Fisheries New Zealand
Tini a Tangaroa

Annual Review Report for Deepwater Fisheries

2017/18

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Contents

Page

1. Introduction

1.1 OVERVIEW OF NEW ZEALAND'S DEEPWATER FISHERIES

New Zealand's 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 2018 calendar year were approximately NZ$704 M.[2] In 2018, five deepwater fish species (hoki, squid, ling, jack mackerel and orange roughy) were amongst the ten largest export-earning seafood species (including those produced via aquaculture). Together, these five species represented 44% of seafood export volume and account for approximately NZ$548 M in FOB export earnings.

The management of New Zealand's deepwater fisheries is a collaborative arrangement between Fisheries New Zealand (representing the Crown and its statutory obligations to the public) and the commercial fishing industry, represented by the Deepwater Group Ltd (DWG).[3] This arrangement allows for Management Objectives outlined in the National Fisheries Plan for Deepwater and Middle-depth Fisheries to be achieved by drawing on the combined knowledge, experience, capabilities and perspectives of both organisations.

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

[1] FOB - 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.

[2] Figures taken from provisional export statistics provided by Seafood New Zealand; https://www.seafood.org.nz/fileadmin/documents/Export_data/18.12.10a.pdf

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

Table 1: Categorisation of deepwater species by Tier.

	Stocks with completed fishery-specific chapters in the National Deepwater Plan[4]	Stocks with fishery-specific chapters under development
Tier 1 species	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 species	Alfonsino: all Black cardinalfish: all Blue (English) mackerel: EMA 3 & EMA 7 Frostfish: FRO 3 – FRO 9 Lookdown dory: all Redbait: all Ribaldo: RIB 3 – RIB 8 Rubyfish: all Patagonian toothfish: all Silver warehou: all Spiny dogfish: SPD 4 & SPD 5 White warehou: all	Barracouta: BAR 4, BAR 5 & BAR 7 Dark ghost shark: GSH 4 – GSH 6 Deepwater crabs (KIC/GSC/CHC): all Gemfish: SKI 3 & SKI 7 Pale ghost shark: all Prawn killer: all Sea perch: SPE 3 – SPE 7
Tier 3 species	Non-QMS species	

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

1.2 OVERVIEW OF THE NATIONAL DEEPWATER PLAN

From 1 July 2011, the management of New Zealand's deepwater fisheries has been implemented through the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan), which collectively consists of three parts (Figure 1).

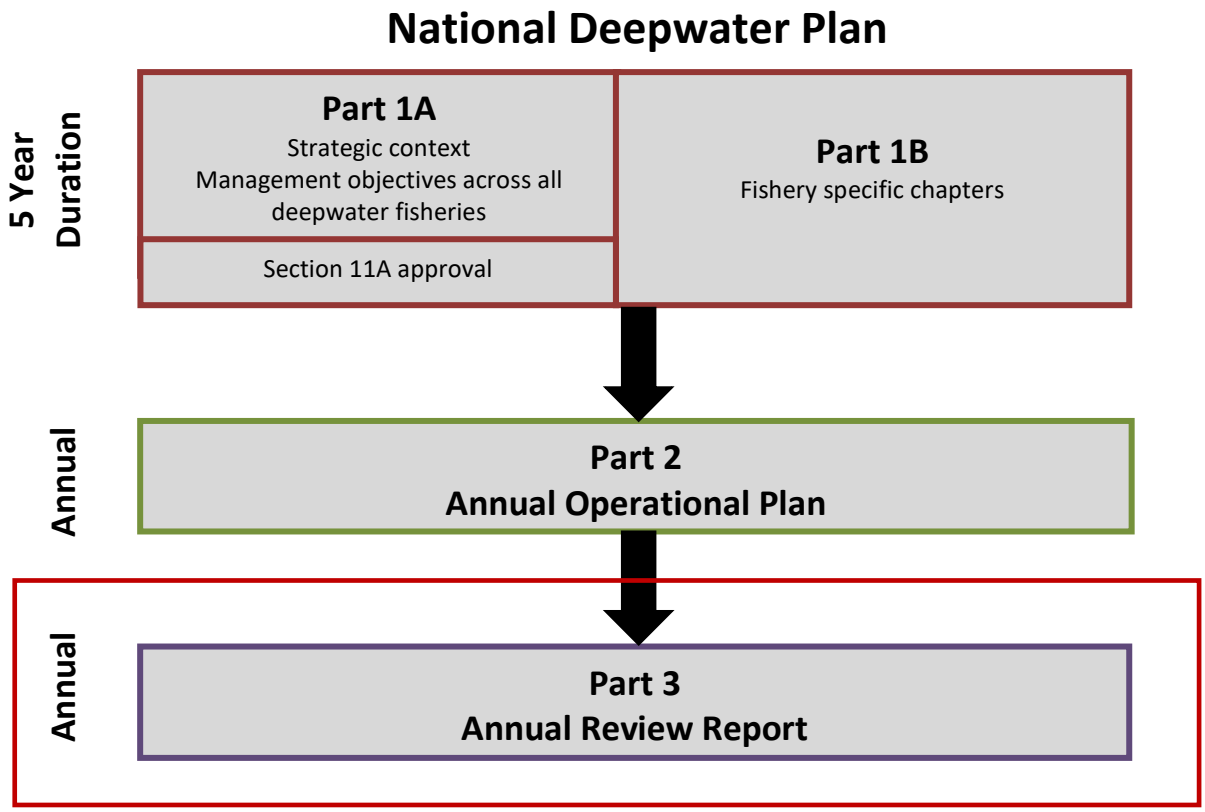


Figure 1: The three components of the National Deepwater Plan

Part 1 of the National Deepwater Plan established a five year framework for the management of New Zealand's deepwater fisheries. It is further divided into two parts – Part 1A and Part 1B.

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

1. The wider strategic context that fisheries plans are part of, including legislative obligations under the Fisheries Act 1996 (the Act) and the strategic directions of MPI's *Our Strategy 2030*, and the *Fisheries Management System Review.*
2. The description and status of the management objectives that will apply across all deepwater fisheries
3. How the updated National Deepwater Plan will be implemented and how stakeholders will be engaged during the implementation phase.

Part 1A of the National Deepwater Plan was approved by the Minister of Fisheries under Section 11A of the Fisheries Act. Consequently, it must be considered each time the Minister makes decisions or recommendations concerning the regulation or control of fishing or any sustainability measures relating to deepwater fisheries. Part 1A of the National Deepwater Plan is being reviewed and updated and was released to external stakeholders for consultation in 2017. It is intended that the updated National Deepwater Plan will inform the strategic direction for New Zealand's deepwater fisheries from 2019.

Part 1B comprises the fishery-specific chapters of the National Deepwater Plan which provide greater detail on how deepwater fisheries will be managed at the fishery level, in line with the management objectives specified within the National Deepwater Plan. To date, fishery-specific chapters have been completed for the hoki, orange roughy, southern blue whiting, ling, hake, jack mackerel and oreo

fisheries. Following the review of the National Deepwater Plan 1A, those fishery-specific chapters previously completed will be updated, and chapters for the scampi and squid fisheries will be developed.

Fishery-specific chapters describe the operational objectives for each target fishery, as well as how performance against both the management and operational objectives will be assessed at the fishery level. These chapters also describe any agreed harvest strategy in place for the relevant species.

Parts 2 and 3 of the National Deepwater Plan consist of the Annual Operational Plans (AOPs) and Annual Review Reports (ARRs), respectively. Both AOPs and ARRs are delivered annually and form the Annual Fisheries Planning Process. This annual cycle incorporates planning and reporting by both financial year (1 July – 30 June) and fishing year (1 October – 30 September).[5] AOPs and ARRs are not approved under Section 11A of the Act. Statutory interventions required to regulate deepwater fisheries will be identified in the AOP.

Each AOP details the Management Actions and Services scheduled for delivery over the next financial year. All Management Actions and Services aim to contribute to meeting the Management Objectives and Operational Objectives specified in Part 1A of the National Deepwater Plan. Up- to-date management overviews are also provided for all deepwater fisheries with completed fisheries-specific chapters.

Each ARR assesses progress during the previous financial year towards meeting the year's management priorities, by reviewing delivery of the relevant AOP. Each ARR also reports on the annual performance of deepwater fisheries during the previous fishing year in relation to environmental interactions and impacts.

1.3 THE 2017/18 DEEPWATER ANNUAL REVIEW REPORT

This Annual Review Report is split into three parts:

Part 3A describes the progress that has been made during the 2017/18 financial year (1 July 2017 – 30 June 2018) towards delivering the Management Actions set out in the 2017/18 AOP.[6]

Achievement of these annual priorities contributes to meeting the high level Management Objectives and Operational Objectives set out in Part 1A of the National Deepwater Plan.

Part 3B provides detail on delivery of fisheries services relevant to Deepwater Fisheries Management that are planned by financial year. These processes include the planning and contracting of fisheries and conservation research projects, planning observer coverage on the deepwater fleet and the cost recovery regime.

Part 3C provides a summary report of the combined environmental impacts of deepwater fishing activity, and on the deepwater fleet's adherence to the suite of non-regulatory management measures in place during the 2017/18 fishing year (1 October 2017 – 30 September 2018).

The periods encompassed by the 2017/18 financial and fishing years are shown in Figure 2 below.

			2017			2018								
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep

2017/18 Financial year
2017/18 Fishing year

Figure 2: Diagram indicating the periods encompassed by the 2017/18 financial year and the 2017/18 fishing year.

[5] Some deepwater species, for example southern blue whiting, work to a different fishing year (1 April – 31 March).

[6] The Annual Operational Plan for Deepwater Fisheries 2017-18 can be accessed online; (https://www.mpi.govt.nz/dmsdocument/26395/loggedIn)

This Annual Review Report also contains several appendices:

- Appendix I summarises the catch of deepwater stocks during the 2017/18 fishing year. Also included, where available, are observer coverage details, the amount of deemed values invoiced and export earnings during the 2018 calendar year.
- Appendix II summarises the results of the October 2017 and April 2018 sustainability rounds.
- Appendix III summarises landings of all Tier 3 (non-QMS) species by the core deepwater fleet[7] between the 2013/14 and 2017/18 fishing years.
- Appendix IV summarises cost recovery levies for deepwater stocks for the 2017/18 financial year.
- Appendix V comprises the observer Interim Trip Report template.

2. Part 3A: Progress on Management Actions

2.1 MANAGEMENT ACTIONS DELIVERED BY DEEPWATER FISHERIES MANAGEMENT

The 2017/18 AOP identified 16 Management Actions that aimed to progress delivery of the Management Objectives and Operational Objectives specified in Part 1A of the National Deepwater Plan. Table 2 summarises progress relating to each of these Management Actions. For reference, the 2017/18 Management Actions are listed in the grey boxes in Table 2

Table 2: Management Actions to be delivered by Deepwater Fisheries Management during the 2017/18 financial year

1	**Fisheries Sustainability Controls:** Review catch limits and management settings as required
	Deepwater sustainability decisions consist primarily of reviews to catch limits (TACs[8] and TACCs[9]) and deemed value rate settings across the fish stocks managed within the National Deepwater Fisheries Plan. Reviews are completed in two rounds; one for stocks managed with a fishing year beginning on 1 October and a second for stocks with a fishing year beginning on 1 April. Additionally, conversion factors are subject to ongoing monitoring by comparing observer data to the gazetted conversion factors. If a conversion factor for a certain species and product state is reviewed, the proposal will be consulted on. Changes to conversion factors are Fisheries New Zealand decisions and the process does not have to run to the same timeframes as the sustainability rounds.

	Key Actions for 2017/18:
	• Stocks reviewed for 1 October 2017; HAK 7 & ORH 3B
	• Stocks undergoing assessment to be considered for review;
	  • April 2018: SBW 6B
	  • October 2018: BAR 4, BAR 7, EMA 7, HAK 1, HOK 1, JMA 7, LIN 5/6, ORH MEC, ORH 3B , OEO 4, SCI 3 & SCI 4

	Action relates to Management Objectives 1.1, 1.3, 2.1, 2.2, 2.4, 2.5 & 2.6 Action relates to Management Objectives 1, 3, 4, 6 & 10
	Actions achieved:

[7] The core deepwater fleet is defined as all bottom longline vessels > 34 m in length, all trawl vessels > 28 m in length which are regularly used to target deepwater species and all vessels used to target scampi (regardless of length).

[8] Total allowable catch.

[9] Total allowable commercial catch.

For the 1 October 2017 sustainability round, catch limits were reviewed and changed for two deepwater stocks:

- HAK 7 - The TAC was reduced from 7,777 tonnes to 5,120 tonnes. The reviewed TAC consisted of a 5,064 tonne TACC (reduced from 7,700 tonnes), a 51 tonne allowance for other sources of fishing-related mortality (set at 1% of the TACC, reduced from 77 tonnes), the retention of a nil allowance for recreational fishing interests and the introduction of a 5 tonne customary Māori fishing allowance.
- ORH 3B – The TAC was increased from 5,250 tonnes to 5,470 tonnes. The reviewed TAC consisted of a 5,197 tonne TACC (increased from 5,000 tonnes), a 268 tonne allowance for other sources of fishing-related mortality (increased from 250 tonnes), the retention of a nil allowance for recreational fishing interests and the introduction of a 5 tonne customary Māori fishing allowance. The increase to the ORH 3B TACC applied only to the Puysegur sub-area, with the Puysegur sub-area catch limit increasing from 150 tonnes to 347 tonnes. All other ORH 3B sub-area catch limits remained unchanged.
- No deemed value settings were reviewed for deepwater stocks during the October 2017 sustainability round.

For the 1 April 2018 sustainability round, catch limits were reviewed and changed for one deepwater stock:

- SBW 6B - The TAC was increased from 2,426 tonnes to 3,209 tonnes. The reviewed TAC consisted of a 3,145 tonne TACC (increased from 2,377 tonnes), a 64 tonne allowance for other sources of fishing-related mortality (increased from 49 tonnes) and the retention of a nil allowance for recreational and customary Māori fishing interests.
- No deemed value rates were reviewed for deepwater stocks during the April 2018 sustainability round.

For the 1 October 2018 sustainability round, consultation and decision documents were prepared for four deepwater stocks; LIN 5, OEO 4, ORH 3B & SCI 3. The Deepwater Fisheries Management team also provided input towards the review of deemed value settings for the 1 October 2018 sustainability round.

As at 1 October 2018, vessel specific conversion factor certificates had been issued to operators of ten deepwater vessels. The annual review process resulted in amended certificates being issued for five vessels during the 2017/18 fishing year.

No changes were made to any gazetted conversion factors during the 2017/18 financial year.

2	**Fisheries Planning:** Implement updated National Deepwater Plan
	The National Deepwater Plan (2010) was reviewed in 2016/17, culminating in a revised National Deepwater Plan being consulted on in 2017. Implementation of the National Deepwater Plan for the 2017/18 financial year included the core activities listed below.
	Core Actions for 2017/18: • Implement National Deepwater Plan (Part 1A). • Implement Management Objectives within the National Deepwater Plan. • Compile the Annual Review Report for 2016/17. • Develop the Annual Operational Plan for 2018/19. • Update/finalise species-specific chapters (Part 1B) for hake, hoki, ling, orange roughy, oreo, scampi and squid (as resources allow).
	Action relates to all Management Objectives
	Actions achieved:

	• The review of Part 1A of the National Deepwater Plan finished in 2017/18. Public consultation took place in 2017, and a final, revised plan is expected to be in place in early 2019. • The Annual Operational Plan for 2017/18 was completed and made available in October 2017.[10] • The Annual Review Report for 2016/17 was completed and made available in May 2018.[11] • All National Deepwater Plan documents were made available online.[12]

3	**Ministerial Services**: Ensure timely completion of all Ministerial correspondence and communication requests assigned to the Deepwater Fisheries Management team
	The timely completion of all Ministerial correspondence and communication requests is a core government function and will be given priority attention throughout the year to ensure that all response timeframes are met.
	Core Actions for 2017/18: This management actions refers to Fisheries New Zealand's responsibility to: • Provide quality advice and information to the Minister of Fisheries. • Maintain an open relationship with stakeholders and the public and respond to all Official Information Act (OIA) requests and Government correspondence regarding deepwater fisheries issues in a timely manner.
	Action relates to Management Objectives 9, 10 & 11
	Actions achieved: During the 2017/18 financial year, the Deepwater Fisheries Management team completed: • Three Aide Memoires • Nine Briefing Papers • One Submission to Cabinet • Six Ministerials. In November 2014, the Official Information Act (OIA) team was established and has taken over responsibility for drafting responses to OIA requests. In 2017/18, the Deepwater Fisheries Management team contributed to the completion of OIA requests as subject matter experts, providing advice and appropriate review of information.

4	**Protected Species Frameworks – NPOA-Seabirds:** Work to achieve the five year practical, biological, research and development, and international objectives within deepwater fisheries
	The National Plan of Action – Seabirds (2013) to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA-Seabirds)[13] sets out the long term and five year objectives, relating to managing fisheries interactions with seabirds. The NPOA-Seabirds (2013) is underpinned by the seabird risk assessment, which identifies the seabird species considered to be most at risk

[10] The Annual Operational Plan for Deepwater Fisheries 2017/18 can be accessed online; https://www.mpi.govt.nz/dmsdocument/26395/loggedIn

[11] The Annual Review Report for Deepwater Fisheries 2016/17 can be accessed online; https://www.mpi.govt.nz/dmsdocument/29741/loggedIn

[12] https://www.mpi.govt.nz/dmsdocument/18779/loggedIn

[13] The NPOA-Seabirds (2013) can be accessed online; https://www.mpi.govt.nz/dmsdocument/3962-national-plan-of-action-2013-to-reduce-the-incidental-catch-of-seabirds-in-new-zealand-fisheries

of being adversely affected by commercial fishing in New Zealand.[14] The risk assessment also identifies which fisheries pose the most risk to seabird species.

In line with the five year term of the NPOA-Seabirds (2013), a review to evaluate progress against the management objectives, the suitability of these objectives and the effectiveness of the implementation process commenced in 2017. This work preceded the development of a revised NPOA-Seabirds which is planned to be completed in the first half of 2019.

This Management Action outlines the priority seabird work areas for deepwater fisheries in 2017/18 to give effect to the NPOA-Seabirds (2013), as well as the work required to support the revision of the NPOA-Seabirds (2013). Further details on the objectives of the NPOA-Seabirds (2013) and how the Deepwater Fisheries Management team will support the achievement of these objectives can be found in Section 2.4 of this report.

Key Actions for 2017/18:

- Contribute towards the review and drafting of the revised NPOA-Seabirds.

Core Actions for 2017/18:

- Work with the Fisheries Management Directorate, and with key stakeholders, to monitor seabird performance measures including capture rate reduction targets.
- Report annual performance to inform ongoing progress towards meeting the objectives of the NPOA-Seabirds (2013) and species specific action plans.
- Continue to implement and refine best practice mitigation measures across the deepwater fleet (with a focus on reviewing the existing vessel management plan (VMP) audit process for trawl vessels), to minimise interactions with seabirds and support achievement of the practical objectives in the NPOA-Seabirds (2013).
- Assist with the development and implementation of species and fisheries-specific action plans for seabird species considered to be at a 'very high' or 'high' risk from fishing, to work towards achieving the biological risk objective in the NPOA-Seabirds (2013).
- Investigate and implement any additional practicable and effective measures to minimise the risk of net captures based on the outcomes of the contracted project characterising trawl net captures and potential contributing factors.
- Continue to work with DWG to develop educational material and additional mitigation measures specific to 'very high' and 'high' risk seabird species to support achievement of the objectives in the NPOA-Seabirds (2013).

Action relates to Management Objective 2.5

Action relates to Management Objectives 8 & 10

Actions achieved:

During the 2017/18 financial year, the following actions relating to the NPOA-Seabirds were completed:

- Actions relating to the implementation of the NPOA-Seabirds (2013) are detailed within Section 2.4 of this report.
- Draft documents detailing Endorsed Mitigation Standards[15] for deepwater fisheries (>28 m trawl, scampi trawl and ling bottom longline) were prepared in advance of a Technical Workshop held in August 2018. Representatives from the Deepwater Fisheries Management team also attended the Technical Workshop held to discuss Endorsed Mitigation Standards for use in the surface longline and other bottom longline fisheries.
- A review to evaluate progress against the management objectives, the suitability of these objectives and the effectiveness of the implementation process commenced in 2017. This work preceded the development of a revised NPOA-Seabirds which is planned to be completed in 2019.

[14] The most recent update to the seabird risk assessment can be accessed online; https://www.mpi.govt.nz/dmsdocument/27531/loggedIn

[15] The term 'Endorsed Mitigation Standards' is provisional and may be subject to change.

5	**Protected SpeciesFrameworks –** Work collaboratively with the Department of Conservation on implementation of the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022
	The New Zealand sea lion is classified as 'Nationally Critical' due to annual pup counts declining by 50% between 1998 and 2009 at the largest breeding sites on the Auckland Islands. The New Zealand sea lion Threat Management Plan prioritises management actions to enable the recovery of the New Zealand sea lion population.[16]
	Key Actions for 2017/18: • Work with the Department of Conservation (DOC) to finalise and implement the New Zealand sea lion/rāpoka Threat Management Plan. • Engage with key stakeholders at the New Zealand sea lion/rāpoka Forum and Advisory Group. • Continue stakeholder engagement on the SQU 6T Operational Plan management settings through the Squid 6T Operational Plan Technical Advisory Group. • Finalise the SQU 6T Operational Plan for 2017/18-2018/19. **Core Actions for 2017/18** • Plan and initiate a review of the Operational Plan for the Campbell Island southern blue whiting fishery. • Monitor adherence to Operational Plans and continue standard weekly reporting to stakeholders for SQU 6T. • Monitor research and management actions as recommended by the Squid 6T Operational Plan Technical Advisory Group.
	Action relates to Management Objective 2.5 Action relates to Management Objectives 8 & 10
	Actions achieved: • The New Zealand sea lion/rāpoka Threat Management Plan (TMP) was published by the DOC and MPI in July 2017. • The SQU 6T Operational Plan 2017-2019 was signed off by the Minister of Fisheries in December 2017. • The SBW 6I Operational Plan 2018 was reviewed, updated and finalised. • The second annual meeting of the New Zealand sea lion/rāpoka Forum and Advisory Group took place on 23-24 May 2018 at Te Rau Aroha Marae in Bluff. • The Squid 6T Operational Plan Technical Advisory Group met for the second time in May 2018.

[16] Information on the New Zealand sea lion/rāpoka Threat Management Plan is available online; www.doc.govt.nz/nature/native-animals/marine-mammals/seals/new-zealand-sea-lion/docs-work/new-zealand-sea-lion-threat-management-plan

6	**National Plan Frameworks**: Implement components of the NPOA-Sharks relevant to deepwater fisheries
	The National Plan of Action for the Conservation and Management of Sharks 2013 (NPOA-Sharks)[17] sets out six goals and accompanying five year objectives to support the management of sharks. A second qualitative risk assessment of all New Zealand shark species was completed in November 2017, which informs the prioritisation of management actions and research.[18] This Management Action is focused on achieving the objectives of the NPOA-Sharks (2013), and addressing at-risk species identified in the risk assessment. A review of the NPOA-Sharks (2013) will begin in early 2019 to produce a revised to produce a revised NPOA-Sharks.
	Key Actions for 2017/18: • Contribute to the review of the NPOA-Sharks (2013). • Monitor and review the regulatory framework that governs shark processing and landing, and review shark fin ratios. • Contribute, where necessary, to the qualitative risk assessment update in late 2017 to precede the NPOA-Sharks (2013) review in 2019. **Core Actions for 2017/18:** • Support and contribute to the review of management categories for shark species and implement any recommendations for QMS introduction or protection as required. • Implement the NPOA-Sharks Implementation Plan across the fisheries management directorate in conjunction with DOC and the Ministry of Foreign Affairs and Trade (MFAT). • Support progression and delivery of the quantitative risk assessment and subsequent prioritisation as required. • Continue to work with stakeholders to avoid captures of protected shark species in deepwater fisheries and maximise survival of captured protected shark species. • Engage as required on the Memorandum of Understanding on the Conservation of Migratory Sharks (CMS Sharks MOU)[19] and ensure that New Zealand's shark management is consistent with the CMS Sharks MOU and its conservation plan. • Improve awareness of fishers to the need for accurate shark reporting to reduce the usage of generic shark reporting codes.
	Action relates to Management Objectives 1.6, 2.4, 2.5 & 2.6 Action relates to Management Objectives 6, 8 & 10
	Actions achieved: During the 2017/18 financial year, the following actions relating to the NPOA-Sharks were completed: • The qualitative risk assessment of all shark species was updated in November 2017.[20] This risk assessment informs the prioritisation of management actions and research. • A review of the regulatory framework to eliminate shark finning[21] in New Zealand was begun by the Deepwater Fisheries Management team.

[17] The NPOA-Sharks (2013) is available online; https://www.mpi.govt.nz/dmsdocument/1138/loggedIn

[18] The shark risk assessment is available online; https://www.mpi.govt.nz/dmsdocument/9803/loggedIn

[19] Additional information on the CMS Sharks MOU can be accessed online; https://www.cms.int/sharks/en

[20] https://fs.fish.govt.nz/Doc/24619/AEBR-2018-201-Chondrichthyan-risk-assessment.pdf.ashx

[21] Shark finning is defined as the removal of the fins from a shark and disposal of the trunk at sea, but does not include the removal of the fins from a shark where the trunk is also retained for processing.

7	**Benthic Framework**: Benthic Invertebrates: Monitor and measure the nature and extent of benthic interactions with deepwater fishing activity
	The current approach to mitigating the effects of fishing on deepwater benthic communities is through the closure of large areas of the EEZ to bottom trawling.[22] The level of interactions between deepwater vessels and benthic invertebrates is monitored by Fisheries New Zealand observers. The trawl footprint is also monitored each year and the most recent information available is reported in Section 5.6 of this report.
	Key Actions for 2017/18: • Support the development of objectives and/or framework for the management of the benthic impacts of deepwater fisheries. • Provide support to the development of the Benthic Risk Assessment. **Core Actions for 2017/18:** • Monitor the trawl footprint of all deepwater species and report on any new areas trawled in the ARR. • Report in the ARR the volume and species (where possible) of benthic species captured and consider management action if required.
	Action relates to Management Objective 2.7 Action relates to Management Objective 7, 8 & 10
	Actions achieved: • Fisheries New Zealand contracts a research provider to map the annual 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 2015/16 fishing year.[23] The trawl footprint report included fishing up to the end of the 2016/17 fishing year is expected to be published in early 2019.

8	**Engagement:** Ensure sufficient and appropriate engagement with tangata whenua and stakeholders
	Sufficient and appropriate engagement with tangata whenua and stakeholders is an integral part of fisheries management. Engagement aims to ensure Deepwater Fisheries Management information is available and accessible for all stakeholders and to provide opportunity for input and participation in the deepwater fisheries planning process and the ongoing management of deepwater fisheries for tangata whenua.
	Core Actions for 2017/18: • Ensure input and participation of tangata whenua and respond to/incorporate feedback as necessary. • Advise Fisheries New Zealand representatives attending Iwi Fisheries Forums of upcoming consultations. • Engage with stakeholders through the Fisheries Plan Advisory Group (formerly known as the Environmental Engagement Forum) on issues, processes and management decisions relating to deepwater fisheries.

[22] The implementation of Benthic Protection Areas (BPAs) from 2007 onwards have effectively closed approximately 70% of New Zealand's EEZ to bottom trawling.

[23] https://www.mpi.govt.nz/dmsdocument/27546/loggedIn

	• Maintain an open and transparent management environment by ensuring that all management information is available and accessible online for stakeholder and tangata whenua consideration.
	Action linked to Management Objectives 1.6 & 1.7 Action linked to Management Objectives 9, 10 & 11
	Actions achieved: • Fish Plan Advisory Group meetings were held in December 2017 and April 2018. • Directed efforts were made to engage with tangata whenua for all deepwater fisheries consultations throughout the year, including the distribution of all sustainability round advice papers to iwi and iwi forums (in particular Te Waka a Maui and Te Tau Ihu). In addition, relevant specific objectives from Iwi Fisheries Plans (IFPs) and Forum Fisheries Plans (FFPs) were incorporated into sustainability round advice to the Minister. **Actions not applicable:** • No new Iwi Fisheries Plans or Forum Fisheries Plans were finalised in the 2017/18 year.

9	**Deepwater Research Planning**: Finalise and agree research commitments for the 2018/19 year and determine future approach to research planning and procurement
	In 2016/17, Fisheries New Zealand initiated a process to form a Deepwater Research Panel of pre-qualified research providers. This Panel will enable a streamlined approach to the market for the deepwater fisheries research programme, allowing Fisheries New Zealand to engage directly with pre-qualified suppliers whilst meeting its obligations under the Government Rules of Sourcing. The Deepwater Research Panel will also provide more certainty to research providers enabling a return to longer term contracting thereby reducing administration and risk of delays in the contracting process.
	Core Actions for 2017/18: • Monitor research projects to ensure delivery remains on track to provide results that will support fisheries management. • Finalise and agree the deepwater fisheries research programme, including any proposals for industry-led research, for delivery during the 2018/19 financial year before December 2017. • Provide the option for Fisheries Management Directorate projects to implement a new approach to research planning and procurement, including a return to longer term contracting for routine trawl surveys.
	Action linked to Management Objectives 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.2, 2.4, 2.5, 2.6, and 2.7 Action relates to all Management Objectives
	Actions achieved: During the 2017/18 financial year, the following actions relating to research planning were completed: • The 5-year research plan was updated to reflect the outputs of management strategy evaluations and to enable long term planning of deepwater research.[24]

[24] The Medium Term Research Plan for Deepwater Fisheries 2018/19 – 2022/23 is available online; https://www.mpi.govt.nz/dmsdocument/21746/loggedIn

	• Deepwater research for 2018/19 was planned and discussed with stakeholders at the Environmental Engagement Forum (EEF)[25] meeting in December 2017. • A Deepwater Research Panel was approved in March 2018, and the agreement of final contracts is underway.

10	**Deepwater Monitoring:** Deepwater observer coverage/sampling requirements for 2017/18 and 2018/19
	Observer coverage of deepwater fisheries is planned by financial year and is based on biological sampling requirements and percentage-level coverage targets. Observer coverage is monitored throughout the year to ensure sufficient information is available to support stock assessments and to understand interactions with protected species.
	Key Actions for 2017/18: • Identify future observer coverage needs to inform more long term planning. • Develop coverage and sampling targets for each of the next five years to align with the deepwater fisheries research programme. **Core Actions for 2017/18:** • Liaise with industry to acquire quarterly fishing plans to support observer coverage planning. • Ensure observer briefing documents are up to date and that appropriate sampling is undertaken in accordance with biological targets. • Monitor observer coverage delivery against the plan to ensure coverage targets and biological sampling needs are met. • Develop the observer coverage plan for 2018/19.
	Action linked to Management Objectives 1.1, 1.3, 1.4, 1.5, and 2.5 Action linked to Management Objectives 1, 2, 3, 6, 7 & 10
	Actions achieved: • Quarterly fishing plans were requested from industry for the second, third and fourth quarters of the 2017/18 fishing year. • The collection of biological samples by observers was tracked over the course of the year and compared against sampling targets (as set out in the 2017/18 AOP) to enable the prioritisation of observer placement. • The Deepwater Fisheries Management team worked closely with Fisheries New Zealand Observer Services to discuss future observer coverage needs, the prioritisation of species for biological sampling and any other issues arising from deepwater observer coverage. • The 2018/19 observer coverage plan, as well as biological sampling requirements for deepwater fisheries were both completed and made available within the 2018/19 AOP.[26]

[25] This forum is now known as the Fish Plan Advisory Group (FPAG).

[26] The Annual Operational Plan for Deepwater Fisheries 2018/19 can be accessed online; https://www.mpi.govt.nz/dmsdocument/30828/loggedIn

11	**Registry Services:** Continue implementation of the Fisheries (Foreign Charter Vessels and Other Matters) Amendment Act 2014**,** the Foreign Charter Vessels[27] (FOV) registration process and risk based observer coverage
	The Deepwater Fisheries Management team provides input to all advice papers relating to Fisheries New Zealand's consent to the registration of foreign owned vessels operating in deepwater fisheries under Section 103 of the Fisheries Act 1996. The FCV and Other Matters Amendment Act 2014 (FCV Act),[28] amended the registration process for foreign owned vessels as well as expanding the range of observer functions. Fisheries New Zealand co-ordinates the cross agency work programme for the implementation of requirements of the FCV Act and will continue to assist the Fisheries New Zealand Registry Analyst and Observer Services with any changes to their respective processes and functions.
	Core Actions for 2017/18: • Input to the foreign-owned vessel registration and risk profiling process in conjunction with MPI Compliance. • Provide secretariat services to and chair the Inter-Agency Fisheries Group. • Provide input into high seas permit applications.
	Action linked to Management Objective 1.6 Action linked to Management Objectives 9 & 10
	Actions achieved: • The Deepwater Fisheries Management team coordinated the work programme of the Inter-agency Fisheries Group, which includes the Ministry of Foreign Affairs and Trade (MFAT), the Ministry of Business, Innovation and Employment (MBIE), Maritime New Zealand (MNZ) and members from a cross-section of key MPI directorates. The Inter-agency Fisheries Group met every two months to discuss and refine inter-agency data sharing to input into the risk profiling of fishing vessels to inform risk assessment of vessels and operators. • In addition, reports were provided by the Deepwater Fisheries Management team on all applications for FOV registration.

12	**Deepwater Monitoring:** Monitor adherence of the deepwater fleet to the range of measures in place to monitor and manage the effects of fishing activity on protected species and sharks
	A range of management measures, including some non-regulatory initiatives by DWG, are employed to monitor environmental interactions in deepwater fisheries and to reduce the risk of ongoing adverse effects on protected species populations. Measures are described in the following Operational Procedures or Plans (OPs);[29] • Marine Mammal Operational Procedures (DWG initiative) • Vessel Management Plans – Seabirds (DWG initiative) • Ling Operational Procedures (bottom longline) – Seabirds (DWG initiative) • Shark Operational Procedures (DWG initiative) • SQU 6T/SBW 6I Operational Plans[30]

[27] The acronym FCV (foreign charter vessel) has been used historically, however, these vessels are more correctly identified as 'foreign-owned' and the acronym FOV (foreign owned vessel) will be used henceforth.

[28] The FCV act can be accessed online; http://legislation.govt.nz/act/public/2014/0060/latest/DLM4794406.html

[29] DWG operational documents can be accessed online; http://deepwatergroup.org/newsresources/op-manual/

[30] The Squid 6T/SBW 6I Operational Plans are covered as part of Management Action 5 (Protected Species Frameworks – Work collaboratively with the Department of Conservation on implementation of the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022)

The DWG Environmental Liaison Officer (DWG ELO) trains senior crew and vessel managers of deepwater trawlers, hoki coastal trawl, scampi trawl and ling longline vessels to promote best practice mitigation standard practices across the fleet. The DWG ELO also reviews the DWG standards set out within the Operation Procedure Manual (OPs) and audits Vessel Management Plans (VMPs) and best practice environmental and mitigation practices.

Key Actions for 2017/18:

- Work with DWG to develop an audit process for the Ling Operational Procedures.
- Work with DWG to update the Fisheries New Zealand observer audit sheet for Vessel Management Plans.
- Work with DWG to update materials and methods used to educate crew on Operational Procedures and Plans.
- Provide an update of the list of vessels covered by DWG OPs to DWG.

Core Actions for 2017/18:

- Monitor adherence of the deepwater fleet to management measures through Fisheries New Zealand observer coverage.
- Monitor protected species interactions across all trips via Fisheries New Zealand observer debriefs and reporting of trigger points.
- Report levels of adherence to Operational Plans to stakeholders through the ARR.
- Continue to support the training and outreach and awareness programme run by the DWG Environmental Liaison Officer (ELO).

Action relates to Management Objectives 2.4, 2.5 & 1.6

Action relates to Management Objectives 6, 8, 9 & 10

Actions achieved:

- Details regarding the auditing and monitoring of adherence to VMPs by Fisheries New Zealand observers are detailed within Sections 2.4 and 5.1 of this report.
- Deepwater Fisheries Management liaised with the DWG ELO to obtain copies of all revised VMPs. All VMPs were provided to Observer Services.
- An observer audit form to assess vessel adherence to the ling bottom longline (BLL) Operational Procedures during observed trips was finalised in February 2018 and subsequently completed following all ling BLL trips.
- The Deepwater Fisheries Management team provided the DWG ELO with an update of vessel activity.
- The SBW 6I Operational Plan was updated for the 2017 season.
- The DWG ELO encourages improvement of offal control and mitigation device use and real time reporting of capture events, to reduce the risk of protected species captures. Details regarding vessel visits by the DWG ELO can be found in table 6 of this report.

Actions underway:

- A revision of the deepwater trawl VMP observer audit form commenced.

13	**Deepwater Monitoring:** Monitor adherence to all non-regulatory measures in place to manage Tier 1 deepwater fish stocks at a sub-QMA level.
	In conjunction with industry, Fisheries New Zealand has implemented a series of non-regulatory sub-area and/or species specific catch limits in the hoki, orange roughy, and oreo fisheries. In addition, hoki management areas (HMAs) have been created to reduce fishing mortality on juvenile hoki in important nursery areas.
	Key Actions for 2017/18: • Develop GIS tools to provide for a more efficient reporting mechanism. **Core Actions for 2017/18:** • Continue auditing fleet adherence to sub-QMA catch limits and HMA requirements. • Report level of adherence to these measures to stakeholders through the ARR. • Respond as required where non-compliance with sub-QMA catch limits impacts the sustainability of the stock.
	Action linked to Management Objectives 1.1, 1.3 and 2.1 Action linked to Management Objectives 2, 3, 9 & 10
	Actions achieved: • The Deepwater Fisheries Management team worked with the Business Technology and Information Services directorate of MPI to establish custom reports which, utilising electronically reported catch data, enabled the efficient compilation of quarterly sub-QMA catch reports. Such reports were used to monitor fleet adherence to sub-QMA catch limits for relevant orange roughy and oreo stocks. • Quarterly reports summarising fishing effort, estimated catch and hoki length frequency information from inside HMAs were compiled and provided to DWG. Following the development of a GIS tool in early 2018, quarterly reports provided from March 2018 onwards also summarised fishing effort, estimated catch and hoki length frequency information from the immediate vicinity (i.e. 2 NM) of HMA boundaries. • Summaries of quarterly sub-QMA catch and HMA reports are provided within Appendix I of this report.

14	**Fisheries Management Controls:** Regulatory amendments
	Progressing regulatory amendments requires analysis of options, drafting the documents required for the different components of the regulatory process such as the PIRA (preliminary impact and risk assessment), consultation documents, RIS (regulatory impact statement), final advice and papers for relevant Cabinet Committees.
	Core Actions for 2017/18: • Progress regulatory amendments as required.
	Action linked to Management Objectives 1.1 & 1.2 Action linked to Management Objectives 9, 10 & 11
	Actions not applicable: • No regulatory amendments were required in 2017/18.

15	**Fisheries Management/Sustainability Controls:** Support existing approaches to market initiatives for New Zealand's deepwater seafood
	The primary component of this management action is working with DWG to support the requirements of the Marine Stewardship Council (MSC) assessment and certification process. Fisheries New Zealand supports industry to achieve and maintain certification of key deepwater fisheries, and progress performance of all Tier 1 deepwater fisheries towards meeting the MSC Standard.[31]
	Key Actions for 2017/18: • Support re-assessment of hake/hoki/ling and southern blue whiting in July 2017. **Core Actions for 2017/18:** • Provide information and support to assist with audits of certified fisheries (orange roughy). • Support the development and implementation of Fisheries Improvement Plans for fisheries not yet assessed (jack mackerel, oreo, squid)
	Action linked to Management Objectives 1.1 & 1.5 Action linked to Management Objectives 2 & 10
	Actions achieved: • Deepwater Fisheries Management provided data and support for the re-assessment of hoki, hake, ling and southern blue whiting stocks. All assessed stocks were re-certified by the MSC as the hoki, hake and ling trawl fishery, the ling bottom longline fishery (LIN 3 – 7) and the southern blue whiting trawl fishery. • Deepwater Fisheries Management provided data and support for the first annual surveillance audit of the certification of three orange roughy stocks. • Fisheries New Zealand also provided review of DWG Fisheries Improvement Plans for three stocks.

16	**Fisheries Sustainability Controls:** Develop and implement specific harvest strategies for Tier 1 species and management approaches for low information stocks, which enable economically viable deepwater and middle-depth fisheries 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 will be undertaken which assesses a range of different management strategies, including those which incorporate economic aspects of the fishery. Management of Tier 2 species is often limited by the information available to inform decision making. The appropriate management approach for each stock will be informed from the recent series of fisheries characterisations and could include development of stock assessments, management procedures or an agreed index of abundance.
	Core Actions for 2017/18: • Continue to assess the relevance of the default Harvest Strategy for deepwater species.[32] • Where necessary, develop and implement alternative harvest strategies and management approaches for deepwater species.

[31] Information on the status of New Zealand's deepwater fisheries in the MSC programme can be found online; deepwatergroup.org/certification/

[32] The Harvest Strategy is available here (http://fs.fish.govt.nz/Doc/16543/harveststrategyfinal.pdf.ashx)

	• Work with the science team to update and publish working group reports and stock status information. • Work with DWG to minimise unwanted bycatch (for example kingfish in the jack mackerel fishery).
	Action linked to Management Objective 1.1, 1.2 & 2.1 Action linked to Management Objective 4 & 9
	Actions achieved: • Research projects providing abundance information have been contracted for a number of Tier 2 stocks including barracouta, silver warehou and blue (english) mackerel. **Actions not applicable:** • Because the default Harvest Strategy Standard appeared to be operating appropriately, no alternative harvest strategies or management approaches were developed.

2.2 MANAGEMENT ACTIONS DELIVERED IN CONJUNCTION WITH OTHER TEAMS WITHIN FISHERIES NEW ZEALAND AND MPI

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

Table 3: Management Actions that the Deepwater Fisheries Management team contributed to during the 2017/18 financial year

A	**Input to work wider MPI processes:** Assist relevant branches within MPI with review of policy developments and any necessary fisheries management information **Lead: MPI Policy and Trade**
	A review of the fisheries management system, entitled the Fisheries Management System Review is underway. This is expected to make significant improvements to how our fisheries are managed. These projects may require information, feedback and review of working documents. It includes three key work streams; • The Fisheries Management System Review policy initiatives, led by the Policy and Trade branch. • Digital Monitoring of commercial fishing. • Enabling innovative trawl technologies (EITT), led by the Regulation and Assurance branch. The Deepwater Fisheries Management team also works with the Fisheries Policy team on information requests from other government agencies (e.g. EPA)[33] and on relevant international fisheries management organisations (SPRFMO).[34]
	Key Tasks for 2017/18: • Engage as required on policy initiatives including all work streams of the Fisheries Management System Review policy review, digital monitoring and EITT. • Actively participate in SPRFMO to ensure consistency with domestic management and add deepwater fisheries expertise to the New Zealand delegation.

[33] Environmental Protection Agency.

[34] South Pacific Regional Fisheries Management Organisation.

	• Respond to requests for information or other initiatives from the policy branch to support New Zealand's fisheries (e.g. EPA or requests from other governments for information on New Zealand fisheries).
	Action linked to various Management Objectives
	Actions achieved: • In relation to Digital Monitoring (DM), the Deepwater Fisheries Management team assisted with development of the new Geospatial Monitoring System (GMS). GMS is an application that integrates electronic catch reporting information provided by fishers and position reporting data.[35] • In relation to EITT, the Deepwater Fisheries Management team assisted with drafting the Fisheries (Innovative Trawl Technologies) Notice; assessment of the Modular Harvesting System (MHS) application against criteria specified in Regulation 71A and the Notice; assisted with preparing the recommendation for the Director General to approve MHS; and developed procedures to operationalise use of the MHS, including developing reporting requirements and guidelines for operators and observers; and performed valid trip assessments. • In relation to SPRFMO, the Deepwater Fisheries Management team assisted with the ongoing development of a new set of rules for bottom fishing in the SPRFMO Convention Area. **Actions not applicable:** • No requests for involvement of the Deepwater Fisheries Management team were received in relation to MPA policy development.

B	**Research Monitoring and Evaluation:** Ensure that all information used in management decisions meets the requirements of the Research and Science Information Standard for New Zealand Fisheries (the Research Standard) **LEAD: Fisheries New Zealand 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.
	Key Actions for 2017/18: • Assist Fisheries Science to deliver outputs of all 2017/18 research projects as listed in Section 4.2 of this Report. • Assist Fisheries Science to ensure that all research used to support management of deepwater fisheries is assessed against the Research Standard.[36]
	Action linked to Management Objectives 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.2, 2.4, 2.5, 2.6 & 2.7 Action linked to Management Objectives 1, 2, 3, 4, 5, 9 & 10
	Actions achieved: • All science information used to support management was reviewed by Fisheries Assessment Working Groups and determined to have met the Research Standard. • All deepwater fisheries research contracted during the 2017/18 financial year (including additional projects), and all Final Research Reports relevant to deepwater fisheries published in the 2017/18 year are listed within Section 4.2 of this Report.

[35] Electronic catch reporting became mandatory for operators of trawl vessels >28m in length on 1 October 2017. Position reporting (VMS) was already mandatory for this category of vessels. GMS is only available to Fisheries New Zealand/MPI staff.

[36] The Research Standard can be accessed online; http://www.mpi.govt.nz/dmsdocument/3692-research-and-science-information-standard-for-new-zealand-fisheries

C	**Observer Coverage Delivery:** The Fisheries New Zealand Observer Programme is responsible for delivering on the observer coverage targets set out in the final 2017/18 coverage plan and ensuring that the required biological sampling targets are met. **LEAD: Fisheries Monitoring (Observer Services)**
	Observer coverage plans for all fisheries are prepared annually as are biological sampling targets and other observer tasks. The Deepwater Fisheries Management team will continue to work closely with Observer Services to ensure the necessary targets are achieved.
	Key Actions for 2017/18: • Assist Observer Services to deliver the 2017/18 observer coverage plan by continuing to engage with industry to regularly provide quarterly fishing plans to Observer Services to facilitate placement of observers and delivery of the required representative levels of coverage. • Ensure Observer Services is aware of, and that observers are adequately briefed on, the biological sampling targets and any new requirements for 2017/18. • Provide training to new recruits as part of the intake process to ensure that observers collect data and sample correctly. • Request frequent reporting and updates of coverage levels against targets throughout the 2017/18 year.
	Action linked to Management Objectives 1.1, 1.3, 1.4, 1.5 & 2.5 Action linked to Management Objectives 1, 2, 3, 4 & 10
	Actions achieved: • Deepwater Fisheries Management actions relating to the delivery of the 2017/18 observer coverage plan and associated biological sampling and percentage-level coverage targets are detailed in Section 4.1 of this report. • By participating in multiple observer assessment centres, the Deepwater Fisheries Management team contributed towards the recruitment of new observers. • The Deepwater Fisheries Management team attended four intakes of observer trainees at the Nelson Marlborough Institute of Technology (NMIT). During such visits, the Deepwater Fisheries Management team gave presentations covering the QMS, Fisheries Management Science, non-regulatory measures used in Deepwater Fisheries Management and the mitigation devices used to reduce interactions between fishing vessels and seabirds/marine mammals. • The Deepwater Fisheries Management team regularly contributed to the monthly observer newsletter. • Participated in the process of reviewing observer forms to improve the quality of data collected.

D	**Cost Recovery Process:** Assist the Business and Financial Advice team with the cost recovery processes for 2017/18 and 2018/19. **LEAD: MPI Corporate Services (Cost Recovery)**
	MPI undertakes an annual cost recovery process to recover costs associated with fisheries compliance, registry, research, and observer coverage. There are two stages to the process: the first involves undertaking a port price survey while the second consists of calculating the levies for each stock.
	Key Actions for 2017/18: • Ensure the Deepwater Fisheries Management team has input into the port price survey process administered by the Finance team. • Ensure the cost recovery levy process recovers costs consistent with deepwater observer coverage and research plans. • Provide input, if required, into the cost recovery first principles review.
	Action linked to various Management Objectives
	Actions achieved: • Deepwater Fisheries Management contributed to the port price survey process, and provided information as required to enable accurate recovery of costs associated with observer and research planning. Detailed information on the 2017/18 cost recovery levies may be found in Appendix IV of this report.

E	**Compliance risk profiling and monitoring work** **LEAD: Compliance Directorate (Operations Branch)**
	MPI's Compliance Directorate will continue to focus on monitoring deepwater fishing activity and catch reporting in 2017/18 to ensure the fleet demonstrates behaviours and practices consistent with legislative and regulatory requirements.
	Key Actions for 2017/18: • Engage with industry to support the implementation of new catch reporting and positional reporting requirements under Digital Monitoring. • Monitor compliance issues identified in previous hoki and southern blue whiting risk profiles. • Finish the risk profile work on orange roughy. • Provide compliance and enforcement information to support the reassessment process for MSC certification of hake, hoki, ling and southern blue whiting. • Engage with industry to verify fish to meal sources and meal quantification processes identified in factory plans for vessels. **Core Actions for 2017/18:** • Assess compliance risk for deepwater fisheries. • Support industry to resolve technical issues around positional reporting. • Investigate issues where offending is suspected. • Carry out at sea inspections. • Audit catch returns.
	Action linked to various Management Objective

	Actions achieved: • The Compliance Directorate, together with the Deepwater Fisheries Management team, was involved with the various industry workshops and industry consultation for the introduction of electronic catch and position reporting under the Digital Monitoring programme. • The Deepwater Compliance Group, which includes representatives from the Deepwater Fisheries Management team and Compliance, met on 13 June 2018. • Work that was undertaken by Compliance in relation to deepwater fisheries without specific involvement of the Deepwater Fisheries Management Team included: o Undertaking in-port inspections of hoki/hake/ling product during the 2017 hoki season o Tasking observers to monitor processed state adherence during the 2017 southern blue whiting season o Preparing work schedules for in-port inspections during the 2018 hoki and southern blue whiting seasons o Leading an at-sea patrol at the start of the 2018 hoki season, which included boarding and vessel inspections to check processed state adherence o Ongoing liaison with Observer Services in relation to observer auditing of fish to meal processes on vessels that have a meal plant

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 2017/18 financial year.

When required, work with industry to :
Core Actions for 2017/18: • Respond to any industry 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 for deepwater species. • Assist the MPI Fisheries Policy team and the Overseas Investment Office to assess applications by foreign owned companies to purchase quota
Actions achieved: • One application for a vessel specific conversion factor certificate was received and assessed. • All vessel specific conversion factor testing was undertaken on a pro rata basis i.e. vessel operators were charged for the proportion of each trip that was dedicated to testing (28 days during the year delivered across six vessels). • A request to transfer fish between vessels under the transhipping provisions of the Act (Section 110 of the Act) was received and actioned in June 2018. The request related to <28 m trawlers operating in the Cook Strait and West Coast South Island hoki fisheries. • An amendment was made to the Fisheries (Seabird Mitigation Measures – Bottom Longlines) Circular permitting the FV '*Janas*' to discard spiny dogfish on the same side of the vessel as the hauling station (under additional mitigation and monitoring conditions).[37]

[37] Fisheries (Seabird Sustainability Measures – Bottom Longlines) Circular 2018 can be accessed online; http://www.legislation.govt.nz/regulation/public/2018/0116/latest/whole.html

- Three special permits pertinent to deepwater fisheries were issued.
- Provided fisheries management advice to MPI Fisheries Policy and the Overseas Investment Office (OIO) on an application by a foreign owned company to purchase quota and/or ACE for deepwater stocks.

Actions not applicable:

- No stock boundary changes were requested by industry in 2017/18.

2.4 IMPLEMENTATION OF THE NATIONAL PLAN OF ACTION – SEABIRDS (2013)

The NPOA-Seabirds (2013) sets out objectives to guide management of interactions with seabirds in New Zealand fisheries. The objectives are implemented through integration into Fisheries New Zealand's annual planning cycle. This ARR reports back on the prioritised actions and services needed to meet these objectives for deepwater fisheries as set out in the 2017/18 AOP. The five year review of the NPOA-Seabirds (2013) began in 2017.

The NPOA-Seabirds (2013) objectives address four key areas:

i) a practical objective focused on continuous improvement to reduce and where practicable, eliminate the incidental mortality of seabirds

ii) a biological risk objective focused on ensuring seabird populations remain at or attain a favourable conservation status

iii) a research and development objective focused on researching mitigation and observation methods, and seabird biology, demography and ecology; and

iv) an international objective focused on the implementation of best practice mitigation in other fishing fleets that overlap with New Zealand breeding seabirds.

The NPOA-Seabirds (2013) employs a quantitative risk assessment framework that generates quantitative risk scores for seabird species. It allows for identification of the seabird species most at risk from commercial fishing, as well as the fisheries that contribute the greatest risk to these species and seabirds more generally. This information is used to prioritise management action to reduce the overall risk that commercial fishing poses to seabirds over time.

The risk assessment calculates a risk score, which is defined as the ratio of annual potential fatalities (APFs; an estimate of the number of birds killed in fisheries each year) to a population sustainability threshold (PST), which is the number of human-induced mortalities a population can sustain while maintaining a defined population outcome (the current seabird risk assessment uses a population outcome of 50% of carrying capacity (*K*).

A seabird species is considered to be at 'very high risk' from fishing if the ratio of the estimated mean APF to the mean PST is higher than 1. A species is considered to be at 'high risk' from fishing if the ratio of APFs to the PST is above 0.3. As the risk assessment is an ongoing process of iterative improvement, and is updated as the methodology improves and when new data becomes available, risk scores can change over time. Therefore, the most recent risk assessment (published in 2017), based on seabird bycatch and fisheries data to the end of the 2014/15 fishing year, differs from those published previously[38]. The 2017 seabird risk assessment identified one seabird species as being at a 'very high' risk from fishing and seven seabird species as being at a 'high' risk from fishing.

Those seabird species considered to be at a 'very high' or 'high' risk from fishing for which deepwater fisheries contribute more than 10% of the risk (according to the most recent iteration of the seabird risk assessment) are listed below. Of these species, fully quantitative population modelling has been completed for southern Buller's[39] and white-capped albatross.[40] The outcomes of these assessments or species-specific population modelling (completed since the Seabird Risk Assessment was published) will be reviewed and considered as part of any management updates.

38 Richard, Y.; Abraham, E.R. (2013). Assessment of the risk of commercial fisheries to New Zealand seabirds. New Zealand Aquatic Environment and Biodiversity Report; Richard, Y.; Abraham, E.R. (2015). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2012–13. New Zealand Aquatic Environment and Biodiversity Report 162

39 https://www.mpi.govt.nz/dmsdocument/11662-aebr-165-2014-demographic-assessment-of-the-snares-islands-population-of-southern-bullers-albatross-diomedea-bulleri-bulleri

40 https://www.mpi.govt.nz/dmsdocument/4233-aebr-104-fisheries-risks-to-the-population-viability-of-white-capped-albatross-thalassarche-steadi

2.4.1 HIGH RISK SEABIRDS

Salvin's albatross

Deepwater fisheries contribute a total of 55% of the risk score for Salvin's albatross with most of the contribution from middle-depth fisheries, hoki, and scampi trawl, and small vessel ling bottom longline fisheries. Deepwater fisheries account for 1,532 of the total 2,780 APFs with the PST for Salvin's albatross estimated to be 3,600. The main uncertainty in the modelled risk is the number of captures in inshore trawl fisheries, the cryptic mortality multiplier, and the estimate of adult survival.

Southern Buller's albatross

Deepwater fisheries contribute a total of 72% of the risk score for southern Buller's albatross with most of the contribution from hoki and squid trawl fisheries. Deepwater fisheries account for 379 of the total 528 APFs with the PST for southern Buller's albatross estimated to be 1,370.

New Zealand white-capped albatross

Deepwater fisheries contribute a total of 31% of the risk score for white-capped albatross with most of the deepwater contribution from middle-depth and squid trawl fisheries. Deepwater fisheries account for 1,359 of the total 3,830 APFs with the PST of New Zealand white-capped albatross estimated to be 10,900.

Chatham Island albatross

Deepwater fisheries contribute a total of 88% of the risk score for Chatham Island albatross with most of the deepwater contribution from the small vessel (<28 m) ling bottom longline fishery. Deepwater fisheries account for 136 of the total 155 APFs with the PST of Chatham Island albatross estimated to be 425.

Westland petrel

Deepwater fisheries contribute a total of 31% of the risk score for Westland petrel with most of the deepwater contribution from the hoki trawl fishery. Deepwater fisheries account for 56 of the total 180 APFs with the PST of Westland petrel estimated to be 350.

2.4.2 CAPTURE RATE REDUCTION TARGETS

Capture rate reduction targets provide a gauge against which the Practical Objective of the NPOA-Seabirds (2013) can be measured. A working group of the Seabird Advisory Group (SAG), was tasked with developing a set of principles that could be used when determining capture rate reduction targets. The group recommended that fisheries be defined using the same groupings as that of the risk assessment model, and that targets should be quantitative wherever possible. These targets would then be compared to a baseline capture rate, which has been defined as the average estimated capture rate across the three year block leading up to the implementation of the NPOA-Seabirds (2013) with at least 10% observer coverage and a coefficient of variation (CV) of less than 0.30. It was also agreed that these targets should be meaningful, and a test was devised based on the level of actual observed captures, the estimated captures, and the corresponding capture rate. The calculation steps taken to determine the baseline capture rate, the capture rate reduction targets and proxy targets are outlined within the 2016/17 AOP.[41]

Table 5 sets out the deepwater capture rate reduction targets and proxy targets along with three year averages (based on the 2014/15 to 2016/17 fishing years[42]) of observer coverage and estimated capture rates[43] for deepwater fisheries groupings. 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.

[41] The Annual Operational Plan for Deepwater Fisheries 2016/17 can be accessed online; https://www.mpi.govt.nz/dmsdocument/13281-annual-operational-plan-for-deepwater-fisheries-for-201617

[42] Data from the 2014-15 to 2016-17 fishing years are used as estimated capture data for the 2017-18 fishing year is not currently available.

[43] Estimated capture data can be accessed online; https://psc.dragonfly.co.nz/2017v1/released/summary/

Table 5: Deepwater Capture Rate Reduction Targets and three year averages of observer coverage and estimated capture rate.

Fishery	Targets				Three year average (14/15-16/17)		Progress against target/proxy
	Suggested target/proxy	Baseline capture rate (per 100 tows/1000 hooks)	'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)	1.1	-	No	100%	1.15	
SQU trawl	Statistically significant decrease in rate (based on 3-yr rolling average)	14.0	12.0 (14%)	Yes	86%	15.50	
JMA trawl	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	1.0	-	No	83%	0.70	
SCI trawl	Observer coverage has been >10% twice in the most recent 4 years with 8.4% of tows observed in the last five years. This is not considered sufficient 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	7%	-	VMPs in place for all scampi vessels. During 2017/18, the DWG ELO visited eight scampi vessels. Observer coverage of 12% of effort in 2017/18.
Deepwater trawl[44]	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.6	-	No	31%	0.30	
Middle-depth trawl (>28 m)[45]	Statistically significant decrease in rate (based on 3-yr rolling averages)	2.7	2.3 (15%)	Yes	35%	2.80	
Large vessel BLL	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.01[46]	-	No	11%	0.03	
Small vessel LIN BLL	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. And a target of 15% of effort observed will be set.	-	-	No	4%	-	During 2017/18, the DWG ELO visited 20 of the 24 ling manual bottom longliners. Observer overage of 7% of effort in 2017/18

[44] Deepwater trawl includes orange roughy, alfonsino and oreo species.

[45] 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.

[46] Updated from the table set out in 2017/18 AOP which reported baseline capture rates in longline fisheries in terms of 'sets' rather than per 1000 hooks.

2.4.3 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[47]
- implementation of best practice seabird mitigation measures through VMPs and Operational Procedures
- an annual crew training and vessel outreach programme
- ongoing exploration of new or improved mitigation methods, and
- Fisheries New Zealand observers monitoring vessel adherence to VMPs

VMPs outline a set of operational procedures that are specific to each vessel. These include controlling the discharge of offal during shooting and hauling, the correct deployment of bird scaring devices, and the removal of 'stickers' between each tow. Contingency plans and reporting requirements for capture events and equipment failures (that may increase bird capture risk), are also included.

Throughout 2017/18, actions in deepwater fisheries to support the NPOA-Seabirds (2013) were focused on continuing to improve and manage the VMP 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 and the actions achieved during 2017/18. 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 (2013).

Table 6: NPOA-Seabirds (2013) services planned for Deepwater Fisheries Management during 2017/18.

Five-year Objectives	
Practical objectives	**Biological objectives**
a) All New Zealand commercial fishing vessels are shown to be implementing current best practice mitigation measures relevant to their area and fishery **b)** Recreational and customary non-commercial fishers understand the risks their fishing activities pose to seabirds, relevant organisations support and promote the use of best practice mitigation measures and it is the cultural norm in New Zealand to use such measures. **c)** Capture rates are reducing in all New Zealand fisheries in accordance with reduction targets in the relevant planning documents for those fisheries (three year rolling average).	• The level of mortality of seabirds in New Zealand commercial fisheries is reduced so that species currently categorised as 'very high' or 'high risk' from fishing, move to a lower category of risk.
Planned deepwater services for 2017/18: • Work with the DWG ELO to continually improve the VMP process and apply it across the wider deepwater fleet; • Continue to monitor adherence to VMPs, as well as review VMPs and education programmes to ensure all measures are as effective as possible. The goal is:	

[47] Regulations require trawlers over 28 m in overall length to deploy a seabird scaring device 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. See here for links to these regulations.

I. 100% of observed trips have audited the VMP

II. 95% of observers debriefed by the Deepwater Fisheries Management team

III. Follow up all non-adherence

- Work across Fisheries New Zealand and with key stakeholders to monitor the targets already developed and report on appropriate seabird performance measures including capture rate reduction targets
- Increase observer coverage to further monitor seabird interactions in the ling bottom longline and scampi trawl fishery to reduce uncertainty in the risk assessment.
- Implement actions from the Black petrel and Flesh-footed shearwater Action Plan in the scampi fishery including:
  - I. Ongoing auditing and monitoring of adherence to VMPs.
  - II. Monitoring of effectiveness of current mitigation measures detailed in VMPs
- Assist with the development and implementation of species and fisheries-specific action plans for seabird species considered to be at 'very high' or 'high risk' from fishing as follows:
  - I. Salvin's, northern and southern Buller's, and white-capped albatross plan
  - II. Chatham Island, Campbell black-browed albatross and Westland petrel plan
- Improve awareness among vessel operators of times and areas where the risk of seabird interactions is increased.

Actions Achieved 2017/18:

- Of the 189 observed deepwater trips[48] that finished during the 2017/18 fishing year, the Deepwater Fisheries Management team debriefed observers at the end of 163 trips (86%). This is less than the target of 95% due to operational constraints (e.g. observers not returning to the office following trips or observers departing on another vessel shortly after the cessation of the previous trip). However, 100% of observers were debriefed by Observer Services at the end of each trip with all relevant information passed on to the Deepwater Fisheries Management team.
- Observers on 99% of trips on deepwater trawl vessels (all trawl vessels >28 m in length which targeted Tier 1 or Tier 2 species and all trips on scampi trawlers) audited the VMP. Summaries of vessel adherence to VMPs were provided to the DWG ELO after 150 trips with follow up (corrective) actions initiated after 16 trips. The DWG ELO undertook one vessel visit in repose to an observer review.
- Observers audited the VMP of all trawl vessels >28 m that regularly target deepwater species (33 vessels) and 70% of the scampi fleet (seven vessels). Observers were also placed on all longline vessels >34 m in length (three vessels), six longline vessels <34 m in length used to target ling[49] and nine trawl vessels <28 m in length used to target hoki in the Cook Strait or West Coast South Island 'inside the line' fisheries.[50]
- During 2017/18 the DWG ELO visited 82 vessels including 27 factory trawlers (including all 13 foreign crewed vessels), six large fresh trawlers (>28 m), 13 hoki-season fresh trawlers (<28 m), eight scampi freezer vessels, all eight ling auto bottom longliners and 20 of the 24 ling manual baiting bottom longliners. During vessel visits, the DWG ELO trains/refreshes vessel managers and senior crew to promote best practice mitigation standard practices across the fleet, as codified in VMPs (and Operational Practices).

[48] Includes all trips on trawl vessels >28 m in length during which deepwater species were targeted, all trips on trawl vessels <28 m during which Tier 1 species were targeted and all trips on bottom longline vessels during which ling was targeted.

[49] Approximately 20% of bottom longline vessels <34 m which landed greater than four tonnes during the 2017/18 fishing year.

[50] Approximately 60% of trawl vessels <28 m used to target hoki in these areas during the 2017/18 fishing year.

- The Deepwater Fisheries Management team reported on appropriate seabird performance measures including capture rate reduction targets within this report.
- Observer coverage during the 2017/18 fishing year was increased in the scampi (318 seadays[51] of observer coverage compared to 260 in 2016/17) and ling bottom longline fisheries (362 seadays of coverage compared to 332 in 2016/17). This is less than the number of days planned due to high levels of observer coverage required elsewhere (e.g. 100% observer coverage on FOVs).
- All vessels used to target scampi in FMA 1 have a VMP in place in accordance with actions specified in the Black petrel and Flesh-footed shearwater Action Plan. Approximately 11% of scampi effort in FMA 1 was observed (one trip). During 2017/18, observers audited the VMP of vessels responsible for 84% of scampi effort in FMA 1.

Research and development objectives

a) Where existing mitigation measures are impractical or of limited effectiveness in reducing the mortality of seabirds, new or improved mitigation measures have been sought and where identified are under development for all priority fisheries or fishing methods.

b) New observation and monitoring methods, especially in relation to poorly observed fisheries, are researched, developed and implemented.

c) Programmes of research to improve understanding of, and ability to mitigate, seabird incidental mortality for at risk species are underway and key projects for very high risk species have been completed.

Planned deepwater services for 2017/18

- Investigate and implement any additional practicable and effective measures to minimise the risk of net captures based on outcomes of contracted project characterising net captures and potential contributing factors.
- Continue to engage in DOC and Fisheries New Zealand research planning and review processes.
- Continue to engage in the SAG.

Actions Achieved 2017/18:

- The project characterising net captures and potential contributing factors has not yet been finalised and therefore no outputs have been available to inform potential mitigation measures. This project is continuing and will be extended.
- The Deepwater Fisheries Management team continued to engage in DOC and Fisheries New Zealand research planning and review processes.
- The Deepwater Fisheries Management team continued to engage in the SAG.

3. Summary of progress against Management Actions in 2017/18

All 'business as usual' Management Actions were progressed appropriately throughout the 2017/18 year. All of these Actions remain open as they represent ongoing requirements of Deepwater Fisheries Management that are delivered each year.

The remaining Management Actions relate to broader work programmes that will be delivered over several years, namely:

- The New Zealand sea lion/rāpoka Threat Management Plan 2017-2022.

[51] An observer seaday is defined as one day on which an observer is placed on a vessel which has left port for the purposes of fishing.

- Implementation of the NPOA-Sharks (2013).
- Implementation of the NPOA-Seabirds (2013).
- Market initiatives for New Zealand's deepwater fisheries

The specific management actions listed have, for the most part, been achieved during 2017/18. New actions that relate to each of these projects will be included in subsequent AOPs.

The Management Actions relating to the definition of habitat of particular significance for Deepwater Fisheries Management will be taken out of future AOPs as it does not need to be retained as a separate management action.

4. Part 3B: Deepwater Fisheries Research, Compliance, Observer Coverage and Cost Recovery Levies

This Section of the ARR provides detail on Fisheries New Zealand 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.

4.1 OBSERVER COVERAGE

Biological sampling and environmental monitoring is informed by the requirements of the National Deepwater Plan and carried out by the Fisheries New Zealand Observer Services. Data collected by Observer Services is used by Fisheries New Zealand:

- As an input to monitor key fisheries against harvest strategies.
- As an input to monitor biomass trends for bycatch species.
- To enable analysis of the nature and extent of interactions with protected species.
- To assess compliance with both regulatory and non-regulatory measures.
- To enable real-time responses to sustainability and environmental impact issues.

Observer coverage is planned by both Fisheries New Zealand 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.

4.1.1 2017/18 OBSERVER COVERAGE PERFORMANCE

In 2017/18, observer coverage for each fishery was planned based on a combination of biological sampling targets, desired percentage coverage targets and expected deployment requirements to comply with the Cabinet directive requiring all FOVs to have at least one observer on each trip. Planning required assumptions to be made regarding the number of vessels (particularly FOVs) that would operate in each fishery and the number of samples an observer takes per 'observer day' in each fishery. Details on the planning process and calculations can be found in the 2017/18 AOP.

In 2017/18, 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 deepwater fisheries dominated by domestic vessel effort (e.g. scampi and Chatham Rise deepwater).
- In some fisheries, most notably the west coast deepwater fishery (ORH 7A), days in the fishery were achieved through required coverage on vessels planning to fish outside of New Zealand's

EEZ. These days are not included in the deepwater planned (and cost recovered) coverage or delivery, but are included in the fishery specific numbers reported in Appendix I.

- 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 2017/18 financial year is summarised in Table 7. Table 8 shows the level of observer coverage within each fishery complex for the 2017/18 fishing year in addition to the percent observer coverage obtained for specific target fisheries within each complex.

Tables 9 and 10 provide information on the numbers of length frequency and otolith samples collected by observers for deepwater species during the 2016/17 and 2017/18 fishing years. Table 9 also provides information on how the level of observer sampling conducted during the 2016/17 and 2017/18 fishing years compared to sampling targets as defined in the 2016/17 and 2017/18 AOPs.

This report provides the opportunity for review of performance against those targets. There are a number of fish stocks where sampling has not met the targets, however sufficient samples were collected to support stock assessments. These targets have been revised for the 2018/19 AOP to better reflect actual requirements for stock assessments.

Table 7: Comparison of planned and achieved observer coverage for the 2017/18 financial year.

Fishery complex	Target stocks	Planned FOV days	FOV days delivered	Planned domestic days	Domestic days delivered	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	0	0	90	85	90	85	94%
Chatham Rise deepwater	ORH 3B, OEO 3A, OEO 4 & BYX 3	0	0	220	161	220	161	73%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6	0	0	60	118	60	118	197%
West Coast deepwater	ORH 7A	0	0	40	65	40	65	163%
Hoki and middle-depth fisheries								
West Coast North Island	JMA 7, EMA 7 & BAR 7	600	648	35	62	635	710	112%
West Coast South Island (FMA 7)	HOK 1, HAK 7, LIN 7 & SWA 1	900	735	200	257	1,100	992	90%
WCSI HOK 'inside the line'	HOK 1	0	0	80	79	80	79	99%
Cook Strait HOK	HOK 1	0	0	100	101	100	101	101%
Chatham Rise middle-depth (FMA3/FMA4)	HOK 1, HAK 1, HAK 4, LIN 3, LIN 4, SWA 3, SWA 4, JMA 3, BAR 1 & BAR 4	360	685	400	432	760	1,117	147%
Sub-Antarctic middle-depth excl. SQU/SBW (FMA5/FMA6)	HOK1, SWA 4, WWA 5B, BAR 5 & JMA 3	600	645	250	446	850	1,091	128%
Southern blue whiting	SBW (all)	350	224	130	110	480	334	70%[52]
Squid	SQU 1T & SQU 6T	900	1,075	120	506	1,020	1,581	155%
Deepwater bottom longline								
Bottom longline	LIN 3 – LIN 7	0	0	400	356	400	356	89%
Scampi trawl								
Scampi	Scampi (all)	0	0	400	289	400	289	72%
Total		3,710	4,012	2,525	3,067	6,235	7,079	114%

[52] 100% of fishing effort targeting SBW was observed during the 2017/18 financial year. The shortfall in days delivered is due to fishing effort during 2017/18 being less than anticipated.

Table 8: Percent observer coverage obtained within deepwater fisheries during the 2017/18 fishing year. 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.

Fishery complex	Target stocks		Commercial tows	Observed tows	Percent observed
Deepwater trawl					
North Island deepwater	ORH 1, ORH 2A, ORH 2B, ORH 3A, BYX 2 & CDL 2		1,058	129	12%
	Orange roughy target		695	109	16%
Chatham Rise deepwater	ORH 3B, OEO 3A, OEO 4 & BYX 3		2,322	353	15%
	Orange roughy target		1,582	156	10%
Sub-Antarctic deepwater	ORH 3B, OEO 1 & OEO 6		499	301	60%
	Orange roughy target		152	79	52%
West Coast deepwater	ORH 7A		361	210	58%
Hoki and middle-depth trawl[53]					
West Coast North Island	JMA 7, EMA 7 & BAR 7		1,686	1,498	89%
West Coast South Island (FMA 7)	HOK 1, HAK 7, LIN 7 & SWA 1		3,687	2,203	60%
WCSI HOK 'inside the line'	HOK 1		1,647	268	16%
Cook Strait HOK	HOK 1		2,106	211	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		5,162	1,852	36%
	Hoki target		4,131	1,091	26%
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		3,309	1,977	60%
	Hoki target		1,935	1,068	55%
Southern blue whiting	SBW (all)		453	453	100%
Squid	SQU 1T & SQU 6T		2,688	2,542	95%
	SQU 6T target		1,136	1,009	89%
Deepwater bottom longline					
Bottom longline[54]	LIN 3 – LIN 7	< 34 m	5,404,402	369,987	7%
		> 34 m	14,575,789	4,821,406	33%
Scampi trawl					
Scampi	Scampi (all)		4,326	525	12%
	SCI 6A only		1,730	272	16%

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

[54] 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 2016/17 and 17/18 fishing years for Tier 1 deepwater species by area. Ticks or crosses indicate whether sampling targets (as set out in the 2016/17 and 2017/18 AOPs) were met.

Species		Area/method		Number of length frequency samples				Number of fish measured		Number of otoliths collected			
				2016/17		2017/18		2016/17	2017/18	2016/17		2017/18	
Jack mackerel	*Trachurus declivis*	JMD 3		80	✓	147	✓	1,999	5,743	394	×	717	×
		JMD 7		332	×	427	✓	24,848	30,367	2,151	✓	2,461	✓
	Trachurus murphyi	JMM 3		73	×	144	✓	2,212	4,901	323	×	624	×
		JMM 7		133	✓	190	✓	734	2,620	375	×	525	×
	Trachurus novaezelandiae	JMN 3		1	×	33	✓	75	381	36	-	69	-
		JMN 7		238	×	271	✓	18,636	26,469	1,185	✓	1,238	✓
Ling		LIN 3 & 4	Line	164	✓	306	✓	1,694	3,829	823	×	921	✓
			Trawl	117	✓	155	✓	2,206	3,209	518	×	2,361	✓
		LIN 5 & 6	Line	77	✓	86	×	1,027	1,680	485	×	676	×
			Trawl	249	✓	444	✓	9,879	18,245	1,224	✓	2,285	✓
		LIN 7		238	✓	269	✓	4,043	5,275	1,163	✓	1,372	✓
		LIN Cook Strait		39	×	69	✓	160	712	92	×	326	×
Hake		HAK 1		108	×	99	×	3,451	3,540	432	×	470	×
		HAK 4		10	×	21	×	122	312	41	×	95	×
		HAK 7		411	✓	405	✓	16,635	9,192	2,046	✓	1,948	✓
Hoki		Sub-Antarctic[55]		194	×	711	✓	12,079	52,859	1,437	×	6,293	✓
		Chatham Rise		370	×	390	×	34,935	37,274	3,418	✓	3,811	✓
		WCSI		697	✓	893	✓	59,667	87,967	6,199	✓	8,439	✓
		Cook Strait		79	×	86	×	8,255	7,887	684	×	829	×
		ECNI		12	-	4	-	222	121	-	-	-	-
Orange roughy		ORH 1		A = - B = - C = - D = 4 Total = 4	× × × ×	A = 5 B = 13 C = 1 D = 19 Total = 34	× × × ×	A = - B = - C = - D = 233 Total = 233	A = 343 B = 480 C = 2 D = 587 Total = 1412	A = - B = - C = - D = 50 Total = 50	- - - -	A = 64 B = 115 C = 2 D = 106 Total = 287	- - - -
		ORH 2A (North)		13	×	1	×	646	20	80	×	-	-
		ORH 2A (South)		21	-	4	-	1,309	140	140	-	35	-
		ORH 2B		2	-	-	-	145	-	-	-	-	-
		ORH 3B (NW Chatham Rise)		9	×	35	×	467	1,253	125	×	302	✓

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

Species		Area/method	Number of length frequency samples				Number of fish measured		Number of otoliths collected			
			2016/17		2017/18		2016/17	2017/18	2016/17		2017/18	
		ORH 3B (E&S Chatham Rise)	53	×	12	×	3,892	921	977	✓	225	×
		ORH 3B (Sub-Ant & Puysegur)	28	×	16	×	1,099	860	285	-	218	-
		ORH 7A & Westpac Bank	46	×	80	✓	2,700	3,867	666	✓	996	✓
Oreo	Black	BOE 1	8	-	5	-	520	340	57	-	41	-
		BOE 3A	13	×	17	×	757	1,143	83	×	161	×
		BOE 4	8	×	3	×	406	120	50	-	15	-
		BOE 6	6	-	20	-	280	1,203	28	-	149	-
	Smooth	SSO 1	11	-	8	-	929	443	100	-	58	-
		SSO 3A	10	×	20	×	553	1,531	66	-	193	-
		SSO 4	27	×	10	×	1,529	736	211	×	80	×
		SSO 6	49	×	41	×	4,451	3,421	421	-	350	-
	Spiky	SOR 1	2	-	-	-	24	-	-	-	-	-
		SOR 3A	-	-	1	-	-	20	-	-	-	-
		SOR 4	-	-	-	-	-	-	-	-	-	-
Scampi		SCI 1	-	×	55	✓	-	8,905	N/A			
		SCI 2	-	×	-	×	-	-				
		SCI 3	68	✓	56	✓	4,113	6,699				
		SCI 4A	6	×	93	✓	153	8,140				
		SCI 6A	265	✓	108	✓	20,637	14,138				
Southern blue whiting		SBW 1	3	-	4	-	41	63	10	-	28	-
		SBW 6I	158	✓	200	✓	25,146	28,914	2,704	✓	3,036	✓
		SBW 6B	21	×	12	×	3,152	1,536	333	×	187	×
		SBW 6R & 6A	-	×	30[56]	×	-	851	-	×	161	-
Squid (all species combined)		SQU 1T	504	✓	678	✓	47,376	71,285	N/A			
		SQU 6T	495	✓	521	✓	49,657	54,693				

[56] All SBW 6A and 6R length frequency samples from 2017/18 were taken from tows targeting species other than southern blue whiting.

Table 10: Numbers of length frequency samples and otoliths collected by observers during the 2016/17 and 2017/18 fishing years for Tier 2 deepwater species

Species	QMA	Number of length frequency samples		Number of fish measured		Pairs of otoliths collected	
		2016/17	2017/18	2016/17	2017/18	2016/17	2017/8
Barracouta	BAR 4	61	42	4,713	3,064	306	222
	BAR 5	388	342	21,843	16,419	2,174	1,972
	BAR 7	183	308	7,904	11,763	1,012	1,554
Alfonsino	BYX 2	16	10	1,401	655	155	79
	BYX 3	5	37	83	1,012	23	182
	BYX 7	4	9	158	123	24	42
Cardinal fish	CDL 1	1	-	100	-	5	-
	CDL 3	1	1	18	80	5	5
	CDL 4	1	-	80	-	5	-
	CDL 5	2	1	29	20	5	5
Blue (English) mackerel	EMA 3	2	1	14	20	-	4
	EMA 7	74	141	1,453	4,020	367	738
Frostfish	FRO 3 - 4	4	3	45	59	9	16
	FRO 5	6	5	125	72	31	24
	FRO 7 - 9	116	101	2,866	2,730	589	503
Dark ghost shark	GSH 4	31	51	622	924	N/A	
	GSH 5	3	5	131	81		
	GSH 6	42	33	816	452		
Pale ghost shark	GSP 1	70	132	1,200	2,278	N/A	
	GSP 5	21	21	355	344		
	GSP 7	13	17	221	262		
Giant spider crab	GSC 3	4	6	192	110	N/A	
	GSC 5	45	72	1,707	1,944		
	GSC 6A	135	238	4,848	5,450		
	GSC 6B	1	-	20	-		
Lookdown dory	LDO 1	4	11	39	128	-	-
	LDO 3	15	1	290	21	30	-
Patagonian toothfish	PTO 1	-	10	-	87	-	65
Redbait	RBT 3	56	42	2,708	1,676	20	179
	RBT 7	4	16	80	248	282	71
Rubyfish	All	-	6	-	307	-	20
Ribaldo	RIB 3 & 4	7	43	124	604	30	139
	RIB 5 & 6	-	28	-	318	-	112

Species	QMA	Number of length frequency samples		Number of fish measured		Pairs of otoliths collected	
		2016/17	2017/18	2016/17	2017/18	2016/17	2017/8
	RIB 7	55	60	1,018	1,070	293	333
Gemfish	SKI 3	40	88	713	1,521	198	449
	SKI 7	49	52	680	743	174	201
Sea perch	SPE 3	25	21	357	291	92	21
	SPE 4	53	101	1,094	1,790	310	456
	SPE 5	-	4	-	63	-	16
	SPE 6	5	-	53	-	23	-
	SPE 7	2	6	6	98	-	29
Silver warehou	SWA 1	30	23	299	321	79	91
	SWA 3	157	133	6,041	4,729	754	692
	SWA 4	312	363	10,227	10,916	1,509	1,883
Spiny dogfish	SPD 4	9	38	139	807	N/A	
	SPD 5	66	26	1,426	565		
White warehou	WWA 3 & 4	12	18	435	429	55	62
	WWA 5B	43	51	1,799	1,812	217	303
	WWA 7	6	5	123	95	30	20

4.2 DEEPWATER FISHERIES RESEARCH

Research needs for deepwater fisheries are driven from the Objectives within the National Deepwater Plan and are primarily delivered through the research programme for deepwater fisheries. 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 2017/18 financial year, which are detailed in Table 11, included stock assessments, and trawl and acoustic surveys. All research projects are reviewed by Fisheries New Zealand 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 1.4 within the Deepwater Plan which aims to ensure the availability of appropriate, accurate and robust information to underpin the management of New Zealand's deepwater fisheries. Table 12 details the status of the Aquatic Environment Research planned for the 2017/18 fishing year and Table 13 details the status of biodiversity research relating to deepwater fisheries.

Table 11: Deepwater research planned for the 2017/18 financial year[57] and current status (as of December 2018).

Project code	Title	Status
BAR2017-02	Update of abundance indices for BAR 4 and BAR 7	In progress
DAE2017-01	Bycatch monitoring and quantification in deepwater fisheries (hoki, hake & ling trawl)	In progress
DAE2017-02	Taxonomic identification of benthic samples	Complete
DAE2017-03	Factors contributing to net captures of at risk seabird species	In progress
DAE2017-04	Quantification of key bycatch groups across fisheries	In progress
DEE2017-01	Stock assessment of blue (English) mackerel (EMA 7)	In progress
HAK2017-01	Stock assessment of hake in HAK 1	Complete
HOK2017-01	Estimation of spawning hoki biomass in Cook Strait using acoustic surveys	Complete
HOK2017-02	Land-based catch sampling of hoki	Complete
HOK2017-03	Hoki stock assessment	Complete
HOK2017-04	Management Strategy Evaluation and Harvest Control Rule development for hoki	Complete
JMA2017-01	Stock assessment of jack mackerel in JMA 7	In progress
LIN2017-01	Stock assessment of ling in LIN 5 and 6	Complete
MID2017-01	Routine age determination of middle-depth and deepwater species from commercial fisheries and resource surveys	Complete
MID2017-02	Multi-species trawl survey on the Chatham Rise to estimate abundance of middle-depth and deepwater fish species	Complete
OEO2017-02	Development of monitoring approach for smooth and black oreos in OEO 3A	Cancelled

[57] Progress reports are not available for all projects, reports are made publically available at the conclusion of each project. Projects listed as complete may not have published reports available yet.

Project code	Title	Status
ORH2017-01	Estimation of orange roughy abundance using acoustic methods (ORH 2A, 2B and 3A)	Complete
ORH2017-02	Stock assessment of orange roughy (ORH MEC)	Complete
SBW2017-01	Estimation of southern blue whiting using acoustic methods (Bounty Platform)	Complete
SBW2017-02	Southern blue whiting Bounties stock assessment	Complete
SCI2017-01	Estimation of the abundance of scampi in SCI 1 and SCI 2 using photographic surveys	Complete
SCI2017-02	Stock assessment of scampi in SCI 3	Complete
SCI2017-03	Evaluation of potential management strategies for scampi	Planned
SCI2017-04	Characterisation and CPUE of scampi in SCI 4A	Planned
SQU2017-01	Stock assessment of squid	Planned

Table 12: Aquatic Environment Research planned for the 2017/18 financial year[58] and current status.

Project code	Title	Status
BEN2017-01	Monitoring of deepwater trawl footprint	In progress
PRO2017-01A	Research into the demographic parameters for at-risk seabirds as identified by the risk assessment (black petrels)	In progress
PRO2017-01B	Research into the demographic parameters for at-risk seabirds as identified by the risk assessment (southern Buller's/Snares albatross	Planned
PRO2017-04	Risk assessments to support the development of revised NPOA-seabirds (2013)	Cancelled[59]
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	Planned
PRO2017-06	Characterisation of yellow-eyed penguin/fishery interactions	Planned
PRO2017-08A	Research into the demographic parameters for at-risk marine mammals as identified by the marine mammal risk assessment (common dolphins)	Planned
PRO2017-08C	Research into the demographic parameters for at-risk marine mammals as identified by the marine mammal risk assessment (sea lions)	Planned
PRO2017-10	Analysis of New Zealand sea lion tracking data to estimate overlap with fisheries	Planned
PRO2017-19	Factors affecting capture rate of black petrels and flesh-footed shearwaters	Planned
DAE2016-01	Total catch composition in deepwater fisheries (squid & scampi)	Complete
PRO2016-01A	Demographic parameters of black petrels	Completed
PRO2016-02	Factors affecting capture rate of black petrels and flesh-footed shearwaters	Cancelled
PRO2016-03	Estimation of captures of protected species in New Zealand fisheries	Planned
PRO2016-06	Spatially explicit risk assessment query and simulation tool	Planned

[58] Progress reports are not available for all projects, reports are made publically available at the conclusion of each project. Projects listed as complete may not have published reports available yet.

[59] Project withdrawn as project outcome covered under PRO2016-06: Spatially explicit risk assessment query and simulation tool.

Project code	Title	Status
ENV2014-02	NPOA-sharks: age and growth of selected at-risk species	Complete
PRO2014-06	Update of level-2 seabird risk assessment	Complete

Table 13: Ongoing biodiversity research that relates to the deepwater fisheries

Project code	Title	Status
ZBD2017-04	Buffering eutrophication and prioritising climate change issues in coastal ecosystems	In progress
ZBD2017-02	Linking primary and secondary productivity	In progress
ZBD2016-07	Multiple stressors on coastal ecosystems-in situ	In progress
ZBD2016-11	Quantifying benthic biodiversity across natural gradients	Complete
ZBD2014-03	Sub-lethal effects of environment change on fish populations	In progress
ZBD2014-05	Modelling the effects of ocean acidification	Complete
ZBD2014-09	Climate change risks and opportunities	In progress
ZBD2014-10	BPA Biodiversity	Complete
ZBD2013-02	Vulnerable Marine Ecosystems Project - Genetic Connectivity	In progress
ZBD2008-01	Research on biogenic habit-forming biota & their functional role in maintaining biodiversity in the marine environment	Complete

4.2.1 RESEARCH REPORTS

Final research reports from previously contracted work that were published in the 2017/18 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 2017/18 financial year of relevance to deepwater fisheries.

Annual documents	
2018 May Plenary	Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Volume 1 covers alfonsino to grouper. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand. 1674 p https://fs.fish.govt.nz/Doc/24612/May%20Plenary%202018%20-%20Volume%201.pdf.ashx
	Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Volume 2 covers hake to pilchard. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand. 1674 p https://fs.fish.govt.nz/Doc/24613/May%20Plenary%202018%20-%20Volume%202.pdf.ashx
	Fisheries New Zealand (2018). Fisheries Assessment Plenary, May 2018: stock assessments and stock status. Volume 3 covers pip to yellow-eyed mullet. Compiled by the Fisheries Science and Information Group, Fisheries New Zealand, Wellington, New Zealand. 1674 p https://fs.fish.govt.nz/Doc/24614/May%20Plenary%202018%20-%20Volume%203.pdf.ashx
2017 AEBAR	Ministry for Primary Industries (2017) Aquatic Environment and Biodiversity Annual Review 2017. Compiled by the Fisheries Management Science Team, Ministry for Primary Industries, Wellington, New Zealand. 724 p https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/

Aquatic Environment and Biodiversity Reports (AEBRs)	
185 ZBD2016-11	Bowden, D.A.; Davey, N.; Fenwick, M.; George, S.; Macpherson, D.; Ray, C.; Stewart, R.; Christensen-Field, C.; Gibson, K. (2017). Quantifying Benthic Biodiversity: a factual voyage report from RV Tangaroa voyage TAN1701 to Chatham Rise, 4 January – 2 February 2017. https://www.mpi.govt.nz/dmsdocument/21698/loggedIn
187 ZBD2014-05	Mikaloff-Fletcher, S.E.; Bostock, H.C.; Williams, M.; Forcen, A. (2017). Modelling the Effects of Ocean Acidification in New Zealand. https://www.mpi.govt.nz/dmsdocument/21719/loggedIn
188 PRO2013-01	Abraham, E.R.; Berkenbusch, K. (2017). Estimated captures of New Zealand fur seal, New Zealand sea lion, common dolphin, and turtles in New Zealand commercial fisheries, 1995–96 to 2014–15. https://www.mpi.govt.nz/dmsdocument/27160/loggedIn
189 PRO2012-02	Abraham, E.R.; Neubauer, P.; Berkenbusch, K.; Richard, Y. (2017). Assessment of the risk to New Zealand marine mammals from commercial fisheries. https://www.mpi.govt.nz/dmsdocument/27163/loggedIn
190 DAE2015-04	Anderson, O.F.; Ballara, S.L.; Edwards, C.T.T. (2017). Fish and invertebrate bycatch and discards in New Zealand orange roughy and oreo trawl fisheries from 2001–02 until 2014–15. https://www.mpi.govt.nz/dmsdocument/26156/loggedIn
191 PRO2014-06	Richard, Y.; Abraham, E.; Berkenbusch, K. (2017). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2014–15. https://www.mpi.govt.nz/dmsdocument/27531/loggedIn
192 PRO2013-01	Thompson, F.N.; Abraham, E.R.; Berkenbusch, K. (2017). Preparation of data on observed protected species captures, 2002–03 to 2014–15. https://www.mpi.govt.nz/dmsdocument/27543/loggedIn
193 DAE2016-05	Baird, S.J.; Wood, B.A. (2018). Extent of bottom contact by New Zealand commercial trawl fishing for deepwater Tier 1 and Tier 2 target fishstocks, 1989–90 to 2015–16. https://www.mpi.govt.nz/dmsdocument/27546/loggedIn
195 ENV2014-02	Francis, M.P.; Ó Maolagáin, C.; Lyon, W.S. (2018). Growth and reproduction of carpet shark, common electric ray and blind electric ray. https://www.mpi.govt.nz/dmsdocument/27564/loggedIn
196 ENV2014-02	Francis, M.P.; Jones, E.G.; Ó Maolagáin, C.; Lyon, W.S. (2018). Growth and reproduction of four deepwater sharks in New Zealand waters. https://www.mpi.govt.nz/dmsdocument/27585/loggedIn
197 PRO2013-01	Abraham, E.R.; Richard, Y. (2018). Estimated capture of seabirds in New Zealand trawl and longline fisheries, 2002–03 to 2014–15. https://www.mpi.govt.nz/dmsdocument/27588/loggedIn
198	Bell, E.A.; Burgin, D.; Sim, J.; Dunleavy, K.; Fleishman, A.; Scofield, R.P. (2018). Population trends, breeding distribution and habitat use of black petrels (*Procellaria parkinsoni*) – 2016/2017 operational report https://www.mpi.govt.nz/dmsdocument/27975/loggedIn
199 DAE2016-01	Anderson, O.F.; Edwards, C.T.T. (2018). Fish and invertebrate bycatch and discards in New Zealand arrow squid and scampi trawl fisheries from 2002–03 until 2015–16. https://www.mpi.govt.nz/dmsdocument/29351/loggedIn
200 SEA2016-26ORC	Osborne, T.A. (2018). Forecasting quantity of displaced fishing Part 1: CatchMapper - Mapping EEZ catch and effort. New Zealand Aquatic Environment and Biodiversity Report No. 200. 168 p. https://fs.fish.govt.nz/Page.aspx?pk=113&dk=24611
201 SEA2017-03	Ford, R.B.; Francis, M.P.; Holland, L.; Clark, M.R.; Duffy, C.A.J.; Dunn, M.R.; Jones, E.; Wells, R. (2018). Qualitative (Level 1) risk assessment of the impact of commercial fishing on New Zealand chondrichthyans: an update for 2017. https://www.mpi.govt.nz/dmsdocument/29807/loggedIn
Fisheries Assessment Reports (FARs)	
2017-35 DEE2016-11	Large, K.; Hanchet, S.M. (2017). 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 2016 season. https://fs.fish.govt.nz/Doc/24413/FAR-2017-35-SBW-Data-Inputs.pdf.ashx

2017-38 DEE2015-08	Dunn, A.; Hanchet, S.M. (2017). Southern blue whiting (*Micromesistius australis*) stock assessment for the Campbell Island Rise for 2016. https://fs.fish.govt.nz/Doc/24478/FAR-2017-38-SBW-Stock-Assessment.pdf.ashx
2017-39 MID2015-01	Horn, P.L.; Ó Maolagáin, C.; Hulston, D.; Ballara, S.L. (2017). Commercial catch sampling for species proportion, sex, length, and age of jack mackerels in JMA 7 in the 2014–15 fishing year, with a summary of all available data sets. https://fs.fish.govt.nz/Doc/24480/FAR-2017-39-Commercial-Catch-Sampling-JMA7.pdf.ashx
2017-41 DEE2016-20	Horn, P.L.; Sutton, C.P. (2017). Catch-at-age for hake (*Merluccius australis*) and ling (*Genypterus blacodes*) in the 2015–16 fishing year and from two research trawl surveys in 2016, with a summary of all available data sets from the New Zealand EEZ. https://fs.fish.govt.nz/Doc/24482/FAR-2017-41-Catch-at-age-for-hake-and-ling.pdf.ashx
2017-46 DEE2015-04	Dunn, M.R. (2017). Orange roughy fisheries around northern New Zealand (ORH 1) https://fs.fish.govt.nz/Doc/24488/FAR-2017-46-Orange-Roughy-fisheries-ORH1.pdf.ashx
2017-47 DEE2016-09	Horn, P.L. (2017). Stock assessment of hake (*Merluccius australis*) on the Chatham Rise (HAK 4) and off the west coast of South Island (HAK 7) for the 2016–17 fishing year. https://fs.fish.govt.nz/Doc/24489/FAR-2017-47-Hake-Stock-Assessment.pdf.ashx
2017-52 DEE2016-11	Doonan, I.J. (2017). Evaluation of a simple harvest control rule for the southern blue whiting Bounty management area (SBW 6B). https://fs.fish.govt.nz/Doc/24495/FAR-2017-52-SBW_harvest_control.pdf.ashx
2017-55 DEE2010-02	Edwards, C. T. T. (2017) Development of natural mortality priors for ling (*Geypterus blacodes*) stock assessments in New Zealand. https://fs.fish.govt.nz/Doc/24503/FAR-2017-55-Natural-mortality-in-ling.pdf.ashx
2017-56 DEE2016-12	Tuck, I.D. (2017). Characterisation and a length-based assessment model for scampi (*Metanephrops challengeri*) at the Auckland Islands (SCI 6A). https://fs.fish.govt.nz/Doc/24504/FAR-2017-56-Length-based-assessment-SCI6A.pdf.ashx
2017-58 MTD2010-02B	Bagley, N.W.; Ladroit, Y.; O'Driscoll, R.L. (2017). Trawl survey of hoki and middle-depth species in the Southland and Sub-Antarctic areas, November–December 2014 (TAN1412). https://fs.fish.govt.nz/Doc/24507/FAR-2017-58-Trawl-survey-TAN1412.pdf.ashx
2017-59 MID2015-01	Doonan, I.J.; McMillan, P.J.; Ó Maolagáin, C. (2017). Estimates of age frequency for black oreo from 2014 on southwest Chatham Rise (OEO 3A). https://fs.fish.govt.nz/Doc/24508/FAR-2017-59-Age-frequency-black-oreo-OEO3A.pdf.ashx
2018-11 SBW2017-01	O'Driscoll, R.L. (2018). Acoustic biomass estimates of southern blue whiting on the Bounty Plateau in 2017. https://fs.fish.govt.nz/Doc/24595/FAR-2018-11-Acoustic-biomass-estimates-Bounty-SBW-2017.pdf.ashx
2018-12 HOK2017-01	O'Driscoll, R.L.; Escobar-Flores, P. (2018). Acoustic survey of spawning hoki in Cook Strait during winter 2017. https://fs.fish.govt.nz/Doc/24596/FAR-2018-12-Acoustic-biomass-estimates-Cook-Strait-HOK-2017.pdf.ashx
2018-13 DEE2016-09	Horn, P.L.; Ballara, S.L. (2018). A comparison of a trawl survey index with CPUE series for hake (*Merluccius australis*) off the west coast of South Island (HAK 7). https://fs.fish.govt.nz/Doc/24597/FAR-2018-13-Comparison-Trawl-CPUE-Indices-HAK7.pdf.ashx
2018-14 DEE2016-09 DEE2016-10 SEA2017-01	Horn, P.L.; Dunn, M.R.; McKenzie, A. (2018). Stock assessments of hoki, hake and ling using alternative catch histories. https://fs.fish.govt.nz/Doc/24598/FAR-2018-14-HOK-HAK-LIN-Alternative-Catch-Histories.pdf.ashx
2018-24 DEE2016-04	Tuck, I.D.; Parkinson, D.; Armiger, H.; Smith, M.; Miller, A.; Rush, N.; Spong, K. (2018). Estimating the abundance of scampi in SCI 3 (Mernoo Bank) in 2016. https://fs.fish.govt.nz/Doc/24609/FAR-2018-24-SCI3-Abundance-3178.pdf.ashx
Fisheries Science Review	
2017-01	Butterworth, D.; Hillary, R.; Ianelli, J. (2017). Report on the review of the New Zealand hoki stock assessment model; 2014. New Zealand Fisheries Science Review 2017/1. 17 p. https://fs.fish.govt.nz/Doc/24496/FSR-2017-01-Hoki-stock-assessemnt-model.pdf.ashx
2017-02	Lonergan, M.E.; Phillips, R.A.; Thomson, R.B.; Zhou, S. (2017). Independent review of New Zealand's spatially explicit fisheries risk assessment approach – 2017. New Zealand Fisheries Science Review 2017/2. 36 p.

	https://fs.fish.govt.nz/Doc/24493/FSR-2017-02-Independent-SEFRA-review.pdf.ashx
Conservation Services Programme (Department of Conservation) reports	
	Frost, P. G. H. 2017. Aerial Census of Northern Royal Albatross (*Diomedea sanfordi*) fledglings on Rangitatahi (The Sisters) and Motuhara (Forty-Fours), July 2017. Report prepared for the Marine Species and Threats team, Department of Conservation. 22 p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/aerial-census-of-northern-royal-albatross-fledglings-on-the-sisters-and-forty-fours/
INT2017-02	Pierre, J. 2018. Using electronic monitoring imagery to characterise protected species interactions with commercial fisheries: A primer and review. Final Report prepared by JPEC for the Conservation Services Programme, Department of Conservation. 42 p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/using-electronic-monitoring-imagery-to-characterise-protected-species-interactions-with-commercial-fisheries-a-primer-and-review/
POP2017-04	Elliot, G., Walker, K., Parker, G. and Rexer-Huber, K. 2018. Gibson's wandering albatross population study and census 2017/18, June 2018. Report prepared by Albatross Research for the Conservation Services Programme, Department of Conservation. 16 p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/gisbons-population-study-and-census-2017-18/
POP2017-087	Tracey, D., Bostock, H., Shaffer, M. (2018). Ageing methods for protected deep-sea corals: A review and recommendation for an ageing study. DOC Contract 4527 GMC - Age & Growth of coral (POP2017-07). NIWA Client Report No. 2018035WN 40 p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/ageing-methods-for-protected-deep-sea-corals/
POP2016-05	Mattern, T & Ellenbert U. 2018. Yellow-eyed penguin diet and indirect effects affecting prey composition. Report prepared by Eudyptes EcoConsulting for the Conservation Services Programme, Department of Conservation. 39p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/yellow-eyed-penguin-diet-and-indirect-effects-affecting-prey-composition/
MIT2017-01	Pierre, J. 2018. Protected Species Liaison Coordination, Final Report provided by JPEC for the Conservation Services Programme, Department of Conservation. 36 p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/protected-species-liaison-project/
MIT2016-01	Pierre, J. 2018. Protected Species Bycatch Media. Final Report prepared by JPEC for the Conservation Services Programme, Department of Conservation. 22p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/yellow-eyed-penguin-diet-and-indirect-effects-affecting-prey-composition22/
MIT2015-02	Goad, D. 2018. Small longline vessel hauling mitigation development. Final Report prepared by Vita Maris for Conservation Services Programme, Department of Conservation, Wellington. 15 p. Pierre, J. 2018. Mitigating seabird captures during hauling on smaller longline vessels. Final Report prepared by JPEC for the Conservation Services Programme, Department of Conservation, Wellington. 47 p. https://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2017-18/mitigating-seabird-captures-during-hauling-on-smaller-longline-vessels/

4.3 COMPLIANCE

Successfully delivering on Management Objectives for deepwater fisheries is dependent upon high levels of compliance with the various sustainability and environmental regulations defined in legislation. MPI's Compliance Directorate is responsible for providing the intervention services to achieve cost-effective compliance with all regulations.[60]

Towards the end of the 2013 calendar year, MPI introduced 'interim observer trip reports.' These reports are sent to vessel operators within a few days of the completion of an observed trip. Fifteen questions are answered by the observer to provide more immediate feedback to vessel operators on a variety of factors. Of the 15 questions, observers answer 10 using a rating of 'A', 'B', 'C' or 'N/A'. It is considered

[60] Function is now under the Compliance Directorate in the Operations Branch of MPI.

that ratings of 'A' and 'B' are acceptable performance. The interim trip report template is shown in Appendix V.

Overall, 178 interim trip reports relating to observed trips on deepwater vessels[61] were completed in the 2017/18 financial year (Table 15). Observers answered 81% of questions with a rating of 'A', 4% of questions with a rating of 'B', 13% of questions with a rating of 'N/A' and less than 1% of questions with a rating of 'C'. Of the 171 interim trip reports completed during the 2017/18 financial year, only 12 trips had one (or more) of the questions receive a 'C' rating by observers.

Table 15: Summary of interim trip reports where a 'C' rating was given for the 2017/18 financial year.

Factor	Number of 'C' ratings
QMS species are discarded only after correct estimation and authorisation[62]	1
QMS species identified accurately	-
Vessel has a valid system for determining, recording and retaining block weight test information	-
Vessel has a valid system in place to quantify all sources of whole and processed fish to meal including applying conversion factor to processed fish[63]	-
Fish is cut in accordance with the Conversion Factors Notice	-
Non-fish by-catch recorded and reported accurately	1
Offal management was adequate (if VMP on board, meets specifications)[64]	4
Appropriate bird mitigation devices were deployed and in working condition for duration of trip	1
The factory was clean and hygienic	1
Observer Standard met (e.g. living conditions, water etc., were adequate)	6

4.4 COST RECOVERY LEVIES

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

The cost recovery regime, which is legislated under Part 14 of the 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 16 shows the total amount levied from deepwater stocks for the 2017/18 fishing year AND Figure 3 shows the total amount levied for both deepwater, and all, stocks between the 2006/07 and 2017/18 fishing years. Species specific cost recovery levies are provided in Appendix d IV.

[61] Trawl vessels greater than 28 m targeting Tier 1 or Tier 2 species, trawl vessels less than 28 m targeting Tier 1 species and all bottom longline vessels targeting ling (regardless of size). Includes trips fishing outside New Zealand's EEZ.

[62] Observers rate this as N/A if there were no QMS discards during the trip.

[63] Observers rate this as N/A if the vessel does not have a meal plant.

[64] Observers rate this as N/A if little or no offal was produced during a trip.

Table 16: The total levied for the 2017/18 financial year from stocks managed under the National Deepwater Plan 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		5,591,593	12,754,935
Registry		1,652,805	3,770,199
Observers	MPI	2,331,353	3,280,634
	DOC	532,907	1,116,141
Research	MPI	7,529,585	12,122,284
	DOC	395,336	795,632
Under & Overs	MPI	-1,646,971	-4,768,725
	DOC	-126,125	-360,431
Total		16,260,483	28,710,669

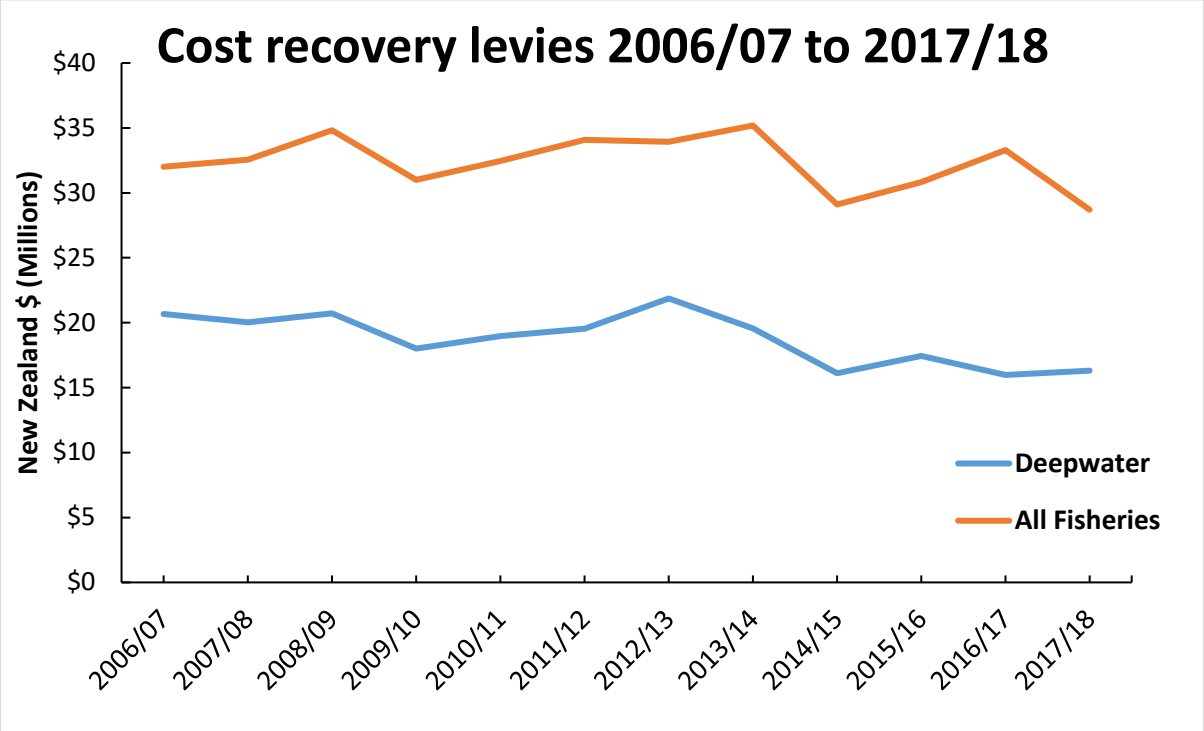


Figure 3: Total amount recovered by cost recovery levies between 2006/07 and 2017/18. Separate totals are shown for deepwater species and all species combined.[65]

5. 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 2017/18 fishing year. Species-specific environmental interactions are reported in Appendix I.

[65] The decline in deepwater levies cost recovered from 2013/14 onwards is due to reprioritisation of research projects and shifting trawl surveys to alternate years.

5.1 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 Objective 2.5, DWG and Fisheries New Zealand 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 Fisheries New Zealand as part of their obligations under the Fisheries (Reporting) Regulations 2017. For reasons of increased reliability however, 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, 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 17 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 2013/14 and 2017/18 fishing years and the results of the audit of vessel adherence.

Table 17: Summary of Fisheries New Zealand observer audits of adherence to non-regulatory measures.

Fishing year	Observed deepwater trawl trips	Reviews sent to and reviewed by DWG	Trips with no issues raised	Trips requiring follow up	Proportion of reviewed trips requiring follow up (%)
2013/14	183	162	128	34	21%
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%

5.1.1 VESSEL MANAGEMENT PLANS (VMP)

The following section summarises information provided through observer audits of vessel performance in relation to measures within VMPs. Measures within VMPs that vessels are audited against include the use of bird mitigation devices, the removal of fish 'stickers' from the net before shooting, avoiding shooting gear near congregations of marine mammals, and employing 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.

VMP-related issues that required follow-up by DWG were identified following 16 trips in 2017/18. VMP issues were classed as being in one of four general categories (Table 18). Offal management issues were followed up after nine 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 scaring devices** – 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.

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

Table 18: Breakdown of reviews with VMP-related issues during 2013/14 to 2017/18 fishing years.

Type of issue	2013/14	2014/15	2015/16	2016/17	2017/18
Administrative	2	2	0	2	2
Seabird trigger not reported	2	2	1	0	2
Seabird scaring devices	6	8	5	6	3
Offal management issues	21	13	12	13	9
Total	31	25	18	21	16

5.1.2 OFFAL MANAGEMENT ISSUES

The management of offal is a contributing factor to both seabird and marine mammal captures and therefore issues with offal management on board vessels is considered relevant to both VMPs and the MMOP. During the 2017/18 fishing year there were eight trips that required follow up in relation to offal management related issues (Table 19). 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 19: Breakdown of offal management/food attractant related reviews for VMP/MMOP issues during 2013/14 to 2017/18 fishing years.

Type of issue	2013/14	2014/15	2015/16	2016/17	2017/18
General offal management	14	7	9	4	6
Net cleaning/time in water	1	3	0	1	2
Floor wash	3	2	1	4	1
Breakdown procedures	3	1	2	4	0
Total	21	13	12	13	9

5.2 SEABIRDS

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.[66] 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 level 2 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 20 reports all observed seabird captures by species from tows targeting Tier 1 deepwater species for the 2016/17 and 2017/18 fishing years.[67]

[66] 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.

[67] This table uses 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.

Table 20: Observed seabird captures (excluding deck strikes and impacts against the vessel) for the 2016/17 and 2017/18 fishing years from the core deepwater fleet targeting Tier 1 species ('Other' includes decomposed or unknown life status).

Seabird species	2016/17				2017/18			
	Alive	Dead	Other	Total	Alive	Dead	Other	Total
Albatrosses (Unidentified)	1	5	3	9	8	5	0	13
Black bellied storm petrel	0	0	0	0	0	1	0	1
Buller's and Pacific albatross	2	4	0	6	5	9	0	14
Campbell albatross	0	1	0	1	0	2	0	2
Cape petrels	1	1	0	2	0	0	0	0
Chatham Island albatross	0	0	0	0	0	2	0	0
Common diving petrel	0	0	0	0	0	1	0	1
Crested penguin	0	0	0	0	0	0	1[68]	1
Fairy prion	0	0	0	0	0	1	0	1
Flesh-footed shearwater	1	0	0	1	0	0	0	0
Giant petrels (Unidentified)	1	0	0	1	0	0	0	0
Great albatrosses	0	1	0	1	2	1	0	3
Grey petrel	0	3	0	3	1	6	0	7
Mid-sized petrels & shearwaters	0	3	0	3	1	1	0	2
Northern giant petrel	0	0	0	0	1	0	0	1
Penguins	0	0	0	0	2	0	0	2
Petrel (Unidentified)	7	1	0	8	2	0	0	2
Petrels, prions and shearwaters	0	1	0	1	5	0	0	5
Prions (Unidentified)	0	0	0	0	0	1	0	1
Procellaria petrels	3	3	1	7	2	5	0	7
Pterodroma petrels	0	0	0	0	1	0	0	1
Royal albatrosses	3	1	0	4	0	0	0	0
Salvin's albatross	7	16	0	23	13	16	0	29
Shearwaters	4	1	0	5	1	3	0	4
Shy albatross	0	0	0	0	1	0	0	1
Smaller albatrosses	1	0	0	1	0	0	2	2
Sooty shearwater	9	96	0	105	9	33	0	42
Southern Buller's albatross	3	6	0	9	15	7	0	22
Southern royal albatross	0	1	0	1	0	0	0	0
Spotted shag	0	0	0	0	2	0	0	2
Storm petrels	0	2	0	2	1	1	0	2
Wandering albatross (Unidentified)	0	0	0	0	1	0	0	1
Westland petrel	2	1	0	3	2	4	0	6
White-capped albatross	20	35	5	60	31	57	1	89
White-chinned petrel	23	128	0	151	58	154	1	213
Total	88	310	9	407	164	310	5	479

[68] Decomposing at the time of capture

Table 21 summarises the proportion of observed seabird captures released alive on the deepwater trawl fleet between the 2013/14 and 2017/18 fishing years. Table 22 summaries the capture method of observed seabird captures on deepwater trawl vessels between the 2013/14 and 2017/18 fishing years. Table 23 shows industry reported seabird captures between the 2013/14 and 2017/18 fishing years.

Table 21. Proportion of observed seabird captures (excluding deck strikes and impacts against the vessel) released alive on the core deepwater trawl fleet between the 2012/13 and 2017/18 fishing years.

Fishing year	Percentage released alive
2013/14	45
2014/15	55
2015/16	31
2016/17	25
2017/18	36

Table 22. Number of observed seabird captures on deepwater trawl vessels (core vessels and any other vessel targeting Tier 1 species) classified according to capture method and life status (deck strikes and records involving decomposing carcasses excluded).

Fishing year	Net captures[69]			Warp captures			Other[70]		
	Dead	Alive	Unknown	Dead	Alive	Unknown	Dead	Alive	Unknown
2013/14	203	176	3	68	0	2	18	10	0
2014/15	257	297	1	21	1	1	17	9	0
2015/16	259	116	1	43	1	3	16	3	0
2016/17	282	99	0	22	1	0	8	5	0
2017/18	268	158	5	33	1	0	8	23	-

Table 23: In-zone industry-reported seabird[71] interactions between the 2012/13 and 2017/18 fishing years from the core deepwater fleet and any vessels targeting Tier 1 deepwater species (includes bottom longlining).[72]

Fishing year	Large seabirds			Small seabirds			Total
	Alive	Dead	Total	Alive	Dead	Total	
2013/14	78	246	324	196	288	484	808
2014/15	115	230	345	321	399	720	1,065
2015/16	94	291	385	93	372	485	870
2016/17	86	210	296	196	474	670	966
2017/18	130	228	358	171	292	463	921

Table 24 shows observed captures from trawl vessels targeting deepwater species (includes some effort from vessels <28 m). The observed captures and capture rate for ling longline fisheries has varied widely over time and estimated total captures also reflect this but with broad confidence intervals (Table 25).

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

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

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

[72] These data are not cumulative with Table 20: 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).

Table 24: Observed seabird captures (excluding deck strikes and impacts against the vessel) for New Zealand deepwater and middle-depth trawl fisheries for the 2017/18 fishing year (includes effort by vessels <28 m).

Target species	Tows	Tows observed	% of tows observed	Observed captures
Hoki	13,749	4,788	35%	144
Hake	247	157	64%	1
Ling (trawl)	1,157	308	27%	14
Squid (trawl)	2,815	2,542	90%	264
Southern blue whiting	453	453	100%	6
Jack mackerel	1,653	1,432	87%	8
Scampi	4,326	525	12%	20
Deepwater (ORH/OEO/CDL/BYX)[73]	4,415	993	23%	7
Barracouta	1,962	1,096	56%	18
Silver/white warehou	529	316	60%	13
Total	31,306	12,610	40%	495

Table 25: Observed and estimated[74] seabird captures from ling bottom longline fisheries (includes all ling stocks and vessels <28 m), 2013/14 to 2017/18.

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
2013/14	21,812,848	1,979,516	9.1	30	0.015	1,023	554 – 1,978
2014/15	19,436,286	581,000	3.0	16	0.028	787	413 – 1,527
2015/16	23,568,780	2,096,941	8.9	89	0.042	915	529 - 1,659
2016/17	27,380,500	3,864,197	14.1	35	0.009	851	452 – 1,577
2017/18	22,496,141	5,191,393	23.1	24	0.005	-	-

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 https://data.dragonfly.co.nz.

5.2.1 SEABIRD BYCATCH TRIGGER POINT NOTIFICATIONS

All trawl and bottom longline vessels >28 m or targeting ling by bottom longlining are required to notify DWG any time they capture more than a given number of seabirds within a defined time period. These are known as trigger point notifications. There were 13 trigger point activations for seabird captures in the 2017/18 fishing year. Trigger point specifics and activations are summarised in Table 26 below. Most seabird trigger point activations are a result of net captures.

As part of non-regulatory management measures (Operational Procedures) to manage impacts of fishing on protected species, non-fish protected species trigger points have been developed in collaboration with DWG. Trigger points are part of a real-time reporting threshold system. 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).

[73] Excludes effort in international waters

[74] Estimated captures for the 2017/18 year not available at the time of publication.

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

Table 26: Number of trigger point activations (as reported by DWG) for seabirds from the 2013/14 to 2017/18 fishing years from trawl vessels >28 m (overall length), trawl vessels <28 m targeting scampi or bottom longline vessels targeting ling (any size).

Species	Trigger points		2013/14	2014/15	2015/16	2016/17	2017/18
	Captures in any 24 hr period	Captures in any 7 day period					
Seabirds - large	3 or more	10 or more of any species	3	0	8	3	6
Seabirds - small	5 or more		5	11	3	8	7

5.3 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 27 reports all observed and industry-reported marine mammal captures in deepwater fisheries from 2015/16 to 2017/18 fishing years.

Table 28 shows observed fur seal capture data from fishing activity targeting deepwater species. Marine mammal interactions by fishery are reported in Appendix I.

Table 27: Observed and industry reported captures of marine mammals by the core deepwater fleet or vessels targeting Tier 1 species between the 2015/16 and 2017/18 fishing years[75]. Observed records involving decomposing carcasses have not been included

Species	Observed captures[76]						Industry reported captures					
	Alive			Dead			Alive			Dead		
	15/16	16/17	17/18	15/16	16/17	17/18	15/16	16/17	17/18	15/16	16/17	17/18
Common dolphin	0	0	0	4	0	1	0	0	0	3	0	1
Dusky dolphin	0	0	0	0	0	0	0	0	0	0	0	4
NZ fur seal	8	11	10	99	67	68	27	25	20	165	153	156
Elephant seal	0	0	0	0	0	0	0	0	0	0	1	0
Leopard seal	0	0	0	0	0	0	0	1	0	0	1	0
NZ sea lion	0	0	1	4	3	6	0	0	2	4	3	9[77]
Seals and sea lions[78]	0	0	0	0	0	0	3	0	0	1	1	1
Dolphins and toothed whales[79]	0	0	0	0	0	0	0	0	0	1	0	0
Pilot whale	0	0	0	0	0	1	0	0	0	0	0	1[80]
Orca	0	0	0	0	0	1	0	0	0	0	0	1[81]

Table 28: 2017/18 observed NZ fur seal captures from New Zealand deepwater and middle-depth fisheries. Records involving decomposing carcasses have not been included.

Target species	Tows	Tows observed	% of tows observed	Observed captures
Hoki	13,749	4,788	35%	41
Hake	247	157	64%	0
Ling (trawl)	1,157	308	27%	1
Squid (trawl)	2,815	2,542	90%	14
Southern blue whiting	453	453	100%	17
Jack mackerel	1,653	1,432	87%	3
Scampi	4,326	525	12%	0
Deepwater (ORH/OEO/CDL)	4,415	993	23%	0
Barracouta	1,962	1,096	56%	2
Silver/white warehou	529	316	60%	0
Total	31,306	12,610	40%	78

[75] 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 capture). In other words, the number reported by observers is independent of those reported by industry.

[76] Excludes effort outside the EEZ.

[77] Two animals were badly decomposed when brought on board the vessel, as verified by the observers who were on board the vessels at the time of capture (these captures are not included within the observed capture figures).

[78] This is a generic description; captures reported under this code are not reported at the species level.

[79] This is a generic description; captures reported under this code are not reported at the species level.

[80] The animal in question was significantly predated upon when brought on board and was likely already dead at the time of capture.

[81] A working group formed after the capture concluded that a strike by a container vessel was the most likely cause of death.

5.3.1 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 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.

5.3.2 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 17 trigger point activations for marine mammal captures during the 2017/18 fishing year. These are summarised in Table 29 below.

Table 29: Marine mammal trigger point activations for the 2013/14 to 2017/18 fishing years.

Species	Trigger Points		2013/14	2014/15	2015/16	2016/17	2017/18
	Captures in any 24 hr period	Captures in any 7 day period					
NZ fur seal	2	5	9	8	6	5	6
Common dolphin	1	-	7	14	2	0	1
NZ sea lion	1	-	5	8	3	3	8
Other marine mammal[82]	1	-	0	0	0	1	2[83]

5.4 ELASMOBRANCHS

Management Objectives 2.4 and 2.5 in the National Deepwater Plan address the need to manage and monitor shark interactions with deepwater fishing activity. The management of sharks in New Zealand is guided by the National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks), which was revised in 2013. 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 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 30 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.

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

[83] One orca and one unidentified dolphin.

Table 30: 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; a single basking shark trigger was reported during the 2017/18 fishing year. Table 31 shows the number of observed and industry reported protected shark captures in deepwater fisheries between the 2013/14 and 2017/18 fishing years.

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

Reporting for sharks in connection with deepwater fisheries includes information on the total interactions with shark species during deepwater fishing activity, interactions with protected shark species, the level of the use of generic reporting codes, and information about the utilisation and processing of sharks in deepwater fisheries. Table 32 shows the reported landings of sharks by the core deepwater fleet during the 2017/18 fishing year.

Table 31: Observed and industry reported captures of protected shark species from the core deepwater fishing fleet or vessels targeting Tier 1 stocks between the 2013/14 and 2017/18 fishing years.[84]

Species	Observed Captures					Industry-reported				
	13/14	14/15	15/16	16/17	17/18	13/14	14/15	15/16	16/17	17/18
Basking shark	4	5	1	5	1	7	11	5	8	1
White pointer shark	0	0	1	3	5	0	0	1	4	5

[84] These 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).

Table 32: Reported landings of the three categories of elasmobranchs from the core deepwater fishing fleet in 2017/18 (tonnes).

Species	Chimaeras	Rays & Skates	Sharks & Dogfish	Total
Generic reporting code	2	4	300	306
QMS species	1,652	690	5,006	7,348
Other	168	18	1,318	1,504
Total	1,822	712	6,624	9,158

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 Fisheries New Zealand in future. The use of generic reporting has decreased over time (Table 33). Details of QMS elasmobranch landings by the core deepwater fleet during 2017/18 are summarised in Table 34. 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).

Table 33: Use of generic reporting codes from both observer data and reported landings 2012/13 to 2017/18 as a percent of total reported elasmobranch landings/catches in the core deepwater fleet.

Year	% industry-reported elasmobranch landings with generic codes	% of observed shark catches with generic codes
2012/13	9	3
2013/14	4	1
2014/15	4	1
2015/16	6	3
2016/17	5	1
2017/18	3	1

Table 34: Details of elasmobranchs (managed under the QMS) landed by the core deepwater fleet during the 2017/18 fishing year (tonnes)

Species	Total landings	Landed green	Landed processed (exc MEA)	Mealed	Discarded under observer approval	Discarded dead (6TH schedule)	Returned alive (6th schedule)	Accidental loss
Blue shark	16	-	-	<1	N/A	14	2	-
Elephant fish	28	<1	25	2	1	N/A	N/A	<1
Dark ghost shark	642	24	518	59	39	N/A	N/A	1
Mako shark	18	-	-	-	N/A	15	3	-
Pale ghost shark	982	9	753	203	11	N/A	N/A	4
Porbeagle shark	64	-	-	<1	N/A	53	11	<1
Rig	7	<1	1	1	5	N/A	<1	-
Rough skate	238	83	89	32	12	N/A	20	1
School shark	159	<1	122	19	11	N/A	4	1
Smooth skate	452	3	315	67	12	N/A	51	3
Spiny dogfish	4,742	169	1	2,047	N/A	2,484 (destination code M)		39
Total	7,348	288	1,824	2,430	91	82[85]	91[86]	49

[85] Excludes discards of spiny dogfish.

[86] See above

5.5 TIER 3 SPECIES

Tier 3 species are non-QMS species that are caught during fishing activity for QMS species. The top 40 Tier 3 species landed are reported in Table 35, full details of all Tier 3 species caught in deepwater fisheries can be found in Appendix III.

Table 35: Landings (tonnes) of the top 40 Tier 3 species 2013/14 to 2017/18 (core deepwater fleet).

Species code	Common name	2013/14	2014/15	2015/16	2016/17	2017/18
JAV	Javelinfish	3,922	4,234	4,300	5,366	6,102
RAT	Rattails	3,378	3,682	3,630	5,069	4,539
STU	Slender tuna	582	235	177	209	628
SSI	Silverside	98	123	134	169	589
SND	Shovelnose dogfish	283	251	429	377	492
ETB	Baxter's lantern dogfish	300	290	253	309	325
SDO	Silver dory	225	231	230	192	295
OSD	Other sharks and dogfish	226	189	291	268	248
NCB	Smooth red swimming crab	169	186	143	491	245
CSQ	Leafscale gulper shark	96	123	178	127	195
SLK	Slickhead	65	107	115	166	191
RHY	Common roughy	41	116	67	64	160
LCH	Long-nosed chimaera	123	111	128	138	157
FHD	Deepsea flathead	78	105	99	100	147
WSQ	Warty squid	93	89	84	173	140
BEN	Scabbardfish	49	44	50	90	133
BSH	Seal shark	128	87	81	139	113
SFI	Starfish	44	48	73	70	96
BBE	Banded bellowsfish	17	39	31	19	81
DWD	Deepwater dogfish	59	68	70	71	79
BEL	Bellowsfish	45	53	56	106	71
CRB	Crab (unspecified)	35	37	80	57	68
CON	Conger eel	91	107	41	42	63
BCD	Black cod	17	10	37	78	56
DWE	Deepwater eel (unspecified)	15	16	22	40	55
HJO	Johnson's cod	17	20	34	61	55
MOD	Morids	37	62	63	99	53
HCO	Hairy conger	45	63	90	80	53
ETL	Lucifer dogfish	21	32	34	36	52
SRH	Silver roughy	48	63	25	33	49
CDO	Capro dory	61	58	34	28	48
RUD	Rudderfish	55	57	47	46	39
CYP	Longnose velvet dogfish	38	10	20	26	34
THR	Thresher shark	25	31	23	32	34
TOA	Toadfish	24	28	15	27	32
CAR	Carpet shark	40	60	46	48	32
BEE	Basketwork eel	14	13	22	24	30
ALB	Albacore tuna	35	22	4	3	30
POP	Porcupine fish	32	31	26	31	28
SUN	Sunfish	51	20	13	12	27

5.6 BENTHIC INTERACTIONS

5.6.1 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 2015/16 and 2017/18 are shown in Table 36.

Table 36: Observed[87] and industry reported catch of benthic species from the core deepwater fleet and all vessels targeting Tier 1 species from the 2015/16, 2016/17 and 2017/18 fishing years.

Phylum	Common name	2015/16		2016/17		2017/18	
		Total amount observed (kg wet weight)	Industry reported (kg wet weight	Total amount observed (kg wet weight)	Industry-reported (kg wet weight)	Total amount observed (kg wet weight)	Industry-reported (kg wet weight)
Cnidaria	Corals (protected species)	12,221	1,022	265	8,885	220	82[88]
	Corals (generic codes)	1,551	12,713	13,257	13,529	2,166	3,902
	Soft corals	3	0	28	0	20	0
	Anemones	6,902	375	11,718	285	18,463	5,754
	Sea pens	121	0	47	0	169	0
	Hydroids	77	0	42	0	23	0
Porifera	Sponges	18,998	61,019	56,742	116,555	47,692	89,535

5.6.2 TRAWL FOOTPRINT

The most recent (2019) iteration of the deepwater trawl footprint[89] estimated the extent of bottom contact by trawl vessels targeting Tier 1 and Tier 2 species between the 2007/08 and 2016/17 fishing years.[90] The reporting is based on all relevant TCEPR and TCER and is reviewed each year through the Aquatic Environment Working Group. 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 footprint between 2007/08 and 2016/17 was estimated at 181,100 km^2. This represents 4.5% of the seafloor between the coastline and the outer boundary of the EEZ and 13% of the seafloor that is open to bottom trawling down to 1600 m. The Tier 1 target fisheries accounted for 87% of the total 2007/08 – 2016/17 deepwater footprint, with hoki effort contributing approximately 47% to the total (Figure 4). Between 2007/08 and 2016/17 hoki trawls covered about 5.4% of the seafloor open to fishing. The total trawl footprint for each of the other Tier 1 targets covered

[87] Excludes effort outside the EEZ.

[88] Corals are typically reported by industry using generic codes whereas observers are required to speciate coral species. Therefore the quantity of coral reported by industry to species level is less than that reported by observers.

[89] The 2019 deepwater trawl footprint has yet to be finalised, therefore all figures presented in this report are preliminary. The finalised report is expected to be published in early 2019.

[90] The 2019 trawl footprint report differs from those published previously in that the 2019 iteration calculated the cumulative deepwater trawl footprint back to 2007/08 (previous versions have calculated the footprint back to 1989/90) and also used a newly developed software tool (CatchMapper) to generate the bottom-contacting trawl footprint. The 2018 deepwater trawl footprint can be accessed online;
Baird, S.J.; Wood, B.A. (2018). Extent of bottom contact by New Zealand commercial trawl fishing for deepwater Tier 1 and Tier 2 target fishstocks, 1989-90 to 2015-16. *New Zealand Aquatic Environment and Biodiversity Report No. 193*. 102 p.

between 1.8% (jack mackerel) and 0.3% (oreo) of the seafloor out to the outer EEZ boundary (with the remainder taken up by the Tier 2 target footprint).

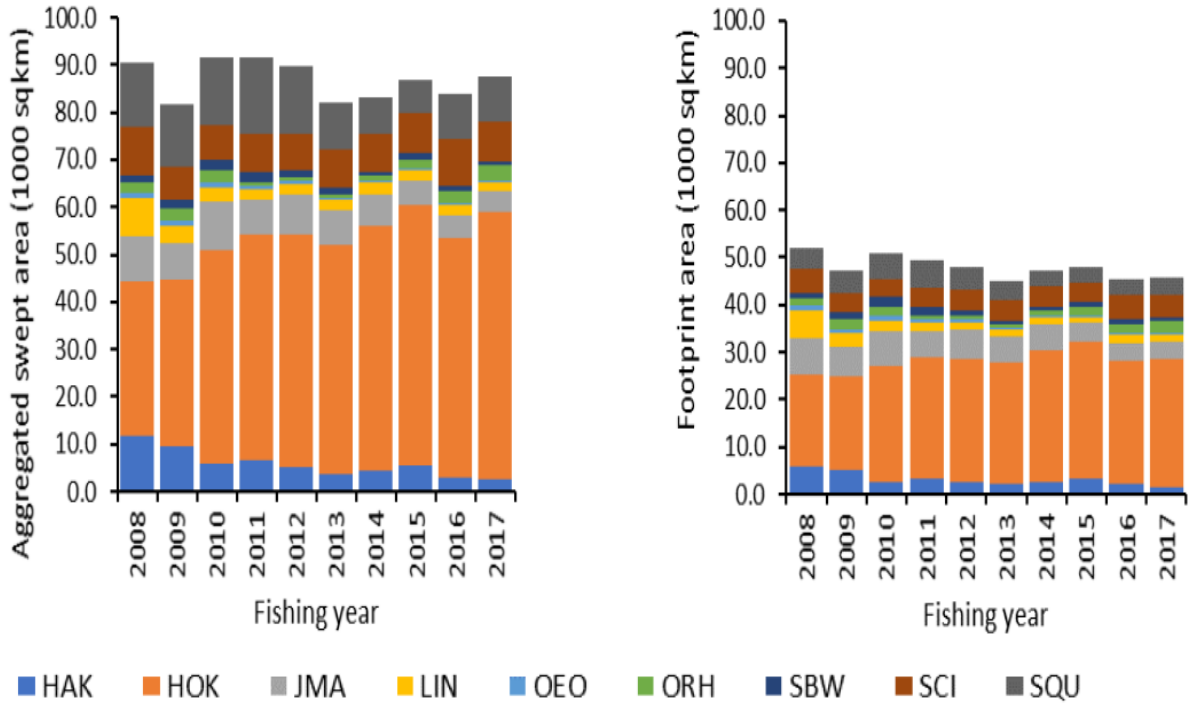


Figure 4: The annual aggregated swept area (left) and annual footprint (right) for Tier 1 deepwater fish stocks, based on TCER and TCEPR forms, between 2007/08 and 2016/17.

Estimating the area of seafloor contacted in 2016/17 that has not been previously contacted is problematic given the difference in methodology between 2019 and previous years. Approximately 455 km^2 of the 2017/18 footprint was estimated not to have been contacted in the previous nine years. Other than cells at the extremity of previous effort, the 'new' contact area indicated extension of hoki effort in the main fisheries (including the Southern Plateau) and of orange roughy effort on the Challenger Plateau. Some of these areas were contacted by the 1989/90 – 2015/16 footprint and thus, were trawled prior to 2007/08.

The distribution of the cumulative 2007/08 – 2016/17 and 2016/17 trawl footprints for Tier 1 and Tier 2 targets is shown in Figure 5. Swept area for each individual Tier 1 species is reported in Appendix I.

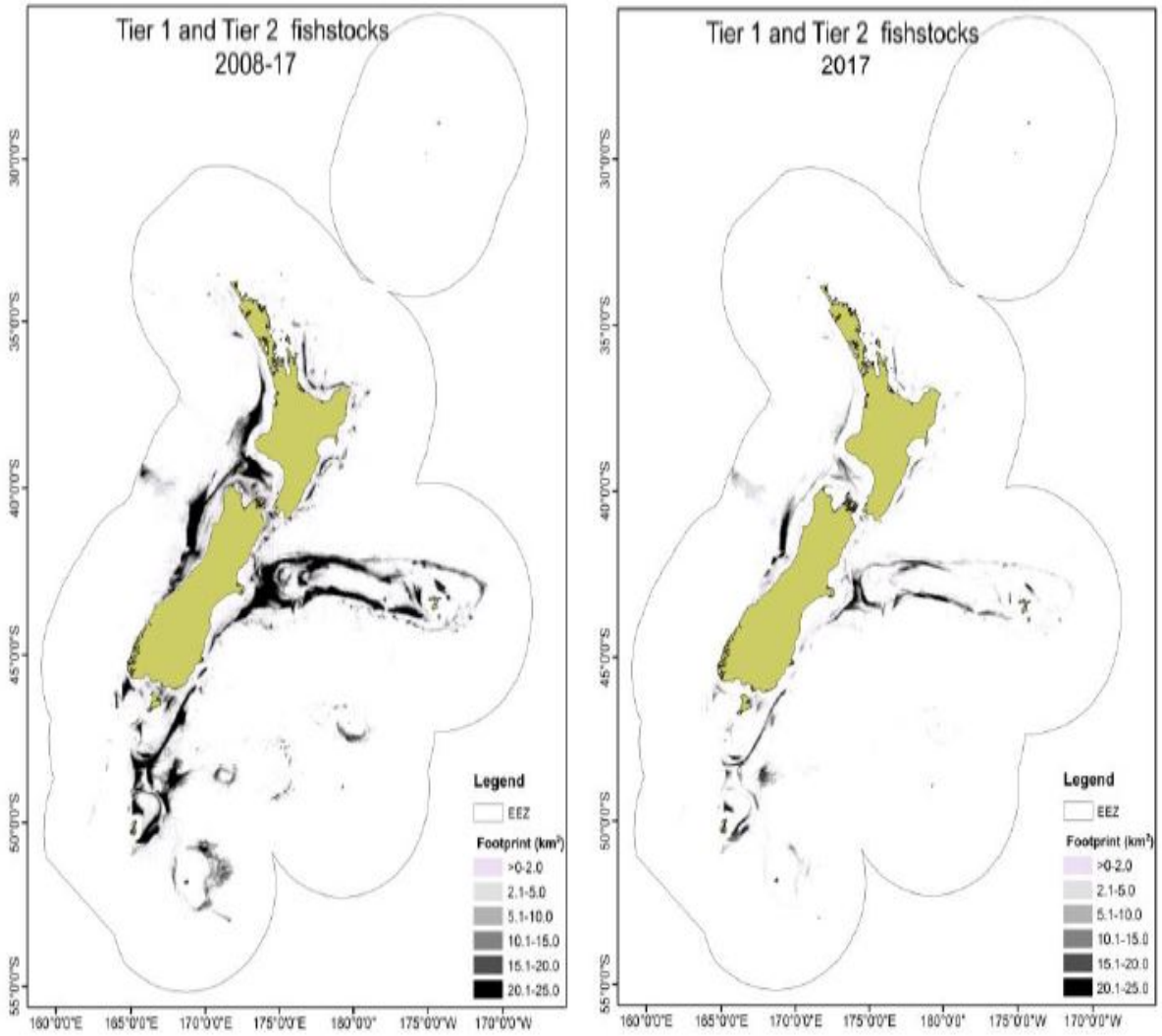
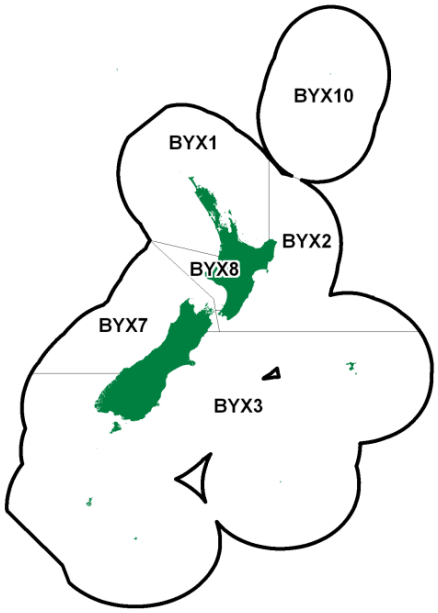


Figure 5: Distribution of the cumulative 2007/08 – 2016/17 trawl footprint and the annual 2016/17 trawl footprint for Tier 1 and Tier 2 target species combined.

Appendix I: Summaries of NZ Deepwater Fisheries 2017/18

ALFONSINO (TIER 2) BYX



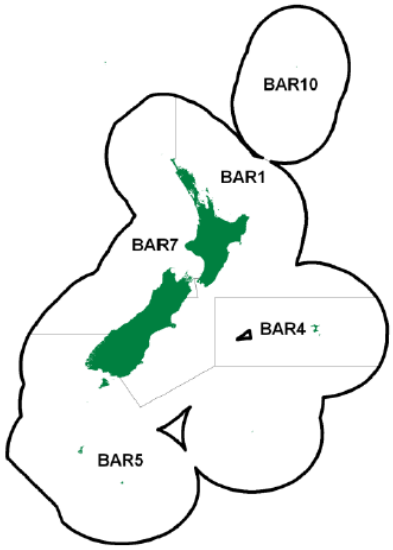
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
BYX 1	73	304	300	2	2	0
BYX 2	1,692	-	1,575	-	-	-
BYX 3	754	-	1,010	-	-	-
BYX 7	12	-	80.5	-	-	-
BYX 8	<1	-	10	-	-	-

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	B_{MSY} (30-50% B_0)	BYX 1	B_{2010} 'Likely' (>60%) to be at or above the target
	40% 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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 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	$0
BYX 3								$0
BYX 7								$7
BYX 8								$0
		100-110%	110-130%	130-150%	150-170%	170-190%	190%+	2017/18 Actual
BYX 2		$2.20	$2.64	$3.08	$3.52	$3.96	$4.40	$305,077

Economic indicators (calendar year)	
Quota value 2018	$NZ 66.8 m
Export earnings 2018	$NZ 13.3 m FOB (includes catch taken outside the EEZ)

BARRACOUTA (TIER 2) BAR



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
BAR 4	2,479	-	3,019	-	-	-
BAR 5	7,128	8,370	8,200	3	2	165
BAR 7	8,356	-	11,173	-	-	-

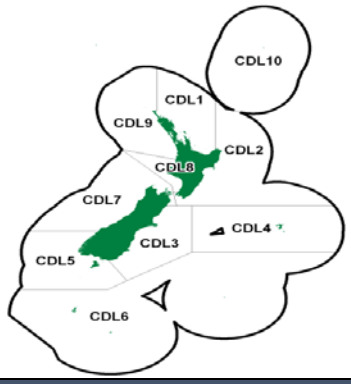
Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	BAR 4	Unknown
		BAR 5	Unknown
		BAR 7	Unknown
Soft Limit	20% B_0	BAR 4	Unknown
		BAR 5	B_{2015} is 'Very Unlikely' (<10%) to be below the soft limit
		BAR 7	B_{2015} is 'Very Unlikely' (<10%) to be below the soft limit
Hard Limit	10% B_0	BAR 4	Unknown
		BAR 5	B_{2015} is 'Very Unlikely' (<10%) to be below the hard limit
		BAR 7	B_{2015} is 'Very Unlikely' (<10%) to be below the hard limit

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
BAR 7	$0.12	$0.24	$0.29	$0.33	$0.38	$0.43	$0.48	$4
Stock		100-110%		110-120%		120%+		2017/18 Actual
BAR 4 BAR 5		$0.25		$0.50		$1.00		$0

Environmental indicators and observer coverage			
Observer coverage	2015/16: 31% tows observed	2016/17: 41% tows observed	2017/18: 56% tows observed
Seabirds	2015/16: 38 observed captures; 119 estimated	2016/17: 41 observed captures;	2017/18: 18 observed captures
Fur seals	2015/16: 3 observed captures; 18 estimated	2016/17: 6 observed captures	2017/18: 2 observed captures

Economic indicators (calendar years)	
Quota value 2018	$NZ 79.6 m (includes BAR 1 holdings)
Export earnings 2018	$NZ 31.5 m FOB

BLACK CARDINALFISH (TIER 2) CDL



2017/18 Landings, catch limits and allowances (in tonnes)						
Stock	2017/18 Catch	TAC	TACC	Recreational	Customary	Other fishing related mortality
CDL 1	2	1,320	1,200	0	0	120
CDL 2	236	460	440	0	0	20
CDL 3	131	196	196	0	0	0
CDL 4	13	66	66	0	0	0
CDL 5	6	22	22	0	0	0
CDL 6	<1	1	1	0	0	0
CDL 7	11	39	39	0	0	0
CDL 8	0	0	0	0	0	0
CDL 9	<1	4	4	0	0	0

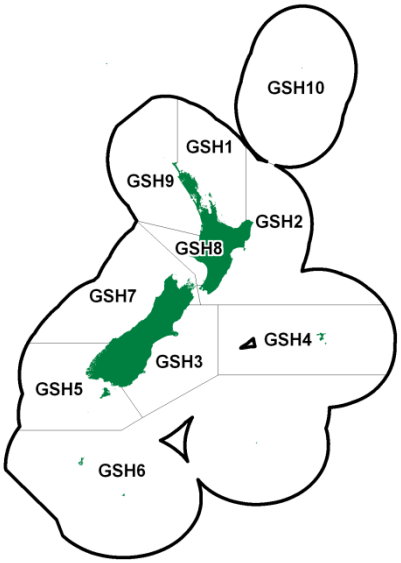
Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	CDL 2, 3 & 4	B_{2009} estimated to be 12% B_0. 'Very Unlikely' (<10%) to be at or above target
		All other stocks	Unknown
Soft Limit	20% B_0	CDL 2, 3 & 4	B_{2009} 'Likely' (>60%) to be below the soft limit
		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

2017/18 Deemed value rates (per kg) and charges				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2017/18 Actual
		100%+		
CDL 1 CDL 6 CDL 7 CDL 8 CDL 9	$0.15	$0.30		$0
CDL 5	$0.26	$0.52		
Stock	Interim rate	100-120%	120%+	2017/18 Actual
CDL 2	$0.30	$0.60	$0.69	$0
CDL 3 CDL 4	$0.26	$0.52	$0.60	$1 $0

Environmental indicators and observer coverage			
Observer coverage	2015/16: 11.5% tows observed	2016/17: 17.3% tows observed	2017/18: 3% tows observed
Seabirds	2015/16: 0 observed captures; 0 estimated	2016/17: 0 observed captures	2017/18: 0 observed captures
NZ fur seal	2015/16: 0 observed captures; 0 estimated	2016/17: 0 observed captures	2017/18: 0 observed captures

Economic indicators (calendar year)	
Quota value 2018	$NZ 4.4 m
Export earnings 2018	$NZ 0.8 m FOB

DARK GHOST SHARK (TIER 2) GSH



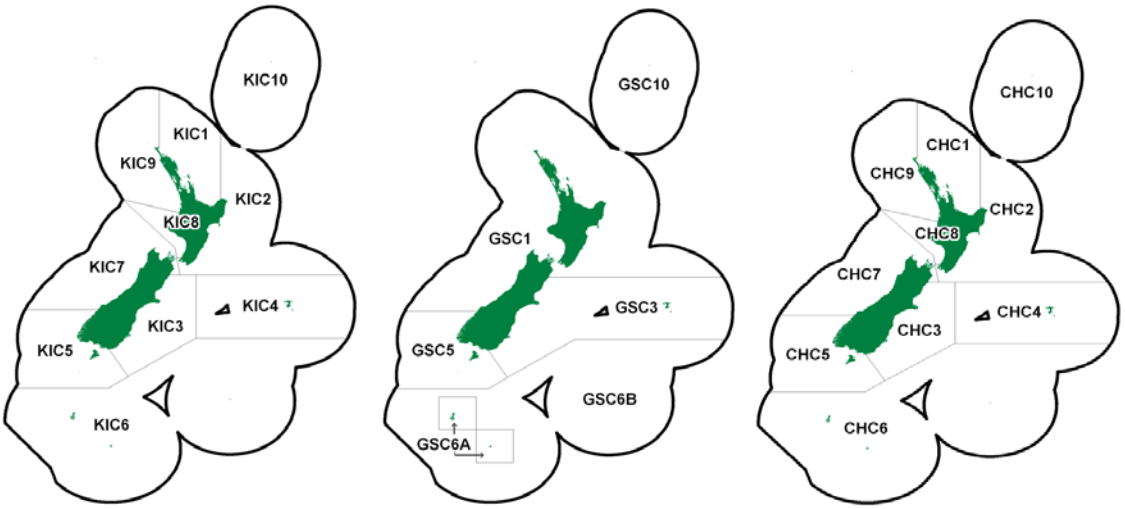
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
GSH 4	198	370	370	0	0	0
GSH 5	64	109	109	0	0	0
GSH 6	71	95	95	0	0	0

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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 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

Economic indicators (calendar year)	
Quota value 2018	$NZ 6.7 m (includes GSH 1, GSH 2, GSH 3, GSH 7, GSH 8 & GSH 9 holdings)
Export earnings 2018	$NZ 1.0 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:



2017/18 Landings, catch limits and allowances [91] (tonnes) (only shown for stocks where catches > 0.1 t were taken)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
KIC 6	1	10	10	0	0	0
GSC 3	8	15	14	0	0	1
GSC 5	91	20	19	0	0	1
GSC 6A	140	165	148	0	0	17
GSC 6B	4	250	237	0	0	13

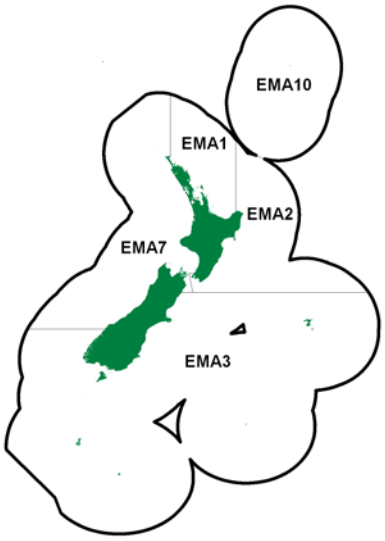
Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All CHC, GSC & KIC stocks	Unknown
Soft Limit	20% B_0	All CHC, GSC & KIC stocks	Unknown
Hard Limit	10% B_0	All CHC, GSC & KIC stocks	Unknown

2017/18 Deemed value rates (per kg) and charges (only shown for stocks where catches > 0.1 t were taken)								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
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	

Economic indicators (calendar year)	
Quota value 2018	$NZ 3.3 m (all deepwater crab species combined)
Export earnings 2018	$NZ 0.4 m FOB (reported as 'crabs')

[91] All catch information is based on the April fishing year (1 April 2017 – 31 March 2018).

BLUE (ENGLISH) MACKEREL (TIER 2) EMA



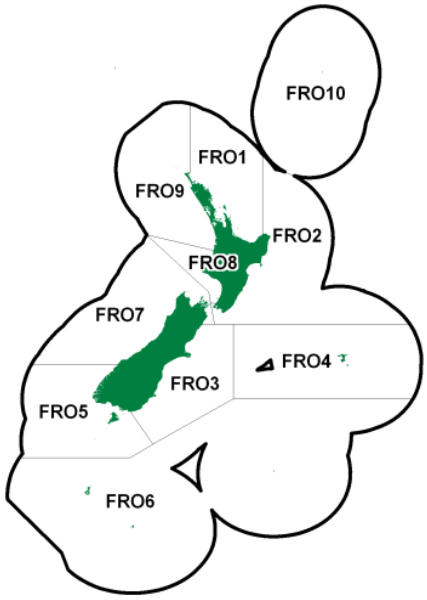
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
EMA 3	46	392	390	1	1	0
EMA 7	3,254	3,352	3,350	1	1	0

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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 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

Economic indicators (calendar year)	
Quota value 2018	$NZ 28.8 m (includes EMA 1 & EMA 2 holdings)
Export earnings 2018	$NZ 13.2 m FOB (includes all stocks)

FROSTFISH (TIER 2) FRO



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
FRO 3	12	176	176	0	0	-
FRO 4	16	28	28	0	0	-
FRO 5	44	135	135	0	0	-
FRO 6	<1	11	11	0	0	-
FRO 7	2,063	2,625	2,623	1	1	-
FRO 8	380	649	649	0	0	-
FRO 9	65	140	138	1	1	-

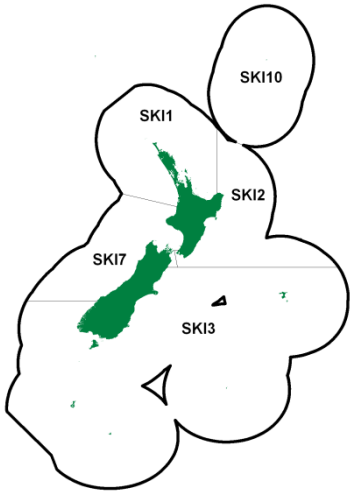
Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	FRO 3 – FRO 9	Unknown
Soft Limit	20% B_0	FRO 3 – FRO 9	Unknown
Hard Limit	10% B_0	FRO 3 – FRO 9	Unknown

2017/18 Deemed value rates (per kg) and charges			
Stock	Interim rate	Annual rate for catch in excess of ACE[92]	2017/18 Actual
FRO 3	$0.17	$0.34	$0
FRO 4	$0.22	$0.24	
FRO 5 FRO 6 FRO 7	$0.08	$0.15	
FRO 8 FRO 9	$0.14		$0 $9

Economic indicators (calendar year)	
Quota value 2018	$NZ 5.0 m (includes FRO 1 & FRO 2 holdings)
Export earnings 2018	No export information specific to frostfish is currently available

[92] Differential deemed value rates do not apply for frostfish stocks.

GEMFISH (TIER 2) SKI



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SKI 3	466	300	300	0	0	0
SKI 7	583	300	300	0	0	0

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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
SKI 3 SKI 7	$0.65	$1.29	$1.55	$1.81	$2.06	$2.32	$2.58	$262,775 $591,394

Economic indicators (calendar year)	
Quota value 2018	$NZ 14.9 m (includes SKI 1 & SKI 2 holdings)
Export earnings 2018	$NZ 2.7 m FOB (includes all stocks)

HAKE (TIER 1) HAK

2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
HAK 1	1,350	-	3,701	-	-	-
HAK 4	267	1,818	1,800	0	0	18
HAK 7	3,086	5,120	5,064	0	5	51

Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	HAK Sub-Antarctic[93]	B_{2018} estimated to be 49% B_0. 'Very Likely' (>90%) to be at or above the target
		HAK Chatham Rise[94]	B_{2016} estimated to be 48% B_0. 'Likely' (>60%) to be at or above the target
		HAK 7	B_{2016} estimated to be either 26% (survey model) or 50% B_0 (CPUE model). Either 'Very Unlikely' (<10%) or 'Very Likely' (>90%) to be at or above the target (survey & CPUE model respectively)
Soft limit	20% B_0	HAK Sub-Antarctic	B_{2018} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		HAK Chatham Rise	B_{2016} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		HAK 7	Either 'About as Likely as Not' (<40%-60%) or 'Very Unlikely' (<10%) to be below the soft limit (survey & CPUE model respectively)
Hard limit	10% B_0	HAK Sub-Antarctic	B_{2018} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		HAK Chatham Rise	B_{2016} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		HAK 7	Either 'Very Unlikely' (<10%) or 'Exceptionally Unlikely' (<1%) to be below the hard limit (survey & CPUE model respectively)

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
HAK 1 HAK 4 HAK 7	$0.80	$1.60	$1.92	$2.24	2.56	2.88	3.20	$146 $0 $0

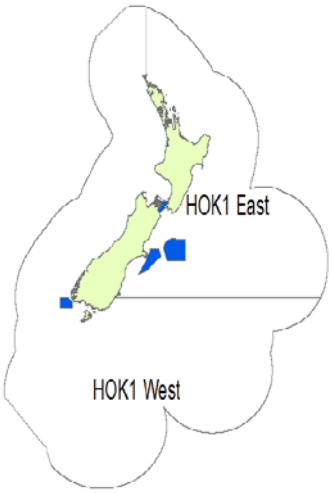
Environmental indicators and observer coverage				
Observer coverage		2015/16: 71% tows observed	2016/17: 80% tows observed	2017/18: 64% tows observed
Seabirds		2015/16: 10 observed captures; 12 estimated	2016/17: 1 observed capture; 2 estimated	2017/18: 1 observed capture
Marine mammals	NZ fur seal	2015/16: 0 observed captures; 2 estimated	2016/17: 2 observed captures	2017/18: 0 observed captures
Benthic interactions (fishable area trawled)		2016/17: 1,556 km^2 (0.1%)		2007/08 – 2016/17: 11,542 km^2 (0.8%)

Economic indicators (calendar year)	
Quota value 2018	$NZ 154.8 m
Export earnings 2018	$NZ 14.6 m FOB

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

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

HOKI (TIER 1) HOK



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
HOK1	135,418	151,540	150,000	20	20	1,500

Reference points and current status			
Target range	35-50% B_0	Eastern stock[95]	B_{2018} estimated to be 54% B_0. 'Virtually Certain' (>99%) to be at or above the lower end of the target range and Likely (>60%) to be at or above the upper end of the target range
		Western stock[96]	B_{2018} estimated to be 64% B_0. 'Very likely' (>90%) to be at or above the lower end of the target range and Likely (>60%) to be at or above the upper end of the target range
Soft limit	20% B_0	Eastern stock	B_{2018} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		Western stock	B_{2018} 'Exceptionally Unlikely' (<1%) to be below the soft limit
Hard limit	10% B_0	Eastern stock	B_{2018} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		Western stock	B_{2018} 'Exceptionally Unlikely' (<1%) to be below the soft limit

2017/18 Deemed value rates (per kg) and charges				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2017/18 Actual
		100-102%	102%+	
HOK 1	$0.45	$0.90	$1.30	$6

Environmental indicators and observer coverage				
Observer coverage		2015/16: 28% of tows observed	2016/17: 23% tows observed	2017/18: 35% tows observed
Seabirds		2015/16: 48 observed captures; 242 estimated	2016/17: 62 observed captures; 280 estimated	2017/18: 144 observed captures
Marine mammals	NZ fur seal	2015/16: 42 observed captures; 194 estimated	2016/17: 38 observed captures	2017/18: 41 observed captures
	NZ sea lion	2015/16: 0 observed captures	2016/17: 0 observed captures	2017/18: 1 observed capture
Benthic interactions (fishable area trawled)		2016/17: 26,932 km^2 (0.9%)	2007/08 to 2016/17: 74,810 km^2 (5.4%)	

Economic indicators (calendar year)	
Quota value 2018	$NZ 1,367.9 m
Export earnings 2018	$NZ 234.5 m FOB

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

[96] 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.

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 catch limits apply to each stock since 2001/02. For the 2017/18 fishing year, owners of the majority of the 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 37 provides details on the catch limits and catch amounts for the 2017/18 fishing year.

Table 37: Catch limits and actual catch estimates for 2017/18 fishing year (tonnes).

Catch limits	2017/18 Planned	Catch within agreement (from FishServe)	Estimated catch (all fishers)	Available ACE[97]
Eastern stock	60,000	56,855	60,391	66,430
Western stock	90,000	68,382	70,277	99,645

1.1.1 Hoki Operational Procedures

The purpose of the Hoki Operational Procedures (HOPs) is to monitor and manage fishing effort within the agreed hoki management areas (HMAs). 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 not permitted to target hoki within HMAs.

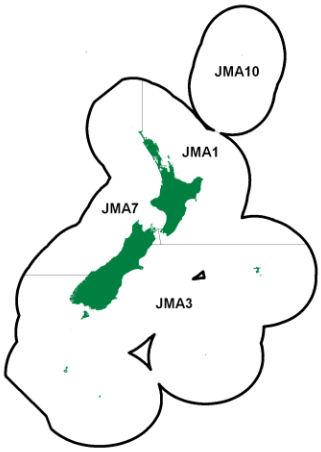
[97] Available ACE for the eastern and western stocks is allocated on a pro-rata basis from total HOK 1 ACE of 166,075 tonnes.

Table 38: Summary of HMA fishing activity by trawl vessels >28 m in length between the 2011/12 and 2017/18 fishing years.

Fishing year	Number of vessels that fished in HMA	Number of HOK target tows[98]	Number of non-HOK target tows	Reported estimated catch of HOK (t)	Estimated catch of all species (t)
Canterbury Banks					
2011/12	24	16	454	494	7,301
2012/13	20	17	471	772	7,849
2013/14	19	41	584	692	9,094
2014/15	21	18	336	576	4,014
2015/16	21	45	308	1,929	4,870
2016/17	20	33	454	1,028	7,380
2017/18	21	47	638	1,347	9,975
Mernoo Bank					
2011/12	17	14	68	456	1,310
2012/13	14	8	178	322	3,092
2013/14	16	9	231	346	4,102
2014/15	20	12	193	290	3,231
2015/16	19	11	201	602	2,529
2016/17	18	3	157	853	2,405
2017/18	20	16	263	581	2,577
Puysegur Bank					
2011/12	14	2	98	197	1,167
2012/13	12	2	82	80	781
2013/14	11	0	118	294	1,432
2014/15	10	0	96	454	1,392
2015/16	13	1	173	208	2,382
2016/17	10	0	98	150	1,033
2017/18	10	0	66	203	808
Cook Strait[99]					
2011/12	0	0	0	0	0
2012/13	1	3	0	1	1
2013/14	0	0	0	0	0
2014/15	2	2	0	<1	32
2015/16	0	0	0	0	0
2016/17	4	3	1	39	40
2017/18	1	1	0	<1	<1

[98] The majority of tows targeting hoki inside an HMA were undertaken very close to HMA boundaries.
[99] 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



2017/18 Landings, Catch limits and Allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
JMA 3	5,559	9,000	8,780	20	20	180
JMA 7	34,190	-	32,537	-	-	-

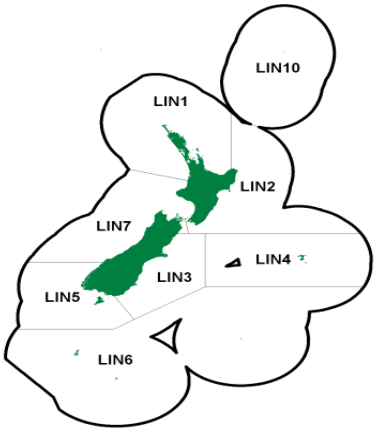
Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	JMA 3 & JMA 7	Unknown
Soft Limit	20% B_0	JMA 3 & JMA 7	Unknown
Hard Limit	10% B_0	JMA 3 & JMA 7	Unknown

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 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	$0.14	$0.15	$0.18	$0.21	$0.24	$0.27	$0.30	$231,577

Environmental indicators and observer coverage				
Observer coverage		2015/16: 90% tows observed	2016/17: 74% tows observed	2017/18: 87% tows observed
Seabirds		2015/16: 6 observed captures; 7 estimated	2016/17: 4 observed captures; 6 estimated	2017/18: 8 observed captures
Marine mammals	NZ fur seal	2015/16: 2 observed captures; 3 estimated	2016/17: 0 observed captures	2017/18: 3 observed captures
	Common dolphin	2015/16: 2 observed captures; 3 estimated	2016/17: 0 observed captures	2017/18: 1 observed capture
Benthic interactions (fishable area trawled)		2016/17: 3,797 km^2 (0.3%)	2007/08 – 2016/17: 24,367 km^2 (1.8%)	

Economic indicators (calendar year)	
Quota value 2018	$NZ 76.2 m (includes JMA 1 holdings)
Export earnings 2018	$NZ 68.2 m FOB (for all stocks)

LING (TIER 1) LIN



2017/18 Landings, Catch limits and Allowances (tonnes)							
Stock			2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
LIN 3			2,171	2,060	2,060	0	0	0
LIN 4			2,636	4,200	4,200	0	0	0
LIN 5			4,034	4,036	3,955	1	1	79
LIN 6			4,845	8,590	8,505	0	0	85
LIN 7			3,487	3,144	3,080	1	1	62
Reference points and Current status								
Target	40% B_0	LIN 3 & 4	B_{2014} estimated to be 57% B_0. 'Very Likely' (>90%) to be above the target					
		LIN 5 & 6[100]	B_{2018} estimated to be 75%-101% B_0. 'Virtually Certain' (>99%) to be above the target					
		LIN 6B[101]	B_{2006} estimated to be 61% B_0. 'Very Likely' (>90%) to be at or above the target.					
		LIN 7[102]	B_{2017} estimated to be 54%-79% B_0. 'Very Likely' (>90%) to be at or above the target.					
		LIN CS[103]	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_{2014} 'Exceptionally Unlikely' (<1%) to be below the soft limit					
		LIN 5 & 6	B_{2018} '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_{2017} 'Exceptionally Unlikely' (<1%) 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_{2014} 'Exceptionally Unlikely' (<1%) to be below the hard limit					
		LIN 5 & 6	B_{2018} '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_{2017} 'Exceptionally Unlikely' (<1%) to be below the hard limit					
		LIN CS	B_{2010} 'Exceptionally Unlikely' (<1%) to be below the soft limit					

2017/18 Deemed value rates (per kg) and charges					
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)			2017/18 Actual
		100-102%	102-120%	Annual 120%+	
LIN 3 LIN 4 LIN 5 LIN 6	$1.20	$2.38	$3.40	$6.00	$422 $0 $85,234 $0
LIN 4[104]	$0.56	$1.12			$0

[100] Excluding the Bounty Plateau.

[101] Bounty Plateau.

[102] Excluding Cook Strait.

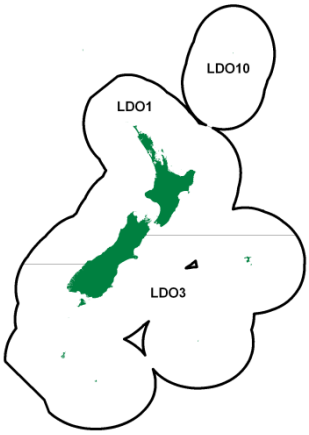
[103] Cook Strait.

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

LIN 7	$2.14	$2.38			$1,695,545
Environmental indicators and observer coverage					
Observer coverage	Trawl	2015/16: 15% tows observed	2016/17: 21% tows observed.	2017/18: 27% tows observed	
	Longline[105]	2015/16: 9% hooks observed	2016/17 14% hooks observed.	2017/18: 23% hooks observed	
Seabirds	Trawl	2015/16: 7 observed captures; 54 estimated	2016/17: 16 observed captures; 59 estimated	2017/18: 14 observed captures	
	Longline	2015/16: 89 observed captures; 915 estimated	2016/17: 34 observed captures; 851 estimated	2017/18: 24 observed captures	
NZ fur seals	Trawl	2015/16: 1 observed capture; 9 estimated	2016/17: 3 observed captures	2017/18: 1 observed capture	
	Longline	2015/16: 0 observed captures	2016/17: 1 observed capture.	2017/18: 0 observed captures	
Benthic interactions (fishable area trawled)		2016/17: 1,370 km^2 (0.1%)		2007/08 – 2016/17: 14,324 km^2 (1.0%)	
Economic indicators (calendar year)					
Quota value 2018		$NZ 529.4 m (includes LIN 1 & LIN 2 holdings)			
Export earnings 2018		$NZ 73.5 m FOB			

[105] Includes all ling stocks

LOOKDOWN DORY (TIER 2) LDO



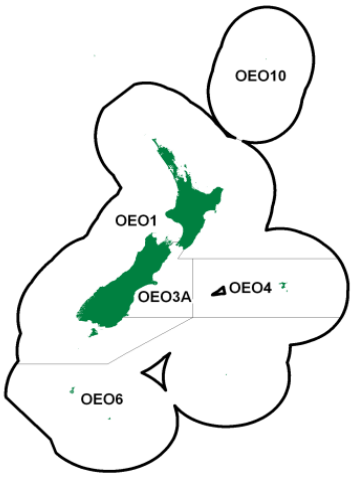
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
LDO 1	244	168	168	0	0	0
LDO 3	320	614	614	0	0	0

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	'Unlikely' (<40%) to be below the hard limit

2017/18 Deemed value rates (per kg) and charges			
Stock	Interim rate	Annual rate for catch in excess of ACE	2017/18 Actual
LDO 1	$0.38	$0.42	$28,967
LDO 3	$0.21		$0

Economic indicators (calendar year)	
Quota value 2018	$NZ 2.0 m
Export earnings 2017	This species is not individually listed in export statistics

OREO (TIER 1) OEO



2017/18 Landings, catch limits and allowances (tonnes)							
Stock		2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
OEO 1		601	2,500	2,500	0	0	0
OEO 3A		3,177	3,518	3,350	0	0	168
OEO 4		2,867	3,150	3,000	0	0	150
OEO 6		2,138	-	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			
			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			
			SSO	B_{2018} estimated to be 40% B_0. 'About as Likely as Not' (40-60%) to be at or above the target			
		OEO 6 Pukaki rise	BOE	Unknown			
			SSO	Unknown			
		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			
			SSO	B_{2009} is 'Unlikely' (<40%) to be below the soft limit			
		OEO 4	BOE	Unknown			
			SSO	B_{2018} is 'Very Unlikely' (<10%) to be below the soft limit			
		OEO 6 Pukaki rise	BOE	Unknown			
			SSO	Unknown			
		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			
			SSO	B_{2009} is 'Very Unlikely' (<10%) to be below the hard limit			
		OEO 4	BOE	Unknown			
			SSO	B_{2018} is 'Exceptionally Unlikely' (<1%) to be below the hard limit			
		OEO 6 Pukaki rise	BOE	Unknown			
			SSO	Unknown			
		OEO 6 Bounty Plateau	SSO	B_{2008} is 'Very Unlikely' (<10%) to be below the hard limit			
2017/18 Deemed value rates (per kg) and charges							

Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
OEO 1 OEO 6	$0.39	$0.78	$0.94	$1.09	$1.25	$1.40	$1.56	$2 $0
OEO 3A	$0.38	$0.76	$0.91	$1.06	$1.22	$1.37	$1.52	$0
OEO 4	$0.82	$0.90	$1.08	$1.26	$1.44	$1.62	$1.80	

Environmental indicators and observer coverage				
Observer coverage		2015/16: 29% tows observed	2016/17: 53% tows observed	2017/18: 41% tows observed
Seabirds		2015/16: 1 observed captures; 3 estimated	2016/17: 0 observed captures; 1 estimated	2017/18: 2 observed captures
Marine mammals	NZ fur seal	2015/16: 0 observed captures; 0 estimated	2016/17: 0 observed captures	2017/18: 0 observed captures
Benthic interactions (fishable area trawled)		2016/17: 255 km^2 (<0.1%)	2007/08 – 2016/17: 4,312 km^2 (0.3%)	

Economic indicators (calendar year)	
Quota value 2018	$NZ 84.3 m (includes all species)
Export earnings 2018	Black oreo - $NZ 4.1 m FOB Smooth oreo - $NZ 2.4 m FOB Oreo, other - $NZ 7.1 m FOB (this category includes black and/or smooth oreo that has not been reported by individual species)

CATCH SPLIT

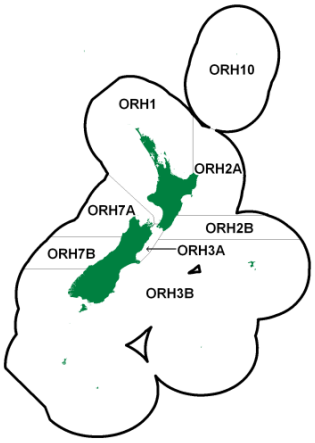
OEO 1

Area	Catch limit for 2017/18 (t)	Industry reported catch (t)	Sum of catch reported via ERS (t)
Southland (*smooth oreo only*)	400	166	139
Southland (*black & spiky oreo only*)	N/A	32	31
OEO 1 excluding Southland (*all species*)	N/A	403	326
OEO 1 (*all species*)	2,500	601	496

OEO 3A

Species	Catch limit (t)	Sum of catch reported via ERS (t)
Black oreo (includes spiky oreo)	1,700	1,557
Smooth oreo	1,650	1,619
Totals	3,350	3,177

ORANGE ROUGHY (TIER 1) ORH



2017/18 Landings, catch limits, and allowances (tonnes)						
Stock	2017/18 Catch	TAC	TACC	Recreational	Customary	Other fishing related mortality
ORH 1	881	1,470	1,400	-	-	70
ORH 2A	485	512	488	-	-	24
ORH 2B	46	63	60	-	-	3
ORH 3A	117	186	177	-	-	9
ORH 3B	4,942	5,470	5,197	-	5	268
ORH 7A	1,601	1,680	1,600	-	-	80
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[106]	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_{2017} estimated to be 33% 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[107]	B_{2014} estimated to be 42% 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_{2004} estimated to be 17% B_0. 'Very Unlikely' (<10%) to be at or above the target.
Soft limit	20% B_0	ORH 1	Unknown
		ORH 2A (North)	B_{2003} 'Unlikely' (<40%) to be below the soft limit
		ORH 2A (South), 2B & 3A	B_{2014} 'Likely' (>60%) to be below the soft limit
		ORH 3B NW Chatham Rise	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		ORH 3B E&S Chatham Rise	B_{2017} '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_{2014} 'Very Unlikely' (<10%) to be below the soft limit
		ORH 7B	B_{2004} 'Likely' (>60%) to be below the soft limit
	10% B_0	ORH 1	Unknown

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

[107] Includes the Westpac Bank.

Hard limit		ORH 2A (North)	B_{2003} 'Very Unlikely' (<40%) 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_{2017} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		ORH 3B Puysegur	B_{2017} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		ORH 7A	B_{2014} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		ORH 7B	B_{2004} 'Unlikely' (<40%) to be below the hard limit

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%. 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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-110%			110%+			
ORH 1	$1.70	$3.40			$5.00			$0
Stock	Interim rate	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2017/18 Actual
ORH 2A	$2.50	$5.00	$6.00	$7.00	$8.00	$9.00	$10.00	$0
ORH 2B								$0
ORH 3A								$27
Stock	Interim rate	100-110%			110%+			2017/18 Actual
ORH 3B ORH 7A	$2.50	$5.00			$6.25			$0
ORH 7B	$1.60	$3.20			$5.00			$1,544

Environmental indicators and observer coverage				
Observer coverage		2015/16: 44.1% tows observed	2017/18: 50.6% tows observed	2017/18: 20% tows observed
Seabirds		2015/16: 3 observed captures; 9 estimated	2017/18: 2 observed captures; 9 estimated	2017/18: 1 observed captures
Marine mammals	NZ fur seal	2015/16: 0 observed captures	2016/17: 0 observed captures	2017/18: 0 observed captures
Benthic impacts (fishable area trawled)		2016/17: 2,703 km^2 (0.2%)	2007/08 – 2016/17: 11,189 km^2 (0.8%)	

Economic indicators (calendar year)	
Quota value 2018	$NZ 295.8 m
Export earnings 2018	$NZ 53.5 m FOB (includes catch from outside the EEZ)

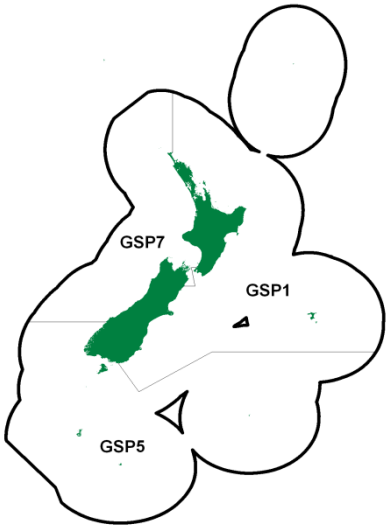
Table 39: Sub-area catch limits and estimated catch for orange roughy stocks (tonnes).

Stock	Sub-area	Agreed catch limit	2017/18 Catch
ORH 1[108]	Area A	530	230
	Area B	530	526
	Area C	470	3
	Area D	470 (incl. 30 t bycatch limit in the MC Box)	122 (incl. 17 t from the MC Box)
ORH 2A	ORH 2A North	200	203
	ORH 2A South	288	282
ORH 3B	NW Chatham Rise	1,250[109]	724
	E&S Chatham Rise	3,100	3,328
	Puysegur	347	386
	Sub-Antarctic	500	504

[108] The sum of the catch limits applying to each sub-area is greater than the overall TACC of 1,400 tonnes. This means the catch limit cannot be reached in all sub-areas in a given year.

[109] Quota owners continued to agree to shelve 207 tonnes of NW Chatham Rise ACE during 2017/18 leaving 1,043 tonnes available to be caught.

PALE GHOST SHARK (TIER 2) GSP



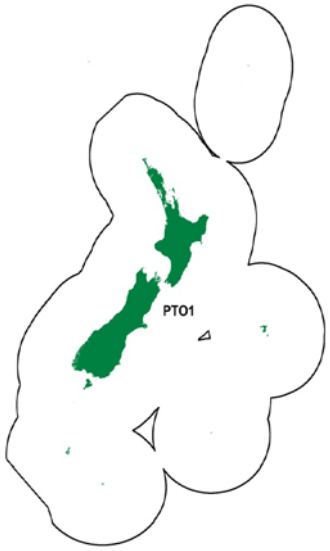
2017/18 Landings, Catch limits and Allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
GSP 1	525	1,208	1,150	0	0	58
GSP 5	470	477	454	0	0	23
GSP 7	35	176	176	0	0	0

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

2017/18 Deemed value rates (per kg) and charges			
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)	2017/18 Actual
		100%+	
GSP 1 GSP 5	$0.08	$0.15	$0 $3,962
GSP 7	$0.17	$0.34	$0

Economic indicators (calendar year)	
Quota value 2018	$NZ 1.8 m
Export earnings 2018	$NZ 1.0 m FOB (includes both pale and dark ghost shark, Export statistics are not provided for individual ghost shark species)

PATAGONIAN TOOTHFISH (TIER 2) PTO



2017/18 Landings, Catch limits and Allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
PTO 1	5	50	49.5	0	0	0.5

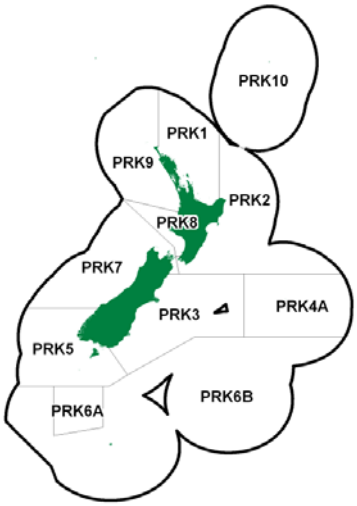
Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	PTO 1	Unknown
Soft Limit	20% B_0	PTO 1	Unknown
Hard Limit	10% B_0	PTO 1	Unknown

2017/18 Deemed value rates (per kg) and charges				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2017/18 Actual
		100-110%	110%+	
PTO 1	$13.50	$15.00	$25.00	$0

Economic indicators (calendar year)	
Quota value 2018	Not available
Export earnings 2018	$NZ 0.2 m FOB[110]

[110] Most revenue generated by Patagonian toothfish was likely taken in other jurisdictions but landed in New Zealand.

PRAWN KILLER (TIER 2) PRK



2017/18 Landings, Catch limits and Allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
PRK 1	<1	25.7	24.5	0	0	1.2
PRK 2	<1	3.7	3.5	0	0	0.2
PRK 3	<1	1	1	0	0	0
PRK 4A	<1	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	1	1	1	0	0	0
PRK 8	0	1	1	0	0	0
PRK 9	0	1	1	0	0	0

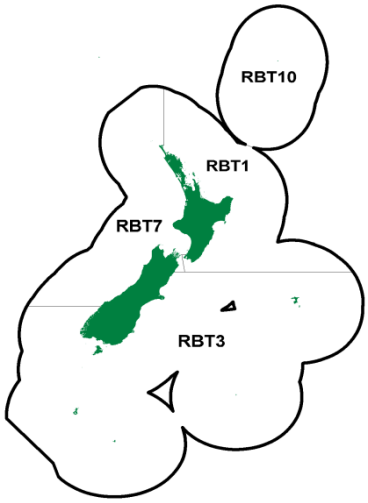
Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks	Unknown

2017/18 Deemed value rates (per kg) and charges			
Stock	Interim rate	Annual differential rate for excess catch[111]	2017/18 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)	
Quota value 2018	Not available
Export earnings 2018	Prawn killer does not feature as an individual species in export statistics

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

REDBAIT (TIER 2) RBT



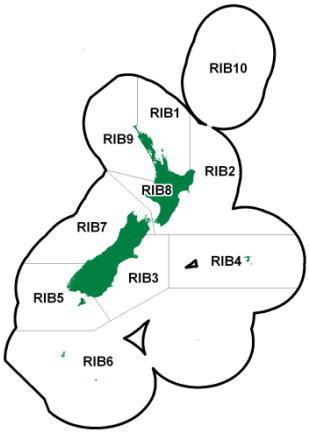
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RBT 1	2	20	19	0	0	1
RBT 3	1,687	2,305	2,190	0	0	115
RBT 7	75	2,991	2,841	0	0	150

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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
RBT 1 RBT 7	$0.25	$0.50	$0.60	$0.70	$0.80	$0.90	$1.00	$0
RBT 3	$0.45							$4

Economic indicators (calendar year)	
Quota value 2018	NZ$ 9.5 m
Export earnings 2018	Redbait does not feature as an individual species in export statistics

RIBALDO (TIER 2) RIB



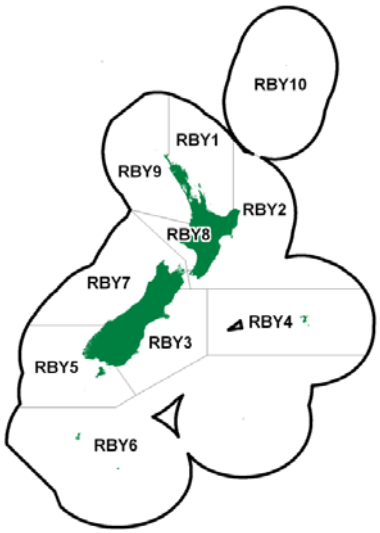
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RIB 3	198	394	394	0	0	0
RIB 4	182	357	357	0	0	0
RIB 5	36	52	52	0	0	0
RIB 6	182	231	231	0	0	0
RIB 7	290	330	330	0	0	0
RIB 8	<1	1	1	0	0	0

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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
RIB 3 RIB 5	$0.15	$0.30	$0.36	$0.42	$0.48	$0.54	$0.60	$0
RIB 4 RIB 8	$0.27							
RIB 6	$0.40	$0.80	$0.96	$1.12	$1.28	$1.44	$1.60	
Stock	Interim rate	100-110%		110-120%		120%+		
RIB 7	$0.72	$0.80		$1.20		$2.50		

Economic indicators (calendar year)	
Quota value 2018	$NZ 6.6 m (includes RIB 1, RIB 2 & RIB 9 holdings)
Export earnings 2018	No export information specific to ribaldo is currently available

RUBYFISH (TIER 2) RBY



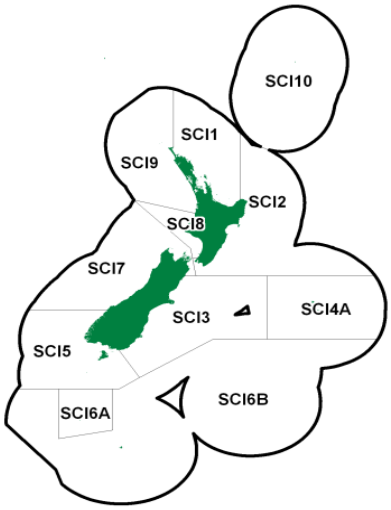
2017/18 Landings, Catch limits and Allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RBY1	71	318	300	1	2	15
RBY2	104	435	433	1	1	0
RBY3	<1	32	30	0	0	2
RBY4	17	19	18	0	0	1
RBY5	1	0	0	0	0	0
RBY6	0	0	0	0	0	0
RBY7	5	33	33	0	0	0
RBY8	<1	6	6	0	0	0
RBY9	1	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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
RBY 1	$0.25	$0.28	$0.34	$0.39	$0.45	$0.50	$0.56	$0
RBY 2								$0
RBY 3								$0
RBY 4								$0
RBY 5								$387
RBY 6								$0
RBY 8								$0
RBY 9								$0
Stock	Interim rate	100%+						2017/18 Actual
RBY 7	$0.38	$0.42						$0

Economic indicators (calendar year)	
Quota value 2018	$NZ 5.2 m
Export earnings 2018	Rubyfish is not listed as an individual species in export statistics

SCAMPI (TIER 1) SCI



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SCI 1	120	126	120	0	0	6
SCI 2	152	161	153	0	0	8
SCI 3	337	357	340	0	0	17
SCI 4A	111	126	120	0	0	6
SCI 5	<1	42	40	0	0	2
SCI 6A	295	321	306	0	0	15
SCI 6B	<1	53	50	0	0	3
SCI 7	4	79	75	0	0	4
SCI 8	0	5	5	0	0	0
SCI 9	<1	37	35	0	0	2

Reference Points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	SCI 1	B_{2015} estimated to be 75% B_0. 'Very Likely' (>90%) to be at or above the target
		SCI 2	B_{2015} estimated to be 89-113% B_0. 'Very Likely' (>90%) to be at or above the target
		SCI 3	B_{2017} estimated to be 76% B_0. 'Very Likely' (>90%) to be at or above the target
		SCI 6A	B_{2016} estimated to be 67-72% B_0 'Very Likely' (>90%) to be at or above the target
		All other stocks	Unknown
Soft Limit	20% B_0	SCI 1	B_{2015} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		SCI 2	B_{2015} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		SCI 3	B_{2017} 'Very Unlikely' to be below the soft limit
		SCI 6A	B_{2016} 'Exceptionally Unlikely' (<1%) to be below the soft limit
		All other stocks	Unknown
Hard Limit	10% B_0	SCI 1	B_{2015} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		SCI 2	B_{2015} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		SCI 3	B_{2017} 'Very Unlikely' to be below the hard limit
		SCI 6A	B_{2016} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		All other stocks	Unknown

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
SCI 1 SCI 2 SCI 3 SCI 4A SCI 5	$25.65	$51.30	$61.56	$71.82	$82.08	$92.34	$102.60	$51 $72 $0 $0 $0

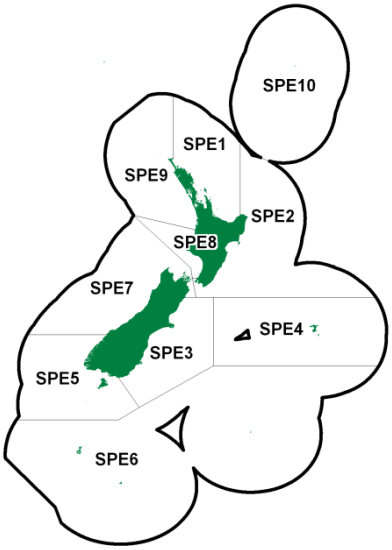
SCI 6A SCI 6B SCI 7 SCI 8 SCI 9								\$0 \$0 \$0 \$0 \$0

Environmental indicators and observer coverage				
Observer coverage		2015/16: 2.8% tows observed	2016/17: 9.5% tows observed	2017/18: 12% tows observed
Seabirds		2015/16: 3 observed captures; 203 estimated	2016/17: 12 observed captures; 169 estimated	2017/18: 20 observed captures
Marine mammals	NZ fur seal	2015/16: 0 observed captures; 4 estimated	2016/17: 1 observed capture	2017/18: 0 observed captures
	NZ sea lion	2015/16: 0 observed captures	2016/17: 0 observed captures	2017/18: 3 observed captures[112]
Benthic interactions (fishable area trawled)		2016/17: 4,673 km^2 (0.3%)	2007/08 – 2016/17: 12,694 km^2 (0.9%)	

Economic Indicators (calendar year)	
Quota value 2018	\$NZ 421.4 m
Export earnings 2018	\$NZ 21.2 FOB (based on the "shrimps and prawns cold-water", "shrimps & prawns other" and 'Norway lobster' categories)

[112] Two animals were badly decomposed when brought on board the vessel

SEA PERCH (TIER 2) SPE



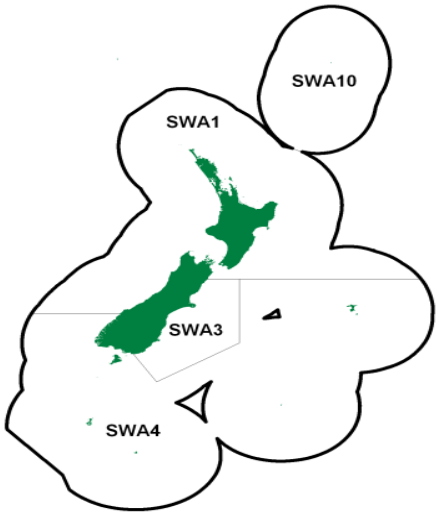
2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SPE 3	625	1,022	1,000	11	11	0
SPE 4	490	956	910	0	0	46
SPE 5	12	38	36	1	1	0
SPE 6	2	9	9	0	0	0
SPE 7	118	98	82	8	8	0

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

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 Actual
		100-120%	120-140%	140-160%	160-180%	180-200%	200%+	
SPE 3 SPE 7	$0.50	$0.55	$0.66	$0.77	$0.88	$0.99	$1.10	$0 $33,218
SPE 4 SPE 5 SPE 6	$0.36	$0.40	$0.48	$0.56	$0.64	$0.72	$0.80	$38 $10 $0

Economic indicators (calendar year)	
Quota value 2018	$NZ 6.7 m (includes SPE 1 & SPE 2 holdings)
Export earnings 2018	$NZ 2.0 m FOB (includes all stocks)

SILVER WAREHOU (TIER 2) SWA



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SWA 1	543	3,003	3,000	2	1	0
SWA 3	3,396	-	3,280	-	-	-
SWA 4	4,714	-	4,090	-	-	-

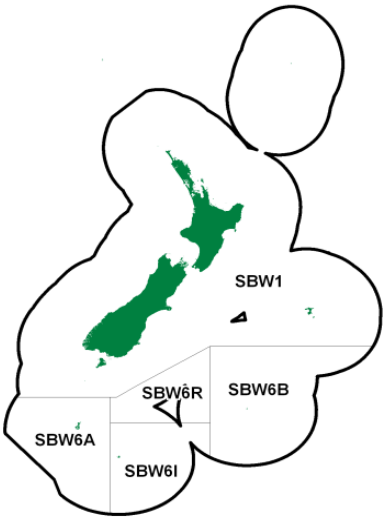
Target	40% B_0	All stocks	Unknown
Soft Limit	20% B_0	All stocks	Unknown
Hard Limit	10% B_0	All stocks	Unknown

2017/18 Deemed value rates (per kg) and charges					
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)			2017/18 Actual
		100-110%	110-130%	130%+	
SWA 1 SWA 4	$0.50	$1.22	$1.74	$3.00	$51 $611,248
SWA 3	$1.57	$1.74	$2.00		$132,033

Environmental indicators and observer coverage			
Observer coverage	2015/16: 38% of tows observed	2016/17: 48% tows observed	2017/18: 61% tows observed
Seabirds	2015/16: 9 observed captures	2016/17: 7 observed captures	2017/18: 11 observed captures
NZ fur seal	2015/16: 0 observed capture	2016/17: 0 observed captures	2017/18: 0 observed captures

Economic indicators (calendar year)	
Quota value 2018	$NZ 171.1 m
Export earnings 2018	$NZ 20.1 FOB

SOUTHERN BLUE WHITING (TIER 1) SBW



Landings, catch limits and allowances as of 1 April 2018 (tonnes)						
Stock	2017/18 Landings[113]	TAC	TACC	Recreational	Customary	Other fishing related mortality
SBW 1	50 (25)	100	98	0	0	2
SBW 6A	202 (88)	1,640	1,640	0	0	0
SBW 6B	2,423 (1,100)	3,209	3,145	0	0	64
SBW 6I	18,334 (15,147)	40,000	39,200	0	0	800
SBW 6R	36 (36)	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[114]
		SBW 6I	B_{2016} estimated to be 70% B_0. 'Very Likely' (>90%) to be at or above the target
		SBW 6R	Unknown
Soft limit	20% B_0	SBW 1	Unknown
		SBW 6A	Unknown
		SBW 6B	Unknown
		SBW 6I	B_{2016} '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_{2016} 'Exceptionally Unlikely' (<1%) to be below the hard limit
		SBW 6R	Unknown

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 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%+		
SBW 6A SBW 6B SBW 6I SBW 6R		$0.46		$0.60		$0.92		

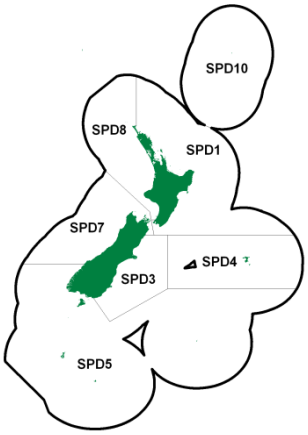
[113] 2017/18 landings from the 1 April 2017 – 30 March 2018 fishing year. Figures in brackets indicate landings for the 2018 'season' (the 2018/19 fishing year).

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

Environmental indicators and observer coverage[115]				
Observer coverage		2015/16: 100% tows observed	2016/17: 100% tows observed	2017/18: 100% tows observed
Seabirds		2015/16: 6 observed captures; 6 estimated	2016/17: 6 observed captures; 6 estimated	2017/18: 6 observed captures
Marine mammals	NZ fur seals	2015/16: 51 observed captures; 51 estimated	2016/17: 11 observed capture	2017/18: 17 observed captures
	NZ sea lion	2015/16: 3 observed captures	2016/17: 0 observed captures	2017/18: 2 observed captures
Benthic interactions (fishable area trawled)		2007/08: 748 km^2 (<0.1%)	2007/08 – 2016/17: 10,063 km^2 (0.7%)	
Economic indicators (calendar year)				
Quota value 2018		$NZ 172.6 m		
Export earnings 2018		$NZ 18.5 m FOB		

[115] Information on environmental actions is provided by October fishing year e.g. 2017-18 covers 1 October 2017 – 30 September 2018. This effectively includes all captures in the 2018-19 April fishing year.

SPINY DOGFISH (TIER 2) SPD



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SPD 4	1,734	1,662	1,626	10	10	20
SPD 5	1,542	3,753	3,700	8	8	37

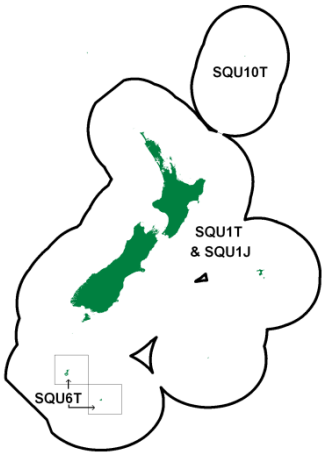
Reference points and current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	SPD 4 & SPD 5	Unknown
Soft Limit	20% B_0	SPD 4 & SPD 5	Unknown
Hard Limit	10% B_0	SPD 4 & SPD 5	Unknown

2017/18 Deemed value rates (per kg) and charges			
Stock	Interim	Annual rate for catch in excess of ACE[116]	2017/18 Actual
SPD 4 SPD 5	$0.05	$0.10	$3,220 $0

Economic indicators (calendar year)	
Quota value 2018	$NZ 8.4 m (includes SPD 1, SPD 3, SPD 7 & SPD 8 holdings)
Export earnings 2018	$NZ 0.2 m FOB (includes all SPD stocks)

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

SQUID (TIER 1) SQU



2017/18 Landings, catch limits and allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SQU 1J	<1	5,030	5,000	10	10	10
SQU 1T	11,984	44,741	44,741	0	0	0
SQU 6T	11,086	-	32,369	-	-	-

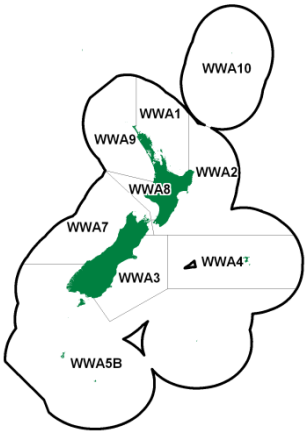
Reference points and current status
Arrow squid live for one year, spawn once then die. No estimates of current and reference biomass are available and there is no proven method available at this time to estimate yields from the squid fishery before the fishing season begins.

2017/18 Deemed value rates (per kg) and charges								
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)						2017/18 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 $18 $0

Environmental indicators and observer coverage				
Observer coverage		2015/16: 81.6% tows observed	2016/17: 75% tows observed	2017/18: 95% tows observed
Seabirds		2015/16: 302 observed captures; 364 estimated	2016/17: 270 observed captures; 353 estimated	2017/18: 264 observed captures
Marine mammals	NZ fur seals	2015/16: 10 observed captures; 18 estimated	2016/17: 17 observed captures	2017/18: 14 observed captures
	NZ sea lion	2015/16: 0 observed captures	2016/17: 3 observed captures	2017/18: 3 observed captures
Benthic interactions (fishable area trawled)		2016/17: 3,715 km^2 (0.3%)	192007/08 – 2016/17: 13,656 km^2 (1.0%)	

Economic indicators (calendar years)	
Quota value 2018	$NZ 132.5 m
Export earnings 2018	$NZ 118.0 m FOB

WHITE WAREHOU (TIER 2) WWA



2017/18 Landings, Catch limits and Allowances (tonnes)						
Stock	2017/18 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
WWA 1	<1	4	4	0	0	0
WWA 2	6	75	73	1	1	0
WWA 3	282	585	583	1	1	0
WWA 4	57	332	330	1	1	0
WWA 5B	650	2,621	2,617	2	2	0
WWA 7	139	129	127	1	1	0
WWA 8	0	1	1	0	0	0
WWA 9	0	0	0	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

2017/18 Deemed value rates (per kg) and charges				
Stock	Interim rate	Annual differential rate for excess catch (% of ACE)		2017/18 Actual
		100%+		
WWA 1 WWA 2 WWA 8 WWA 9	$0.27	$0.54		$7 $0 $0 $0
Stock	Interim rate	100-110%	110%+	2017/18 Actual
WWA 3 WWA 4 WWA 5B WWA 7	$0.52	$1.03	$2.00	$0 $0 $0 $4,365

Economic indicators (calendar year)	
Quota value 2018	$NZ 25.0 m
Export earnings 2018	$NZ 5.7 m FOB[117]

[117] Information in export statistics for "Warehou, Other" is assumed to be white warehou.

Appendix II: Results of 2017/18 Sustainability Rounds

TAC REVIEWS

Species	Stock	Pre-1 Oct 2017 TAC (t)	Pre-1 Oct 2017 TACC (t)	1 Oct 2017 TAC (t)	1 Oct 2017 TACC (t)
Hake	HAK 7	7,777	7,700	5,120	5,064
Orange roughy	ORH 3B	5,250	5,000	5,470	5,197

Species	Stock	Pre-1 Apr 2018 TAC (t)	Pre-1 Apr 2018 TACC (t)	1 Apr 2018 TAC (t)	1 Apr 2018 TACC (t)
Southern blue whiting	SBW 6B	2,426	2,377	3,209	3,145

Appendix III: Landed catch of Tier 3 species by the core deepwater fleet (2013/14 – 2017/18)

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
JAV	Javelinfish	*Lepidorhynchus denticulatus*	3,922,453	4,233,558	4,299,703	5,366,017	6,101,957
RAT	Rattails	*Macrouridae* spp.	3,378,020	3,681,747	3,630,495	5,068,584	4,538,703
STU	Slender tuna	*Allothunnus fallai*	582,089	234,630	177,288	208,589	627,634
SSI	Silverside	*Argentina elongate*	97,536	123,038	133,923	168,808	588,581
SND	Shovelnose dogfish	*Deania calcea*	283,168	250,659	428,894	376,752	491,923
ETB	Baxter's lantern dogfish	*Etmopterus baxteri*	299,975	289,706	252,780	309,202	325,158
SDO	Silver dory	*Cyttus novaezealandiae*	224,542	230,741	230,383	192,410	295,292
OSD	Other sharks and dogfish	Order Selachii	225,817	189,100	290,874	268,354	248,357
NCB	Smooth red swimming crab	*Nectocarcinus bennetti*	168,810	185,908	141,902	491,231	245,122
CSQ	Leafscale gulper shark	*Centrophorus squamosus*	95,793	122,870	177,808	126,796	194,669
SLK	Slickhead	*Alepocephalidae* spp.	65,231	106,980	114,798	165,740	191,060
RHY	Common roughy	*Paratrachichthys trailli*	41,449	115,953	66,943	63,535	159,567
LCH	Long-nosed chimaera	*Harriotta raleighana*	123,384	110,550	128,018	137,950	157,373
FHD	Deepsea flathead	*Hoplichthys haswelli*	77,543	105,271	99,009	99,737	146,791
WSQ	Warty squid	*Onykia* spp.	93,082	88,731	83,629	173,382	139,573
BEN	Scabbardfish	*Benthodesmus* spp.	49,013	44,419	50,394	89,818	132,784
BSH	Seal shark	*Dalatias licha*	128,003	86,591	80,944	138,535	113,409
SFI	Starfish	-	44,432	47,871	72,546	69,777	95,790
BBE	Banded bellowsfish	*Centriscops humerosus*	17,157	38,848	30,762	19,397	80,948
DWD	Deepwater dogfish	-	59,177	68,246	70,470	70,599	78,880
BEL	Bellowsfish	*Centriscops* spp.	45,255	53,040	55,510	105,659	70,883
CRB	Crab (unspecified)	-	35,050	36,770	79,893	56,969	68,321
CON	Conger eel	Family Congridae	91,297	106,921	41,306	42,406	63,308
BCD	Black cod	*Paranotothenia magellanica*	16,966	9,782	37,037	77,722	55,895
DWE	Deepwater eel (unspecified)	-	14,778	16,496	21,980	39,523	55,298
HJO	Johnson's cod	*Halargyreus johnsonii*	16,637	20,140	34,461	60,923	55,099

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
MOD	Morids	*Moridae* spp.	37,066	62,179	63,278	98,793	53,104
HCO	Hairy conger	*Bassanago hirsutus*	44,559	62,825	90,138	79,682	52,687
ETL	Lucifer dogfish	*Etmopterus lucifer*	20,535	31,899	23,591	36,108	51,618
SRH	Silver roughy	*Hoplostethus mediterraneus*	48,077	62,776	24,537	32,653	48,633
CDO	Capro dory	*Capromimus abbreviatus*	60,965	58,345	34,028	28,096	47,695
RUD	Rudderfish	*Centrolophus niger*	54,624	56,702	56,890	46,272	38,736
CYP	Longnose velvet dogfish	*Centroscymnus crepidater*	37,728	10,282	20,410	25,632	33,895
THR	Thresher shark	*Alopias vulpinus*	25,080	30,725	23,158	31,524	33,579
TOA	Toadfish	*Neophrynichthys* spp.	24,045	28,421	14,283	26,795	32,451
CAR	Carpet shark	*Cephaloscyllium isabellum*	40,396	59,859	26,390	47,759	32,448
BEE	Basketwork eel	*Diastobranchus capensis*	14,341	12,531	22,296	24,158	29,746
ALB	Albacore tuna	*Thunnus alalunga*	34,611	22,283	3,890	2,689	29,590
POP	Porcupine fish	*Tragulichthys jaculiferus*	32,241	30,885	25,819	31,053	27,543
SUN	Sunfish	*Mola mola*	51,112	19,599	12,753	12,326	27,321
NSD	Northern spiny dogfish	*Squalus griffin*	24,561	49,714	26,851	29,405	27,078
PIG	Pigfish	*Congiopodus leucopaecilus*	7,453	7,443	12,915	16,721	20,691
WIT	Witch	*Arnoglossus scapha*	14,962	15,353	17,667	17,432	20,593
SBO	Southern boarfish	*Pseudopentaceros richardsoni*	2,300	11,035	7,045	23,922	18,235
PLS	Plunket's shark	*Centroscymnus plunketi*	7,075	8,746	9,964	15,562	16,215
SSH	Slender smooth-hound	*Gollum attenuates*	8,036	20,194	27,998	12,722	15,967
YBO	Yellow boarfish	*Pentaceros decacanthus*	6,307	8,133	6,340	7,730	15,759
SCO	Swollenhead conger	*Bassanago bulbiceps*	16,043	8,761	28,655	26,188	15,480
SBK	Spineback	*Notacanthus sexpinis*	8,176	19,313	8,665	5,792	14,103
LAN	Lanternfish	*Myctophidae* spp.	2,239	3,359	6,505	5,865	13,579
OPE	Orange perch	*Lepidoperca aurantia*	18,273	10,489	23,606	15,001	13,267
CHI	Chimaera spp.	*Chimaeras pp.*	1,856	1,255	8,044	6,565	11,740
TSQ	*Todarodes filippovae*	*Todarodes filippovae*	1,866	5,645	6,802	7,709	11,644
WHX	Unicorn rattail	*Trachyrincus* sp.	4,356	25,646	8,651	18,045	10,252
CHG	Purple chimaera	*Chimaera lignaria*	3,246	1,847	5,287	12,082	9.750

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
CBE	Crested bellowsfish	*Notopogon lilliei*	39,301	36,060	32,724	25,243	9,604
BSL	Black slickhead	*Xenodermichthys* spp.	3,201	2,575	1,920	3,552	9,121
HAG	Hagfish	*Eptatretus cirrhatus*	39,932	6,709	9,547	19,187	8,954
OPI	Umbrella octopus	*Opisthoteuthis* spp.	5,030	8,199	7,273	6,540	7,776
OSK	Skate, other	Family Rajidae	6,497	13,195	7,590	3,815	7,717
CYO	Smooth skin dogfish	*Centroscymnus owstoni*	1,016	3,373	7,773	4,299	7,602
MAN	Finless flounder	*Neoachiropsetta milfordi*	2,184	1,134	575	1,925	7,372
PAH	Opah	*Lampris immaculatus*	16,509	9,986	2,067	7,004	7,302
DEA	Dealfish	*Trachipterus trachypterus*	2,997	3,285	2,510	5,956	7,237
ERA	Electric ray	*Torpedo fairchildi*	11,988	14,589	7,724	9,722	7,127
SQX	Squid (unspecified)	-	3,137	1,111	1,666	4,231	6,950
VCO	Violet cod	*Antimora rostrata*	497	40	2,387	1,114	6,579
DSK	Deepwater spiny skate	*Amblyraja hyperborean*	933	1,793	592	3,445	6,391
HEX	Sixgill shark	*Hexanchus griseus*	2,525	4,595	8,842	7,592	6,361
SCG	Scaly gurnard	*Lepidotrigla brachyoptera*	7,805	13,797	7,196	8,479	6,358
EPL	Cardinal fish, bigeye	*Epigonus lenimen*	4,784	5,143	3,964	6,789	5,784
TOP	Pale toadfish	*Neophrynichthys angustus*	1,825	4,053	4,545	4,267	5,297
GON	Sandfish	*Gonorynchus* spp.	9,945	13,406	4,398	5,653	4,501
UNI	Unidentified fish	-	18,982	2,048	4,872	1,658	4,177
PDG	Prickly dogfish	*Oxynotus bruniensis*	3,725	5,456	2,103	2,744	4,033
DSP	Deepsea pigfish	*Congiopodus coriaceus*	18	79	30	448	3,884
CUC	Cucumber fish	*Chlorophthalmus nigripinnis*	561	2,194	1,685	429	3,853
VSQ	Violet squid	*Histioteuthis* spp.	3,943	3,993	4,810	7,297	3,607
MDO	Mirror dory	*Zenopsis nebulosa*	6,799	8,947	5,397	6,918	3,524
URO	Sea urchin, other (except SUR)	-	4,104	1,802	401	1,231	3,302
EUC	Eucla cod	*Euclicthys polynemus*	344	546	3,602	1,567	2,845
OPA	Opalfish	*Hemerocoetes* spp.	1,084	11,736	7,607	15,001	2,789
PRA	Prawn (unspecified)	-	203	1,822	406	662	2,758

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
JFI	Jellyfish (unspecified)	-	19,373	4,084	270	14,899	2,637
HYD	Hydrolagus spp.	*Hydrolagus* spp.	5	-	3,275	-	2,136
GSQ	Giant squid	*Architeuthis* sp.	1,652	1,479	1,475	3,118	2,134
SAL	Salps	-	12,820	13,553	23,057	9,173	2,091
YCO	Yellow cod	*Parapercis gilliesi*	2,032	1,001	521	969	2,045
EGR	Eagle ray	*Myliobatis tenuicaudatus*	1,087	625	992	2,619	1,748
HTH	Sea cucumber (other than *Stichopus mollis*)	Holothuroidea (Class)	273	336	747	860	1,721
SSF	Shortbill spearfish	*Tetrapturus angustirostris*	-	-	-	-	1,630
SCD	Smallscaled cod	*Paranotothenia microlepidota*	1,021	141	327	311	1,514
TRS	Cape scorpionfish	*Trachyscorpia capensis*	6	303	197	1,779	1,498
SEV	Broadnose sevengill shark	*Notorynchus cepedianus*	2,044	2,225	2,025	2,255	1,491
BSP	Big-scale pomfret	*Taractichthys longipinnis*	960	1,528	1,388	718	1,432
JGU	Japanese gurnard	*Pterygotrigla picta*	2,022	4,220	6,667	4,415	1,419
BRZ	Brown stargazer	*Xenocephalus armatus*	634	159	319	992	1,402
SMC	Small-headed cod	*Lepidion microcephalus*	367	1,488	567	344	1,233
BER	Electric ray	*Typhlonarke* spp.	906	14,589	1,498	412	1,186
SBR	Southern bastard cod	*Pseudophycis barbata*	1,657	2,577	918	1,177	944
DCS	Dawson's cat shark	*Halaelurus dawsoni*	168	211	165	493	931
EEL	Eels, Marine (unspecified)	-	1,922	247	1,160	52	844
BRA	Short-tailed black ray	*Dasyatis brevicaudata*	168	308	87	347	812
BAT	Slickheads	*Alepocephalidae* (Family)	-	-	-	-	800
SNI	Snipefish	*Macroramphosus scolopax*	1,558	89	247	84	791
PHO	Lighthouse fish	*Photichthys argenteus*	408	318	1,102	1,493	785
HEP	Sharpnose sevengill shark	*Heptranchias perlo*	501	902	218	478	685
RCH	Widenosed chimaera	*Rhinochimaera pacifica*	107	135	12	691	661
PLZ	Scaly stargazer	*Pleuroscopus pseudodorsalis*	46	717	125	78	646
OFH	Oilfish	*Ruvettus pretiosus*	699	554	202	449	629
MRL	Moray cods	*Muraenolepididae* sp.	-	-	707	1,406	533

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
WHE	Whelks	-	247	480	361	176	487
PSK	Longnosed deepsea skate	*Bathyraja shuntovi*	768	495	-	-	479
EPR	Cardinal fish, robust	*Epigonus robustus*	255	438	4	267	446
WRA	Whiptail ray	*Dasyatis thetidis*	1,274	1,025	974	2,831	435
DWO	Deepwater octopus	*Graneledone* spp.	4,283	5,473	868	784	421
HYP	Pointynose blue ghost shark	*Hydrolagus trolli*	-	151	75	97	358
DAP	Antlered Crab	*Dagnaudus petterdi*	-	-	-	-	325
TAM	Tam O'Shanter urchins	-	1,985	1,479	1,214	1,348	323
RSQ	*Ommastrephes bartrami*	*Ommastrephes bartrami*	500	80	39	565	315
BWH	Bronze whaler shark	*Carcharhinus brachyurus*	142	200	268	844	300
APR	Cat shark	*Apristurus* spp.	257	2,461	62	153	295
API	Alert pigfish	*Alertichthys blacki*	67	162	129	63	291
FMA	*Fusitriton magellanicus*	*Fusitriton magellanicus*	308	618	499	2,803	267
ROC	Rock cod	*Lotella rhacina*	-	3,200	151	8	249
CHP	Chimaera, purple	*Chimaera* sp.	175	325	559	815	245
MNI	Krill, squat lobsters	*Munida* spp.	-	-	-	8	244
BEM	Blue marlin	*Makaira nigricans*	-	-	-	-	200
SFN	Spinyfin	*Diretmichthys parini*	8	9	-	-	197
HSI	Jack-knife prawn	*Haliporoides sibogae*	1,540	376	255	-	150
LSK	Long-tailed skate	*Arhynchobatis asperrimus*	650	196	657	41	149
AGR	Ribbonfish	*Agrostichthys parkeri*	101	332	390	122	142
PSY	Blobfish	*Psychrolutes marcidus*	-	-	-	-	138
LEG	Giant lepidion	*Lepidion schmidti, L. inosimae*	455	222	487	347	134
LFB	Long-finned boarfish	*Zanclistius elevatus*	118	10	14	824	120
CYL	Portuguese dogfish	*Centroscymnus coelolepis*	1,010	3,959	293	634	114
PAG	Pagurid	-	34	1	6	76	102
TUB	Tasmanian ruffe	*Tubbia tasmanica*	-	-	-	-	94
SPI	Spider crabs (unspecified)	-	133	101	72	34	93

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
STR	Stingray (unspecified)	-	65	156	281	415	90
BOA	Sowfish	*Paristiopterus labiosus*	23	12	9	390	88
RAG	Ragfish	*Icichthys australis*	97	147	28	20	79
TOD	Dark toadfish	*Neophrynichthys latus*	15	82	324	182	75
OAR	Oarfish	*Regalecus glesne*	126	68	20	2	70
ETP	Smooth lanternshark	*Etmopterus pusillius*	-	-	-	-	65
SKJ	Skipjack tuna	*Katsuwonus pelamis*	1,798	1,933	30	92	62
CUB	Cubeheads	*Cubiceps* spp.	124	38	523	388	61
RDO	Rosy dory	*Cyttopsis rosea*	964	64	94	728	59
COD	Cod (unspecified)	-	167	199	611	44	58
MIQ	Warty squid	*Onykia ingens*	7	363	32	39	56
BNO	*Benthoctopus spp*	*Benthoctopus spp*	-	-	-	-	55
MOL	Molluscs (unspecified)	-	-	-	-	-	55
GVO	Golden volute	*Provocator mirabilis*	14	12	-	8	53
SNE	Snubnosed eel	*Simenchelys parasitica*	-	1	-	1	49
GPF	Girdled wrasse	*Notolabrus cinctus*	124	84	80	46	48
BPE	Butterfly perch	*Caesioperca Lepidoptera*	131	57	68	117	46
ECN	Echinoid (unspecified)	-	-	-	-	-	45
BCA	Barracudina	*Magnisudis prionosa*	458	150	139	148	40
BSQ	Broad squid	*Sepioteuthis australis*	26	2	3	286	38
SYN	Cutthroat eels (except Basketwork eels)	-	142	108	2	133	33
CSH	Cat shark	Other than *Apristurus* spp.	99	2,461	33	811	30
SHE	Sherwood's dogfish	*Scymndalatias sherwoodi*	-	-	-	-	30
NCA	Hairy red swimming crab	*Netocarcinus antarcticus*	1	-	2	15,184	29
FRS	Frill shark	*Chlamydoselachus anguineus*	-	16	-	1	29
AFO	Royal red prawn	*Aristaeomorpha foliacea*	-	-	-	-	26
LAT	Lancetfish	*Alepisaurus spp*	-	-	-	-	21
BLO	Feeler fish	*Bathypterois longifilis*	-	-	-	-	20

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
SIW	Siphon whelk	*Penion cuvierianus/ sulcatus*	-	-	-	-	14
CHX	Pink frogmouth	*Chaunax pictus*	34	243	18	65	13
PGR	Plunderfish	*Pogonophryne permitini*	-	-	30	33	13
SHR	Sea hare	Aplysiomorpha (order)	-	-	-	-	12
ABR	Shortsnouted lancetfish	*Alepisaurus brevirostris*	-	7		19	11
SPF	Scarlet wrasse	*Pseudolabrus miles*	116	55	26	29	10
CAN	Brown botula	*Cataetyx niki*	-	-	-	-	10
SLG	Sea slug	*Scutus breviculus*	-	-	-	-	9
TET	Squaretail	*Tetragonurus cuvieri*	-	-	-	-	8
SDR	Spiny seadragon	*Solegnathus spinosissimus*	-	-	-	-	8
COT	Bonyskull toadfish	*Cottunculus nudus*	-	-	-	-	8
PAL	Barracudinas	-	2	9	34	7	8
SDF	Spotted flounder	*Azygopus pinnifasciatus*	65	126	5	20	8
SPK	Spikefish	*Macrorhampho sodes uradoi*	-	-	-	-	8
FAN	Fanfish	*Pterycombus petersii*	-	-	-	-	8
TIN	Tinselfish	*Xenolepidichthy s dalgleishi*	-	41	4	-	7
BCR	Blue cusk eel	*Brotulotaenia crassa*	13	3	1	-	7
CAM	Sabre prawn	*Campylonotus rathbunae*	-	4	-	40	7
RAY	Rays	N/A	410	441	25	299	7
SBI	Bigscaled brown slickhead	*Alepocephalus australis*	-	-	-	-	6
SEE	Silver conger	*Gnathophis habenatus*	-	-	9	7	6
BRE	Codlet	*Bregmaceros macclellandi*	-	-	-	-	5
WIN	Wingfish	*Pteraclis velifera*	-	-	-	-	5
SQI	Squirrelfish	*Pristilepis oligolepis*	-	-	-	-	4
BAF	Black anglerfish	-	-	-	-	-	3
DIS	Discfish	*Diretmus argenteus*	10	8	7	3	2
TRA	Roughies	Family Trachichthyidae	-	-	-	17	2
SAU	Saury	*Scomberesox saurus*	-	-	-	-	2

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
VOL	Volute	Family Volutidae	81	175	26	38	2
SLS	Slender sole	*Peltorhampus tenuis*	-	-	-	-	2
MST	Scaleless black dragonfishes	-	-	2	-	12	2
BDA	Barracuda	*Sphyraena novaehollandiae*	-	-	-	-	1
FLU	Perch	*Perca fluvitalis*	-	-	-	-	1
GRC	Grenadier cod	*Tripterophycis gilchristi*	339	136	2,542	2	1
BRC	Northern bastard cod	*Pseudophycis breviuscula*	-	5	65	70	1
WLP	Wavy line perch	*Lepidoperca tasmanica*	8	1	33	-	1
SPP	Splendid perch	*Callanthias allporti*	4	-	7	4	1
SHO	Seahorse	*Hippocampus abdominalis*	-	-	-	-	1
CST	Manefish	*Caristius spp*	-	-	-	-	1
CTN	*Calliostoma turnerarum*	*Calliostoma turnerarum*	-	-	-	-	1
LUC	*Luciosudis normani*	*Luciosudis normani*	-	-	-	-	1
SSC	Giant masking crab	*Leptomithrax australis*	-	10	-	2,077	-
GAS	Gastropods	-	-	-	237	636	-
UNX	All and any unidentified species	-	362	1,020	148	318	-
SSM	Smallscaled brown slickhead	*Alepocephalus antipodianus*	240	241	206	144	-
SPZ	Spotted stargazer	*Genyagnus monopterygius*	137	189	5	50	-
PMA	Pink maomao	*Caprodon longimanus*	27	-	-	34	-
WSE	Wrasses	N/A	2	1	14	18	-
BAC	Codheaded rattail	*Bathygadus cottoides*	-	-	6	6	-
SDE	Seadevil	*Cryptopsaras couesi*	4	5	3	3	-
CHA	Viper fish	*Chauliodus sloani*	129	70	1	2	-
DHO	Deepsea urchin	*Dermechinus horridus*	-	-	-	2	-
FLO	Flounder (unspecified)	-	-	-	-	2	-
PSP	Scissortail	*Psenes pellucidus*	10	3	7	2	-
SAM	Quinnat salmon	*Omcorhynchus tshawytscha*	-	4	67	2	-
COL	Olivers rattail	*Coelorinchus oliverianus*	-	-	-	1	-

Species code	Common name	Scientific name	2013/14	2014/15	2015/16	2016 /17	2017/18
LEP	Escolar	*Lepidocybium flavobrunneum*	-	-	-	1	-
MOB	Blunthead lightfish	*Margrethia obtusirostra*	2	-	4,590	-	-
NTU	Northern bluefin tuna	*Thunnus thynnus*	49	-	265	-	-
MUR	Moray cod	*Muraenolepis marmoratus*	-	6	50	-	-
BPF	Banded wrasse	*Notolabrus fucicola*	-	-	29	-	-
WHR	White rattail	*Trachyrincus longirostris*	250	621	10	-	-
MOR	Moray eel	*Muraenidae* spp.	-	11	6	-	-
AER	Aeneator recens	*Aeneator recens*	1	-	2	-	-
INV	Invertebrate (unknown)	-	-	-	2	-	-
EPD	Cardinal fish, white	*Epigonus denticulatus*	-	6	1	-	-
SLL	Slipper lobsters	*Scyllaridae* spp.	1	5	1	-	-
TAS	Rough pomfret	*Taractes asper*	-	-	1	-	-
MCA	Ridge scaled rattail	*Macrourus carinatus*	-	2,328	-	-	-
GSE	Snake mackerel	*Gempylus serpens*	-	700	-	-	-
LHO	Omega prawn	*Lipkius holthuisi*	2	4	-	-	-
SPT	Purple-heart urchin	*Spatangus multispinus*	8	1	-	-	-
SOP	Pacific sleeper shark	*Somniosus pacificus*	-	1	-	-	-
BOT	Lefteye flounders	*Bothidae* spp.	116	-	-	-	-
RRC	Red scorpion fish	*Scorpaena cardinalis, S. papillosus*	6	-	-	-	-
NOT	Antarctic rock cods	*Paranotothenia* spp.	1	-	-	-	-

Appendix IV: Cost recovery levy analysis

Table 38: Cost recovery levies ($) for deepwater stocks 2017/18

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2017/18 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
BAR 4	12,462	3,684	1,956	400	10,221	371	-541	-52	28,501
BAR 5	28,656	8,470	5,093	1,042	2,245	840	-1,632	-229	44,484
BAR 7	46,979	13,886	73,372	15,088	38,528	13,145	-2,497	5	198,506
BYX 1	5,258	1,554	26	0	182	0	-348	0	6,673
BYX 10	268	79	1	0	0	0	-8	0	341
BYX 2	41,373	12,229	13,188	1,689	1,434	0	-3,586	-339	65,988
BYX 3	23,711	7,009	8,600	1,100	822	0	-20,419	-173	20,651
BYX 7	1,411	417	7	0	49	0	-78	0	1,806
BYX 8	550	163	3	0	19	0	-23	0	712
CDL 1	16,513	4,881	82	0	3,581	0	-600	0	24,458
CDL 10	0	0	0	0	0	0	0	0	0
CDL 2	6,049	1,788	1,929	247	1,312	0	-1,907	-247	9,171
CDL 3	2,684	793	13	0	582	0	-101	0	3,972
CDL 4	908	268	5	0	197	0	-32	0	1,346
CDL 5	303	89	2	0	66	0	-12	0	448
CDL 6	13	4	0	0	3	0	-1	0	20
CDL 7	537	159	3	0	116	0	-21	0	793
CDL 8	0	0	0	0	0	0	0	0	0
CDL 9	55	16	0	0	11	0	-2	0	80
CHC 1	28	8	0	0	0	0	0	0	36
CHC 10	0	0	0	0	0	0	0	0	0
CHC 2	28	8	0	0	0	0	0	0	36
CHC 3	11	3	0	0	0	0	0	0	14
CHC 4	11	3	0	0	0	0	0	0	14
CHC 5	11	3	0	0	0	0	0	0	14
CHC 6	11	3	0	0	0	0	0	0	14
CHC 7	11	3	0	0	0	0	0	0	14
CHC 8	11	3	0	0	0	0	0	0	14
CHC 9	11	3	0	0	0	0	0	0	14
EMA 3	2,197	650	11	0	83	45	-97	0	2,889
EMA 7	18,875	5,579	29,479	6,060	38,343	387	-81,456	-4,371	12,896
FRO 3	3,972	1,174	20	0	151	0	-120	0	5,196
FRO 4	116	34	1	0	4	0	-15	0	140
FRO 5	2,452	725	12	0	93	0	-83	0	3,199
FRO 6	74	22	0	0	3	0	-5	0	95
FRO 7	32,485	9,602	162	0	3,348	0	-1,253	0	44,344
FRO 8	1,476	436	7	0	2,172	0	-340	0	3,752
FRO 9	390	115	2	0	14	0	-73	0	449
GSC 1	3	1	0	0	0	0	0	0	4
GSC 10	0	0	0	0	0	0	0	0	0
GSC 3	39	11	0	0	0	0	0	0	50
GSC 5	52	15	0	0	0	0	0	0	68
GSC 6A	61	18	0	0	0	0	-1	0	78
GSC 6B	652	193	3	0	0	0	-1	0	847

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2017/18 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
GSH 4	1,501	444	7	0	52	31	-50	0	1,986
GSH 5	602	178	3	0	21	14	-26	0	792
GSH 6	465	138	2	0	16	0	-23	0	598
GSP 1	6,668	1,971	33	0	231	137	-293	1	8,748
GSP 5	2,635	779	13	0	91	0	-118	0	3,400
GSP 7	1,020	301	5	0	35	21	-41	0	1,341
HAK 1	69,270	20,475	10,866	2,220	101,471	1,420	-1,671	-266	203,785
HAK 10	162	48	1	0	0	0	-4	0	207
HAK 4	30,460	9,004	4,780	973	382,764	625	44,890	-133	473,363
HAK 7	118,705	35,088	30,374	6,275	33,762	2,761	-27,610	-1,250	198,104
HOK 1	1,378,141	407,361	16,250	181,371	1,697,752	104,067	14,041	-31,691	3,767,293
HOK 10	110	33	1	0	0	0	-3	0	140
JMA 3	27,428	8,107	860,579	1,878	1,970	1,453	6,118	-583	906,952
JMA 7	90,160	26,650	140,813	28,955	150,253	1,849	-246,192	-30,803	161,684
KIC 1	28	8	0	0	0	0	0	0	36
KIC 10	0	0	0	0	0	0	0	0	0
KIC 2	28	8	0	0	0	0	0	0	36
KIC 3	28	8	0	0	0	0	0	0	36
KIC 4	28	8	0	0	0	0	0	0	36
KIC 5	28	8	0	0	0	0	0	0	36
KIC 6	28	8	0	0	0	0	0	0	36
KIC 7	28	8	0	0	0	0	0	0	36
KIC 8	28	8	0	0	0	0	0	0	36
KIC 9	28	8	0	0	0	0	0	0	36
LDO 1	3,518	1,040	18	0	122	0	-149	0	4,548
LDO1 0	21	6	0	0	0	0	0	0	26
LDO 3	13,390	3,958	67	0	464	0	-482	0	17,396
LIN 3	80,550	23,809	24,020	5,612	382,113	5,964	7,484	-368	529,184
LIN 4	154,335	45,619	41,198	10,756	385,588	7,753	6,613	-723	651,140
LIN 5	136,748	40,421	25,664	5,154	45,731	8,553	-199	-123	261,949
LIN 6	314,722	93,028	82,503	23,316	95,078	6,453	-9,046	-295	605,760
LIN 7	112,744	33,326	75,500	10,209	42,729	4,996	-26,106	-1,243	252,156
OEO 1	23,516	6,951	2,444	300	6,086	883	-38,996	-1,183	0
OEO 10	94	28	0	0	0	0	-4	0	119
OEO 3A	31,511	9,314	11,425	1,463	204,070	2,120	-256,320	-3,583	0
OEO 4	28,219	8,341	10,234	1,310	511,201	1,898	-54,472	-493	506,238
OEO 6	56,438	16,682	5,865	726	14,606	2,119	-3,917	-183	92,336
ORH 1	36,873	10,899	11,757	1,505	9,244	1,384	-3,560	-379	67,723
ORH 10	341	101	2	0	61	0	-11	0	494
ORH 2A	21,956	6,490	6,999	894	781,144	2,209	-2,059	-184	817,449
ORH 2B	2,675	791	855	110	95,166	100	-346	-30	99,321
ORH 3A	5,607	1,657	1,787	226	199,482	210	-858	-84	208,029
ORH 3B	165,682	48,974	76,472	9,829	200,521	13,710	-123,043	-1,241	390,903
ORH 7A	51,935	15,351	16,458	2,105	12,828	0	-1,088	-2,070	95,519
ORH 7B	34	10	0	0	9	0	-53	0	1
PRK 1	1,153	341	6	0	40	0	-44	0	1,495
PRK 10	0	0	0	0	0	0	0	0	0

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2017/18 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
PRK 2	165	49	1	0	5	0	-6	0	213
PRK 3	47	14	0	0	1	0	-2	0	61
PRK 4A	47	14	0	0	1	0	-2	0	61
PRK 5	47	14	0	0	1	0	-2	0	61
PRK 6A	47	14	0	0	1	0	-2	0	61
PRK 6B	47	14	0	0	1	0	-2	0	61
PRK 7	47	14	0	0	1	0	-2	0	61
PRK 8	47	14	0	0	1	0	-2	0	61
PRK 9	47	14	0	0	1	0	-2	0	61
PTO 1	6,812	2,013	34	0	0	0	-10	0	8,849
RBT 1	102	30	1	0	4	0	-4	0	133
RBT 10	0	0	0	0	0	0	0	0	0
RBT 3	2,956	874	28,300	95	102	0	-427	0	31,900
RBT 7	15,247	4,507	76	0	528	0	-584	0	19,773
RBY 1	9,420	2,785	47	0	326	0	-252	0	12,326
RBY 10	0	0	0	0	0	0	0	0	0
RBY 2	1,608	475	512	63	56	0	-1,629	-63	1,022
RBY 3	107	32	1	0	5	0	-2	0	142
RBY 4	74	22	0	0	3	0	-99	0	0
RBY 5	0	0	0	0	0	0	0	0	0
RBY 6	0	0	0	0	0	0	0	0	0
RBY 7	199	59	1	0	7	0	-99	0	166
RBY 8	94	28	0	0	4	0	-4	0	123
RBY 9	192	57	1	0	7	0	-8	0	249
RIB 3	4,569	1,350	23	0	328	0	-212	0	6,058
RIB 4	4,852	1,434	24	0	349	0	-2,268	0	4,391
RIB 5	451	133	2	0	32	0	-448	0	170
RIB 6	2,327	688	12	0	167	0	-3,038	0	156
RIB 7	3,379	999	17	0	243	0	-159	0	4,479
RIB 8	9	3	0	0	0	0	0	0	12
SBW 1	405	120	2	0	29	0	-3	0	552
SBW 6A	9,478	2,802	47	0	681	356	-430	0	12,934
SBW 6B	18,317	5,414	540	2,825	106,952	1,232	-10,177	4	125,108
SBW 6I	339,838	100,452	11,156	42,387	44,730	12,758	-125,413	-17	425,890
SBW 6R	42,383	12,528	142,150	5,286	3,044	1,591	920	-2	207,901
SCI 1	30,229	8,935	17,854	5,034	589,176	620	-1,054	-185	650,608
SCI 10	0	0	0	0	0	0	0	0	0
SCI 2	39,731	11,744	17,051	6,617	774,376	815	-1,287	-188	848,859
SCI 3	90,270	26,683	22,601	15,028	100,440	2,684	-40,079	-551	217,076
SCI 4A	26,745	7,906	50,464	4,455	58,298	1,435	-928	-171	148,205
SCI 5	7,612	2,250	38	0	547	0	-368	0	10,080
SCI 6A	65,769	19,441	15,239	10,952	26,046	14,309	-126,495	-25,261	0
SCI 6B	9,516	2,813	47	0	684	195	-387	-71	12,797
SCI 7	19,092	5,643	95	0	1,371	0	-689	0	25,512
SCI 8	952	281	5	0	68	0	-46	0	1,260
SCI 9	6,661	1,969	33	0	478	0	-322	0	8,819
SKI 3	6,484	1,917	32	0	225	133	-232	2	8,560

Fish stock	Compliance	Registry	Observers		Research		Under/over recovery		2017/18 total
	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	
SKI 7	5,164	1,526	26	0	179	106	-202	1	6,800
SPD 4	5,818	1,720	29	0	259	119	-221	1	7,724
SPD 5	8,656	2,558	4,290	4,648	2,620	3,000	-18,124	-7,648	0
SPE 3	9,183	2,714	46	0	47,200	188	-2,812	2	56,522
SPE 4	7,265	2,147	36	0	276	149	-299	1	9,575
SPE 5	169	50	1	0	19	0	-74	0	165
SPE 6	20	6	0	0	1	0	-2	0	24
SPE 7	724	214	4	0	78	15	-270	0	764
SQU 10T	157	46	1	0	0	0	-4	0	200
SQU 1J	78,437	23,185	37,061	0	0	0	-19,463	0	119,219
SQU 1T	753,913	222,847	24,134	62,018	90,924	32,439	-242,521	-717	943,037
SQU 6T	550,600	162,750	198,640	45,290	164,870	130,687	-201,493	-7,608	1,043,736
SWA 1	31,614	9,345	143,228	1,673	2,360	1,137	-2,546	-356	186,455
SWA 10	114	34	1	0	0	0	-3	0	145
SWA 3	33,071	9,775	8,096	1,057	23,325	1,752	-2,858	-144	74,075
SWA 4	39,295	11,615	5,220	2,688	23,813	2,190	-3,663	-495	80,662
WWA 1	78	23	0	0	6	0	-3	0	104
WWA 10	0	0	0	0	0	0	0	0	0
WWA 2	1,941	574	10	0	152	40	-58	0	2,658
WWA 3	12,989	3,839	65	0	1,018	266	-541	2	17,639
WWA 4	7,952	2,351	40	0	623	163	-285	2	10,845
WWA 5B	54,378	16,074	13,024	1,978	4,261	1,115	-2,277	-352	88,201
WWA 7	3,271	967	16	0	0	67	-109	1	4,213
WWA 8	21	6	0	0	0	256	-1	0	282
WWA 9	0	0	0	0	0	2	0	0	2
Grand Total	**5,591,593**	**1,652,805**	**2,331,353**	**532,907**	**7,529,585**	**395,336**	**-1,646,971**	**-126,125**	**16,260,484**

Table 39: Levies by stock as a percent of landed value for the 2017/18 fishing year[118]

Fish stock	Total levies ($)	Landings (kg)	Port price ($/kg)	Landed value ($)	Levies as % landed value
BAR 4	28,501	2,478,783	0.30	743,635	3.8
BAR 5	44,484	7,128,016	0.25	1,782,004	2.5
BAR 7	198,506	8,356,093	0.31	2,590,389	7.6
BYX 1	6,673	73,367	1.27	93,176	7.2
BYX 2	65,988	1,691,754	1.91	3,231,250	2.0
BYX 3	20,651	754,069	1.71	1,289,458	1.6
BYX 7	1,806	11,759	1.27	14,934	12.1
CDL 1	24,458	2,296	1.00	2,296	1,065.2
CDL 2	9,171	236,167	1.00	236,167	3.9
CDL 3	3,972	131,124	1.00	131,124	3.0
CDL 4	1,346	13,226	1.00	13,266	10.1
CDL 5	448	5,733	1.00	5,733	7.8
CDL 7	793	10,840	1.00	10,840	7.3
EMA 3	2,889	45,687	0.41	18,732	15.4
EMA 7	12,896	3,253,741	0.41	1,334,032	1.0
FRO 3	5,196	11,901	1.64	19,518	26.6
FRO 4	140	16,255	0.30	4,877	2.9
FRO 5	3,199	43,655	1.32	57,625	5.6
FRO 7	44,344	2,062,898	0.90	1,856,608	2.4
FRO 8	3,752	380,156	0.17	64,627	5.8
FRO 9	449	64,909	0.21	13,631	3.3
GSC 6B	847	4,203	0.20	841	100.7
GSH 4	1,986	197,668	0.29	57,330	3.5
GSH 5	792	64,287	0.40	25,715	3.1
GSH 6	598	71,115	0.36	25,601	2.3
GSP 1	8,748	524,926	0.42	220,469	4.0
GSP 5	3,400	469,861	0.42	197,342	1.7
GSP 7	1,341	24,744	0.42	10,393	12.9
HAK 1	203,785	1,350,269	1.36	1,836,366	11.1
HAK 4	473,363	267,402	1.23	328,905	144.0
HAK 7	198,104	3,086,353	1.12	3,456,713	5.7
HOK1	3,767,293	135,396,996	0.67	90,715,987	4.15
JMA 3	906,952	5,559,110	0.23	1,278,595	70.9
JMA 7	161,684	34,189,987	0.20	6,837,997	2.4
LDO 1	4,548	244,278	1.52	371,303	1.2
LDO 3	17,396	320,245	1.58	505,987	3.4
LIN 3	529,184	2,170,973	2.84	6,165,563	8.6
LIN 4	651,140	2,636,486	2.67	7,039,418	9.2
LIN 5	261,949	4,034,112	2.51	10,125,621	2.6
LIN 6	605,760	4,845,221	2.69	13,033,644	4.6
LIN 7	252,156	3,487,150	2.66	9,275,819	2.7
OEO 4	506,238	2,867,131	0.68	1,949,649	26.0
OEO 6	92,336	2,138,052	0.68	1,453,875	6.4
ORH 1	67,723	881,364	1.91	1,683,921	4.0
ORH 2A	817,449	484,836	3.27	1,585,414	51.6

[118] 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
ORH 2B	99,321	45,701	3.24	148,071	67.1
ORH 3A	208,029	116,926	2.30	268,930	77.4
ORH 3B	390,903	4,942,111	2.41	11,910,487	3.3
ORH 7A	95,519	1,601,069	2.36	3,778,523	2.5
PRK 1	1,495	448	3.42	1.532	97.6
PTO 1	8,849	4,485	10.00	44,850	19.7
RBT 1	133	1,897	0.39	740	18.0
RBT 3	31,900	1,686,568	0.10	168,657	18.9
RBT 7	19,773	75,312	0.39	29,372	67.3
RBY 1	12,326	70,637	2.28	161,052	7.7
RBY 2	1,022	103,527	0.27	27,953	3.7
RBY 7	166	5,298	0.44	2,331	7.1
RBY 9	249	929	0.73	678	36.7
RIB 3	6,058	197,640	0.84	166,018	3.6
RIB 4	4,391	182,482	0.99	180,657	2.4
RIB 5	170	35,798	0.63	22,553	0.8
RIB 6	156	181,965	0.73	132,834	0.1
RIB 7	4,479	290,494	0.74	213,966	2.1
SBW 1	552	50,533	0.30	15,160	3.6
SBW 6A	12,934	202,017	0.42	84,847	15.2
SBW 6B	125,108	2,423,249	0.56	1,357,019	9.2
SBW 6I	425,890	18,334,038	0.63	11,550,443	3.7
SBW 6R	207,901	36,081	0.56	20,205	1,029.0
SCI 1	650,608	119,939	18.31	2,196,083	29.6
SCI 2	848,859	152,374	18.87	1,875,298	45.3
SCI 3	217,076	336,557	19.29	6,492,185	3.3
SCI 4A	148,205	111,402	16.20	1,804,712	8.2
SCI 5	10,080	67	13.83	927	1,087.4
SCI 6B	12,797	11	13.83	152	8,419.1
SCI 7	25,512	4,231	18.50	78,274	32.6
SKI 3	8,560	466,036	1.57	731,677	1.2
SKI 7	6,800	583,175	1.25	728,969	0.9
SPD 4	7,724	1,733,848	0.26	450,800	1.7
SPE 3	56,522	624,574	0.67	418,465	13.5
SPE 4	9,575	490,347	0.58	284,401	3.4
SPE 5	165	12,463	0.34	4,237	3.9
SPE 7	764	118,037	0.64	75,544	1.0
SQU 1T	943,037	11,984,236	1.22	14,620,767	6.4
SQU 6T	1,043,736	11,086,080	1.24	13,746,739	7.6
SWA 1	186,455	543,016	0.77	418,122	44.6
SWA 3	74,075	3,395,539	0.73	2,478,743	3.0
SWA 4	80,662	4,714,286	0.70	3,300,000	2.4
WWA 1	104	201	1.41	283	36.7
WWA 2	2,658	6,127	1.93	11,825	22.5
WWA 3	17,639	281,841	1.62	456,582	3.9
WWA 4	10,845	57,198	1.75	100,097	10.8
WWA 5B	88,201	649,788	1.51	981,180	9.0
WWA 7	4,213	139,384	1.87	260,648	1.6

Appendix V: Observer interim trip report template

Ministry for Primary Industries
Manatū Ahu Matua

Interim Observer Trip Report	
Trip Number:	**Vessel Name:**
Call Sign:	**Observer:**
Trip Start Date:	**Trip End Date:**

Q	Criteria	Rating
1	QMS species are discarded only after correct estimation and authorisation	
2	QMS species identified accurately	
3	Vessel has a valid system for determining, recording and retaining block weight test information	
4	Vessel has a valid system in place to quantify all sources of whole and processed fish to meal; including applying conversion factor to processed fish	
5	Fish is cut in accordance with the Conversion Factors Notice	
6	Non-fish by-catch recorded and reported accurately	
7	Offal management was adequate (if VMP onboard, meets specifications)	
8	Appropriate bird mitigation devices were deployed and in working condition for duration of trip	
9	The factory was clean and hygienic	
10	Observer Standard met (e.g. living conditions, water etc, were adequate)	
11	Vessel was using/applying glaze during trip	Y / N
12	If conversion factor (CF) tested insert species, state, and average CF over page	
13	If any maritime or safety issues were identified insert comment over page	
14	If any labour or employment issues were brought to your attention by any crew insert comment over page	
15	Comment on any issues raised with Captain or Factory Manager during trip and the outcome (include names of people spoken too)	

Criteria Rating:	**A** Clearly acceptable.	**B** Generally acceptable but minor departures from best practice identified.	**C** Not Deemed Acceptable: this criterion is not met and requires addressing	**N/A** Not applicable

Should you not receive a copy of the full observer report, or have any questions, please contact the Observer Programme via the following email address: observer@mpi.govt.nz

Signed: **Date:**

Manager Observer Services

Question Number	Comment

12	Conversion Factors		
SPECIES	STATE	# of TESTS	AVERAGE CF
SPECIES	STATE	# of TESTS	AVERAGE CF
SPECIES	STATE	# of TESTS	AVERAGE CF