completed</a> to identify line weighting configurations in the snapper longline fishery. Further work to identify options in other target fisheries is planned for 2022-23.

<b>Activity 4</b>	<b>Collaborate on the development and trial of weighted hooks</b>
	DOC and SST supported the initial development of the Procella hook and began outreach to fishers through the DOC Fishery Liaison Programme. <sup>28</sup>

<sup>28</sup> Further information on the Procella hook is available [here](#)

## 5.2. Objective 6

<b>Objective 6</b>	<b>Monitoring programmes for New Zealand commercial fisheries are designed and implemented to provide statistically robust information to assess progress toward the NPOA Seabirds 2020's objectives</b>
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This objective is focused solely on the commercial sector and ensuring that monitoring programmes are appropriately designed to support the NPOA Seabirds 2020. To date, Fisheries New Zealand's observer programme has been the primary means of monitoring commercial fisheries. However, it is anticipated that during the term of the NPOA, electronic monitoring (cameras on vessels) will provide an additional means of monitoring commercial fisheries.

Performance measures 19-23 are used to track progress towards meeting Objective 6.

<b>Performance measure 19</b>	<b>Monitoring objectives and needs are documented and updated annually, informed by the risk assessment and species conservation concern</b>
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This performance measure will demonstrate transparent and robust planning and documenting of monitoring priorities for seabirds.

A summary of monitoring objectives, fishery risk, and observer coverage in relation to species of particular concern was developed for 2022/23 and circulated to the Seabird Advisory Group prior to the 23 November 2022 meeting. The document is included as Appendix 5.

<b>Performance measure 20</b>	<b>Monitoring coverage across all fisheries</b>
Target	Increasing

### *Observer coverage*

Information on the delivery of the observer seadays plan for the 2021/22 financial year is provided in Appendix 8.

Figures 3-9 show observer coverage levels (% of effort observed) between the 2014/15 and 2021/22 fishing years for >28 m trawl, <28 m trawl, scampi trawl, surface longline, set net, autoline and manual baiting bottom longline fisheries. To provide a greater level of information, coverage levels are further broken down by target species, vessel size or area (as appropriate).

In summary, observer coverage on the >28m trawl fleet remains at a consistently high level while coverage on the <28m trawl, hand-baiting bottom longline, and >7m set fleets remains constant but at relatively low levels. Coverage on the scampi trawl and autoline bottom longline fleets has been variable over time, while coverage on the surface longline fleet during 2021/22 was affected by the inability to place observers on vessels where adherence to watchkeeping requirements could not be guaranteed.

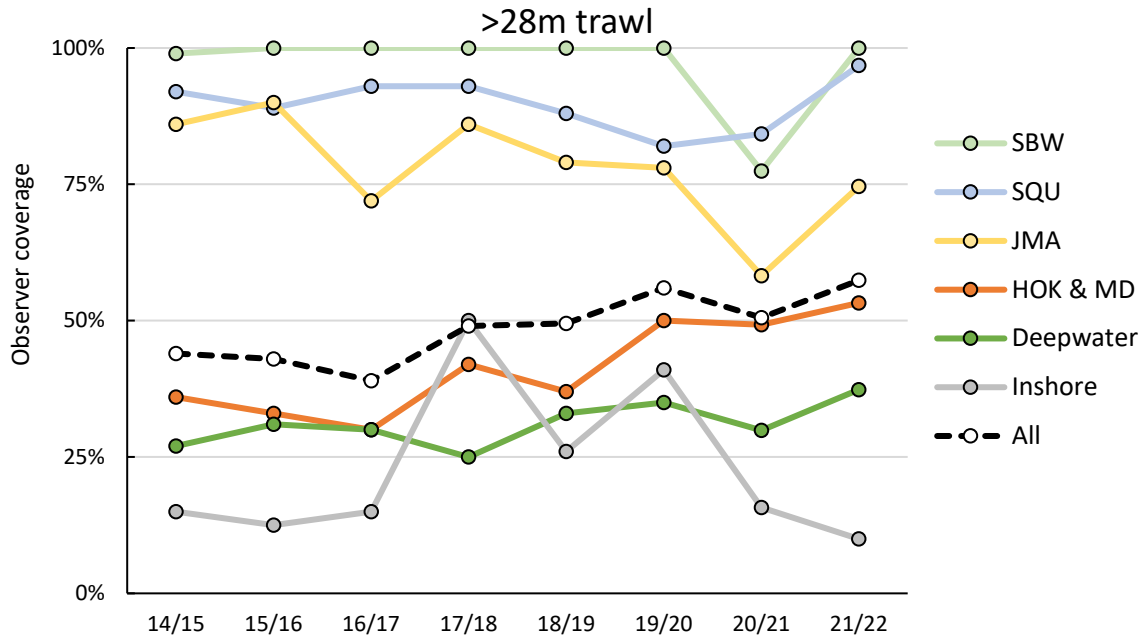


Figure 3 – Percent observer coverage (% tows observed) of the >28 m trawl fleet by target species<sup>29</sup> between the 2014/15 and 2021/22 fishing years. 'Deepwater (DW)' target species are principally orange roughy and oreo species, 'hoki and middle-depth' includes hoki, hake and ling, as well as barracouta, warehou species (and others) while 'Inshore' target species are predominantly tarakihi, trevally and snapper.

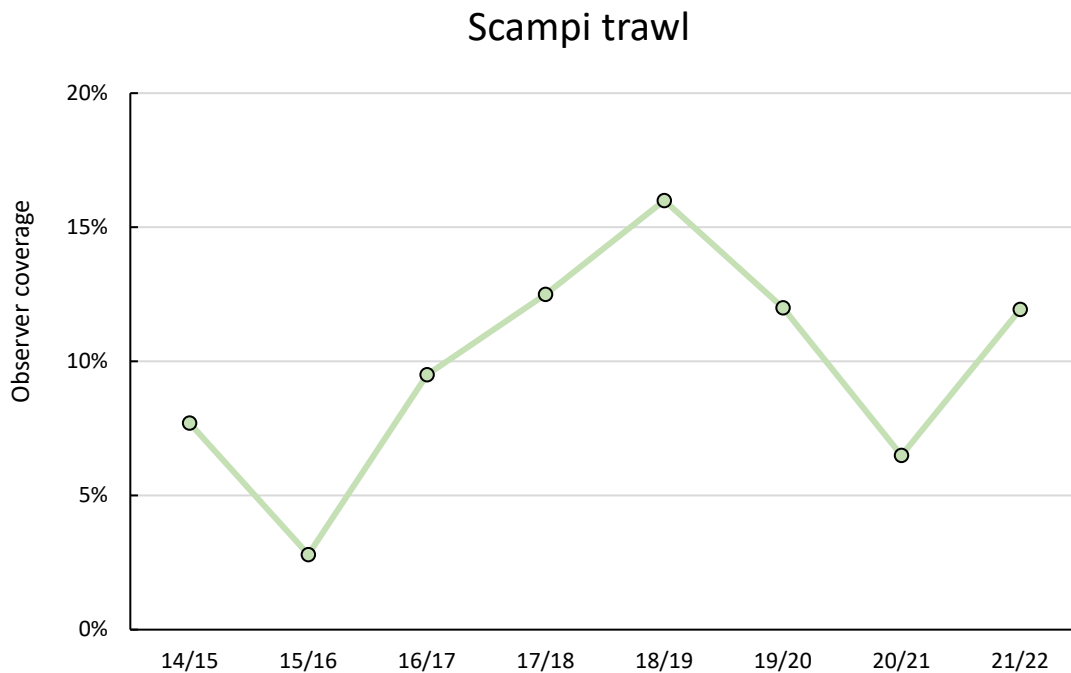


Figure 4 – Percent observer coverage (% tows observed) of the scampi trawl fleet (all QMAs combined) between the 2014/15 and 2021/22 fishing years.

<sup>29</sup> SBW = southern blue whiting, SQU = squid, JMA = jack mackerel, DW = deepwater, HOK = hoki

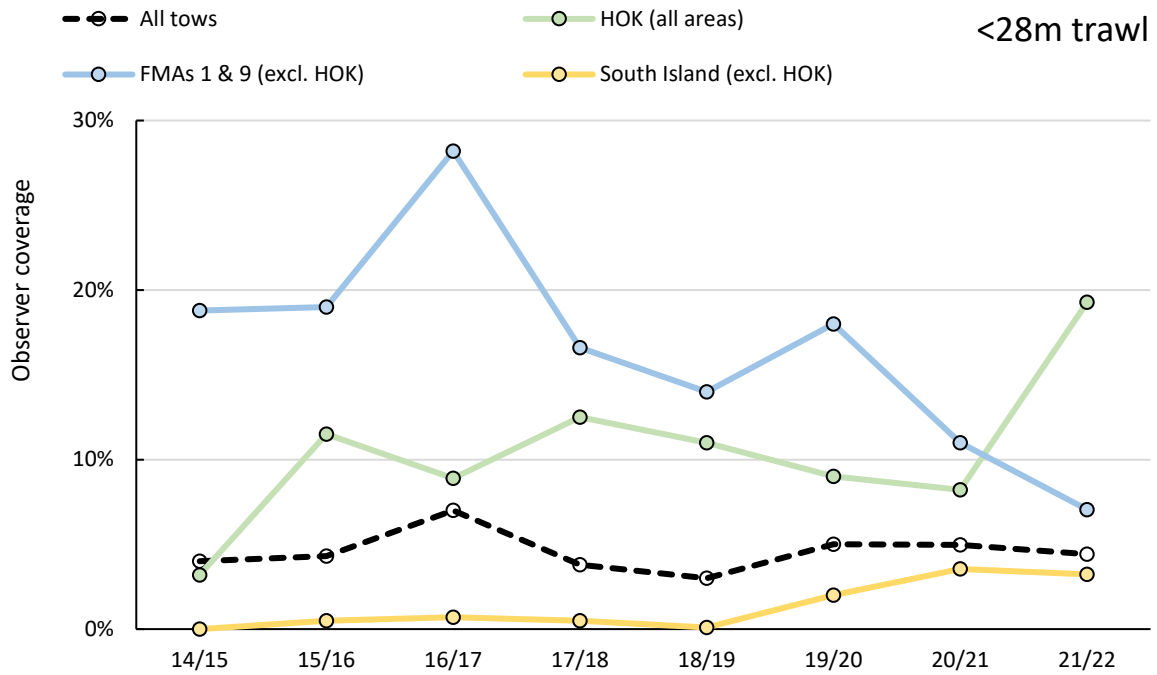


Figure 5 – Percent observer coverage (% tows observed) of the <28 m trawl fleet by target species/area between the 2014/15 and 2021/22 fishing years. ‘South Island’ includes all effort in FMAs 3, 5 & 7 excluding tows that targeted hoki.

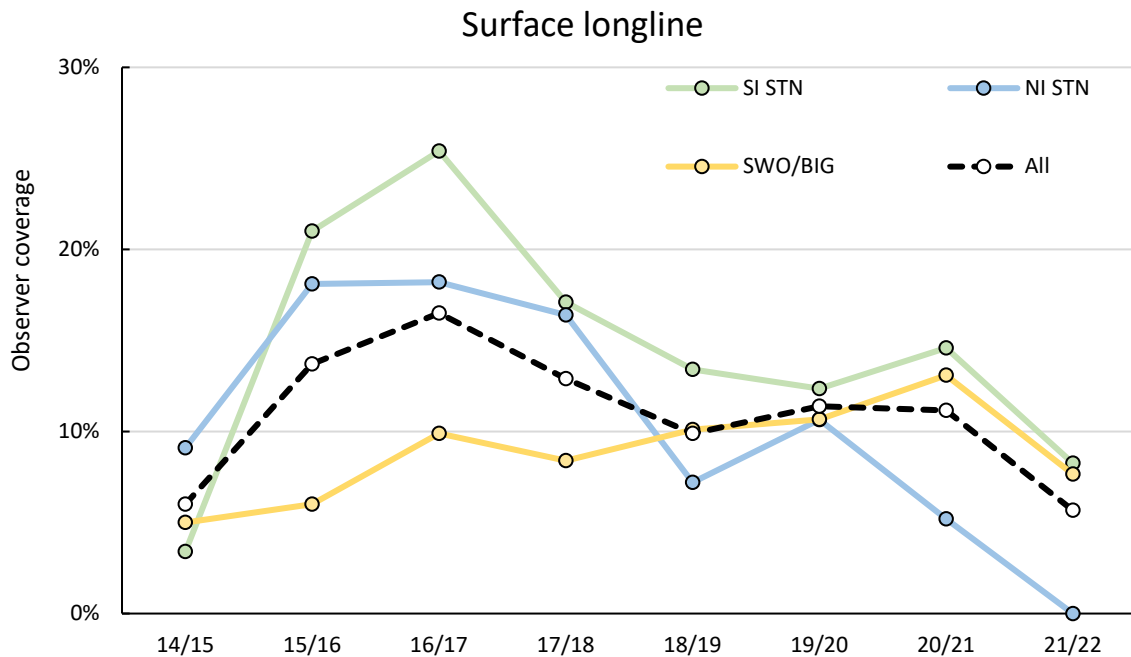


Figure 6 – Percent observer coverage (% of hooks set) of the surface longline fleet by target species/area between the 2014/15 and 2021/22 fishing years. ‘North Island’ includes all effort in FMAs 1, 2, 8 & 9; ‘South Island’ includes all effort in FMAs 3, 4, 5, 6 & 7.



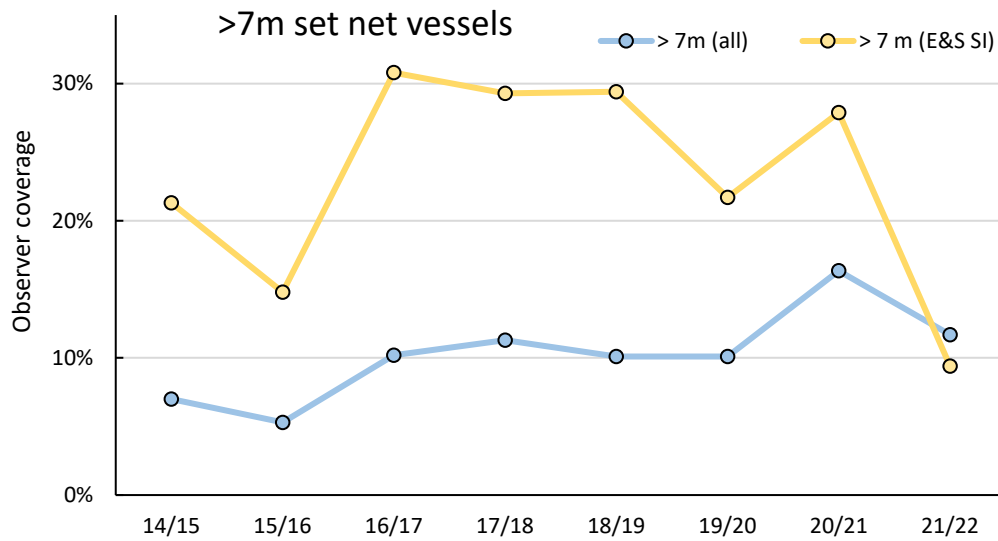


Figure 7 – Percent observer coverage (metres of net set) of the >7 metre set net fleet between the 2014/15 and 2021/22 fishing years. ‘East and South Coast South Island’ (E&S SI) includes all effort off the coast of Otago, Southland, Stewart Island & Fiordland (statistical areas 024 – 032).

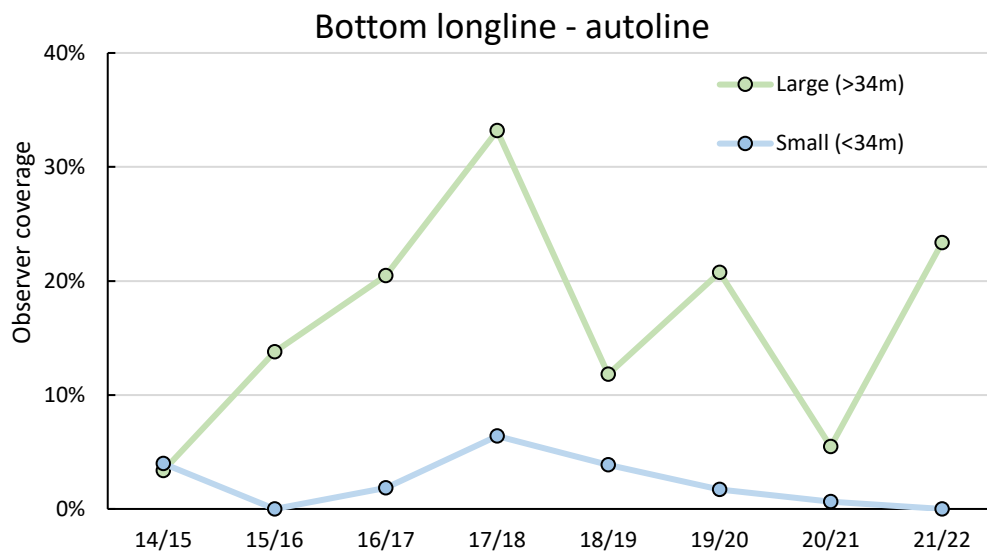
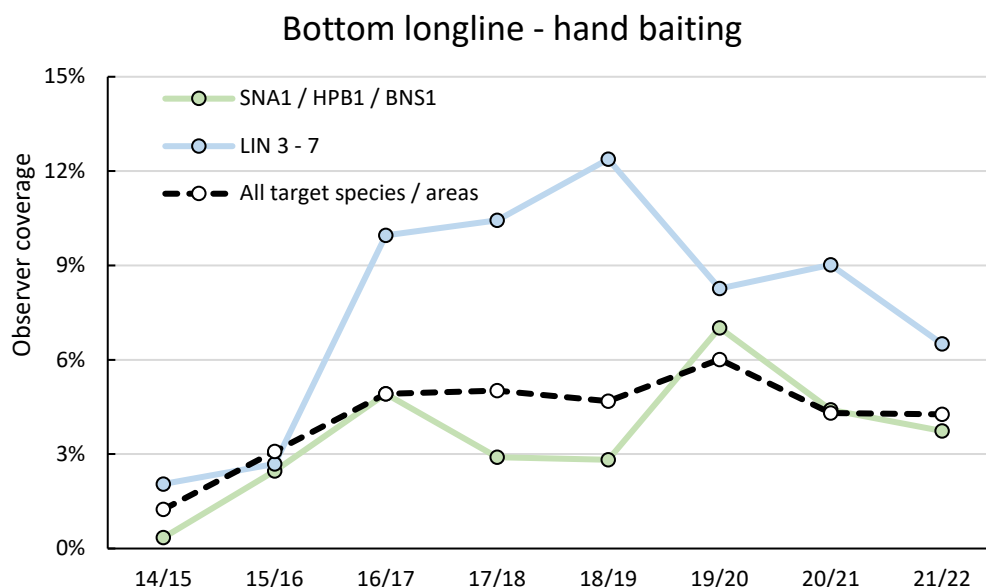


Figure 8 – Percent observer coverage (% of hooks set) of large (>34 m) and small (<34 m) autoliners (all target species and areas combined) between the 2014/15 and 2021/22 fishing years (excludes effort outside the EEZ).



**Figure 9 – Percent observer coverage (% of hooks set) of the manual bottom longline fleet by target fishery/area between the 2014/15 and 2021/22 fishing years.**

Additional information on observer coverage can be found in Appendix 4, on the [protected species capture website](#), and in the 2021/22 Annual Review Reports for [deepwater](#) and [HMS<sup>30</sup>](#) fisheries.

#### *Other monitoring*

The Black Petrel Electronic Monitoring Programme, initiated in 2016, continued until the end of the 2021/22 fishing year. Cameras were present on eight bottom longline vessels during 2021/22, with the vessels primarily targeting snapper.

Refer to Activity 4 under performance measure 22 below for a summary of footage reviewed for the 2020/21 Black Petrel Electronic Monitoring.

<b>Performance measure 21</b>	<b>Uncertainty in risk assessment arising from limited monitoring data</b>
Target	Decreasing

Uncertainty arising from limited monitoring data is best reflected in the estimates of fishing-related deaths in the risk assessment, as observed (or e-monitored) captures are a key input to estimating fishing-related deaths.

The seabird risk assessment was not updated during 2021/22. Refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

<sup>30</sup> Highly migratory species (HMS) are those fish that swim large distances and are found in New Zealand and international waters (e.g. tuna, swordfish, and pelagic sharks).

<b>Performance measure 22</b>	<b>The Fisheries New Zealand monitoring plan, and the plan's rationale is published annually</b>
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For the 2021/22 financial year, information on the objectives of deepwater and Highly Migratory Species (HMS) observer coverage was made available in the [Annual Operational Plan for Deepwater Fisheries 2021/22](#) and the [HMS Annual Operational Plan 2021/22](#). Information on the rationale for observer coverage in inshore fisheries was made available in the [Conservation Services Programme Annual Plan 2021/22](#).

The draft monitoring plan (observer seadays plan) for the 2021/22 financial year was made available in the version of NPOA Seabirds 2020 Implementation Plan dated July 2021 as well as the [Fisheries New Zealand](#) website.

Future iterations of the monitoring plan will be discussed annually with the Seabird Advisory Group and uploaded onto the Fisheries New Zealand webpage at the start of each financial year.

### 5.2.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Review the forms and data collection methods used by observers and fishers to make sure they are appropriate to support the NPOA Seabirds 2020</b>
	Refer performance measure 24

<b>Activity 2</b>	<b>Document monitoring objectives and needs based on risk assessment outputs. Include as Annex to Implementation Plan</b>
	Refer Appendix 6

<b>Activity 3</b>	<b>Continue the Black Petrel Electronic Monitoring project for the 2021/22 summer</b>
	For the 2020/21 season, reporting will be done as part of PRO2021-07. A formal report summarising the Black Petrel Electronic Monitoring project 2021/22 will be published in 2023.

<b>Activity 4</b>	<b>Review the footage collected by the 2020/21 Black Petrel Electronic Monitoring Project</b>
	For the 2019/20 season, 95% of fishing trips with footage (608 fishing events) have been reviewed. This represents 23.6% of hooks set during 2019/20 in the SNA 1 BLL fishery. From the review, 65 seabird captures were detected, the most frequently caught species was the flesh-footed shearwater. The report can now be found <a href="#">online</a> .

### 5.3. Objective 7

<b>Objective 7</b>	<b>Observation and monitoring methods are researched, developed and implemented across all sectors</b>
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This objective covers all sectors and acknowledges that there are gaps in our observation and monitoring framework in terms of collecting information on seabird interactions, particularly for non-commercial fisheries.

Three performance measures (23-25) are used to track progress towards meeting Objective 7.

<b>Performance measure 23</b>	<b>New observation and monitoring methods (including e-monitoring) are incorporated into monitoring programmes, analyses and reporting</b>
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Electronic reporting became mandatory for the entire commercial fishing fleet during the first quarter of the 2019/20 fishing year. Fishers using surface and bottom long-lining fishing methods are required to report detailed information on setting and hauling, including the location and time of the start and end of set.

This information can be analysed to provide additional data on adherence to specific aspects of the Mitigation Standards. The two bottom longline [Mitigation Standards](#) encourage fishers to conduct setting at night to limit seabirds' access to baited hooks during setting. The surface longline [Mitigation Standard](#) encourages fishers to set at night and use line weighting unless hook-shielding devices are used.

Using fisher-reported setting information, the nautical dusk and dawn times at that specific location, for that day, can be calculated. In this analysis, the results of which are presented in the table below, the calculation was done using the 'getSunlightTimes()' function from the [suncalc package](#) in the statistical software R. For the purposes of this analysis, 30 minutes was added to the nautical dusk time and 30 minutes subtracted from the nautical dawn time to be consistent with requirements in the relevant [circulars](#).

The window between these times is what we consider to be 'night'. Once the relevant times have been calculated, a logic test is run over the data. If the start or end of set took place during the 'night' (between ½ an hour after dusk, and ½ an hour before dawn), it is tagged with a 'night' flag, otherwise it is given a 'day' flag.

A summary of setting time of day information for longline fishing undertaken during the 2019/20 to 2021/22 fishing years is provided in Table 8 below.

**Table 8. Summary of time of day setting information for longline fishing for the 2019/20 to 2021/22 fishing years**

Auto bottom longline					
Year	# of sets for which data available	Start and end at night (%)	Start and end during day	Start at night, end during day	Start during day, end at night
2019/20	3,002	45%	44%	9%	2%
2020/21	2,865	47%	42%	8%	2%
2021/22	1,795	43%	45%	10%	2%

Hand-baiting bottom longline					
Year	# of sets for which data available	Start and end at night (%)	Start and end during day	Start at night, end during day	Start during day, end at night
2019/20	15,050	33%	50%	12%	4%
2020/21	15,853	36%	50%	10%	4%
2021/22	13,077	33%	51%	11%	5%

Surface longline					
Year	# of sets for which data available	Start and end at night (%)	Start and end during day	Start at night, end during day	Start during day, end at night
2019/20	2,178	77%	1%	8%	14%
2020/21	1,805	73%	2%	5%	20%
2021/22	1,418	79%	3%	6%	13%

Information on fisher-reported seabird captures, including how the captures occurred, is provided in Appendix 2.

Following a successful pilot project testing a new monitoring tool and stakeholder engagement framework in the Marlborough Sounds in 2020/21, the Department of Conservation (DOC) extended the programme to include improved monitoring of recreational fishing bycatch in the wider Hauraki Gulf region in 2021/22. This work supports DOC's commitments under the Sea Change Strategy. Project objectives are supported by a diversified programme of public outreach through education and awareness using new and existing networks such as the Hauraki Gulf Forum, seabird conservation groups, Kelly Tarlton's and the Hutchwilco Boat show. The focus has been on large target audiences (fishers and citizen scientists) to promote the use of the Protected Species Catch app to report recreational bycatch of marine protected species, including seabirds. Data can be viewed here <https://docnewzealand.shinyapps.io/protectedspeciescatch/>.

<b>Performance measure 24</b>	<b>Update and improve observer and fisher reporting requirements to enable effective analysis of bycatch and mitigation use as necessary</b>
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*Observer reporting requirements*

No amendments to observer reporting requirements were made during 2021/22.

### Fisher reporting requirements

During 2020, Fisheries New Zealand began a review of specific aspects of the two electronic logbook circulars.<sup>31</sup> This resulted in amendments to reporting requirements, which are detailed [here](#). In relation to seabirds, the amendments included:

- Requiring fishers to report whether a PSRMP had been developed for the fishing method that would be used most during a trip
- Mandatory reporting of mitigation use by trawl and longline fishers
- Expanding the list of mitigation devices and operational practices available to trawl and longline fishers
- Requiring surface longline fishers and bottom longline fishers (except those using integrated weight line) to recording line weighting regime details
- Requiring the fish catch event ID to be reported on non-fish and protected fish species catch reports (with the exception of seabird deck strikes)

The amended reporting requirements were phased in between September and November 2021. The new information was therefore available for most of the 2021/22 fishing year.

Performance measure 25	Proportion of commercial fishers reporting mitigation use
Target	100% by 2022

As noted under performance measure 24 above, reporting of mitigation use by trawl and longline fishers became mandatory at the end of the 2021 calendar year. For the 2019/20 and 2020/21 fishing years, reporting of mitigation use was not required although the majority of fishers reported this information (refer Table 9).

Table 9 summarises the available information for 2019/20 to 2021/22 fishing years.

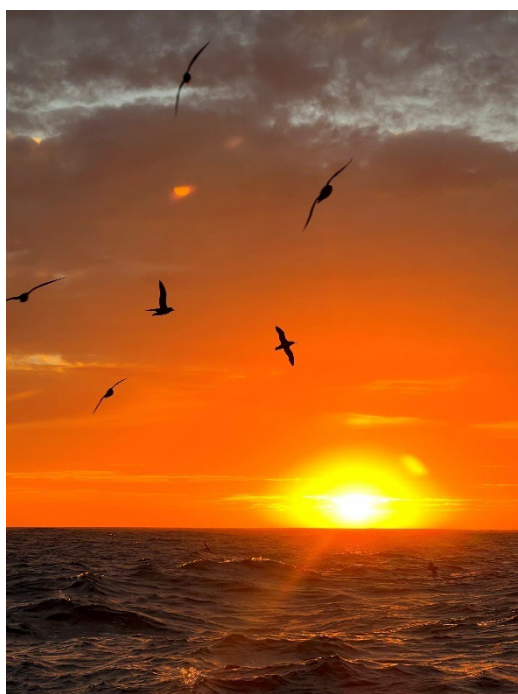


<sup>31</sup> All circulars, including those in force and those that have been revoked can be viewed [here](#)

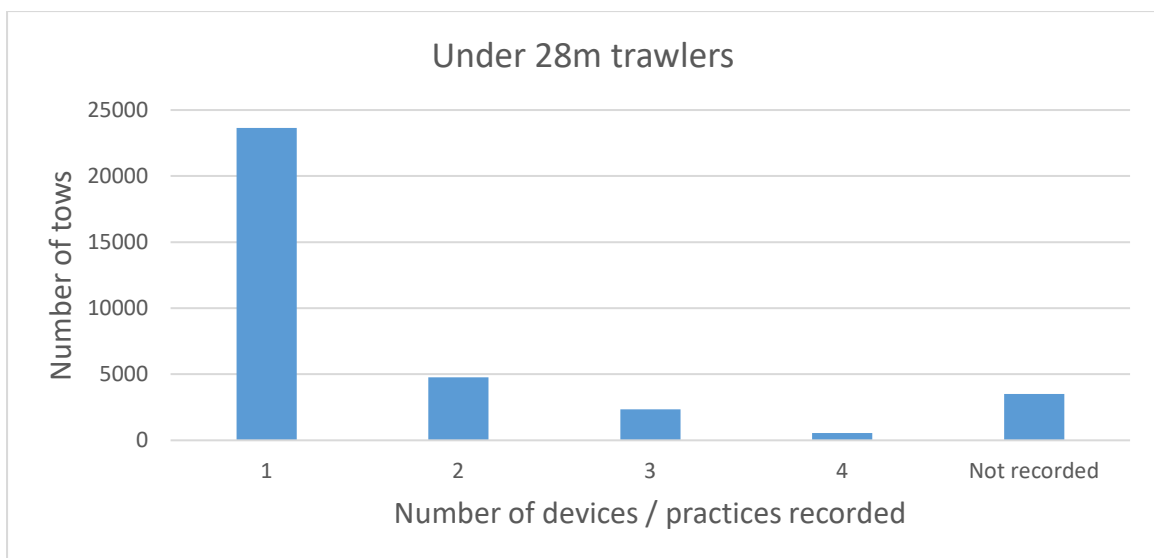
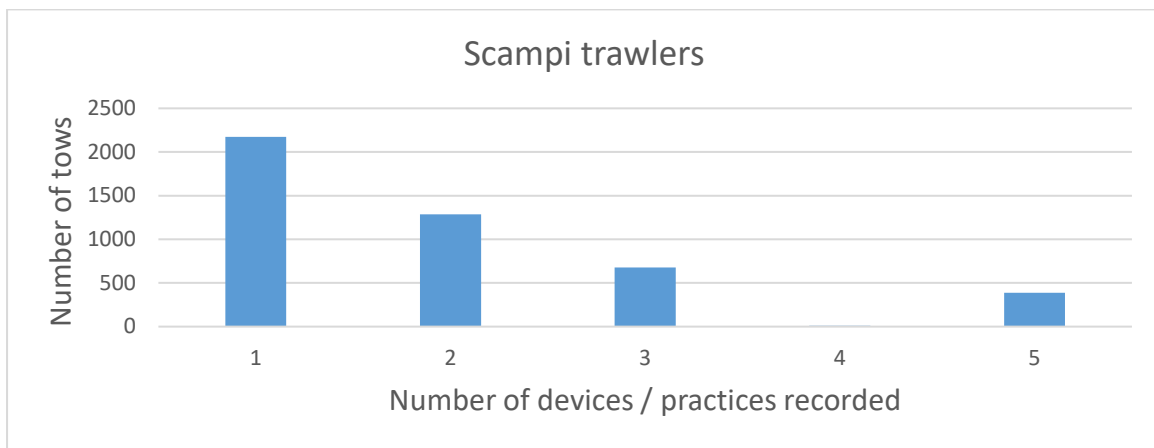
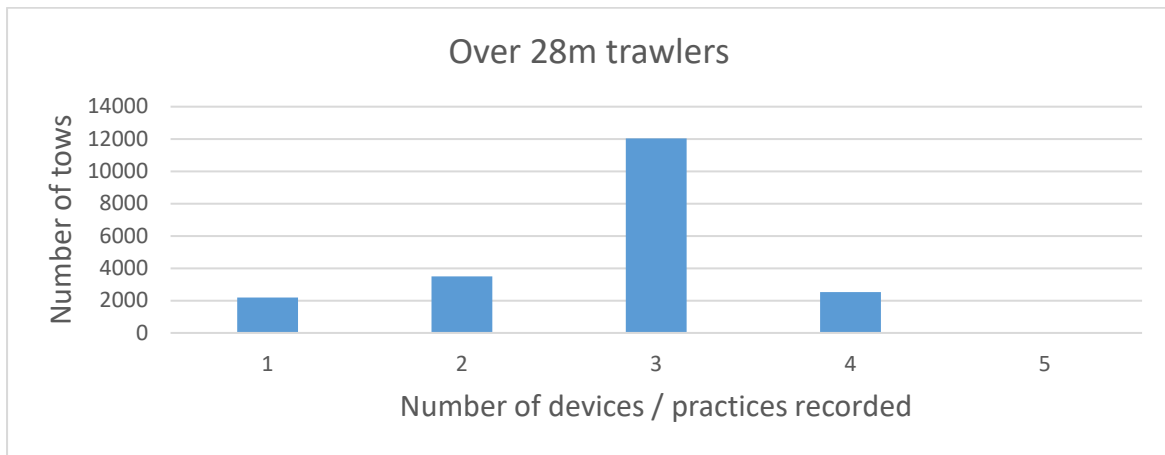
**Table 9 - Summary of commercial fisher mitigation use reporting during the 2019/20 to 2021/22 fishing years**

Fleet	Fishing year	Number of fishing events reported electronically <sup>32</sup>	Proportion of events reported electronically	Number of fishing events where mitigation use was reported	Proportion of electronically-reported events where mitigation use was reported
Trawl >28m	2019/20	23,862	100%	23,829	99.9%
	2020/21	21,676		21,317	98.3%
	2021/22	20,274		20,274	100%
Scampi trawl	2019/20	4,562	100%	4,553	99.8%
	2020/21	4,926		4,911	99.6%
	2021/22	4,538		4,538	100%
Trawl <28m	2019/20	37,325	99%	17,056	46%
	2020/21	37,810	100%	17,942	47.5%
	2021/22	34,790		31,289	90%
Auto BLL	2019/20	3,018	94%	3,005	99.6%
	2020/21	2,870	100%	2,870	100%
	2021/22	1,804		1,804	100%
Manual BLL	2019/20	15,119	98%	13,292	88%
	2020/21	15,933	100%	12,429	78%
	2021/22	13,094		12,476	95%
Surface longline	2019/20	2,178	99%	1,960	90%
	2020/21	1,832	100%	1,707	93%
	2021/22	1,424		1,424	100%

As well as reporting of mitigation use becoming mandatory, a wider range of mitigation and operational practices was made available for fishers to choose from. The number of devices / practices recorded is shown in the graphs below.

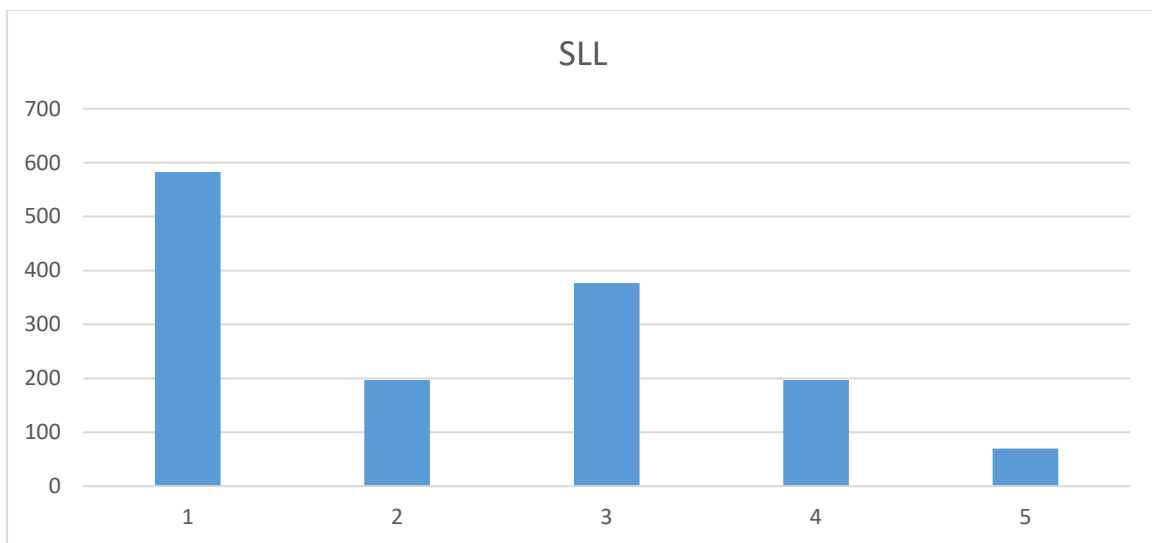
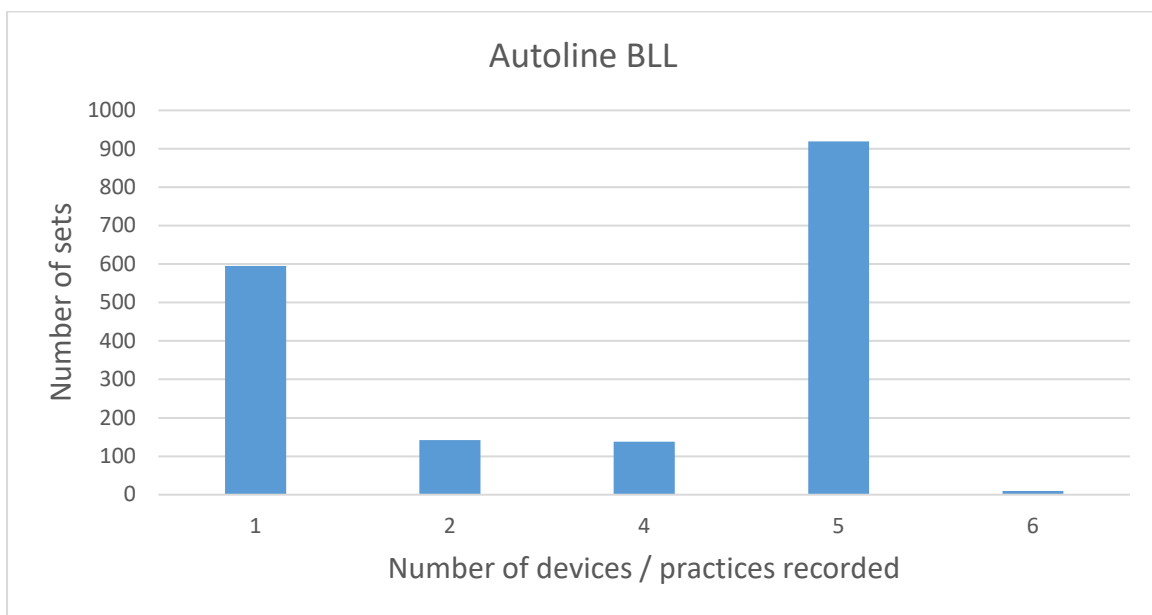
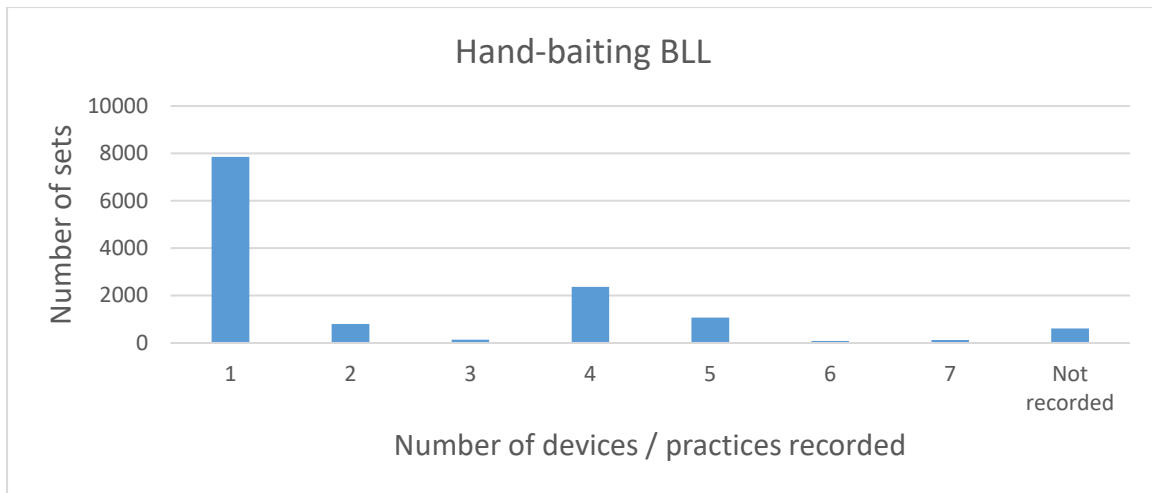


<sup>32</sup> Rollout of ER across the fleet was not completed until the first quarter of the 2019/20 fishing year.



**Figure 10 - Number of mitigation devices / operational practices recorded by the over 28m (upper), scampi (centre) and under 28m (lower) trawl fleets during the 2021/22 fishing year**





**Figure 11 - Number of mitigation devices / operational practices recorded by the hand-baiting (upper), autoline (centre) and surface (lower) longline fleets during the 2021/22 fishing year**

Requiring fishers to record whether a protected species risk management plan (PSRMP) had been developed for the main fishing method intended to be used during the trip also became mandatory at the beginning of the 2021/22 fishing year. It is likely that some of the information recorded was not correct and that further education may be required. For example, in some fleets where all vessels have a PRSMP, there were some trips where fishers recorded that the vessel did not have a PSRMP, which was clearly incorrect.

For the bottom longline fleets, mandatory reporting of the use of integrated weight line (IWL) or externally weighted line (and the corresponding line weighting regime) began in the 2021/22 fishing year. Fisheries New Zealand understands that IWL is only used by some vessels in the autoline fleet. However, IWL was recorded as having been used for around 20% of sets conducted by the hand-baiting bottom longline fleet during the 2021/22 fishing year.<sup>33</sup> This indicates that further education may be required in relation to reporting this information.

Reporting of line weighting also became mandatory for the surface longline fleet. There is also an indication that further education may be required for this fleet too. If no additional weight is added to the snood, the instruction was to record '0' for both the 'Weight on snoods' and 'Distance from hook (m)'. However, for around 25% of sets where line weighting was recorded, the 'Distance from hook (m)' is recorded as not being 0 when 'Weight on snoods' is recorded as 0.

### 5.3.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Targeted application of bycatch reporting app to fishers in the Hauraki Gulf</b>
	Completed. Data can be viewed at: <a href="https://docnewzealand.shinyapps.io/protectedspeciescatch/">https://docnewzealand.shinyapps.io/protectedspeciescatch/</a>
<b>Activity 2</b>	<b>Continue to attempt to facilitate access to footage and stills of seabird captures to support development of software to allow AI detection of seabirds in EM</b>
	CSIRO (Australia) is developing software for detection of seabirds and tori lines. Stills and videos of bycaught seabirds have been provided to the CSIRO team by Wildlife Management International Ltd, with support from DOC.

<sup>33</sup> This measure relates to the sets where this information was recorded. Around 16% of sets were conducted prior to the recording of IWL / externally weighted line becoming mandatory.

## 5.4. Objective 8

<b>Objective 8</b>	<b>A research programme provides information to reduce uncertainty in estimates of risk to seabirds from fishing across all sectors</b>
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This objective, and its associated performance measures, relates to the seabird risk assessment and complements the work undertaken in relation to Objectives 6 and 7.

Two performance measures are used to track progress towards meeting Objective 8.

<b>Performance measure 26</b>	<b>Uncertainty in risk assessment due to limited biological data</b>
Target	Decreasing

Assessing the risk to a population (or the impacts of fishing on the population) relies on having good information on population size and any trends, as well as distribution and behavioural information.

The seabird risk assessment was not updated during 2020/21. Refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

<b>Performance measure 27</b>	<b>Uncertainty in risk assessment due to limited information about the nature of fishing interactions with seabirds (such as vulnerability and cryptic mortality)</b>
Target	Decreasing

This performance measure is focused on reducing uncertainty associated with understanding the nature of fishing interactions with seabirds.

### *Cryptic mortality*

Cryptic mortality refers to direct mortalities that would not be recorded by an observer. For example, a bird that strikes a trawl warp but is not observable from the vessel. Cryptic mortality estimates are a key component of overall risk as it scales up captures to estimate deaths attributed to fishing.

Cryptic multipliers for net and warp captures on the New Zealand domestic trawl fleet were updated under project PSB2020-08 and the report is In Press (as at April 2023).

The seabird risk assessment was updated during 2021/22 and is currently In Press (as at April 2023). For the previous results please refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

### *Vulnerability*

Seabird vulnerability to capture differs according to both the species group and fishery type. Some species are more attracted to fishing vessels than others, and some fisheries are more likely than others to catch birds.

The seabird risk assessment was updated during 2021/22 and is currently In Press (as at April 2023). Refer to the [2019/20 Seabird Annual Report](#) for a description of reporting against this performance measure.

### 5.4.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Seabird monitoring projects (Table 2 of Implementation Plan) provide improved input data for priority/uncertain species</b>
	Refer to Tables 7 and 51 for updates on the relevant research planned for 2021/22

## 6. International Engagement

Goal 4 of the NPOA Seabirds 2020 is that ***New Zealand actively engages internationally to promote measures and practices that reduce impacts on New Zealand seabirds.***

This goal will be achieved through four measurable objectives that relate to assessing the risk that fishing outside the New Zealand EEZ poses to New Zealand seabirds and communicating this internationally, advocating for international seabird conservation measures and capacity building.

This section of the report provides an update on the status, as at the end of the 2021/22 fishing year, on the nine performance measures that will be used to track progress towards meeting Goal 4 of the NPOA Seabirds 2020. This section of the report also summarises progress towards achieving the management actions specified in the Seabird Implementation Plan under Objectives 9, 10 and 11 respectively.

### 6.1. Objective 9

<b>Objective 9</b>	<b>The risk to New Zealand seabirds from fisheries outside the New Zealand EEZ is assessed and communicated to international organisations, governments and other stakeholders</b>
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The migratory nature of many New Zealand seabirds means they are also threatened by the operations of New Zealand and foreign-flagged vessels on the high seas, or by fishers operating in waters under the jurisdiction of other states.

Four performance measures (28-31) are used to track progress towards meeting Objective 9.

<b>Performance measure 28</b>	<b>A fisheries risk assessment for seabirds is completed and updated to incorporate data for New Zealand seabirds caught outside the New Zealand EEZ</b>
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Extending the risk assessment framework to New Zealand seabirds caught outside the EEZ will assist with prioritising management action at a global scale.

The New Zealand delegation to the [Commission for the Conservation of Southern Bluefin Tuna](#) (CCSBT) Ecologically Related Species Working Group (ERSWG) presented multiple papers when the group met in March 2022. These include:<sup>34</sup>

- A hotspot analysis using Antipodean albatross as a test case
- Risk assessment framework for seabirds in the southern hemisphere
- Antipodean albatross multi-threat risk assessment
- Factors affecting protected species captures in domestic surface longline fisheries

CCSBT Members agreed at the 2022 meeting to make ERSWG meetings an annual occurrence (they were previously biennial with alternating years being technical workshops). This will help advance CCSBT's commitments to seabird initiatives, including implementing the Multi-Year Seabird Strategy. Another important seabird project, which is being led by New Zealand (in collaboration with Japan), is an update of the southern hemisphere SEFRA. This update will incorporate seabird data from various CCSBT Member nations and will involve three New Zealand-led workshops over two years. Final results of the SEFRA are tentatively scheduled to be presented at the ERSWG meeting in May 2024.

<sup>34</sup> All the papers listed here are available online at <https://www.ccsbt.org/en/past-meeting-documents/684>

Performance measure 29	New Zealand’s information on compliance with seabird measures is shared with relevant flag states, CCAMLR, <sup>35</sup> and Regional Fisheries Management Organisations
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[CCAMLR](#) and the Regional Fisheries Management Organisations (RFMOs) that New Zealand is a member of, have management measures relating to seabird mitigation. This performance measure acknowledges the need for a feedback loop between vessels, flag states, regional bodies, and RFMOs relating to compliance with seabird measures.

During 2022, New Zealand undertook two high seas boarding and inspection operations in the Western and Central Pacific Ocean Convention Area (WCPO). This was the first time that New Zealand has been able to conduct surface patrolling of the high seas since 2019. Operation Nasse included the patrolling of the Tasman Sea, in partnership with assets from Australia, France, and the United States of America.

Following Op Nasse, New Zealand further embarked Fishery Officers from Fiji and Vanuatu to support the FFA fisheries patrol – Operation Island Chief (patrolling the exclusive economic zones of Fiji and Vanuatu). Many changes in operating procedures were required due to the risk of COVID-19, including the limiting of boarding times, use of personal protective equipment, social distancing, and decontamination post the boarding and inspection.

New Zealand also undertook several aerial surveillance patrols of the Pacific and South Oceans using the Royal New Zealand Air Force (RNZAF) P-3K2 Orion aircraft. A summary of high seas aerial surveillance conducted during 2021/22 is set out in Table 11.

New Zealand completed 27 surveillance flights; five flights patrolling the high seas on behalf of the [Western and Central Pacific Fishery Commission](#) (WCPFC) that detected 72 longline fishing vessels, and 20 flights in the South West Pacific in support of [Forum Fisheries Agency](#) (FFA) countries in undertaking wide area surveillance within the countries’ EEZs, that detected 279 longline fishing vessels. During 2022, five vessels were observed in the Western and Central Pacific Ocean with potential breaches relating to seabird mitigation measures as required by [CMM 2018-03](#). These breaches largely related to the use of tori lines not meeting the specifications of the WCPFC. New Zealand is currently working with international compliance staff to resolve a number of these issues.

Two flights in support of CCAMLR detected and reported a total of seven vessels involved in bottom longlining. One objective of the flights was to detect any potential non-compliance with WCPFC CMM<sup>36</sup> [2018-03](#), and another was to provide an overt presence to deter any future non-compliance. No breaches were identified in relation to seabird mitigation measures during the reporting period.

**Table 10 – Summary of aerial surveillance operational activity conducted during 2021/22**

<sup>35</sup> Commission for the Conservation of Antarctic Marine Living Resources.

<sup>36</sup> CMM – Conservation and Management Measure

Month	Area of operation	Purpose for flight	All FVs	Trawl (>28m) FVs observed	Surface Longlining FVs observed	Bottom Longlining FVs observed	Surface Long Liners Operating Below 30S	Surface Long Liners observed day setting	Vessels Imaged	Incorrect BMD deployment
Nov-21	Southern Ocean	CCAMLR patrol	1	0	0	1	0	0	0	0
Dec-21	Southern Ocean	CCAMLR patrol	6	0	0	6	0	0	0	0
Feb-22	Louisville Ridge	WCPFC Patrol	15	0	0	0	0	0	15	0
May-22	SE Solomon - Fiji	FFA Patrol	20	0	19	0	0	0	9	0
May-22	Fiji - Tuvalu	FFA Patrol	11	0	8	0	0	0	6	0
May-22	Fiji - Tokelau	FFA Patrol	20	0	16	0	0	0	6	0
May-22	Fiji - Tonga	FFA Patrol	8	0	5	0	0	0	3	0
May-22	Tasman Sea	WCPFC Patrol	19	0	19	0	18	3	16	1
May-22	Tui Moana - Fiji	FFA Patrol	14	0	14	0	0	0	0	0
May-22	Tui Moana - Tuvalu	FFA Patrol	5	0	5	0	0	0	4	0
May-22	Tui Moana - Tonga/Samoa/Tokelau	FFA Patrol	22	0	8	0	0	0	7	0

May-22	Tui Moana - Cook Islands High Seas Boundary	FFA Patrol	9	0	9	0	0	1	9	0
Jul-22	Samoa	FFA Patrol	1	0	1	0	0	0	1	0
Jul-22	Tokelau	FFA Patrol	1	0	1	0	0	0	1	0
Jul-22	Cook Islands northern boundary	FFA Patrol	34	0	32	0	0	0	9	0
Jul-22	Kiribati	FFA Patrol	20	0	19	0	0	0	2	0
Jul-22	Nasse flight one	WCPFC Patrol	9	0	9	0	4	2	9	0
Jul-22	Nasse flight two	WCPFC Patrol	18	0	18	0	1	5	18	0
Jul-22	Nasse flight three	WCPFC Patrol	11	0	11	0	1	1	9	1
Aug-22	Island Chief - Fiji/Tonga/Samoa	FFA Patrol	7	0	7	0	0	1	5	0
Aug-22	Island Chief - Kiribati	FFA Patrol	21	0	20	0	0	1	21	0
Aug-22	Island Chief - Fiji	FFA Patrol	1	0	1	0	0	1	1	0
Aug-22	Island Chief - Tuvalu/Fiji	FFA Patrol	21	0	18	0	0	3	19	0
Sep-22	Mahi Tahī - Vanuatu/HSP4	FFA Patrol	12	0	12	0	0	1	12	0
Sep-22	Mahi Tahī - Tuvalu and High seas	FFA Patrol	26	0	20	0	0	2	10	0

Sep-22	Mahi Tahi - Tokelau/ Samoa	FFA Patrol	14	0	14	0	0	6	13	0
Sep-22	Mahi Tahi - High Seas	FFA Patrol	12	0	12	0	0	2	11	0
Nov-21	Southern Ocean	CCAMLR patrol	1	0	0	1	0	0	0	0
Dec-21	Southern Ocean	CCAMLR patrol	6	0	0	6	0	0	0	0
<b>Total:</b>			<b>365</b>	<b>0</b>	<b>298</b>	<b>14</b>	<b>24</b>	<b>29</b>	<b>216</b>	<b>2</b>

<b>Total vessels reported in RFMOs:</b>	
Forum Fisheries Agency	279
Western and Central Pacific Fishery Commission	72
Commission for the Conservation of Antarctic Marine Living Resources	14

<b>Performance measure 30</b>	<b>New Zealand actively engages with governments and fishing industries whose vessels create the greatest risk to New Zealand seabirds</b>
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The southern hemisphere risk assessment for New Zealand seabirds identifies where the greatest risk lies and where engagement should be prioritised. For clarification, in the context of this performance measure, 'New Zealand' includes all stakeholders. This performance measure is intended to reflect broader engagement rather than that of just the New Zealand government.

Bilateral and multi-lateral activities in 2021/22 included: continued collaboration with Peru, in particular the implementation of the Antipodean albatross Concerted Action Plan under CMS; holding a bilateral seabird bycatch workshop with China; and delivering a seabird initiative with APEC's Ocean and Fisheries Working Group as part of the New Zealand host year.<sup>37</sup>

<sup>37</sup> APEC refers to Asia-Pacific Economic Cooperation (<https://www.apec.org/>)



<b>Performance measure 31</b>	<b>New Zealand actively facilitates data sharing (relevant to New Zealand seabirds and fishing) between relevant international organisations, governments, and stakeholders</b>
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This performance measure is complementary to the others under Objective 9 and acknowledges that feedback loops need to be created as part of the process of reducing the risk to New Zealand seabirds from fishing outside the EEZ.

New Zealand works collaboratively with all members of the CCSBT on addressing seabird bycatch, but Japan, Australia, and South Africa played a key part in sharing data and expertise towards the final seabird risk assessment project. The 15<sup>th</sup> Ecologically Related Species Working Group of CCSBT is tentatively scheduled for May 2024, and the updated southern hemisphere risk assessment will be presented at this meeting.

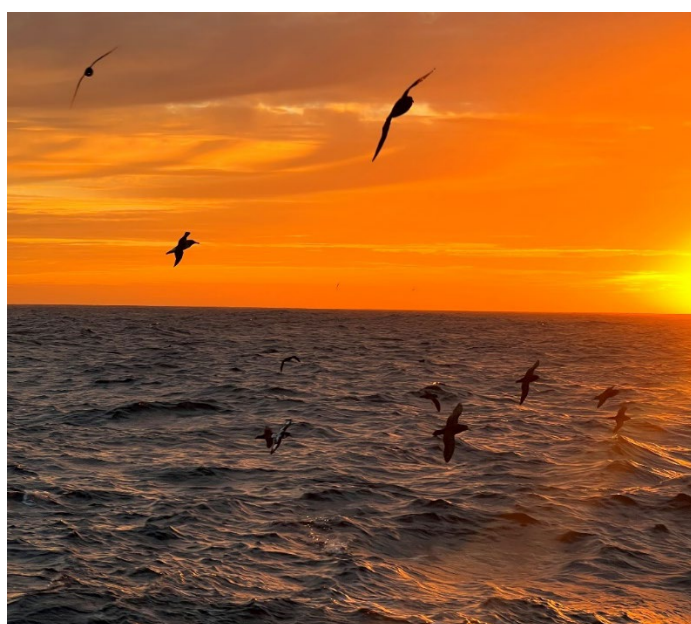
Data from tracking studies, in particular Antipodean albatross, was made open-access to interested parties to help target bycatch reduction activities. These data can be found online at <https://docnewzealand.shinyapps.io/albatrosstracker/>

### 6.1.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Updated southern hemisphere risk assessment presented to relevant RFMOs</b>
	This is reported under performance measure 28 above.

<b>Activity 2</b>	<b>Continue tracking programme for Antipodean albatrosses and expand to other species as logistics allow</b>
	Continued for Antipodean albatross in 2021-22. Tracking of Gibson’s albatross planned for 2022-23.

<b>Activity 3</b>	<b>Communicate risk assessment results to international organisations, governments and other stakeholders</b>
	A range of bilateral and multilateral initiatives were progressed as described above.



## 6.2. Objective 10

<b>Objective 10</b>	<b>New Zealand advocates for the development, adoption, improvement, and uptake of seabird conservation measures</b>
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This objective relates to the role New Zealand plays in RFMOs and CCAMLR in implementing measures to mitigate the risk to New Zealand seabirds from fisheries outside the EEZ.

Three performance measures (32-34) are used to track progress towards meeting Objective 10.

<b>Performance measure 32</b>	<b>Where possible, meeting reports from CCAMLR and Regional Fisheries Management Organisations show that seabird matters, including new conservation measures, have been considered</b>
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This performance measure provides transparency about what New Zealand advocates for at CCAMLR and RFMO meetings related to reducing the risk to New Zealand seabirds from fisheries outside the EEZ.

At the [WCPFC Scientific Committee](#) in 2021, New Zealand supported recommendations for small-scale longline vessels operating above 23° North to report on specific seabird mitigation measures used (such as streamer-less tori lines and experimental offal discharge and blue-dyed bait) and associated seabird interaction rates. This will inform the Commission’s upcoming review of the seabird measure (CMM 2018-03).

At the South Pacific Fisheries Management Organisation commission meeting in February 2022, New Zealand supported ACAP’s recommendations that the seabird bycatch mitigation measures in CMM 09-2017, could be reviewed against new science and ACAP best practice advice. New Zealand included in the multi-annual science workplan that it will review CMM 09-2017 and the seabird related data collection requirements in CMM 02-2022, and provide analysis and recommendations to the Scientific Committee in 2023.

The [2022 meeting reports from CCSBT](#) show progress on various seabird initiatives, including formal adoption of the actions under the Multi-Year Seabird Strategy. There was also momentum gained on the southern hemisphere SEFRA collaboration – New Zealand and Japan agreed to lead intersessional work to advance the initiative, including various technical workshops. Additionally, it was decided by members that meetings of the Ecologically Related Species Working Group will occur annually, instead of biennially.

The report from the [2022 CCAMLR](#) meeting shows that the Commission endorsed the recommendation of the Scientific Committee for the extension of the existing derogation on the use of net monitoring cables. The trial of mitigation devices for krill fishing vessels using a net monitoring cable was also extended.

<b>Performance measure 33</b>	<b>Where possible, conservation measures from relevant fora consider the risk to seabirds from fishing</b>
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This performance measure is complementary to the southern hemisphere fisheries risk assessment for seabirds and outcomes from New Zealand advocacy as covered by performance measure 32. Conservation measures should be informed by the risk assessment.

CCSBT’s ‘Resolution to [Align CCSBT’s Ecologically Related Species measures with those of other tuna RFMOs](#)’, and WCPFC’s ‘[Conservation and Management Measure to mitigate the impact of fishing for highly migratory fish stocks on seabirds](#)’ consider the risk to seabirds from fishing and require vessels

fishing under those RFMOs to use relevant mitigation practices to reduce this risk. The two measures were updated in 2021 and 2018 respectively.

<b>Performance measure 34</b>	<b>New Zealand carries out compliance checks for all high seas vessels visiting New Zealand ports, where appropriate, consistent with port state measures, and in keeping with the relevant Regional Fisheries Management Organisation rules and conservation and management measures</b>
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This performance measure recognises that by undertaking in-port inspections New Zealand can contribute to the feedback loop between RFMOs, vessels, and flag states on adherence with seabird-related conservation and management measures.

In the 2021/2022 fishing year, New Zealand Fishery Officers conducted twenty-two in-port inspections of foreign flagged fishing vessels visiting New Zealand ports from the high seas (refer Table 11).<sup>38</sup> The inspection of foreign vessels by Fishery Officers continued to not be recommended due to the risk of COVID-19 however, the number of inspections has increased since last year. Furthermore, COVID-19 quarantine restrictions have eased since November 2022. Vessels inspected had been fishing under CCAMLR and the WCPFC. Of the twenty-two foreign fishing vessels inspected, five inspections examined seabird mitigation measures. Four potential breaches of the WCPFC Conservation and Management Measures were detected in relation to seabird mitigations. Fisheries Compliance is continuing to work with the vessel operators and flag states to address and improve seabird non-compliance and mitigations.

**Table 11 – Summary of in-port inspections of foreign-flagged fishing vessels conducted during 2021/22**

Number of foreign vessel arrivals	Number of Fishery Officer inspections	Number of vessels covered by inspections	Number of inspections of seabird mitigation	Trawl vessels	Longliners	Other methods
55	22	22	5	0	17	5

*Type of vessel only applies to those inspected.*

### 6.2.1. Progress against Seabird Implementation Plan

<b>Activity 1</b>	<b>Advocate for strengthening of seabird conservation measures to ensure international best practice, and effective monitoring of measures through engagement in <a href="#">CCSBT</a>, <a href="#">WCPFC</a>, <a href="#">SPRFMO</a>, and <a href="#">CCAMLR</a></b>
	<p>At the CCSBT, New Zealand supported adoption of the actions of the Multi-Year Seabird Strategy, which were ultimately confirmed by the Commission. Additionally, we are working with our Japanese counterparts to progress the risk assessment work in the ERSWG, which is aimed at introducing tailored measures aimed at SBT fishing hotspots.</p> <p>At WCPFC in 2022, New Zealand secured agreement for the review of the seabird CMM over 2023/4.</p> <p>At CCAMLR in 2022, New Zealand supported the intersessional work plan that included reviewing the existing use of and conspiring mitigation requirements in conventional trawl vessels, and considering the performance of warp/cable strike mitigation approaches used by continuous trawl vessels.</p>

<sup>38</sup> Note, this total does not include vessels that entered into New Zealand ports for reasons of force majeure, or arrival approved under the Fisheries Act section 113ZD (visits where no fish was present on board the vessel).

	At SPRFMO, New Zealand consistently promotes compliance with observer coverage and seabird bycatch mitigation standards being implemented and reported. New Zealand is currently considering options for reviewing the seabird conservation and management measure.
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<b>Activity 2</b>	<b>Seek opportunities to collaborate with members of other RFMOs that may pose bycatch risk to New Zealand breeding seabirds, including IATTC, to strengthen seabird conservation measures and effective reporting<sup>39</sup></b>
	Engagement in RFMO's, including IATTC, has been raised through bilateral meetings with the EU and USA (amongst others).

<b>Activity 3</b>	<b>Support implementation of the CMS Concerted Action Plan for Antipodean albatross</b>
	Implementation was undertaken and reported, although progress was limited due to COVID-19

<b>Activity 4</b>	<b>Continue engagement with ACAP, including active input to progress the Advisory Committee and Working Group work programmes</b>
	New Zealand actively supported various ACAP work programmes and participated at Advisory Committee and Working Group meetings, including presentation of a range of papers.

<b>Activity 5</b>	<b>Work with tuna companies, eNGOs and international tuna partnerships to address the risk to Antipodean albatrosses and other at risk seabirds</b>
	Southern Seabirds in partnership with DOC has consulted widely with organisations working with the relevant tuna companies to find out what opportunities exist to advance seabird mitigation within existing projects and frameworks, and what tools and assistance would fit with their programmes. A key learning from this investigation is that a number of the tuna companies that operate in Antipodean albatross waters are involved in Fisheries Improvement Plans (FIPs) or have intentions to seek MSC certification. The driver for them is retaining market access in North America. Work is ongoing.



<sup>39</sup> IATTC refers to the Inter-American Tropical Tuna Commission

### 6.3. Objective 11

<b>Objective 11</b>	<b>New Zealand actively works bilaterally, multi-laterally, and with international organisations to build capacity to reduce the risk to New Zealand seabirds</b>
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This objective recognises work to reduce bycatch in New Zealand fisheries alone may not be sufficient to protect wide-ranging seabirds and acknowledges the need to work with other jurisdictions to achieve our objectives for New Zealand.

Two performance measures will be used to track progress towards meeting Objective 11.

<b>Performance measure 35</b>	<b>Active and effective programmes, including mitigation research and outreach, are in place, or completed, that build the capacity of governments and other stakeholders in fisheries that create risks to New Zealand seabirds</b>
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This performance measure acknowledges the importance of capacity-building in other jurisdictions. It also recognises that to be effective, mitigation may need to be designed specifically for the fisheries operating in that jurisdiction.

Amongst other initiatives, Ministry of Foreign Affairs and Trade (MFAT) funds work delivered by the Ministry of Primary Industries (MPI) aimed at enhancing fisheries management capacity in the Pacific, including the management of bycatch (this is the Te Pātui work programme, which is outlined under Performance Measure 36 below).

Relevant work undertaken during 2021/22 included:

- Raising the issue of seabird conservation in bilateral engagements with Spain, Peru, Taiwan, the EU, and the US.
- Conducting outreach to foreign fishing fleets in the Tasman Sea through the distribution of an industry-targeted flyer on seabird bycatch mitigation.
- Providing technical advice to Vanuatu to ensure alignment between Vanuatu’s National Plan of Action on Seabirds and international best practice.
- Developing a memorandum of understanding on seabird conservation between DOC and the Instituto del Mar del Perú.
- Joint data analysis of seabird overlap with Peruvian fishing effort and mitigation options between DOC and the Instituto del Mar del Perú.

<b>Performance measure 36</b>	<b>New Zealand supports small-island developing states in developing and implementing NPOA Seabirds, as necessary</b>
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Under Te Pātuitanga Ahumoana a Kiwa (Te Pātui) work programme, small island developing states in the Pacific can request support from New Zealand in developing and implementing NPOA Seabirds.<sup>40</sup>

<b>Activity 1</b>	<b>Continue Pacific capacity development programmes</b>
	Through its Te Pātui team, FNZ engages with Pacific Island Countries and territories (PICTs) to build capacity in fisheries administrations. The re-opening of borders post-COVID 19 has enabled delivery of face-to-face capacity building with Advisors of Pacific Island fisheries agencies. Throughout the year, Te Pātui worked

<sup>40</sup> More information about the Te Pātui programme is available [here](#).

	<p>in close partnership with Pacific fisheries agencies, delivering focussed activities in Fiji, Tonga, Tuvalu and Samoa. The Te Pātui Fisheries Management team delivered in-person capacity building workshops to Tonga and Samoa fisheries administrations. These workshops focussed on strengthening management systems and frameworks, data analysis and reporting, policy development, and implementation planning.</p> <p>The programme continues to develop fisheries compliance e-learning modules on high seas boarding and inspection. This will include a course to ensure PICTs understand how to correctly monitor compliance with WCPFC conservation and management measures, including how to inspect vessels and equipment to mitigate HMS fishing impacts on seabirds (2018-03).</p>
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<b>Activity 2</b>	<b>Continue engagement with APEC on seabird conservation during NZ host year 2021</b>
	Agencies engaged the US APEC Ocean and Fisheries Working Group leads (OFWG) in planning to collaborate on a seabird focused project for OFWG in 2023

<b>Activity 3</b>	<b>Continue developing and delivering bilateral collaboration opportunities, including those with Australia, Chile, Peru, Ecuador, Spain and China</b>
	<ul style="list-style-type: none"> <li>• <b>Peru</b> – Agencies are developing a memorandum of understanding on seabird conservation between DOC and the Instituto del Mar del Perú.</li> <li>• <b>Spain</b> – Agencies have worked to engage Spain in identifying implementation actions under the 2021 New Zealand Spain memorandum of understanding on seabird conservation.</li> </ul>

<b>Activity 4</b>	<b>Continue engagement with IGOs, including ACAP and SPREP, to support outreach and capacity building programmes</b>
	Via SPREP, DOC shared information and advice to ensure alignment between Vanuatu’s National Plan of Action on Seabirds and international best practice



## Appendix 1 – Observed seabird captures during 2021/22

The tables below show the number of observed seabird captures (alive and dead) on >28 m trawl vessels, <28 m trawl, scampi trawl, surface longline, set net, autoline and manual baiting bottom longline fisheries during the 2021/22 fishing year. All figures exclude deck strikes, impacts against the vessel and records where seabirds ride the codend up the stern ramp and are released alive. Fishery-specific figures are only provided for those fisheries where a seabird capture was recorded, or a significant proportion of effort was observed.

Seabirds are classified according to initial species identifications recorded by Fisheries New Zealand observers. As species identifications may not yet have been verified, figures are subject to change after specimens are necropsied or observer photos are formally identified.

In the tables, captures are grouped by the following seabird types:

Acronym / term used	Description	Species included
L. alb	Large albatrosses	All <i>Diomedea</i> albatross species
S. alb	Small albatrosses	All <i>Thalassarche</i> albatross species
U. alb	Unknown albatrosses	All albatross species not identified to genus level
Pet & Shw	Petrels & shearwaters	All <i>Procellaria</i> petrels and shearwaters
Diving		All penguin and shag species
Other		All other seabird species (prions, giant petrels, cape petrels etc.) and those birds recorded using generic codes.

Additional information on seabird captures for 2021/22 (including location of capture and life status) can be found in the Deepwater Fisheries Annual Review Report 2021/22 (available [here](#) and the Conservation Services Programme Annual Research Summary 2021/22, which is available [here](#). Information on observed seabird captures in previous years can be found on the [Protected Species Capture website](#).

**Table 12a – Observed captures on >28 m trawl vessels during 2021/22**

Fishery	# of tows (fisher reported)	% observed	Observed captures	Observed capture rate (per 100 tows)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
Squid	3,010	97%	162	5.56	1	43	6	108	-	4
Hoki & MD	10,250	53%	118	2.15	7	68	1	38	-	4
Deepwater	3,653	37%	2	0.15	-	2	-	-	-	-
SBW	512	100%	2	0.39	-	2	-	-	-	-
Jack mackerel	1,706	75%	-	0	-	-	-	-	-	-
Inshore	1,143	10%	-	0	-	-	-	-	-	-
<b>All</b>	<b>20,274</b>	<b>57%</b>	<b>284</b>	<b>2.46</b>	<b>8</b>	<b>115</b>	<b>7</b>	<b>146</b>	<b>-</b>	<b>8</b>

- *'Hoki and middle depth (MD)'* includes all >28 m trawl effort targeting hoki, hake, ling, barracouta, red cod, and warehou species.
- *'Jack mackerel'* includes blue mackerel, redbait, Ray's bream and frostfish target tows as well
- *'Deepwater'* includes all tows targeting CDL, ORH, oreo species, RBY and BYX
- *'Inshore'* includes all tows for inshore species including BNS, GUR, JGU, SNA, TAR and TRE

**Table 12b – summary of observer records of 'operating in accordance with PSRMP' during observed capture events on >28m trawl vessels during 2021/22**

Number of observed captures	Number of observed captures where 'operating in accordance with PSRMP' attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
284	284	98%	0%	2%



**Table 13a - Observed captures on scampi trawl vessels during 2021/22**

Fishery	# of tows (fisher reported)	% observed	Observed captures	Observed capture rate (per 100 tows)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
SCI 1	459	13%	-	0	-	-	-	-	-	-
SCI 2	495	6%	1	3.45	-	1	-	-	-	-
SCI 3/4A	1,900	8%	1	0.64	-	1	-	-	-	-
SCI 6A	1,684	16%	12	4.33	-	10	1	-	-	1
<b>All</b>	<b>4,538</b>	<b>11%</b>	<b>14</b>	<b>2.69</b>	<b>-</b>	<b>12</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>

**Table 13b – summary of observer records of ‘operating in accordance with PSRMP’ during observed capture events on scampi trawl vessels during 2021/22**

Number of observed captures	Number of observed captures where ‘operating in accordance with PSRMP’ attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
14	14	100%	0%	0%

**Table 14a - Observed captures on <28 m trawl vessels during 2021/22**

Fishery	# of tows (fisher reported)	% observed	Observed captures	Observed capture rate (per 100 tows)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
Hoki	1,053	19%	11	5.42	-	-	-	11	-	-
FMA 1 & 9	5,516	7%	-	0	-	-	-	-	-	-
South Island	22,176	3%	13	1.81	1	9	-	3	-	-
<b>All</b>	<b>34,790</b>	<b>4%</b>	<b>26</b>	<b>1.69</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>14</b>	<b>-</b>	<b>-</b>

- 'Hoki' includes all <28 m trawl effort targeting hoki regardless of area
- 'FMA 1 & 9' includes all <28 m trawl effort in FMA 1 or 9 except that targeting hoki.
- 'South Island' includes all <28 m trawl effort in FMA 3, 4, 5, 6 or 7 except that targeting hoki.
- 'All' includes all <28 m trawl effort regardless of area or target species.

**Table 14b – summary of observer records of 'operating in accordance with PSRMP' during observed capture events on <28m trawl vessels during 2021/22**

Number of observed captures	Number of observed captures where 'operating in accordance with PSRMP' attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
26	26	100%	0%	0%

Table 15a - Observed captures on auto bottom longline vessels during 2021/22

Vessel size	# of hooks (fisher reported)	% observed	Observed captures	Observed capture rate (per 1,000 hooks)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
<34 m	59,000	0%	-	n/a	-	-	-	-	-	-
>34 m	19,065,467	23%	45	0.01	-	4	-	41	-	-
<b>All</b>	<b>19,124,467</b>	<b>23%</b>	<b>45</b>	<b>0.01</b>	-	<b>4</b>	-	<b>41</b>	-	-

Table 15b – summary of observer records of ‘operating in accordance with PSRMP’ during observed capture events on auto bottom longline vessels during 2021/22

Number of observed captures	Number of observed captures where ‘operating in accordance with PSRMP’ attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
45	41	100%	0%	0%

**Table 16a - Observed captures on manual bottom longline vessels during 2021/22**

Fishery	# of hooks (fisher reported)	% observed	Observed captures	Observed capture rate (per 1,000 hooks)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
SNA 1	8,881,231	4%	6	0.02	-	-	-	5	-	1
LIN 3 - 7	3,572,690	7%	6	0.03	1	1	-	4	-	-
HPB/BNS	2,074,673	4%	-	0	-	-	-	-	-	-
<b>All</b>	<b>18,185,801</b>	<b>4%</b>	<b>12</b>	<b>0.02</b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>9</b>	<b>-</b>	<b>1</b>

- 'SNA 1' includes all manual bottom longline effort targeting snapper in FMA 1.
- 'LIN 3 - 7' includes all manual bottom longline effort targeting ling in FMAs 3, 4, 5, 6, 7 or 8.
- 'HPB/BNS' includes all manual bottom longline effort targeting bluenose, hapuka or bass regardless of area.
- 'All' includes all bottom longline effort regardless of area or target species.

**Table 16b – summary of observer records of 'operating in accordance with PSRMP' during observed capture events on manual bottom longline vessels during 2021/22**

Number of observed captures	Number of observed captures where 'operating in accordance with PSRMP' attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
12	12	92%	0%	8%

**Table 17a - Observed captures on surface longline vessels during 2021/22**

Fishery	# of hooks (fisher reported)	% observed	Observed captures	Observed capture rate (per 1,000 hooks)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
SWO/BIG	299,366	8%	4	0.17	-	-	-	4	-	-
North Island bluefin	309,605	0%	-	n/a	-	-	-	-	-	-
South Island bluefin	554,472	8%	51	1.11	1	15	-	35	-	-
<b>All</b>	<b>1,211,693</b>	<b>6%</b>	<b>55</b>	<b>0.80</b>	<b>1</b>	<b>15</b>	<b>-</b>	<b>39</b>	<b>-</b>	<b>-</b>

- 'SWO/BIG' includes all surface longline effort targeting big eye tuna or swordfish.
- 'North Island bluefin' includes all surface longline effort targeting southern bluefin tuna in FMAs 1, 2, 8 or 9.
- 'South Island bluefin' includes all surface longline effort targeting southern bluefin tuna in FMAs 3, 4, 5, 6 or 7
- 'All' includes all surface longline effort regardless of area or target species.

**Table 17b – summary of observer records of 'operating in accordance with PSRMP' during observed capture events on surface longline vessels during 2021/22**

Number of observed captures	Number of observed captures where 'operating in accordance with PSRMP' attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
55	55	100%	0%	0%

**Table 18a - Observed captures on set net (>7 m) vessels during 2021/22**

Fishery	Fisher-reported effort (m of net set)	% observed	Observed captures	Observed capture rate (per 1,000 metres of net)	Observed captures by seabird type					
					L. alb	S. alb	U. alb	Pet & Shw	Diving	Other
E&S SI	2,373,787	9%	23	0.10	-	-	-	-	23	-
<b>All</b>	<b>5,674,850</b>	<b>12%</b>	<b>23</b>	<b>0.03</b>	-	-	-	-	<b>23</b>	-

- *East and South Coast South Island* (E&S SI) includes all set net effort off the coast of Otago, Southland, Stewart Island & Fiordland (statistical areas 024 – 032).
- *All* includes all effort by set net vessels >7m in length regardless of area.
- There was no observer coverage on set net vessels <7 m in length during the 2021/22 fishing year.

**Table 18b – summary of observer records of ‘operating in accordance with PSRMP’ during observed capture events on set net (>7m) vessels during 2021/22**

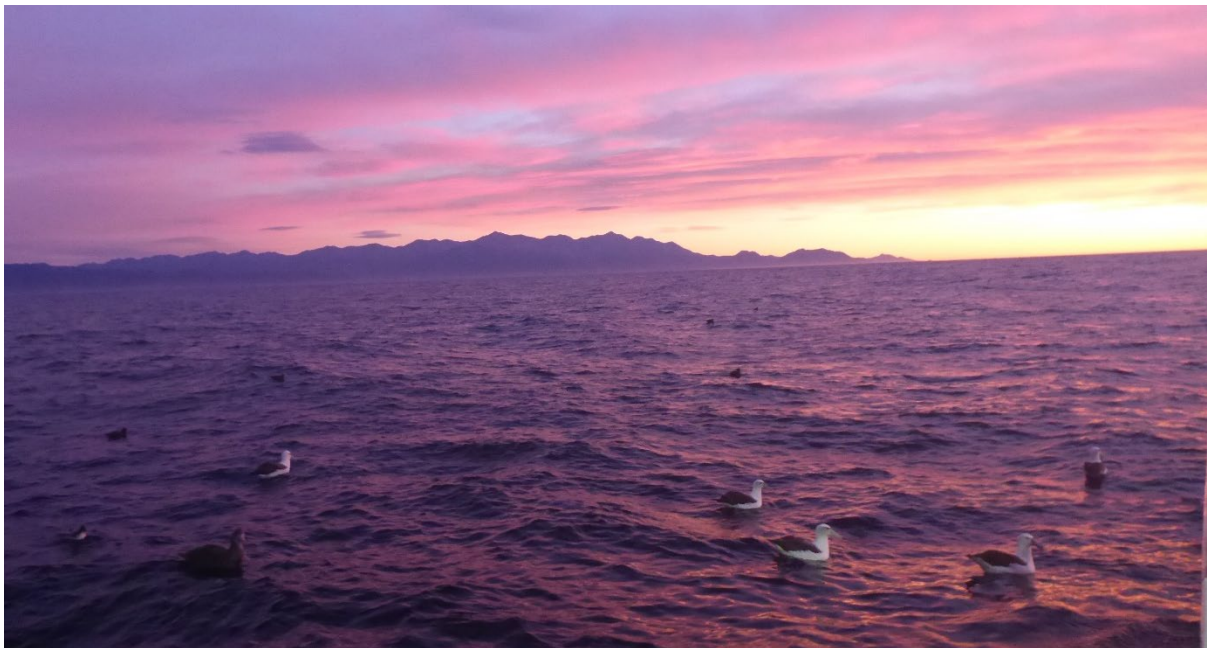
Number of observed captures	Number of observed captures where ‘operating in accordance with PSRMP’ attribute was recorded	Percentage of captures recorded as Y (yes)	Percentage of captures recorded as N (no)	Percentage of captures recorded as U (unknown)
23	19	100%	0%	0%

## Appendix 2 – Fisher-reported seabird captures

The tables below show the number of fisher-reported seabird captures between 2014/15 and 2021/22 for >28 m trawl, <28 m trawl, scampi trawl, surface longline, set net, autoline and manual baiting bottom longline fisheries.

'*Large seabirds*' includes all albatross species and giant petrel, '*Small seabirds*' includes all petrels, shearwaters, prions, gulls, terns, gannets & boobies, penguins and shags.

Figures prior to 2019/20 include deck strikes and cases where seabirds '*ride*' the cod end onto the vessel and are released alive. In 2019/20, reporting was amended such that fishers could report deck strikes, which allows such captures to be identified in the data. Prior to 2019/20, deck strikes could not be clearly identified in fisher-reported capture data.



## Greater than 28 metre trawl vessels

**Table 19 – Fisher-reported captures on >28 m trawl vessels between 2014/15 and 2021/22**

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	30	100	184	272	318	874
2015/16	31	83	234	97	225	639
2016/17	30	74	146	82	288	590
2017/18	35	110	184	171	235	700
2018/19	32	83	228	141	247	699
Deck strikes are excluded in capture data from 2019/20 onwards						
2019/20	32	89	191	148	287	715
2020/21	31	72	158	36	158	424
2021/22	30	52	129	34	137	352

**Table 20 - 2019/20 and 2021/22 fisher-reported captures by capture type for >28m trawl vessels**

Capture type	Fishing year	Number of captures reported by category type		
		Large seabirds	Small seabirds	Total
Deck strike	2019/20	16	15	31
	2020/21	18	32	50
	2021/22	23	607 <sup>41</sup>	630
Net	2019/20	168	292	460
	2020/21	115	128	243
	2021/22	122	161	283
Warp	2019/20	40	3	43
	2020/21	69	4	73
	2021/22	48	4	52
Other	2019/20	14	33	47
	2020/21	11	10	21
	2021/22	11	6	17
Not reported	2019/20	58	107	165
	2020/21	41	69	110
	2021/22	-	-	-

<sup>41</sup> Of this total, 520 were reported in a single incident



## Scampi trawl vessels

**Table 21 - Fisher-reported captures on scampi trawl vessels between 2014/15 and 2021/22**

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	7	14	33	9	17	73
2015/16	8	12	37	12	26	87
2016/17	10	11	26	3	15	55
2017/18	6	16	28	7	11	62
2018/19	11	6	40	0	14	60
Deck strikes are excluded in capture data from 2019/20 onwards						
2019/20	6	5	23	0	0	28
2020/21	9	9	31	5	5	50
2021/22	10	4	21	0	1	26

**Table 22 - 2019/20 and 2021/22 fisher-reported captures by capture type for scampi trawl vessels**

Capture type	Fishing year	Number of captures reported by category type		
		Large seabirds	Small seabirds	Total
Deck strike	2019/20	1	2	3
	2020/21	1	0	1
	2021/22	1	4	5
Net	2019/20	5	0	5
	2020/21	14	8	22
	2021/22	13	1	14
Warp	2019/20	18	0	18
	2020/21	19	1	20
	2021/22	12	-	12
Other	2019/20	3	-	3
	2020/21	6	-	6
	2021/22	-	-	-
Not reported	2019/20	2	-	2
	2020/21	1	2	3
	2021/22	-	-	-



## Under 28 metre trawl vessels

**Table 23 - Fisher-reported captures on <28 m trawl vessels between 2014/15 and 2021/22**

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	15	0	21	23	19	63
2015/16	20	3	40	43	32	118
2016/17	20	2	19	84	49	154
2017/18	20	7	39	71	93	210
2018/19	13	1	29	34	17	81
Deck strikes are excluded in capture data from 2019/20 onwards						
2019/20	23	6	37	18	20	81
2020/21	27	2	34	30	34	100
2021/22	22	8	28	12	20	68

**Table 24 - 2019/20 and 2021/22 fisher-reported captures by capture type for <28m trawl vessels**

Capture type	Fishing year	Number of captures reported by category type		
		Large seabirds	Small seabirds	Total
Deck strike	2019/20	1	4	5
	2020/21	2	115	17
	2021/22	3	20	23
Net	2019/20	2	14	16
	2020/21	2	40	42
	2021/22	7	26	33
Warp	2019/20	28	5	33
	2020/21	26	11	37
	2021/22	24	3	27
Other	2019/20	-	-	-
	2020/21	-	3	3
	2021/22	1	-	1
Not reported	2019/20	13	19	32
	2020/21	8	12	20
	2021/22	4	3	7

## Autoline bottom longline vessels

**Table 25 - Fisher-reported captures on autoline bottom longline vessels between 2014/15 and 2021/22**

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	5	1	11	1	61	74
2015/16	7	-	13	-	131	144
2016/17	6	-	4	2	57	63
2017/18	3	-	7	2	36	45
2018/19	4	-	7	-	45	52
Deck strikes are excluded in capture data from 2019/20 onwards						
2019/20	5	4	11	2	164	182
2020/21	6	3	10	1	121	135
2021/22	4	-	7	2	87	96 <sup>42</sup>

**Table 26 - 2019/20 and 2021/22 fisher-reported captures by capture type for autoline bottom longline vessels**

Capture type	Fishing year	Number of captures reported by category type		
		Large seabirds	Small seabirds	Total
Deck strike	2019/20	-	-	-
	2020/21	3	6	9
	2021/22	1	2	3
Setting	2019/20	2	59	61
	2020/21	3	55	58
	2021/22	8	67	75
Hauling	2019/20	7	62	69
	2020/21	7	61	68
	2021/22	-	22	22
Other	2019/20	1	1	1
	2020/21	-	-	-
	2021/22	-	-	-
Not reported	2019/20	6	45	51
	2020/21	3	8	11
	2021/22	-	-	-



<sup>42</sup> An additional bird was also reported as 'decomposing'

## Manual bottom longline

**Table 27 - Fisher-reported captures on manual bottom longline vessels between 2014/15 and 2021/22**

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	12	3	18	6	57	84
2015/16	15	1	11	11	49	72
2016/17	21	-	17	36	82	135
2017/18	21	3	10	45	65	123
2018/19	23	4	12	30	79	125
Deck strikes are excluded in capture data from 2019/20 onwards						
2019/20	29	9	11	80	142	242
2020/21	33	4	11	177	214	406
2021/22	26	6	8	27	65	106

**Table 28 - 2019/20 and 2021/22 fisher-reported captures by capture type for manual bottom longline vessels**

Capture type	Fishing year	Number of captures reported by category type		
		Large seabirds	Small seabirds	Total
Deck strike	2019/20	-	-	-
	2020/21	-	3	3
	2021/22	1	2	3
Setting	2019/20	2	11	13
	2020/21	4	109	113
	2021/22	7	37	44
Hauling	2019/20	14	145	159
	2020/21	5	165	170
	2021/22	5	41	46
Other	2019/20	-	1	1
	2020/21	-	3	3
	2021/22	-	-	-
Not reported	2019/20	4	65	69
	2020/21	6	115	121
	2021/22	2	14	16



## Surface longline

**Table 29 - Fisher-reported captures on surface longline vessels between 2014/15 and 2021/22**

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	15	23	60	35	17	135
2015/16	18	40	170	7	46	263
2016/17	12	12	30	2	41	85
2017/18	14	14	105	-	33	152
2018/19	14	15	91	8	44	158
Deck strikes are excluded in capture data from 2019/20 onwards						
2019/20	14	2	47	18	40	107
2020/21	14	16	85	29	49	179
2021/22	17	23	61	11	113	208

**Table 30 - 2019/20 and 2021/22 fisher-reported captures by capture type for surface longline vessels**

Capture type	Fishing year	Number of captures reported by category type		
		Large seabirds	Small seabirds	Total
Deck strike	2019/20	-	-	-
	2020/21	-	1	1
	2021/22	-	2	2
Setting	2019/20	1	5	6
	2020/21	13	5	18
	2021/22	5	8	13
Hauling	2019/20	25	38	63
	2020/21	32	54	86
	2021/22	30	54	84
Other	2019/20	11	3	14
	2020/21	24	8	32
	2021/22	29	33	62
Not reported	2019/20	12	12	24
	2020/21	32	11	43
	2021/22	20	29	49

Set net (all vessel sizes)

Table 31 - Fisher-reported captures on set net vessels between 2014/15 and 2021/22

Year	Number of vessels that reported captures	Large seabirds		Small seabirds		Total
		Alive	Dead	Alive	Dead	
2014/15	3	-	-	1	3	4
2015/16	3	-	-	1	10	11
2016/17	6	-	-	-	9	9
2017/18	6	-	-	2	21	23
2018/19	6	-	-	1	20	21
2019/20	9	1	-	1	17	19
2020/21	4	-	-	2	16	18
2021/22	10	-	-	2	44	46

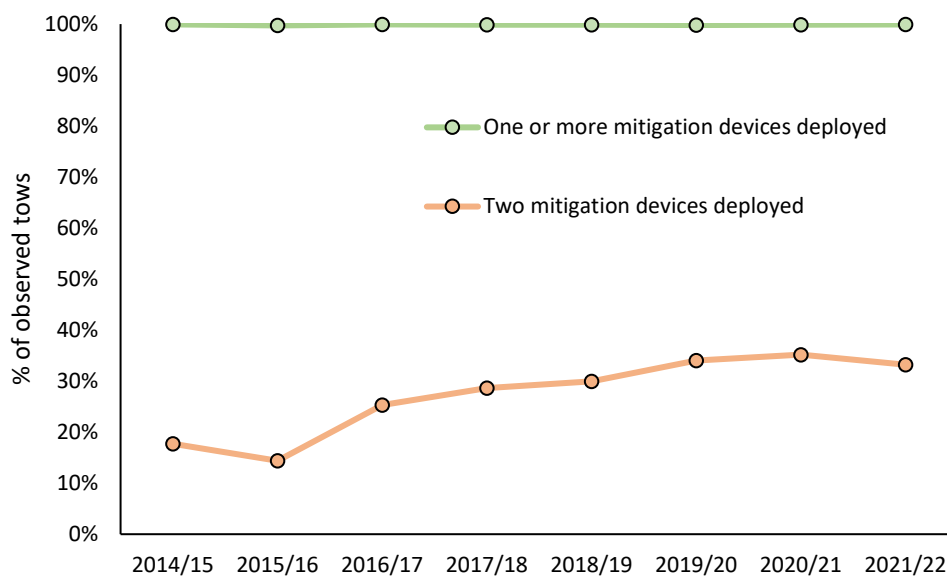


## Appendix 3 – Observed mitigation use

### Observed mitigation use on trawl vessels

Seabird scaring devices such as bird bafflers, tori lines or warp scarers are deployed on trawl vessels to reduce the risk trawl warps pose to seabirds. Fisheries New Zealand observers record information on the use of seabird scaring devices (tori lines, bird bafflers, warp scarers etc.) during each observed fishing event on trawl vessels.

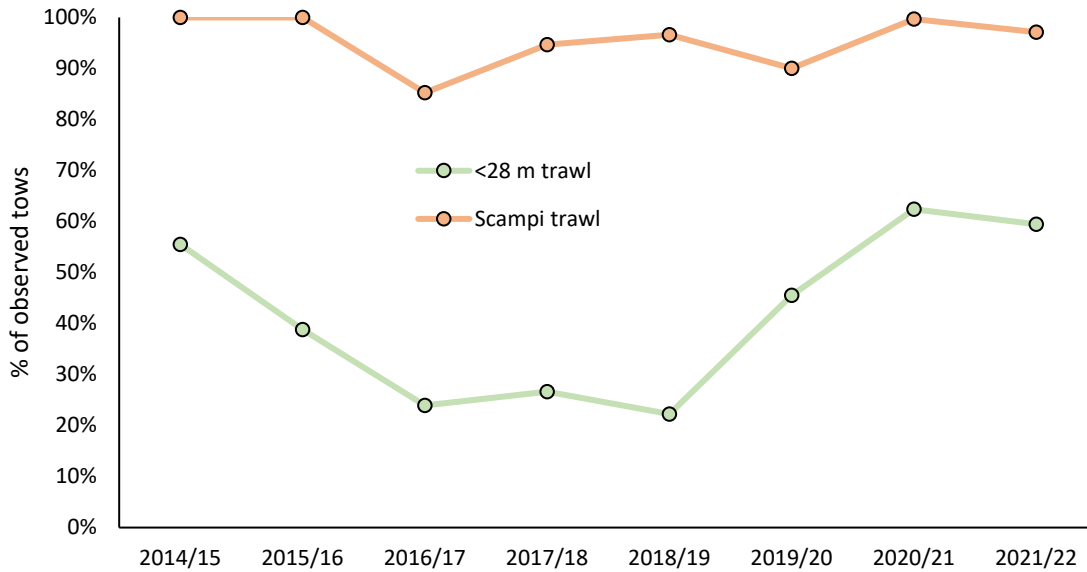
Since 2014/15, observers have recorded the use of at least one seabird scaring device during almost all observed tows on trawl vessels >28 m in length. During this time the observed use of two types of seabird scaring devices simultaneously (typically both bird bafflers and tori lines) almost doubled from 18% of tows in 2014/15 to 35% of tows during 2020/21 (Figure 12). Vessel crews typically deploy two seabird scaring devices simultaneously when fishing in areas with a high level of seabird interactions (e.g. the squid fishery) or when the risk to seabirds from the vessel may be higher (e.g. following the failure of a fishmeal plant). Deployment of tori lines (in addition to bird bafflers) is often weather dependent however, and crews may not use tori lines if conditions are too windy.



**Figure 12 – Observer recorded information on the use of seabird scaring devices on >28 m trawl vessels between the 2014/15 and 2021/22 fishing years.**

Since 2014/15, observers have recorded the use of seabird scaring devices for the majority of observed tows on scampi trawl vessels (Figure 13).

On a tow by tow basis, the observed use of seabird scaring devices on <28 m trawl vessels has fluctuated since 2014/15 (Figure 13). However, observer coverage of the <28 m trawl fleet is low (typical less than 5% per annum) and both spatially and temporally unrepresentative with coverage focused on those fisheries with lower rates of seabird captures (e.g. winter hoki fisheries and the West Coast of the North Island inshore fishery). Therefore, information on the observed use of seabird scaring devices on <28 m trawl vessels may not be representative of the wider <28 m trawl fleet.



**Figure 13 – Observer recorded information on the use of seabird scaring devices on scampi trawl and <28 m trawl vessels between the 2014/15 and 2020/21 fishing years (% of observed tows where at least one seabird mitigation device was used)**

Trawl vessels utilise a variety of fish waste management systems both between vessels (depending on onboard equipment) and between different fish waste sources.<sup>43</sup> Given other observer duties (biological sampling, independent catch quantification etc.) it may not be possible for observers to continuously record information on a vessel’s fish waste management system (particularly on large factory vessels where processing may occur 24 hours a day).

Nevertheless, observers can record whether offal and/or whole fish was discharged during shooting, towing, and hauling. PSRMPs require no discharge of fish waste during shooting and hauling and no continuous discharge during towing. A vessel’s PSRMP describes how any discharge during towing is to be done.

The observer data that is presented (Figure 14) only relates to data collected on the discharge of fish waste during the shooting and hauling of each observed tow. During 2021/22, no offal or whole fish were discharged during either shooting or hauling for the majority (>99%) of observed tows on >28 m trawl vessels, 98% of observed tows on <28 m trawl vessels where this data was recorded,<sup>44</sup> and 99% of observed tows on scampi trawl vessels. Note that the term ‘*whole fish*’ includes species able to be returned to the water under the Schedule 6 of the Fisheries Act 1996 (e.g. spiny dogfish or kingfish), species legally required to be returned to the sea (e.g. species subject to minimum legal size requirements) and very large fish such as sharks, stingrays or sunfish.

Observers also record adherence to a vessel’s agreed fish waste management system, as codified in PSRMPs<sup>45</sup> on a trip by trip basis. This information is recorded on PSRMP audit forms and is summarised in Section 3.1.1.

<sup>43</sup> For example, some species/types of offal may be processed to fish meal whereas others (such as spiny dogfish or warehou heads) are not as they may compromise the quality of fish meal if processed in large quantities.

<sup>44</sup> During 2020/21, this data was only recorded for around 60% of tows on inshore trawl vessels

<sup>45</sup> Also known as vessel management plans or VMPs



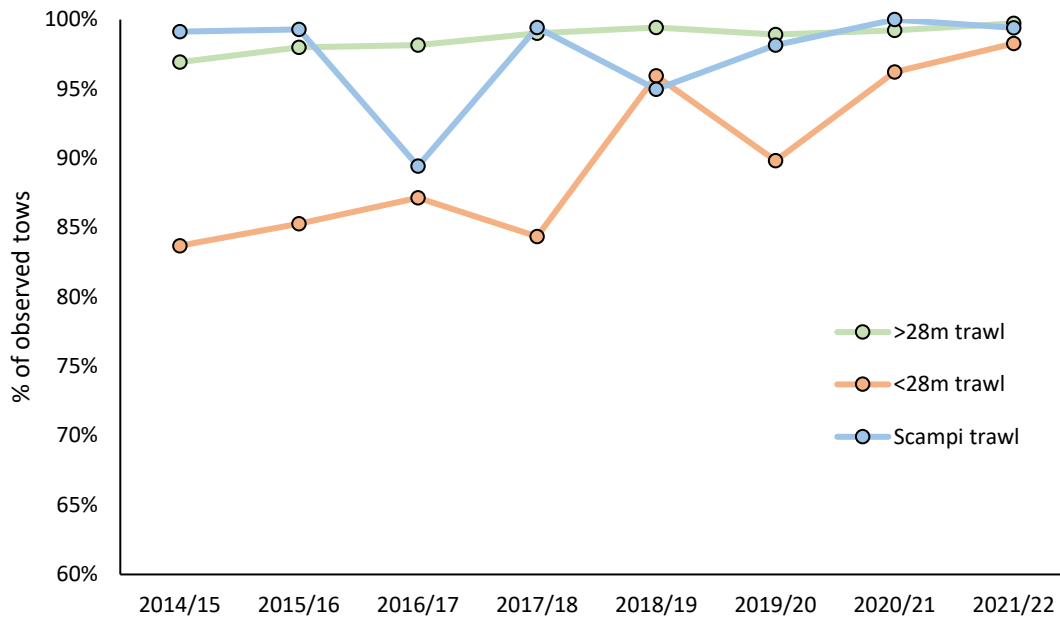


Figure 14 – Proportion of observed tows during which no offal (including minced offal) or whole fish (including schedule 6 and sub-MLS fish) was discharged during either shooting or hauling (data limited to those tows for which information on discharge during shooting/hauling is available and the observer was in a position to ascertain whether offal or fish discharge occurred during both shooting and hauling).

### Observed mitigation use on bottom longline vessels

Prior to April 2019, observers did not systematically record data on the line weighting regime, fish waste management system, or the use of mitigation devices (including tori lines) on an event by event basis for all trips on bottom longline vessels. Likewise, prior to April 2019, observers did not record date, time, and position for both the start and end of setting. Therefore, it is not possible to provide data on the observed set by set use of mitigation practices (including night setting) for either autoline or manual baiting bottom longline vessels over the last five years.

This data began to be recorded during the 2019/20 fishing year however, and the available information is summarised in the tables below.

### Setting

Table 32 – Summary of observed tori line use during setting on bottom longline vessels during 2019/20 to 2021/22

Longline vessel category	Fishing year	# of observed sets where data on tori line use was recorded	Percentage of observed sets where tori line use was recorded
>34m autoline	2019/20	195	100%
	2020/21	108	98%
	2021/22	371	100%
<34m autoline	2019/20	37	100%
	2020/21	11	100%
	2021/22	0	N/A
Hand baiting	2019/20	814	97%
	2020/21	543	99%
	2021/22	509	100%

The data the table above from 2019/20 and 2020/21 indicates there may have either been some non-compliance with regulatory requirements around use of tori lines during setting or that the observer has recorded the data incorrectly. For example, on one trip on a >34m autoliner during 2020/21, the observer noted that a tori line was used on every set but also recorded that a tori line was not used on two sets.

As part of the observer deployment process, a compliance debrief is conducted with each observer at the conclusion of each trip. Fisheries Compliance assesses each debrief and will consider whether further action is required.

Additionally, observers audit crew performance against a vessel's PSRMP. As part of the feedback loop, audit forms are sent to liaison officers. Where failure to adhere to a PSRMP is recorded, liaison officers will assess whether follow up with vessel operators is required.

**Table 33 – Summary of other types of mitigation use on bottom longline vessels while setting in 2019/20 to 2021/22**

Fishing year	Number of observed sets where acoustic deterrent used	Number of observed sets where laser deterrent used	Number of observed sets without unnecessary deck lighting	Number of observed sets where use of alternative mitigation device was recorded
<b>&gt;34m autoline</b>				
2019/20	78	1	183	-
2020/21	-	108	108	78 <sup>46</sup>
2021/22	47	85	305	119 <sup>47</sup>
<b>&lt;34m autoline</b>				
2019/20	-	-	39	-
2020/21	4	4	9	-
2021/22	-	-	-	-
<b>Hand baiting</b>				
2019/20	-	17	822	32
2020/21	-	-	469	4
2021/22	0	35	510	2

**Table 34 – Summary of observed bait state on bottom longline vessels during setting in 2019/20 and 2020/21<sup>48</sup>**

Vessel category	Fishing year	Number of observed sets where data on bait state was recorded	Proportion of observed sets where bait state was recorded as not fully frozen
>34m autoline	2019/20	315	100%
	2020/21	108	100%
	2021/22	370	100%
<34m autoline	2019/20	39	100%
	2020/21	13	100%
	2021/22	0	N/A
Hand baiting	2019/20	939	99%
	2020/21	555	100%
	2021/22	510	100%

<sup>46</sup> Bait was dyed blue

<sup>47</sup> Includes dyed bait, deck hose spraying over bait entry point, and second tori line deployment

<sup>48</sup> The rationale for recording information on bait state is that thawed baits sink faster than frozen baits. More information is available in [this report](#). Using bait that is not fully frozen is consistent with the outcome of reducing seabirds' access to baited hooks during setting.

**Table 35 – Summary of observed offal management on bottom longline vessels during setting in 2019/20 and 2020/21**

Vessel category	Fishing year	Number of observed sets where offal management data was recorded	Proportion of observed sets with no discharge during setting
>34m autoline	2019/20	313	100%
	2020/21	108	100%
	2021/22	369	99%
<34m autoline	2019/20	39	100%
	2020/21	7	86%
	2021/22	0	N/A
Hand baiting	2019/20	849	99%
	2020/21	543	99%
	2021/22	510	100%

## Hauling

Observers record discarding of bait, offal, and whole fish separately during hauling. Observers also record whether or not the discarding takes place on the same side of the vessel as the hauling station.<sup>49</sup> Tables 36-38 summarise that information for the 2019/20 to 2021/22 fishing years.

**Table 36 – Summary of observed used bait management on bottom longline vessels while hauling during 2019/20 and 2021/22 (HS refers to hauling station)**

		Batched		No bait discarded during hauling	Some discarding of used baits <sup>50</sup>	
		Opposite side to HS	Same side as HS		Opposite side to HS	Same side as HS
<b>&gt;34m autoline vessels</b>						
2019/20	# of records	-	-	246	25	-
	%	-	-	91%	9%	-
2020/21	# of records	-	-	108	-	-
	%	-	-	100%	-	-
2021/22	# of records	-	-	265	105	-
	%	-	-	72%	28%	-
<b>&lt;34m autoline vessels</b>						
2019/20	# of records	-	1	1	-	37
	%	-	3%	3%	-	95%
2020/21	# of records	-	-	11	-	1
	%	-	-	92%	-	8%
2021/22	# of records	-	-	-	-	-
	%	-	-	-	-	-
<b>Hand baiting vessels</b>						
2019/20	# of records	-	13	526	16	359
	%	-	1%	58%	2%	40%
2020/21	# of records	82	44	287	3	90
	%	16%	9%	57%	1%	17%
2021/22	# of records	75	1	363	34	37
	%	15%	<1%	71%	7%	7%

<sup>49</sup> Legislative requirements are that offal or fish may be discharged during hauling, but only from the side of the vessel that is opposite to the side on which the hauling station is located. Longline mitigation standards specify that fish waste is to be held on board for the duration of hauling (when possible) with any discharge occurring in a way that minimises the risk to seabirds.

<sup>50</sup> This data combines records where observers recorded bait as being discarded occasionally or continually

**Table 37 – Summary of observed offal management on bottom longline vessels while hauling during 2019/20 and 2021/22 (HS refers to hauling station)**

		Batched		No offal discarded during hauling	Some discarding of offal	
		Opposite side to HS	Same side as HS		Opposite side to HS	Same side as HS
<b>&gt;34m autoline vessels</b>						
2019/20	# of records	-	1	187	83	-
	%	-	<1%	69%	31%	-
2020/21	# of records	-	-	108	-	-
	%	-	-	100%	-	-
2021/22	# of records	85	-	180	105	-
	%	23%	-	49%	28%	-
<b>&lt;34m autoline vessels</b>						
2019/20	# of records	-	-	34	-	5
	%	-	-	87%	-	13%
2020/21	# of records	-	-	13	-	-
	%	-	-	100%	-	-
2021/22	# of records	-	-	-	-	-
	%	-	-	-	-	-
<b>Hand baiting vessels</b>						
2019/20	# of records	-	3	227	357	51
	%	-	<1%	36%	56%	8%
2020/21	# of records	-	37	233	168	107
	%	-	7%	43%	31%	19%
2021/22	# of records	20	-	318	149	23
	%	4%	-	62%	29%	5%

**Table 38 – Summary of observed whole fish discharge management on bottom longline vessels while hauling during 2019/20 and 2021/22 (HS refers to hauling station)**

		Batched		No whole fish discarded during hauling	Some discarding of whole fish	
		Opposite side to HS	Same side as HS		Opposite side to HS	Same side as HS
<b>&gt;34m autoline vessels</b>						
2019/20	# of records	-	-	204	24	43
	%	-	-	74%	9%	16%
2020/21	# of records	-	-	-	-	105
	%	-	-	-	-	100% <sup>51</sup>
2021/22	# of records	-	-	188	105	77
	%	-	-	51%	28%	21%
<b>&lt;34m autoline vessels</b>						
2019/20	# of records	-	-	4	-	35
	%	-	-	10%	-	90%
2020/21	# of records	-	-	-	-	12
	%	-	-	-	-	100%
2021/22	# of records	-	-	-	-	-
	%	-	-	-	-	-

<sup>51</sup> The current bottom longline circular, which came into force on 1 October 2021, allows the return, from the same side of the vessel as the hauling station, of any fish greater than 30cm in length that can legally be returned (subject to use of a hauling mitigation device). The previous circular also allowed one vessel to return spiny dogfish from the side of the vessel to which the hauling station is located if a hauling mitigation device was used.

		Batched		No whole fish discarded during hauling	Some discarding of whole fish	
		Opposite side to HS	Same side as HS		Opposite side to HS	Same side as HS
<b>Hand baiting vessels</b>						
2019/20	# of records	-	3	137	132	613
	%	-	<1%	15%	15%	70%
2020/21	# of records	-	4	97	94	323
	%	-	1%	19%	18%	62%
2021/22	# of records	68	-	281	62	99
	%	13%	-	55%	12%	19%

As noted, a compliance debrief is conducted with observers at the conclusion of each trip as part of the observer deployment process. This incorporates adherence with regulatory requirements around seabird mitigation. Fisheries Compliance assesses each debrief and if there is an indication of possible non-compliance with mandatory seabird mitigation requirements, a decision will be made on whether further action is required.

Additionally, observers audit crew performance against a vessel's PSRMP. As part of the feedback loop, audit forms are sent to liaison officers. Where failure to adhere to a PSRMP is recorded, liaison officers will assess whether follow up with vessel operators is required.

#### **Haul mitigation use**

Observers record mitigation use during hauling. While there is no legislative requirement to use haul mitigation, the bottom longline Mitigation Standards state that vessel operators should utilise measures appropriate to both the vessel and the situation to actively deter seabirds from approaching hauled hooks. The categories currently available to observers are water deterrent, acoustic deterrent, bird exclusion device, or 'other'. Observed use of mitigation during hauling for the 2019/20 to 2021/22 fishing years is summarised in Table 39.

**Table 39 – Summary of observed haul mitigation use on bottom longline vessels between 2019/20 and 2021/22**

Vessel category	Fishing year	Number of observed hauls where data on mitigation use was recorded	Proportion of observed hauls where at least one form of mitigation was recorded
>34m autoline	2019/20	270	80%
	2020/21	108	91%
	2021/22	366	78%
<34m autoline	2019/20	38	18%
	2020/21	13	31%
	2021/22	0	-
Hand baiting	2019/20	907	21%
	2020/21	539	36%
	2021/22	496	19%

## Observed mitigation use on surface longline vessels

### Setting

Information on observed mitigation use and fish waste management during setting and hauling during the 2020/21 and 2021/22 fishing years is summarised in Tables 40 and 41.

**Table 40. Summary of observed mitigation use during setting (2020/21 and 2021/22 fishing years)**

Fishing year		Tori line used during setting	Additional mitigation device used during setting?	No discards during setting
2020/21	# of sets where data recorded	190	190	166
	%	100%	0%	99%
2021/22	# of sets where data recorded	79	79	79
	%	100%	0%	100%

### Hauling

**Table 41. Summary of observed fish waste management and mitigation during hauling (2020/21 and 2021/22 fishing years)**

Fishing year		Used baits not discarded during hauling	Offal not discarded during hauling	Whole fish not discarded during hauling	Haul mitigation used
2020/21	# of sets where data recorded	187	189	174	186
	%	26%	9%	10%	1%
2021/22	# of sets where data recorded	77	77	77	75
	%	58%	39%	22%	0%

Additional information on observed mitigation use on surface longline vessels can be found in Highly Migratory Species Annual Review Reports, which are available [here](#).

## Appendix 4 – Monitoring of fisheries that interact with seabirds of particular concern<sup>52</sup>

### Black petrel and flesh-footed shearwater

The majority of modelled black petrel and flesh-footed shearwater captures are estimated to occur off north-eastern New Zealand (Figure 15). Observer coverage of the fisheries that are estimated to pose the greatest risk to black petrel and flesh-footed shearwater is shown in Figure 16.

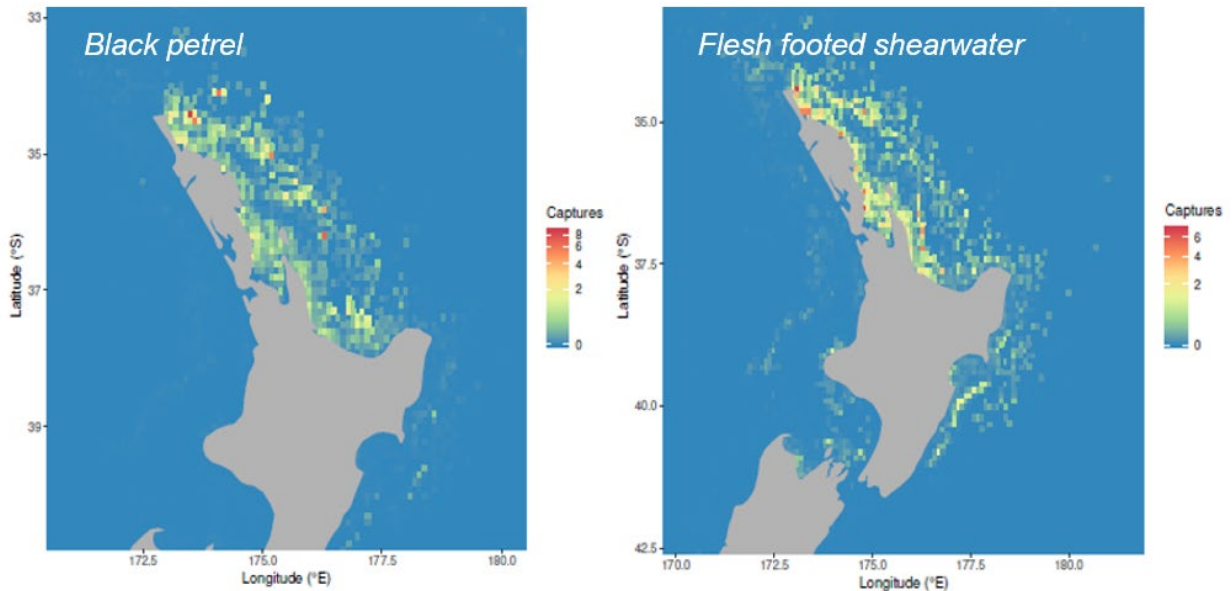


Figure 15 – Location of estimated black petrel and flesh-footed shearwater captures during the 2016/17 year. Data taken from [Abraham & Richard 2019](#).

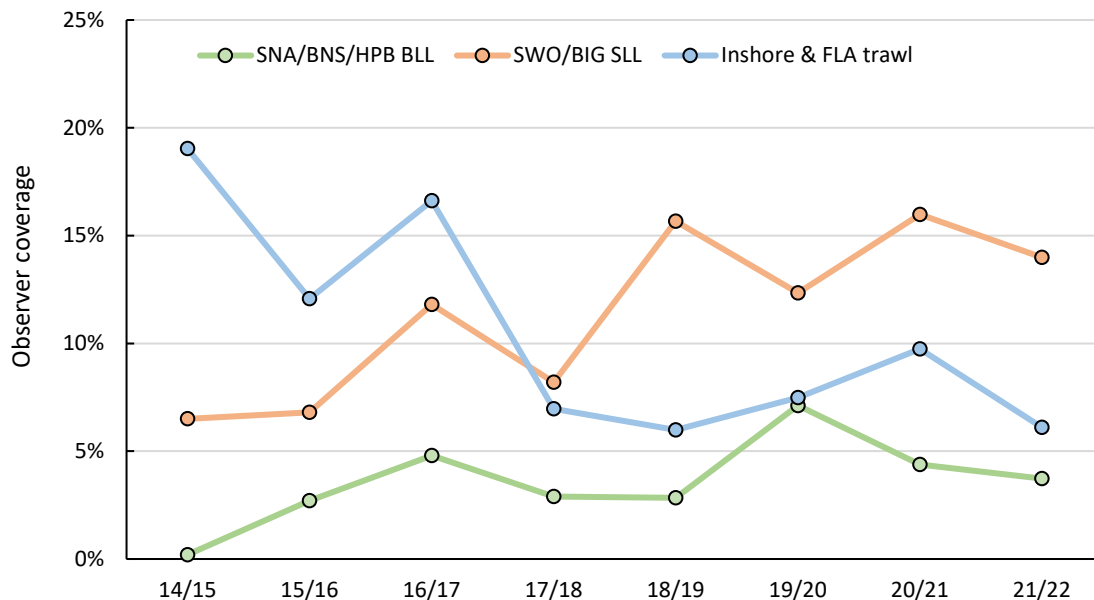


Figure 16 – Observer coverage rates for those commercial fisheries estimated to pose the greatest risk to black petrel and flesh-footed shearwater. All data limited to effort in FMA 1. 'Inshore & FLA trawl' includes effort by vessels <28 m in length targeting middle-depth species.

<sup>52</sup> Refer to Appendix 4 of the [2019/20 Seabird Annual Report](#) for more information on the fisheries that interact with seabirds of particular concern

## Salvin's albatross

The majority of modelled Salvin's albatross captures are estimated to occur on the Chatham Rise and along the east coast of the South Island (Figure 17). Observer coverage of those fisheries estimated to contribute the greatest risk to Salvin's albatross is shown in Figure 18.

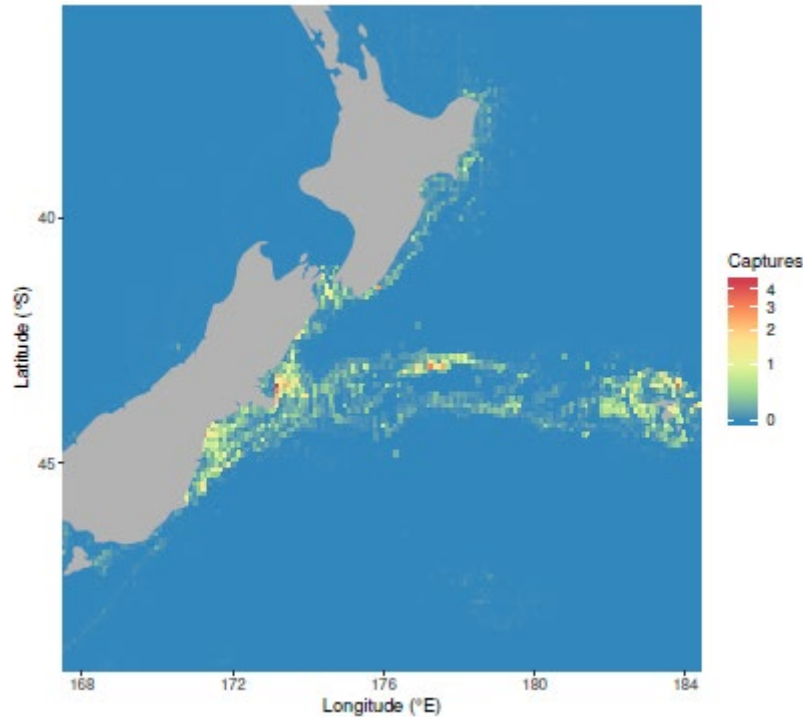


Figure 17 – Location of estimated Salvin's albatross captures during the 2016/17 year. Data taken from [Abraham & Richard 2019](#).

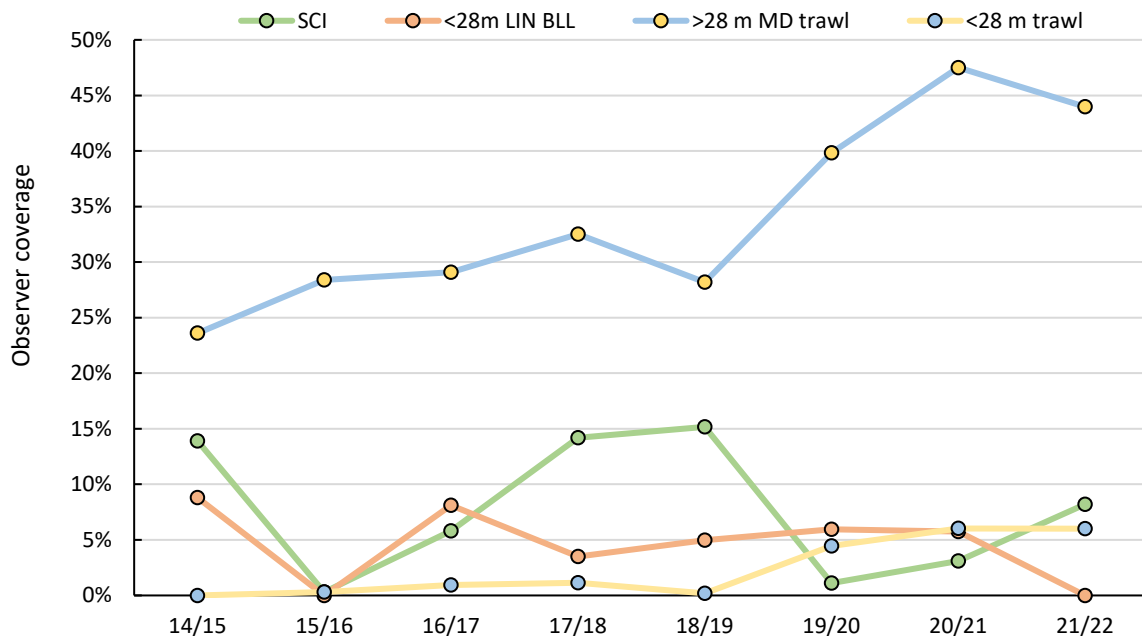


Figure 18 – Observer coverage rates for those fisheries estimated to pose the greatest risk to Salvin's albatross. All data limited to effort in FMAs 3 & 4. 'Middle-depth (MD)' includes effort targeting alfonsino, barracouta, hake, hoki, jack mackerel, ling and warehou species. '<28 m trawl' includes all effort by trawlers less than 28 m in overall length except those targeting scampi (SCI).



## Westland petrel

Quantitative modelling of the location of estimated Westland petrel captures has not been conducted. However, the majority of observed captures have occurred close to the species breeding colonies on the South Island's West Coast. Observer coverage of those fisheries estimated to contribute the greatest risk to Westland petrel is shown in Figure 19.

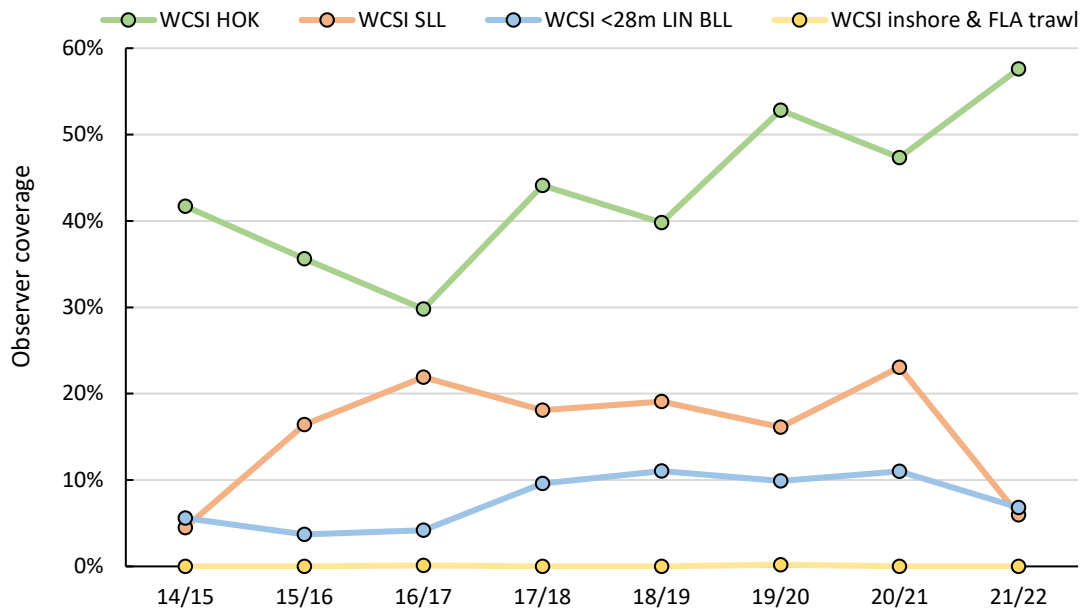


Figure 19 – Observer coverage rates for those fisheries estimated to pose the greatest risk to Westland petrel. All data limited to effort in FMA 7. Trawl data includes all vessels regardless of length; surface longline (SLL) data limited to vessels <28 m in length.

## Hoiho

Quantitative modelling of the location of estimated hoiho captures has not been conducted. However, all observed captures have occurred close to the species breeding colonies off the east and south coasts of the South Island. Observer coverage of those fisheries estimated to contribute the greatest risk to hoiho is shown in Figure 20.

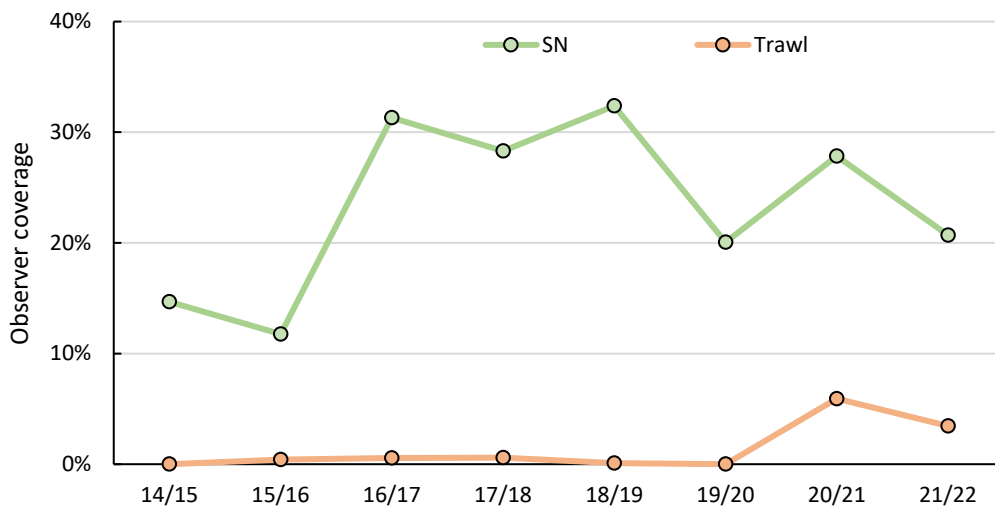


Figure 20 – Observer coverage rates for those commercial fisheries estimated to pose the greatest risk to hoiho. Data limited to the east and south coasts of the South Island (E&S SI) which are defined as statistical areas 024, 025, 026, 027, 028, 029, 030, 031 and 032. Data for set net excludes effort targeting flatfish, mullet, or kahawai.

## Southern Buller's albatross

The majority of modelled southern Buller's albatross captures are estimated to occur in hoki and squid trawl fisheries off the West Coast of the South Island and the sub-Antarctic, and surface longline fisheries (Figure 21). Observer coverage of those fisheries estimated to contribute the greatest risk to southern Buller's albatross is shown in Figure 22.

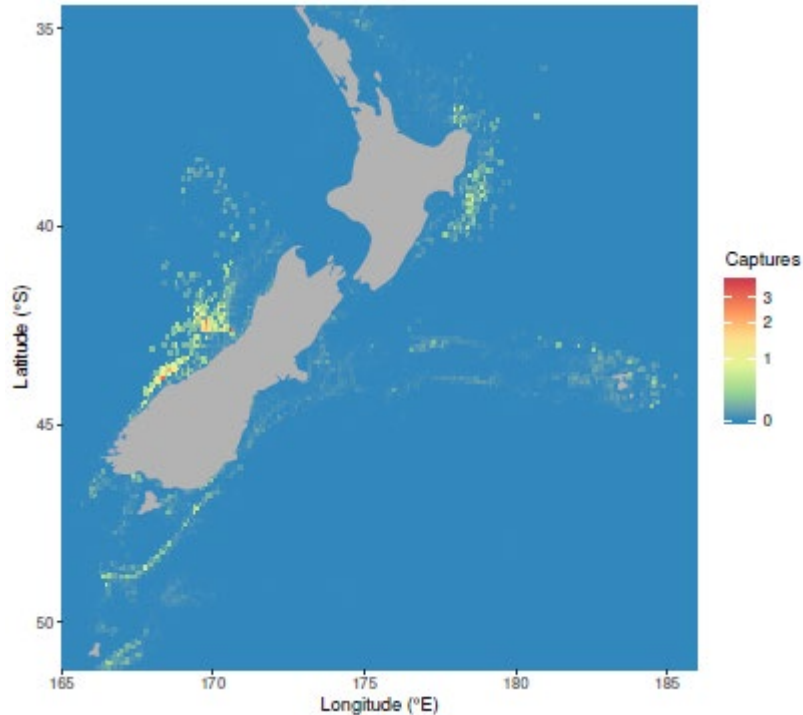


Figure 21 – Location of estimated Buller's albatross captures (both northern and southern sub-species combined) during the 2016/17 year. Data taken from [Abraham & Richard 2019](#).

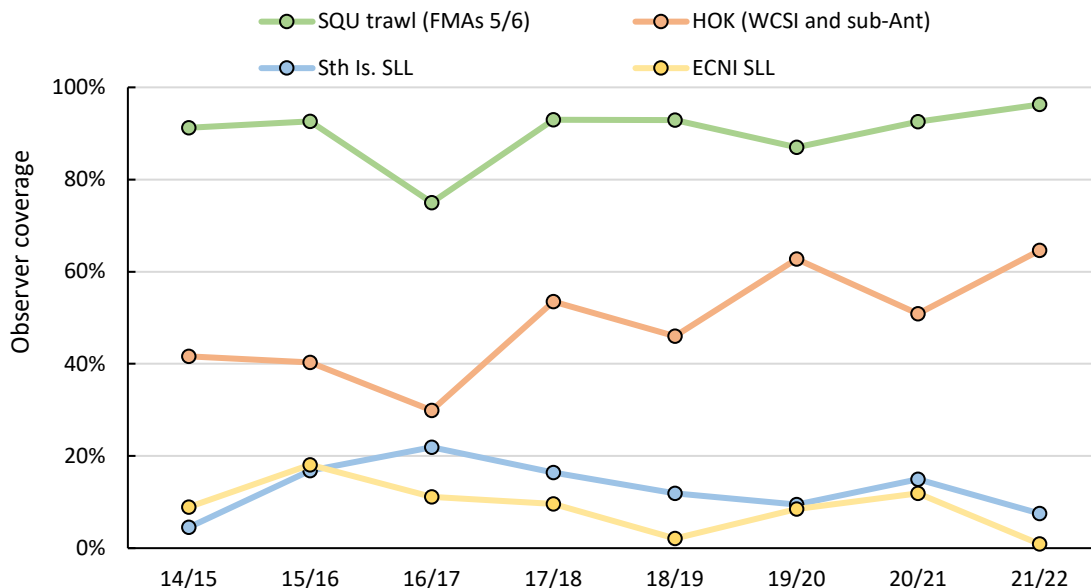
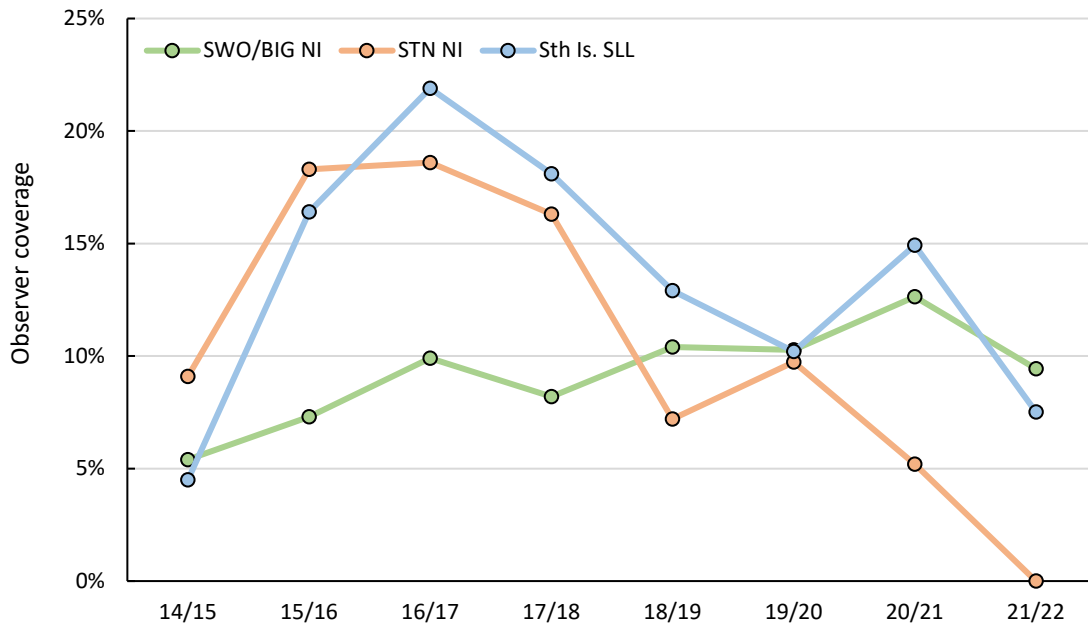


Figure 22 – Observer coverage rates for those commercial fisheries estimated to pose the greatest risk to southern Buller's albatross. Trawl data limited to vessels >28 m, surface longline (SLL) data limited to vessels <28 m in length. South Island (SI) SLL includes all effort in FMAs 3, 4, 5, 6 & 7; East Coast North Island (ECNI) SLL includes all effort in FMA 2.

## Gibson's and Antipodean albatross

Quantitative modelling of the location of estimated Gibson's and Antipodean albatross captures has not been conducted. However, the majority of observed captures have occurred in surface longline fisheries off the North or East coasts of the North Island, or off the West Coast of the South Island.

Observer coverage of those fisheries estimated to contribute the greatest risk to Gibson's and Antipodean albatross is shown in Figure 23.



**Figure 23 – Observer coverage rates for those commercial fisheries estimated to pose the greatest risk to Gibson's and Antipodean albatross. North Island includes all effort in FMAs 1, 2, 8 or 9 whilst South Island includes all effort targeting swordfish, bigeye tuna or southern bluefin tuna in FMAs 3, 4, 5, 6 or 7.**



## Appendix 5 – Monitoring objectives, fishery risk, and observer coverage for 2022/23 in relation to species of particular concern

### Introduction

Outputs from the seabird risk assessment will continue to be used as a prioritisation tool for various management activities including observer coverage.<sup>53</sup> The risk assessment estimates the level of risk to each seabird species posed by specific commercial fishery categories. Several of the fishery categories used in the risk assessment do not align completely with the fishery categories that are used for observer coverage planning purposes.

### Generic monitoring objective

Fisheries New Zealand developed the first version of this document for the observer coverage plan for 2020/21. The document was developed to respond to performance measure 19 in the NPOA Seabirds 2020:

**19**

Monitoring objectives and needs are documented and updated annually, informed by the risk assessment and species conservation concern

In the 2020/21 version, a generic monitoring objective of 20% observer coverage for each fishery that contributes >10% of risk to the seabird species identified as being of particular concern was proposed.<sup>54</sup> That objective is also used in this document.

‘Particular concern’ means all those species identified through both the risk assessment (species categorised as at High or Very High risk) and review of other data (e.g. population monitoring indicating a significant population decline) and taking into account threat status. The species categorised as being of particular concern at the start of 2022/23 are set out in the table below.

**Table 42.** Seabird species of particular concern

Species	Risk category
Black petrel	Very high
Salvin’s albatross	High risk
Westland petrel	
Flesh-footed shearwater	
Southern Buller’s albatross	
Gibson’s albatross	
Hoiho	Medium risk (species of ‘particular concern’)
Antipodean albatross	

For each of the eight species of particular concern, the following species-specific tables include:

- The fishery categories from the risk assessment that contribute >10% of risk to that species
- Planned observer coverage for 2022/23 in relation to those fishery categories; and
- An assessment of whether the coverage is consistent with the generic monitoring objective
  - Assessments are colour-coded to indicate whether the generic monitoring objective is likely to be met during 2022/23

<sup>53</sup> Seabird risk assessment used for 2022/23 analysis [available here](#)

<sup>54</sup> The 2020/21 version is available as Appendix 5A of the [Seabird Annual Report 2019/20](#)

Indicates the generic monitoring objective is likely to be met or close to being met

Indicates the generic monitoring objective is unlikely to be met

## Background

### Observer coverage levels

Broadly, observer coverage across most of the deepwater and highly migratory species fisheries has been relatively consistent for a number of years. Planned coverage in some categories such as the scampi and small vessel bottom longline fisheries has increased in recent years.

Coverage of inshore fisheries has also been gradually increasing in recent years. This includes bottom longline fisheries in FMA1, and set net and trawl fisheries on the east and south coasts of the South Island.

### Observer coverage planning

Fisheries New Zealand's observer programme is constrained as to the total number of days it can deliver. Fisheries New Zealand undertakes an annual planning process that considers requests for observer coverage (primarily from the deepwater, highly migratory species and inshore fisheries management teams but also from Fisheries Compliance). Requests are assessed against the programme's capacity to deliver and prioritised against considerations such as percentage coverage targets, Ministerial commitments, and international requirements.

### Observer tasking

Some components of observer tasking are the top priorities for every trip; this includes recording protected species interactions and auditing performance against a vessel's Protected Species Risk Management Plan (PSRMP) or Operational Procedures. Depending on the nature of the trip, additional seabird-specific tasking may be undertaken, such as warp strike observations.

### Acronyms used in tables

BIG – bigeye tuna

BLL – Bottom longline

BNS – bluenose

ECSI – east coast South Island

FMA – fishery management area

HPB – hāpuku / bass

LIN - ling

PSH – precision seafood harvesting

SCI - scampi

SCSI – south coast South Island

SLL – surface longline

SN – set net

SNA – snapper

SQU - squid

STN – southern bluefin tuna

SWO – swordfish

TAR – tarakihi

TMP – threat management plan (Hector's and Maui's dolphins)

WCSI – West Coast South Island

**Table 43.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **black petrel** (very high risk species)

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer <sup>55</sup>	Planned seadays	
Inshore trawl	Inshore trawl	45%	SNA1 – trawl incl. PSH	11%	216	<i>The highest risk to black petrel is from the inshore trawl fishery (45% of overall risk). However, as the risk is primarily confined to FMA1, only the relevant FMA1 observer fishery categories have been included here.<sup>56</sup> Based on days fished during 2021/22, planned SNA1 trawl coverage, including PSH, (216 days in total) should equate to around 10% of total FMA1 inshore trawl effort. This is not consistent with the generic monitoring objective.</i>
SLL	Bigeye SLL	14%	STN – North Island	20%	150	<i>The surface longline fisheries collectively contribute 18% of risk to black petrel.<sup>57</sup> Based on days fished in North Island FMAs during 2021/22, the coverage planned for the North Island swordfish/bigeye fishery for 2022/23 (120 days) would cover around 1/3 of effort.<sup>58</sup></i>
			BIG/SWO – North Is.	20%	120	
BLL	Snapper BLL	14%	BLL – SNA1	7%	302	<i>Bottom longline fisheries collectively contribute 32% of risk to black petrel, primarily through</i>
	Bluenose BLL	14%	BLL – HPB/BNS1	10%	39	

<sup>55</sup> This is also taken from the observer seaday plan

<sup>56</sup> Refer to page 18 of the following research report for location information of black petrel captures <https://www.mpi.govt.nz/dmsdocument/36822-AEBR-226-Estimated-capture-of-seabirds-in-New-Zealand-trawl-and-longline-fisheries-to-201617>

<sup>57</sup> As well as the 14% from the bigeye fishery, the swordfish fishery contributes an additional 4%.

<sup>58</sup> Black petrels breed between October to May but leaves New Zealand between June and September. The North Island southern bluefin fishery takes place primarily during winter (Jun-Aug), which is a time of year that black petrels are not present in New Zealand

						<p><i>fisheries in FMA1.<sup>59</sup> The planned 2022/23 coverage in the SNA1 (302 days) and HPB1/BNS1 BLL fisheries (39 days) is expected to cover around 10% and 15% of effort respectively based on days fished during 2021/22.</i></p> <p><i>Based on days fished during 2021/22, planned coverage of bottom longline fisheries in FMA 1 during 2022/23 will likely cover less than 10% of collective effort. It is therefore unlikely to meet the generic monitoring objective. Coverage will continue to be augmented by electronic monitoring (cameras) for the 2022/23 summer at least.</i></p>
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<sup>59</sup> As well as the 14% from both the snapper and bluenose fisheries, the hāpuku and minor target BLL fisheries each contribute 2% of risk.

**Table 44.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **Salvin’s albatross** (high risk species)

On the basis that risk is directly related to capture location information<sup>60</sup>, risk for Salvin’s albatross is spread across the east coasts of the South Island and North Island and the Chatham Rise. The west coasts of both islands, the south coast of the South Island and FMA 1 are largely excluded.

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
Inshore trawl	Inshore trawl	35%	TAR 2 trawl	20%	207	<p><i>The highest risk to Salvin’s albatross is from the inshore trawl fishery (35% of overall risk). The plan for 2022/23 includes 425 days and 207 days on the east coasts of the South Island and North Island respectively. Based on days fished during 2021/22, this should equate to around 10% and 11% and of inshore trawl effort in FMAs 2 and 3 respectively. This is less than the generic monitoring objective but is higher than historic coverage in these fisheries.</i></p>
			ECSI trawl – TMP	20%	298	
			ECSI trawl – TAR	25%	127	
Deepwater trawl	Hoki trawl	16%	Chat. Rise mid. depth	30%	555	<p><i>The hoki and middle depth fisheries contribute 16% and 11% of risk respectively to Salvin’s albatross. Hoki and middle-depth coverage is spread around the South Island and Sub-Antarctic. Chatham Rise coverage for 2022/23 (550 days) is planned to achieve ~30% of effort in this area and is consistent with the generic monitoring objective. Planned coverage of the</i></p>
	Middle depth trawl	11%	Cook Strait HOK	20%	200	

<sup>60</sup> Refer to page 19 of this research report for location of estimated Salvin’s albatross captures <https://www.mpi.govt.nz/dmsdocument/36822-AEBR-226-Estimated-capture-of-seabirds-in-New-Zealand-trawl-and-longline-fisheries-to-201617>



					<i>Cook Strait hoki fishery (200 days) would cover over 50% of effort (based on days fished during 2021/22).<sup>61</sup></i>
Deepwater trawl	Scampi trawl	12%	SCI6A	25%	200
			SCI – other stocks	20%	300
					<i>'SCI - other stocks' includes the SCI3 and SCI4A (Chatham Rise) fisheries and SCI2 (east coast North Island). The 300 days of planned coverage for 2022/23 may work out at only one or two observed trips for each scampi fishery outside SCI6A. If more than half of the 300 days were allocated to trips in the SCI2, 3, or 4A fisheries, the generic monitoring objective would be met for these fisheries.</i>
BLL	Small vessel ling BLL	12%	<34m mixed BLL	30%	445
					<i>The small vessel ling bottom longline fishery contributes 12% of risk to Salvin's albatross. The '&lt;34m mixed BLL' category includes smaller vessels targeting ling. The 445 days in the 2022/23 coverage plan is based on covering 30% of effort in the fisheries in this category, which cover a larger area than just FMAs 2 and 3. If coverage is spread as intended, it is unlikely to meet the generic monitoring objective.</i>

<sup>61</sup> Effort in the Cook Strait hoki fishery during 2021/22 was significantly reduced compared to previous years

**Table 45.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **Westland petrel** (high risk species).

The distribution of this species is centred on the West Coast of the South Island and it is uncommon in FMAs 1 and 9. It is also not present in the country over summer.

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
SLL	Small vessel southern bluefin SLL	25%	STN - South Island	20%	150	<i>The surface longline fisheries collectively contribute 31% of risk to Westland petrel.<sup>62</sup> Based on days fished during 2021/22, the observer coverage planned for South Island surface longline fisheries for 2022/23 (175 days) would be sufficient to cover around half of effort.<sup>63</sup> This is consistent with the generic monitoring objective.</i>
			BIG/SWO – South Is.	20%	25	
Inshore trawl	Inshore trawl	22%	WCNI trawl, set net & BLL	14%	182	<i>The second highest risk to Westland petrel is from the inshore trawl fishery (22% of overall risk, with the flatfish trawl fishery contributing another 7%).<sup>64</sup></i>
			TAR 2 trawl	20%	207	
			ECSI trawl – TMP	20%	298	
			ECSI trawl – TAR	25%	127	

<sup>62</sup> As well as the 25% of risk from the small vessel southern bluefin SLL fishery, the bigeye and swordfish fisheries each contribute an additional 3% of risk,

<sup>63</sup> Fishing effort in the surface longline fisheries on the West Coast of the South Island has been gradually declining in recent years

<sup>64</sup> The ECSI trawl – TMP and SCSi trawl observer fishery categories include the flatfish trawl fishery

			SCSI trawl	10%	118	<i>While around over 900 days of inshore trawl coverage is planned for 2022/23 (not including coverage in FMA1), none of this is planned for the West Coast of the South Island where most observed captures of this species (across all methods) have been recorded to date.<sup>65</sup> Coverage is therefore unlikely to meet the generic monitoring objective.</i>
Deepwater trawl	Hoki trawl	11%	Chat. Rise mid. depth	30%	555	<i>The hoki trawl fishery contributes 11% of risk to Westland petrel with the middle depth fisheries contributing another 6%. Hoki and middle depth coverage is spread around the South Island and Sub-Antarctic. The extensive WCSI coverage planned for 2022/23 (505 days), should equate to around 40% of effort in this area (based on days fished during 2021/22). As identified above, this area is where most captures have been recorded to date.</i>
			Sub-Ant mid. depth	30%	325	
			WCSI	30%	400	
			WCSI (inside line)	25%	105	
			Cook Strait HOK	20%	200	

<sup>65</sup> Refer to the [protected species capture website](#) for details on the location of observed Westland petrel captures

**Table 46.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **flesh-footed shearwater** (high risk species)

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
BLL	Snapper BLL	37%	BLL – SNA1	7%	302	<i>Bottom longline fisheries collectively contribute 53% of risk to flesh-footed shearwater, primarily through the fisheries in FMA1.<sup>66</sup> The planned SNA1 and HPB1/BNS1 coverage for 2022/23 (341 days) is likely to represent less than 10% of bottom longline effort in FMA1 (based on days fished in 2021/22) and would not meet the generic monitoring objective. Observer coverage in FMA1 is augmented by electronic monitoring (cameras).</i>
	Minor target BLL	10%	BLL – HPB/BNS1	10%	39	
				<34m mixed BLL	30%	
Inshore trawl	Inshore trawl	30%	WCNI trawl, set net & BLL	14%	182	<i>The second-highest risk to flesh-footed shearwater is from the inshore trawl fishery (30% of overall risk). 370 days of inshore trawl coverage in FMAs 1 and 2 is planned for 2022/23, which should equate to around 10% of effort (based on days fished during 2021/22). This is not consistent with the generic monitoring objective.</i>
			SNA1 – trawl incl. PSH	11%	216	
			TAR 2 trawl	10	154	

<sup>66</sup> In addition to the snapper BLL and minor target BLL, the hāpuku BLL fishery contributes 6% of risk

**Table 47.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **southern Buller’s albatross** (high risk species)

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
Deepwater trawl	Hoki trawl	31%	Chat. Rise mid. depth	30%	555	<i>The hoki and middle depth trawl fisheries contribute 31% and 13% of risk respectively to southern Buller’s albatross.<sup>67</sup> Hoki and middle depth coverage is spread around the South Island, Sub-Antarctic, and Chatham Rise. Collectively, the planned 2022/23 coverage (around 1,500 days) should equate to around 40% of effort (based on days fished during 2021/22). This is consistent with the generic monitoring objective.</i>
	Middle depth	13%	Sub-Ant mid. depth	30%	325	
			WCSI	30%	400	
			WCSI – inside line	25%	105	
			Cook Strait HOK	20%	200	
SLL	Small vessel southern bluefin SLL	17%	STN – North Island	20%	150	<i>The surface longline fisheries collectively contribute 20% of risk to southern Buller’s albatross, primarily through the small vessel southern bluefin SLL fishery.<sup>68</sup> The planned southern bluefin coverage for 2022/23 (300 days) may cover around 30% of effort in this fishery (based on days fished during 2021/22 data).<sup>69</sup> This is consistent with the generic monitoring objective.</i>
			STN – South Island	20%	150	
			BIG/SWO – North Is.	20%	120	
			BIG/SWO – South Is.	20%	25	

<sup>67</sup> Refer to page 19 of this research report for location of estimated Buller’s albatross captures <https://www.mpi.govt.nz/dmsdocument/36822-AEBR-226-Estimated-capture-of-seabirds-in-New-Zealand-trawl-and-longline-fisheries-to-201617>

<sup>68</sup> The other SLL fisheries make up the additional 3% of risk.

<sup>69</sup> Fishing effort in the surface longline fisheries during 2020/21 and 2021/22 was lower than previous years

Deepwater trawl	Squid trawl	15%	SQU 6T, SQU 1T	75%	1,846	<i>Although the coverage requirement is primarily for the SQU6T fishery, it results in high coverage across the sub-Antarctic (over 80% in recent years). Planned coverage of the squid trawl fishery for 2022/23 will be well above the generic monitoring objective.</i>
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**Table 48.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **Gibson's albatross** (high risk species)

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
SLL	Swordfish BLL	64%	STN – North Island	20%	150	<i>The surface longline fisheries collectively contribute 93% of risk to Gibson's albatross.<sup>70</sup> The overall coverage planned for 2022/23 (445 days) would, if achieved, be sufficient to cover more than 20% of effort across all fisheries (based on days fished during 2021/22 data). This is consistent with the generic monitoring objective.</i>
	Small vessel southern bluefin SLL	22%	STN – South Island	20%	150	
			BIG/SWO – North Is.	20%	120	
			BIG/SWO – South Is.	20%	25	

<sup>70</sup> In addition to the swordfish BLL (64%) and small vessel bluefin SLL fisheries (22%), the bigeye SLL fishery contributes another 7% of risk.

**Table 49.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **hoiho** (species identified as being of particular concern)

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
Set net	Shark	57%	SN – ECSI (Kaikoura)	25%	182	<i>Set net fisheries collectively contribute 81% of risk to hoiho. The coverage planned for Otago and the south coast of the South Island during 2022/23 (549 days) is expected to cover around 50% of effort in these set net fisheries based on days fished during 2021/22. Most of this coverage will likely be where fishers target shark species (which contributes 57% of risk) and butterfish (included in the minor target category, which contributes 14% of risk). Set net coverage is consistent with the generic monitoring objective.</i>
	Minor target	14%	SN – SCSI	55%	266	
	Flatfish	10%	SN – ECSI (Otago)	40%	283	

**Table 50.** Fishery risk and planned observer coverage for risk assessment fishery categories that contribute over 10% of the overall risk to **Antipodean albatross** (species identified as being of particular concern)

Method or general fishery description	Fishery category (from risk assessment)	% of risk from risk assessment fishery category	Planned 2022/23 observer coverage			Comments
			Fishery name (from observer plan)	Expected % effort observer	Planned seadays	
SLL	Swordfish BLL	54%	STN – North Island	20%	150	<i>The surface longline fisheries collectively contribute 84% of risk to Antipodean albatross.<sup>71</sup> The overall coverage planned for 2022/23 (445 days) would, if achieved, be sufficient to cover more than 20% of effort across all fisheries (based on days fished during 2021/22 data). This is consistent with the generic monitoring objective.</i>
	Small vessel southern bluefin SLL	22%	STN – South Island	20%	150	
			BIG/SWO – North Is.	20%	120	
			BIG/SWO – South Is.	20%	25	

<sup>71</sup> In addition to the swordfish BLL (54%) and small vessel southern bluefin SLL (22%) fisheries, the bigeye SLL fishery contributes another 8% of risk.



## Appendix 6 – Seabird research

Table 51 – Research reports not specifically focused on seabird populations of particular concern, but of relevance to seabirds, published during the 2021/22 financial year.

DOC bycatch programme reports	
POP2021-03	<a href="#">Chatham Islands seabird population research 2022</a>
POP021-04	<a href="#">Flesh-footed shearwater population monitoring and estimates 2021/22</a>
	<a href="#">Northern Royal Albatross nesting on the Chatham Islands, February 2022</a>
BCBC2020-08	<a href="#">Seabird feeding associations with fish shoals</a>
POP2019-03	<a href="#">Antipodes Island seabird research 2021/22</a>
POP2021-07	<a href="#">Otago shag breeding population size</a>
BCBC2020-05a	<a href="#">Breeding population assessment of kawau pāteketeke/king shag</a>
	<a href="#">Breeding biology of king shags from analysis of field camera images</a>
Fisheries New Zealand Aquatic Environment and Biodiversity Reports (AEBRs)	
AEBR 266	<a href="#">Assessment of risk factors for seabird net captures in selected sub-Antarctic trawl fisheries</a>
AEBR 268	<a href="#">Improving estimates of cryptic mortality for use in seabird risk assessments: loss of seabirds from longline hooks</a>
AEBR 272	<a href="#">Best practices and technologies available to minimise and mitigate the interactions between finfish open ocean aquaculture and seabirds</a>
AEBR 283	<a href="#">Creating standardised grids for New Zealand marine science outputs</a>
AEBR 285	<a href="#">Use of innovative tag technology to examine foraging patterns of seabirds and association with fishing vessels</a>
AEBR 296	<a href="#">Factors affecting protected species captures in domestic surface longline fisheries</a>

## Appendix 7 – Mitigation Research

Table 52 – Research reports related to seabird bycatch mitigation published during the 2021/22 financial year.

DOC bycatch programme reports	
BCBC2020-11b	<a href="#">Development of bottom longline underwater setting devices</a>
BCBC2021-03	<a href="#">Sink rates of line weighting configurations in the snapper longline fishery</a>
BCBC2020-11d	<a href="#">Drivers for fisher uptake of seabird bycatch mitigation in the surface longline fishery</a>

## Appendix 8 – Delivery of the 2021/22 observer seadays plan

Observer coverage is planned based on a combination of desired percentage coverage targets, the number of days required to achieve biological sampling targets and an estimate of the number of days necessary to comply with operational plans (e.g. 100% coverage on vessels operating in the southern blue whiting fishery). Additional information on the planning of observer coverage can be found in the Annual Operational Plans for [deepwater](#) and [highly migratory species](#) Fisheries, and the Conservation Services Programme [annual plans](#).

The planned number of observer seadays, and the number of days achieved for the 2021/22 financial year is shown in the table below. An observer seaday is defined as one day on which an observer is placed on board a vessel that has left port for the purposes of fishing.

The planned number of observer seadays may not have been achieved in certain fisheries for a number of reasons including:

- Prioritisation of observers onto those vessels participating in fisheries requiring high levels of observer coverage (e.g. SQU 6T)
- Difficulties associated with deploying observers during level 3 and 4 COVID restrictions
- Fewer vessels participating in fisheries than expected (of particular relevance to fisheries with high percentage effort targets e.g. southern blue whiting)

**Table 53 - Comparison of planned, and achieved, observer coverage for the 2021/22 financial year.**

Fishery	Target stocks	Days planned 21/22	Days achieved 21/22	% achieved 21/22
<b>Deepwater and middle-depth fisheries</b>				
North Island deepwater	ORH 1, ORH 2A, ORH 2B, ORH 3A, BYX 2 & CDL 2	75	80	107%
Chatham Rise deepwater	ORH 3B, OEO 3A, OEO 4 & BYX 3	275	336	123%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6	75	57	76%
West Coast deepwater	ORH 7A	80	63	79%
West Coast North Island	JMA 7, EMA 7 & BAR 7	255	226	91%
West Coast South Island (FMA 7)	HOK 1, HAK 7, LIN 7 & SWA 1	500	518	104%
WCSI HOK 'inside the line'	HOK 1	100	99	99%
Cook Strait HOK	HOK 1	100	62	62%
Chatham Rise middle-depth (FMA 3/FMA 4)	HOK 1, HAK 1, HAK 4, LIN 3, LIN 4, SWA 3, SWA 4, JMA 3, BAR 1 & BAR 4	680	689	101%
Sub-Antarctic middle-depth exc. SQU/SBW (FMA5/FMA6)	HOK1, SWA 4, WWA 5B, BAR 5 & JMA 3	550	444	81%
Southern blue whiting	SBW (all)	450	216	48%
Squid	SQU 1T & SQU 6T	1,960	2,321	118%
Bottom longline	LIN 3 – LIN 7	420	262	62%
Scampi	Scampi (all)	401	305	76%
<b>Inshore fisheries</b>				
WCNI trawl	JDO 1; SCH 1; TRE 7; SNA 8; KAH 8; TAR 1; GUR 1 + others	250	89	36%
SNA 1 trawl - standard	SNA 1	158	65	41%
SNA 1 trawl - PSH	SNA 1	80	89	111%
Southland set net	SCH 5; SPO 3; BUT 5	181	127	70%
ECSI set net – Kaikoura	SCH 3; SPO 3; HPB 3; TAR 3	284	136	48%
ECSI set net – Otago	SCH 3; SPO 3; HPB 3	133	99	74%
ECSI Trawl- TMP	FLA 3; GUR 3	240	216	90%
ECSI Trawl- TAR	TAR 3	393	153	39%
SCSI Trawl	FLA 3, STA 5	128	93	73%
BLL – SNA 1	SNA 1	249	139	56%
HPB/BNS 1 bottom longline	BNS 1; HPB 1	74	18	24%
TAR 2 trawl	TAR 2	154	142	92
<b>Highly migratory species fisheries</b>				
North Island BIG/SWO SLL	BIG 1; SWO 1	120	38	32%
South Island BIG/SWO SLL	BIG 1; SWO 1	25	0	0%
North Island STN SLL	STN 1	145	53	37%
South Island STN SLL	STN 1	145	116	80%
Purse seine	SKJ 1	102	109	107%

## Appendix 9 – Capture rate reduction targets developed under NPOA Seabirds 2013.

During the life of the NPOA Seabirds 2013, a working group of the SAG was tasked with determining a set of principles that could be used to determine capture rate reduction targets. The group recommended that fisheries be defined using the same groupings as that of the seabird risk assessment model, and that targets should be quantitative wherever possible. These targets would then be compared to a baseline capture rate, which was defined as the average estimated capture rate across the three-year block leading up to the implementation of the NPOA Seabirds 2013 (the 2010/11 to 2012/13 fishing years) with at least 10% observer coverage and an estimated seabird capture rate coefficient of variation (CV) of less than 0.30. It was also agreed that these targets should be meaningful, and a test was devised based on the level of actual observed captures, the estimated captures, and the corresponding capture rate.

### Fisheries with meaningful capture reduction rate target

Using this approach, in 2015, the SAG agreed that **two fisheries** (>28 m squid trawl and >28 m middle-depth trawl)<sup>72</sup> have sufficient information to set numerical capture rate reduction targets.

For >28 m squid trawl, the capture rate reduction target was agreed at 12.0 estimated captures per 100 tows (14% reduction compared to the baseline of 14.0 estimated captures per 100 tows). For >28 m middle depth trawl, the capture rate reduction target was agreed at 2.3 estimated captures per 100 tows (15% reduction compared to the baseline of 2.7 estimated captures per 100 tow).

The primary information source used to monitor capture rates is the [Protected Species Capture](#) website. At the time of publishing, only data up to the end of the 2019/20 fishing year was available. For the 2020/21 and 2021/22 fishing years, a combination of observed seabird captures and fisher-reported effort data was used to derive estimated captures. As information from these two fishing years does not come from the same source as earlier years, the three-year rolling averages for the 2018/19 to 2020/21 and 2019/20 to 2021/22 fishing years should be viewed as interim. The interim data will be updated when further information becomes available on the Protected Species Capture website.

Figure 24 shows the estimated capture rates for the >28m squid trawl and >28 m middle-depth trawl fisheries. It shows that the capture rate for squid has been below the target since the three-year average for 2017/18 (2016/17 to 2018/19 fishing years).

The capture rate for middle-depth trawl has remained above the target.

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<sup>72</sup> >28 m middle-depth trawl includes fishing effort targeting hoki, hake, ling, barracouta and warehou species.

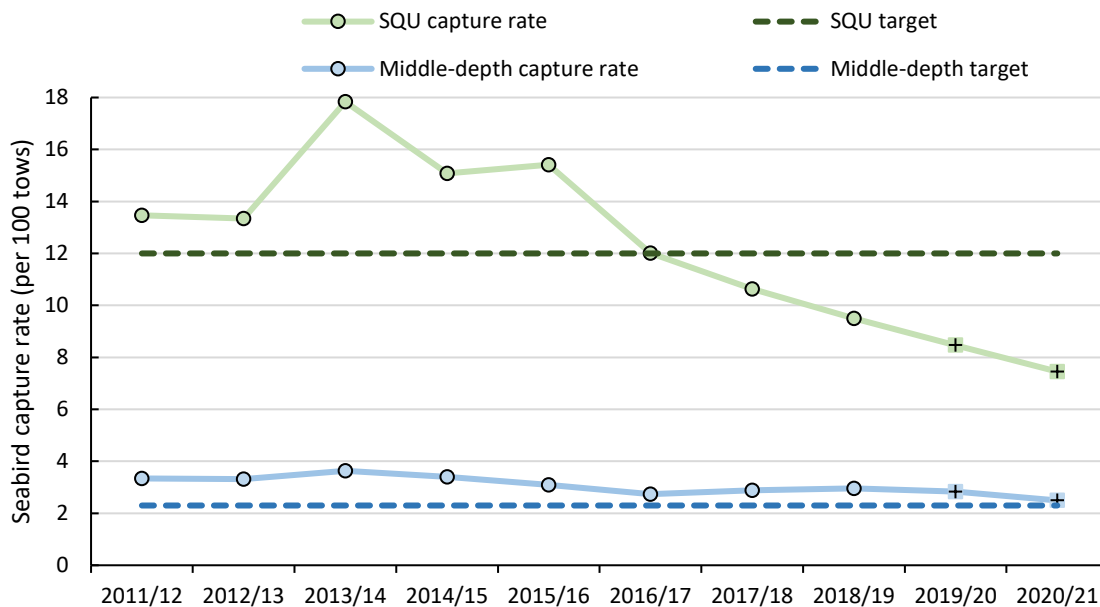


Figure 24 – Estimated seabird capture rates (captures per 100 tows) relative to agreed reduction targets, for the >28 m squid and middle-depth trawl fisheries since the 2010/11 fishing year. Seabird capture rates are expressed as three-year rolling averages. For example, data for 2018/19 represents the average for the 2017/18, 2018/19, and 2019/20 years. Data taken from the [Protected Species Capture webpage](#) except for the 2020/21 and 2021/22 fishing years (indicated with a '+').

#### Fisheries with baseline capture rate

For **three fisheries** (deepwater,<sup>73</sup> jack mackerel, and southern blue whiting trawl) sufficient information was available to calculate a baseline capture rate. As a meaningful target could not be set, a target of 'no significant increase in capture rates' was set. A baseline capture rate for the >28 m ling bottom longline fishery was also subsequently calculated (refer to the deepwater fisheries [Annual Review Report for 2016/17](#)).

The initial baseline capture rates were calculated in 2015 using estimated captures for the three fishing years between 2010/11 and 2012/13. The model that is used to determine estimated captures is updated regularly. As a result, the number of estimated captures for a specific fishery may not remain static for a given fishing year. This resulted in the scenario in the 2018/19 Seabird Annual Report where the estimated capture rates for the deepwater and jack mackerel fisheries in 2011/12 were below the baseline; it should be the same as the baseline.

For this reason, Fisheries New Zealand recalculates the baseline capture rates using the most recent version of the Protected Species Capture website. The issues that outlined above relating to availability of data on the PSC website also apply to these fisheries.

Figure 25 shows the estimated capture rates for the three trawl fisheries. The estimated seabird capture rate for deepwater has remained at around the level of the baseline throughout the time period. The rate for the jack mackerel trawl fishery has stayed below the baseline whilst that of southern blue whiting has been below the baseline since for the latter part of the time series.

<sup>73</sup> Deepwater trawl includes fishing effort targeting orange roughy, oreo species and black cardinalfish.

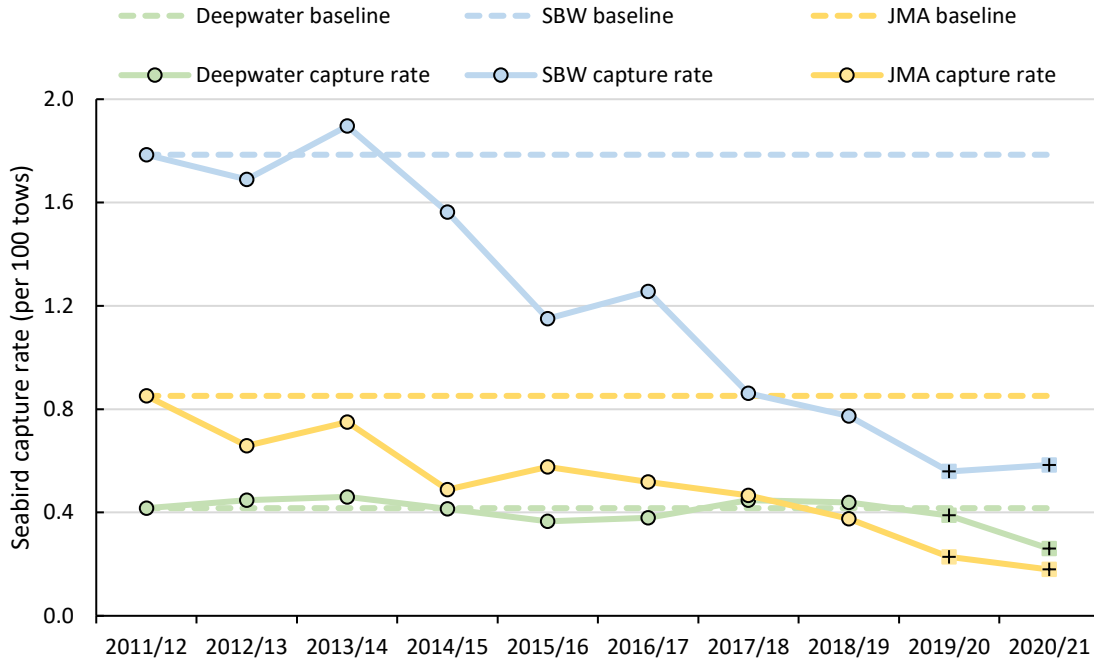


Figure 25 – Estimated seabird capture rates (captures per 100 tows) relative to baseline capture rates, for the deepwater, southern blue whiting (SBW), and jack mackerel (JMA) fisheries since the 2010/11 fishing year. Seabird capture rates are expressed as three-year rolling averages. For example, data for 2018/19 represents the average for the 2017/18, 2018/19, and 2019/20 years. Data taken from the [Protected Species Capture webpage](#) except for the 2020/21 and 2021/22 fishing years (indicated with a '+').

Figure 26 shows the estimated capture rate for the >28 m ling bottom longline fishery. The rate has fluctuated above and below the baseline for the time series. Again, data from the Protected Species Capture website was not available for the 2020/21 and 2021/22 fishing years.

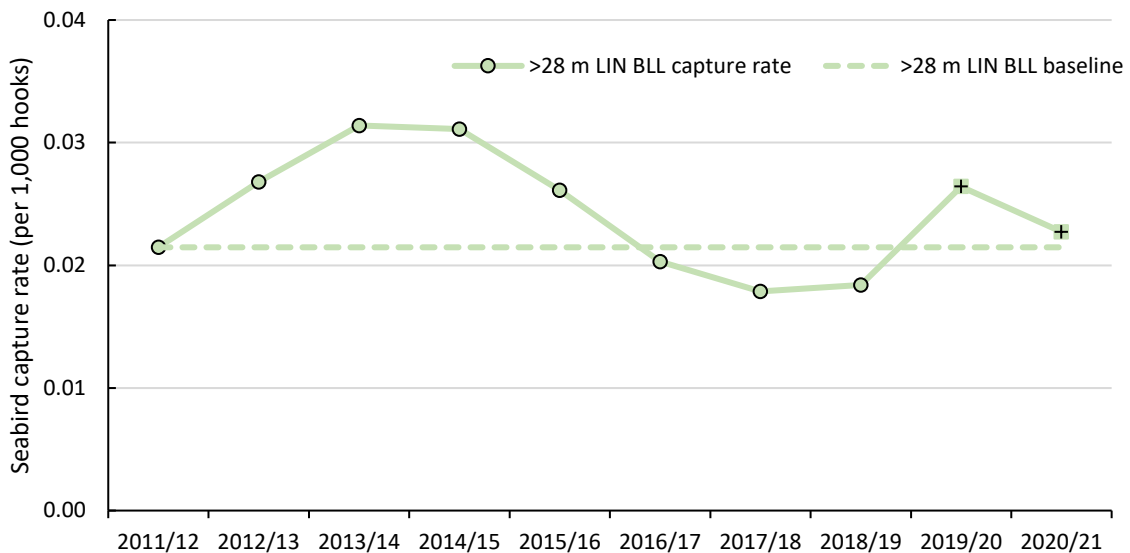



Figure 26 – Estimated seabird capture rates (captures per 1000 hooks set) relative to baseline capture rates for the >28 m ling bottom longline (LIN BLL) fishery, since the 2010/11 fishing year. Seabird capture rates are expressed as three-year rolling averages. For example, data for 2018/19 represents the average for the 2017/18, 2018/19, and 2019/20 years. Data taken from the [Protected Species Capture webpage](#) except for the 2020/21 and 2021/22 fishing years (indicated with a '+').

# Appendix 10 – Updated >28m trawl and scampi trawl observer audit form introduced during 2020/21.

## Deepwater Trawl Vessel Observer VMP Audit

*(For Seabird and Marine Mammal Operational Procedures)*



**Fisheries New Zealand**  
Tini a Tangaroa

Trip Number	Vessel Name	FMAs fished	Trip start date	Trip end date
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Target species	<input type="text"/>	Observer name	<input type="text"/>	
Number of tows	<input type="text"/>			
Bottom Trawl(s)	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/>	Mid water trawl	<input type="checkbox"/>	

Record Yes (Y), No (N), Unknown (U) or Not Applicable (N/A) in the box provided. Make detailed comments on areas of interest and if you answer N or U to any questions, or Y for items 3 or 4.

Item 1) Were copies of the DWG Vessel Management Plan (VMP) and the Trawl Operational Procedures carried onboard and made available upon request? ..... N/A

Item 2) Were the senior crew familiar with and have access to the above documents?..... N/A

Item 3) Were any seabird, marine mammal or protected shark 'trigger points' activated during the trip?..... N/A

Item 4) Did a gear or equipment failure event occur that increased the risk of seabird or marine mammal captures? (if Y detail the event and the action taken by the vessel) ..... N/A

Item 5) Were there any response in crew behaviour, fishing activity, mitigation devices or gear used following 'trigger-point' events or during high risk periods? (describe in comments any actions taken by crew) ..... N/A

**Seabird/Marine Mammal Mitigation Devices:**

Item 6) Record what mitigation devices were carried by the vessel and when they were utilised

Device	Carried on board	Deployed all tows	Deployed on some tows <i>(describe why in comments)</i>
Bird Baffle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tori line	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SLED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other <i>(Describe in comments)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item 7) Were net restrictors fitted into the centre of a triple-rig configuration when required? (SCI only)..... N/A

Item 8) Was a Dolphin Dissuasive Device deployed on every JMA7 tow?..... N/A

**Fish Waste Management:**

Item 9) Was the discharge of fish waste from the vessel managed as per the VMP?..... N/A

Item 10) The main fish waste management strategy employed during this trip was: *(describe in comments)*  
 F/Meal  Held (for the full tow)  Batch (during tow)  Mince  Other

Item 11) Was all fish waste (including offal and whole fish) held on board during shooting and hauling?..... N/A

Item 12) Was the net cleared, as practicable, of all stickers prior to shooting?..... N/A

Item 13) Was a grating or trap system used to prevent fish or offal accidentally lost to the factory floor or deck from being discharged overboard via scuppers or sump-pumps *(whilst allowing the egress of water)*..... N/A

**General Procedures:**

Item 14) Were all plastics and netting retained on board?..... N/A

Item 15) Was shooting fishing gear near congregations of marine mammals avoided?..... N/A

Item 16) Was the amount of time the net spent on the surface minimised as much as practicable?..... N/A

Item 17) Were any turns conducted during the tow with the doors fully submerged and a headline depth of less than 50 m? *(excl. coastal trawlers)* ..... N/A

Item 18) Were all protected species captures reported by the vessel?..... N/A

Item 19) Were protected species that were caught alive handled and released with due care?..... N/A

Item 20) **Make comments on the vessels protected species mitigation equipment and risk reduction operations which went well and those that didn't work so well.**

Item No:

Item No:

Item No:

Item No:

Item No:

Item No: