Fisheries New Zealand
Tini a Tangaroa

Deepwater Annual Review Report 2021/22

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1 Introduction

This Deepwater Fisheries Annual Review Report (ARR) assesses progress against the fisheries management priorities and actions identified in the Deepwater Fisheries Annual Operational Plan 2021/22. It also reports on the annual performance of New Zealand's deepwater fisheries during the 2021/22 fishing year in relation to environmental interactions and impacts.

1.1 Overview of New Zealand's commercial deepwater fisheries

New Zealand's commercial deepwater and middle-depth fisheries (deepwater fisheries) predominantly occur in offshore waters beyond the 12 nautical mile (NM) limit of the Territorial Sea out to the 200 NM limit of the Exclusive Economic Zone (EEZ). Total FOB[1] export revenues from deepwater fisheries during the 2022 calendar year exceeded $658 million.

The management of New Zealand's commercial deepwater fisheries is a collaborative arrangement between Fisheries New Zealand (FNZ) representing the Crown and its statutory obligations to the public, and the commercial fishing industry represented by Deepwater Group (DWG).[2] This arrangement allows for the Management Objectives outlined in the 'National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019' (National Deepwater Plan 2019) to be achieved by drawing on the combined knowledge, experience, capabilities and perspectives of both organisations.

Within the commercial deepwater fisheries portfolio, fish species have been ranked into three tiers, according to their commercial importance to guide management priorities (Table 1). Tier 1 species are high volume and/or high value fisheries and are usually targeted. They are important export revenue earners, which is reflected in the high quota value associated with these stocks. Tier 2 species are typically only target fisheries at certain times of the year and/or are important bycatch taken in fisheries targeting Tier 1 species. Tier 3 species are those caught as incidental bycatch that are not managed through the Quota Management System (QMS).

Table 1: Categorisation of commercial deepwater species by Tier.

Deepwater species[3]		
Tier 1 stocks	Hake: all stocks Hoki: all stocks Jack mackerel: JMA 3 & JMA 7 Ling: LIN 3 – LIN 7 Orange roughy: all stocks	Oreo: all stocks Southern blue whiting: all stocks Scampi: all stocks Squid: all stocks
Tier 2 stocks	Alfonsino: all stocks Black cardinalfish: all stocks Barracouta: BAR 4, BAR 5 & BAR 7 Blue (English) mackerel: EMA 3 & EMA 7 Dark ghost shark: GSH 4 – GSH 6 Deepwater crabs (KIC/GSC/CHC): all stocks Frostfish: FRO 3 – FRO 9 Gemfish: SKI 3 & SKI 7 Lookdown dory: all stocks Pale ghost shark: all stocks	Patagonian toothfish: all stocks Prawn killer: all stocks Redbait: all stocks Ribaldo: RIB 3 – RIB 8 Rubyfish: all stocks Sea perch: SPE 3 – SPE 7 Silver warehou: all stocks Spiny dogfish: SPD 4 & SPD 5 White warehou: all stocks
Tier 3 species	Non-QMS species	

[1] FOB - Free on board, which means the value of export goods, including raw material, processing, packaging, storage, and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport or insurance cost to get the goods to the export market. https://www.seafood.org.nz/publications/export-information/

[2] Shareholders of DWG collectively hold over 90% of deepwater quota shares.

[3] For some species (e.g. ling and jack mackerel), management of some stocks falls under the National Deepwater Plan 2019, while the remainder are managed under the National Inshore Finfish Fisheries Plan.

1.2 National Deepwater Plan wider context and structure

Since 2010, New Zealand's deepwater fisheries management has been implemented through a number of iterations of the National Deepwater Plan. The National Deepwater Plan 2019 sits within the Fisheries Act 1996 (**the Act**) and Te Tiriti o Waitangi obligations to Māori. The National Deepwater Plan 2019 consists of three parts:

- Part 1A: The National Deepwater Plan
    - Part 1B: Fishery-specific chapters
- Part 2: Annual Operational Plan (AOP). The AOP details the management priorities and actions that will be implemented on an annual basis for Deepwater fisheries for each financial year.
- **Part 3: Annual Review Report** (ARR - this document).

The Annual Review Report is split into three parts:

- Part 3A describes the progress that has been made during the 2021/22 financial year (1 July 2021 – 30 June 2022) towards delivering the management actions set out in the 2021/22 AOP. Achievement of these annual priorities contributes to meeting the high-level management objectives set out in Part 1A of the National Deepwater Plan 2019.
- Part 3B provides detail on delivery of fisheries services relevant to Deepwater Fisheries Management that are planned by Financial Year. These processes include the planning and contracting of fisheries and conservation research projects, planning observer coverage on the deepwater fleet and the cost recovery regime.
- Part 3C provides a summary report of the combined environmental impacts of deepwater fishing activity, and the deepwater fleet's adherence to the suite of non-regulatory management measures in place during the 2021/22 October Fishing Year (1 October 2021 – 30 September 2022).

This Annual Review Report also contains several appendices:

- Appendix I summarises the commercial catch of deepwater stocks during the 2021/22 fishing year. Also included, where available, are observer coverage details, the deemed values invoiced, and export earnings during the 2022 calendar year.
- Appendix II summarises the results of the October 2021 sustainability rounds.
- Appendix III summarises fishing effort and bycatch in MSC certified stocks.
- Appendix IV summarises cost recovery levies for deepwater stocks for the 2021/22 Financial Year.

Further information and links to other National Deepwater Planning documents can be found at: https://www.mpi.govt.nz/fishing-aquaculture/fisheries-management/deepwater-fisheries/

2 Part 3A: Progress on management actions

2.1 Management actions delivered by Deepwater Fisheries Management

The 2021/22 AOP identified 16 management actions that aimed to progress delivery of the management objectives specified in Part 1A of the National Deepwater Plan 2019. Table 2 summarises progress relating to each of these management actions which are ranked in priority.

Table 2: Management actions to be delivered by Deepwater Fisheries Management during the 2021/22 financial year

1

Fisheries sustainability controls

Review catch limits and management settings as required

Key actions[4]

Stocks undergoing assessment or characterisation to be considered for review:

- October 2021: CDL 1, HOK 1, LIN 5, SKI 3, SKI 7
- April 2022: SBW 6B, RBT 7
- October 2022 (tentative): HOK 1, HAK 7, JMA 7, LIN 3, LIN 4, ORH MEC, ORH 3B, SCI 1, SCI 2, SWA 3, and SWA 4
- Review deemed value rates for deepwater stocks identified as meeting criteria for review.
- Review conversion factors as required.

Actions achieved

For the October 2021 sustainability round, catch limits were reviewed and increased for ling (LIN 5) and gemfish (SKI 3 & SKI 7). Catch limits were also reviewed and decreased for hoki (HOK 1) and cardinalfish (CDL 1).

For the April 2022 sustainability round, catch limits were reviewed and decreased for redbait (RBT 7) and southern blue whiting (SBW 6B).

The deepwater team also contributed to the deemed value rate review for one kingfish stock that is primarily taken by the deepwater fleet (KIN 8).

Stock	TAC	TACC	Increase/ decrease	Customary	Recreational	Other sources of mortality caused by fishing
HOK 1	111,140	110,000	-	20	20	1,100
LIN 5	5,314	5,208	↑	1	1	104
SKI 3	848	839	↑	1	0	8
SKI 7	848	839	↑	1	0	8
CDL 1	176	160	↓	0	0	16
RBT 7	421	400	↓	0	0	21
SBW 6B	2309	2264	↓	0	0	45

2

Fisheries planning

Implement National Deepwater Plan (2019)

Key actions

- Ministerial approval of fisheries-specific plans for Ministerial sign off (SCI, SBW, SQU)

Core actions

- Compile and publish Annual Review Report for 2020/21
- Develop and publish Annual Operational Plan for 2022/23

[4] 'Key actions' are major pieces of work, often tied to the AOP fishing year. 'Core actions' are usually undertaken every year (business as usual).

	Actions achieved • The Annual Review Report for 2020/21 was completed and made available in June 2022[5] • The Annual Operational Plan for 2022/23 was completed and made available in June 2022[6] • Feedback on the draft species-specific fish plans for SCI, SBW, and SQU has been received by the FPAG, however these are yet to be approved
3	**Ministerial services** Ensure timely completion of all Ministerial correspondence and communication requests assigned to the Deepwater Team
	Core actions • Provide quality advice and information to the Minister for Oceans and Fisheries • Respond to all Official Information Act requests and government correspondence regarding deepwater fisheries issues in a timely manner.
	Actions achieved During the 2021/22 financial year, the Deepwater Fisheries Management team completed: • 6 Aide memoires; • 7 Briefing papers; • 21 Ministerial responses; • 2 submissions to Cabinet; and • 12 Written Parliamentary Questions Since 2014, MPI's Official Information Act (OIA) Team has had responsibility for drafting responses to OIA requests. In 2021/22, the Deepwater Team contributed to the completion of OIA requests as subject matter experts, providing advice and appropriate review of information.
4	**Engagement** Engage with tangata whenua and stakeholders in the management of deepwater fisheries
	Core actions • Ensure that all management information is available on Fisheries New Zealand's website • Engage with Treaty partner representatives such as Te Ohu Kaimoana and industry and eNGO stakeholders through biannual Fish Plan Advisory Group meetings (FPAG) • Provide for input and participation through Iwi Fisheries Forums
	Actions achieved • Directed efforts were made to engage with tangata whenua for all deepwater fisheries consultations throughout the year, including the preparation and distribution of one-page summaries of all sustainability round proposals to iwi forums. • Fisheries Plan Advisory Group (FPAG) meetings were held in November 2021 and April 2022. The FPAG is an engagement forum for the Deepwater Team to meet with iwi and stakeholders (industry and eNGO representatives).
5	**Protected species frameworks** National Plan of Action (NPOA) Seabirds 2020
	Key actions • Ongoing management of the PSRMP process as it applies to trawlers >28m, scampi trawlers, <28m hoki trawlers, and ling bottom longline vessels • Auditing PSRMPs against Mitigation Standards • Continuing to improve and manage the process that applies to the ling bottom longline operational procedures (for any vessels for which a PSRMP has not yet been developed) • Investigating and implementing any additional practicable and effective measures to minimise the risk of net captures, based on the outcomes of the contracted project characterising trawl net captures and potential contributing factors

[5] The ARR for deepwater fisheries 2020/21 can be accessed online: https://www.mpi.govt.nz/dmsdocument/51895-Annual-review-report-for-deepwater-fisheries-202021

[6] The AOP for deepwater fisheries 2020/21 can be accessed online: https://www.mpi.govt.nz/dmsdocument/51892-Annual-Operational-Plan-for-Deepwater-Fisheries-202223

	Actions achieved • The Deepwater Team worked with the net capture working group to coordinate at-sea mitigation trials with observer coverage, briefing and debriefing observers, and analysing lengthener captures. • The Deepwater Team led the development of the Seabird Annual Report 2020/21 based on the objectives and performance measures of the NPOA Seabirds (2020). • To investigate sink rates of bottom longlines after the implementation of the 2021 bottom longline circular, a project for testing sink rates on observer deployments was progressed. • Actions relating to implementation of the NPOA Seabirds 2020 are detailed within Section 2.4 of this Report. More detail can be found in the Seabird Annual Report 2021/22. • Seabird captures in deepwater fisheries for the 2021/22 year are detailed in Part 3C of this report.
6	**Protected species frameworks** Work collaboratively with the Department of Conservation on implementation and review of the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022
	Key actions • Initiate review of the Threat Management Plan with DOC in 2021/22. Core actions • Engage with key stakeholders at meetings of both the Threat Management Plan Forum and Advisory Groups in 2021/22 • Update and publish an annual operational plan for SBW 6I.
	Actions achieved • The New Zealand sea lion/rāpoka Threat Management Plan 2017-2022 (TMP) came to the end of its first five-year term at the end of 2022. After a delay caused by the Covid pandemic, work began on the review of the Plan in association with DOC and Te Rūnanga o Ngāi Tahu (Ngāi Tahu). • The New Zealand sea lion/pakake/whakahao TMP Technical Advisory Group hui was held on 16 June 2022 to present results of the 2021-22 fieldwork season, provide updates on other ongoing or planned projects, and identify ideas and actions for the next field season. • The Department of Conservation, Te Rūnanga o Ngāi Tahu and Fisheries New Zealand held the annual New Zealand sea lion TMP Forum hui on 27 September 2022 at Ōtākou Marae, Dunedin. The purpose of this forum was to discuss with mana whenua and stakeholders, updated knowledge on mainland and Rakiura sea lion populations and potential threats these animals face. A fisheries update, including recent captures was provided at this meeting. • Research was co-contracted with DOC to update the 2015 estimate of the New Zealand sea lion population. • A paper was written for the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) meeting in Hobart with the title 'New Zealand Sea Lion Exclusion Device as an Example of Successful Bycatch Mitigation.' • A revised southern blue whiting (SBW 6I) Operational Plan was put in place for the 2021/22 fishing year.
7	**Benthic framework** Benthic Interactions: Work collaboratively with the Department of Conservation to monitor and measure the nature and extent of benthic interactions with deepwater fishing activity
	Key actions • Support the development of potential management actions to mitigate any adverse effects on benthic biodiversity from fishing. • Contribute to development of publicly available trawl footprint information. Core actions • Report extent of new areas trawled, and the volume/species (where possible) of benthic bycatch.

	Actions achieved • FNZ and DOC established a multi-stakeholder forum to discuss and make recommendations on managing the effects of bottom trawling on the benthic environment in NZ's EEZ. This Forum met over a period of 10 months in 2021/22. The forum's deliberations, engagement with tangata whenua, and subsequent public consultation will inform Government decisions measure to manage the effects of bottom trawling in NZ's EEZ. • FNZ contracted a research provider to map the annual commercial trawl footprint for all Tier 1 species, and for deepwater fisheries overall. The latest version updates the trawl footprint to include the 2019/20 and the 2020/21 fishing years and compares the previously used method of producing the trawl footprint (reported tow start and end points) with a method that incorporates data available from Geospatial Positional Reporting. This updated trawl footprint report can be found here. Details of the 2020/21 trawl footprint and the volume of selected benthic species recorded during the 2021/22 fishing year are reported in section 4.7 of this report.
8	**National Plan of Action frameworks** Key actions • Ministerial approval of new NPOA-Sharks. • Participate in meeting of signatories to the Memorandum of Understanding on the Conservation of Migratory Sharks. Core actions • Monitor captures and respond to events • Ensure that the management of sharks in New Zealand is consistent with the CMS Sharks MOU and other international management instruments.
	Actions achieved • Consultation on the draft NPOA-Sharks (2022) was completed. A total of 32 submissions were received from iwi, industry, eNGOs, and individuals. In addition, 2,100 form submissions from Forest & Bird and 43,592 form submissions from 'Only One', a United States-based eNGO, were received. Most submissions were generally supportive of the updated goals and objectives of the revised NPOA. • FNZ and DOC analysed the submissions, and incorporated changes where appropriate, into a final proposed version of the NPOA-Sharks. The final version will be subject to Ministerial approval. • NPOA-Sharks is now a joint FNZ-DOC plan, to better reflect dual agency responsibilities for shark conservation and management.
9	**Deepwater monitoring** Deepwater observer coverage/sampling requirements
	Core actions • Work with vessel operators to ensure quarterly fishing plans that accurately reflect likely fishing activity are provided to Fisheries New Zealand in a timely manner • Work with the observer programme to ensure that observers are informed of biological sampling targets and other requirements • Debrief observers after trips if required • Monitor percent coverage levels to ensure adequate and representative coverage is achieved and • Develop the observer coverage plan for the 2022/23 financial year by reviewing and updating sampling targets.
	Actions achieved • Quarterly fishing plans were received from operators when requested • The Deepwater Team liaised with the Observer Programme to ensure biological sampling targets were met by observers • Observer coverage was monitored through meetings with the observer programme • The Deepwater team worked with Observer Services to update the observer coverage plan for 2022/23 • The deepwater bottom longline operational procedures audit form was reviewed in the 2020/21 fishing year and a new version was finalised in October 2021.

10	**Deepwater research planning**
	Core actions • Finalise and agree the draft Deepwater Fisheries Research Programme for delivery during the 2022/23 financial year (including any proposals for industry-led research) before December 2021 • Update the Medium-Term Research Plan • Support delivery of 2021/22 research for deepwater fisheries.
	Actions achieved • The Deepwater Fisheries Research Programme for delivery during the 2022/23 financial year (including any proposals for industry-led research) was finalised before December 2021. • The Medium-Term Research Plan was updated. • The delivery of 2021/22 research for deepwater fisheries was supported by the Deepwater Team.
11	**Deepwater monitoring – protected species and sharks** Monitor the deepwater fleet adherence to the range of measures in place to manage the effects of fishing activity on protected species and sharks
	Core actions • Audit Protected Species Risk Management Plans against the Mitigation Standards developed to support implementation of the NPOA Seabirds 2020 • Monitor and report adherence of the deepwater fleet to non-regulatory management measures • Monitor protected species interactions, notify DWG of trigger points, and report in ARR
	Actions achieved • Protected species risk management plans were audited • Protected species interactions were monitored on all observed trips via observer debriefs and through reporting of DWG protected species trigger points • Logistical support was provided to the DWG Environmental Liaison Officer and the DOC Liaison Officer programme by responding to requests for information around protected species interaction events over time.
12	**Deepwater monitoring – non-regulatory measures** Monitor adherence to non-regulatory measures in place to manage Tier 1 deepwater fish stocks at a sub-QMA scale.
	Core actions • Audit and report adherence to sub-QMA catch limits • Consider additional management where sub-QMA catch limits are exceeded • Audit and report adherence to HMA and HSSA management measures.
	Actions achieved • Custom data reports, using electronically reported catch data, were used to monitor fleet adherence to sub-QMA catch limits for hoki, quarterly reports summarising fishing effort, estimated catch and hoki length frequency information from inside HMAs were compiled and provided to DWG. • Summaries of adherence to sub-QMA catch limits and Hoki Operational Procedures are provided within Appendix I of this Report.
13	**Fisheries management controls** Regulatory amendments
	Key actions • Regulate Sea Lion Exclusion Devices (SLEDs) use on tows in SQU 6T as per Ministerial decision • Implement technical regulatory amendments. Core actions • Progress any other legislative amendments as required

	Actions achieved • The 'Commercial Fishing (Sea Lion Exclusion Device) Amendment Regulations 2021' ("the Amendment Regulations") amended the Fisheries (Commercial Fishing) Regulations 2001 to require a 'Sea Lion Exclusion Device' (SLED) to be used in SQU6T. The Fisheries (Sea Lion Exclusion Device) Circular 2021 was issued pursuant to regulation 58CA and 58CB of the Fisheries (Commercial Fishing) Regulations 2001. The notice was issued and came into force on 5 January 2022. • A consultation document setting out over 30 proposals for regulatory amendment was released for public consultation in January 2022. The proposals relevant to deepwater fisheries included a review of the prohibition on the use of net-sonde (data transmission) cables on trawl vessels and creating infringement offences relating to mandatory requirements to use seabird scaring devices.
14	**Fisheries management/sustainability controls** Support existing approaches to market initiatives for New Zealand's deepwater seafood
	Core actions • Provide information for the re-assessment of ORH fisheries • Provide information for annual surveillance audits of SBW, LIN bottom longline, and the HOK, HAK and LIN trawl complex
	Actions achieved • FNZ provided data to the MSC auditors to inform re-assessment of the ORH fisheries. On 2 August 2022 MRAG Americas announced that the New Zealand Orange Roughy fishery may be certified as sustainable against the MSC standard. The New Zealand Orange Roughy fishery is now certified for 5 years, subject to successful completion of annual surveillance audits. • Information was provided as requested on time for annual surveillance audits of SBW, LIN bottom longline, and the HOK, HAK and LIN trawl complex.
15	**Fisheries sustainability controls** Develop and implement specific harvest strategies for Tier 1 species, and management approaches for low information stocks, that enable deepwater and middle-depth fisheries to be economically viable over the long-term
	Key actions • Support reviews of MSEs for deepwater species
	Actions achieved • During the annual meeting on 21 September 2022 between scampi quota owners and operators and FNZ, a presentation was given on the use of close to real-time catch information to create a scampi dashboard for use by industry. The purpose of this would be for vessel operators to collectively and more effectively respond to signals from the fishery (e.g. change in CPUE) with management actions within the set catch limit for the stock.
16	**Digital monitoring**
	Key actions • Implement changes to Electronic Reporting Circulars as required • Contribute to post implementation assessment of ER and GPR Core actions • Contribute to monitoring and reviewing the data quality standards and specifications process • Utilise geospatial position reporting and electronic catch reporting to aid management • Work with vessel operators to ensure all geospatial position reporting and electronic catch reporting requirements are well understood and implemented consistently.

	Actions achieved • Geospatial position reporting and electronic catch reporting was regularly utilised to aid deepwater fisheries management. • The deepwater team worked with vessel operators to ensure all geospatial position reporting and electronic catch reporting requirements are well understood and implemented consistently particularly with regards to Non-Fish Protected Species reports. • Changes made to electronic reporting requirements, including additional reporting to support implementation of the NPOA Seabirds 2020, came into effect during the first quarter of the 2021/22 fishing year.

2.2 Management actions delivered in conjunction with other directorates within FNZ and MPI

Table 3: Management actions led by other teams within Fisheries New Zealand and within MPI

A	**Input to wider strategic MPI projects** LEAD: Project dependent (see below)
	Key action • Contribute to the process for progressing the Fisheries Amendment Bill Core action • Contribute to policy development as required particularly on Marine Protected Areas and the Fisheries Change Programme.
	Actions achieved • Assistance was provided on specific aspects of the Fisheries Amendment Bill including the landing and discard exception instrument that would replace the 6th Schedule of the Act and reviewing drafting of the Bill itself prior to introduction.
B	**Research monitoring and evaluation** LEAD: Fisheries Science (Stock Assessment and Aquatic Environment)
	Core actions • Assist the Fisheries Science team to deliver outputs of all 2021/22 research projects • Assist Fisheries Science to ensure that all science research used to support management of deepwater fisheries is assessed against the Research Standard.
	Actions achieved • All science information used to support fisheries management was reviewed by Fisheries Assessment Working Groups and determined to have met the Research Standard • Deepwater fisheries research was contracted as required during the 2021/22 financial year (including additional projects). Exceptions were the ORH 3B stock assessment (delayed by a year) and the ORH 7A acoustic survey (postponed due to COVID). • All contracted research in 2021/22 and all final research reports relevant to deepwater fisheries published in the 2021/22 year are listed within Section 3.3 of this report
C	**Observer coverage delivery** LEAD: Fisheries Monitoring (Observer Programme)
	Core actions • Ensure that the Observer Programme is adequately informed of the biological sampling targets and other observer requirements for 2021/22 • Provide training to observer recruits as part of the intake process to highlight the importance of and provide context to the work they will be conducting • Engage with, and provide feedback to, observers through the observer newsletter and observer catch up sessions • Monitor effort coverage and liaise with observer programme on observer deployment throughout the year

	Actions achieved • The delivery of the 2021/22 observer coverage plan and associated biological sampling and percentage-level coverage targets are detailed in Section 3 of this report.
D	**Cost Recovery Process** LEAD: Corporate Services (Cost Recovery)
	Core actions • Ensure the cost recovery levy process recovers costs consistent with deepwater observer coverage and research plans, including providing information to support the levy order and 'Unders and Overs' process.
	Actions achieved • Deepwater Fisheries Management contributed to the port price survey process and provided information as required to enable the accurate recovery of costs associated with observer and research delivery. Detailed information on the 2021/22 cost recovery levies can be found in Appendix I V of this report.
E	**Compliance monitoring work** LEAD: Compliance Directorate (Compliance Services Branch)
	Core actions • The Fisheries Management Deepwater Team will be involved in discussions with Compliance relating to the priorities for the future monitoring of deepwater fisheries; and at-sea and in-port inspections • Fisheries Compliance will maintain an investigative response capability for investigating identified breaches; and will advise Fisheries Management of any systemic issues that arise from investigations.
	Actions achieved • Fisheries Compliance and Fisheries Management maintain a forum to discuss priorities for compliance attention, this includes discussion of deepwater fisheries. • Fisheries Compliance recruit and train Fishery Officers to maintain monitoring, analytical, surveillance and investigative capability. Serious and significant matters may be referred to the Investigations group for further attention. When systemic issues are identified these are discussed with Fisheries Management.
F	**Aquaculture & Fisheries Permits** LEAD: Verification and Operations Directorate (Aquaculture and Fisheries Permitting)
	Core actions The Fisheries Management Deepwater Team provides: • Advice on registration of Foreign Owned Fishing Vessels (FOVs) • Input into High Seas Permit applications • Input into annual tenders of Crown-held ACE.
	Actions achieved • Advice was provided for the registration of nine FOVs • Input was provided for the 19 high seas fishing permit applications received for the 2021/22 high seas fishing year (from 1 May 2021 to 30 April 2022) • Input was provided for the annual tender of Crown-held ACE for scampi stocks

2.3 Management actions initiated by industry

Management Actions that the Deepwater Fisheries Management team contributed towards delivery of, but that were initiated by industry, are summarised below.

Table 4: Summary of progress on industry-initiated management actions during the 2021/22 financial year.

	Core actions • Respond to quota owner requests for changes to QMA boundaries or definitions • Respond to any proposals to install cameras • Respond to applications for vessel specific conversion factors • Support development of new fisheries within sustainable limits • Respond to any requests for special permits that relate to deepwater fisheries • Respond to any requests to use innovative trawl gear
1	During the 2021/22 financial year: • There were no quota owner requests for changes to QMA boundaries or definitions • No proposals to install cameras were received • A vessel specific conversion factor was issued to the only fillet vessel that had been operating without a certificate until that point. ○ An amended certificate was also issued in response to a request from a vessel operator to accommodate different processing • No requests for special permits were received • No requests to use innovative trawl gear were received

2.4 Implementation of the National Plan of Action – Seabirds 2020

The NPOA Seabirds 2020 describes objectives to guide management of interactions with seabirds in New Zealand fisheries. This ARR reports on the prioritised actions and services needed to meet these objectives for deepwater fisheries as set out in the 2021/22 AOP.

2.4.1 Deepwater management approach - seabirds

In deepwater fisheries, seabird interactions are avoided or mitigated by:

- mandatory use of seabird scaring devices and implementation of seabird mitigation measures;[7]
- implementation of best practice seabird mitigation measures through Protected Species Risk Management Plans (PSRMPs) and Operational Procedures;
- an annual crew training and vessel outreach programme;

[7] Regulations require trawlers over 28 m in overall length to deploy a seabird scaring device during all tows (https://www.mpi.govt.nz/dmsdocument/20321-Seabird-Scaring-Devices-Circular-2010-No.-F517) and all bottom longliners to deploy streamer (tori) lines, and restrict offal and fish discharge. Bottom longline vessels are required to weight longlines so that an approved sink rate is met (https://gazette.govt.nz/notice/id/2021-go3770).

- ongoing exploration of new or improved mitigation methods, and
- FNZ observers monitoring at-sea vessel adherence to PSRMPs.

PSRMPs outline a set of operational procedures that are specific to each vessel. These include fish waste management systems, the correct deployment of seabird scaring devices, and the removal of 'stickers' (fish caught in net mesh) between each tow. Contingency plans for equipment failures (that may increase seabird capture risk), and additional reporting requirements for capture events are also included.

Throughout 2021/22, actions in deepwater fisheries to support the NPOA Seabirds 2020 were focused on continuing to improve and manage the PSRMP process. Table 5 sets out the objectives and specific services that were planned for Deepwater Fisheries Management. Many of the services contributed to the achievement of more than one objective. These measures contribute to a reduction over time in the number and rate of seabird captures resulting from fishing activity and contribute to achieving objectives under the avoiding bycatch and healthy seabird population goals of the NPOA Seabirds 2020. For the actions achieved during the 2021/22 year, refer to the Seabird Annual Report.

Table 5: Deepwater services for 2021/22

NPOA-Seabirds Objectives
Goal 1: Avoiding bycatch
1. Ensure all New Zealand commercial fishers are using practices that best avoid the risk of seabird bycatch, enabled by appropriate regulations 2. Practices that effectively avoid risk of seabird are supported and promoted to non-commercial fishers
Planned deepwater services for 2021/22
• Review the changes made in 2021 to the bottom longline seabird mitigation circular to reflect Mitigation Standards and update this circular in 2022 as required • Collect data to better understand line sink rates on bottom longline vessels • Capture rate reduction targets will be agreed by the Seabird Advisory Group (SAG) in 2021/22 • Audit existing PSRMPs against Mitigation Standards • Report on at-sea audits of adherence to PSRMPs • Review and update Mitigation Standards as required • Report captures and capture rate data for the previous fishing year • Review and update mitigation regulations as appropriate
Goal 2: Healthy seabird populations
3. Research, monitoring, and management actions are prioritised for seabird populations of particular concern and their risk ratios reduce 4. The number of fishing-related mortalities is decreasing towards zero
Planned deepwater services for 2021/22
• Implement new research programme along with Observer Services on hook sink rates utilising time-depth recorder • Clearly identify additional priority research or management actions.
Goal 3: Research and information
5. 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) 6. Monitoring programmes for New Zealand commercial fisheries are designed and implemented to provide statistically robust information to assess progress towards the NPOA Seabirds 2020's objectives 7. Observation and monitoring methods are researched, developed, and implemented across all sectors 8. A research programme provides information to reduce uncertainty in estimates of risk to seabirds from fishing across all sectors
Planned deepwater services for 2021/22
• Continue to review the factors that contribute to seabirds getting caught in trawl nets in deepwater fisheries • Review the forms and data collection methods used by observers and fishers to make sure they are appropriate to support the NPOA Seabirds 2020

NPOA-Seabirds Objectives
• Document monitoring objectives and needs based on risk assessment outputs
Goal 4: International engagement
9. The risk to New Zealand seabirds from fisheries outside the New Zealand EEZ is assessed and communicated to international organisations, governments, and other stakeholders 10. New Zealand advocates for the development, adoption, improvement, and update of seabird conservation measures New Zealand actively works bilaterally, multi-laterally, and with international organisations to build capacity to reduce the risk to New Zealand seabirds
Planned deepwater services for 2021/22
• Contribute to advocacy for management of fishing impacts on seabirds on the high seas through participation in the South Pacific Regional Fisheries Management Organisation

2.4.2 Capture rate reduction targets

Capture rate reduction targets provide a gauge against which the 'avoiding bycatch' goal of the NPOA Seabirds 2020 can be measured. There are two performance measures under Objective 1 of the 'avoiding bycatch' goal that relate to capture rate reduction targets. There are challenges involved in setting statistically robust targets. To ensure capture rate reduction targets are set that are both appropriate and meaningful, a seabird workshop took place in the first half of the 2020/21 financial year. Meaningful targets were unable to be set because the observer capture estimates were not available at the time.

Table 6 sets out the deepwater capture rate reduction targets and proxy targets developed in 2015 along with three-year averages (based on the 2019/20 to 2021/22 fishing years[8]) of observer coverage and estimated capture rates for deepwater fisheries groupings. Table 6 also shows progress against capture rate reduction and proxy targets, however the statistical analysis required to determine whether changes in estimated seabird capture rates are significant has yet to be completed.

8 The estimated capture rate data used for the 2020/21 and 2021/22 fishing years is observer data as information from the Protected Species Capture website was not available. The equivalent data used for 2019/20 comes from the Protected Species Capture website.

Fishery	Targets				Three-year average (19/20-21/22)		Progress against target/proxy
	Suggested target/proxy (from 2015)	Baseline capture rate (per 100 tows/1000 hooks)[9]	'Target' rate/100 tows (reduction)	Meaningful target?	Observer coverage (%)	Estimated capture rate (per 100 tows/1000 hooks)	
SBW trawl	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	1.79	-	No	100%	0.58	Declining trend in estimated capture rate
SQU trawl (> 28 m)	Statistically significant decrease in rate (based on 3-yr rolling average)	13.47	12.0 (14%)	Yes	97%	7.45	Estimated capture rate target met based on 19/20 to 21/22 three year rolling average
JMA trawl (> 28 m)	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.85	-	No	75%	0.13	Declining trend in estimated capture rate
SCI trawl	Observer coverage considered insufficient to provide a robust baseline. Proxy target is to have VMPs in place on all vessels, ELO to visit all scampi vessels, and a target of 15% observer coverage be set	2.85	-	No	11%	2.56	Observer coverage remains below target
Deepwater trawl[10]	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.41	-	No	37%	0.42	Estimated capture rate remains static
Middle-depth trawl (>28 m)[11]	Statistically significant decrease in rate (based on 3-yr rolling averages)	2.70	2.3 (15%)	Yes	53%	2.15	Estimated capture rate target met based on 19/20 to 21/22 three year rolling average
Large vessel BLL (>28 m)	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.02		No	0%	0.02	Estimated capture rate remains static

9 The baseline captures presented in this table for SBW, JMA and deepwater trawl fisheries have been recalculated from those presented in earlier ARRs based on updated estimates. The baseline period remains the same (the 2010/11 to 2012/13 fishing years)

10 Deepwater trawl includes orange roughy and oreo species.

11 Middle-depth trawl includes trawl effort for all species other than those with specific categories. This includes hoki, hake, ling, and a number of Tier 2 species.

Fishery	Targets				Three-year average (19/20-21/22)		Progress against target/proxy
	Suggested target/proxy (from 2015)	Baseline capture rate (per 100 tows/1000 hooks)[9]	'Target' rate/100 tows (reduction)	Meaningful target?	Observer coverage (%)	Estimated capture rate (per 100 tows/1000 hooks)	
Small vessel LIN BLL (<28 m)	Work with industry to implement vessel-specific seabird management plans including the use of best practice mitigation across this fleet. Liaison officers will also provide seabird training sessions to crew. Observer coverage target of 15% of effort to be set.	-	-	No	23%	Not available	-

3 Part 3B: Deepwater observer coverage, fisheries research, and cost recovery levies

This section of the ARR provides detail on FNZ fisheries and conservation services that are relevant to Deepwater Fisheries Management and are planned by financial year (1 July – 30 June). These processes include the planning and contracting of fisheries and aquatic environment research projects, planning observer coverage on the deepwater fleet, and the cost recovery regime.

3.1 Observer coverage

Biological sampling and environmental monitoring are informed by the requirements of the National Deepwater Plan 2019 and carried out by FNZ Observer and Verification Services. Data collected by observers is used by FNZ to:

- Monitor key fisheries against harvest strategies;
- Monitor biomass trends for non-target species;
- Assess fishery performance against environmental benchmarks as available; and
- Enable more timely responses to sustainability and environmental impact issues.

Observer coverage is planned by both FNZ and DOC, based on the management objectives of both agencies. Observer coverage is used by DOC to collect information regarding fisheries interactions with protected species.

3.2 2021/22 observer coverage performance

In 2021/22, observer coverage for each fishery was planned based on a combination of biological sampling targets, desired percentage coverage targets, and expected deployment requirements. Planning required assumptions to be made regarding the number of vessels that would operate in each fishery and the number of biological samples an observer takes per 'observer day' in each fishery. Details on the planning process and calculations can be found in the 2021/22 AOP.

In 2021/22, delivery on the observer coverage plan was affected by factors including:

- Ongoing disruption to travel for observers and vessel crews due to COVID
- Vessels not complying with watchkeeping rules

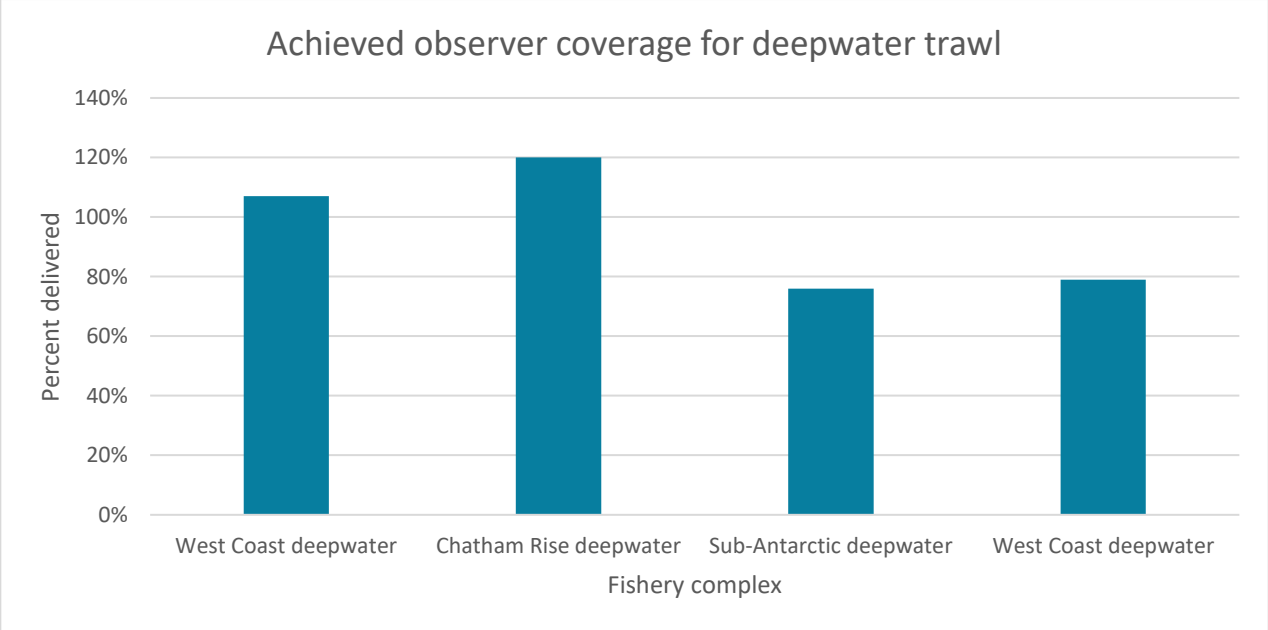
The observer days delivered in relation to the days planned for each fishery complex for the 2021/22 financial year is summarised in Table 7 and Figures 2 and 3. Table 7 relates to observer days that are planned by fish stock based on either prior years' effort or biological sampling requirements, so this can lead to fluctuations in the resulting coverage over time. For example, coverage of the southern blue whiting fishery appears low at 48%, however in 2021/22 there was much less effort than the 450 days that were planned for. Table 8 shows the level of observer coverage within each fishery complex for the 2020/21 fishing year, in addition to the percent observer coverage obtained for specific target fisheries within each complex based on the fishing effort.

Tables 9 and 10 provide information on the numbers of length frequency and otolith samples collected by observers for deepwater species during the 2021/22 fishing year. Table 9 also provides information on how the level of observer sampling conducted during the 2021/22 fishing year compared to sampling targets as defined in the 2021/22 AOP. This report provides the opportunity for review of performance against those targets.

Table 7: Comparison of planned and achieved observer coverage for the 2021/22 financial year. Figures exclude 'training days' so are not directly comparable to those from previous years.

Fishery complex	Target stocks	Total days planned	Total days delivered	Percent delivered
Deepwater trawl				
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	331	120%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6	75	57	76%
West Coast deepwater	ORH 7A	80	63	79%

Fishery complex	Target stocks	Total days planned	Total days delivered	Percent delivered
Middle-depth trawl				
West Coast North Island	JMA 7, EMA 7 & BAR 7	255	226	89%
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	671	99%
Sub-Antarctic middle-depth exc. SQU/SBW (FMA5/FMA6)	HOK1, SWA 4, WWA 5B, BAR 5 & JMA 3	550	441	80%
Southern blue whiting	SBW (all)	450	216	48%
Squid	SQU 1T & SQU 6T	1960	2306	118%
Bottom longline				
Bottom longline	LIN 3 - LIN 7	420	261	62%
Scampi trawl				
Scampi	Scampi (all)	401	303	75%
Total		**5,520**	**5,331**	**87%**



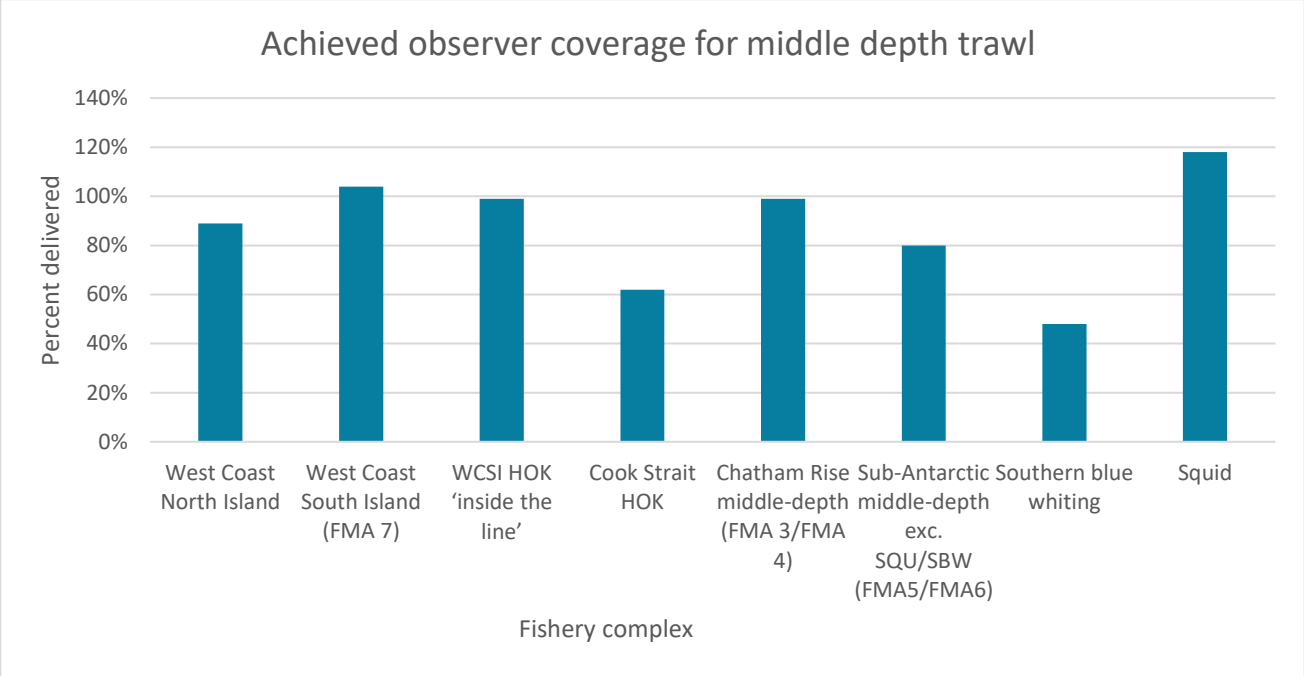


Table 8: Percent observer coverage obtained within deepwater fisheries during the 2021/22 fishing year

Fishery complex	Target stocks		Commercial tows / hooks	Observed tows / hooks	Percent observed
Deepwater trawl					
North Island deepwater	ORH 1, ORH 2A, ORH 2B, ORH 3A, BYX 2 & CDL 2		1,307	259	20%
	Orange roughy target		878	144	16%
Chatham Rise deepwater	ORH 3B, OEO 3A, OEO 4 & BYX 3		1,803	834	46%
	Orange roughy target		1,134	662	58%
	ORH3B	*NW Rise*	139	35	25%
		E&S Rise	995	627	63%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6		244	146	60%
	Orange roughy target		60	58	97%
West Coast deepwater	ORH 7A (excluding Westpac Bank)		665	126	19%
Hoki and middle-depth trawl[12]					
West Coast North Island	JMA 7, EMA 7 & BAR 7		1,551	1,106	71%
West Coast South Island (FMA 7)	HOK 1, HAK 7, LIN 7 & SWA 1		1,738	1,335	77%
WCSI HOK 'inside the line'	HOK 1		1,036	284	27%
Cook Strait HOK[13]	HOK 1		644	209	32%
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		5,505	2,472	45%
	Hoki target		4,537	1,594	35%
	HOK 1, SWA 4, WWA 5B, LIN 5, LIN 6, HAK 1, BAR 5 & JMA 3		2,085	1,491	72%

[12] Excludes effort by trawl vessels less than 28 metres in length except for the WCSI 'inside the line' and Cook Strait hoki fisheries.

[13] Defined as statistical areas 016 and 017.

Fishery complex	Target stocks		Commercial tows / hooks	Observed tows / hooks	Percent observed
Sub-Antarctic middle-depth excl. SQU/SBW (FMA 5/FMA 6)	*Hoki target*		777	470	60%
Southern blue whiting	SBW (all)		512	513	100%
Squid	SQU 1T & SQU 6T		3,010	2,913	97%
	SQU 6T target		1,080	1,024	95%
Bottom longline					
Bottom longline[14]	LIN 3-7	<34 m	3,528,390	232,599	7%
		>34 m	19,003,152	4,464,820	23%
Scampi trawl					
Scampi	Scampi (all)		4,538	519	11%
	SCI 6A only		1,684	276	16%

Table 9: Numbers of length frequency samples and otoliths collected by observers during the 2021/22 fishing year for Tier 1 deepwater species, by area

Species		Area/method		LF target	# of LF samples		# of fish measured	Otolith target	# of otoliths pairs collected	
Jack mackerel	*Trachurus declivis*	JMD 3		-	95	-	3,018	-	578	-
		JMD 7		200	301	✓	27,539	900	2,013	✓
	Trachurus murphyi	JMM 3		-	82	-	2,688	-	477	-
		JMM 7		200	47	×	180	900	99	×
	Trachurus novaezelandiae	JMN 3		-	14	-	194	-	73	-
		JMN 7		200	196	×	15,171	900	964	✓
Ling		LIN 3 & 4	BLL	100	120	✓	1,840	500	757	✓
			Trawl	100	179	✓	2,911	500	725	✓
		LIN 5 & 6	BLL	100	92	×	2,639	500	363	×
			Trawl	100	325	✓	18,862	500	2,553	✓
		LIN 7	BLL	200	106	×	1,398	500	968	✓
			Trawl		72	×	1,892		445	×
		LIN Cook Strait		-	8	-	145	-	80	-
Hake		HAK 1		100	145	✓	4,698	1,000	1,256	✓
		HAK 4		100	17	×	221	1,000	128	×
		HAK 7		200	169	×	3,820	1,000	1,147	✓
Hoki		Sub-Antarctic[15]		400	362	×	28,165	1,600	2,957	✓
		Chatham Rise		400	739	✓	69,013	1,600	7,368	✓
		WCSI	>46 m	400	626	✓	60,234	1,000	6,173	✓
			<46 m	200	90	×	8,345	600	894	✓
		Cook Strait		200	114	×	11,410	1,000	1,127	✓
		ECNI		-	7	-	379	-	49	-
Orange roughy		ORH 1 Area A		30	2	×	95	30	20	×

[14] Total and observed deepwater bottom longline effort is expressed in number of hooks set rather than number of tows.

[15] Includes samples taken from statistical areas 26 and 27 within Fisheries Management Area (FMA) Southeast Coast (SEC).

Species		Area/method	LF target	# of LF samples		# of fish measured	Otolith target	# of otoliths pairs collected	
		ORH 1 Area B	30	10	✗	780	30	203	✓
		ORH 1 Area C	30	-	✗	-	30	-	✗
		ORH 1 Area D	30	2	✗	91	30	-	✗
		ORH 2A (North)	30	4	✗	82	-	40	-
		ORH 2A (South)	-	3	-	197	-	51	-
		ORH 3A	-	7	-	369	-	110	-
		ORH 3B (NW Chatham Rise)	50	8	✗	455	300	83	✗
		ORH 3B (E&S Chatham Rise)	50	185	✓	12,100	300	2,352	✓
		ORH 3B (Sub-Ant & Puysegur)	100	13	✗	1,092	300	263	✗
		ORH 7A & Westpac Bank	50	48	✗	3,950	300	959	✓
Oreo	Black	BOE 1	-	2	-	41	-	10	-
		BOE 3A	-	11	-	799	-	97	-
		BOE 4	-	11	-	312	-	69	-
		BOE 6	-	9	-	502	-	65	-
	Smooth	SSO 1	-	8	-	220	-	41	-
		SSO 3A	-	17	-	1,091	-	150	-
		SSO 4	-	38	-	2,538	-	318	-
		SSO 6	-	9	-	669	-	79	-
	Spiky	SOR 3A	-	5	-	99	-	24	-
		SOR 4	-	-	-	-	-	-	-
Scampi		SCI 1	50	17	✗	1,680			
		SCI 2	50	11	✗	1,292			
		SCI 3	50	102	✓	10,152			
		SCI 4A	50	13	✗	1,240			
		SCI 6A	50	189	✓	16,505			
Southern blue whiting		SBW 1	-	3	-	50	-	19	-
		SBW 6I	100	227	✓	38,784	900	434	✗
		SBW 6B	50	3	✗	574	600	116	✗
		SBW 6R	-	2	-	170	-	20	-
		SBW 6A	-	-	-	-	-	-	-
Squid (all species combined)		SQU 1T	-	1,167	-	127,277			
		SQU 6T	-	775	-	85,488			

Biological sampling targets may not have been met due to variability in vessel fishing plans and target species.

Table 10: Numbers of length frequency samples and otoliths collected by observers during the 2021/22 fishing years for Tier 2 deepwater stocks

Species	QMA	Number of length frequency samples	Number of fish measured	Pairs of otoliths collected
Barracouta	BAR 4	103	8,693	194
	BAR 5	349	15,070	137
	BAR 7	139	4,239	1,144
Alfonsino	BYX 1	-	-	-
	BYX 2	20	1,512	114
	BYX 3	2	54	10
	BYX 7	-	-	-
Cardinal fish	CDL 2	2	136	-
	CDL 3	4	380	20
	CDL 5	2	56	10
Blue (English) mackerel	EMA 3	5	117	25
	EMA 7	69	3,704	438
Frostfish	FRO 4	5	104	27
	FRO 5	2	40	10
	FRO 7 - 9	81	3,728	412
Giant spider crab	GSC 3	2	120	
	GSC 5	46	890	
	GSC 6A	218	4,204	
	GSC 6B	1	21	
Dark ghost shark	GSH 4	5	189	
	GSH 5	4	80	
	GSH 6	4	63	
Pale ghost shark	GSP 1	4	71	
	GSP 5	2	40	
	GSP 7	1	22	
Lookdown dory	LDO 1	1	90	-
	LDO 3	5	100	-
Prawn killer	PRK 1	-	-	-
Patagonian toothfish	PTO 1	-	-	-
Redbait	RBT 3	32	773	124
	RBT 7	2	44	11
Rubyfish	All stocks	5	360	35
Ribaldo	RIB 3 & 4	13	281	79
	RIB 5 & 6	9	71	5
	RIB 7	3	60	15
Gemfish	SKI 3	77	1,530	400
	SKI 7	48	1,015	285
Spiny dogfish	SPD 4	-	-	

Species	QMA	Number of length frequency samples	Number of fish measured	Pairs of otoliths collected
	SPD 5	6	458	
Sea perch	SPE 3	4	60	28
	SPE 4	9	149	59
	SPE 5	1	22	5
	SPE 6	4	74	20
	SPE 7	1	20	5
Silver warehou	SWA 1	5	152	31
	SWA 3	149	5,229	708
	SWA 4	280	9,745	1402
White warehou	WWA 3 & 4	9	257	50
	WWA 5B	29	1,314	155

3.3 Deepwater fisheries research

Research needs for deepwater fisheries are driven from the Objectives within the National Deepwater Plan 2019 and are primarily delivered through FNZ Fisheries Research Services. These research needs are outlined in the Medium Term Research plan, which is a living document updated regularly to reflect changes in management priorities and identification of new information.

This research programme focuses on obtaining comprehensive, consistent, and robust information in a cost-effective manner. To accomplish this, the research programme specifies the routine research and data collection necessary to meet Management Objectives. Research projects contracted for the 2021/22 financial year, which are detailed in Table 11, included stock assessments, and trawl and acoustic surveys. All research projects are reviewed by FNZ Science Working Groups and are assessed against the Research and Science Information Standard for New Zealand Fisheries. This review process aims to ensure the quality of the research is sufficient to underpin Deepwater Fisheries Management. Delivery of quality research is driven through Management Objective 3 within the National Deepwater Plan 2019 which aims to ensure the effective management of deepwater and middle-depth fisheries through the availability of appropriate, accurate and robust information.

Table 12 details the status of the Aquatic Environment Research planned for the 2021/22 financial year and Table 13 details the status of biodiversity research relating to deepwater fisheries.

Progress reports are not available for all projects. Reports are made publicly available on the Fisheries Infosite Document library at the conclusion of each project. Projects listed as complete may not have published reports available at the time this ARR is published. Links to published research reports can be found in Table 14 of this Report.

Table 11: Deepwater research planned for the 2021/22 financial year and current status

Project code	Title	Status
HAK2021-01	Stock assessment of hake in HAK 7	Complete
HOK2021-01	Hoki population modelling and stock assessment	Complete
JMA2021-01	Stock assessment of jack mackerel in JMA 7	Work complete, FAR due 31/05/2023
LIN2021-01	Stock assessment of ling in LIN 3 and 4	Complete
MID2021-01	Routine age determination of middle depth and deepwater species from commercial fisheries and resource surveys	In progress—this is a multi-year project
MID2021-02	Multi-species deepwater trawl surveys	In progress—this is a multi-year project with 5 surveys
ORH2021-01	Stock assessment of the orange roughy Mid-East Coast stock	Complete

Project code	Title	Status
ORH2021-02	Stock assessment of orange roughy in ORH 3B	In progress
ORH2021-03	Estimation of the abundance of orange roughy on the southwest Challenger Plateau (ORH 7A including Westpac Bank)	To be undertaken in July 2023
SCI2021-02	Stock assessment of scampi in SCI 1 and SCI 2	Complete
SBW2021-01	Biomass estimation of the Campbell Island southern blue whiting stock using acoustic surveys	Complete
SBW2021-02	Analysis of Bounties southern blue whiting (SBW 6B) acoustic survey	No survey so no analysis
SWA2021-01	Assessment of biomass for silver warehou in SWA 3 and SWA 4	In progress
HOK2020-02	Land-based sampling of hoki	Complete
MID2018-01	Estimation of hoki and middle depth fish abundance using trawl surveys • West Coast South Island July/August 2021 • Chatham Rise survey January 2022	Complete
OEO2020-01	Investigating monitoring and assessment approaches for oreo species	Complete
SQU2020-01	Squid management strategy	Complete

Table 12: Aquatic Environment and Biodiversity research planned for the 2021/22 financial year and current status

Project code	Title	Status
BYC2021-01	Trialling a semi-quantitative shark and turtle risk assessment	Ongoing
BYC2021-02	Protected chondrichthyan captures characterisation	Complete
BYC2021-03	Bycatch monitoring and quantification of fish in deepwater fisheries	Ongoing – Year 1 (out of 3) complete. Expected completion Nov 2024.
PRO2021-02	Estimation of warp capture cryptic mortality multipliers with seabird corpse catcher devices	Complete

Table 13: Ongoing multi-year biodiversity research projects that relate to deepwater fisheries.

Project code	Title	Status
BEN2021-03	Taxonomic identification of benthic invertebrate samples	Ongoing - Year 1 complete, year 2 results due June 2023. Final year results and project completion June 2024.
BEN2019-05	Towards the development of a spatial decision support tool for managing the impacts of bottom fishing on in-zone, particularly vulnerable or sensitive habitats.	Ongoing – Final report and data to be delivered in 2022/23
BEN2019-04	A spatially explicit benthic impact assessment for inshore and deepwater fisheries in New Zealand	Ongoing – Final report and data to be delivered in 2022/23
BEN2020-01	Extent and intensity of seabed contact by mobile bottom fishing in the New Zealand Territorial Sea and Exclusive Economic Zone (trawl footprint	Ongoing – Final report and data to be delivered in 2022/23
BEN2022-01	The extent and intensity of seabed contact by mobile bottom fishing in the New Zealand Territorial Sea and Exclusive Economic Zone	Ongoing. Methods presented to AEWG March 2023. Expected completion April 2024.
BEN2020-07	Extent and intensity of trawl effort on or near underwater topographic features in New Zealand's Exclusive Economic Zone	Complete
DAT2020-05	Risk atlas development for protected species risk models	Ongoing
ENV2020-20	Temporal and spatial distribution of non-target catch, and non-target species, in deepwater fisheries	Complete
PMM2020-06	Auckland Islands New Zealand sea lion tracking	Cancelled
PSB2019-01	Estimation of total seabird captures using standardised estimation methods	Ongoing
PSB2019-09	Opportunistic aerial survey of white-capped albatross on the Auckland Islands	Cancelled
ZBD2018-01	5-year continuous plankton survey (phase 3)	Ongoing
ZBD2020-07	Recovery of seamount communities	Complete

3.3.1 Research reports

Final research reports from previously contracted work that were published in the 2021/22 financial year that relate to deepwater fisheries are shown in Table 14 below. Links to these documents are provided.

Table 14: Final research reports published during the 2021/22 financial year of relevance to deepwater fisheries.

Annual documents	
2022 May Plenary	Fisheries New Zealand (2022). Fisheries Assessment Plenary, November 2022: stock assessments and stock status. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand. 684 p.
	Fisheries New Zealand (2022). Fisheries Assessment Plenary, May 2022: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1,886 p. Vol 1 Alfonsino to Hoki (650p.)
	Fisheries New Zealand (2022). Fisheries Assessment Plenary, May 2022: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1,886 p. Vol 2 Horse Mussel to Red Crab (p635 to 1,232).
	Fisheries New Zealand (2022). Fisheries Assessment Plenary, May 2022: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1,886 p. Vol 3 Red Gurnard to Yellow-Eyed Mullet (p1,233 to 1,886).

2021 AEBAR	Fisheries New Zealand (2021). Aquatic Environment and Biodiversity Annual Review 2021. Compiled by the Fisheries Science Team, Ministry for Primary Industries, Wellington New Zealand. 768p.
Aquatic Environment and Biodiversity Reports (AEBRs)	
AEBR 262	Clark, M.R.; Bowden, D.A.; Stewart, R.; Schnabel, K.; Quinn, W.; Lennard, B.; Goode, S.L.; Davis, A. (2021). Seamount recovery: factual voyage report of a survey of seamounts on the northwest and southeast Chatham Rise (TAN2009)
AEBR 264	Anderson, O.F.; Pallentin, A.; Bowden, D.A.; Chin, C.; Davey, N.; Eton, N.; Fenwick, M.; George, S.; Macpherson, D. (2021). Quantifying Benthic Biodiversity—Phase II: a factual voyage report from RV Tangaroa voyage TAN2004 to Campbell Plateau, 17 May–7 June 2020
AEBR 268	Baker, G.B.; Candy, S.; Parker, G. (2021). Improving estimates of cryptic mortality for use in seabird risk assessments: loss of seabirds from longline hooks
AEBR 266	Edwards, C.T.T.; Dunn, A. (2021). Assessment of risk factors for seabird net captures in selected sub-Antarctic trawl fisheries
AEBR 269	Schnabel, K.E.; Mills, V.S.; Tracey, D.M.; Macpherson, D.; Kelly, M.; Peart, R.A.; Maggs, J.Q.; Yeoman, J.; Wood, C.R. (2021). Identification of benthic invertebrate samples from research trawls and observer trips, 2020–21
AEBR 270	Bell, E.; Ray, S.; Crowe, P. (2021). Population trends, at-sea distribution, and breeding population size of black petrels (*Procellaria parkinsoni*) on Great Barrier Island/Aotea: 2019–2020 operational report
AEBR 271	Finucci, B.; Jones, E.G.; Marsh, C.; Pinkerton, M.; Sibanda, N.; Sutton, P.; Francis, M.P. (2021). Spatial and temporal distribution of seven deepwater sharks in New Zealand waters
AEBR 267	Behrens, E.; Wood, B.; Bowden, D; Chin, C.; Anderson, O. (2021). Plastics and marine debris across the ocean floor in New Zealand waters
AEBR 274	Mormede, S.; Baird, S.J.; Roux, M.-J. (2021). Developing quantitative methods for the assessment of risk to benthic habitats from bottom fishing activities using the test case of holothurians on the Chatham Rise
AEBR 276	Stephenson, F.; Bowden, D.A.; Finucci, B.; Anderson, O.F.; Rowden, A.A. (2021). Developing updated predictive models for benthic taxa and communities across Chatham Rise and Campbell Plateau using photographic survey data
AEBR 279	Finucci, B.; Anderson, O.F.; Edwards, C.T.T. (2022). Non-target fish and invertebrate catch and discards in New Zealand jack mackerel trawl fisheries from 2002–03 to 2018–19
AEBR 280	Bell, E.; Lamb, S.; Ray, S. (2022). Population trends and breeding population size of black petrels (*Procellaria parkinsoni*) — 2020/2021 operational report
AEBR 281	Bowden, D.A.; Anderson, O.F.; Rowden A.A.; Stephenson F. (2022). Assessing the utility of habitat suitability models developed for Chatham Rise when applied to Campbell Plateau
AEBR 282	Anderson, O.F.; Finucci, B. (2022). Non-target fish and invertebrate catch and discards in New Zealand orange roughy and oreo trawl fisheries from 2002–03 to 2019–20
AEBR 284	Filippi, D.P.; Elliott, G. (2022). Use of innovative tag technology to examine foraging patterns of seabirds and association with fishing vessels
AEBR 286	Dunn, M.R. (2022). Climate change and the distribution of commercially caught marine fish species in New Zealand. Part 1: Spatio-temporal changes since 1989
AEBR 287	Dunn, M.R.; Goeden, Z.; Neubauer, P.; Behrens, E.; Arnold, R. (2022). Climate change and the distribution of commercially caught marine fish species in New Zealand. Part 2: Predicting changes in distribution
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FAR2021/46	R.J. Saunders; K. Spong; C. Ó Maolagáin. Age data of orange roughy (*Hoplostethus atlanticus*) from the Lord Howe Rise in 1989, 1990, 1992, 1993, 2013, and 2015
FAR2021/59	D.N. Webber; A. Dunn; S. Mormede. Stan-ASD: a new age-structured stock assessment model, with an application to sub-Antarctic hake (Merluccius australis) and ling (*Genypterus blacodes*)

FAR2021/60	S. Mormede; A. Dunn; D.N. Webber. Descriptive analysis and stock assessment model inputs of ling (*Genypterus blacodes*) in the Sub-Antarctic (LIN 5&6) for the 2020–21 fishing year
FAR2021/64	S. Mormede; A. Dunn; D.N. Webber. Stock assessment of ling (*Genypterus blacodes*) in the Sub-Antarctic (LIN 5&6) for the 2020–21 fishing year
FAR2021/67	S.L. Ballara; R.L. O'Driscoll. Catches and size and age structure of the 2019–20 hoki fishery and a summary of input data used for the 2021 stock assessment.
FAR2021/69	Bradley Moore; Teresa A'mar; Alex Schimel; Caoimhghin Ó Maolagáin; Simon Hoyle. Development of deep learning approaches for automating age estimation of hoki and snapper
FAR2021/74	A. Dunn; S. Mormede; D.N. Webber. Descriptive analysis and stock assessment model inputs of hake (*Merluccius australis*) in the Sub-Antarctic (HAK 1) for the 2020–21 fishing year
FAR2021/75	A. Dunn; S. Mormede; D.N. Webber. Stock assessment of hake (*Merluccius australis*) in the Sub-Antarctic (HAK 1) for the 2020–21 fishing year
FAR2021/76	B.R. Moore; C. Ó Maolagáin; K. Spong; R.J. Saunders. Age composition of orange roughy from Cook Canyon (ORH 7B) in 2020
FAR2022/06	D.N. Webber; P.J. Starr. Characterisation and CPUE of jack mackerel off the west coast of New Zealand (JMA 7)
FAR2022/08	Stevens, D.W.; Ballara, S.L.;Escobar-Flores, P.C.;O'Driscoll, R.L.;MacGibbon, D.J. Trawl survey of hoki and middle depth species in the Southland and Sub-Antarctic, November–December 2020 (TAN2014).
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FAR2022/27	P.L. Horn. A synopsis of the biology of ling (*Genypterus blacodes*), and a history of its fishery and assessment in New Zealand
FAR2022/28	Pablo Escobar Flores; Richard O'Driscoll. Acoustic survey of spawning hoki in Cook Strait and on the east coast South Island during winter 2021
FAR2022/32	B Hartill et al. Estimating the abundance of scampi in SCI 1 (Bay of Plenty) and SCI 2 (Wairarapa / Hawke Bay) in 2021
FAR2022/43	V. McGregor; M. Dunn; A. Langley; A. Dunn. Assessment of hoki (*Macruronus novazelandiae*) in 2021
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POP2021-03	Bell, M. 2022. Motuhara seabird research: field trip report January 2022. POP2021-03 final report prepared by Toroa Consulting Limited for the Conservation Services Programme, Department of Conservation. 12 p.
POP2021-01	Bell, E.A., Welch, M. & Lamb, S. 2022. Key demographic parameters and population trends of tākoketai/black petrels (*Procellaria parkinsoni*) on Aotea/Great Barrier Island: 2021/2022. POP2021-01 final report prepared by Wildlife Management International for the Department of Conservation, Wellington. 35 p.
POP2021-01	Burgin, D. 2022. Summary report for at-sea capture work for tākoketai/black petrels 2022. POP2021-01 final report prepared by Wildlife Management International for the Department of Conservation, Wellington. 18p
BCBC2020-26	Bilewitch, J.P. 2022. Octocoral bycatch diversity on the Chatham Rise. BCBC2020-26 final report prepared by NIWA for Department of Conservation. 31 pp.
BCBC2020-01	Tracey, D. et al (2021). Protected coral reproduction. Literature review recommended study species, and description of spawning event for *Goniocorella dumosa*. BCBC2020-01 final report prepared by NIWA for the Conservation Services Programme, Department of Conservation. 63 p.

[16] Full reports and their descriptions can be found on the Conservation Services Programme website, https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/202122/

INT2020-02	Johnston O, Childerhouse S (2022). Identification of marine mammals captured in New Zealand fisheries 2020-21. INT2020-02 final report prepared by Cawthron Institute for the Department of Conservation. 18 pp.
POP2018-03	Young MJ and Manno K (2022). Auckland Islands 2021/22 New Zealand sea lion field research report: Conservation Services Programme pup count. Department of Conservation, Dunedin. 35 pp.
POP2021-03	Frost, P.G.H. 2022. A Census of Northern Royal Albatross Nesting on the Chatham Islands, February 2022. POP2021-03 supplementary report for the Department of Conservation. 24 pp
MIT2021-02	Pierre, J. P., How, J. R., Dunn, A. 2022. Whale entanglements with New Zealand pot fisheries: characterisation and opportunities for management. MIT2021-02 final report prepared by JPEC for Department of Conservation, Wellington. 79 pp.
BCBC2020-08	Kozmian-Ledward, L., Jeffs, A. and Gaskin, C. 2022. Seabird feeding associations with fish shoals. BCBC2020-08 final report summarising analysis of zooplankton samples 2020-21. Prepared by Northern NZ Seabird Trust for the Department of Conservation. 36 pp.
POP2021-05	Finucci, B., Ó Maolagáin, C. 2022. Preliminary age estimation of New Zealand white shark (Carcharodon carcharias). POP2021-05 final report by NIWA for Department of Conservation. 50 p.
INT2021-03	Dunn, M.R.; Finucci, B.; Pinkerton, M.H.; Sutton, P. 2022. Review of commercial fishing interactions with marine reptiles. INT2021-03 final report by NIWA for Department of Conservation. 78 p.
BCBC2020-11b	Goad, D., Kiddie, B., Hollands, N., Clow, A., Angel, J. 2022. Development of bottom longline underwater setting devices. BCBC2020-11b final report prepared by Vita Maris for Department of Conservation, Wellington. 30 pp.
-	Parker G.C., Elliott G., Walker K., Rexer-Huber K. 2022. Gibson's albatross and white-capped albatross in the Auckland Islands 2021–22. Final report. Parker Conservation, Dunedin. 26 p.
POP2019-03	Elliot, G.; Walker K. Estimating the number of white-chinned petrels breeding on Antipodes Island. POP2019-03 Final Report for the Department of Conservation. Albatross Research, Nelson. 17 pp.
POP2019-03	Elliot, G.; Walker K. Numbers of Northern Giant Petrel breeding on Antipodes Island in 2021 and 2022. POP2019-03 Final Report for the Department of Conservation. Albatross Research, Nelson. 15 pp.
POP2019-04	Thompson, D.; Sagar, P. 2022. Population studies of southern Buller's albatross on The Snares. Report for POP2019-04 for the Department of Conservation. Wellington, NIWA. 20 pp.
INT2019-04	Macpherson, D., Tracey, D. and Mills, S. (2022). Identification and storage of cold-water coral bycatch specimens 1 July 2020 - 30 June 2021. INT2019-04 final report prepared by NIWA for Department of Conservation. 49 pp
MIT2020-02	Plencner, T. 2022. CSP Liaison Programme Annual Report 2020-21. Final Report for MIT2020-02, Department of Conservation. 43 p.

3.4 Cost recovery levies

Research, compliance activities, observers, and registry services are funded, at least partially, by levies recovered from the fishing industry.

The cost recovery regime, which is legislated under Part 14 of the Fisheries Act 1996, enables the Crown to recover its costs in respect of the provision of fisheries and conservation services, as far as practicable, from those people who have requested services, who benefit from the provision of those services or cause the adverse effects that the services are designed to avoid, remedy or mitigate.

MPI uses the Fisheries (Cost Recovery) Rules 2001 to calculate the levies to be applied to each fish stock, based on the total amount to be cost recovered from the commercial fishing industry and the under or over-recovery of levies in the previous year. The proposed levies are consulted on with industry as per statutory requirements.

Table 15 shows the total amount levied from deepwater stocks for the 2021/22 fishing year and Figure 1 shows the total amount levied for both deepwater, and all, stocks between the 2006/07 and 2021/22 fishing years. Species-specific cost recovery levies are provided in Appendix IV.

Table 15: The total levied for the 2021/22 financial year from stocks managed under the National Deepwater Plan 2019 as well as the total levied across all New Zealand fisheries.

		Total levied ($) for stocks managed in the National Deepwater Plan	Total levied ($) for all New Zealand fisheries
Compliance		5,170,170	11,975,637
Registry		1,505,693	3,487,627
Observers	MPI	4,118,527	6,169,834
	DOC	892,766	2,443,950
Research	MPI	8,152,080	8,160,713
	DOC	450,490	780,065
Under & Overs	MPI	168,780	247,479
	DOC	122,971	95,826
Total		**20,581,477**	**33,361,131**

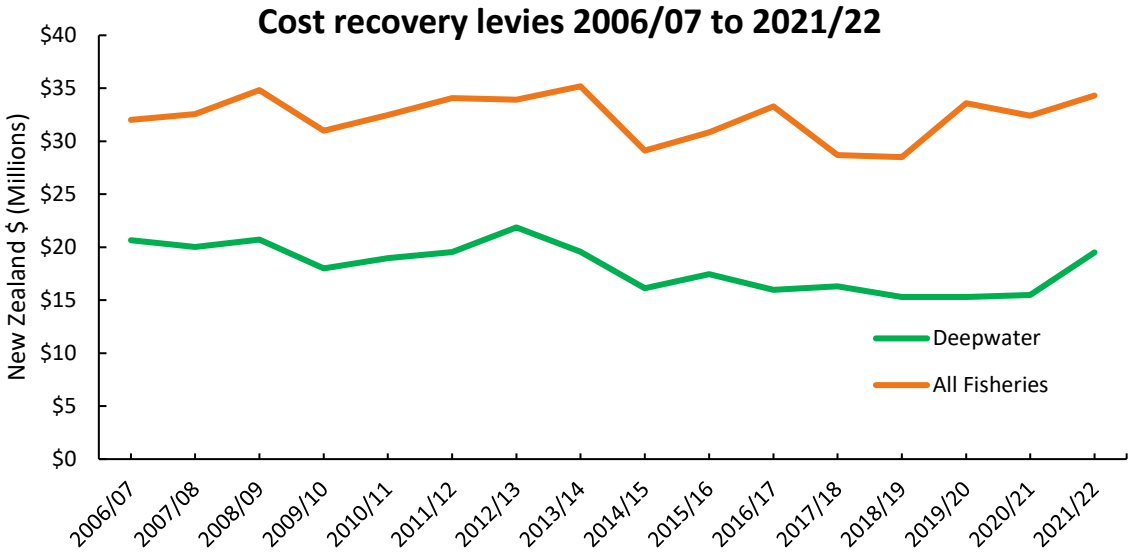

Figure 1: Total amount recovered by cost recovery levies between 2006/07 and 2021/22. Separate totals are shown for deepwater species and all species combined.

4 Part 3C: General environmental reporting and adherence to non-regulatory management measures

This part of the ARR summarises the overall impacts of deepwater fishing on the marine environment, and reports adherence to non-regulatory environmental mitigation measures for the 2021/22 fishing year. Fisheries-specific environmental interactions are reported in Appendix I.

In the tables throughout this section, 'core deepwater fleet' refers to all bottom longline vessels > 34 m in length, all trawl vessels > 28 m in length which are regularly used to target deepwater species, and all vessels used to target scampi (regardless of length).

4.1 Environmental reporting

New Zealand's deepwater fisheries are known to interact with the marine environment including protected species, the benthic habitat, and other bycatch species. To achieve Management Objectives 5, 6, 7 and 8, DWG and FNZ work together to monitor adherence to non-regulatory management measures and environmental interactions. Non-regulatory measures include vessel-specific vessel management plans (VMPs) for mitigating incidental seabird captures, Marine Mammal Operational Procedures (MMOP), and notification requirements for certain numbers of seabird or mammal captures (trigger points).

Vessel operators are required to report all captures of protected species to FNZ as part of their obligations under the Fisheries (Reporting) Regulations 2017. However, for reasons of increased reliability, analyses of protected species interactions and adherence to non-regulatory measures is based on information collected during observed fishing trips.

Observers from most observed trips on deepwater vessels are debriefed by the Deepwater Fisheries Management team to determine the vessel's adherence to all non-regulatory measures. Feedback on performance for every trip is provided to Deepwater Group Ltd (DWG). In any instance where issues were reported by observers, further follow up action is taken by DWG (discussed below). DWG provides feedback to operators after every observed trip regardless of whether follow up action is required.

Table 16 and Figure 2 summarise results of observer VMP audits on trawl vessels >28 m in length (during which Tier 1 species were targeted) and scampi trawlers (regardless of length) completed between the 2014/15 and 2021/22 fishing years.

Table 16: Summary of FNZ observer audits of adherence to non-regulatory measures.

Fishing year	Observed trawl trips	No. of trawl vessel VMP audits sent to and reviewed by DWG	Trips with no issues raised	Trips followed up	Proportion of reviewed trips followed up
2014/15	162	160	132	28	18%
2015/16	162	160	140	20	13%
2016/17	151	149	128	21	14%
2017/18	156	150	134	16	11%
2018/19	179	174[17]	159	15	9%
2019/20	146	142	120	18	13%
2020/21	141	141	120	21	18%
2021/22	135	133	132	25	15%

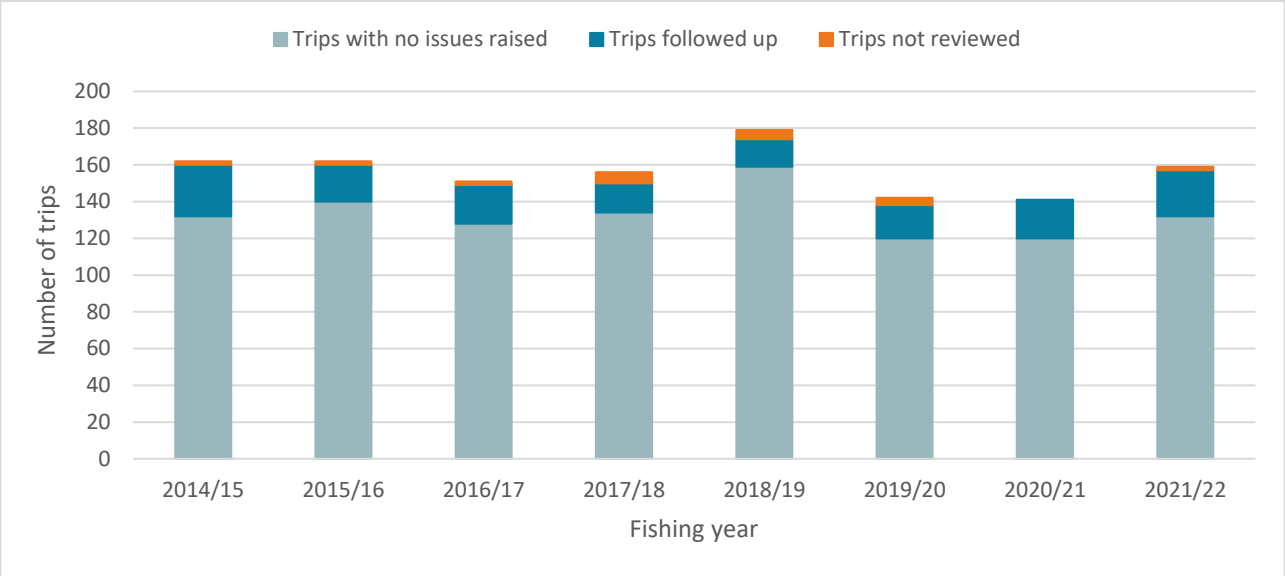

Figure 2. Summary of observer audits of adherence to non-regulatory measures

4.1.1 Vessel management plans

The following section summarises information provided through observer audits of >28 m trawl and scampi trawl vessel performance in relation to measures within VMPs/PSRMPs. Measures within VMPs that vessels are audited include the use of bird mitigation devices, the removal of fish 'stickers' from the net before shooting, avoiding shooting gear near congregations of marine mammals, and employing appropriate fish waste management techniques. Fish waste management is intended to reduce the amount of 'food' in the water for seabirds and marine mammals while fishing gear may pose a risk to those animals.

During 2021/22, VMP-related issues that required follow-up by DWG were identified following 25 trips on >28 m or scampi trawl vessels. VMP issues were classed as being in one of four general categories listed below (Table 17 and Figure 6). Most follow ups were for minor issues easily resolved, while three required changes to the VMP and crew procedures. Fish waste management issues were followed up after 13 trips.

- Administrative – Relating to misunderstandings about requirements i.e. the need for observers to be shown live seabirds prior to release;
- Seabird trigger reporting – relating to the reporting of trigger points;
- Seabird mitigation – relating to the need to employ an additional seabird mitigation device when experiencing seabird captures, or when mitigation devices need to be replaced or repaired; or
- Fish waste management issues – see below.

[17] Observed trips on trawlers >28 m in length for which reviews of adherence to non-regulatory measures were not provided to DWG were mostly those trips where inshore species only were targeted.

Table 17: Breakdown of reviews with VMP-related referrals between the 2015/16 and 2021/22 fishing years

Type of referral	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Administrative	0	2	2	2	3	4	6
Seabird trigger not reported	1	0	2	0	0	0	2
Seabird scaring devices	5	6	3	2	3	6	4
Fish waste management	12	13	9	11	12	13	13
Total	18	21	16	15	18	23	25

4.1.2 Fish waste management

The management of fish waste is a contributing factor to both seabird and marine mammal captures. Therefore, issues with fish waste management are considered relevant to both VMPs and the MMOP. During the 2021/22 fishing year there were 13 trips that required follow up in relation to fish waste management related issues (Table 18). Issues are divided into four broad categories: general fish waste management, net cleaning or leaving the net in the water longer than desirable, floor wash, and breakdown procedures.

Table 18: Breakdown of fish waste management/food attractant related reviews for VMP/MMOP issues between the 2015/16 and 2021/22 fishing years

Type of issue	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
General fish waste management	9	4	6	7	6	9	8
Net cleaning/ time in water	0	1	2	2	4	1	1
Floor wash	1	4	1	2	2	2	2
Breakdown procedures	2	4	0	0	0	1	2
Total	12	13	9	11	12	13	13

4.2 Bottom longline operational procedures

During the 2021/22 fishing year, FNZ observers audited the performance of nine vessels against the Ling Bottom Longline (LIN 2-7) Operational Procedures. Along with an objective stating that mandatory measures are understood and complied with, the procedures stipulate the non-regulatory management measures agreed between Deepwater Group Ltd (DWG) shareholders owning LIN 2-7 quota and Fisheries New Zealand to mitigate seabird captures. They are implemented and administered by DWG. Follow up actions were required after six trips in 2021/22 in relation to fish waste management, seabird scaring devices, trigger points, or sink rate issues.

4.3 Seabird captures

Total seabird captures in deepwater fisheries are estimated using statistical models that are informed by data on observed captures, fishing effort location data, and seabird species distribution data. Estimated captures provide an estimate of the total number of captures that would be observed if all effort was observed. They do not take into account any seabird mortalities that may take place due to interactions with fishing gear but are not observed (cryptic mortalities). Cryptic mortalities are considered in the seabird risk assessment which informs the management of seabird risk in New Zealand.

Information regarding observed captures of seabirds (excludes deck strikes) is available for each fishing year, whereas modelled total capture estimates take some time to process. Information presented here represents the best available information at the time of publication. Table 19 reports all observed seabird captures from deepwater fisheries for the 2021/22 fishing year and Figure 3 shows the top ten species caught. Note that Table 19 and Figure 3 use raw data from Fisheries New Zealand observers. Species identifications may have not yet been verified and are subject to change after specimens are necropsied or observer photos are formally identified by the Department of Conservation.

Table 19: Observed seabird captures for the 2021/22 fishing year from deepwater fisheries

Seabird species		Alive	Dead[18]	Total
Common name	Species Code			
Albatrosses (unidentified)	XAL	8	1	9
Buller's albatross	XBM	6	13	19
Black browed albatross (unidentified)	XKM	-	2	2
Buller's and Pacific albatross	XPB	10	15	25
Cape petrels	XCP	1	2	3
Chatham Island albatross	XCI	-	1	1
Common diving petrel	XDP	2	3	5
Fairy prion	XFP	2	3	5
Giant petrels (unidentified)	XTP	2	1	3
Great albatrosses	XGA	5	-	5
Grey-headed albatross	XGM	2	-	1
Mid-sized petrels & shearwaters	XPM	1	1	2
Northern giant petrel	XNP	2	2	4
Petrel (unidentified)	XPE	10	2	12
Petrels, prions, and shearwaters	XXP	7	4	11
Prions (unidentified)	XPN	3	1	4
Procellaria petrels	XPC	2	5	7
Salvin's albatross	XSA	8	32	40
Seabird – large	XSL	-	1	1
Shearwaters	XSW	1	-	1
Smaller albatrosses	XMA	-	5	5
Sooty shearwater	XSH	3	10	13
Southern royal albatross	XRA	3	2	5
Storm petrels	XST	2	1	3
Wandering albatross (unidentified)	XWA	1	-	1
Westland petrel	XWP	1	-	1
White-capped albatross	XWM	23	23	46
White-chinned petrel	XWC	15	99	114
White-faced storm petrel	XWF	-	1	1
Total		**58**	**174**	**232**

[18] Seabird captures recorded as 'decomposing' have not been included in this table.

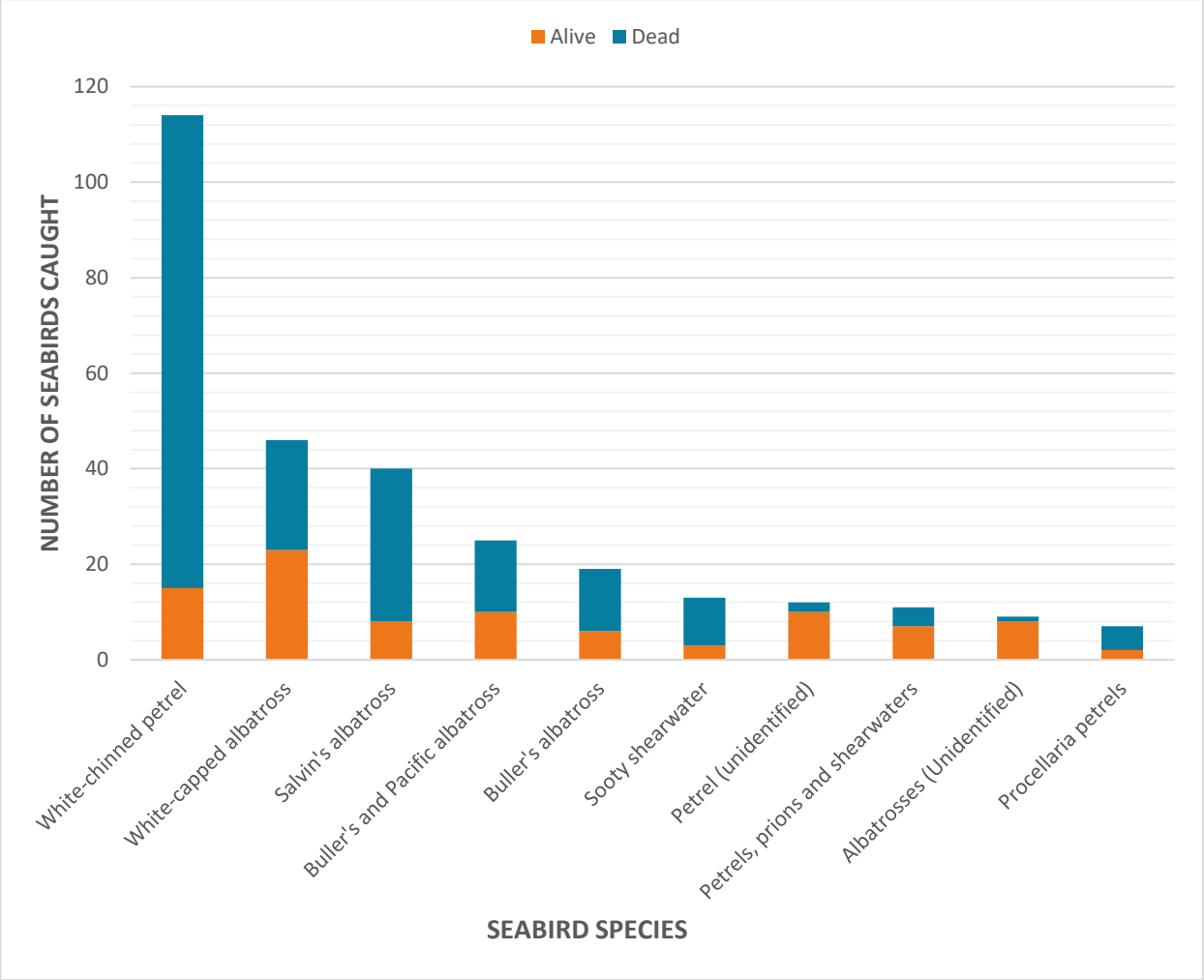

Figure 3: Top ten seabird species or species groups caught in 2021/22.

Table 20 and figures 4 and 5 provide further details of observed seabird captures on deepwater trawl vessels between the 2014/15 and 2021/22 fishing years.

Table 20: Number of observed seabird captures on deepwater trawl vessels between 2014/15 and 2021/22.

Fishing year	Net captures			Warp captures			Other		
	Dead	Alive	Unknown	Dead	Alive	Unknown	Dead	Alive	Unknown
2014/15	257	297	1	21	1	1	17	9	-
2015/16	259	116	1	43	1	3	16	3	-
2016/17	282	99	-	22	1	-	8	5	-
2017/18	268	158	5	33	1	-	8	23	-
2018/19	294	128	-	60	-	-	8	4	-
2019/20	334	141	6	29	-	-	14	4	-
2020/21	194	84	-	41	-	-	5	-	-
2021/22	274[19]	65	-	36	5	-	35	26	5

[19] Of these captures, 11 were reported as 'decomposing'.

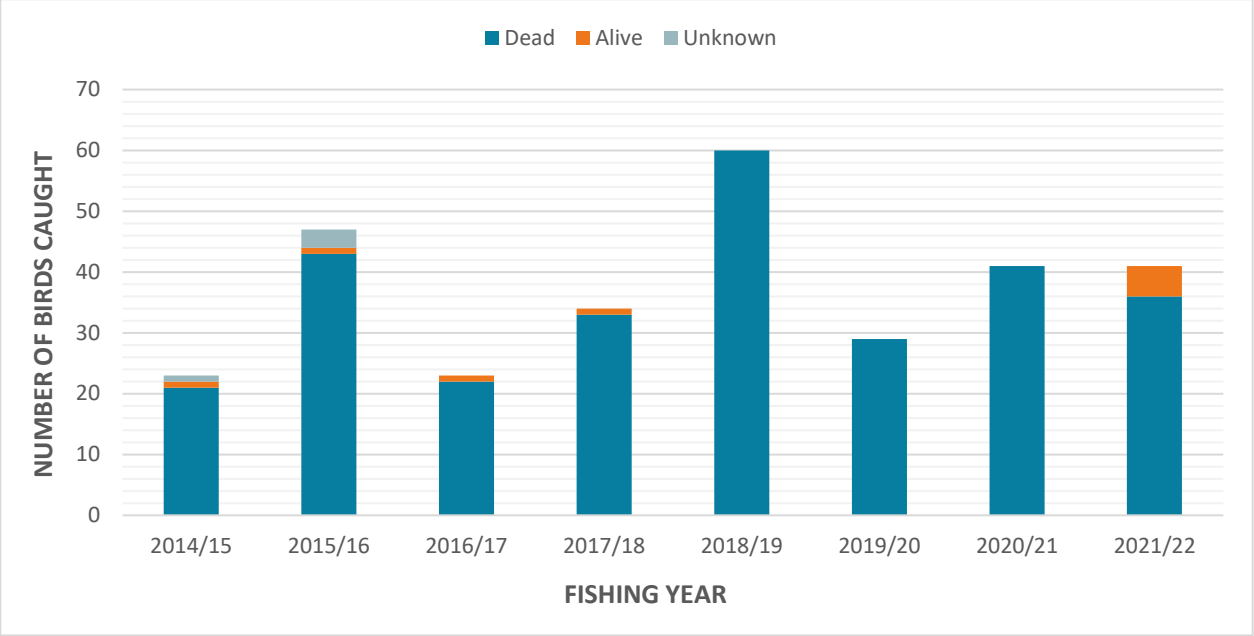

Figure 4. Number of observed seabird warp captures on deepwater trawl vessels between 2014/15 and 2021/22

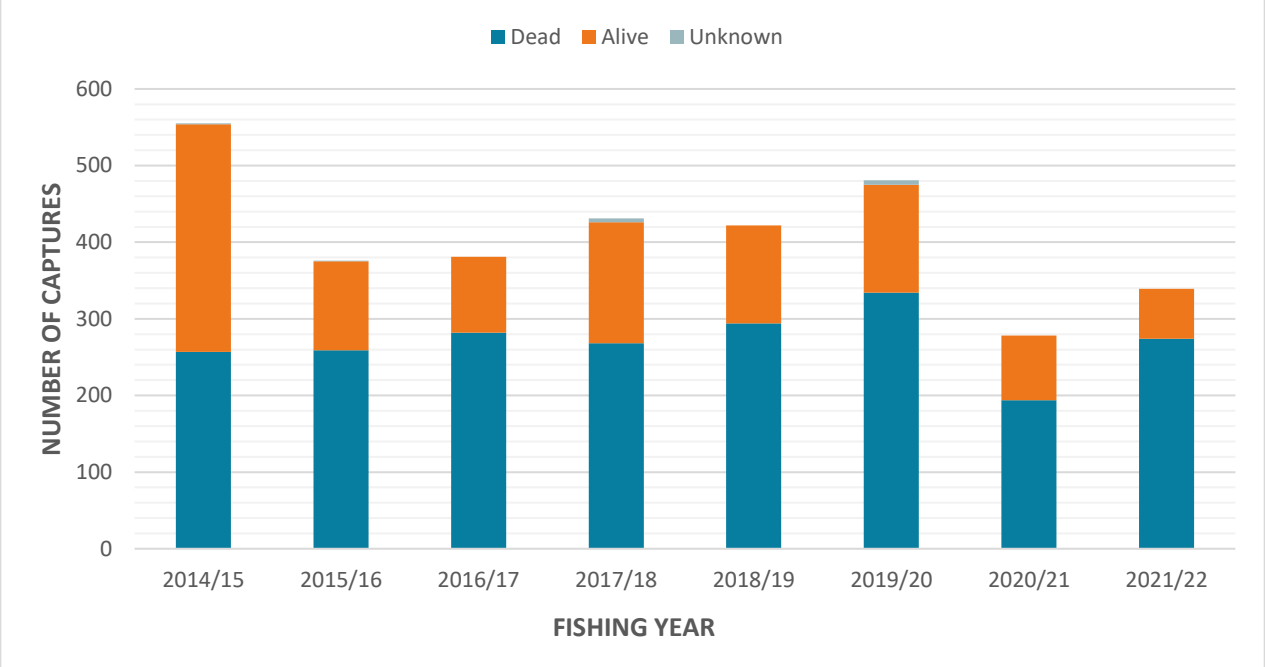

Figure 5. Number of observed seabird net captures on deepwater trawl vessels between 2014/15 and 2021/22

Table 21 and Figure 6 show industry-reported seabird captures between the 2014/15 and 2021/22 fishing years.

Table 21: Industry-reported seabird[20] interactions between the 2014/15 and 2021/22 fishing years from the core deepwater fleet

Fishing year	Large seabirds			Small seabirds			Total
	Alive	Dead	Total	Alive	Dead	Total	
2014/15	114	221	335	281	380	661	996
2015/16	95	279	374	109	341	450	1,028
2016/17	85	176	261	86	327	413	674
2017/18	126	218	344	164	278	442	786
2018/19	89	272	361	140	308	448	809
2019/20	115	216	331	163	441	604	935
2020/21	104	189	293	76	277	353	646
2021/22[21]	57 (20)	156 (5)	214 (25)	36 (572)	224 (42)	260 (614)	474 (639)

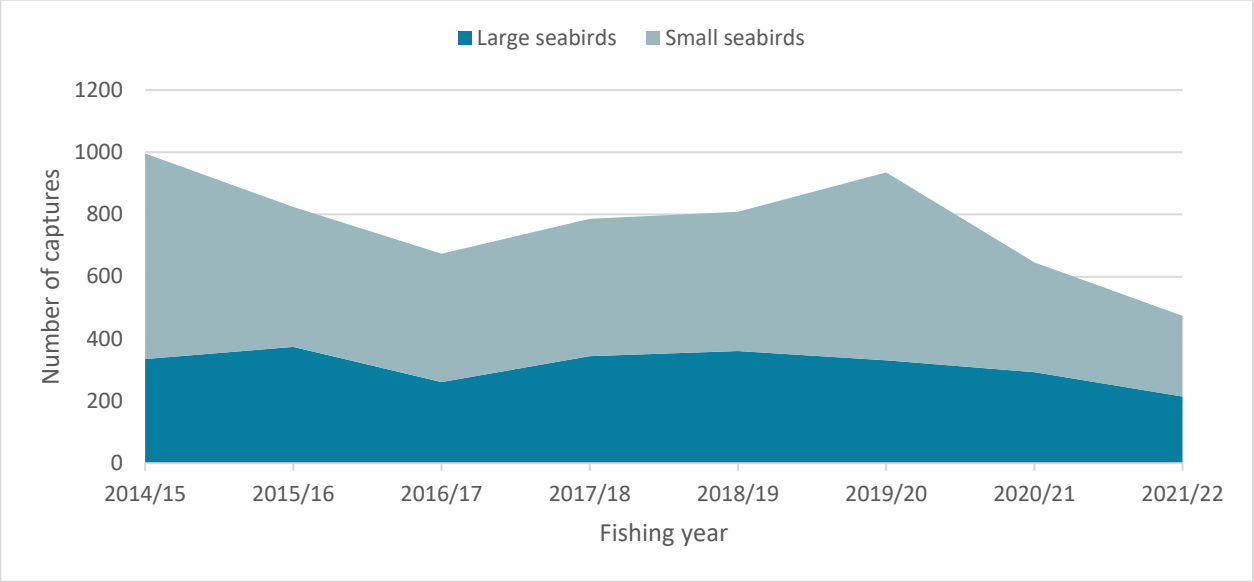

Figure 6. Industry-reported seabird interactions (not including deck strikes) between the 2014/15 and 2021/22 fishing years.

Table 22: Observed seabird captures for New Zealand deepwater and middle-depth trawl fisheries for the 2021/22 fishing year[22]

Target species	Tows	Tows observed	% of tows observed	Observed captures	Observed capture rate (per 100 tows)
Barracouta	954	950	99.58%	29	3.04
Deepwater (ORH/OEO/CDL/BYX)	3,602	1,306	36.26%	2	0.06
Hake	133	132	99.25%	2	1.50
Hoki	8,088	3,644	45.05%	94	1.16
Jack mackerel	1,617	1,183	73.16%	-	-
Ling (LIN 3 – 7)	708	448	63.28%	8	1.13
Scampi	4,561	514	11.27%	14	0.31
Southern blue whiting	514	514	100.00%	2	0.39

[20] Large seabirds constitute albatross and giant petrels; small seabirds constitute petrels, shearwaters, prions, and shags.

[21] Deck strikes are included in parentheses.

[22] Deck strikes are not included.

Squid	3,026	2,913	96.27%	168	5.55
Warehou species	294	209	71.09%	7	2.38
Total	23,497	11,813	70%	326	1.39

Table 23: Observed and estimated seabird captures from deepwater ling bottom longline fisheries (LIN 3 – LIN 7) between 2014/15 and 2021/22. Data for all years except 2021/22 is taken from the protected species captures website. Data for 2021/22 is taken directly from MPI databases.

Fishing year	Hooks set	Observed				Estimated	
		Hooks observed	% of hooks observed	Observed seabird captures	Capture rate (per 1,000 hooks)	Estimated total captures	95% confidence interval
2014/15	16,957,923	636,486	4%	16	0.025	570	293 – 1,026
2015/16	21,228,063	2,059,615	10%	88	0.043	690	412 – 1,106
2016/17	23,786,799	3,800,948	16%	31	0.008	633	328 – 1,169
2017/18	19,232,211	5,109,103	27%	23	0.005	353	187 – 632
2018/19	20,442,735	2,247,100	11%	20	0.009	545	276 – 1,068
2019/20	20,940,785	3,402,393	16%	87	0.026	805	502 – 1,304
2020/21	20,826,896	1,144,393	6%	31	0.027	602	337 – 1,037
2021/22	23,874,471	4,697,419	20%	50	0.011	-	-

4.3.1 Seabird bycatch trigger point notifications

All trawl vessels >28 m, those trawl vessels targeting scampi, and bottom longline vessels targeting ling stocks LIN 2 – LIN 7 are required to notify DWG any time they capture more than a given number of seabirds (or marine mammals) within a defined time period. These are known as trigger point notifications. When a trigger point is reached, the vessels report the event to DWG within 24 hours. The DWG Environmental Liaison Officer (ELO) then contacts the vessel to determine if there was any particular factor (such as a mitigation measure failure, mechanical breakdown or weather conditions) that may have contributed to the trigger event. The DWG ELO will determine what additional mitigation measures the vessel should take (if any). Through electronic reporting (ER), Fisheries Management can independently monitor trigger points and identify discrepancies between the ER data and what was notified to DWG.

Trigger points are summarised in Table 24 below. There were eight trigger point activations for seabird captures in the 2021/22 fishing year. Most seabird trigger point activations are a result of net captures.

FNZ monitors trigger point alerts closely and is notified by DWG of the subsequent mitigation actions taken by the vessel. FNZ observers on board deepwater vessels audit performance of the DWG Operational Procedures and VMPs.

Table 24: Number of seabird trigger point activations (as reported by DWG) between the 2015/16 and 2021/22 fishing years.

Seabirds	Trigger points		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
	Captures in any 24-hr period	Captures in any 7-day period							
Large	3 +	10 +	8	3	6	6	4	2	2
Small	5 +	10 +	3	8	7	1	15	7	6

4.4 Marine mammals

Total marine mammal interactions and captures in deepwater fisheries are estimated using statistical models that are informed by data on observed interactions, fishing effort location data from each deepwater fishery and marine

mammal distribution data. The estimates of total captures do not include any estimates of cryptic mortality, although this will be included in the risk assessment modelling.

Information regarding observed captures of marine mammals is available shortly after the completion of each fishing year, whereas modelled total capture estimates take some time to become available. Table 25 reports all observed marine mammal captures in the core deepwater fleet between the 2017/18 and 2021/22 fishing years, while Table 26 reports all fisher reported marine mammal captures in the core deepwater fleet between the 2017/18 and 2021/22 fishing years. Table 27 and Figure 12 show observed New Zealand fur seal capture data from fishing activity targeting deepwater species. Marine mammal interactions by fishery are reported in Appendix I.

Table 25: Observed captures (core deepwater fleet) of marine mammals between the 2017/18 and 2021/22 fishing years

Species	Observed captures									
	Alive					Dead				
	17/18	18/19	19/20	20/21	21/22	17/18	18/19	19/20	20/21	21/22
Common dolphin	-	-	-	-	-	1	-	-	-	-
Dusky dolphin	-	-	-	-	-	-	-	2	-	1
NZ fur seal	3	7	2	1	5	68	56	52	58	38[23]
NZ sea lion	1	-	1	2	-	6	9	-	7	2
Seals and sea lions	-	-	-	-	-	-	-	-	-	1[24]
Pilot whale	-	-	-	-	-	1	-	1	-	-
Orca	-	-	-	-	-	1	-	-	-	-
Whale (unidentified)	-	-	-	-	-	-	-	-	-	2[25]

Table 26: Industry reported captures (core deepwater fleet) of marine mammals between the 2017/18 and 2021/22 fishing years.

Species	Fisher-reported captures									
	Alive					Dead				
	17/18	18/19	19/20	20/21	21/22	17/18	18/19	19/20	20/21	21/22
Common dolphin	-	-	-	5	-	1	-	5	-	5
Dusky dolphin	-	-	-	-	-	1	2	2	-	6
NZ fur seal	8	12	12	15	15	108	81	105	98	117
NZ sea lion	2	-	1	2	-	7	9	2	7	4
Seals and sea lions	-	-	-	1	-	1	1	-	2	-
Pilot whale	-	-	-	-	-	1	-	1	1	-
Orca	-	-	-	-	-	1	-	-	-	-
Baleen whales	-	-	-	-	-	-	1	-	-	-
Southern right whale	-	-	-	-	-	-	-	1[26]	-	-
Dolphin and toothed whales (unidentified)	-	-	-	-	-	-	-	-	1	-

[23] Includes two captures recorded as decomposing

[24] Decomposing remains

[25] Decomposing remains

[26] Decomposing remains

Table 27: Observed NZ fur seal captures from deepwater and middle-depth trawl fisheries for the 2021/22 fishing year

Target species	Tows	Observed tows	Percentage of tows observed	Industry-reported captures[27]	Observed captures
Hoki	8,088	3,644	45.05%	116	65
Hake	133	132	99.25%	1	1
Ling (LIN 3 – 7)	708	448	63.28%	6	1
Squid	3,026	2,913	96.27%	24	24
Southern blue whiting	514	514	100.00%	-	1
Jack mackerel	1,617	1,183	73.16%	5	4
Scampi	4,561	514	11.27%	-	-
Deepwater (ORH/OEO/CDL/BYX)	3,602	1,306	36.26%	-	-
Barracouta	954	950	99.58%	6	5
Warehou species	294	209	71.09%	-	-
Total	23,497	11,813	70%	158	101

4.4.1 Marine mammal operational procedures

The Marine Mammal Operational Procedures (MMOP) aim to reduce the risk of incidental captures of marine mammals during deepwater fishing activity. Measures outlined in the MMOP include minimising the amount of time the trawl gear is on the surface, removing stickers from the net before shooting it, moving away from large congregations of marine mammals before shooting if possible, and always being on the lookout for marine mammals around fishing gear. Specific measures are included to minimise the risk of dolphin captures including information on the time of day and areas where the risk of dolphin captures is highest. It also includes trigger points which should be reported to DWG within 24 hours.

4.4.2 Marine mammal trigger point notifications

All trawl vessels >28 m are required to notify DWG any time they capture more than a given number of marine mammals within a defined time period. There were 30 trigger point activations for marine mammal captures during the 2021/22 fishing year. These are summarised in Table 28.

Table 28: Marine mammal trigger point notifications reached between 2015/16 and 2021/22 fishing years

Species	Trigger points		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
	Captures in any 24-hr period	Captures in any 7-day period							
NZ fur seal	2	5	6	5	6	8	6	11	21
Common dolphin	1	-	2	0	1	0	1	1	1
NZ sea lion	1	-	3	3	8	9	2	9	4
Other[28]	1	-	0	1	2[29]	2[30]	4[31]	0	4[32]

[27] Records of decomposing remains have not been included

[28] All cetaceans other than common dolphin and all pinnipeds other than New Zealand fur seal and New Zealand sea lion.

[29] One orca and one unidentified dolphin.

[30] One capture event involving the capture of two dusky dolphins (both dead at the time of capture) and one involving the capture of a neonate Risso's dolphin.

[31] Four capture events, two involving two dusky dolphins, one involving two unidentified dolphins and one involving a pilot whale

[32] All trigger points in this category relate to dusky dolphin captures

4.5 Sharks

Management Objectives 6 and 8 in the National Deepwater Plan address the need to manage and monitor shark interactions with deepwater fishing activity. The management of sharks in New Zealand is guided by the National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks 2013, which was reviewed and updated in 2021 and 2022 and is expected to be released in 2023). The NPOA-Sharks sets out goals and objectives to guide the conservation and management of sharks. The NPOA-Sharks objectives most immediately relevant to deepwater fisheries is the objective to encourage the legal full utilisation of dead sharks and maintain the prohibition of shark finning.

On 1 October 2014 it became illegal for commercial fishers to remove the fins from any shark and discard the body of that shark at sea (shark finning). Fishers are still able to land shark fins, however conditions apply depending on the species concerned (summarised in the Table 29 below). It also became possible for fishers to return dead mako, porbeagle and blue sharks to the sea and balance catch against Annual Catch Entitlement (ACE). Fishers were already able to return these species, as well as rig and school shark, to the sea if they were alive and likely to survive.

Table 29: Summary of conditions that apply if fishers wish to land shark fins.

Approach	Description	Applicable species
Ratio	Fins must be stored and landed separately by species. The weight of fins landed must not exceed a specified percentage of the greenweight of the shark. Weight of fins must be reported on landing returns. The ratio applies to landings on a trip-by-trip basis.	Elephant fish
		Dark ghost shark
		Mako shark
		Pale ghost shark
		Porbeagle shark
		Rig
		School shark
Fins artificially attached	After being processed to the dressed state, fins must be re-attached to the shark by some artificial means. Landings to be reported with landed state of SFA (shark fins attached)	Blue shark
Fins naturally attached	After being processed to the headed and gutted state, the fins must remain attached to the body by some portion of uncut skin. Landings to be reported with landed state of SFA (shark fins attached).	Spiny dogfish
		All non-QMS species

In 2013, a trigger point was added to the Deepwater Fisheries Operational Procedures that requires vessels to report any basking shark captures to DWG within 24 hours. Eleven basking shark triggers were reported during the 2021/22 fishing year. Table 30 shows the number of observed and industry reported protected shark captures in deepwater fisheries between the 2015/16 and 2021/22 fishing years.

Table 30: Observed and industry reported captures of protected shark species from the core deepwater fishing fleet between the 2015/16 and 2021/22 fishing years.

Species		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Basking shark	Observed	1	5	1	7	11	3	2
	Fisher-reported	5	8	1	7	11	4	2
Smalltooth sandtiger shark	Observed	-	-	-	-	-	1	-
	Fisher-reported	-	-	-	-	-	1	-
White pointer shark	Observed	1	3	5	3	9	4	4
	Fisher-reported	1	4	5	3	9	4	11

Sharks are classified as rays and skates, sharks and dogfish, and chimaeras. Within these three classifications, some species are protected, some are managed under the QMS, and some are reported using generic codes that do not allow for species determination.

Reporting for sharks in connection with deepwater fisheries includes information on the total interactions with shark species during deepwater fishing activity, interactions with protected shark species, the level of the use of generic reporting codes, and information about the utilisation and processing of sharks in deepwater fisheries. Table 31 shows the reported landings of sharks by the core deepwater fleet during the 2021/22 fishing year.

Table 31: Reported landings of sharks from the core deepwater fishing fleet in 2021/22 (greenweight tonnes).

Species	Chimaeras[33]	Rays & skates	Sharks & dogfish	Total
Generic reporting code	1	7	204	212
QMS species	1,188	548	3,979	5,715
Other	163	19	1,243	1,425
Total	1,351	575	5,426	7,353

Generic reporting codes make it impossible to accurately quantify the captures of specific shark species. The NPOA-Sharks identified the use of generic reporting codes for shark catches as an area in need of attention from FNZ. Table 32 shows that the use of generic reporting codes has decreased over time. The decline in the use of generic reporting codes will allow improved quantification of shark catches in the future.

Table 32: Use of generic reporting codes from both observer data and reported landings between the 2015/16 and 2021/22 fishing years by the core deepwater fleet.

Year	Percentage of industry-reported landings with generic codes	Percentage of observed shark catches with generic codes
2015/16	6%	3%
2016/17	5%	1%
2017/18	3%	1%
2018/19	4%	1%
2019/20	3%	1%
2020/21	3.3%	1.1%
2021/22	2.9%	1.2%

Details of QMS shark landings by the core deepwater fleet during 2021/22 are summarised in Table 33. No vessels from the core deepwater fleet reported landing any sharks under the processed state code SFA (shark fins attached).

Table 33: Details of QMS shark species landed by the core deepwater fleet during the 2021/22 fishing year (tonnes).

Species	Total landings[34]	Landed green	Landed processed (excl. MEA)	Mealed	Discarded under observer approval[35]	Returned dead (Schedule 6)	Returned alive (Schedule 6)	Accidental loss
Blue shark	5	-	-	<1	<1	3	2	<1
Elephant fish	1	12	<1	1	<1	-	-	<1
Ghost shark	422	15	264	62	82	-	-	<1
Mako shark	8		-	<1	-	6	3	<1
Pale ghost shark	734	11	515	184	24	-	-	<1

[33] Cartilaginous fish in the order Chimaeriformes (variously known as ghost shark or elephant fish).

[34] Total landings may not equal the sum of fish landed, returned or accidentally lost due to rounding errors and/or fish that were reported using other landed destination types (e.g. consumed on board, used as bait or retained by an observer as a specimen).

[35] Highlighted numbers indicate that fishers may not require observer approval to return particular species (depending on life status).

Species	Total landings[34]	Landed green	Landed processed (excl. MEA)	Mealed	Discarded under observer approval[35]	Returned dead (Schedule 6)	Returned alive (Schedule 6)	Accidental loss
Porbeagle shark	20	-	-	<1	<1	15	5	-
Rig	7	<1	2	1	4	-	<1	-
Rough skate	180	13	88	45	17	-	18	<1
School shark	160	<1	117	17	20	-	5	2
Smooth skate	314	<1	151	90	14	-	58	1
Spiny dogfish	3,979	22	129	1,505	-	-	2,322[36]	<1
Total	5,832	61	1,266	1,904	160	24	2,412	4

4.6 Reptiles

In the 2021/22 fishing year there was one observed capture of one dead leatherback turtle.

4.7 Benthic interactions

4.7.1 Benthic bycatch

Many deepwater species are targeted using fishing methods that result in regular contact between fishing gear and the seabed. This can lead to bycatch of benthic organisms including corals, sponges, and sea anemones. In New Zealand all black corals, gorgonian corals, stony corals, and hydrocorals are protected under the Wildlife Act 1953. Details of observed and industry-reported benthic bycatch between 2017/18 and 2021/22 are shown in Table 34.

Table 34: Observed (O) and industry reported (IR) catch of benthic species (kg) by the core deepwater fleet between the 2017/18 and 2021/22 fishing years

Species	2017/18		2018/19		2019/20		2020/21		2021/22	
	O	IR	O	IR	O	IR	O	IR	O	IR
Anemones	18,463	5,754	7,773	4,275	5,064	9,249	7,852	14,312	8,467	7,859
Corals	240	82	631	163	2,656	35	3,860	20	1,936	24
Corals (generic codes[37])	2,166	2,926	8,141	27,928	1,024	1,488	938	5,350	104	9,763
Hydroids	23	-	18	-	65	-	10		40	-
Sea pens	169	-	104	-	125	-	95		194	-
Sponges	47,692	89,452	18,752	78,622	30,639	57,909	33,772	49,936	15,204	34,291

4.7.2 Trawl footprint

The most recent iteration of the deepwater trawl footprint (MacGibbon and Mules, 2023) estimated the extent of bottom contact by trawl vessels targeting Tier 1 and Tier 2 species between 1990 and 2021.[38] The report is based on all relevant reporting data and is reviewed each year through the Aquatic Environment Working Group. The TCER[39], TCEPR[40], and ERS[41] data provide tow-by-tow information that can be used to generate annual trawl footprints that represent the area of the seafloor contacted by trawl gear. Trawled area is reported against the

[36] Returned alive or dead.

[37] Corals (COU) + corals, sponges, bryozoans (CSB)

[38] The latest trawl footprint (between 2018/19 and 2019/20 fishing years) utilises ERS data as it allows for more precision in locating start and end positions

[39] Trawl Catch Effort Return

[40] Trawl Catch Effort Processing Return

[41] Electronic Reporting System

'fishable area', which is defined as the area shallower than 1600 m and not closed to bottom trawling (by BPAs, seamount closures or marine reserves).

The Tier 1 and Tier 2 target fish stock trawl footprint between 1990 and 2021 was 355,701km^2. This represents almost 9% of the seafloor between the coastline and the outer boundary of the EEZ and 25% of the seafloor that is open to bottom trawling and within fishable depths (shallower than 1600m).

In 2021, the trawl footprint for both Tier 1 and Tier 2 species was 43,633 km^2. The most recent three years represent the lowest annual footprints for the past 30 years.

During 2021, hoki trawls contacted 38% of the cells[42] making up the deepwater trawl footprint, while orange roughy trawls contacted 22%. Trawling for scampi, squid, and jack mackerels accounted for 11%, 10%, and 7% of the 2021 footprint area, respectively.

The spatial distribution analysis of where the footprint contacted the seafloor in one year but not in the next suggests that over recent years there has been very little expansion beyond the regularly fished areas, other than in the Challenger area off the west coast of the South Island.

[42] 25 km^2 cells are used as reference points. A cell is considered 'contacted' if any part of the cell is trawled.

Appendix I: Summaries of deepwater fisheries for 2021/22

Alfonsino (BYX) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
BYX 1	10	304	300	2	2	-
BYX 2	1,631	1,575	1,575	-	-	-
BYX 3	564	1,010	1,010	-	-	-
BYX 7	5	80.5	80.5	-	-	-
BYX 8	<1	20	20	-	-	-
BYX 10	0	10	10	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	B_{MSY} (30-50% B_0)	BYX 1	B_{2010} 'Likely' (>60%) to be at or above the target
	40%	All other stocks	Unknown
Soft Limit	20% B_0	BYX 1	B_{2010} 'Very Unlikely' (<10%) to be below the soft limit
		All other stocks	Unknown
Hard Limit	10% B_0	BYX 1	B_{2010} 'Very Unlikely' (<10%) to be below the hard limit
		All other stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
BYX 1	$1.98	$2.20	$2.64	$3.08	$3.52	$3.96	$4.40	$3
BYX 3								$0
BYX 7								$0
BYX 8								$34
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-110%	110-130%	130-150%	150-170%	170-190%	190%+	
BYX 2	2.16	$2.40	$2.88	$3.36	$3.84	$4.32	$4.80	$0

Environmental indicators and observer coverage		
Observer coverage		2021/22: 14.5% of target tows observed
Seabirds		2021/22: 2 observed captures
Marine mammals		2021/22: 0 observed captures
Benthic interactions[43] (fishable area trawled)	2020/21: 310.0 km^2 (7.40%)	1990 to 2021: 4,188.0 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $86.9 m
Export earnings 2022[44]	NZ $12.5 m FOB[45] (includes catch taken outside the EEZ)

[43] Trawl footprint statistics include all tows when the species is targeted only.

[44] All export earnings are for the calendar year from January 2022 to December 2022. They are provisional only and are subject to change.

[45] Free on board. The value of export goods, including raw material, processing, packaging, storage, and transportation up to the point where the goods are about to leave the country as exports. FOB does not include storage, export transport or insurance cost to get the goods to the export market. Note that since export data presented in these tables is for the calendar year, it does not completely align with fishing effort and landings data, which are reported for the fishing year.

Barracouta (BAR) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
BAR 4	3,859	3,019	3,019	-	-	-
BAR 5	6,939	8,370	8,200	3	2	165
BAR 7	2,441	11,173	11,173	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	BAR 4	Unknown (2021)
		BAR 5	Unknown (2021)
		BAR 7	Unknown (2020)
Soft Limit	20% B_0	BAR 4	Unknown (2021)
		BAR 5	B_{2021} is 'Unlikely' (<40%) to be below the soft limit
		BAR 7	Unknown (2020)
Hard Limit	10% B_0	BAR 4	Unknown (2021)
		BAR 5	B_{2021} is 'Very Unlikely' (<10%) to be below the hard limit
		BAR 7	Unknown (2020)

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
BAR 7	$0.22	$0.24	$0.29	$0.34	$0.38	$0.43	$0.48	$0
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-110%		110-120%		120%+		
BAR 4 BAR 5	$0.23	$0.25		$0.50		$1.00		$215,970 $0

Environmental indicators and observer coverage[46]			
Observer coverage			2021/22: 31% of target tows observed
Seabirds			2021/22: 28 observed captures
Marine mammals	Fur seals		2021/22: 2 observed captures
	Dolphins		2021/22: 1 observed capture
Benthic interactions (fishable area trawled)		2020/21: 2,934.4 km^2 (7.79%)	1990 to 2021: 37,662.9 km^2

Economic indicators (calendar years)	
Quota value 2019	NZ $83.3 m (includes BAR 1 holdings)
Export earnings 2022	NZ $30.0 m FOB[47]

[46] Trawl vessels greater than 28 m in length targeting all barracouta stocks.

[47] Includes all BAR stocks

Black cardinalfish (CDL) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
CDL 1	2	176	160	0	0	16
CDL 2	65	460	440	0	0	20
CDL 3	115	196	196	0	0	0
CDL 4	7	66	66	0	0	0
CDL 5	18	34	33	0	0	1
CDL 6	1	1	1	0	0	0
CDL 7	1	39	39	0	0	0
CDL 9	1	4	4	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	CDL 2, 3 & 4	B_{2009} estimated to be 12% B_0. 'Very Unlikely' (<10%) to be at or above target
		All other stocks	Unknown
Soft Limit	20% B_0	CDL 2, 3 & 4	B_{2009} 'Likely' (>60%) to be below the soft limit
		All other stocks	Unknown
Hard Limit	10% B_0	CDL 2, 3 & 4	B_{2009} 'About as Likely as Not' (40-60%) to be below the hard limit
		All other stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2021/22 Actual
		100%+		
CDL 5 CDL 6 CDL 7 CDL 9	$0.27	$0.30		$0 $0 $0 $0
Stock	Interim rate	100-120%	120%+	2021/22 Actual
CDL 1 CDL 2	$0.54	$0.60	$0.69	$1 $0
CDL 3 CDL 4	$0.47	$0.52	$0.60	$0 $0

Environmental indicators and observer coverage		
Observer coverage		2021/22: 73% of target tows observed
Seabirds		2021/22: 1 observed capture
NZ fur seal		2021/22: 0 observed captures
Benthic interactions (fishable area trawled)	2020/21: 62.9 km^2 (2.81%)	1990 to 2021: 2,235.6 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $5.9 m
Export earnings 2022	NZ $0.513 m FOB

Dark ghost shark (GSH) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
GSH 4	125	370	370	-	-	-
GSH 5	50	109	109	-	-	-
GSH 6	39	95	95	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	GSH 4, GSH 5 & GSH 6	Unknown (2016)
Soft Limit	20% B_0	GSH 4, GSH 5 & GSH 6	Unknown (2016)
Hard Limit	10% B_0	GSH 4, GSH 5 & GSH 6	Unknown (2016)

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
GSH 4 GSH 5 GSH 6	$0.36	$0.40	$0.48	$0.56	$0.64	$0.72	$0.80	$0 $0 $0

Environmental indicators		
Observer coverage		2021/22: 0 target tows
Seabirds		2021/22: 0 observed captures
Fur seals		2021/22: 0 observed captures
Benthic interactions (fishable area trawled)	2020/21: 0 km^2 (0%)	1990 to 2019: 90.6 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $7.9 m (includes GSH 1, GSH 2, GSH 3, GSH 7, GSH 8 & GSH 9 holdings)
Export earnings 2022	NZ $0.21 m FOB (includes both pale and dark ghost shark, export statistics are not provided for individual ghost shark species)

Deepwater crab species (KIC/GSC/CHC) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
KIC 3	5	10	10	0	0	0
KIC 5	0	10	10	0	0	0
KIC 6	1	10	10	0	0	0
GSC 3	1	20	19	0	0	1
GSC 5	41	20	19	0	0	1
GSC 6A	127	187	170	0	0	17
GSC 6B	7	250	237	0	0	13
CHC 1	0	10	10	0	0	1

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All CHC, GSC & KIC stocks	Unknown
Soft Limit	20% B_0	All CHC, GSC & KIC stocks	Unknown
Hard Limit	10% B_0	All CHC, GSC & KIC stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices 48								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
KIC 3 KIC 5 KIC 6	$1.62	$1.80	$2.16	$2.52	$2.88	$3.24	$3.60	$0
GSC 3 GSC 5 GSC 6A GSC 6B	$0.09	$0.10	$0.12	$0.14	$0.16	$0.18	$0.20	$0
CHC 1	$1.62	$1.80	$2.16	$2.52	$2.88	$3.24	$3.60	$0

Economic indicators (calendar year)	
Quota value 2019	NZ $0.4 m (GSC only)
Export earnings 2022	No export information specific to deepwater crabs is currently available

48 only shown for stocks where catches > 0.1 t were taken

Blue (English) mackerel (EMA) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
EMA 3	10	392	390	1	1	0
EMA 7	3,766	3,352	3,350	1	1	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B0	EMA 3 & EMA 7	Unknown (2020)
Soft Limit	20% B_0	EMA 3 & EMA 7	Unknown (2020)
Hard Limit	10% B_0	EMA 3 & EMA 7	Unknown (2020)

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
EMA3 EMA 7	$0.23	$0.26	$0.31	$0.36	$0.42	$0.47	$0.52	$0 $12,581

Environmental indicators		
Benthic interactions (fishable area trawled)	2021/22: 10.8 km^2 (1.9%)	1990 to 2021: 566.2 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $26.3 m (includes EMA 1 & EMA 2 holdings)
Export earnings 2022	NZ $16.2 m FOB (includes all stocks)

Frostfish (FRO) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
FRO 3	10	82	80	1	1	-
FRO 4	29	126	124	1	1	-
FRO 5	27	135	135	-	-	-
FRO 6	0	11	11	-	-	-
FRO 7	1,859	2,154	2,110	1	1	42
FRO 8	493	919	900	-	1	18
FRO 9	109	410	400	1	1	8
Reference points and current status (as per Harvest Strategy Standard defaults)						
Target	40% B_0		FRO 3 – FRO 9		Unknown	
Soft Limit	20% B_0		FRO 3 – FRO 9		Unknown	
Hard Limit	10% B_0		FRO 3 – FRO 9		Unknown	
2021/22 Deemed value rates (per kg) and invoices						
Stock	Interim rate		Annual rate for catch in excess of ACE[49]		2021/22 Actual	
FRO 3	$0.31		$0.34		$0	
FRO 4	$0.22		$0.24		$0	
FRO 5 to 9	$0.14		$0.15		$0	
Environmental indicators						
Benthic interactions (fishable area trawled)			2020/21: 8.5 km^2 (<1%)		1990 to 2021: 1,042.1 km^2	
Economic indicators (calendar year)						
Quota value 2019			NZ $6.4 m (includes FRO 1 & FRO 2 holdings)			
Export earnings 2022			No export information specific to frostfish is currently available			

[49] Differential deemed value rates are not set for frostfish stocks.

Gemfish (SKI) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SKI 3	881	1,103	1,091	-	1	11
SKI 7	785	1,103	1,091	-	1	11

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	SKI 3 & SKI 7	Unknown (2021)
Soft Limit	20% B_0	SKI 3 & SKI 7	Unknown (2021)
Hard Limit	10% B_0	SKI 3 & SKI 7	B_{2021} unlikely (<40%) to be below the hard limit

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
SKI 3 SKI 7	$0.65	$0.72	$0.86	$1.01	$1.15	$1.30	$1.44	$38,792 $3

Environmental indicators		
Benthic interactions (fishable area trawled)	2020/21: 14.4 km^2 (<1%)	1990 to 2021: 2,524.9 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $19.1 m (includes SKI 1 & SKI 2 holdings)
Export earnings 2022	NZ $3.2 m FOB (includes all stocks)

Hake (HAK) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
HAK 1	1,691	-	3,701	-	-	-
HAK 4	136	1,818	1,800	-	-	18
HAK 7	1,325	2,300	2,272	-	5	23

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	HAK 1 Sub-Antarctic[50]	B_{2021} estimated to be 62% B_0. 'Very Likely' (>90%) to be at or above the target
		HAK 4 Chatham Rise[51]	B_{2020} estimated to be 55% B_0. 'Very Likely' (>90%) to be at or above the target
		HAK 7	B_{2019} estimated to be 17% B_0. 'Exceptionally Unlikely' (<1%) to be at or above the target.
Soft limit	20% B_0	HAK 1 Sub-Antarctic	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		HAK 4 Chatham Rise	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		HAK 7	B_{2019} 'About as Likely as Not' (40%-60%) to be below the soft limit.
Hard limit	10% B_0	HAK 1 Sub-Antarctic	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		HAK 4 Chatham Rise	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		HAK 7	B_{2019} 'Very Unlikely' (<10%) to be below the hard limit

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
HAK 1 HAK 4 HAK 7	$1.44	$1.60	$1.92	$2.24	2.56	2.88	3.20	$0 $0 $0

Environmental indicators and observer coverage[52]			
Observer coverage			2021/22: 98% of target tows observed
Seabirds			2021/22: 1 observed capture
Marine mammals	NZ fur seal		2021/22: 1 observed capture
Benthic interactions (fishable area trawled)		2020/21: 733.5 km^2	1990-2019: 21,049 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $75.3 m
Export earnings 2022	NZ $9.92 m FOB

[50] HAK Sub-Antarctic is defined as all of HAK 1 south of the Otago Peninsula.

[51] HAK Chatham Rise is defined as all of HAK 4 plus that part of HAK 1 north of the Otago Peninsula

[52] Trawl vessels >28 m in length.

Hoki (HOK) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
HOK1	91,664	111, 140	110,000	20	20	1,100

Reference points and current status			
Target range	35-50% B_0	Eastern stock[53]	B_{2022} was estimated to be 51% B_0. Very Likely (> 90 %) to be above the lower end of the target range. About as Likely as Not (40–60%) to be above the upper end of the range
		Western stock[54]	B_{2022} was estimated to be 28% B_0. About as Likely as Not (40–60%) to be above the lower end of the target range. Exceptionally Unlikely (< 1%) to be above the upper end of the target range
Soft limit	20% B_0	Eastern stock	B_{2022} 'Very Unlikely' (<10%) to be below the soft limit
		Western stock	B_{2022} 'Unlikely' (<40%) to be below the soft limit
Hard limit	10% B_0	Eastern stock	B_{2022} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		Western stock	B_{2022} 'Very Unlikely' (<10%) to be below the hard limit

2021/22 Deemed value rates (per kg) and invoices				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2021/22 Actual
		100-102%	102%+	
HOK 1	$0.81	$0.90	$1.30	$0

Environmental indicators and observer coverage			
Observer coverage			2021/22: 42% of target tows observed
Seabirds			2021/22: 48 observed captures
Protected fish			2021/22: 1 observed capture
Marine mammals	NZ fur seal		2021/22: 18 observed captures
	NZ sea lion		2021/22: 0 observed captures
Benthic interactions (fishable area trawled)		2020/21: 20,497.9km^2 (1.75%)	1990 to 2019: 167,649km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $1,251 m
Export earnings 2022	NZ $224.1 m FOB

Eastern and Western catch limit reporting

The hoki fishery is considered to consist of two biological stocks: an eastern stock and western stock. Agreements between the Minister and the fishing industry have seen separate catch limits apply to each stock since 2001/02. For the 2021/22 fishing year, owners of the majority of hoki quota had formally entered into the catch limit agreement requested by the Minister. The east/west catch limit regime is administered by FishServe and monitored by DWG.

Table 35 provides details on the catch limits and catch amounts for the 2021/22 fishing year.

53 The Eastern stock is taken to be the east coast of the North and South Islands, Mernoo Bank, Chatham Rise and Cook Strait.

54 The Western stock is taken to be the west coast of the North and South Islands and the area south of New Zealand including Puysegur, Snares and the Sub-Antarctic.

Table 35: Catch limits and actual catch estimates for 2021/22 fishing year (tonnes).

Stock	Catch limit	Catch within agreement (from FishServe)	Estimated catch (all fishers)
Eastern stock	65,000	48,929	50,298
Western stock	45,000	42,737	39,851

Hoki Operational Procedures

Hoki Operational Procedures stipulate the non-regulatory management measures agreed between HOK 1 quota owners, HOK 1 ACE holders and FNZ. The purpose of the Hoki Operational Procedures is to monitor and manage fishing effort for hoki within agreed hoki management areas (HMAs) and hoki seasonal spawn areas (HSSAs). Hoki Operational Procedures are monitored and administered by DWG.

HMAs are areas where there is information to demonstrate the presence of a high abundance of juvenile hoki (for these purposes hoki <55 cm in total length). Trawlers > 28 m in length are strongly advised not to target hoki within HMAs. FNZ provides DWG summaries of fishing effort, estimated catch and hoki length frequency information from within, and the immediate vicinity of HMAs on a quarterly basis. Table 36 summaries fishing activity within HMAs between the 2016/17 and 2021/22 fishing years.

To allow for a period of undisturbed spawning, all trawlers, regardless of size are strongly advised not to target hoki within four designated HSSAs at certain times. FNZ monitored fishers' adherence to the HSSA requirements during the winter spawn fishery. Six hoki target tows were conducted by one vessel within an HSSA during the specified time periods.

Table 36: Summary of HMA fishing activity by trawl vessels >28 m in length between the 2016/17 and 2021/22 fishing years.

Fishing year	Number of vessels that fished in HMA	Number of HOK target tows[55]	Number of non-HOK target tows	Reported estimated catch of HOK (t)	Estimated catch of all species (t)
Canterbury Banks					
2016/17	20	33	454	1,028	7,380
2017/18	21	47	638	1,347	9,975
2018/19	18	18	143	303	1,795
2019/20	16	2	262	257	3,441
2020/21	19	1	520	433	8,219
2021/22	15	1	490	364	8,390
Mernoo Bank					
2016/17	18	3	157	853	2,405
2017/18	20	16	263	581	2,577
2018/19	24	4	1,112	429	12,523
2019/20	20	0	495	217	3,582
2020/21	22	1	824	403	6,482
2021/22	25	0	825	73	8,305
Puysegur Bank					
2016/17	10	0	98	150	1,033
2017/18	10	0	66	203	808
2018/19	10	0	65	188	1,087
2019/20	11	0	92	99	908

55 The majority of tows targeting hoki inside an HMA were undertaken very close to HMA boundaries.

Fishing year	Number of vessels that fished in HMA	Number of HOK target tows[55]	Number of non-HOK target tows	Reported estimated catch of HOK (t)	Estimated catch of all species (t)
2020/21	11	0	109	66	1,122
2021/22	8	0	120	56	967
Cook Strait					
2016/17	4	3	1	39	40
2017/18	1	1	0	<1	<1
2018/19	0	0	0	0	0
2019/20	0	0	0	0	0
2020/21	2	1	2	25	28
2021/22	0	0	0	0	0

Jack mackerel (JMA) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
JMA 3	4,857	9,000	8,780	20	20	180
JMA 7	27,782	*None set*	32,537	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	JMA 3 & JMA 7	Unknown
Soft Limit	20% B_0	JMA 3 & JMA 7 (2020)	Unknown
Hard Limit	10% B_0	JMA 3 & JMA 7 (2020)	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
JMA 3	$0.08	$0.09	$0.11	$0.13	$0.14	$0.16	$0.18	$0
JMA 7	Interim rate	100-105%	105-120%	120%+				$19
	$0.18	$0.20	$0.25	$0.30				

Environmental indicators and observer coverage			
Observer coverage			2021/22: 73% of target tows observed
Seabirds			2021/22: 3 observed captures
Marine mammals	NZ fur seal		2021/22: 2 observed captures
	Common dolphin		2021/22: 0 observed captures
Protected fish	White pointer shark		2021/22:1 observed capture
Protected reptiles	Leatherback turtle		2021/22:1 observed capture
Benthic interactions (fishable area trawled)		2020/21: 2,818.9km^2	1990 to 2019: 46,698 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $153 m (includes JMA 1 holdings)
Export earnings 2022	NZ $66.6 m FOB (for all stocks)

Ling (LIN) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
LIN 3	1,174	2,060	2,060	0	0	0
LIN 4	2,603	4,200	4,200	0	0	0
LIN 5	5,049	5,314	5,208	1	1	104
LIN 6	3,880	8,590	8,505	0	0	85
LIN 7	3,325	3,458	3,387	1	2	68

Reference points and current status			
Target	40% B_0	LIN 3 & 4	B_{2019} estimated to be 57% B_0. 'Very Likely' (>90%) to be above the target
		LIN 5 & 6[56]	B_{2021} estimated to be 71% B_0. 'Virtually Certain' (>99%) to be above the target
		LIN 6B[57]	B_{2006} estimated to be 61% B_0. 'Very Likely' (>90%) to be at or above the target.
		LIN 7[58]	B_{2020} estimated to be 47% B_0. 'Very Likely' (>90%) to be at or above the target.
		LIN CS[59]	B_{2010} estimated to be 54% B_0. 'Likely' (>60%) to be at or above the target
Soft limit	20% B_0	LIN 3 & 4	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		LIN 5 & 6	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		LIN 6B	B_{2006} 'Very Unlikely' (<10%) to be below the soft limit
		LIN 7	B_{2020} 'Very Unlikely' (<10%) to be below the soft limit
		LIN CS	B_{2010} 'Exceptionally Unlikely' (<1%) to be below the soft limit
Hard limit	10% B_0	LIN 3 & 4	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		LIN 5 & 6	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		LIN 6B	B_{2006} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		LIN 7	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		LIN CS	B_{2010} 'Exceptionally Unlikely' (<1%) to be below the soft limit

2021/22 Deemed value rates (per kg) and charges					
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)			2021/22 Actual
		100-102%	102-120%	Annual 120%+	
LIN 3 LIN 4 LIN 5 LIN 6 LIN 7	$2.14	$2.38	$3.40	$6.00	$0 $942 $116 $0 $253

Environmental indicators and observer coverage (LIN 3 – LIN 7 only)			
Observer coverage	Trawl (>28 m)		2021/22: 32% of target tows observed
	Longline		2021/22: 21% hooks observed
Protected fish	Trawl		2021/22: 1 observed capture
Seabirds	Trawl (>28 m)		2021/22: 9 observed captures

[56] Excluding the Bounty Plateau.

[57] Bounty Plateau.

[58] Excluding Cook Strait

[59] Cook Strait.

	Longline		2021/22: 9 observed captures
NZ fur seals	Trawl (>28 m)		2021/22: 0 observed captures
	Longline		2021/22: 1 observed capture
Benthic interactions (fishable area trawled)		2020/21: 1,600.6 km^2	1990 to 2019: 27,852 km^2
Economic indicators (calendar year)			
Quota value 2019		NZ $554.3 m (includes LIN 1 & LIN 2 holdings)	
Export earnings 2022		NZ $61.9 m FOB (includes all stocks)	

Lookdown dory (LDO) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
LDO 1	133	168	168	0	0	0
LDO 3	344	614	614	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks (2013)	Unknown
Soft Limit	20% B_0	All stocks (2013)	Unknown
Hard Limit	10% B_0	All stocks (2013)	'Unlikely' (<40%) to be below the hard limit

2021/22 Deemed value rates (per kg) and invoices			
Stock	Interim rate	Annual rate for catch in excess of ACE	2021/22 Actual
LDO 1	$0.38	$0.42	$0
LDO 3			$0

Environmental indicators		
Benthic interactions (fishable area trawled)	2020/21: 135.4 km^2 (11.11%)	1990 to 2021: 1,218.6 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $2.6 m
Export earnings 2022	This species is not individually listed in export statistics

Oreo (OEO) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
OEO1	205	2,500	2,500	0	0	0
OEO3A	2,648	3,518	3,350	0	0	168
OEO4	3,414	3,780	3,600	0	0	180
OEO6	1,234	-	6,000	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)				
Target	40% B_0	OEO 1 Southland	SSO	B_{2007} estimated to be 27% B_0. 'Unlikely'(<40%) to be at or above the target
		OEO 3A	BOE	Unknown (2013)
			SSO	B_{2009} estimated to be 36% B_0. 'About as Likely as Not' (40-60%) to be at or above the target
		OEO 4	BOE	Unknown (2009)
			SSO	B_{2018} estimated to be 40% B_0. 'About as Likely as Not' (40-60%) to be at or above the target
		OEO 6 Pukaki rise	BOE	Unknown (2009)
			SSO	Unknown (2006)
		OEO 6 Bounty Plateau	SSO	B_{2008} estimated to be 33% B_0. 'Unlikely'(<40%) to be at or above the target
Soft Limit	20% B_0	OEO 1 Southland	SSO	B_{2007} is 'Unlikely' (<40%) to be below the soft limit
		OEO 3A	BOE	Unknown (2013)
			SSO	B_{2009} is 'Unlikely' (<40%) to be below the soft limit
		OEO 4	BOE	Unknown (2009)
			SSO	B_{2018} is 'Very Unlikely' (<10%) to be below the soft limit
		OEO 6 Pukaki rise	BOE	Unknown (2009)
			SSO	Unknown (2006)
		OEO 6 Bounty Plateau	SSO	B_{2008} is 'Unlikely' (<40%) to be below the soft limit
Hard Limit	10% B_0	OEO 1 Southland	SSO	B_{2007} is 'Very Unlikely' (<10%) to be below the hard limit
		OEO 3A	BOE	Unknown (2013)
			SSO	B_{2009} is 'Very Unlikely' (<10%) to be below the hard limit
		OEO 4	BOE	Unknown (2009)
			SSO	B_{2018} is 'Exceptionally Unlikely' (<1%) to be below the hard limit
		OEO 6 Pukaki rise	BOE	Unknown (2009)
			SSO	Unknown (2006)
		OEO 6 Bounty Plateau	SSO	B2008 is 'Very Unlikely' (<10%) to be below the hard limit

2021/22 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	

OEO 1 OEO 6	$0.70	$0.78	$0.94	$1.09	$1.25	$1.40	$1.56	$0 $0
OEO 3A	$0.68	$0.76	$0.91	$1.06	$1.22	$1.37	$1.52	$0
OEO 4	$0.81	$0.90	$1.08	$1.26	$1.44	$1.62	$1.80	$0

Environmental indicators and observer coverage		
Observer coverage		2021/22: 37% tows observed
Seabirds		2021/22: 0 observed captures
Marine mammals		2021/22: 0 observed captures
Benthic interactions (fishable area trawled)	2020/21: 285 km^2	1990 to 2019: 17,481km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $106.7 m (includes all species)
Export earnings 2022	Black oreo: NZ $2.98 m FOB Smooth oreo: NZ $3.01 m FOB Oreo, other: NZ $6.5 m FOB (this category includes black and/or smooth oreo that has not been reported by individual species)

OEO 1

Area	Catch limit (t)	Industry reported catch (t)	Sum of estimated catch reported via ERS (t)
Southland (smooth oreo only)	400	101	95
OEO 1 (all species)	2,500	205	200

OEO 3A

Species	Catch limit (t)	Industry reported catch (t)	Sum of estimated catch reported via ERS (t)
Black oreo (includes spiky oreo)	1,700	1,319	1,162
Smooth oreo	1,650	1,317	1,125
Totals	3,350	2,636	2,287

OEO 4

Species	Catch limit (t)	Industry reported catch (t)	Sum of estimated catch reported via ERS (t)
Smooth oreo	2,600	2,492	2,206
Black oreo (includes spiky and warty oreo)	N/A	883	495
OEO 4 (all species)	3,600	3,375	2,701

Orange roughy (ORH) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
ORH 1	597	1,470	1,400	-	-	70
ORH 2A	511	512	488	-	-	24
ORH 2B	60	63	60	-	-	3
ORH 3A	131	186	177	-	-	9
ORH 3B	6,780	8,355	7,967	-	5	383
ORH 7A	2,193	2,163	2,058	-	2	103
ORH 7B	1	1	1	-	-	-

Reference points and current status			
Target	30-40% B_0	ORH 1	Unknown
	30% B_0	ORH 2A (North)	B_{2003} estimated to be 24% B_0. 'Unlikely' (<40%) to be at or above the target
	30-40% B_0	ORH 2A (South), 2B & 3A[60]	B_{2014} estimated to be 14% B_0. 'Very Unlikely' (<10%) to be at or above the lower end of the target range.
	30-50% B_0	ORH 3B Northwest Chatham Rise	B_{2017} estimated to be 38% B_0. Based on 2023 evaluation B_{2017} was As Likely as Not (40–60 %) to be at or above the lower end of the management target range
		ORH 3B East & South Chatham Rise	Current stock status is unable to be determined.
		ORH 3B Puysegur	B_{2017} estimated to be 49% B_0. 'Very Likely' (>90%) to be at or above the lower end of the target range.
	30-40% B_0	ORH 7A[61]	B_{2019} estimated to be 47% B_0. 'Very Likely' (>90%) to be at or above the lower end of the target range and 'About as Likely as Not' (40-60%) to be at or above the upper end of the target range.
	30% B_0	ORH 7B	B_{2020}[62] Unknown
Soft limit	20% B_0	ORH 1	Unknown
		ORH 2A (North)	B_{2003} 'Unlikely' (<40%) to be below the soft limit
		ORH 2A (South), 2B & 3A	B_{2014} 'Likely' (>60%) to be below the soft limit
		ORH 3B Northwest Chatham Rise	Based on 2023 evaluation B_{2017} is Unlikely (< 40%) to be below the Soft Limit.
		ORH 3B East & South Chatham Rise	Current stock status is unable to be determined.
		ORH 3B Puysegur	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the soft limit

[60] Collectively known as the Mid-East Coast stock (MEC).

[61] Includes the Westpac Bank.

[62] Preliminary

		ORH 7A	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		ORH 7B	B_{2020} Unknown
Hard limit	10% B_0	ORH 1	Unknown
		ORH 2A (North)	B_{2003} 'Very Unlikely' (<10%) to be below the hard limit
		ORH 2A (South), 2B & 3A	B_{2014} 'Unlikely' (<40%) to be below the hard limit
		ORH 3B Northwest Chatham Rise	Based on 2023 evaluation B_{2017} is Unlikely (< 40%) to be below the Hard Limit
		ORH 3B East & South Chatham Rise	Current stock status is unable to be determined.
		ORH 3B Puysegur	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		ORH 7A	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		ORH 7B	B_{2020} Unknown

Harvest strategy	
Harvest Control Rule for: ORH 3B Northwest Chatham Rise, ORH 3B East & South Chatham Rise & ORH 7A	Based on an F_{mid} of 4.5%.[63] This is increased slightly above the midpoint of the target range and decreased slightly below the midpoint. If a stock is below the target range, F is decreased more substantially, and the subsequent F is also rescaled to ensure that biomass returns to the target range.
Exploitation rate (F): All other stocks	4.5% of current biomass if in target range. F is reduced if biomass is below the target range

2021/22 Deemed value rates (per kg) and invoices

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2021/22 Actual
		100-110%	110%+	
ORH 1	$3.06	$3.40	$5.00	$0

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)				2021/22 Actual	
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+
ORH 2A ORH 2B ORH 3A ORH 3B ORH 7A	$4.50	$5.00	$6.00	$7.00	$8.00	$9.00	$10.00

Stock	Interim rate	100-110%	110%+	2021/22 Actual
ORH 7B	$2.88	$3.20	$5.00	$0

Environmental indicators and observer coverage			
Observer coverage			2021/22: 35% tows observed
Seabirds			2021/22: 7 observed captures
Marine mammals	NZ fur seal		2021/22: 0 observed captures

63 *F* refers to a fishing exploitation rate calculated using the harvest control rule

Benthic impacts (fishable area trawled)	2020/21: 5,427.4 km^2	1990 to 2019: 41,175km2
Economic indicators (calendar year)		
Quota value 2019	NZ $547.5 m	
Export earnings 2022	NZ $49.7m FOB (includes catch from outside the EEZ)	

Table 37: 2021/22 sub-area catch limits and estimated catch for orange roughy stocks (tonnes).

Stock	Sub-area	Agreed catch limit	Industry reported catch	2021/22 Catch (reported via ERS)
ORH 1	Area A	530	55	54
	Area B	530	447	431
	Area C	470	0	0
	Area D	470 (incl. 30 t bycatch limit in the MC Box)	88	86
ORH 2A	ORH 2A North	200	196	179
	ORH 2A South	288	310	292
ORH 3B	Northwest Chatham Rise	1,150	198	42
	East & South Chatham Rise	5,970	6,058	5,674
	Puysegur	347	372	292
	Sub-Antarctic	500	140	125

Pale ghost shark (GSP) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
GSP 1	569	1,208	1,150	0	0	58
GSP 5	148	477	454	0	0	23
GSP 7	33	176	176	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	GSP 1 & GSP 5	'Unlikely' (<40%) to be below soft limit
		GSP 7	Unknown
Hard Limit	10% B_0	GSP 1 & GSP 5	'Very Unlikely' (<10%) to be below hard limit
		GSP 7	Unknown

2021/22 Deemed value rates (per kg) and invoices			
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)	2021/22 Actual
		100%+	
GSP 1 GSP 5	$0.14	$0.15	$0 $0
GSP 7	$0.31	$0.34	$0

Economic indicators (calendar year)	
Quota value 2019	NZ $2.3 m
Export earnings 2022	NZ $0.21 m FOB (includes both pale and dark ghost shark, export statistics are not provided for individual ghost shark species)

Patagonian toothfish (PTO) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
PTO 1	8	50	49.5	0	0	0.5

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	PTO 1	Unknown
Soft Limit	20% B_0	PTO 1	Unknown
Hard Limit	10% B_0	PTO 1	Unknown

2021/22 Deemed value rates (per kg) and invoices				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2021/22 Actual
		100-110%	110%+	
PTO 1	$13.50	$15.00	$25.00	$0

Economic indicators (calendar year)	
Quota value 2019	Not available
Export earnings 2022	NZ $7.2 m[64] FOB

[64] It is likely that most of this fish was caught in other jurisdictions.

Prawn killer (PRK) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
PRK 1	0	25.7	24.5	0	0	1.2
PRK 2	0	3.7	3.5	0	0	0.2
PRK 3	0	1	1	0	0	0
PRK 4A	0	1	1	0	0	0
PRK 5	0	1	1	0	0	0
PRK 6A	0	1	1	0	0	0
PRK 6B	0	1	1	0	0	0
PRK 7	0	1	1	0	0	0
PRK 8	0	1	1	0	0	0
PRK 9	0	1	1	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices			
Stock	Interim rate	Annual differential rate for excess catch[65]	2021/22 Actual
PRK 1 PRK 2 PRK 3 PRK 4A PRK 5 PRK 6A PRK 6B PRK 7 PRK 8 PRK 9	$0.18	$0.20	$0

Economic indicators (calendar year)	
Quota value 2019	Not available
Export earnings 2022	Prawn killer does not feature as an individual species in export statistics; any exports are likely to be reported under the category 'Other Crustacea'.

[65] Differential deemed value rates do not apply to prawn killer stocks.

Redbait (RBT) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
RBT 1	3	20	19	0	0	1
RBT 3	1,714	2,305	2,190	0	0	115
RBT 7	20	2,991	2,841	0	0	150

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
RBT 1	$0.45	$0.50	$0.60	$0.70	$0.80	$0.90	$1.00	$0
RBT 7	$0.25	$0.30	$0.40	$0.50	$0.60	$0.70	$0.80	$0

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)			2021/22 Actual
		100-105%	105-150%	150%+	
RBT 3	$0.45	$0.50	0.60	$0.70	$2

Environmental indicators		
Benthic impacts (fishable area trawled)	2020/21: 0 km^2 (0%)	1990 to 2021: 446.3 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $ 11.2 m
Export earnings 2022	Redbait does not feature as an individual species in export statistics; any exports are likely to be reported under the category 'Finfish-Product State-Other'.

Ribaldo (RIB) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
RIB 3	91	394	394	0	0	0
RIB 4	274	357	357	0	0	0
RIB 5	27	52	52	0	0	0
RIB 6	116	231	231	0	0	0
RIB 7	295	330	330	0	0	0
RIB 8	0	1	1	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	RIB 3 & 4 (2014)	Unknown
		RIB 5 & 6 (2014)	Unknown
		RIB 7 & 8	Unknown
Soft Limit	20% B_0	RIB 3 & 4 (2014)	Unlikely (<40%) to be below soft limit
		RIB 5 & 6 (2014)	Unlikely (<40%) to be below soft limit
		RIB 7 & 8	Unknown
Hard Limit	10% B_0	RIB 3 & 4 (2014)	Unlikely (<40%) to be below hard limit
		RIB 5 & 6 (2014)	Unlikely (<40%) to be below hard limit
		RIB 7 & 8	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
RIB 3 RIB 5 RIB 4 RIB 8	$0.27	$0.30	$0.36	$0.42	$0.48	$0.54	$0.60	$0 $0 $0 $0
RIB 6 RIB 7	$0.72	$0.80	$0.96	$1.12	$1.28	$1.44	$1.60	$0 $0

Environmental indicators		
Benthic impacts (fishable area trawled)	2020/21: 0 km^2 (0%)	1990 to 2021: 104 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $3.3 m (includes RIB 1, RIB 2 & RIB 9 holdings)
Export earnings 2022	No export information specific to ribaldo is currently available. Any exports are likely to be reported under the category 'Finfish Product State Other'

Rubyfish (RBY) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
RBY1	48	318	300	1	2	15
RBY2	309	435	433	1	1	0
RBY3	<1	32	30	0	0	2
RBY4	21	19	18	0	0	1
RBY5	<1	0	0	0	0	0
RBY6	0	0	0	0	0	0
RBY7	1	33	33	0	0	0
RBY8	<1	6	6	0	0	0
RBY9	2	19	19	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
RBY 1 RBY 2 RBY 3 RBY 4 RBY 5 RBY 6 RBY 8 RBY 9	$0.25	$0.28	$0.34	$0.39	$0.45	$0.50	$0.56	$0 $0 $1 $0 $0 $0 $0 $1
Stock	Interim rate	100%+						2021/22 Actual
RBY 7	$0.38	$0.42						$0

Environmental indicators		
Observer coverage	2021/22: 23% of target tows observed	
Benthic impacts (fishable area trawled)	2020/21: 35.3 km^2 (2.25%)	1990 to 2019: 1,567 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $1.9 m
Export earnings 2022	Rubyfish does not feature as an individual species in export statistics; any exports are likely to be reported under the category 'Finfish Product State Other'

Scampi (SCI) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SCI 1	135	153	145	0	0	8
SCI 2	143	161	153	0	0	8
SCI 3	441	428	408	0	0	20
SCI 4A	118	126	120	0	0	6
SCI 5	<1	42	40	0	0	2
SCI 6A	324	321	306	0	0	15
SCI 6B	0	53	50	0	0	3
SCI 7	1.4	79	75	0	0	4
SCI 8	0	5	5	0	0	0
SCI 9	<1	37	35	0	0	2

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	SCI 1	B_{2019} estimated to be 'Very Likely' (>90%) to be at or above the target
		SCI 2	B_{2019} 'Very Likely' (>90%) to be at or above the target
		SCI 3	B_{2012} estimated to be 88% B_0. 'Very Likely' (>90%) to be at or above the target
		SCI 6A	B_{2020} 'Very Likely' (>90%) to be at or above the target
		All other stocks	Unknown
Soft Limit	20% B_0	SCI 1	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		SCI 2	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		SCI 3	B_{2021} Exceptionally Unlikely' (<1%) to be below the soft limit
		SCI 6A	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		All other stocks	Unknown
Hard Limit	10% B_0	SCI 1	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		SCI 2	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		SCI 3	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		SCI 6A	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		All other stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
All stocks	$ 46.17	$ 51.30	$ 61.56	$ 71.82	$ 82.08	$ 92.34	$ 102.60	$0

Environmental indicators and observer coverage			
Observer coverage			2021/22: 11% tows observed
Seabirds			2021/22: 9 observed captures
Marine mammals	NZ fur seal		2021/22: 0 observed captures
	NZ sea lion		2021/22: 0 observed captures
Benthic interactions (fishable area trawled)		2020/21: 4,610 km^2	1990 to 2019: 20,938km^2

Economic Indicators (calendar year)	
Quota value 2019	NZ $547.2 m
Export earnings 2022	NZ $68.68 m[66]

[66] Estimating the precise value of scampi exports is difficult as scampi export figures are not recorded by Statistics New Zealand using a unique species code. The figure includes exports reported as 'Shrimps & Prawns cold-water', 'Norway Lobster', 'Shrimps & Prawns other (frozen)' and 'Other Crustacea (frozen)

Sea perch (SPE) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SPE 3	255	1022	1000	11	11	-
SPE 4	384	956	910	0	0	46
SPE 5	19	38	36	1	1	-
SPE 6	5	9	9	0	0	-
SPE 7	60	98	82	8	8	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	SPE 3 – SPE 7	Unknown
Soft Limit	20% B_0	SPE 3 – SPE 7	Unknown
Hard Limit	10% B_0	SPE 3 – SPE 7	Unknown

2021/22 Deemed value rates (per kg) and invoices								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
SPE 3 SPE 7	$0.50	$0.55	$0.66	$0.77	$0.88	$0.99	$1.10	$0 $0
SPE 4 SPE 5 SPE 6	$0.36	$0.40	$0.48	$0.56	$0.64	$0.72	$0.80	$0 $2 $0

Environmental indicators		
Benthic interactions (fishable area trawled)	2020/21: 104 km^2	1990 to 2021: 4,991 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $7.6 m (includes SPE 1 & SPE 2 holdings)
Export earnings 2022	NZ $0.77 m FOB (includes all stocks)

Silver warehou (SWA) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SWA 1	321	3,003	3,000	2	1	0
SWA 3	3,987	3,646	3,610	0	0	36
SWA 4	4,275	4,545	4,500	0	0	45

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks unknown apart from SWA 3 and SWA 4	SWA 3 and 4 (2020) Very Unlikely (<10%) to be below

2021/22 Deemed value rates (per kg) and invoices					
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)			2021/22 Actual
		100-110%	110-130%	130%+	
SWA 1	$0.50	$1.22	$1.74	$3.00	$0
SWA 3 SWA 4	$0.63	$0.70	$0.70	$2.00	$385,880 $4

Environmental indicators and observer coverage		
Observer coverage		2021/22: 58% observed
Seabirds		2021/22: 3 observed captures
NZ fur seal		2021/22: 0 observed captures
Benthic interactions (fishable area trawled)	2020/21: 767 km^2 (2.91%)	1990 to 2021: 26,316 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $195.7 m
Export earnings 2022	NZ $22.4 m FOB

Southern blue whiting (SBW) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)							
Stock	2021/22 landings[67]	2022/23 landings[68]	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SBW 1	22	12	100	98	0	0	2
SBW 6A	173	247	1,640	1,640	0	0	0
SBW 6B	801	125	2,888	2,830	0	0	58
SBW 6I	19,513	22,985	40,000	39,200	0	0	800
SBW 6R	32	40	5,500	5,500	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	SBW 1	Unknown
		SBW 6A	Unknown
		SBW 6B	B_{2017} Likely >60% to be below target *F* [69]
		SBW 6I	B_{2020} estimated to be 56% B_0. 'Very Likely' (>90%) to be at or above the target
		SBW 6R	Unknown
Soft limit	20% B_0	SBW 1	Unknown
		SBW 6A	Unknown
		SBW 6B	Unknown
		SBW 6I	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		SBW 6R	Unknown
Hard limit	10% B_0	SBW 1	Unknown
		SBW 6A	Unknown
		SBW 6B	Unknown
		SBW 6I	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		SBW 6R	Unknown

2021/22 Deemed value rates (per kg) and invoices							
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)					2021/22 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
SBW 1	$0.41	$0.46	$0.55	$0.64	$0.74	$0.83	$0.92	$0

Stock	Annual differential rate for excess catch (% of ACE)			2021/22 Actual
	100-102%	102-150%	150%+	
SBW 6A SBW 6B SBW 6I SBW 6R	$0.46	$0.60	$0.92	$0

Environmental indicators and observer coverage		
Observer coverage		2021/22: 100% tows observed
Seabirds		2021/22: 2 observed captures

[67] 2021/22 landings from the 1 April 2021 – 30 March 2022 fishing year

[68] 2022/23 landings from the 1 April 2022 – 30 March 2023 fishing year

[69] *F* refers to a fishing mortality rate calculated using the harvest control rule.

Protected fish			2021/22: 1 observed capture
Marine mammals	NZ fur seals		2021/22: 1 observed capture
	NZ sea lion		2021/22: 1 observed capture
Benthic interactions (fishable area trawled)		2020/21: 547 km^2	1990 to 2019: 23,348 km^2
Economic indicators (calendar year)			
Quota value 2019		NZ $205.1 m	
Export earnings 2022		NZ $20.1 m FOB	

Spiny dogfish (SPD) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SPD 4	1,140	1,662	1,626	10	10	20
SPD 5	983	3,753	3,700	8	8	37
Reference points and current status (as per Harvest Strategy Standard defaults)						
Target	40% B_0	SPD 4 & SPD 5	Unknown			
Soft Limit	20% B_0	SPD 4 & SPD 5	Unknown			
Hard Limit	10% B_0	SPD 4 & SPD 5	Unknown			
2021/22 Deemed value rates (per kg) and invoices						
Stock	Interim	Annual rate for catch in excess of ACE[70]			2021/22 Actual	
SPD 4 SPD 5	$0.09	$0.10			$0 $0	
Environmental indicators						
Benthic interactions (fishable area trawled)		2020/21: 0 km^2 (0%)			1990 to 2021: 1,418 km^2	
Economic indicators (calendar year)						
Quota value 2019		NZ $12.7 m (includes SPD 1, SPD 3, SPD 7 & SPD 8 holdings)				
Export earnings 2022		NZ $0.11 m FOB (includes all SPD stocks)				

[70] Differential deemed value rates do not apply to spiny dogfish stocks.

Squid (SQU) Tier 1

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
SQU 1J	<1	5,030	5,000	10	10	10
SQU 1T	20,064	44,741	44,741	0	0	0
SQU 6T	12,536	-	32,369	-	-	-

Reference points and current status

Arrow squid live for one year, spawn once then die. No estimates of current and reference biomass are available and there is no proven method available at this time to estimate yields from the squid fishery before the fishing season begins.

2021/22 Deemed value rates (per kg) and invoices

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)			2021/22 Actual
		100-105%	105-130%	130%+	
SQU 6T SQU 1T SQU 1J	$0.79	$0.88	$1.23	$1.76	$0 $2 $0

Environmental indicators and observer coverage[71]

Observer coverage			2021/22: 92% of target tows observed
Seabirds			2021/22: 77 observed captures
Protected fish			2021/22: 1 observed capture
Marine mammals	NZ fur seals		2021/22: 15 observed captures
	NZ sea lions		2021/22: 1 observed capture
Benthic interactions (fishable area trawled)		2020/21: 4,103 km^2	1990 to 2019: 41,848 km^2

Economic indicators (calendar years)

Quota value 2019	NZ $149.4 m
Export earnings 2022	NZ $150.83 m FOB

[71] Trawl vessels greater than 28 m in length.

White warehou (WWA) Tier 2

2021/22 Landings, catch limits and allowances (tonnes)						
Stock	2021/22 Landings	TAC	TACC	Recreational	Customary	Other mortality caused by fishing
WWA 1	<1	4	4	-	-	-
WWA 2	2	75	73	1	1	-
WWA 3	203	585	583	1	1	-
WWA 4	47	332	330	1	1	-
WWA 5B	437	2,621	2,617	2	2	0
WWA 7	9	129	127	1	1	-
WWA 8	0	1	1	-	-	-
WWA 9	<1	1	1	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks	Unknown

2021/22 Deemed value rates (per kg) and invoices				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2021/22 Actual
		100%+		
WWA 1 WWA 2 WWA 8 WWA 9	$0.49	$0.54		$0 $0 $0 $5
Stock	Interim rate	100-110%	110%+	2021/22 Actual
WWA 3 WWA 4 WWA 5B WWA 7	$0.93	$1.03	$2.00	$0 $0 $0 $0

Environmental indicators		
Observer coverage	2021/22: 100% of target tows observed	
Benthic interactions (fishable area trawled)	2020/21: 53 km^2 (1.42%)	1990 to 2021: 3,730 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ $21.6 m
Export earnings 2022	NZ $3.81 m FOB[72]

[72] Information in export statistics for "Warehou, Other" is warehou other than blue or silver and is therefore assumed to be white warehou.

Appendix II: Decisions on sustainability measures for the 2021/22 fishing year

TAC reviews

Species	Stock	Pre-1 Oct 2021 TAC (t)	Pre-1 Oct 2021 TACC (t)	1-Oct-2021 TAC (t)	1 Oct 2021 TACC (t)
Hoki	HOK 1	116,190	115,000	111,140	110,000
Ling	LIN 5	4,834	4,735	5,314	5,208
Gemfish	SKI 3	606	599	848	839
Gemfish	SKI 7	606	599	848	839
Black cardinalfish	CDL 1	1320	1200	176	160
Redbait	RBT 7	2,991	2,841	421	400
Southern blue whiting[73]	SBW 6B	2,888	2,830	2,309	2,264

Deemed value rate reviews

Previous						New			
Species	Stock	Interim $/kg	Annual $/kg	Annual at max excess $/kg	Differential	Interim $/kg	Annual $/kg	Annual at max excess $/kg	Differential
Redbait	RBT 7	0.45	0.50	0.90	-	0.25	0.30	0.70	-
Gemfish	SKI 7	0.44	0.49	1.44	Special	0.65	0.72	1.44	Standard
Black cardinal-fish	CDL 1	0.27	0.30	N/A	None	0.54	0.60	0.69	Special
Alfonsino	BYX 2	1.98	2.20	4.40	Special	2.16	2.40	4.80	Special
Kingfish	KIN 8	4.00	4.45	8.90	Standard	3.04	3.30	5.00	Special

[73] From the 1 April 2021 – 30 March 2022 fishing year

Appendix III: MSC certified stocks

Important deepwater fisheries are certified by the internationally recognised Marine Stewardship Council (MSC) as meeting high sustainability and environmental standards. New Zealand certified deepwater fisheries include hoki, hake, ling, southern blue whiting, and orange roughy. Certification gives New Zealanders:

- assurance that these fisheries are being managed sustainably
- access to important international markets for certain species – others can trust our fishing practices.

In tables 38-43 are some (but not all) of the required statistics for the renewal of the MSC certification.

Table 38: Tows observed, and percentage of tows observed in the 2021/22 fishing year within the relevant stocks of HAK, HOK, LIN and SBW target trawl fisheries

Fishery	QMA	2021/22		
		Observed tows	Total tows	% tows observed
Hake	HAK1	90	85	100%
	HAK4	-	-	-
	HAK7	42	50	84%
Hoki	HOK1	3,865	9,129	42.3%
Ling	LIN3	-	2	0%
	LIN4	-	-	-
	LIN5	221	698	31.7%
	LIN6	208	332	62.7%
	LIN7	16	386	4.1%
Southern blue whiting	SBW6B	3	3	100%
	SBW6I	503	502	100%

There are more observed tows than total fisher-reported tows in SBW 6I and HAK 1 due to recording differences between observers and vessels – on some occasions when fishing gear is deployed but does not reach target fishing depth, this is recorded as a fishing event by observers but not by fishers.

Table 39: Number of observed hooks and percentage of hooks observed in the 2021/22 fishing year for ling bottom longline fisheries (LIN 3- 7).

Hooks set	Observed	
	Hooks observed	Percentage of hooks observed
22,471,403	4,697,419	20.90%

Table 40: Industry-reported ETP[74] benthic catch in the 2021/22 fishing year for HOK, HAK, LIN and SBW trawl fishery.

ETP benthic catch	2021/22			
	HOK	HAK	LIN	SBW
Coral catch (kg)	127	-	-	-
Sponges catch (kg)	26,404	1	479	1
Bryozoans catch (kg)	235	-	-	-
Total number of tows	9,129	135	1,418	510
Number of observed tows	3,865	132	445	506
Number of tows with coral	101	-	-	-
Percentage of fisher-reported tows with coral	1.11%	-	-	-

[74] Endangered, threatened, and protected species

ETP benthic catch	2021/22			
	HOK	HAK	LIN	SBW
Number of tows with sponges	563	1	55	1
Percentage of fisher-reported tows with sponges	6.16%	0.74%	3.88%	0.20%
Number of tows with bryozoans	187	-	-	-
Percentage of fisher-reported tows with bryozoans	2.05%	-	-	-
Total catch rate (kg/tow) for corals, sponges, and bryozoans	2.9	0	0.3	0

Table 41: Total estimated ling catches (kg) for ling target fisheries in stocks LIN3-7 (including LIN6B) for the 2021/22 fishing year.

QMA	Trawl[75]	BLL	Other methods[76]	Total
LIN 3	604,390	240,245	173,480	1,019,075
LIN 4	386,848	1,744,675	192,422	2,324,182
LIN 5	4,306,471	505,438	357	4,822,433
LIN 6[77]	2,836,602	970,386	0	3,807,058
LIN 7	826,148	1,478,676	193,351	2,916,807
Total	9,388,073	4,939,419	557,609	14,889,555

Table 42: Fisher-reported incidental capture of non-fish species (excl. benthic) in the HAK, HOK, LIN and SBW trawl fisheries during the 2021/22 fishing year (figures in brackets indicate BLL captures).

Target fishery	2021/22			
	Seabirds	New Zealand sea lion	New Zealand fur seal	Dolphins/whales
HAK	2	-	1	-
HOK	152	-	116	4
LIN (BLL)	153 (138)	-	6	-
SBW	3	1	1	-

Table 43: ETP shark captures in the HAK, HOK, LIN and SBW trawl fisheries in the 2021/22 fishing year.

Fishery	2021/22	
	Basking shark (BSK)	White pointer shark (WPS)
HAK	-	-
HOK	1	-
LIN	1	-
SBW	-	1

[75] Includes bottom, midwater, and precision trawl methods

[76] Includes potting, setnet, and dahn line

[77] Includes LIN 6B catch

Appendix IV: Cost recovery levies for deepwater stocks for the 2021/22 financial year

Table 44: Cost recovery levies for deepwater stocks 2021/22

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2021/22 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
BAR 4	10,281	2,994	3,604	662	7,350	-	-355	193	25,097
BAR 5	27,364	7,969	6,983	1,277	12,797	1,395	-15,716	782	42,851
BAR 7	33,714	9,818	50,765	9,485	1,345	1,484	-595	4,398	96,580
BYX 1	8,910	2,595	54	-	283	454	3,289	-	15,586
BYX 10	246	72	1	-	-	-	-22	-	297
BYX 2	49736	14,484	21,551	2545	1582	2536	-191	-372	88,607
BYX 3	25,255	7,355	14,979	1772	547	-	1,122	-123	49,985
BYX 7	2,391	696	14	-	76	-	-186	-	2,992
BYX 8	528	154	3	-	17	-	-46	-	655
CDL 1	14,013	4,081	85	-	-	-	-2719	-	15,460
CDL 10	-	-	-	-	-	-	-	-	-
CDL 2	5,308	1,546	2301	-	-	-	-994	-104	8,645
CDL 3	1,749	509	11	-	-	-	-443	-	1,825
CDL 4	513	150	3	-	-	-	-150	-	516
CDL 5	227	66	1	-	-	-	-50	-	245
CDL 6	12	3	-	-	-	-	-2	-	13
CDL 7	352	103	2	-	-	-	-89	-	368
CDL 8	-	-	-	-	-	-	-	-	-
CDL 9	46	13	-	-	-	-	-9	-	51
CHC 1	25	7	-	-	-	-	-22	-	11
CHC 10	-	-	-	-	-	-	-	-	-
CHC 2	25	7	-	-	-	-	-22	-	11
CHC 3	10	3	-	-	-	-	-9	-	4
CHC 4	10	3	-	-	-	-	-9	-	4
CHC 5	10	3	-	-	-	-	-9	-	4
CHC 6	10	3	-	-	-	-	-9	-	4
CHC 7	10	3	-	-	-	-	-9	-	4
CHC 8	10	3	-	-	-	-	-9	-	4
CHC 9	10	3	-	-	-	-	-9	-	4
EMA 3	2,062	601	12	-	-	38	-872	-22	1,818
EMA 7	13,245	3,857	19,945	3,726	-	243	5,070	1,102	43,404
FRO 3	1,655	482	10	-	-	-	-404	-	1,743
FRO 4	501	146	3	-	-	-	-62	-	587
FRO 5	461	134	3	-	-	-	-309	-	290
FRO 6	68	20	-	-	-	-	-25	-	64
FRO 7	23,959	69,78	145	-	-	-	-1,890	-	29,192
FRO 8	4,027	1,173	24	-	-	-	2,598	-	7,822

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2021/22 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
FRO 9	1,593	464	10	-	-	3,676	-	-	5,743
GSC 1	3	1	-	-	-	-	-2	-	1
GSC 10	-	-	-	-	-	-	-	-	-
GSC 3	35	10	-	-	-	-	-31	-	15
GSC 5	48	14	-	-	-	-	-42	-	20
GSC 6A	56	16	-	-	-	-	-72	-	-
GSC 6B	598	174	4	-	-	-	-525	-	250
GSH 4	2,140	623	13	-	-	40	3,802	-21	6,596
GSH 5	518	151	3	-	-	-	2,155	-	2,857
GSH 6	519	151	3	-	-	-	2,022	-	2,695
GSP 1	5,226	1,522	32	-	-	96	3,586	-66	10,395
GSP 5	1,905	555	12	-	-	-	5,137	-	7,609
GSP 7	782	228	5	-	-	14	-394	-10	621
HAK 1	71,793	20,908	43,057	7,991	217,186	5,337	-8,920	24	345,604
HAK 10	149	43	1	-	-	-	-23	-	170
HAK 4	28,815	8,392	10,098	1,863	321,029	673	-4,340	12	366,542
HAK 7	31,243	9,151	10,372	1,910	350,731	734	-1,387	-195	402,739
HOK 1	960,019	279,583	1,022,968	190,716	3,217,817	71,371	-347,272	19,839	5,415,041
HOK 10	101	29	1	-	-	-	-23	-	108
JMA 3	21,445	6,245	12,857	2,383	1,215	1,488	-41,762	-3871	-
JMA 7	78,250	22,789	117,838	22,005	221,684	1,828	-75,520	10,696	399,570
KIC 1	25	7	-	-	-	-	-22	-	11
KIC 10	-	-	-	-	-	-	-	-	-
KIC 2	25	7	-	-	-	-	-22	-	11
KIC 3	25	7	-	-	-	-	-22	-	11
KIC 4	8	2	-	-	-	-	-10	-	-
KIC 5	25	7	-	-	-	-	-22	-	11
KIC 6	25	7	-	-	-	-	-22	-	11
KIC 7	25	7	-	-	-	-	-22	-	11
KIC 8	25	7	-	-	-	-	-22	-	11
KIC 9	25	7	-	-	-	-	-22	-	11
LDO 1	3,073	895	19	-	-	-	-391	-	3,596
LDO 10	19	6	-	-	-	-	-2	-	22
LDO 3	10,514	3,062	64	-	-	-	-1,404	-	14,814
LIN 3	80,016	23,303	50,769	9,437	365,421	7,138	-5,382	-475	530,227
LIN 4	150,419	43,806	95,454	17,731	378,892	13,418	-10,937	-969	687,815
LIN 5	154,141	44,890	83,106	15,404	100,965	22,375	-11,894	-1,165	407,821
LIN 6	280,367	81,650	151,162	28,029	113,707	40,697	-22,209	-2,247	671,156
LIN 7	113,267	32,986	69,562	12,917	298,915	8,021	-7,904	-849	526,915
OEO 1	63,084	18,372	9,662	1,109	16,480	1,060	-77,447	-787	31,531
OEO 10	90	26	1	-	-	-	-23	-	94
OEO 3A	30,150	8,780	17,880	2,116	157,047	506	-7,863	-583	208,034

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2021/22 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
OEO 4	32,400	9,436	19,213	2,272	202,377	2,196	-8,842	-522	258,530
OEO 6	53,999	15,726	8,266	953	30,254	3,929	-17,745	-1,890	93,492
ORH 1	45,034	13,115	19,514	2,303	4,475	3,276	-3720	-403	83,596
ORH 10	313	91	2	-	-	-	-24	-	382
ORH 2A	16,707	4,866	7,242	851	884,696	1,215	1,414	-141	914,024
ORH 2B	2042	595	882	102	117,555	149	-188	-17	121,118
ORH 3A	5,055	1,472	2,191	258	314,375	343	-522	-51	323,120
ORH 3B	242,833	70,719	179,727	21,332	227,478	17,667	-32,281	-2,269	725,205
ORH 7A	62,216	18,119	56,840	6,754	218,483	-	-15,107	-2,475	344,831
ORH 7B	26	8	-	-	1	-	-36	-	0
PRK 1	1,057	308	6	-	-	-	-58	-	1,313
PRK 10	-	-	-	-	-	-	-	-	-
PRK 2	151	44	1	-	-	-	-8	-	188
PRK 3	43	13	-	-	-	-	-2	-	54
PRK 4A	43	13	-	-	-	-	-2	-	54
PRK 5	43	13	-	-	-	-	-2	-	54
PRK 6A	43	13	-	-	-	-	-2	-	54
PRK 6B	43	13	-	-	-	-	-2	-	54
PRK 7	7	2	-	-	-	-	-2	-	6
PRK 8	43	13	-	-	-	-	-2	-	54
PRK 9	43	13	-	-	-	-	-2	-	54
PTO 1	6,245	1,819	38	-	-	-	-110	-	7,992
RBT 1	93	27	1	-	-	-	-9	-	112
RBT 10	-	-	-	-	-	-	-	-	-
RBT 3	26,243	7,643	159	-	-	-	-17,471	57	16,630
RBT 7	13,979	4,071	85	-	-	-	-1,328	-	16,807
RBY 1	5,599	1,631	34	-	-	-	-700	-	6,564
RBY 10	-	-	-	-	-	-	-	-	-
RBY 2	4,084	1,189	25	-	-	-	-1,068	-	4,230
RBY 3	23	7	-	-	-	-	-29	-	-
RBY 4	70	20	-	-	-	-	-40	-	51
RBY 5	2	-	-	-	-	-	-	-	2
RBY 6	19	6	-	-	-	-	-	-	25
RBY 7	459	134	3	-	-	-	-74	-	520
RBY 8	86	25	1	-	-	-	-14	-	98
RBY 9	264	77	2	-	-	-	-43	-	300
RIB 3	7,524	2,191	46	-	-	-	-903	-	8,858
RIB 4	4,681	1,363	28	-	48	-	-811	-	5,309
RIB 5	327	95	2	-	-	-	-118	-	307
RIB 6	1,681	490	10	-	-	-	-521	-	1,660
RIB 7	2,489	725	15	-	-	-	-758	-	2,471
RIB 8	9	3	-	-	-	-	-2	-	10

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2021/22 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
SBW 1	371	108	2	-	3	-	-218	-	266
SBW 6A	8,690	2,531	53	-	70	589	-3,739	129	8,324
SBW 6B	19,995	5,823	18,927	4,993	58,410	1,455	137	905	110,644
SBW 6I	311,585	90,742	294,982	77,854	25,792	22,668	180,989	11,270	1,015,883
SBW 6R	38,860	11,317	235	-	315	2,634	4,637	862	58,860
SCI 1	28,381	8,265	31,179	8,236	183,615	477	765	-1691	259,227
SCI 10	-	-	-	-	-	-	-	-	-
SCI 2	31,079	9,051	34,151	9,021	224,976	522	899	-2,156	300,930
SCI 3	92,328	26,888	101,441	26,799	21,233	-	2,253	-4771	266,170
SCI 4A	24,500	7,135	26,920	7,111	1,004	1,661	730	-1,691	67,370
SCI 5	6,980	2,033	42	-	289	-	-172	-	9,172
SCI 6A	58,886	17,149	64,695	17,088	2,419	11,270	1,711	-4,252	146,195
SCI 6B	8,725	2,541	53	-	359	190	-215	-3	11,649
SCI 7	5,678	1,653	34	-	242	-	-322	-	7,286
SCI 8	872	254	5	-	35	-	-21	-	1,145
SCI 9	6,107	1,779	37	-	254	-	-150	-	8,027
SKI 3	9,802	2,855	59	-	2,779	165	-696	-17	14,946
SKI 7	10,194	2,969	62	-	2,779	165	-689	-17	15,468
SPD 4	1,928	562	12	-	34	32	-1,783	-32	753
SPD 5	7,936	2,311	48	-	1,191	376	-1,953	6,806	16,716
SPE 3	10,333	3,009	63	-	36,250	174	16,007	-58	65,777
SPE 4	8,492	2,473	51	-	-	143	5,652	-52	16,759
SPE 5	246	72	1	-	803	-	-85	-	1,037
SPE 6	78	23	-	-	-	-	-20	-	81
SPE 7	744	217	5	-	1,173	12	-198	-5	1,948
SQU 10T	144	42	1	-	9,427	-	-23	-	9,591
SQU 1J	71,916	435	20,944	-	1,253	-	-14,988	-	79,561
SQU 1T	790,180	230,122	818,734	216,210	31,535	57,487	434,905	55,617	2,634,790
SQU 6T	528,638	153,954	547,748	144,644	29,325	128,125	316,500	44,472	1,893,406
SWA 1	31,594	9,201	10,426	1,920	1,261	531	-39,414	-116	15,403
SWA 10	105	30	1	-	-	-	-15	-	121
SWA 3	41,374	12,049	14,508	-	68,080	-	-5,566	-	130,444
SWA 4	44,249	12,886	26,532	4,927	64,295	3,219	-5,681	416	150,842
WWA 1	71	21	-	-	1	-	-9	-	83
WWA 10	-	-	-	-	-	-	-	-	-
WWA 2	1,780	518	11	-	14	30	-179	-4	2,170
WWA 3	13,336	3,884	81	-	108	224	3,397	-34	20,996
WWA 4	7,889	2,297	48	-	64	133	4,006	-19	14,418
WWA 5B	66,618	19,401	17,002	3,111	540	4,847	-1,529	-72	109,917
WWA 7	2,721	792	16	-	22	45	-314	-7	3,276
WWA 8	19	6	-	-	-	-	-2	-	22
WWA 9	19	6	-	-	-	-	-	-	25

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2021/22 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
Grand total	5,146,790	1,471,451	4,138,894	889,817	8,554,778	450,571	171,065	122,956	20,849,497

Table 45: Levies by stock as a percent of landed value for the 2021/22 fishing year[78]

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
BAR 4	25,097	3,859,890	$0.27	1,042,170	2.4
BAR 5	42,851	6,999,394	$0.26	1,819,842	2.4
BAR 7	96,580	2,429,053	$0.24	582,973	16.6
BYX 1	15,586	10,267	$2.35	24,127	64.6
BYX 2	88,607	1,631,219	$2.50	4,078,048	2.2
BYX 7	2,992	5,287	$2.35	12,424	24.1
BYX 8	655	37	$2.09	77	847.0
CDL 1	15,460	1,799	$0.93	1,673	924.0
CDL 2	8,645	65,652	$0.96	63,026	13.7
CDL 3	1,825	115,583	$0.71	82,064	2.2
CDL 4	516	7,531	$0.62	4,669	11.1
CDL 5	245	18,180	$0.55	9,999	2.5
CDL 7	368	1,077	$0.72	775	47.5
EMA 3	1,818	10,113	$0.42	4,247	42.8
EMA 7	43,404	3,766,281	$0.31	1,167,547	3.7
FRO 3	1,743	10,226	$1.64	16,771	10.4
FRO 4	587	29,563	$0.32	9,460	6.2
FRO 5	290	27,129	$0.27	7,325	4.0
FRO 7	29,192	1,859,066	$0.90	1,673,159	1.7
FRO 8	7,822	493,790	$0.35	172,827	4.5
FRO 9	5,743	109,674	$0.32	35,096	16.4
GSC 6B	250	950	$0.20	190	131.6
GSH 4	6,596	128,409	$0.46	59,068	11.2
GSH 5	2,857	50,904	$0.38	19,344	14.8
GSH 6	2,695	41,110	$0.43	17,677	15.2
GSP 1	10,395	569,487	$0.36	205,015	5.1
GSP 5	7,609	148,030	$0.33	48,850	15.6
GSP 7	621	32,882	$0.35	11,509	5.4
HAK 1	345,604	1,692,086	$1.54	2,605,812	13.3
HAK 4	366,542	138,193	$1.27	175,505	208.8

[78] Fish stock not shown if total levies collected or landed value was less than $100.

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
HAK 7	402,739	1,330,548	$1.10	1,463,603	27.5
HOK 1	5,415,041	91,770,615	$0.66	60,568,606	8.9
JMA 7	399,570	27,779,770	$0.19	5,278,156	7.6
LDO 1	3,596	132,948	$1.45	192,775	1.9
LDO 3	14,814	344,068	$1.36	467,932	3.2
LIN 3	530,227	1,197,378	$3.08	3,687,924	14.4
LIN 4	687,815	2,572,333	$2.84	7,305,426	9.4
LIN 5	407,821	4,963,833	$2.58	12,806,689	3.2
LIN 6	671,156	3,937,316	$2.61	10,276,395	6.5
LIN 7	526,915	3,330,833	$2.65	8,826,707	6.0
OEO 1	31,531	78,960	$2.00	157,920	20.0
OEO 3A	208,034	1,264,813	$0.71	898,017	23.2
OEO 4	258,530	835,576	$0.71	593,259	43.6
OEO 6	93,492	631,279	$0.71	448,208	20.9
ORH 1	83,596	597,758	$2.55	1,524,283	5.5
ORH 2A	914,024	511,347	$2.71	1,385,750	66.0
ORH 2B	121,118	60,602	$2.70	163,625	74.0
ORH 3A	323,120	131,049	$2.26	296,171	109.1
ORH 3B	725,205	6,780,909	$2.42	16,409,800	4.4
ORH 7A	344,831	2,193,285	$2.40	5,263,884	6.6
PRK 1	1,313	1,676	$3.42	5,732	22.9
PRK 2	188	85	$3.42	291	64.7
PTO 1	7,992	8,572	$10.00	85,720	9.3
RBT 1	112	2,938	$0.39	1,146	9.8
RBT 3	16,630	1,793,696	$0.95	1,704,011	1.0
RBT 7	16,807	20,809	$0.39	8,116	207.1
RBY 1	6,564	49,144	$1.48	72,733	9.0
RBY 2	4,230	309,458	$0.75	232,094	1.8
RBY 7	520	924	$1.10	1,016	51.2
RBY 9	300	1,565	$1.10	1,722	17.4
RIB 3	8,858	91,628	$1.51	138,358	6.4
RIB 4	5,309	300,562	$1.04	312,584	1.7
RIB 5	307	26,822	$0.50	13,411	2.3
RIB 6	1,660	123,040	$0.58	71,363	2.3
RIB 7	2,471	302,134	$0.60	181,280	1.4

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
SBW 1	266	13,312	$0.30	3,994	6.7
SBW 6A	8,324	174,919	$0.42	73,466	11.3
SBW 6B	110,644	125,456	$0.56	70,255	157.5
SBW 6I	1,015,883	23,970,809	$0.63	15,101,610	6.7
SBW 6R	58,860	39,601	$0.56	22,177	265.4
SCI 1	259,227	143,366	$17.04	2,442,957	10.6
SCI 2	300,930	154,741	$16.10	2,491,330	12.1
SCI 3	266,170	469,250	$17.94	8,418,345	3.2
SCI 4A	67,370	126,821	$16.18	2,051,964	3.3
SCI 5	9,172	68	$13.83	940	975.3
SCI 6A	146,195	367,082	$15.25	5,598,001	2.6
SCI 7	7,286	1,426	$6.00	8,556	85.2
SCI 9	8,027	24	$13.83	332	2,418.4
SKI 3	14,946	884,288	$1.30	1,149,574	1.3
SKI 7	15,468	780,582	$1.35	1,053,786	1.5
SPD 4	753	1,219,826	$0.09	109,784	0.7
SPD 5	16,716	1,002,437	$0.17	170,414	9.8
SPE 3	65,777	262,698	$0.82	215,412	30.5
SPE 7	1,948	61,346	$0.72	44,169	4.4
SQU 10T	9,591	118	$1.14	135	7,102.1
SQU 1J	79,561	12	$1.14	13	601,641.0
SQU 1T	2,634,790	20,132,669	$1.40	28,185,736	9.3
SQU 6T	1,893,406	12,568,384	$1.29	16,213,216	11.7
SWA 1	15,403	320,392	$0.83	265,926	5.8
SWA 3	130,444	3,957,246	$0.91	3,601,094	3.6
SWA 4	150,842	4,301,826	$0.78	3,355,425	4.5
WWA 2	2,170	2,762	$1.92	5,303	40.9
WWA 3	20,996	203,446	$1.81	368,237	5.7
WWA 4	14,418	47,260	$1.89	89,321	16.1
WWA 5B	109,917	437,996	$2.02	884,752	12.4
WWA 7	3,276	8,074	$1.70	13,726	23.9