Fisheries New Zealand
Tini a Tangaroa

Annual Review Report for Deepwater Fisheries 2020/21

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Contents

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 2020/21. It also reports on the annual performance of New Zealand's deepwater fisheries during the 2020/21 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 2021 calendar year exceeded $672 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).

[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.

Table 1: Categorisation of commercial deepwater species by Tier.

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

1.2 NATIONAL DEEPWATER PLAN WIDER CONTEXT AND STRUCTURE

The management of New Zealand's deepwater fisheries encompasses all deepwater target fish stocks, bycatch species and associated environmental impacts. 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 a hierarchy of fundamental legislation including the Fisheries Act 1996 (the Act) and Te Tiriti o Waitangi obligations to Māori. The National Deepwater Plan 2019 consists of three parts (Figure 1).

[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.

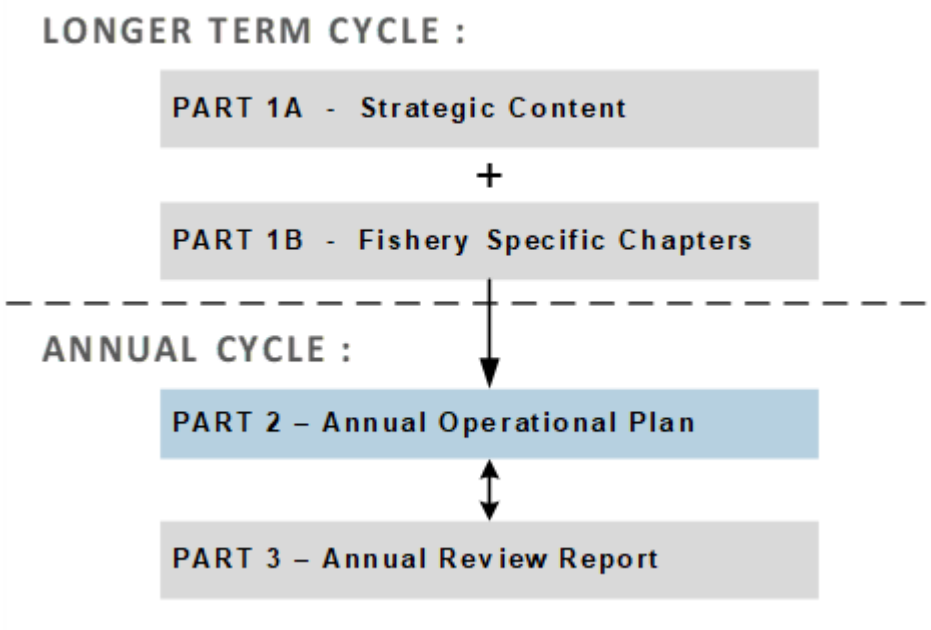

Figure 1: The three components of the National Deepwater Plan.

Part 1 establishes the enabling framework for the management of New Zealand's deepwater fisheries. Part 1 is further divided into two parts, Part 1A and Part 1B.

Part 1A of the National Deepwater Plan 2019 was approved by the Minister of Fisheries under section 11A of the Fisheries Act 1996. This means that it must be considered each time the Minister for Oceans and Fisheries makes decisions or recommendations concerning regulation or control of fishing or any sustainability measures relating to the stocks managed through this plan.

Part 1A details the overall strategic direction for New Zealand's deepwater fisheries. Specifically, it describes;

1. The strategic context and operating environment that fisheries plans are part of, including legislative requirements and government priorities;
2. Management objectives that will apply across all deepwater fisheries (Figure 2); and
3. How the fisheries plan will be implemented, including the approach to engaging with stakeholders.

Part 1A was updated in 2019 to reflect changes and developments since it was first published by the Ministry of Fisheries. The 2019 iteration of Part 1A contained revised management objectives (see Figure 2 below), structure and content, however the high-level structure of the National Deepwater Plan 2019, including the fisheries specific chapters, and annual planning and review processes (as described in this section) remained the same.

Use Outcome: Fisheries resources are used in a manner that provides greatest overall economic, social and cultural benefit.	
1	Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations
2	Ensure excellence in the management of New Zealand's deepwater and middle-depth fisheries so they are consistent with, or exceed, international best practice
3	Ensure effective management of the deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information
4	Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points

Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use	
5	Ensure that maintenance of biological diversity of the aquatic environment and protection of habitats of particular significance for fisheries management are explicitly considered in management
6	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on associated or dependent and incidentally caught fish species
7	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the benthic habitat
8	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the long-term viability of endangered, threatened and protected species populations
Governance Outcome: Sound governance arrangements that are well specified, transparent, and which support cost-effective and accountable decision-making	
9	Ensure the management of New Zealand's deepwater and middle-depth fisheries meets the Crown's obligations to Māori
10	Ensure there is consistency and certainty of management measures and processes in the deepwater and middle-depth fisheries
11	Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed

Figure 2: Outcomes and Management Objectives of the National Deepwater Plan 2019

Part 1B comprises the fishery-specific chapters of the National Deepwater Plan 2019, which include Fisheries Plans for each fishery. These Fisheries Plans provide management objectives at the fishery level, in line with the management objectives outlined in Part 1A. Fisheries Plans describe the operational objectives for target fisheries and the key bycatch species, and how performance against objectives will be assessed at the fishery level.

To date, fishery-specific chapters have been completed for the hoki, orange roughy, oreo, hake, ling, jack mackerel, and southern blue whiting fisheries.[4] Under the National Deepwater Plan 2019, fishery-specific chapters previously completed will be updated. Following input and participation from tangata whenua and public consultation, Fisheries Plans will be provided to the Minister for Oceans and Fisheries for approval.

Part 2 of the National Deepwater Plan 2019 consists of an Annual Operational Plan (AOP), which details the management priorities and actions that will be implemented on an annual basis for deepwater fisheries for each financial year. It also includes the required services, delivery mechanisms, and service prioritisation factors that must be considered each financial year.

The AOP is primarily an internal planning and prioritisation document so will not be approved by the Minister for Oceans and Fisheries under section 11A. However, advice will be provided to the Minister regarding any statutory interventions required to regulate deepwater fisheries.

Part 3 of the National Deepwater Plan 2019 is this Annual Review Report which is split into three parts:

Part 3A describes the progress that has been made during the 2020/21 financial year (1 July 2020 – 30 June 2021) towards delivering the management actions set out in the 2020/21 AOP.

[4] Fisheries-specific chapters are available at http://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries

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 service's 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 2020/21 October Fishing Year (1 October 2020 – 30 September 2021).

This Annual Review Report also contains several appendices:

- Appendix I summarises the commercial catch of deepwater stocks during the 2020/21 Fishing Year. Also included, where available, are observer coverage details, the amount of deemed values invoiced, and export earnings during the 2020 calendar year;
- Appendix II summarises the results of the October 2020 sustainability rounds;
- Appendix III comprises The Deepwater Fish Plan Advisory Group (FPAG) Terms of Reference;
- Appendix IV MSC certified stocks and the relevant data used to review the certification
- Appendix V summarises cost recovery levies for deepwater stocks for the 2020/21 Financial Year; and
- Appendix VI comprises the observer Interim Trip Report template.

2. Part 3A: Progress on Management Actions

2.1 MANAGEMENT ACTIONS DELIVERED BY DEEPWATER FISHERIES MANAGEMENT

The 2020/21 AOP identified 16 management actions that aimed to progress delivery of the management objectives specified in Part 1A of the National Deepwater Plan 2019, which are referenced in Figure 2. 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 2020/21 Financial Year

1	**Fisheries Sustainability Controls:** Review catch limits and management settings as required
	Key Actions[5]: Stocks undergoing assessment or characterisation to be considered for review: • October 2020: CDL 5, FRO 3, 4, 7, 8, 9, KIN 2, 3, 7, 8, ORH 3B, SCI 1, SWA 3, 4, RBY 4 • April 2021: GSC 3, 5 & 6A • Review deemed value rates for deepwater stocks identified as meeting criteria for review
	Actions Achieved: For the 1 October 2020 sustainability round, catch limits were reviewed and changed for 11 deepwater stocks (Table below).

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

The Deepwater Team also contributed to the documents prepared for the two kingfish stocks that are primarily taken by the deepwater fleet (KIN7 and KIN8) and reviewed deemed value settings for five deepwater stocks, squid (SQU 1T, SQU 6T, SQU 1J), redbait (RBT 3) and gemfish (SKI 7). For the 1 April 2021 sustainability round, catch limits were reviewed and increased for GSC 3, 5 and 6A.
As at 1 October 2021, vessel specific conversion factor certificates had been issued to operators of ten deepwater vessels. No changes were made to any gazetted conversion factors during the 2020/21 financial year.

Stock	TAC	TACC	Increase/ decrease	Customary	Recreational	Other Sources of fishing related mortality
ORH 3B	8,355	7,967	↑	5	0	383
SCI 1	139	132	↑	0	0	7
CDL 5	34	33	↑	0	0	1
RBY 4	25	24	↑	0	0	1
SWA 3	3,646	3,610	↑	0	0	36
SWA 4	4,545	4,500	↑	0	0	45
FRO 3	82	80	↓	0	0	2
FRO 4	126	124	↑	0	0	2
FRO 7	2,154	2,110	↓	1	1	42
FRO 8	919	900	↑	1	0	18
FRO 9	410	400	↑	1	1	8
GSC 3	21	19	↑	0	0	2
GSC 5	96	86	↑	0	0	10
GSC 6A	187	170	↑	0	0	17

2 Fisheries Planning:

Implement National Deepwater Plan 2019

Core Actions:

- Complete the Annual Review Report for 2019/20;
- Complete the Annual Operational Plan for 2021/22; and
- Progress species-specific chapters for the Deepwater Plan

Actions achieved:

- The Annual Review Report for 2019/20 was completed and made available in May 2021;[6]
- The Annual Operational Plan for 2021/22 was completed and made available in September 2021;[7] and
- Development of species-specific Fisheries Plans progressed in 2020/21 for scampi, southern blue whiting and squid.

3 Ministerial Services:

Ensure timely completion of all Ministerial correspondence and communication requests assigned to the Deepwater Team

[6] The Annual Review Report for Deepwater Fisheries 2019/20 can be accessed online; https://www.mpi.govt.nz/dmsdocument/45604-Annual-Review-Report-for-Deepwater-Fisheries-201920

[7] The Annual Operational Plan for Deepwater Fisheries 2020/21 can be accessed online; https://www.fisheries.govt.nz/dmsdocument/41334-Annual-Operational-Plan-for-Deepwater-Fisheries-202021

	Core Actions: • Provide quality advice and information to the Minister for Oceans and Fisheries; and • Respond to all Official Information Act requests and government correspondence regarding deepwater fisheries issues in a timely manner.
	Actions achieved: During the 2020/21 financial year, the Deepwater Fisheries Management team completed: • 7 Aide Memoires; • 2 Briefing Papers; • 15 Ministerial responses; • 1 submission to Cabinet; and • 2 Written Parliamentary Questions. Since 2014, MPI's Official Information Act (OIA) Team has had responsibility for drafting responses to OIA requests. In 2020/21, 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: • Maintain an open and transparent management environment by ensuring that all management information is available and accessible on FNZ's website for tangata whenua and stakeholder consideration; • Engage with tangata whenua and stakeholders on environmental and operational issues relating to management of deepwater fisheries through the biannual FPAG meetings; and • Provide for input and participation of Iwi Fisheries Forums in deepwater fisheries management.
	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 two-page summaries of all sustainability round proposals to iwi and iwi forums. In addition, relevant specific objectives from Iwi Fisheries Plans (IFPs) and Forum Fisheries Plans (FFPs) were incorporated into sustainability round advice to the Minister. • Fisheries Plan Advisory Group (FPAG) meetings were held in November 2020 and April 2021. The FPAG is an engagement forum for the Deepwater Team to meet with iwi and stakeholders (industry and eNGO representatives). • A Deepwater Vessel Operators meeting was held in Christchurch in June 2021 to inform stakeholders of the latest compliance issues and to discuss management and operational issues. • The Commercial Catch Balancing Forum met in December 2020. This forum is made up of representatives of the commercial fishing industry and Fisheries New Zealand to consider information on the operation of the catch balancing regime for example reviewing deemed values settings.

5	**Protected Species Frameworks**: National Plan of Action (NPOA) Seabirds (2020)
	Key Actions: • Continue to investigate and implement additional practicable and effective measures to minimise the risk of captures of seabirds based on the outcomes of the project characterising trawl net captures and potential contributing factors; • Work with DWG to develop vessel-specific Protected Species Risk Management Plans (PSRMP) for all bottom longline vessels regularly used to target deepwater ling stocks; • Develop an information framework for the storage of data relevant to the DWG seabird liaison programme; • Finalise a template to be used for reporting against the goals and objective of the NPOASeabirds (2020); and • Update bottom longline circular (Fisheries Seabird Mitigation Measures – Bottom Longlines Circular 2020) to ensure consistency with relevant Mitigation Standards.
	Actions achieved: During the 2020/21 financial year, the following actions relating to the NPOA Seabirds (2020) were completed: • The Deepwater Team facilitated the Net Capture Working Group meeting in July 2020. The purpose of this meeting was to discuss and develop potential new mitigation ideas to reduce the risk of seabird captures in trawl nets in deepwater fisheries. Throughout the 20/21 financial year the group continue to trial a variety of new mitigation and determine the effectiveness of use in the deepwater trawl fishery. • The Deepwater Team led the development of the Seabird Annual Report 2019/20 based on the objectives and performance measures of the NPOA Seabirds (2020). • The Deepwater Team consulted on proposed changes to the bottom longline circular in September 2020 and then developed advice based on submissions. In July 2021 a new bottom longline circular was approved by the Director of Fisheries Management and implemented on 1 October 2021. • Actions relating to implementation of the NPOA-Seabirds (2020) are detailed within Section 2.4 of this Report.
6	**Protected Species Frameworks:** Work collaboratively with the Department of Conservation (DOC) on implementation of the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022
	Key Actions: Initiate review of the New Zealand sea lion Threat Management Plan (TMP) with DOC in 2021. **Core Actions:** • Work with DOC to implement the actions in the TMP; • Engage with key stakeholders at meetings of both the New Zealand sea lion Threat Management Plan Forum and Advisory Groups in 2020/21; and • Review sea lion management actions for the SBW 6I and SCI 6A fisheries.

	Actions achieved: • Work began on the review of the New Zealand Sea Lion Threat Management Plan in association with DOC. • The New Zealand sea lion/pakake Threat Management Plan Forum was held on 14 April 2021 in Dunedin with the theme "Welcoming them back" – celebrating increasing numbers of sea lions and pups and understanding how we can further support this trend. Issues were identified and recommendations were provided on priorities for the New Zealand sea lion Technical Advisory Group and Threat Management Plan review process. • The New Zealand sea lion Technical Advisory Group met on 13 May 2021 in Wellington and discussed the results of the 2020-21 fieldwork season, updates on ongoing and planned projects, and identified ideas and actions for the next field season. • A revised southern blue whiting (SBW 6I) Operational Plan was put in place for the 2020/21 fishing year.
7	**Protected Species Frameworks:** 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 an improved management approach to mitigate any adverse benthic impacts of fishing. • Contribute to research projects focused on characterising benthic impacts and the benthic environment. **Core Actions:** • Monitor the trawl footprint of deepwater fisheries and report new areas trawled, and the volume/species (where possible) of selected benthic organisms captured in the ARR; and take management action if required (see Table 42 on page 94 of this ARR).[8]
	Actions achieved: • FNZ contracted a research provider to map the annual commercial trawl footprint for all Tier 1 species, and for deepwater fisheries overall. The latest finalised trawl footprint to be published included fishing up to the end of the 2019/20 fishing year.[9] • The 2020/21 trawl footprint has not yet been published, however preliminary data was obtained for the purpose of this report; • The deepwater team provided input to the development of the bottom trawl research science project. This involved compiling relevant inputs to be used in a spatial planning tool to manage the impacts of bottom fishing on benthic habitats. The support tool enables researchers to test scenarios and allow for the level of biodiversity protection and cost to fishing to be determined. Details of the 2020/21 trawl footprint and the volume of selected benthic species captures during the 2020/21 fishing year are reported in Section 4.7 of this Report.

[8] The species quantities reported in the ARR are primarily those that fishers are required to report on non-fish protected fish species catch reports under the Fisheries (Reporting) Regulations 2017 i.e. corals, sponges and bryozoans

[9] Available at https://www.mpi.govt.nz/dmsdocument/37050-aebr-229-extent-of-bottom-contact-by-new-zealand-commercial-trawl-fishing-for-deepwater-tier-1-and-tier-2-target-species-determined-using-catchmapper-software-fishing-years-200817

8	**National Plan of Action Sharks (2013)**
	Key Action: • Lead the review of the NPOA-Sharks (2013), in consultation with other agencies, tangata whenua, and stakeholders. **Core Actions:** • Work collaboratively with the Department of Conservation and Ministry of Foreign Affairs & Trade to implement components of the NPOA-Sharks (2013) relevant to deepwater fisheries; • Finalise review of shark fin prohibition regulations, and implement a process to address any recommended changes; • Ensure fishers are aware of regulatory requirements regarding sharks; and • Ensure that the management of sharks in New Zealand is consistent with the Memorandum of Understanding on the Conservation of Migratory Sharks (CMS Sharks MOU) and other international management instruments.
	Actions achieved: • Four NPOA-Sharks 2022 Advisory Group meetings were convened. The Advisory Group provided feedback on progress against objectives for the NPOA-Sharks 2013, and helped to draft Goals and Objectives for NPOA-Sharks 2022. Note that sharks in the NPOA-Sharks encompasses all Chondrichthyes in New Zealand waters – so includes rays and chimeras as well as sharks, throughout the territorial Sea and EEZ. • To support the review of the NPOA a Shark Project Team of Ministry of Primary Industry, Department of Conservation (DOC) and Ministry of Foreign Affairs and Trade (MFAT) analysts was established and meetings held throughout 2020/21 to support the development of new NPOA-Sharks 2022 documents. • Drafting of the NPOA-Sharks 2013 Progress Against Objectives document began, including analysis of the fin ban review and other components of the NPOA Sharks 2013, with input from the Advisory Group. • Commenced drafting NPOA-Sharks 2022 with input from DOC and MFAT. All objectives are consistent with international shark management instruments.
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 FNZ in a timely manner; • Work with the observer programme to ensure that observers are informed of biological sampling targets and other requirements and debrief after all trips; • Monitor percent coverage levels to ensure adequate and representative coverage is achieved; • Develop the observer coverage plan for the 2021/22 financial year by reviewing and updating sampling targets; and • Contribute towards the redesign of observer forms as necessary.

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 monthly deepwater observer meetings; and
- The Deepwater team worked with Observer Services to update the observer coverage plan for 2021/22.
- The deepwater trawl Vessel Management Plan (VMP) audit form (also called the 'Protected Species Risk Management Plan') was reviewed and a new version was finalised in January 2021. The deepwater bottom longline audit form was also reviewed in the 2020/21 financial year.

10 Deepwater Research Planning

The research required to manage deepwater fisheries is detailed in the Medium Term Research Plan for Deepwater Fisheries Some research is contracted on an annual basis, while other research, such as trawl surveys, is contracted as a package.

Core Actions:

- Finalise and agree the Deepwater Fisheries Research Programme for delivery during the 2021/22 Financial Year (including any proposals for industry-led research) before December 2020;
- Update the Medium Term Research Plan; and
- Support delivery of 2020/21 research for deepwater fisheries.

Actions achieved:

- The Deepwater Fisheries Research Programme for the 2021/22 Financial Year (including any proposals for industry-led research) was finalised;
- The Medium Term Research Plan was updated; and
- 2020/21 research for deepwater fisheries was supported with the Deepwater Team working closely with the FNZ Fisheries Science and Information Team to develop research projects, respond to data requests from research providers, provide liaison with the observer team when biological samples were required and providing explanation of fisheries management changes over time.

11 Deepwater Monitoring:

Monitor the deepwater fleet's adherence to the range of measures in place to manage the effects of fishing activity on protected species and sharks

A range of management measures are employed to reduce the risk of ongoing adverse effects on protected species in commercial deepwater fisheries. Measures are described in the following Operational Procedures or Plans:[16]

- Marine Mammal Operational Procedure (DWG initiative);
- Protected Species Risk Management Plans (trawl and bottom longline) – seabirds (DWG and DOC liaison programmes);
- Ling Operational Procedures (bottom longline) – seabirds (DWG initiative);
- Shark Operational Procedure (DWG initiative);
- Scampi Fisheries Operational Procedure – seabirds and marine mammals (DWG initiative); and

	• SQU 6T and SBW 6I Operational Plans - sea lions (Fisheries New Zealand).
	Core Actions: • Audit Protected Species Risk Management Plans against the Mitigation Standards developed to support implementation of the NPOA Seabirds (2020); • Monitor adherence of the deepwater fleet to management measures through FNZ observer coverage; • Report levels of adherence to management measures to stakeholders through the ARR; • Work with DWG to update materials and methods used to educate crew on Operational Procedures and Plans; • Monitor protected species interactions on all observed trips via FNZ Observer debriefs and reporting of DWG protected species trigger points; and • Support the training, outreach and awareness programme run by the DWG Environmental Liaison Officer. • Support the DOC liaison officer programme where relevant.
	Actions achieved: • Protected Species Risk Management Plans were audited; • The SBW6I Operational Plan was updated for the 2021 season; • Protected species interactions were monitored on all observed trips via observer debriefs and through reporting of DWG protected species trigger points; and • Logistical support was provided to the DWG Environmental Liaison Officer and the DOC Liaison Officer programme, mainly around responding to data requests for information around protected species interaction events over time.
12	**Deepwater Monitoring:** Monitor adherence to non-regulatory measures in place to manage Tier 1 deepwater fishstocks at a sub-QMA scale
	In conjunction with DWG, FNZ has implemented a series of non-regulatory sub-area commercial catch limits in the hoki, orange roughy, and oreo fisheries. In addition, hoki management areas (HMAs) and hoki seasonal spawn areas (HSSAs) have been established by industry. The purpose of these areas are to reduce fishing mortality of juvenile hoki in important nursery areas and allow spawning to occur undisturbed at peak times respectively. Measures are described in the following Operational Procedures: • Reporting Operational Procedures; • Orange Roughy and Oreo Operational Procedures; and • Hoki Operational Procedures.
	Core Actions: • Audit fleet adherence to sub-QMA catch limits; • Communicate non-adherance to DWG to encourage implementation; • Audit fleet adherence to HMA and HSSA management measures; and • Report level of adherence to all measures to stakeholders through the ARR.

	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; • All vessels adhered to the HSSA measures during the winter 2021 hoki fishery. • 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
	Progressing amendments to secondary legislation, such as regulations, requires: analysis of options, drafting the documents required for the different components of the regulatory process such as the Preliminary Impact and Risk Assessment (PIRA), consultation documents, Regulatory Impact Statement (RIS), providing advice and decision documents.
	Core Actions: • Progress legislative amendments to make Sea Lion Exclusion Devices (SLEDs) mandatory on tows in SQU6T; • Investigate addition of pilchard stocks to Schedule 2 of the Fisheries Act 1996 (the Act); and • Progress any other legislative amendments as required.
	Actions achieved: • Work was undertaken to draft the 'Commercial Fishing (Sea Lion Exclusion Device) Amendment Regulations 2021' to amend the Fisheries (Commercial Fishing) Regulations 2001 to require a SLED to be used in SQU6T. The Amendment Regulations would empower the making of a circular to set technical specifications for the SLED. • Adding pilchard stocks to Schedule 2 of the Act was considered and the decision was made to not proceed based on other priorities. • Work was undertaken to draft the Fisheries (Seabird Mitigation Measures - Bottom Longlines) Circular 2021.
14	**Fisheries Management/Sustainability Controls:** Support existing approaches to market initiatives for New Zealand's deepwater seafood
	Work with DWG to support the requirements of the Marine Stewardship Council (MSC) assessment and certification process. FNZ supports industry to achieve and maintain certification of key deepwater fisheries, and progress Tier 1 deepwater fisheries towards meeting the MSC Standard.
	Core Action: • Provide information for annual surveillance audits of SBW, LIN bottom longline, the HOK, HAK and LIN bottom trawl complex, and ORH fisheries in 2020/21.
	Actions achieved: • Deepwater Fisheries Management provided data and support for the annual surveillance audit of SBW, LIN bottom longline, the HOK, HAK and LIN bottom trawl complex, and ORH fisheries.

	• The Marine Stewardship Council (MSC) assessment in 2020/21 was that the fisheries continue to meet the MSC Standard and they remain certified.
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
	A Harvest Strategy defines a management target, soft and hard limits, a rebuild strategy, and a harvest control rule for a stock. Often in developing a Harvest Strategy, a Management Strategy Evaluation (MSE) will be undertaken which assesses a range of different management strategies, including those that incorporate economic aspects of the fishery.
	Key Actions: • Support delivery of a MSE for scampi; and • Support review of the orange roughy MSE and Harvest Control Rule.
	Actions achieved: • Work continued on the MSE for scampi. In 2021 NIWA undertook a project to evaluate a set of harvest control rules (HCRs) for scampi fisheries, specifically for SCI 1, SCI 2, SCI 3, and SCI 6A stocks. Management of these main scampi stocks within the QMS has been largely based on information from a combination of fishery-independent surveys using trawl and photographic approaches, and length-based analytical stock assessments. HCRs had not previously been developed, tested, or applied. The findings from this project was assessed by a dedicated scientific working group and the results were published in September 2021 here. • The orange roughy MSE and HCR did not progress
16	**Deepwater Monitoring:**
	FNZ has deployed digital technology for the tracking, reporting, and monitoring of commercial fishing. Digital monitoring is made up of electronic catch reporting via an e-log book (ER) to provide more timely information on commercial catch effort; electronic position reporting (GPR) to verify where and when fishing happened; and on-board cameras to verify what is being reported (up to 300 inshore fishing vessels will be fitted with cameras by 2024). Trawlers over 28m in overall length began reporting electronically in October 2017; they were already subject to requirements to use GPR. All other vessels and fishers began using ER and GPR during 2019.
	Key Action: • Review relevant sections of electronic reporting circulars that relate to the information fishers are required to report on mitigation use to ensure they remain fit for purpose. **Core Actions:** • Work with the FNZ Digital Monitoring and Data Management teams to monitor the data quality standards and specifications process; • Identify opportunities to use the additional data arising from geospatial position reporting and electronic catch reporting, to enhance BAU actions; and • Work with vessel operators to ensure all geospatial position reporting and electronic catch reporting requirements are well understood and implemented consistently.

	Actions achieved: • The process of using electronic reporting data to enhance actions undertaken by the Deepwater Fisheries Management team is ongoing. ER data has proven to be increasingly beneficial to Fisheries Management, enabling more informative and effective decision making for example with tracking vessels during the squid season particularly around the Auckland Islands (SQU 6T). • The Deepwater Fisheries Management Team coordinated the recent amendments to electronic reporting requirements that focused on assisting with implementation of the NPOA Seabirds 2020. The process culminated in amended circulars being approved in May 2021 and implemented on 1 October 2021.[10]

2.2 MANAGEMENT ACTIONS DELIVERED IN CONJUNCTION WITH OTHER DIRECTORATES WITHIN FNZ AND MPI

Management Actions that the Deepwater Fisheries Management team contributed towards delivery of, but were led by other directorates, within FNZ or MPI branches/directorates outside of FNZ are summarised in Table 3 below.

Table 3: Management Actions that the Deepwater Fisheries Management team contributed to during the 2020/21 financial year

A	**Input to work wider strategic MPI projects:** Lead: Project dependent (see below)
	MPI's Policy and Trade branch is leading Fisheries System Reform, which is expected to make significant improvements to how our fisheries are managed.
	Core Action: • Contribute to policy development as required particularly on marine protection and Fisheries System Reform.
	Actions achieved: • The Deepwater Team provided fisheries management advice to MPI Fisheries Policy and Trade and the Overseas Investment Office (OIO) on deepwater fisheries related matters; and • Contributed to marine protection initiatives with other government agencies particularly the Department of Conservation and the Ministry for the Environment.
B	**Research Monitoring and Evaluation:** LEAD: FNZ Science (Stock Assessment and Aquatic Environment)
	The Deepwater Fisheries Management team will continue to be closely involved in the monitoring and evaluation of all research projects that relate to deepwater fisheries.
	Core Actions: • Assist FNZ's Fisheries Science team to deliver outputs of all 2020/21 research projects as listed in Tables 8-10; and

[10] More information about this process is available here

	• Assist Fisheries Science to ensure that all research used to support the 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 2020/21 financial year (including additional projects); and • All contacted research in 2020/21 and all Final Research Reports relevant to deepwater fisheries published in the 2020/21 year are listed within Section 3.2 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 requirements for 2020/21; • Provide training to observer recruits as part of the intake process to ensure that future observers collect data and sample correctly; • Engage with, and provide feedback to, observers through the observer newsletter and observer catch-up sessions; and • Monitor delivery and feedback as required.
	Actions achieved: • The delivery of the 2020/21 observer coverage plan and associated biological sampling and percentage-level coverage targets are detailed in Section 3.1 of this ARR; • Quarterly fishing plans were requested from industry for the first, second and fourth quarters of the 2020/21 fishing year. All essential quarterly fishing plans were received back from fishing operators; • Fortnightly meetings were held between the Deepwater Fisheries Management team and the Observer Programme to discuss future observer coverage needs, the prioritisation of species for biological sampling and any other issues arising from deepwater observer coverage; and • The Deepwater Fisheries Management team attended two intakes of observer trainees to provide information on the QMS, Fisheries Science process and VMP auditing.
D	**Cost Recovery Process** LEAD: Corporate Services (Cost Recovery)
	Core Actions: • Ensure the Deepwater Team has input into the port price survey process administered by the MPI Finance Team; and • Ensure the cost recovery levy process recovers costs consistent with deepwater observer coverage and research plans, including providing information to support the unders/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 2020/21 cost recovery levies may be found in Appendix V of this report.
E	**Compliance risk profiling and monitoring work** LEAD: Compliance Directorate (Operations Branch)
	Core Actions: • Ensure the Deepwater Team is involved in any discussions relating to future fisheries monitoring and profiling; • Assist the Compliance Directorate with issues relating to interpretation of reporting requirements that arise during implementation of electronic catch and position reporting.
	Actions achieved: • The meeting with deepwater vessel operators held in June 2021 included a session focusing on compliance. • During 2020/21 Compliance work related to deepwater fisheries included; the continued monitoring of ER/GPR, ongoing need for fisher awareness of spatial restrictions/ regulations, development of Fisheries Compliance Services Operating Standards and inputting into measures to improve accuracy of greenweight reporting produced by DWG.
F	**Aquaculture & Fisheries Permits:**
	Core Actions: The Fisheries Management Deepwater Team provides: • Advice on registration of Foreign Owned Fishing Vessels (FOVs): • Input into High Seas permit applications; • Chair and secretariat for the Inter-Agency Fisheries Group (MPI, MNZ and MBIE); and • Input into annual tender of Crown-held ACE for Scampi stocks.
	Actions achieved: • Advice was provided for the registration of ten FOVs; • Twenty high seas fishing permits were issued for the 2020/21 high seas fishing year (from 1 May 2020 to 30 April 2021). • The Inter-Agency Fisheries Group held its last meeting in 2020. • 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 in Table 4 below.

Table 4: Summary of progress on industry-initiated Management Actions during the 2020/21 financial year.

Core actions :
• Respond to quota owner requests for changes to QMA boundaries or definitions; • 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 species; and • Respond to any requests to use innovative trawl gear.
Actions achieved: • One application for a vessel specific conversion factor certificate was received; • A special permit was issued for the acoustic biomass survey of orange roughy in ORH 3B; and • A special permit was issued for the trial of device that reduces bluenose bycatch in alfonsino mid water trawl gear

2.4 IMPLEMENTATION OF THE NATIONAL PLAN OF ACTION – SEABIRDS (2020)

The NPOA-Seabirds (2020) set out objectives to guide management of interactions with seabirds in New Zealand fisheries. This ARR reports back on the prioritised actions and services needed to meet these objectives for deepwater fisheries as set out in the 2020/21 AOP.

2.4.1 CAPTURE RATE REDUCTION TARGETS

Capture rate reduction targets provide a gauge against which the Practical Objective 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 however meaningful targets were unable to be set because the observer capture estimates were not available at the time.

Table 5 sets out the deepwater capture rate reduction targets and proxy targets along with three-year averages (based on the 2017/18 to 2019/20 fishing years[11]) of observer coverage and estimated capture rates for deepwater fisheries groupings.[12] Table 5 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.

[11] Data from the 2018/19 or 2019/20 fishing years is only available at a fishery level and not for different vessel size groupings. The estimated capture data used in the table below may be over-estimated as a result, particularly for middle-depth fisheries.
[12] All data in Table 5 is taken from; https://protectedspeciescaptures.nz/PSCv6/released/

Table 5: Deepwater capture rate reduction targets and three-year averages of observer coverage and estimated capture rate.[13]

Fishery	Targets				Three year average (17/18-19/20)		Progress against target/proxy
	Suggested target/proxy (from 2015)	Baseline capture rate (per 100 tows/1000 hooks)[14]	'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%	0.77	Declining trend in estimated capture rate
SQU trawl (> 28 m)	Statistically significant decrease in rate (based on 3-yr rolling average)	14.0	12.0 (14%)	Yes	87%	9.71	Estimated capture rate target met based on 17/18 and 2018/19 three year rolling averages
JMA trawl (> 28 m)	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.84	-	No	81%	0.38	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	-	-	No	8%	2.87	VMPs in place for all scampi vessels. During 2020/21 the DWG ELO visited 10 of the 11 scampi vessels. Observer coverage of 6% of effort in 2019/20.
Deepwater trawl[15]	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.41	-	No	29%	0.44	Estimated capture rate remains static
Middle-depth trawl (>28 m)[16]	Statistically significant decrease in rate (based on 3-yr rolling averages)	2.7	2.3 (15%)	Yes	37%	3.97	Estimated capture rate remains above target rate
Large vessel BLL (>28 m)	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.01	-	No	20%	Not available	-

[13] Data from the 2015/16 to 2017/18 fishing years are used in this table as estimated capture data for the 2018/19 or 2019/20 fishing years are not currently available.
[14] 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)
[15] Deepwater trawl includes orange roughy and oreo species.
[16] 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.

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	5%	Not available	During 2020/21 the DWG ELO visited 17 of the 18[17] manual bottom longliners which landed >2 t of LIN during 2020/21. Observer overage was 5% of effort in 2020/21.[18]

[17] 94% coverage of 18 vessels, another six vessels were tied up in 2020/21
[18] All LIN QMAs.

2.4.2 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;[19]
- 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;
- 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 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 2020/21, actions in deepwater fisheries to support the NPOA-Seabirds (2020) were focused on continuing to improve and manage the PSRMP process, and seabird training sessions for crew on bottom longline vessels. Table 6 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 the practical and biological objectives of the NPOA-Seabirds (2020).

Table 6: NPOA-Seabirds (2020) services planned for Deepwater Fisheries Management during the 2020/21 fishing year.

NPOA Objectives	Planned Deepwater Services for 2020/21
Goal 1: Avoiding bycatch	• Update bottom longline seabird mitigation circular to reflect Mitigation Standards[20] • Audit existing PSRMPs against Mitigation Standards • Report on at-sea audits of adherence to PSRMPs • Review and update Mitigation Standards as required • Report capture and capture rate data for the previous • Review and update mitigation regulations as appropriate
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	
Goal 2: Healthy seabird populations	
3. Research, monitoring and management actions are prioritised for seabird populations of particular concern and their risk ratios reduce	• Clearly identify additional priority research or management actions, including review of mitigation to prevent seabird deaths near breeding colonies, including important feeding estuaries

[19] 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/loggedIn) and all bottom longliners to deploy streamer (tori) lines, restrict offal and fish discharge and either set at night or use an approved line weighting regime (http://www.legislation.govt.nz/regulation/public/2018/0116/latest/whole.html).
[20] The existing circular is available at http://legislation.govt.nz/regulation/public/2018/0116/latest/LMS57231.html

4. The number of fishing-related mortalities is decreasing towards zero	
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	• 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 • 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 11. New Zealand actively works bilaterally, multi-laterally, and with international organisations to build capacity to reduce the risk to New Zealand seabirds	• Contribute to advocacy for management of fishing impacts on seabirds on the high seas through participation in the South Pacific Regional Fisheries Management Organisation

3. Part 3B: Deepwater Fisheries Research, Compliance, Observer Coverage 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 conservation research projects, planning observer coverage on the deepwater fleet and the cost recovery regime.

Please note that all fishing effort, and observer coverage data for 2020/21 is ungroomed and may be subject to change.

3.1 OBSERVER COVERAGE

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

- As an input to monitor key fisheries against harvest strategies;
- As an input to monitor biomass trends for non-target species;
- To assess fishery performance against environmental benchmarks as available; and
- To 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.

3.1 2020/21 OBSERVER COVERAGE PERFORMANCE

In 2020/21, 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 2020/21 AOP.

In 2020/21, delivery on the observer coverage plan was affected by a number of factors including:

- Implementation of a number of Ministerial directives requiring high levels of observer coverage in a number of inshore fisheries (e.g. West Coast North Island). These competing priorities have resulted in ongoing reprioritisation of observer deployments, which has led to challenges in achieving coverage targets in some domestic deepwater fisheries (e.g. ling bottom longline);
- COVID-19 resulting in a shortage of sea day coverage by observers.
- Some operational challenges remain with predicting fishing activities and vessel movements. Improvements have been made, with deepwater fishing companies providing quarterly fishing plans, however fishing activities can be difficult to predict.

The observer days delivered in relation to the days planned for each fishery complex for the 2020/21 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 56% however in 2020/21 there was much less effort than the 400 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 2020/21 fishing year. Table 9 also provides information on how the level of observer sampling conducted during the 2020/21 fishing year compared to sampling targets as defined in the 2020/21 AOP. This report provides the opportunity for review of performance against those targets.

Table 7: Comparison of planned and achieved observer coverage for the 2020/21 financial year. Figures for 2020/21 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	**53**	71%
Chatham Rise deepwater	ORH 3B, OEO 3A, OEO 4 & BYX 3	250	**233**	93%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6	75	**57**	76%
West Coast deepwater	ORH 7A	60	**97**	162%
Middle-depth trawl				
West Coast North Island	JMA 7, EMA 7 & BAR 7	300	**286**	95%
West Coast South Island (FMA 7)	HOK 1, HAK 7, LIN 7 & SWA 1	575	**696**	121%
WCSI HOK 'inside the line'	HOK 1	100	**113**	113%
Cook Strait HOK	HOK 1	100	**94**	94%
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	825	**725**	88%
Sub-Antarctic middle-depth exc. SQU/SBW (FMA5/FMA6)	HOK1, SWA 4, WWA 5B, BAR 5 & JMA 3	655	**485**	74%
Southern blue whiting	SBW (all)	450	**254**	56%
Squid	SQU 1T & SQU 6T	1,600	**2,228**	139%
Bottom longline				
Bottom longline	LIN 3 – LIN 7	300	**285**	95%
Scampi trawl				
Scampi	Scampi (all)	375	**331**	88%
Total		**5,740**	**5,937**	**103%**

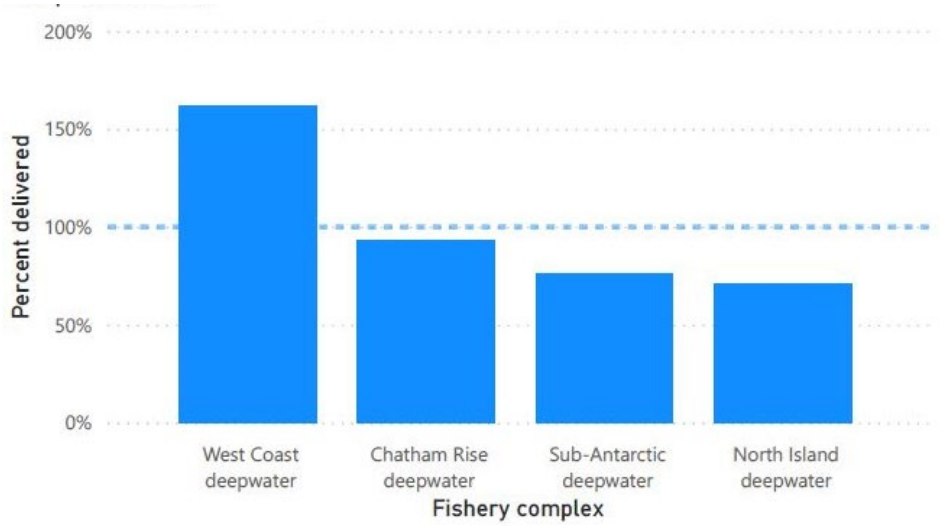

Figure 2 **Comparison of planned and achieved observer coverage for Deepwater Trawl**

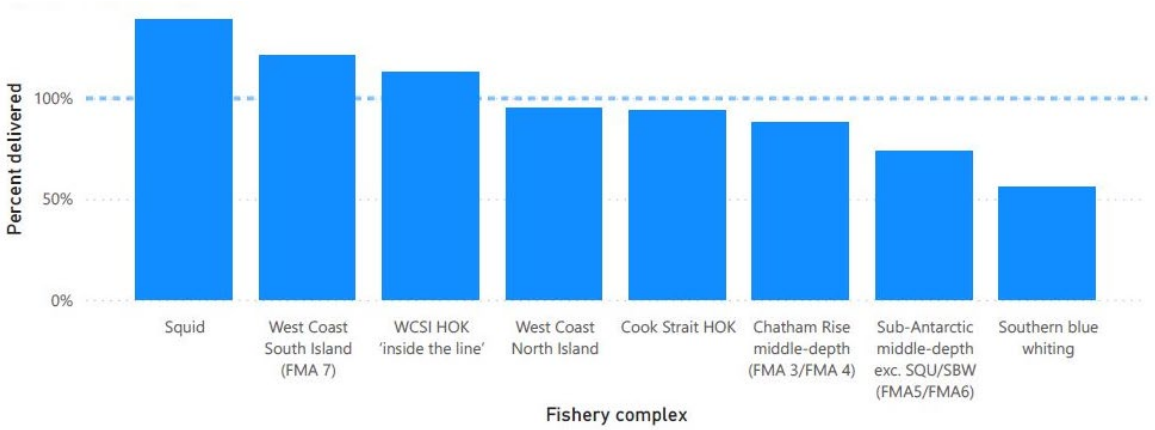

Figure 3 **Comparison of planned and achieved observer coverage for Midwater Trawl**

Table 8: Percent observer coverage obtained within deepwater fisheries during the 2020/21 fishing year[21].

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		1,297	104	8%
	Orange roughy target		686	103	15%
Chatham Rise deepwater	ORH 3B, OEO 3A, OEO 4 & BYX 3		2,353	868	37%
	Orange roughy target		1,645	634	39%
	ORH 3B	NW Rise	196	65	33%
		E&S Rise	1,449	569	39%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6		311	231	74%
	Orange roughy target		68	65	96%
West Coast deepwater	ORH 7A (excluding Westpac Bank)		611	116	19%
Hoki and middle-depth trawl[22]					
West Coast North Island	JMA 7, EMA 7 & BAR 7		2,673	877	33%
West Coast South Island (FMA 7)	HOK 1, HAK 7, LIN 7 & SWA 1		2,962[23]	1,237	42%
WCSI HOK 'inside the line'	HOK 1		966	211	22%
Cook Strait HOK[24]	HOK 1		814	84	10%
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		4,867	2,358	48%
	Hoki target		3,980	1,815	46%
Sub-Antarctic middle-depth excl. SQU/SBW (FMA 5/FMA 6)	HOK 1, SWA 4, WWA 5B, LIN 5, LIN 6, HAK 1, BAR 5 & JMA 3		2,243	1,219	54%
	Hoki target		926	596	64%
Southern blue whiting	SBW (all)		439	340	77%
Squid	SQU 1T & SQU 6T		3,770	2,409	64%
	SQU 6T target		1,065	1,047	98%
Deepwater bottom longline					
Bottom longline[25]	LIN 3 – LIN 7	<34 m	4,601,411	302,068	7%
		>34 m	16,256,665	513,994	3%
Scampi	Scampi (all)		4,926	269	5%
	SCI 6A only		1,354	4	<1%

[21] Rows highlighted in grey are not cumulative with the rows above and are provided to show percentage coverage for specific target fisheries within each complex.
[22] Excludes effort by trawl vessels less than 28 metres in length except for the WCSI 'inside the line' and Cook Strait hoki fisheries.
[23] This total includes all HOK tows designated as 'inside the line'
[24] Defined as statistical areas 016 and 017.
[25] Total and observed deepwater bottom longline effort is expressed in number of hooks set rather than number of tows.

Table 9: Numbers of length frequency samples and otoliths collected by observers during the 2020/21 fishing years for Tier 1 deepwater species by area[26].

Species		Area/method		LF target	# of LF samples		# of fish measured	Otolith target	# of otoliths pairs collected	
Jack mackerel	*Trachurus declivis*	JMD 3		-	54	-	**2,341**	-	245	-
		JMD 7		200	271	✓	**26,801**	900	1,267	✓
	Trachurus murphyi	JMM 3		-	36	-	**766**	-	173	-
		JMM 7		200	61	×	**1,896**	900	149	×
	Trachurus novaezelandiae	JMN 3		-	13	-	**207**	-	65	-
		JMN 7		200	205	✓	**18,125**	900	680	×
Ling		LIN	BLL	-	110	✓	**1,197**	1,100	534	✓
		3 & 4	Trawl	100	120		**3,130**		612	
		LIN	BLL	-	-	✓	**-**	1,100	-	-
		5 & 6	Trawl	100	202		**10,628**		1,037	×
		LIN 7		200	182	×	**2,640**	1,100	305	×
		LIN Cook Strait		-	5	-	**151**	-	24	-
Hake		HAK 1		100	55	×	**2,515**	1,000	273	×
		HAK 4		100	12	×	**199**	1,000	55	×
		HAK 7		200	134	×	**3,935**	1,000	750	×
Hoki		Sub-Antarctic[27]		400	479	✓	**37,241**	1,600	4,370	✓
		Chatham Rise		400	927	✓	**88,730**	1,600	10,150	✓
		WCSI	>46 m	400	558	✓	**54,666**	1,000	5,561	✓
			<46 m	200	98	×	**9,098**	600	860	✓
		Cook Strait		200	62	×	**6,073**	1,600	639	×
		ECNI		-	2	-	**53**	-	5	-
Orange roughy		ORH 1 Area A		30	-	×	-	-	-	-
		ORH 1 Area B		30	7	×	**387**	-	40	-
		ORH 1 Area C		30	-	-	-	-	-	-
		ORH 1 Area D		30	-	-	-	-	-	-
		ORH 2A (North)		30	6	×	**485**	-	120	-
		ORH 2A (South)		-	5	-	**403**	-	100	-
		ORH 3B (NW Chatham Rise)		50	11	×	**726**	300	168	×
		ORH 3B (E&S Chatham Rise)		50	112	✓	**8,209**	300	1,811	✓
		ORH 3B (Sub-Ant & Puysegur)		100	18	×	**1,185**	300	223	×
		ORH 7A & Westpac Bank		50	68	✓	**3,596**	300	873	✓

[26] Ticks or crosses indicate whether sampling targets (as set out in the 2020/21 AOP) were met.

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

Oreo	Black	BOE 1	-	6	-	**350**	-	41	-
		BOE 3A	30	11	✗	**294**	400	54	✗
		BOE 4	-	15	-	**882**	-	110	-
		BOE 6	-	23	-	**1,507**	-	196	-
	Smooth	SSO 1	-	14	-	**1,005**	-	121	-
		SSO 3A	30	15	✗	**1,282**	-	107	-
		SSO 4	30	46	✓	**4,168**	300	459	✓
		SSO 6	-	41	-	**2,620**	-	324	-
	Spiky	SOR 3A	-	-	-	**-**	-	-	-
		SOR 4	-	2	-	**30**	-	8	-
Scampi		SCI 1	50	104	✓	**8,459**	N/A		
		SCI 2	50	32	✗	**1,830**			
		SCI 3	50	38	✗	**4,598**			
		SCI 4A	50	-	-	**-**			
		SCI 6A	50	51	✓	**294**			
Southern blue whiting		SBW 1	-	9	-	**184**	-	45	**-**
		SBW 6I	100	158	✓	**24,981**	900	2,595	✓
		SBW 6B	50	9	✗	**1,350**	600	174	✗
		SBW 6R	-	16	-	**802**	-	121	**-**
		SBW 6A	-	10	-	**201**	-	34	**-**
Squid (all species combined)		SQU 1T	-	911	-	**94,182**	N/A		
		SQU 6T	-	605	-	**68,103**			

Reasons why biological sampling targets may not have been met include:

- Difficulties with achieving observer coverage (COVID-related)
- Low abundance of some species/stocks (e.g. JMM 7, HAK 4)
- Limited fishing activity (e.g. SBW 6B, some orange roughy stocks,)
- Shed sampling data is not included (west coast and Cook Strait hoki)

Table 10: Numbers of length frequency samples and otoliths collected by observers during the 2020/21 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	19	1,303	107
	BAR 5	313	13,131	1,597
	BAR 7	100	3,677	613
Alfonsino	BYX 1	-	-	-
	BYX 2	-	-	-
	BYX 3	4	80	10
	BYX 7	3	58	14
Cardinal fish	CDL 2	-	-	-
	CDL 3	1	20	5
	CDL 5	-	-	-
Blue (English) mackerel	EMA 3	-	-	-
	EMA 7	60	2,473	381
Frostfish	FRO 3 & 4	2	44	10
	FRO 5	4	80	20
	FRO 7 - 9	86	1,853	439
Giant spider crab	GSC 3	4	71	N/A
	GSC 5	89	2,221	
	GSC 6A	314	6,393	
	GSC 6B	1	20	
Dark ghost shark	GSH 4	1	20	
	GSH 5	8	151	
	GSH 6	7	134	
Pale ghost shark	GSP 1	19	342	
	GSP 5	21	406	
	GSP 7	-	-	
Lookdown dory	LDO 1	3	35	-
	LDO 3	5	92	
Prawn killer	PRK 1	-	-	-
Patagonian toothfish	PTO 1	-	-	-
Redbait	RBT 3	30	1,233	123
	RBT 7	4	104	15
Rubyfish	All	7	286	5
Ribaldo	RIB 3 & 4	52	553	237
	RIB 5 & 6	2	40	5
	RIB 7	23	438	127
Gemfish	SKI 3	96	2,013	433
	SKI 7	82	1,560	417
Spiny dogfish	SPD 4	1	50	
	SPD 5	5	97	
Sea perch	SPE 3	10	293	40
	SPE 4	12	240	69
	SPE 5	-	-	-
	SPE 7	8	286	26
Silver warehou	SWA 1	6	118	30
	SWA 3	179	5,973	896
	SWA 4	298	8,577	1,391
White warehou	WWA 3 & 4	4	80	20
	WWA 5B	24	1,467	129
	WWA 7	-	-	-

3.2 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 that is updated regularly to reflect changes in management priorities where these occur, and identification of new information requirements 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 2020/21 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 2020/21 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 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 2020/21 financial year and current status (as of March 2022).[28]

Project code	Title	Status
SBW2019-01	Biomass estimation of the Campbell Island southern blue whiting stock using acoustic surveys	Complete FAR2020/26
HOK2019-01	Estimation of spawning hoki biomass in Cook Strait using acoustic surveys	Complete FAR2020/21
BAR2017-02	Update of abundance indices for BAR 4 & 7	Complete FAR2020/37
HOK2019-03	Hoki Modelling Input	Complete FAR 2020/28
HOK2019-03	Research to develop the New Zealand hoki assessment model	Complete
BAR2020-01	Update of barracouta in BAR 4 & 5	Complete FAR2021/47
HOK2020-01	Estimation of spawning hoki biomass in Cook Strait using acoustic surveys	In progress
HOK2020-02	Land-based sampling of hoki	In progress
MID2020-01	Routine age determination of middle depth and deepwater species from commercial fisheries and resource surveys	In progress
OEO2020-01	Investigating monitoring and assessment approaches for oreo species	In progress

[28] Table 11 also includes deepwater fisheries research projects from 2019/20 that were planned to be initiated in 2020/21.

Project code	Title	Status
ORH2020-01	Acoustic survey of orange roughy in ORH MEC (ORH 2A, 2B, and 3A)	In progress
SCI2020-01	Stock assessment for SCI 3	In progress
SCI2020-02	Estimation of the abundance of scampi in SCI 1 and SCI 2 using photographic surveys.	In progress
SKI2020-01	Gemfish Monitoring	In progress
SQU2020-01	Data Grooming and Characterisation of SQU 6T & SQU 1T	In progress
SQU2020-01	Squid Management Strategy	In progress
SEA2020-00	Use of otolith shape to differentiate jack mackerel species in New Zealand	In progress

Table 12: Aquatic Environment and Biodiversity research planned for the 2020/21 financial year and current status[29].

Project code	Title	Status
ZBD2018-01	Five year continuous plankton survey (phase 3)	In progress
ZBD2018-02	Climate change, fish distribution meta-analysis	In progress
ZBD2018-05	Ecosystem function and regime shifts in the Sub-Antarctic	In progress
PRO2017-19	Factors affecting capture rate of black petrels and flesh-footed shearwaters	In progress
PSB2019-01	Estimation of total seabird captures using standardised estimation methods	In progress
PMM2018-04A	Estimate spatial distributions for at-risk marine mammals to assess fisheries overlap and risk: New Zealand fur seals	In progress
PMM2018-04B	Estimate spatial distributions for at-risk marine mammals to assess potential fisheries overlap and risk: South Island New Zealand sea lions	Complete
PMM2018-07	Updated spatially explicit fisheries risk assessment for New Zealand marine mammal populations	In progress
PMM2018-11	Update Auckland Islands New Zealand sea lion population model	In progress

[29] Table 12 only includes ongoing Aquatic Environment and Biodiversity research projects relevant to deepwater fisheries.

PRO2019-09	Spatial distribution modelling of at-risk seabirds in New Zealand commercial fisheries	In progress
PRO2019-10	Refine SEFRA model parameterisation for at-risk protected species (seabirds)	In progress
PRO2019-12	Protected Species Database - Document, test and update to include 2018-19 fishing year	In progress
BEN2019-04	A spatially explicit benthic impact assessment for inshore and deepwater fisheries in New Zealand	In progress
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.	In progress
PRO2017-05A	Population specific modelling of adult survival of black petrels	In progress
PRO2017-05B	Population specific modelling of adult survival of Chatham Island albatross	In progress
PSB2019-02	Research into the demographic parameters for Antipodean albatross	In progress
PSB2019-09	Opportunistic Aerial survey of white-capped albatross on the Auckland Islands	In progress
ZBD2019-11	Development of Electronic Automated Reporting System (EARS) to improve seabird bycatch monitoring	In progress
PRO2013-01	Estimation of Seabird and Marine Mammal Captures	In progress
PRO2013-13	Southern Hemisphere seabird risk assessment (for ACAP species)	In progress
PRO2017-10	Analysis of New Zealand sea lion tracking data to estimate overlap with fisheries	Complete AEBR 224

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

Project code	Title	Status
ZBD2020-07	Recovery of Seamount Communities	In progress
DAT2020-05	Risk atlas development for protected species risk models	In progress
PSB2020-09	Southern hemisphere seabird risk assessment	In progress
ENV2020-20	Temporal and spatial distribution of non-target catch, and non-target species, in deepwater fisheries	In progress
BEN2020-01	Extent and intensity of seabed contact by mobile bottom fishing in the New Zealand Territorial Sea and Exclusive Economic Zone	In progress
BEN2020-07	Extent and intensity of trawl effort on or near underwater topographic features in New Zealand's Exclusive Economic Zone	In progress
ZBD2020-06	Recovery of biogenic habitats: assessing the recovery potential offered by spatial planning scenarios proposed in the Sea Change Plan	In progress
ENV2020-01	Research into the demographic parameters for Antipodean albatross	In progress
PSB2020-01	Continued population monitoring of black petrel	In progress
PSB2020-08	Desktop update of estimation of seabird cryptic mortality in trawls, via warp and net captures in the NZ domestic fleet using standard mitigation	In progress
PSB2020-10	Review and continuation of footage collection from the 2020-21 Black Petrel Electronic Monitoring project	In progress
ZBD2014-03	Sub-Lethal Effects of Environment Change on fish populations	Complete AEBR 261
ENV2018-06	Improved distribution information for higher risk non-QMS shark species	Complete AEBR 271

3.2.1 RESEARCH REPORTS

Final research reports from previously contracted work that were published in the 2020/21 financial year that relate to deepwater fisheries are shown in Table 14 below. Links to these documents are provided where possible, however all published reports can be found online (www.mpi.govt.nz/news-and-resources/publications/).

Table 14: Final research reports published during the 2020/21 financial year of relevance to deepwater fisheries.

Annual documents	
2021 May Plenary	Fisheries New Zealand (2021). Fisheries Assessment Plenary, November 2021: stock assessments and stock status. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand. 663 p.
	Fisheries New Zealand (2021). Fisheries Assessment Plenary, May 2021: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1,782 p. Vol 1 Alfonsino to Hake (584p.)
	Fisheries New Zealand (2021). Fisheries Assessment Plenary, May 2021: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1,782 p. Vol 2 Hoki to Redbait (p585 50 1,182).
	Fisheries New Zealand (2021). Fisheries Assessment Plenary, May 2021: stock assessments and stock status. Compiled by the Fisheries Science Team, Fisheries New Zealand, Wellington, New Zealand. 1782 p. Vol 3 Red Cod to Yellow-Eyed Mullet (p1,183 to 1,782)
2019-20 AEBAR	Fisheries New Zealand (2020). Aquatic Environment and Biodiversity Annual Review 2019– 20. Compiled by the Fisheries Science Team, Ministry for Primary Industries, Wellington New Zealand. 755p.
Aquatic Environment and Biodiversity Reports (AEBRs)	
242	Baker, G.B.; Hedley, G.; Cunningham, R.; Waugh, S.M. (2020). Estimated population size of the Westland petrel, 2007–2011. New Zealand Aquatic Environment and Biodiversity Report No. 242. 22 p.
243	Mattern, T. (2020). Modelling marine habitat utilisation by yellow-eyed penguins along their mainland distribution: baseline information. New Zealand Aquatic Environment and Biodiversity Report No. 243. 29 p
244	Zhang, J.; Bell, E.A.; Roberts, J.O. (2020). Demographic assessment of black petrels (*Procellaria parkinsoni*) at Great Barrier Island (Aotea Island). New Zealand Aquatic Environment and Biodiversity Report No. 244. 48 p.
245	Holland, L.P.; Rowden A.A.; Hamilton, J.Z.; Clark, M.R.; Chiswell, S.M.; Gardner, J.P.A. (2020). Genetic connectivity of deep-sea corals in the New Zealand region. New Zealand Aquatic Environment and Biodiversity Report No. 245. 88 p
246	Bell, E.; Ray, S.; Crowe, P.; Butler, D.; Bell, M. and McArthur, N. (2020). Population trends, at-sea distribution, and breeding population size of black petrels (*Procellaria parkinsoni*) – 2018/19 operational report. New Zealand Aquatic Environment and Biodiversity Report No. 246. 63 p.
251	McKenzie, A. (2021). Seabird captures during the FMA 1 bottom longline fishery in the 2017/18 fishing year: comparison of electronic monitoring, observer, and audit data. New Zealand Aquatic Environment and Biodiversity Report No. 251. 30 p.

259	Baird, S.J.; Mules, R. (2021). Extent of bottom contact by commercial fishing activity in New Zealand waters, for 1989–90 to 2017–18. New Zealand Aquatic Environment and Biodiversity Report No. 259. 143 p
260	Baird, S.J.; Mules, R. (2021). Extent of bottom contact by commercial trawling and dredging in New Zealand waters, 1989–90 to 2018–19. New Zealand Aquatic Environment and Biodiversity Report No. 260. 157 p.
261	Cummings, V.J.; Lundquist, C.J.; Dunn, M.R; Francis, M.; Horn, P.; Law, C.; Pinkerton, M.H.; Sutton, P.; Tracey, D.; Hansen, L.; Mielbrecht, E. (2021). Assessment of potential effects of climate-related changes in coastal and offshore waters on New Zealand's seafood sector. New Zealand Aquatic Environment and Biodiversity Report No. 261. 153 p
Fisheries Assessment Reports (FARs)	
2020/19	Dutilloy, A.; Dunn, M.R. (2020). Fishery and stock structure for silver warehou (*Seriolella punctata*) in SWA 3 and SWA 4. New Zealand Fisheries Assessment Report 2020/19. 66 p.
2020/21	O'Driscoll, R.L; Escobar-Flores, P. (2020). Acoustic survey of spawning hoki in Cook Strait and off the east coast South Island during winter 2019. New Zealand Fisheries Assessment Report 2020/21. 50 p.
2020/22	Ballara, S.L.; O'Driscoll, R.L. (2020). Catches and size and age structure of the 2018–19 hoki fishery. New Zealand Fisheries Assessment Report 2020/22. 205 p.
2020/26	Ladroit, Y.; O'Driscoll, R.L.; Large, K. (2020). Acoustic estimates of southern blue whiting from the Campbell Island Rise, August-September 2019 (TAN1905). New Zealand Fisheries Assessment Report 2020/26. 56 p.
2020/27	Dunn, M.R.; Dutilloy, A.; McGregor, V. (2020). Investigations of catch and effort data for silver warehou (*Seriolella punctata*) in SWA 3 and SWA 4. New Zealand Fisheries Assessment Report 2020/27. 48 p.
2020/28	Langley, A.D. (2020). Review of the 2019 hoki stock assessment. New Zealand Fisheries Assessment Report 2020/28. 52 p.
2020/29	Dutilloy, A.; Horn, P.L.; Ó Maolagáin, C. (2020). Age composition of orange roughy from Cook Canyon (ORH 7B) in 2019. New Zealand Fisheries Assessment Report 2020/29. 10 p
2020/37	Ballara, S.L.; Holmes, S.J. (2020). Fishery characterisation and standardised CPUE analyses for barracouta (*Thyrsites atun*), for BAR 4 and 7, 1989–90 to 2017–18. New Zealand Fisheries Assessment Report 2020/37. 254 p.
2020/39	Hoyle, S.D.; Maunder, M.N.; A'mar, Z.T. (2020). Frameworks for the next generation of general stock assessment models: Report of the 2019 CAPAM workshop. New Zealand Fisheries Assessment Report 2020/39. 80 p.
2020/43	Doonan, I.J. (2020). Southern blue whiting (*Micromesistius australis*) stock assessment for the Campbell Island Rise for data up to 2018–19. New Zealand Fisheries Assessment Report 2020/43. 20 p
2020/45	McGregor, V. (2020). Fishery characterisation and standardised CPUE analyses for barracouta, *Thyrsites atun*, in BAR 4, 5, and 7, 1989–90 to 2010–11. New Zealand Fisheries Assessment Report 2020/45. 272 p.
2021/01	Tuck, I.D. (2021). Characterisation and a length-based assessment model for scampi (*Metanephrops challengeri*) at the Auckland Islands (SCI 6A), for 1989–90 to 2018–19. New Zealand Fisheries Assessment Report 2021/01. 148 p.
2021/05	Saunders, R.; Horn, P.L.; Ó Maolagáin, C.; Hulston, D. (2021). Commercial catch sampling for species proportion, sex, length, and age of jack mackerels in JMA 7 in the 2018–19 fishing

	year, with a summary of all available data sets. New Zealand Fisheries Assessment Report 2021/05. 29 p
2021/11	Large, K. (2021). Review and summary of the time series of input data available for the assessment of southern blue whiting (*Micromesistius australis*) stocks up to and including the 2017 season. New Zealand Fisheries Assessment Report 2021/11. 41 p
2021/14	Large, K. (2021). Review and summary of the time series of input data available for the assessment of southern blue whiting (*Micromesistius australis*) stocks up to and including the 2019 season. New Zealand Fisheries Assessment Report 2021/14. 77 p
2021/15	Saunders, R.J.; Hart, A.; Horn, P.L.; Sutton, C.P. (2021). Catch-at-age for hake (*Merluccius australis*) and ling (*Genypterus blacodes*) for the 2018–19 fishing year and from a research trawl survey in 2020, and a summary of the available data sets from the New Zealand EEZ. New Zealand Fisheries Assessment Report 2021/15. 97p
2021/17	Tuck, I.D.; Parkinson, D.; Armiger, H.; Smith, M.; Miller, A.; Drury, J.; Spong, K. (2021). Estimating the abundance of scampi in SCI 3 (Mernoo Bank) in 2019. New Zealand Fisheries Assessment Report 2021/17. 42 p.
2021/18	Kienzle, M. (2021). Stock assessment for ling off the west coast South Island (LIN 7WC) to the 2018–19 fishing year. New Zealand Fisheries Assessment Report 2021/18. 22 p
2021/21	Baird, S.J.; Ballara S.L. (2021). Fishery characterisation and standardised CPUE for spiny dogfish, *Squalus acanthias*, in SPD 3, SPD 4, and SPD 5, 1989–90 to 2010–11. New Zealand Fisheries Assessment Report 2021/21. 196 p.
2021/22	Holmes, S.J. (2021). Stock assessment of hake (*Merluccius australis*) on Chatham Rise for the 2019–20 fishing year. New Zealand Fisheries Assessment Report 2021/22. 55 p.
Conservation Services Programme (Department of Conservation) reports	
MIT2020– 03	Large, Kath; Berkenbusch, Katrin; Neubauer, Philipp; Tornquist, McKenzie (2021). Workshop summary report—mitigation of protected species bycatch in commercial fisheries, 29 pages.
N/A	Frost, P.G.H. (2021). Numbers of Northern Royal Albatross chicks and Northern Giant Petrel adults on the Chatham Islands, September 2020. Report to Marine Species Team, Department of Conservation, Wellington. 21 p.
N/A	Frost, P.G.H. (2021). Status of Northern Royal Albatross *Diomedea sanfordi* nesting on the Chatham Islands, December 2020. Report to Marine Species Team, Department of Conservation, Wellington, 23 p.
MIT2019-03	Lukies, K., Gaskin, C., Gaskett, A., Heswall, A., Gulley, K. and Friesen, M. (2021). Lighting adjustments to mitigate against fishing vessel deck strikes/vessel impacts. 37p.
POP2018-04	Crowe, P. and Burgin, D. 2021. Flesh-footed shearwater population monitoring and estimates: 2020/21 season. 47 p.
BCBC2020-27	Rexer-Huber K., Parker G.C., Sagar P.M., Thompson D.R. 2021. Salvin's albatross breeding dates and productivity: nest-camera analysis. 14 p.
MIT2018-03	Middleton, D., King, B. and Wilson, O. 2021. Development of an adaptive management tool for line setting. 34 p.
MIT2018-02	Goad, D. and Peatman, T. 2021. Hauling mitigation for small longline vessels. 34 p.
BCBC2020-11c	Goad, D. 2021. Longline sink rate verification. 21 p.
BCBC2020-09	Richard, Y. 2021. Integrated population model of Antipodean albatross for simulating management scenarios. 31 p.

POP2019-02	Kozmian-Ledward, L., Jeffs, A. and Gaskin, C. 2020. Rexer-Huber K., Parker G.C. 2021. Fish shoal dynamics in north-eastern New Zealand: zooplankton sample analysis. 52 p.
POP2020-04	Rexer-Huber K., Parker G.C. 2021. Antipodes Island grey petrels: assess and develop population estimate methodology. 34 p.
POP2020-03	Finucci, B., Stephenson, F., Petersen, G., Francis, M. and Pinkerton, M. 2020. Exploring the drivers of spatial distributions of basking sharks in New Zealand waters. 50 p.
POP2018-02	Mattern. T. and Ellenberg, U. 2021. Hoiho population and tracking. 50 p.
N/A	Bose, S. & Debski, I. 2021. Antipodean albatross spatial distribution and fisheries overlap 2020. 36 p.

3.3 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 Act, 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 2020/21 fishing year and Figure 4 shows the total amount levied for both deepwater, and all, stocks between the 2006/07 and 2020/21 fishing years. Species specific cost recovery levies are provided in Appendix V.

Table 15: The total levied for the 2020/21 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		5,301,566	12,739,944
Registry		1,512,450	3,634,498
Observers	**MPI**	3,308,916	4,374,333
	DOC	647,917	1,496,832
Research	**MPI**	4,519,167	9,535,966
	DOC	388,607	914,484
Under & Overs	**MPI**	- 155,205	- 360,706
	DOC	17,934	76,776
Total		**$15,541,351**	**$32,412,126**

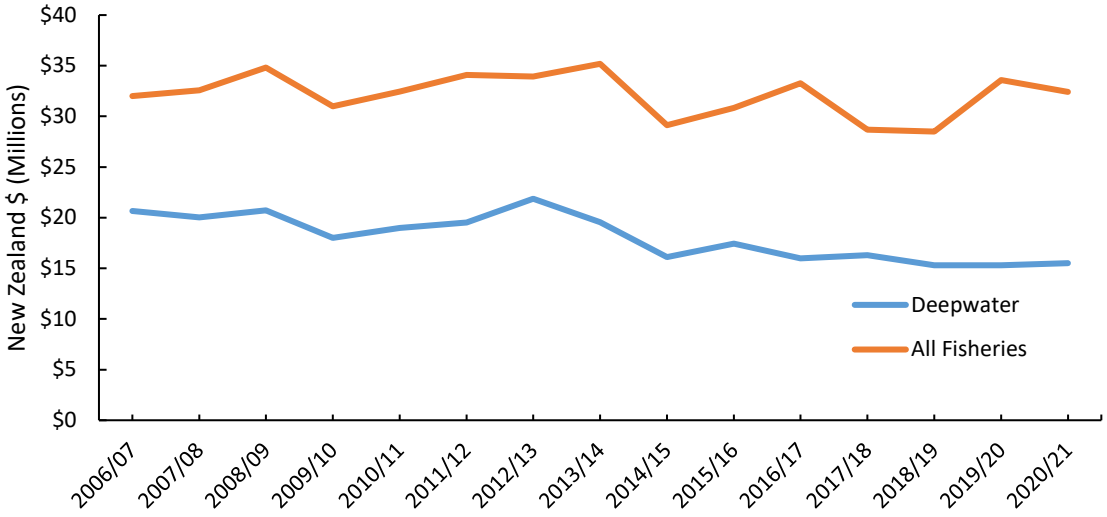

Figure 4: Total amount recovered by cost recovery levies between 2006/07 and 20/21. Separate totals are shown for deepwater species and all species combined.[30]

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 2020/21 fishing year. Fisheries-specific environmental interactions are reported in Appendix I. Please note that all 2020/21 data presented in this section is ungroomed and subject to change.

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. In order 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 VMPs for mitigating incidental seabird captures, Marine Mammals 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 each observed trip 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 DWG. In any instance where issues were reported by observers,

[30] The decline in deepwater levies cost recovered from 2013/14 onwards is in part due to shifting trawl surveys to alternate years.

further follow up action is taken by DWG (discussed below). Regardless of whether follow up action is required or not, DWG provide feedback to operators after every observed trip.

Table 16 and Figure 5 summarises the number of observed trips 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 2020/21 fishing years, and the results of the audit of vessel adherence.

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

Fishing year	Observed trawl trips	No. of reviews 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[31]	159	15	9%
2019/20	146	142	120	18	13%
2020/21	141	141	120	21	18%

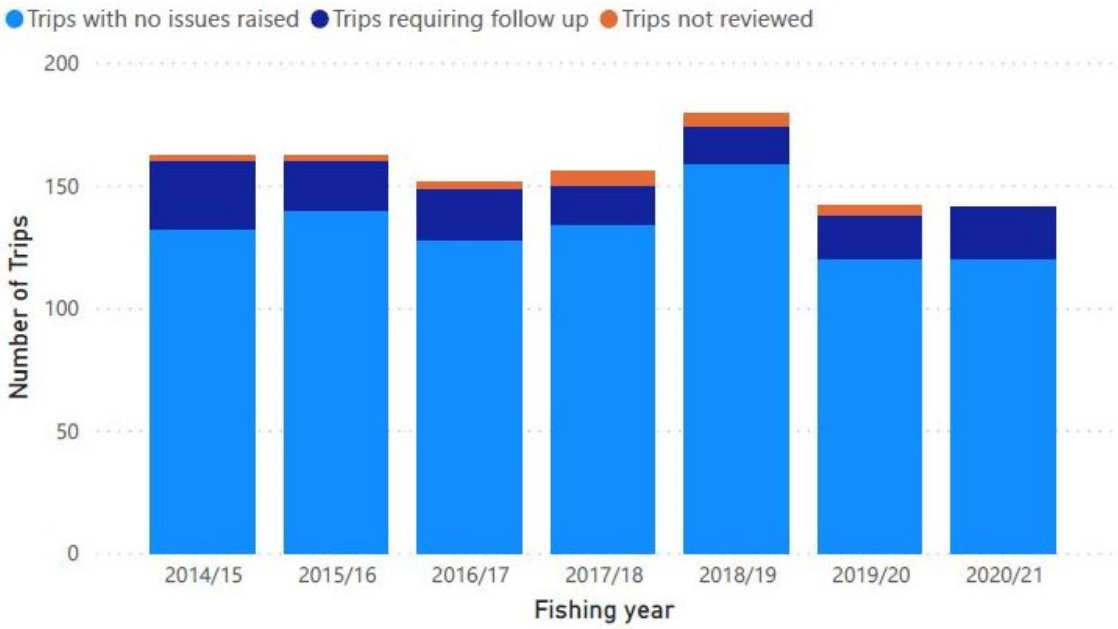

Figure 5 Summary of FNZ observer audits of adherence to non-regulatory measures[32]

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 against include the use of bird mitigation devices, the removal of fish 'stickers' from the net

[31] Those 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.
[32] From time to time a small number of trips are not reviewed due to data issues

before shooting, avoiding shooting gear near congregations of marine mammals, and employing appropriate offal management techniques. Offal 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 2020/21 VMP-related issues that required follow-up by DWG were identified following 23 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). Offal management issues were followed up after 12 trips.

I. **Administrative** – Relating to misunderstandings about requirements i.e. the need for observers to be shown live seabirds prior to release;

II. **Seabird trigger reporting** – relating to the reporting of trigger points;

III. **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

IV. **Offal management issues** – see below.

Table 17: Breakdown of reviews with VMP-related referrals between the 2014/15 and 2020/21 fishing years

Type of Referral	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Administrative	2	0	2	2	2	3	4
Seabird trigger not reported	2	1	0	2	0	0	0
Seabird scaring devices	8	5	6	3	2	3	6
Offal management	13	12	13	9	11	12	13
Total	**25**	**18**	**21**	**16**	**15**	**18**	**23**[33]

[33] Some follow up's had multiple issues

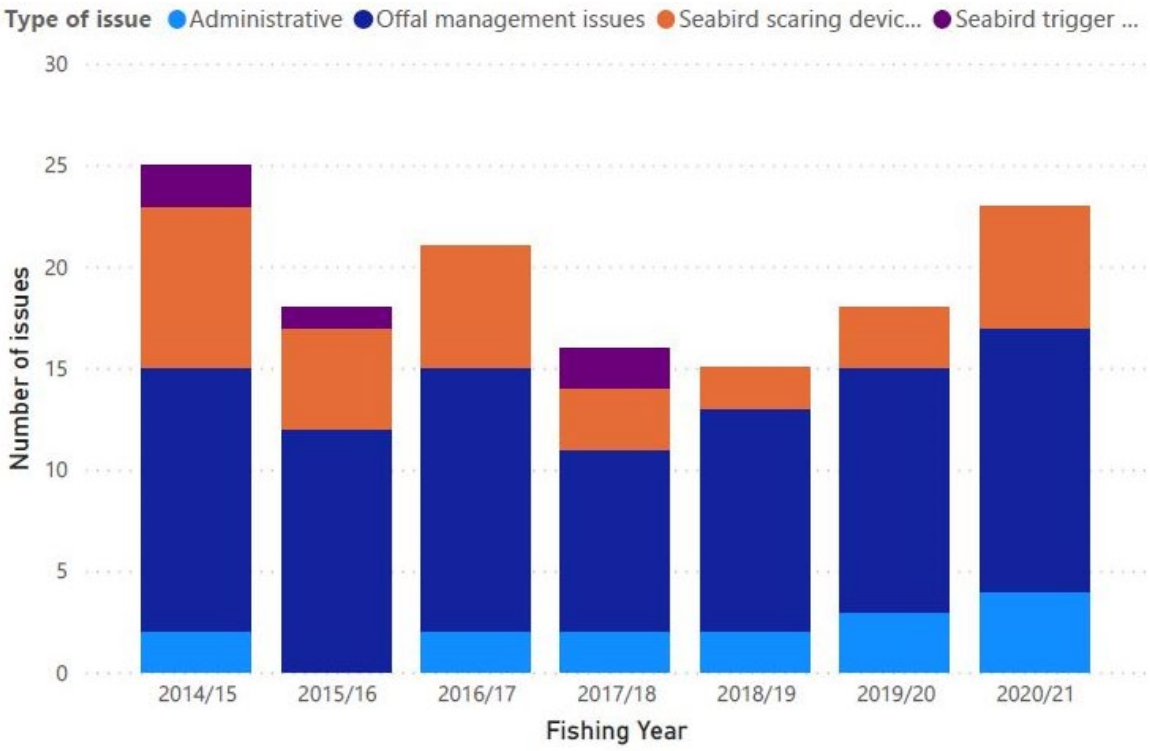

Figure 6 **Breakdown of reviews with VMP-related referrals between the 2014/15 and 2020/21 fishing years**

4.1.2 OFFAL MANAGEMENT ISSUES

The management of offal is a contributing factor to both seabird and marine mammal captures. Therefore, issues with offal management on board vessels are considered relevant to both VMPs and MMOPs. During the 2020/21 fishing year there were 13 trips that required follow up in relation to offal management related issues (Table 18). Issues are divided into four broad categories: general offal management, net cleaning or leaving the net in the water longer than desirable, floor wash, and breakdown procedures.

Table 18: Breakdown of offal management/food attractant related reviews for VMP/MMOP issues between the 2014/15 and 2020/21 fishing years.

Type of issue	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
General offal management	7	9	4	6	7	6	9
Net cleaning/time in water	3	0	1	2	2	4	1
Floor wash	2	1	4	1	2	2	2
Breakdown procedures	1	2	4	0	0	0	1
Total	**13**	**12**	**13**	**9**	**11**	**12**	**13**

4.2 BOTTOM LONGLINE OPERATIONAL PROCEDURES

During the 2020/21 fishing year, FNZ observers audited the performance of nine vessels against the Ling Bottom Longline (LIN 2-7) Operational Procedures. 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 2020/21 in relation to either offal management or seabird scaring devices.

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.[34] 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 2020/21 fishing year and Figure 7 shows the top ten species caught. Note that Table 19 and Figure 7 use raw data from Fisheries New Zealand Observers; species identifications 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 2020/21 fishing year from deepwater fisheries[35]

Seabird species		2020/21		
Common name	Species Code	Alive	Dead	Total
Albatrosses (Unidentified)	XAL	5	5	10
Black petrel	XBP	0	1	1
Buller's albatross	XBM	5	10	15
Buller's and Pacific albatross	XPB	2	15	17
Cape petrels	XCP	0	2	2
Fairy prion	XFP	0	1	1
Flesh-footed shearwater	XFS	2	2	4
Giant petrels (unidentified)	XTP	0	2	2
Great albatrosses	XGA	2	0	2
Mid-sized Petrels & Shearwaters	XPM	0	1	1
Northern giant petrel	XNP	0	1	1

[34] The methods used to estimate the total number of protected species captures can be found in: Abraham, E. R., Richard, Y., Berkenbusch, K. & Thompson, F. (2016). Summary of the capture of seabirds, marine mammals, and turtles in New Zealand commercial fisheries, 2002–03 to 2012–13. *New Zealand Aquatic Environment and Biodiversity Report No. 169.* 205 pages.

[35] (trawl vessels >46 m targeting any stock, trawl vessels >28 m targeting Tier 1 or Tier 2 stocks, trawl vessels <28 m targeting HOK, ORH or SCI and bottom longline vessels targeting ling in quota management areas LIN 3 – LIN 7). Figures exclude deck strikes, impacts against the vessel and records where seabirds ride the trawl net codend up the stern ramp and are released alive.

Petrel (Unidentified)	XPE	4	0	4
Petrels, Prions and Shearwaters	XXP	3	3	6
Prions (unidentified)	XPN	0	1	1
Procellaria petrels	XPC	7	14	21
Pterodroma petrels	XPT	1	0	1
Royal albatrosses	XRU	0	1	1
Salvin's albatross	XSA	6	18	24
Shearwaters	XSW	0	3	3
Smaller albatrosses	XMA	4	5	9
Sooty shearwater	XSH	4	32	36
Southern royal albatross	XRA	2	2	4
Storm petrels	XST	0	2	2
Wandering albatross (unidentified)	XWA	1	0	1
Westland petrel	XWP	2	8	10
White-capped albatross	XWM	29	45	74
White-chinned petrel	XWC	17	100	117
Total		**96**[36]	**274**	**370**

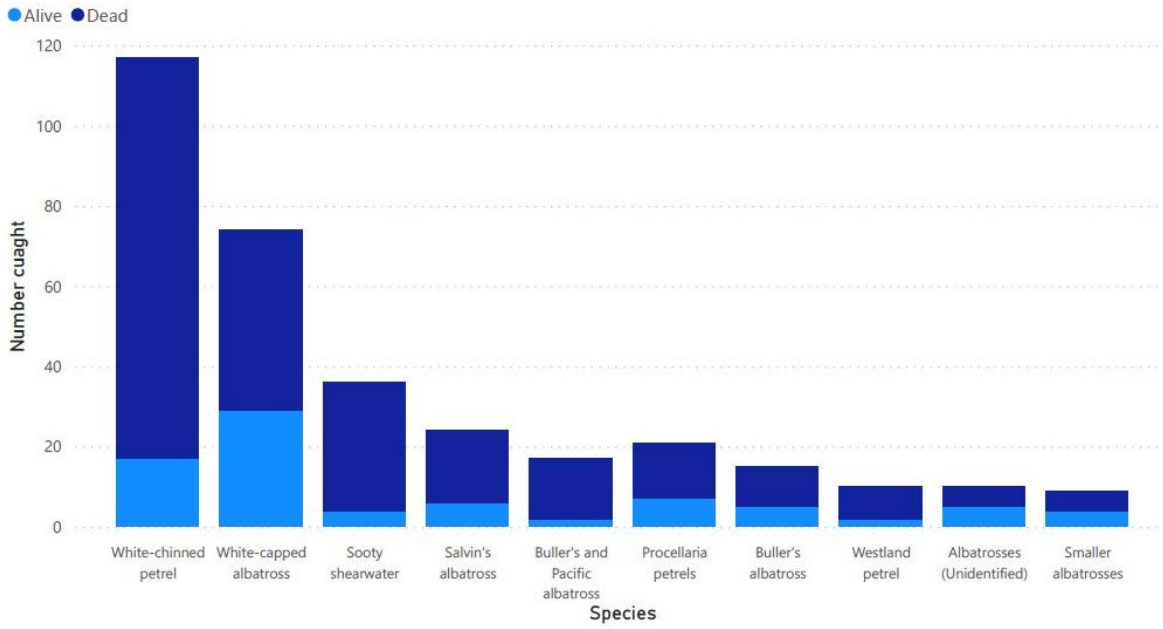

Figure 7 **Top Ten Seabird Species Caught in 2020/21**

[36] Equates to 26% released alive

Table 20 and figures 8 and 9 summarises the capture method of observed seabird captures on deepwater trawl vessels between the 2014/15 and 2020/21 fishing years.

Table 20: Number of observed seabird captures on deepwater trawl vessels classified according to capture method and life status between 2014/15 and 2020/21[37].

Fishing year	Net captures[38]			Warp captures			Other[39]		
	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	-	-

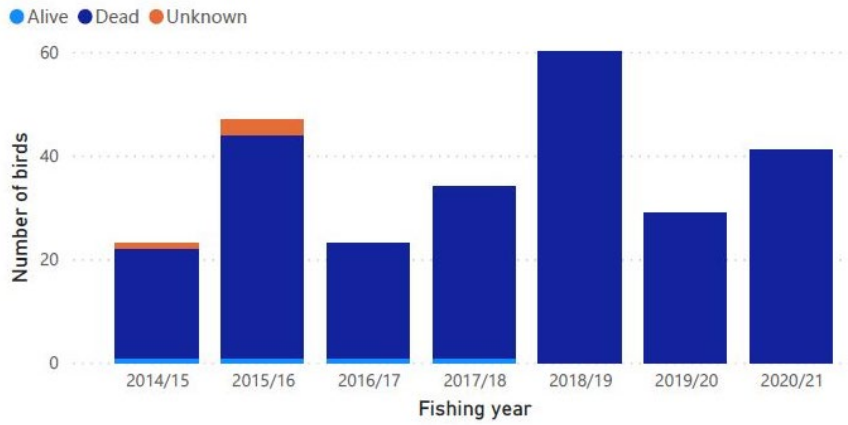

Figure 8 **Number of observed seabird warp captures on deepwater trawl vessels between 2014/15 and 2020/21**

[37] excluding deck strikes and impacts against the vessel

[38] Includes birds retrieved from the SLED, caught in the chaffing gear or in the lengthener mesh.

[39] Includes unknown capture methods, birds caught in mitigation devices and birds tangled with paravanes.

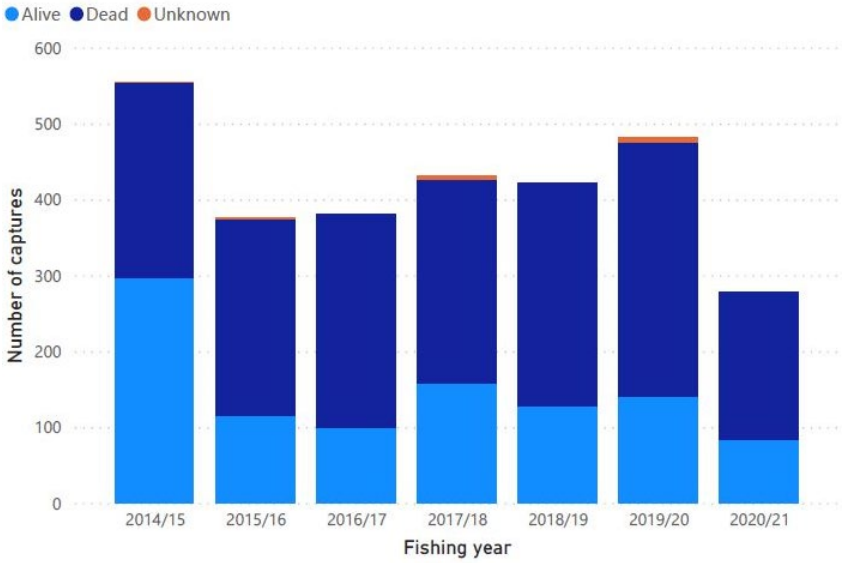

Figure 9 **Number of observed seabird net captures on deepwater trawl vessels between 2014/15 and 2020/21**

Table 21 and figure 10 show industry reported seabird captures between the 2014/15 and 2020/21 fishing years.

Table 21: Industry-reported seabird[40] interactions between the 2014/15 and 2020/21 fishing years from the core deepwater fleet.[41]

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**

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

[41] These data are not cumulative with Table 21: an observed capture will also have been reported by the vessel (i.e. the seabird observed captures are the same events as the industry reported seabird captures).

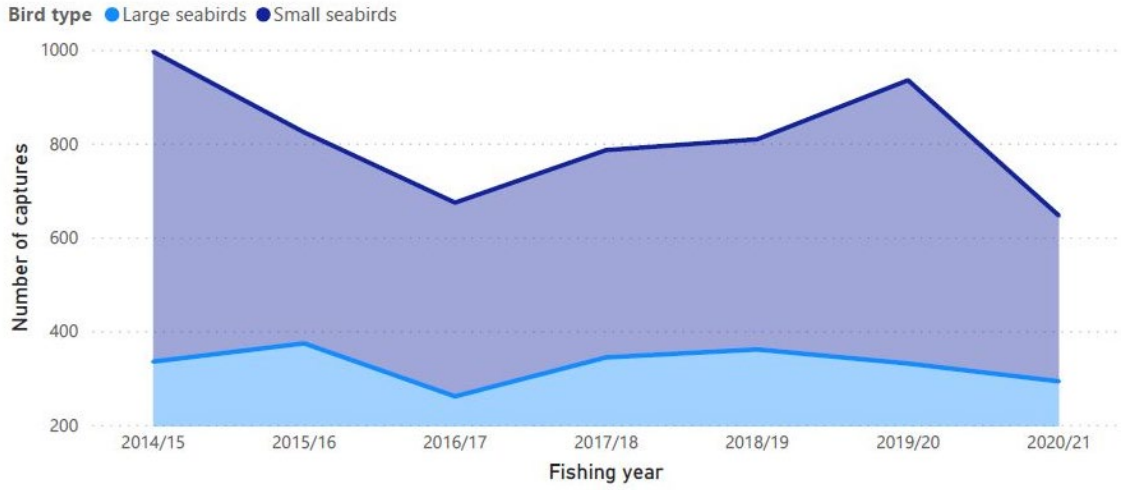

Figure 10 **Industry-reported seabird[42] interactions between the 2014/15 and 2020/21 fishing years**

Table 22 and Figure 11 show the number of observed captures, and the observed capture rate (per 100 tows) from deepwater trawl vessels targeting deepwater species (includes some effort from vessels <28 m). Seabird captures fluctuate over time. The recent peak in 2019/20 is a result of an increase in fisher-reported captures on the autoline fleet during 2019/20 and higher captures on trawl vessels >28m. Total seabird captures reduced in 2020/21.

Table 22: Observed seabird captures for New Zealand deepwater and middle-depth trawl fisheries for the 2020/21 fishing year[43]

Target species	Tows	Tows observed	% of tows observed	Observed captures	Observed capture rate (per 100 tows)
Hoki	8,733	3,696	42%	97	2.6
Hake	205	168	82%	0	0
Ling (LIN 3 – 7)	768	282	37	4	1.4
Squid	3,770	2,409	64%	202	8.4
Southern blue whiting	439	340	77%	2	0.6
Jack mackerel	1,600	917	57%	1	0.1
Scampi	4,926	269	5%	123	4.5
Deepwater (ORH/OEO/CDL/BYX)	4,412	1,319	30%	4	0.3
Barracouta	940	631	67%	14	2.2
Warehou species	435	245	56%	3	1.2%
Total	**26,228**	**10,276**	**39%**	**339**	**3.3**

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

[43] excluding deck strikes and impacts against the vessel, includes effort by vessels <28 m for hoki, orange roughy and scampi target fisheries

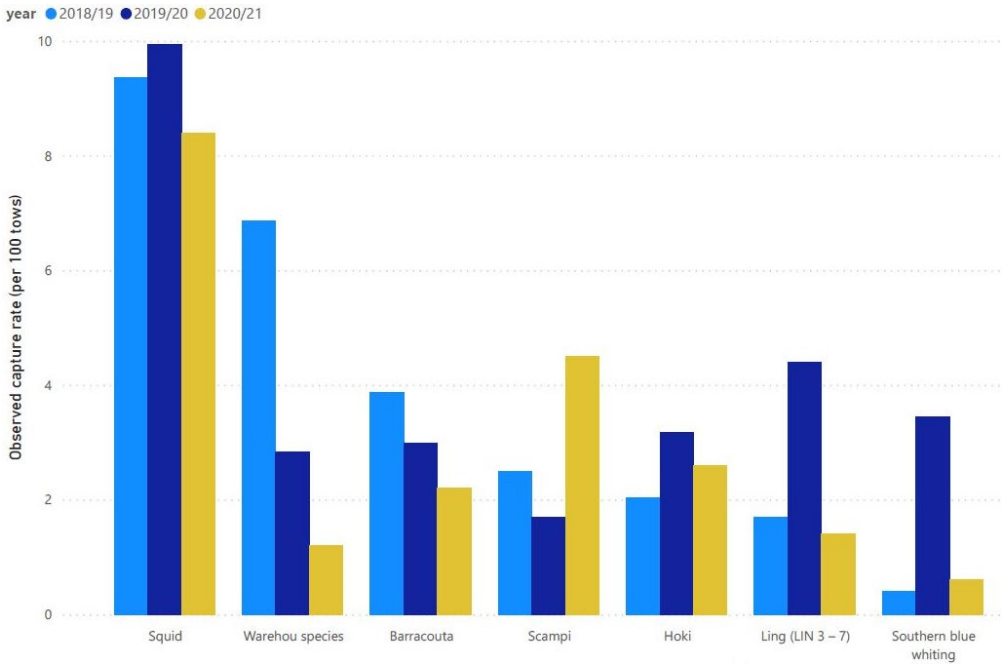

Figure 11 **Observed seabird captures for New Zealand deepwater and middle-depth trawl fisheries between 2018/19 and 2020/21 fishing years[44]**

Table 23 shows the number of observed, and estimated seabird captures from deepwater ling bottom longline fisheries.

Table 23: Observed and estimated seabird captures from deepwater ling bottom longline fisheries (LIN 3 – LIN 7) between 2014/15 and 2020/21.

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	537	304 - 990
2015/16	21,229,063	2,059,615	10%	88	0.043	669	427 – 1,076
2016/17	23,786,999	3,800,948	16%	31	0.008	583	326 – 1,078
2017/18	19,232,411	5,113,103	27%	23	0.004	335	198 - 579
2018/19	20,836,681	2,375,340	11%	18	0.008	-	-
2019/20	19,213,033	3,271,623	17%	57	0.017	-	-
2020/21	20,858,076	1,181,698	6%	31	0.026	-	-

Seabird interactions by fishery are reported in Appendix I. More detailed information for captures and estimated captures of individual bird species may be found on the protected species website.

[44] Fisheries with a capture rate < 3 are not shown

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 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 ER, Fisheries Management can independently monitor trigger points and identify discrepancies between the ER data and what was notified to DWG.

There were nine trigger point activations for seabird captures in the 2020/21 fishing year. Trigger point specifics and activations are summarised in Table 24 below. 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.

Table 24: Number of seabird trigger point activations (as reported by DWG) between the 2015/16 and 2020/21 fishing years[45].

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

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 process. Table 25 reports all observed marine mammal captures in deepwater fisheries between the 2017/18 and 2020/21 fishing years while Table 26 reports all fisher reported marine mammal captures in deepwater fisheries between the 2017/18 and 2020/21 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.

[45] From trawl vessels >28 m (overall length), trawl vessels <28 m targeting scampi, or bottom longline vessels targeting ling in quota management areas LIN 2 – LIN 7 (any size)

Table 25: Observed captures (core deepwater fleet) of marine mammals between the 2017/18 and 2020/21 fishing years.[46]

Species	Observed captures							
	Alive				Dead			
	17/18	18/19	19/20	20/21	17/18	18/19	19/20	20/21
Common dolphin	-	-	-	-	1	-	-	-
Dusky dolphin	-	-	-	-	-	-	2	-
NZ fur seal	3	7	2	1	68	56	52	58
NZ sea lion	1	-	1	2	6	9	-	7
Seals and sea lions	-	-	-	-	-	-	-	-
Pilot whale	-	-	-		1	-	1	
Orca	-	-	-		1	-	-	
Baleen whales	-	-	-		-	-	-	
Southern right whale	-	-	-		-	-	-	

Table 26: Industry reported captures (core deepwater fleet) of marine mammals between the 2017/18 and 2020/21 fishing years.

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

[46] These are not cumulative; an observed capture will also have been reported by the vessel (i.e. the NZ sea lion observed captures are the same events as the industry reported NZ sea lion captures). In other words, the number reported by observers is independent of those reported by industry. Observer and fisher-reported records involving decomposing carcasses have not been included.

Table 27: Observed NZ fur seal captures from deepwater and middle-depth trawl fisheries for the 2020/21 fishing year[47].

Target species	Tows	Tows observed	% of tows observed	Observed captures
Hoki	8,733	3,696	42%	23
Hake	205	168	82%	0
Ling (LIN 3 – 7)	768	282	37	0
Squid	3,770	2,409	64%	27
Southern blue whiting	439	340	77%	3
Jack mackerel	1,600	917	57%	3
Scampi	4,926	269	5%	0
Deepwater (ORH/OEO/CDL/BYX)	4,412	1,319	30%	0
Barracouta	940	631	67%	4
Warehou species	435	245	56%	1
Total	**26,228**	**10.276**	**39%**	**62**

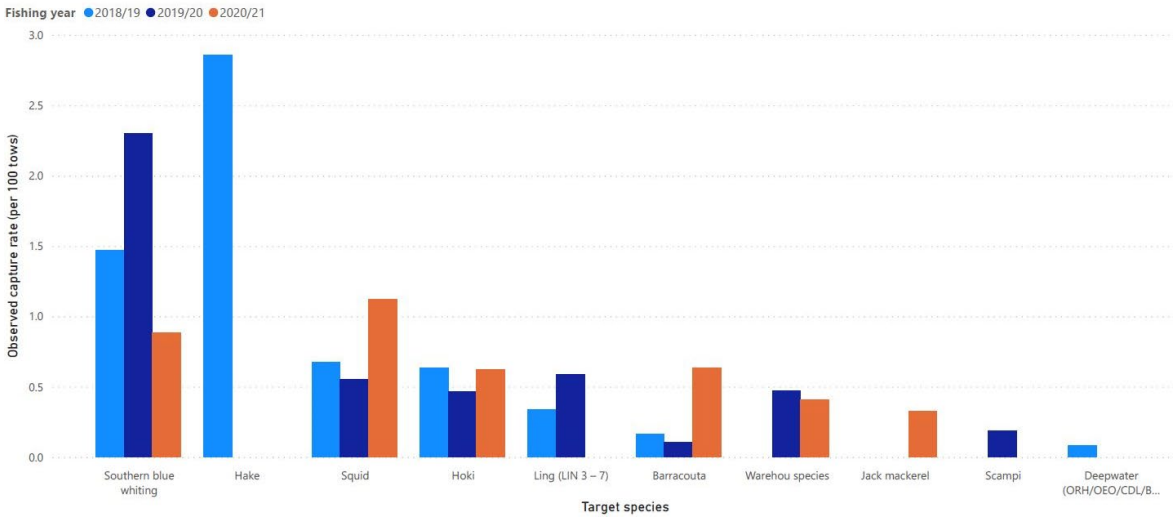

Figure 12 Observed NZ fur seal captures from deepwater and middle-depth trawl fisheries for the 2020/21 fishing year

4.4.1 MARINE MAMMAL OPERATIONAL PROCEDURES

The Marine Mammal Operational Procedures (MMOPs) aim to reduce the risk of incidental captures of marine mammals during deepwater fishing activity. Measures included in the MMOPs 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 be on the lookout for marine mammals around fishing gear. Specific measures are included to minimise the risk of

[47] Incudes effort by vessels <28 m for hoki, orange roughy and scampi target fisheries. Records involving decomposing carcasses have not been included

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 trigger point activations for marine mammal captures during the 2020/21 fishing year. These are summarised in Table 28.

Table 28: Marine mammal trigger point activations between the 2015/16 and 2020/21 fishing years.

Species	Trigger Points		2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
	Captures in any 24 hr period	Captures in any 7 day period						
NZ fur seal	2	5	6	5	6	8	6	11
Common dolphin	1	-	2	0	1	0	1	1
NZ sea lion	1	-	3	3	8	9	2	9
Other[48]	1	-	0	1	2[49]	2[50]	4[51]	0

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.[52] 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 under review at the time this ARR was published (NPOA-Sharks 2022). The NPOA-Sharks sets out goals and five-year objectives to guide the conservation and management of sharks. The NPOA Sharks objectives that are most immediately relevant to deepwater fisheries are the objective to eliminate shark finning in New Zealand, and the objective to reduce the use of generic reporting codes.

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.

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

[49] One orca and one unidentified dolphin.

[50] 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.

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

[52]Throughout this section the term sharks refers to all species in the class Chondrichthyes, which includes all cartilaginous fish such as sharks, skates, rays and chimaer

as

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 2020/21 fishing year. Table 30 shows the number of observed and industry reported protected shark captures in deepwater fisheries between the 2015/16 and 2020/21 fishing years.

Table 30: Observed and industry reported captures of protected shark species from the core deepwater fishing fleet between the 2015/16 and 2020/21 fishing years.[53]

Species		15/16	16/17	17/18	18/19	19/20	20/21
Basking shark	Observed	1	5	1	7	11	3
	Fisher-reported	5	8	1	7	12	4
Smalltooth sandtiger shark	Observed	-	-	-	-	-	1
	Fisher-reported	-	-	-	-	-	1
White pointer shark	Observed	1	3	5	3	9	4
	Fisher-reported	1	4	5	3	9	4

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

[53] Observed captures and Industry-reported captures are not cumulative: an observed capture will also have been reported by the vessel (i.e. the observed white pointer shark captures are the same events as those reported by industry).

deepwater fisheries. Table 31 shows the reported landings of sharks by the core deepwater fleet during the 2020/21 fishing year.

Table 31: Reported landings of sharks from the core deepwater fishing fleet in 2020/21 (tonnes).

Species	Chimaeras[54]	Rays & Skates	Sharks & Dogfish	Total
Generic reporting code	1	6	230	237
QMS species	1,086	642	3,733	5,461
Other	131	40	1,064	1,235
Total	**1,218**	**688**	**5,027**	**6,933**

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 2020/21 fishing year[55] by the core deepwater fleet.

Year	% industry-reported landings with generic codes	% 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%

Details of QMS shark landings by the core deepwater fleet during 2020/21 are summarised in Table 33. No vessels from the core deepwater fleet reported landing fins from a shark species subject to the finweight/greenweight ratio or any sharks under the processed state code SFA (shark fins attached).

[54] Cartilaginous fish in the order Chimaeriformes (variously known as ghost shark or elephant fish)
[55] As a percent of total reported shark landings/catches

Table 33: Details of QMS shark species landed by the core deepwater fleet during the 2020/21 fishing year (tonnes).

Species	Total landings [56]	Landed green	Landed processed (exc MEA)	Mealed	Discarded under observer approval[57]	Returned dead (6TH schedule)	Returned alive (6th schedule)	Accidental loss
Blue shark	-	-	-	-	<1	5	1	<1
Elephant fish	4	<1	2	2	1			-
Ghost shark	447	17	375	55	66			<1
Mako shark	-	-	-	-	<1	7	3	-
Pale ghost shark	749	9	562	177	8			<1
Porbeagle shark	<1	-	-	<1	<1	20	4	-
Rig	16	<1	14	1	2		<1	<1
Rough skate	174	31	84	58	9		53	<1
School shark	168	<1	147	21	12		6	1
Smooth skate	311	5	241	65	7		64	2
Spiny dogfish	1,083	30	61	992	1	2,677		47
Total	**2,950**	**93**	**1,486**	**1,372**	**107**	**32**[58]	**130**[59]	**51**

4.6 TIER 3 SPECIES

Tier 3 species are non-QMS species that are caught during fishing activity. The two main Tier 3 species landed are reported in figure 13. Full details of all Tier 3 species caught in deepwater fisheries can be found in Appendix III. A quantitative analysis of both QMS and non-QMS species bycatch in deepwater fisheries can be found online.[60]

[56] 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).

[57] Highlighted numbers indicate that fishers do not require observer approval to return particular species

[58] Does not include spiny dogfish returns.

[59] See above.

[60] Finucci, B.; Edwards, C.T.T; Anderson, O.F.; Ballara, S.L. (2019). Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2016–17.

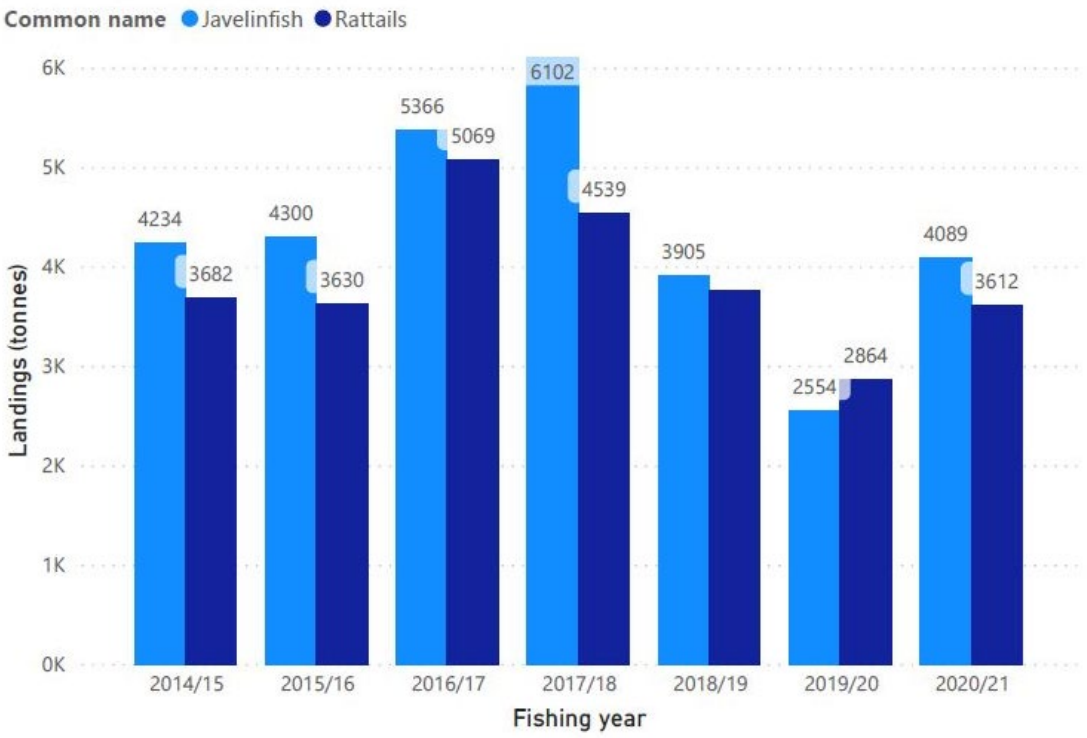

Figure 13 **Landings (tonnes) of the main two Tier 3 species by the core deepwater fleet between the 2014/15 and 2020/21 fishing year**

4.7 BENTHIC INTERACTIONS

4.7.1 BENTHIC BYCATCH

Targeting many deepwater species utilises fishing methods resulting 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 2020/21 are shown in Table 34.

Table 34: Observed and industry reported catch of benthic species (kg) by the core deepwater fleet between the 2017/18 and 2020/21 fishing years[61].

	17/18		18/19		19/20		20/21	
	Observed	Industry Reported	Observed	Industry Reported	Observed	Industry Reported	Observed	Industry Reported
Anemones	18,463	5,754	7,773	4,275	5,064	9,249	7,852	14,312
Corals (COU)	240	82	631	163	2,656	35	3,860	20
Corals, Sponges, Bryozoans (CSB)[62]	2,166	2,926	8,141	27,928	1,024	1,488	938	5,350
Hydroids	23	-	18	-	65	-	10	
Sea pens	169	-	104	-	125	-	95	
Sponges	47,692	89,452	18,752	78,622	30,639	57,909	33,772	49,936

4.7.2 TRAWL FOOTPRINT

The most recent iteration of the deepwater trawl footprint (as reported in the 2019/20 ARR) estimated the extent of bottom contact by trawl vessels targeting Tier 1 and Tier 2 species between 1990 and 2019.[63] The reporting is based on all relevant reporting data and is reviewed each year through the Aquatic Environment Working Group. The TCER[64], TCEPR[65], and ERS[66] 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 '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 2019 was 351,684km^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 2019 the trawl footprint for both tier 1 and tier 2 species was 43,841km^2, the lowest annual footprint for the past 30 years.
- During 2019, hoki trawls contacted 45% of the cells[67] making up the deepwater trawl footprint while orange roughy contacted 18%. Trawling for scampi, squid, and jack mackerels accounted for 11%, 10%, and 7% of the 2019 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 (Figure 14).[68]

[61] Excludes catches from outside the EEZ

62 Anything reported under the CSB code could be corals, sponges or bryozoans

[63] 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

[64] Trawl Catch Effort Processing Return

[65] Trawl Catch Effort Return

[66] Electronic Reporting System

[67] 25km^2 cells are used as reference points. A cell is considered 'contacted' if any part of the cell is trawled

[68] This is not displayed in figure 4

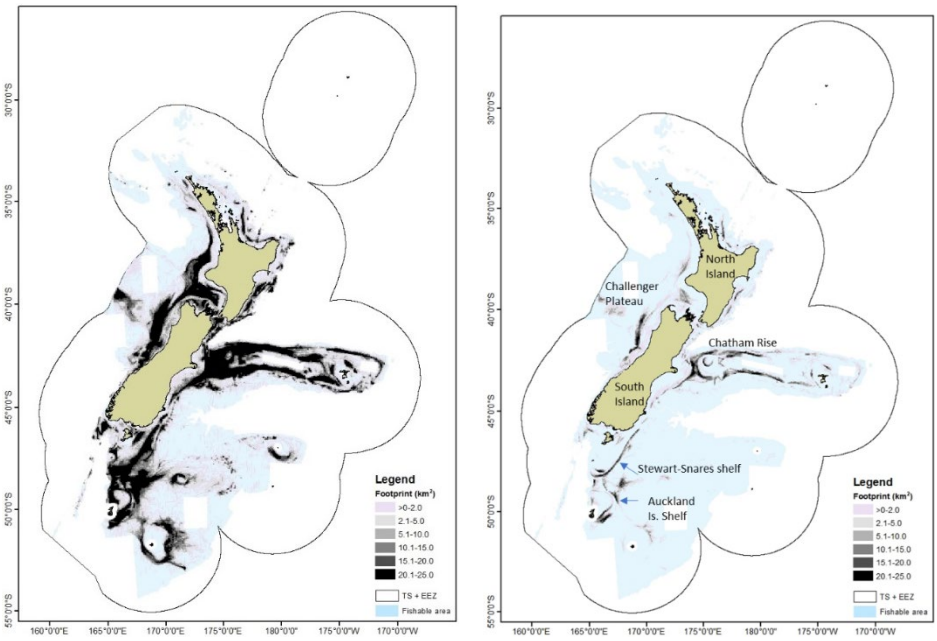

Figure 14: Distribution of the deepwater fishstocks trawl footprint cumulative between 1990 and 2019 (left) and the 2019 year alone (right)

Appendix I: Summaries of Deepwater Fisheries for 2020/21

ALFONSINO (TIER 2) BYX

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
BYX 1	10	304	300	2	2	0
BYX 2	1,594	1,575	1,575	-	-	-
BYX 3	427	1,010	1,010	-	-	-
BYX 7	6	81	81	-	-	-
BYX 8	0	20	20	-	-	-

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% B_0	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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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	$159
BYX 3								$0
BYX 7								$0
BYX 8								$0
BYX 2		**100-110%**	**110-130%**	**130-150%**	**150-170%**	**170-190%**	**190%+**	**2020/21 Actual**
		$2.20	$2.64	$3.08	$3.52	$3.96	$4.40	$35,154

Environmental indicators		
Benthic interactions[69] (fishable area trawled)	2019/20: 321km^2 (<0.1%)	[70]1990 to 2019: 3,847km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 86.9 m
Export earnings 2021[71]	$NZ 7.9 m FOB [72](includes catch taken outside the EEZ)

[69] Trawl footprint statistics include all tows when the species is targeted only.
[70] 1990-2019 trawl footprint is cumulative without accounting for overlap between years.
[71] All export earnings are provisional only and are subject to change.
[72] 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 (TIER 2) BAR

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
BAR 4	775	-	3,019	-	-	-
BAR 5	8,638	8,370	8,200	3	2	165
BAR 7	3,066	-	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)

2020/21 Deemed value rates (per kg) and invoices							
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**					**2020/21 Actual**
		100-120%	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**200%+**
BAR 7	$0.12	$0.24	$0.29	$0.34	$0.38	$0.43	$0.48	$4

Stock	**100-110%**	**110-120%**	**120%+**	**2020/21 Actual**
BAR 4 BAR 5	$0.25	$0.50	$1.00	$0 $71,791

Environmental indicators and observer coverage[73]		
Observer coverage	2018/19: 82% tows observed	2019/20: 89% tows observed
Seabirds	2018/19: 24 observed captures	2019/20: 28 observed capture
Fur seals	2018/19: 1 observed capture	2019/20: 1 observed capture
Benthic interactions (fishable area trawled)	2019/20: 2,082km^2 (0.15%)	1990 to 2019: 35,422km^2

Economic indicators (calendar years)	
Quota value 2019	$NZ 83.3 m (includes BAR 1 holdings)
Export earnings 2021	$NZ 32.3 m FOB[74]

[73] Trawl vessels greater than 28 m in length targeting all barracouta stocks.
[74] All BAR stocks

BLACK CARDINALFISH (TIER 2) CDL

2020/21 Landings, catch limits and allowances (in tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
CDL 1	3	1,320	1,200	0	0	120
CDL 2	401	460	440	0	0	20
CDL 3	125	196	196	0	0	0
CDL 4	7	66	66	0	0	0
CDL 5	6	22	22	0	0	0
CDL 6	2	1	1	0	0	0
CDL 7	3	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

2020/21 Deemed value rates (per kg) and invoices				
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**		**2020/21 Actual**
		100%+		
CDL 6 CDL 7 CDL 8 CDL 9	$0.15	$0.30		$186 $0 $0 $0
CDL 5	$0.27	$0.30		$0
Stock	**Interim rate**	**100-120%**	**120%+**	**2020/21 Actual**
CDL 1 CDL 2	$0.54	$0.60	$0.69	$0
CDL 3 CDL 4	$0.26	$0.52	$0.60	$0 $0

Environmental indicators and observer coverage		
Observer coverage	2018/19: 10% tows observed	2019/20: 0% tows observed
Seabirds	2018/19: 0 observed captures	2019/20: 0 observed captures
NZ fur seal	2018/19: 0 observed captures	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)	2019/20: 70km^2 (<0.1%)	1990 to 2019: 2,213km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 5.9 m
Export earnings 2021	$NZ 0.543 m FOB

DARK GHOST SHARK (TIER 2) GSH

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
GSH 4	191	370	370	0	0	0
GSH 5	54	109	109	0	0	0
GSH 6	49	95	95	0	0	0

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)

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**				**Annual differential rate for excess catch (% of ACE)**			**2020/21 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 $84

Environmental indicators		
Observer coverage	2018/19: % tows observed	2019/20: % tows observed
Seabirds	2018/19: observed captures	2019/20: observed captures
Fur seals	2018/19: observed capture	2019/20: observed capture
Benthic interactions (fishable area trawled)	2019/20: 0 km^2 (<0.1%)	1990 to 2019: 89 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 2021	$NZ 0.29 m FOB (includes both pale and dark ghost shark, export statistics are not provided for individual ghost shark species)

DEEPWATER CRAB SPECIES (TIER 2) KIC/GSC/CHC

2020/21 Landings, catch limits and allowances (tonnes) [75]						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
KIC 3	0	10	10	0	0	0
KIC 5	0	10	10	0	0	0
KIC 6	1	10	10	0	0	0
GSC 3	6	15	14	0	0	1
GSC 5	52	20	19	0	0	1
GSC 6A	169	165	148	0	0	17
GSC 6B	1	250	237	0	0	13
CHC 1	1	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

2020/21 Deemed value rates (per kg) and invoices [76]								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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 2021	No export information specific to deepwater crabs is currently available

[75] All catch information is based on the April fishing year (1 April 2019 – 31 March 2020), (only shown for stocks where catches > 0.1 t were taken)

[76] only shown for stocks where catches > 0.1 t were taken

BLUE (ENGLISH) MACKEREL (TIER 2) EMA

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
EMA 3	3	392	390	1	1	0
EMA 7	2,832	3,352	3,350	1	1	0

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	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)

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 Actual**
		100-120%	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**200%+**	
EMA 3 EMA 7	$0.13	$0.26	$0.31	$0.36	$0.42	$0.47	$0.52	$0 $1

Environmental indicators		
Benthic interactions (fishable area trawled)	2019/20: 24 km^2 (<0.1%)	1990 to 2019: 570 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 26.3 m (includes EMA 1 & EMA 2 holdings)
Export earnings 2020	$NZ 17.1 m FOB (includes all stocks)

FROSTFISH (TIER 2) FRO

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
FRO 3	19	82	80	0	0	-
FRO 4	12	126	124	0	0	-
FRO 5	75	135	135	0	0	-
FRO 6	0	11	11	0	0	-
FRO 7	923	2,154	2,110	1	1	-
FRO 8	430	919	900	0	0	-
FRO 9	122	410	400	1	1	-

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

2020/21 Deemed value rates (per kg) and invoices			
Stock	**Interim rate**	**Annual rate for catch in excess of ACE**[77]	**2020/21 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)	2019/20: 68 km^2 (<0.1%)	1990 to 2019: 1,032 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 6.4 m (includes FRO 1 & FRO 2 holdings)
Export earnings 2021	No export information specific to frostfish is currently available

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

GEMFISH (TIER 2) SKI

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SKI 3	1,063	606	599	0	1	6
SKI 7	1,012	606	599	0	1	6

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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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	$403,611 $327,102

Environmental indicators		
Benthic interactions (fishable area trawled)	2019/20: 15 km^2 (<0.1%)	1990 to 2019: 2,579 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 19.1 m (includes SKI 1 & SKI 2 holdings)
Export earnings 2021	$NZ 3.2 m FOB (includes all stocks)

HAKE (TIER 1) HAK

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
HAK 1	1,503	3,701	3,701	-	-	-
HAK 4	207	1,818	1,800	0	0	18
HAK 7	1,368	2,300	2,272	0	5	23

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	HAK 1 Sub-Antarctic[78]	B_{2021} estimated to be 62% B_0. 'Very Likely' (>90%) to be at or above the target
		HAK 4 Chatham Rise[79]	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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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	$89 $53 $0

Environmental indicators and observer coverage[80]			
Observer coverage		2018/19: 91% tows observed	2019/20: 79% tows observed
Seabirds		2018/19: 0 observed captures	2019/20: 2 observed captures
Marine mammals	NZ fur seal	2018/19: 1 observed capture	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 374km^2 (<0.1%)	1990-2019: 21,049 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 75.3 m
Export earnings 2021	$NZ 10.3 m FOB

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

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

[80] Trawl vessels >28 m in length.

HOKI (TIER 1) HOK

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
HOK1	100,817	116,190	115,000	20	20	1,150

Reference points and current status			
Target range	35-50% B_0	Eastern stock[81]	B_{2021} was estimated to be 48% 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[82]	B_{2021} was estimated to be 35% B_0. About as Likely as Not (40–60%) to be above the lower end of the target range. Very Unlikely (< 10%) to be above the upper end of the target range
Soft limit	20% B_0	Eastern stock	B_{2021} 'Very Unlikely' (<10%) to be below the soft limit
		Western stock	B_{2021} 'Very Unlikely' (<10%) to be below the soft limit
Hard limit	10% B_0	Eastern stock	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		Western stock	B_{2021} 'Exceptionally Unlikely' (<1%) to be below the hard limit

2020/21 Deemed value rates (per kg) and invoices				
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**		**2020/21 Actual**
		100-102%	**102%+**	
HOK 1	$0.81	$0.90	$1.30	$192

Environmental indicators and observer coverage			
Observer coverage		2018/19: 29% tows observed	2019/20: 47% tows observed
Seabirds		2018/19: 70 observed captures	2019/20: 123 observed captures
Marine mammals	NZ fur seal	2018/19: 22 observed captures	2019/20: 18 observed captures
	NZ sea lion	2018/19: 1 observed capture	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 24,392km^2 (1.75%)	1990 to 2019: 167,649km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 1,251 m
Export earnings 2021	$NZ 192.4 m FOB[83]

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 2020/21 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 2020/21 fishing year.

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

[82] 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.

[83] Includes hoki surimi

Table 35: Catch limits and actual catch estimates for 2020/21 fishing year (tonnes).

	Stock	Catch limit	Catch within agreement (from FishServe)	Estimated catch (all fishers)
2020/21	Eastern stock	60,000	54,981	54,247
	Western stock	55,000	46,338	43,265

1.1.1 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 2012/13 and 2020/21 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. No targeting of hoki within any HSSA occurred during the specified time periods.

Table 36: Summary of HMA fishing activity by trawl vessels >28 m in length between the 2016/17 and 2020/21 fishing years.

Fishing year	Number of vessels that fished in HMA	Number of HOK target tows[84]	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
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
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
2020/21	11	0	109	66	1,122
Cook Strait[85]					
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

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

[85] Tows conducted within the Cook Strait HMA during 2012/13 and 2014/15 were undertaken as part of a research project to estimate hoki spawning abundance.

JACK MACKEREL (TIER 1) JMA

2020/21 Landings, Catch limits and Allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
JMA 3	5,601	9,000	8,780	20	20	180
JMA 7	31,810	32,537	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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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		2018/19: 79% tows observed	2019/20: 78% tows observed
Seabirds		2018/19: 3 observed captures	2019/20: 1 observed capture
Marine mammals	NZ fur seal	2018/19: 0 observed captures	2019/20: 0 observed captures
	Common dolphin	2018/19: 0 observed captures	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 2,825 km^2 (0.2%)	1990 to 2019: 46,698 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 153 m (includes JMA 1 holdings)
Export earnings 2021	$NZ 80.6 m FOB (for all stocks)

LING (TIER 1) LIN

2020/21 Landings, Catch limits and Allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
LIN 3	1,489	2,060	2,060	0	0	0
LIN 4	2,103	4,200	4,200	0	0	0
LIN 5	4,950	4,834	4,735	1	1	97
LIN 6	3,916	8,590	8,505	0	0	85
LIN 7	3,308	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[86]	B_{2021} estimated to be 71% B_0. 'Virtually Certain' (>99%) to be above the target
		LIN 6B[87]	B_{2006} estimated to be 61% B_0. 'Very Likely' (>90%) to be at or above the target.
		LIN 7[88]	B_{2020} estimated to be 47% B_0. 'Very Likely' (>90%) to be at or above the target.
		LIN CS[89]	B_{2010} estimated to be 54% B_0. 'Likely' (>60%) to be at or above the target
Soft limit	20% *B0*	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

2020/21 Deemed value rates (per kg) and charges					
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**			**2020/21 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 $0 $21 $0
LIN 4[90]	$1.01	$1.12			$0

Environmental indicators and observer coverage (LIN 3 – LIN 7 only)			
Observer coverage	Trawl (>28 m)	2018/19: 38% tows observed	2019/20: 26% tows observed
	Longline	2018/19: 11% hooks observed	2019/20: 17% hooks observed
Seabirds	Trawl (>28 m)	2018/19: 5 observed captures	2019/20: 15 observed captures
	Longline	2018/19: 18 observed captures	2019/20: 57 observed captures

[86] Excluding the Bounty Plateau.

[87] Bounty Plateau.

[88] Excluding Cook Strait.

[89] Cook Strait.

[90] Chatham Island resident fishers landing to Chatham Island Licenced Fish Receivers.

NZ fur seals	Trawl (>28 m)	2018/19: 1 observed capture	2019/20: 2 observed captures
	Longline	2018/19: 0 observed captures	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 1,645 km^2 (0.12%)	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 2021	$NZ 63.9 m FOB[91]		

LOOKDOWN DORY (TIER 2) LDO

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
LDO 1	141	168	168	0	0	0
LDO 3	316	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

2020/21 Deemed value rates (per kg) and invoices			
Stock	**Interim rate**	**Annual rate for catch in excess of ACE**	**2020/21 Actual**
LDO 1	$0.38	$0.42	$0
LDO 3			$0

Environmental indicators		
Benthic interactions (fishable area trawled)	2019/20: 90 km^2 (<0.1%)	1990 to 2019: 1,113 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 2.6 m
Export earnings 2021	This species is not individually listed in export statistics

OREO (TIER 1) OEO

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
OEO1	357	2,500	2,500	0	0	0
OEO3A	3,095	3,518	3,350	0	0	168
OEO4	3,542	3,780	3,600	0	0	180
OEO6	1,711	-	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

[91] Includes all stocks

		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	B_{2008} is 'Very Unlikely' (<10%) to be below the hard limit

2020/21 Deemed value rates (per kg) and charges

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2020/21 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		2018/19: 54% tows observed	2019/20: 37% tows observed
Seabirds		2018/19: 1 observed capture	2019/20: 0 observed captures
Marine mammals	NZ fur seal	2018/19: 1 observed capture	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 301km^2 (<0.1%)	1990 to 2019: 17,481km^2

Economic indicators (calendar year)

Quota value 2019	$NZ 106.7 m (includes all species)
Export earnings 2021	Black oreo - $NZ 3.3 m FOB Smooth oreo - $NZ 2.9 m FOB Oreo, other - $NZ 4.2 m FOB (this category includes black and/or smooth oreo that has not been reported by individual species)

CATCH SPLIT

OEO 1

Area	Catch limit for 2020/21 (t)	Industry reported catch (t)	Sum of catch reported via ERS (t)
Southland (*smooth oreo only*)	400	119	85
OEO 1 (*all species*)	2,500	357	357

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	1,333	1,291
Smooth oreo	1,650	1,762	1,762
Totals	3,350	3,095	3,053

OEO 4

Species	Catch limit (t)	Industry reported catch (t)	Sum of estimated catch reported via ERS (t)
Smooth oreo	2,600	2,780	2,782
Black oreo *(includes spiky and warty oreo)*	N/A	757	664
OEO 4 *(all species)*	3,600	3,542	3,446

ORANGE ROUGHY (TIER 1) ORH

2020/21 Landings, catch limits, and allowances (tonnes)						
Stock	**2020/21 Catch**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
ORH 1	680	1,470	1,400	-	-	70
ORH 2A	503	512	488	-	-	24
ORH 2B	59	63	60	-	-	3
ORH 3A	182	186	177	-	-	9
ORH 3B	6,525	8,355	7,967	-	5	339
ORH 7A	2,074	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[92]	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 NW Chatham Rise	B_{2017} estimated to be 38% B_0. 'Very Likely' (>90%) to be at or above the lower end of the target range.
		ORH 3B E&S Chatham Rise	B_{2020} estimated to be 36% B_0. 'Likely' (>60%) to be at or above the lower end of the target range.
		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[93]	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}[94] Unknown
Soft limit	20% B_o	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 NW Chatham Rise	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		ORH 3B E&S Chatham Rise	B_{2020} 'Very Unlikely' (<10%) to be below the soft limit
		ORH 3B Puysegur	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		ORH 7A	B_{2019} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		ORH 7B	B_{2020} Unknown
Hard limit	10% B_o	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 NW Chatham Rise	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		ORH 3B E&S Chatham Rise	B_{2020} 'Exceptionally Unlikely' (<1%) to be below the hard limit

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

[93] Includes the Westpac Bank.

[94] Preliminary

		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 NW Chatham Rise, ORH 3B E&S Chatham Rise & ORH 7A	Based on an F_{mid} of 4.5%.[95] 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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 Actual**
		100-110%			**110%+**			
ORH 1	$3.06	$3.40			$5.00			$0
Stock	**Interim rate**	**100-120%**	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**200%+**	**2020/21 Actual**
ORH 2A ORH 2B ORH 3A ORH 3B ORH 7A	$4.50	$5.00	$6.00	$7.00	$8.00	$9.00	$10.00	$0
Stock	**Interim rate**	**100-110%**			**110%+**			**2020/21 Actual**
ORH 7B	$2.88	$3.20			$5.00			$0

Environmental indicators and observer coverage			
Observer coverage		2018/19: 25% tows observed	2019/20: 33% tows observed
Seabirds		2018/19: 3 observed captures	2019/20: 1 observed capture
Marine mammals	NZ fur seal	2018/19: 0 observed captures	2019/20: 0 observed captures
Benthic impacts (fishable area trawled)		2019/20: 3,008km^2 (0.2%)	1990 to 2019: 41,175km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 547.5 m
Export earnings 2021	$NZ 54.2 m FOB (includes catch from outside the EEZ)

Table 37: 2020/21 sub-area catch limits and estimated catch for orange roughy stocks (tonnes).

Stock	Sub-area	Agreed catch limit	Industry reported catch	2020/21 Catch (reported via ERS)
ORH 1	Area A	530	136	124
	Area B	530	494	429
	Area C	470	0	2

[95] *F* refers to a fishing exploitation rate calculated using the harvest control rule

	Area D	470 (incl. 30 t bycatch limit in the MC Box)	33	90
ORH 2A	ORH 2A North	200	171	208
	ORH 2A South	288	205	272
ORH 3B	NW Chatham Rise	1,150	355	129
	E&S Chatham Rise	5,970	5,790	5,380
	Puysegur	347	346	285
	Sub-Antarctic	500	41	36

PALE GHOST SHARK (TIER 2) GSP

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
GSP 1	530	1,208	1,150	0	0	58
GSP 5	226	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

2020/21 Deemed value rates (per kg) and invoices			
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**	**2020/21 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 2021	$NZ 0.29 m FOB (includes both pale and dark ghost shark, Export statistics are not provided for individual ghost shark species)

PATAGONIAN TOOTHFISH (TIER 2) PTO

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
PTO 1	0	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

2020/21 Deemed value rates (per kg) and invoices				
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**		**2020/21 Actual**
		100-110%	**110%+**	
PTO 1	$13.50	$15.00	$25.00	$0

Economic indicators (calendar year)	
Quota value 2019	Not available
Export earnings 2021	$NZ 5.2 m FOB

PRAWN KILLER (TIER 2) PRK

2020/21 Landings, Catch limits and Allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
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

2020/21 Deemed value rates (per kg) and invoices			
Stock	**Interim rate**	**Annual differential rate for excess catch[96]**	**2020/21 Actual**
PRK 1 PRK 2 PRK 3 PRK 4A PRK 5 PRK 6A PRK 6B PRK 7 PRK 8 PRK 9	$0.10	$0.20	$0

Economic indicators (calendar year)

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

Quota value 2019	Not available
Export earnings 2021	Prawn killer does not feature as an individual species in export statistics; any exports are likely to be reported under the category other crustacea.

REDBAIT (TIER 2) RBT

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
RBT 1	1	20	19	0	0	1
RBT 3	2,171	2,305	2,190	0	0	115
RBT 7	38	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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 Actual**
		100-120%	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**200%+**	
RBT 1 RBT 3 RBT 7	$0.45	$0.50	$0.60	$0.70	$0.80	$0.90	$1.00	$0 $1 $0

Environmental indicators		
Benthic impacts (fishable area trawled)	2019/20: 9 km^2 (<0.1%)	1990 to 2019: 441 km^2

Economic indicators (calendar year)	
Quota value 2019	NZ$ 11.2 m
Export earnings 2021	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 (TIER 2) RIB

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
RIB 3	182	394	394	0	0	0
RIB 4	205	357	357	0	0	0
RIB 5	51	52	52	0	0	0
RIB 6	164	231	231	0	0	0
RIB 7	221	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

2020/21 Deemed value rates (per kg) and invoices

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2020/21 Actual
RIB 3 RIB 5 RIB 4 RIB 8	$0.27	$0.30	$0.36	$0.42	$0.48	$0.54	$0.60	$95 $0 $0 $0
RIB 6 RIB 7	$0.72	$0.80	$0.96	$1.12	$1.28	$1.44	$1.60	$0

Environmental indicators

Benthic impacts (fishable area trawled)	2019/20: 0 km^2 (0%)	1990 to 2019: 104 km^2

Economic indicators (calendar year)

Quota value 2019	$NZ 3.3 m (includes RIB 1, RIB 2 & RIB 9 holdings)
Export earnings 2021	No export information specific to ribaldo is currently available; any exports are likely to be reported under the category finfish-product state-other

RUBYFISH (TIER 2) RBY

2020/21 Landings, catch limits and allowances (tonnes)

Stock	2020/21 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RBY1	272	318	300	1	2	15
RBY2	131	435	433	1	1	0
RBY3	0	32	30	0	0	2
RBY4	10	19	18	0	0	1
RBY5	0	0	0	0	0	0
RBY6	0	0	0	0	0	0
RBY7	5	33	33	0	0	0
RBY8	0	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

2020/21 Deemed value rates (per kg) and invoices

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2020/21 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	$5 $0 $0 $0 $0 $0 $0 $0

Stock	Interim rate	100%+	2020/21 Actual
RBY 7	$0.38	$0.42	$0

Environmental indicators		
Benthic impacts (fishable area trawled)	2019/20: 72 km^2 (<0.1%)	1990 to 2019: 1,564 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 1.9 m
Export earnings 2021	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 (TIER 1) SCI

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SCI 1	127	139	132	0	0	6
SCI 2	148	161	153	0	0	8
SCI 3	406	428	408	0	0	20
SCI 4A	112	126	120	0	0	6
SCI 5	0	42	40	0	0	2
SCI 6A	245	321	306	0	0	15
SCI 6B	0	53	50	0	0	3
SCI 7	1	79	75	0	0	4
SCI 8	0	5	5	0	0	0
SCI 9	0	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_{20121} 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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 Actual**
		100-120%	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**200%+**	

All stocks	$25.65	$51.30	$61.56	$71.82	$82.08	$92.34	$102.60	$0 (all stocks)

Environmental indicators and observer coverage			
Observer coverage		2018/19: 16% tows observed	2019/20: 12% tows observed
Seabirds		2018/19: 17 observed captures	2019/20: 9 observed captures
Marine mammals	NZ fur seal	2018/19: 0 observed captures	2019/20: 1 observed capture
	NZ sea lion	2018/19: 1 observed capture	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 4,598km^2 (0.3%)	1990 to 2019: 20,938km^2

Economic Indicators (calendar year)	
Quota value 2019	$NZ 547.2 m
Export earnings 2021	$NZ 35.3 m[97]

SEA PERCH (TIER 2) SPE

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SPE 3	412	1,022	1,000	11	11	0
SPE 4	405	956	910	0	0	46
SPE 5	17	38	36	1	1	0
SPE 6	5	9	9	0	0	0
SPE 7	62	98	82	8	8	0

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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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	$201 $2
SPE 4 SPE 5 SPE 6	$0.36	$0.40	$0.48	$0.56	$0.64	$0.72	$0.80	$0

Environmental indicators		
Benthic interactions (fishable area trawled)	2019/20: 247 km^2 (<0.1%)	1990 to 2019: 4,877 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 7.6 m (includes SPE 1 & SPE 2 holdings)
Export earnings 2021	$NZ 0.8 m FOB (includes all stocks)

[97] 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)

SILVER WAREHOU (TIER 2) SWA

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SWA 1	216	3,003	3,000	2	1	0
SWA 3	4,076	3,646	3,610	-	-	-
SWA 4	4,193	4,545	4,500	-	-	-

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

2020/21 Deemed value rates (per kg) and invoices					
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**			**2020/21 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	$326,769 $5,813

Environmental indicators and observer coverage		
Observer coverage	2018/19: 66% tows observed	2019/20: 59% observed
Seabirds	2018/19: 16 observed captures	2019/20: 6 observed capture
NZ fur seal	2018/19: 0 observed captures	2019/20: 1 observed capture
Benthic interactions (fishable area trawled)	2019/20: 958 km^2 (<0.1%)	1990 to 2019: 26,149 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 195.7 m
Export earnings 2021	$NZ 16.3 m FOB

SOUTHERN BLUE WHITING (TIER 1) SBW

Landings, catch limits and allowances as of 1 April 2022 (tonnes)						
Stock	**2020/21 Landings** [98]	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SBW 1	71	100	98	0	0	2
SBW 6A	211	1,640	1,640	0	0	0
SBW 6B	1,100	3,209	3,145	0	0	64
SBW 6I	11,982	40,000	39,200	0	0	800
SBW 6R	71	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 [99]
		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

[98] 2020/21 landings from the 1 April 2020 – 30 March 2021 fishing year.
[99] F refers to a fishing mortality rate calculated using the harvest control rule.

		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

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 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		**100-102%**		**102-150%**		**150%+**		**2020/21 Actual**
SBW 6A SBW 6B SBW 6I SBW 6R		$0.46		$0.60		$0.92		$0

Environmental indicators and observer coverage			
Observer coverage		2018/19: 100% tows observed	2019/20: 100% tows observed
Seabirds		2018/19: 3 observed captures,	2019/20: 12 observed captures
Marine mammals	NZ fur seals	2018/19: 11 observed captures	2019/20: 8 observed captures
	NZ sea lion	2018/19: 0 observed captures	2019/20: 1 observed captures
Benthic interactions (fishable area trawled)		2019/20: 757km^2 (<0.1%)	1990 to 2019: 23,348km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 205.1 m
Export earnings 2021	$NZ 15.2 [100] m FOB

SPINY DOGFISH (TIER 2) SPD

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SPD 4	854	1,662	1,626	10	10	20
SPD 5	1,601	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

2020/21 Deemed value rates (per kg) and invoices			
Stock	**Interim**	**Annual rate for catch in excess of ACE[101]**	**2020/21 Actual**
SPD 4 SPD 5	$0.05	$0.10	$9 $0

Environmental indicators		
Benthic interactions (fishable area trawled)	2019/20: 0 km^2 (0%)	1990 to 2019: 1,428 km^2

[100] Includes surimi
[101] Differential deemed value rates do not apply to spiny dogfish stocks.

Economic indicators (calendar year)	
Quota value 2019	$NZ 12.7 m (includes SPD 1, SPD 3, SPD 7 & SPD 8 holdings)
Export earnings 2021	$NZ 0.13 m FOB (includes all SPD stocks)

SQUID (TIER 1) SQU

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
SQU 1J	0	5,030	5,000	10	10	10
SQU 1T	19,007	44,741	44,741	0	0	0
SQU 6T	11,074	-	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.

2020/21 Deemed value rates (per kg) and invoices								
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**						**2020/21 Actual**
		100-120%	**120-140%**	**140-160%**	**160-180%**	**180-200%**	**200%+**	
SQU 1J SQU 1T SQU 6T	$0.44	$0.88	$1.056	$1.232	$1.408	$1.584	$1.76	$0 $0 $1,246

Environmental indicators and observer coverage[102]			
Observer coverage		2018/19: 88% tows observed	2019/20: 80% tows observed
Seabirds		2018/19: 347 observed captures	2019/20: 412 observed captures
Marine mammals	NZ fur seals	2018/19: 25 observed captures	2019/20: 23 observed captures
	NZ sea lion	2018/19: 7 observed captures	2019/20: 0 observed captures
Benthic interactions (fishable area trawled)		2019/20: 3,926km^2 (0.3%)	1990 to 2019: 41,848km^2

Economic indicators (calendar years)	
Quota value 2019	$NZ 149.4 m
Export earnings 2021	$NZ 126 m FOB

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

WHITE WAREHOU (TIER 2) WWA

2020/21 Landings, catch limits and allowances (tonnes)						
Stock	**2020/21 Landings**	**TAC**	**TACC**	**Recreational**	**Customary**	**Other fishing related mortality**
WWA 1	0	4	4	0	0	0
WWA 2	6	75	73	1	1	0
WWA 3	123	585	583	1	1	0
WWA 4	34	332	330	1	1	0
WWA 5B	633	2,621	2,617	2	2	0
WWA 7	21	129	127	1	1	0
WWA 8	0	1	1	0	0	0
WWA 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

2020/21 Deemed value rates (per kg) and invoices				
Stock	**Interim rate**	**Annual differential rate for excess catch (% of ACE)**		**2020/21 Actual**
		100%+		
WWA 1 WWA 2 WWA 8 WWA 9	$0.27	$0.54		$12 $0 $0 $0
Stock	**Interim rate**	**100-110%**	**110%+**	**2020/21 Actual**
WWA 3 WWA 4 WWA 5B WWA 7	$0.52	$1.03	$2.00	$0

Environmental indicators		
Benthic interactions (fishable area trawled)	2019/20: 112 km^2 (<0.1%)	1990 to 2019: 3,689 km^2

Economic indicators (calendar year)	
Quota value 2019	$NZ 21.6 m
Export earnings 2021	$NZ 0.01 m FOB[103]

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

Appendix II: Decisions on sustainability measures for the 2020/21 fishing year

TAC REVIEWS

Species	Stock	Pre-1 Oct 2020 TAC (t)	Pre-1 Oct 2020 TACC (t)	1-Oct-2020 TAC (t)	1 Oct 2020 TACC (t)
Orange roughy	ORH 3B	7,116	6,772	8,355	7,967
Scampi	SCI 1	126	120	139	132
Black cardinalfish	CDL 5	22	22	34	33
Rubyfish	RBY 4	19	18	25	24
Silver warehou	SWA 3	-	3,280	3,646	3,610
Silver warehou	SWA 4	-	4,090	4,545	4,500
Frostfish	FRO 3	176	176	82	80
Frostfish	FRO 4	28	28	126	124
Frostfish	FRO 7	2,625	2,623	2,154	2,110
Frostfish	FRO 8	649	649	919	900
Frostfish	FRO 9	140	138	410	400

DEEMED VALUE RATE REVIEW

Old						New			
Species	**Stock**	**Interim $/kg**	**Annual $/kg**	**Annual at max excess $/kg**	**Differential**	**Interim $/kg**	**Annual $/kg**	**Annual at max excess $/kg**	**Differential**
Arrow squid	SQU 1J	0.79	0.88	1.76	standard	0.79	0.88	1.76	special
Arrow squid	SQU 1T								
Arrow squid	SQU 6T								
Gemfish	SKI 7	0.65	0.72	1.44	standard	0.44	0.49	1.44	standard
Redbait	RBT 3	0.45	0.50	1.00	standard	0.45	0.50	0.70	special

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 2020/21 fishing year within the relevant stocks of HAK, HOK, LIN and SBW target fisheries

Fishery	QMA	2020/21		
		observed tows	total tows	% tows observed
Hake	HAK1	69	69	100%
	HAK4	0	0	-
	HAK7	96	137	70%
Hoki	HOK1	3,495	7,385	47%
Ling	LIN3	1	11	9%
	LIN4	2	2	100%
	LIN5	97	348	28%
	LIN6	159	368	43%
	LIN7	20	51	39%
Southern blue whiting	SBW6B	13	22	59%
	SBW6I	297	389	76%

Table 39: Number of observed hooks and percentage of hooks observed in the 2020/21 fishing year for line bottom longline fishery (LIN 3- 7).

Fishing year	Hooks set	Observed	
		Hooks observed	% of hooks observed
2020/21	16,305,085	387,357	0.24%

Table 40: Industry reported ETP[104] coral catch in the 2020/21 fishing year for HOK, HAK, LIN and SBW trawl fishery

	2020/21			
ETP corals catch	HOK	HAK	LIN	SBW
Coral catch (kg)	4.1	2	63.3	0
No. tows with coral	6	1	3	0
No. observed tows	3497	168	394	310
% tows with coral	0.08	0.49	0.38	0
Catch rate (kg/tow)	0.0005552	0.009709	0.08032995	0

Table 41: Total estimated ling catches (kg) for ling target fisheries in stocks LIN3-7 (including LIN6B) for 2020/21 fishing year

QMA	Trawl[105]	BLL	Other methods[106]	Total
LIN 3	489	406	594	1,489
LIN 4	656	1,447	0	2,103
LIN 5	4,380	567	3	4,950
LIN 6[107]	2,567	1,349	0	3,916
LIN 7	1,414	1,780	114	3,308
Total	9,506	5,549	711	15,766

Table 42: Fisher reported incidental capture of non-fish species (excl. benthic) during 2020/21. (Figures in brackets indicate BLL captures)

	2020/21			
Target fishery	Seabirds	New Zealand sea lion	New Zealand fur seal	Dolphins/ whales
HAK	0	0	0	0
HOK	74	0	83	7
LIN *(BLL)*	60	0	1	1
SBW	0	4	7	0
Total	134	4	91	8

[104] Endangered, threatened and protected species
[105] Includes bottom, midwater and precision trawl methods
[106] Includes potting, setnet, dahn line, Danish seine and fish traps
[107] Includes LIN6B catch

Table 43: ETP shark capture in the HAK, HOK, LIN and SBW trawl fisheries in the 2020/21 fishing year.

Fishery	2020/21	
	BSK	WPS
HAK	1	0
HOK	1	0
LIN	1	0
SBW	0	0

Appendix V:

Cost recovery levies ($) for deepwater stocks for the 2020/21 financial year

Table 44

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
BAR 4	11,400	3,252	53	-	14,977	80	568	-80	30,250
BAR 5	29,453	8,403	6,349	1,213	39,666	1,818	167	-3,031	84,038
BAR 7	42,404	12,097	284,417	14,259	260	8,939	2,304	-2,597	362,084
BYX 1	8,442	2,408	39	-	52	170	40	-	11,151
BYX 10	262	75	1	-	-	-	3	-	341
BYX 2	43,023	12,274	16,112	1,956	263	866	-3,319	-542	70,632
BYX 3	29,714	8,477	14,269	1,734	182	-	78	145	54,598
BYX 7	2,265	646	10	-	14	-	7	-	2,943
BYX 8	563	161	3	-	3	-	2	-	731
CDL 1	14,943	4,263	69	-	-	-	275	-	19,551
CDL 10	-	-	-	-	-	-	-	-	-
CDL 2	5,496	1,568	2,126	261	-	-	-352	-152	8,947
CDL 3	2,469	704	11	-	-	-	44	-	3,228
CDL 4	547	156	3	-	-	-	16	-	722
CDL 5	161	46	1	-	-	-	5	-	214

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
CDL 6	13	4	0	-	-	-	0	-	17
CDL 7	375	107	2	-	-	-	9	-	493
CDL 8	-	-	-	-	-	-	-	-	-
CDL 9	56	16	0	-	-	-	1	-	73
CHC 1	27	8	0	-	-	-	3	-	37
CHC 10	-	-	-	-	-	-	-	-	-
CHC 2	27	8	0	-	-	-	3	-	37
CHC 3	11	3	0	-	-	-	1	-	15
CHC 4	11	3	0	-	-	-	1	-	15
CHC 5	11	3	0	-	-	-	1	-	15
CHC 6	11	3	0	-	-	-	1	-	15
CHC 7	11	3	0	-	-	-	1	-	15
CHC 8	11	3	0	-	-	-	1	-	15
CHC 9	11	3	0	-	-	-	1	-	15
EMA 3	2,199	627	10	-	-	54	84	-18	2,957
EMA 7	14,124	4,029	50,292	2,517	-	350	720	591	72,624
FRO 3	3,884	1,108	18	-	-	-	18	-	5,027
FRO 4	121	34	1	-	-	-	6	-	162
FRO 5	492	140	2	-	-	-	17	-	652
FRO 6	73	21	0	-	-	-	2	-	96
FRO 7	31,762	9,061	147	-	-	-	443	-	41,414
FRO 8	3,097	884	14	-	-	-	155	-	4,149
FRO 9	626	178	3	-	-	-	32	-	839
GSC 1	3	1	0	-	-	-	0	-	4
GSC 10	-	-	-	-	-	-	-	-	-
GSC 3	38	11	0	-	-	-	4	-	52

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
GSC 5	51	15	0	-	-	-	5	-	71
GSC 6A	59	17	0	-	-	-	38	-	114
GSC 6B	638	182	3	-	-	-	60	-	882
GSH 4	2,569	733	12	-	-	64	83	-17	3,444
GSH 5	378	108	2	-	-	-	-22	-	466
GSH 6	351	100	2	-	-	-	21	-	474
GSP 1	6,845	1,953	32	-	-	170	246	-53	9,192
GSP 5	2,661	759	12	-	-	-	98	-	3,530
GSP 7	868	248	4	-	-	22	38	-8	1,171
HAK 1	73,386	20,936	340	-	236,796	3,903	-10,997	-311	324,054
HAK 10	159	45	1	-	-	-	3	-	207
HAK 4	35,457	10,115	164	-	278,197	879	-21,079	-151	303,583
HAK 7	41,785	11,921	23,552	4,557	244,219	1,035	113,666	-518	440,218
HOK 1	997,755	284,643	781,333	151,473	647,535	83,001	-58,157	-32,702	2,854,880
HOK 10	108	31	0	-	-	-	3	-	141
JMA 3	26,384	7,527	5,344	1,017	1,563	1,403	-42,076	-2,420	-1,259
JMA 7	90,969	25,952	241,012	12,069	48,674	3,309	11,625	5,732	439,340
KIC 1	27	8	0	-	-	-	3	-	37
KIC 10	-	-	-	-	-	-	-	-	-
KIC 2	27	8	0	-	-	-	3	-	37
KIC 3	27	8	0	-	-	-	3	-	37
KIC 4	27	8	0	-	-	-	3	-	37
KIC 5	27	8	0	-	-	-	3	-	37
KIC 6	27	8	0	-	-	-	3	-	37
KIC 7	27	8	0	-	-	-	3	-	37
KIC 8	27	8	0	-	-	-	3	-	37

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
KIC 9	27	8	0	-	-	-	3	-	37
LDO 1	3,709	1,058	17	-	-	-	18	-	4,803
LDO 10	20	6	0	-	-	-	0	-	26
LDO 3	12,300	3,509	57	-	-	-	67	-	15,933
LIN 3	79,197	22,594	15,129	2,881	276,330	1,700	-29,532	-1,315	366,983
LIN 4	153,849	43,891	30,985	5,906	280,751	5,087	-30,871	-888	488,710
LIN 5	181,562	51,797	54,059	10,379	111,472	8,218	-11,285	-2,375	403,827
LIN 6	304,804	86,955	117,158	22,570	134,291	15,202	-32,225	-2,264	646,491
LIN 7	136,173	38,848	56,628	10,920	258,466	952	112,242	-2,023	612,204
OEO 1	23,994	6,845	3,250	385	12,905	478	-49,382	-862	-2,388
OEO 10	96	27	0	-	-	-	3	-	126
OEO 3A	32,152	9,172	13,672	1,662	129,394	640	-3,615	325	183,403
OEO 4	34,551	9,857	12,273	1,486	157,580	1,269	-192,428	291	24,880
OEO 6	57,585	16,428	7,801	926	31,403	2,114	1,456	-258	117,455
ORH 1	47,129	13,445	17,783	2,158	2,791	2,277	-3,520	-547	81,518
ORH 10	334	95	2	-	-	-	4	-	434
ORH 2A	17,280	4,930	7,243	880	142,055	634	-104,693	-191	68,138
ORH 2B	1,868	533	911	111	16,937	69	-13,441	-23	6,964
ORH 3A	5,433	1,550	2,751	332	50,760	263	-25,277	-69	35,744
ORH 3B	212,372	60,586	151,498	18,476	111,091	10,261	-4,983	522	559,823
ORH 7A	64,771	18,478	37,401	4,557	3,836	-	-15,232	-1,845	111,966
ORH 7B	17	5	0	-	1	-	-25	-	-2
PRK 1	1,127	322	5	-	-	-	-2	-	1,453
PRK 10	-	-	-	-	-	-	-	-	-
PRK 2	161	46	1	-	-	-	-0	-	208
PRK 3	46	13	0	-	-	-	-0	-	59

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
PRK 4A	46	13	0	-	-	-	-0	-	59
PRK 5	46	13	0	-	-	-	-0	-	59
PRK 6A	46	13	0	-	-	-	-0	-	59
PRK 6B	46	13	0	-	-	-	-0	-	59
PRK 7	7	2	0	-	-	-	0	-	9
PRK 8	46	13	0	-	-	-	-0	-	59
PRK 9	46	13	0	-	-	-	-0	-	59
PTO 1	6,660	1,900	31	-	-	-	12	-	8,603
RBT 1	100	28	0	-	-	-	4	-	133
RBT 10	-	-	-	-	-	-	-	-	-
RBT 3	5,940	1,695	28	-	-	-	-7,662	-	-
RBT 7	14,908	4,253	69	-	-	-	616	-	19,845
RBY 1	6,207	1,771	29	-	-	72	12	-	8,090
RBY 10	-	-	-	-	-	-	-	-	-
RBY 2	3,413	974	16	-	-	-	-168	-	4,234
RBY 3	104	30	0	-	-	-	7	-	141
RBY 4	56	16	0	-	-	-	4	-	76
RBY 5	-	-	-	-	-	-	-	-	-
RBY 6	-	-	-	-	-	-	-	-	-
RBY 7	194	55	1	-	-	-	7	-	257
RBY 8	92	26	0	-	-	-	1	-	120
RBY 9	188	54	1	-	-	-	4	-	246
RIB 3	4,021	1,147	19	-	-	-	63	-	5,249
RIB 4	4,229	1,207	20	-	-	-	62	-	5,518
RIB 5	415	118	2	-	-	-	10	-	545
RIB 6	1,873	534	9	-	-	-	42	-	2,458

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
RIB 7	3,173	905	15	-	-	-	61	-	4,153
RIB 8	10	3	0	-	-	-	0	-	13
SBW 1	396	113	2	-	-	5	22	-	537
SBW 6A	9,268	2,644	43	-	-	448	351	-205	12,548
SBW 6B	21,323	6,083	12,748	3,495	89,919	1,030	-17,023	-1,146	116,429
SBW 6I	332,274	94,792	236,217	64,835	94,991	16,055	22,789	-14,285	847,668
SBW 6R	41,440	11,822	192	-	-	2,002	-52,262	-1,570	1,624
SCI 1	27,514	7,849	17,869	4,903	324,076	867	-212,781	234	170,531
SCI 10	-	-	-	-	-	-	-	-	-
SCI 2	33,142	9,455	21,523	5,907	411,553	660	-188,594	298	293,944
SCI 3	98,458	28,089	53,367	14,618	189,761	688	-508	677	385,150
SCI 4A	26,126	7,453	16,971	4,655	160	1,262	6,147	234	63,009
SCI 5	7,443	2,123	4,831	1,324	46	-	-42	-	15,725
SCI 6A	62,796	17,915	40,783	11,188	385	13,900	-366	577	147,178
SCI 6B	9,304	2,654	6,043	1,656	57	185	-53	-2	19,845
SCI 7	18,667	5,325	12,122	3,325	114	-	-111	-	39,443
SCI 8	930	265	606	163	6	-	-5	-	1,966
SCI 9	6,513	1,858	4,231	1,161	40	-	-37	-	13,765
SKI 3	10,840	3,092	50	-	30,016	216	38	-14	44,238
SKI 7	6,053	1,727	28	-	30,366	120	42	-14	38,322
SPD 4	2,056	587	10	-	-	41	339	-41	2,991
SPD 5	8,463	2,414	39	-	-	1,548	879	22,772	36,115
SPE 3	10,178	2,904	6,217	6,520	-	203	16,918	-46	42,893
SPE 4	7,939	2,265	37	-	-	158	187	-42	10,544
SPE 5	251	72	1	-	-	-	8	-	331
SPE 6	62	18	0	-	-	-	2	-	82

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2020/21 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
SPE 7	755	215	3	-	-	15	17	-4	1,002
SQU 10T	153	44	1	-	-	-	3	-	200
SQU 1J	76,691	21,879	355	-	-	-	1,265	-	100,190
SQU 1T	799,611	228,116	513,151	140,748	49,728	53,347	423,243	37,414	2,245,358
SQU 6T	526,238	150,127	372,373	102,201	35,687	131,433	307,299	24,516	1,649,874
SWA 1	30,395	8,671	9,480	1,819	186	605	-50,183	-2,424	-1,450
SWA 10	112	32	1	-	-	-	3	-	147
SWA 3	34,321	9,791	159	-	14,786	1,658	1,967	-277	62,405
SWA 4	40,872	11,660	9,411	1,800	14,826	3,201	1,153	-648	82,276
WWA 1	76	22	0	-	-	-	0	-	98
WWA 10	-	-	-	-	-	-	-	-	-
WWA 2	1,898	541	9	-	-	38	5	-3	2,488
WWA 3	14,222	4,057	66	-	-	283	55	-27	18,656
WWA 4	8,413	2,400	39	-	-	167	29	-15	11,033
WWA 5B	71,041	20,267	15,286	2,914	-	3,105	-1,294	-364	110,954
WWA 7	3,449	984	16	-	-	69	11	-6	4,523
WWA 8	20	6	0	-	-	-	0	-	26
WWA 9	-	-	-	-	-	-	-	-	-
Grand Total	5,300,901	1,512,262	3,308,909	647,917	4,519,167	388,608	-155,209	17,935	15,540,469

Table 45: Levies by stock as a percent of landed value for the 2020/21 fishing year[108]

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
BAR 4	30,250	775,367	0.2699	209271.6	14.5
BAR 5	84,038	8,637,879	0.2645	2284719	3.7
BAR 7	362,084	3,066,256	0.2392	733448.4	49.4
BYX 1	11,151	10,296	2.3541	24237.81	46.0
BYX 2	341	1,594,404	2.5032	3991112	0.0
BYX 3	70,632	427,481	1.9811	846882.6	8.3
BYX 7	54,598	6,143	2.3541	14461.24	377.5
CDL 1	19,551	2,646	0.9255	2448.873	798.4
CDL 2	8,947	401,409	0.9562	383827.3	2.3
CDL 3	3,228	125,118	0.7071	88470.94	3.6
CDL 4	722	7,487	0.6165	4615.736	15.6
CDL 5	214	5,935	0.5456	3238.136	6.6
EMA 3	2,957	2,653	0.4191	1111.872	265.9
EMA 7	72,624	2,832,196	0.3134	887610.2	8.2
FRO 3	5,027	19,379	1.64	31781.56	15.8
FRO 4	162	11,660	0.32	3731.2	4.3
FRO 5	652	75,458	0.2708	20434.03	3.2
FRO 8	41,414	430,309	0.3547	152630.6	27.1
FRO 9	4,149	121,791	0.3157	38449.42	10.8
GSH 4	3,444	191,120	0.4584	87609.41	3.9
GSH 5	466	53,980	0.3766	20328.87	2.3
GSH 6	474	49,387	0.4332	21394.45	2.2
GSP 1	9,192	529,743	0.3602	190813.4	4.8
GSP 5	3,530	225,610	0.3326	75037.89	4.7
GSP 7	1,171	33,204	0.3522	11694.45	10.0

[108] Fish stock not shown if either 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 1	324,054	1,502,784	1.5374	2310380	14.0
HAK 4	303,583	206,803	1.2688	262391.6	115.7
HAK 7	440,218	1,367,550	1.0962	1499108	29.4
HOK 1	2,854,880	100,818,690	0.6617	66711727	4.3
JMA 7	439,340	31,809,549	0.1906	6062900	7.2
LDO 1	4,803	140,739	1.4499	204057.5	2.4
LDO 3	15,933	316,266	1.3572	429236.2	3.7
LIN 3	366,983	1,489,037	3.0787	4584298	8.0
LIN 4	488,710	2,129,076	2.8386	6043595	8.1
LIN 5	403,827	4,948,651	2.5802	12768509	3.2
LIN 6	646,491	3,307,556	2.6506	8767008	7.4
LIN 7	612,204	3,915,756	2.6128	10231087	6.0
OEO 3A	183,403	3,094,596	0.7133	2207375	8.3
OEO 4	24,880	3,542,025	0.7133	2526526	1.0
OEO 6	117,455	1,710,959	0.7133	1220427	9.6
ORH 1	81,518	679,644	2.5496	1732820	4.7
ORH 2A	68,138	502,511	2.7136	1363614	5.0
ORH 2B	6,964	59,276	2.6971	159873.3	4.4
ORH 3A	35,744	182,474	2.2637	413066.4	8.7
ORH 3B	559,823	6,525,117	2.4158	15763378	3.6
ORH 7A	111,966	2,074,481	2.3961	4970664	2.3
RBT 1	133	815	0.39	317.85	41.8
RBT 7	19,845	38,427	0.39	14986.53	132.4
RBY 1	8,090	272,034	1.4793	402419.9	2.0
RBY 2	4,234	131,301	0.7475	98147.5	4.3
RBY 7	257	5,441	1.1014	5992.717	4.3
RBY 9	246	2,269	1.1014	2499.077	9.8

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
RIB 3	5,249	182,430	1.5136	276126	1.9
RIB 4	5,518	204,624	1.0393	212665.7	2.6
RIB 5	545	51,135	0.4992	25526.59	2.1
RIB 6	2,458	164,121	0.5768	94664.99	2.6
RIB 7	4,153	223,223	0.5978	133442.7	3.1
SBW 1	537	22,368	0.3	6710.4	8.0
SBW 6A	12,548	173,969	0.42	73066.98	17.2
SBW 6B	116,429	800,941	0.56	448527	26.0
SBW 6I	847,668	19,513,846	0.63	12293723	6.9
SBW 6R	1,624	32,505	0.56	18202.8	8.9
SCI 1	170,531	127,429	17.0411	2171530	7.9
SCI 2	293,944	147,993	16.0998	2382658	12.3
SCI 3	385,150	1,000	6	6000	657.4
SCI 4A	63,009	244,634	15.2525	3731280	3.9
SCI 6A	147,178	406,389	17.9359	7288952	5.3
SCI 7	39,443	112,268	16.1819	1816710	3.5
SKI 3	44,238	1,063,203	1.297	1378974	3.2
SKI 7	38,322	1,012,306	1.3488	1365398	2.8
SPD 4	2,991	853,776	0.094	80254.94	3.7
SPD 5	36,115	1,601,953	0.17	272332	13.3
SPE 3	42,893	412,067	0.819	337482.9	12.7
SPE 4	10,544	404,946	0.7396	299498.1	3.5
SPE 5	331	17,055	0.5415	9235.283	3.6
SPE 7	1,002	62,147	0.7191	44689.91	2.2
SQU 1T	2,245,358	19,006,367	1.3998	26605113	8.4
SQU 6T	1,649,874	11,074,362	1.2944	14334654	11.5
SWA 1	1,450	216,296	0.8347	180542.3	0.8

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
SWA 3	62,405	4,076,249	0.9084	3702865	1.7
SWA 4	82,276	4,193,057	0.7794	3268069	2.5
WWA 2	2,488	6,192	1.9321	11963.56	20.8
WWA 3	18,656	123,013	1.8131	223034.9	8.4
WWA 4	11,033	34,195	1.8948	64792.69	17.0
WWA 5B	110,954	20,513	1.6981	34833.13	13.0
WWA 7	4,523	633,497	2.0176	1278144	8.7