Fisheries New Zealand
Tini a Tangaroa

Annual Review Report for Deepwater Fisheries 2016/17

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1.1 OVERVIEW OF NEW ZEALAND'S DEEPWATER FISHERIES

New Zealand's deepwater and middle-depth fisheries (deepwater fisheries) are the fisheries that predominantly occur in offshore waters beyond the 12 nautical mile (NM) limit of the territorial sea. Deepwater fishing activity occurs out to the 200NM limit of New Zealand's exclusive economic zone (EEZ). Total FOB[1] export revenues during the 2017 calendar year from deepwater fisheries were approximately NZ$668M[2]. In 2017, six deepwater fish species (hoki, squid, ling, jack mackerel, orange roughy and barracouta) were amongst the ten largest export-earning seafood species (including those produced via aquaculture). Together, these six species represent 46% of seafood export volume and account for approximately NZ$ 532M in FOB export earnings.

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

Table 1: Categorisation of Deepwater Species by Tier

	Stocks with completed fishery-specific chapters in the National Deepwater Plan[3] (Tier 1 plan associated with species)	Stocks not currently included in the National Deepwater Plan (date of expected inclusion or Tier 1 plan associated with species)
Tier 1 Species	Hoki: all Orange roughy: all Southern blue whiting: all Ling: LIN3-LIN7 Hake: all Jack mackerel: JMA3 and JMA7 only Oreo: all	Scampi: all (2018) Squid: all (2018)
Tier 2 Species	Silver warehou: all (HOK) Spiny dogfish: SPD4, SPD5 (HOK) Frostfish: FRO3-FRO9 (HOK) White warehou: all (HOK) Lookdown dory: all (HOK) Black cardinalfish: all (ORH) Ribaldo: RIB3-RIB8 (LIN) Patagonian toothfish: all (LIN) Redbait: all (JMA) Blue (English) mackerel: EMA3, EMA7(JMA) Rubyfish: all (OEO) Alfonsino: all (OEO)	Barracouta: BAR4, BAR5, BAR7 Prawn killer: all (SCI) Sea perch: SPE3-SPE7 (SCI) Pale ghost shark: all (tbc) Dark ghost shark: GSH4-GSH6 (tbc) Deepwater crabs (KIC/GSC/CHC): all (tbc) Gemfish: SKI3, SKI7 (tbc)
Tier 3 Species		Non-QMS species

[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 export statistics provided by Seafood New Zealand. Source: https://www.seafoodnewzealand.org.nz/fileadmin/documents/Export_data/17.12.10a.pdf (accessed 19 March 2018)

[3] For some species (e.g. ling), management of some stocks falls under the National Deepwater Plan while the remainder are managed under the 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).

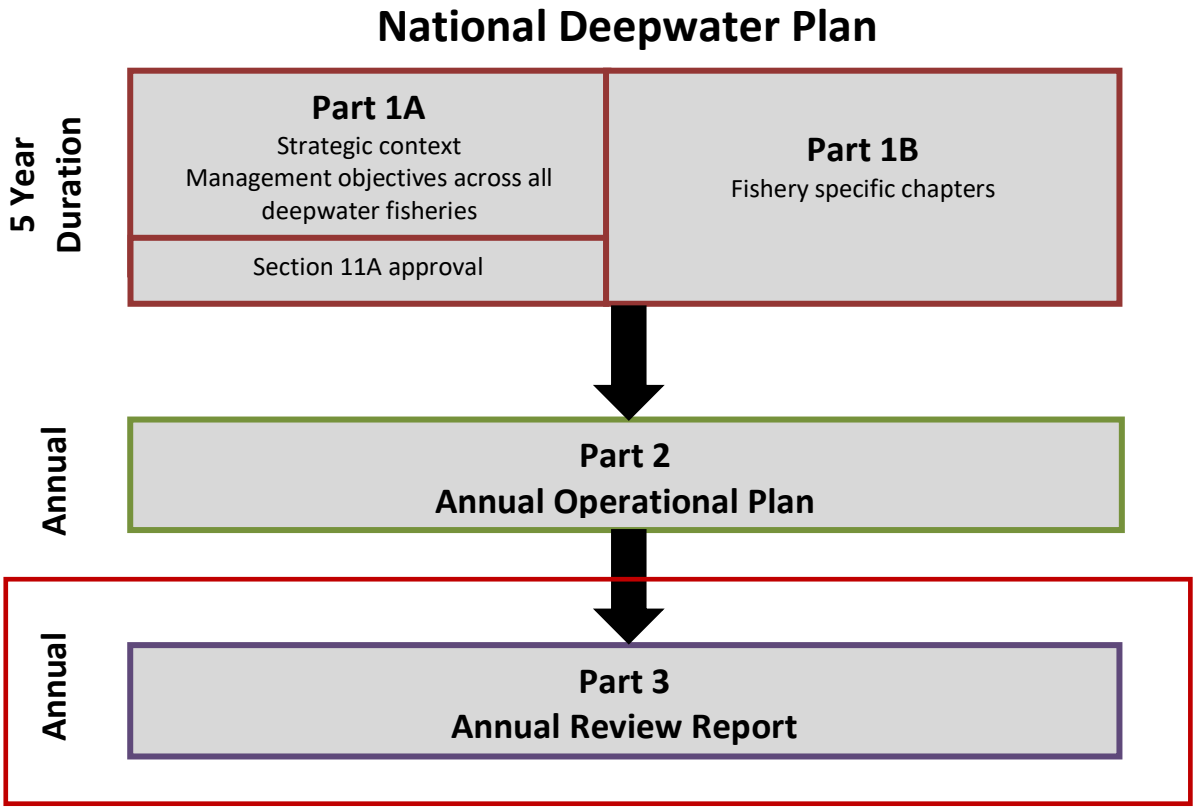

Figure 1: The three components of the National Deepwater Plan.

Part 1 of the National Deepwater Plan established a five year enabling 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 Fisheries 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 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 once finalised, will inform the strategic direction for New Zealand's deepwater fisheries from 2018.

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 in 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. Chapters for the scampi and squid fisheries are currently being developed and a draft will be finalised in 2018.

The fishery-specific chapters describe the operational objectives for each target fishery and their key associated bycatch species, as well as how performance against both the management and operational objectives will be assessed at the fishery level, however they do not have a statutory basis. These chapters also describe any agreed harvest strategy in place for the relevant species.

Parts 2 and 3 of the National Deepwater Plan 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).[4]

Like the fishery specific chapters, Annual Operational Plans (AOPs) and Annual Review Reports (ARRs) are not approved under section 11A of the Fisheries Act. Statutory interventions required to regulate deepwater fisheries will be identified in the AOP.

Part 2 of the National Deepwater Plan consists of the AOPs. 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 1 of the National Deepwater Plan. Up- to-date management overviews are also provided for all the deepwater fisheries within completed chapters in Part 1B.

Part 3 of the National Deepwater Plan consists of the ARRs. 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 in relation to environmental interactions and impacts and against the management actions specified in the AOP.

1.2.1 The 2016/17 Deepwater Annual Review Report

This Annual Review Report is split into three parts:

Part 3A describes the progress that has been made during the 2016/17 financial year towards delivering the Management Actions set out in the 2016/17 AOP.
Achievement of these annual priorities contributes to meeting the five year high level Management Objectives and Operational Objectives set out in Part 1 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 (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.

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 2016/17 fishing year (1 October 2016 – 30 September 2017).

The periods encompassed by the 2016/17 financial and fishing years are shown in Figure 2 below.

[4] Some deepwater species, for example southern blue whiting, work to a different fishing year (1 April – 31 March), though a change to the timing to better align with the fishing season is under consideration.

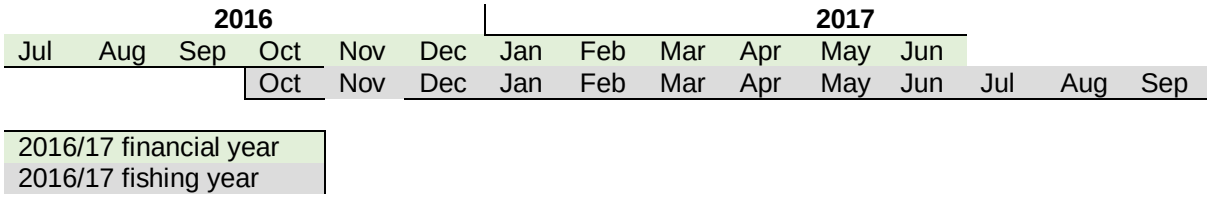

Figure 2. Diagram indicating the periods encompassed by the 2016/17 financial year and the 2016/17 fishing year

This Annual Review Report also contains several appendices:

- Appendix I summarises catch of deepwater stocks during the 2016/17 fishing year. Also included, where available, is observer coverage, the amount of deemed values invoiced, and export earnings during the 2016 calendar year
- Appendix II summarises the results of the October 2016 and April 2017 sustainability rounds
- Appendix III summarises landings of all Tier 3 (non-QMS) species by the core deepwater fleet between 2012/13 and 2016/17
- Appendix IV summarises cost recovery levies for deepwater stocks for 2016/17
- Appendix V comprises the Interim Trip Report template.

2 Part 3A: Progress on Management Actions

The 2016/17 AOP included 16 Management Actions that aimed to progress delivery of the Management Objectives and Operational Objectives specified in Part 1 of the National Deepwater Plan. Table 2 summarises progress relating to each of these Management Actions. For reference, the 2016/17 Management Actions are listed in the grey boxes in Table 2, taken verbatim from the 2016/17 AOP, reflecting the situation in July 2016. The report on progress made between 1 July 2016 and 30 September 2017 is provided in the white boxes in Table 2.

Table 2: Management Actions to be delivered by Deepwater Fisheries Management during the 2016/17 financial year

1	Fisheries Sustainability Controls: Review catch limits and management settings as required
	Deepwater sustainability decisions consist primarily of reviews to catch limits (TAC and TACC) and deemed value settings across the fish stocks managed within the National Deepwater Fisheries Plan. These are completed in two rounds, one for stocks managed with a fishing year beginning on 1 October and another 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 MPI decisions and the process does not have to run to the same timeframes as the sustainability rounds.
	• October 2016: JMA3, BAR5, SQU1J, SCI2, RBY3 and RBY4 • April 2017: SBW6I and SBW6B
	Action relates to Management Objectives 1.1, 1.3, 2.1, 2.2, 2.4, 2.5, and 2.6
	Actions achieved: • For the 1 October 2016 sustainability round, one stock was not reviewed (RBY4), catch limits were reviewed and changed for five deepwater stocks: • JMA3 - the TAC was set at 9,000 tonnes, with a recreational fishing allowance of 20 tonnes, customary Māori fishing allowance of 20 tonnes and other sources of fishing-

related mortality of 180 tonnes, with the TACC reduced from 18,000 tonnes to 8,780 tonnes.

- BAR5 - the TAC was increased from 7,475 tonnes to 8,370 tonnes, with recreational fishing allowance of 3 tonnes, customary Māori fishing allowance of 2 tonnes, an allowance set for other sources of fishing-related mortality of 165 tonnes, and the TACC was set at 8,200 tonnes.
- SQU1J - the TAC was reduced from 50,214 tonnes to 5,030 tonnes, and allowances were set for recreational fishing of 10 tonnes, customary Māori fishing of 10 tonnes, other sources of fishing-related mortality of 10 tonnes, and the TACC was set at 5,000 tonnes.
- SCI2 – the TAC was increased from 140 tonnes to161 tonnes, zero allowances for recreational or customary Māori fishing, an allowance set for other sources of fishing-related mortality of 8 tonnes, and the TACC set at 153 tonnes.
- RBY3 - the TAC was increased from 3 tonnes to 32 tonnes, zero allowances for recreational or customary Māori fishing, an allowance set for other sources of fishing-related mortality of 2 tonnes, and the TACC set at 30 tonnes.

Deemed value rates were reviewed for the following deepwater stocks during the October 2016 sustainability round:

- FRO4, JMA7, LIN7, OEO4, RBY1, 2, 3, 4, 5, 6, 8 & 9, RIB7 and SWA3

For the 1 April sustainability round, the TAC for SBW1 was increased from 8 to 100 tonnes, with no allowance for recreational or customary Māori fishing, a 2 tonne allowance set for all other sources of mortality caused by fishing, and the TACC was set at 98 tonnes. For SBW6B the TAC was reduced from 3,000 to 2,426 tonnes, with no allowance for recreational or customary Māori fishing, a 53 tonne allowance was set for all other sources of mortality caused by fishing, and the TACC set at 2,377 tonnes. No deemed value rates were reviewed for deepwater stocks that did not have a concurrent catch limit review, for the 1 April sustainability round.

2 Fisheries Planning: Implement Updated National Deepwater Plan

The National Deepwater Plan had a five year horizon and was reviewed in 2016. Implementation of the National Deepwater Plan for the 2016/17 financial year will include the core activities listed below.

Core:	**Key Actions 16/17:**
• Implement National Deepwater Plan (Part 1A) • Implement Management Objectives within the National Deepwater Plan • Annual Review Report for 2015/16 • Annual Operational Plan for 2017/18	• Finalise update of Part 1A of the National Deepwater Plan

Action relates to all Management Objectives

Actions achieved:

- The review of Part 1A of the National Deepwater Plan finished in 2016/17. Public consultation took place in 2017, and a final, revised plan is expected to be in place in 2018.
- The Annual Review Report for 2015/16 and Annual Operational Plan for 2017/18 were completed and made available online.
- All National Deepwater Plan documents can be found online here.

3 Ministerial Services: Ensure timely completion of all Ministerial correspondence and communication requests assigned to the Deepwater FM 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.
	This Management Action refers to MPI's responsibility to: • Provide quality advice and information to the Minister for Primary Industries • Maintain an open relationship with stakeholders and the public and respond to all OIA requests and Government correspondence regarding deepwater fisheries issues in a timely manner
	Action relates to all Management Objectives
	Actions achieved: During the 2016/17 financial year, the deepwater fisheries management team completed: • 8 Official Information Act requests • 6 Aide Memoires • 6 Briefing Papers • 1 Submission to Cabinet • 4 Ministerials and • 24 written parliamentary questions. In November 2014, the Official Information Act team was established and has taken over responsibility for drafting responses to OIA requests. The deepwater team contributes to the completion of OIA requests as subject matter experts, providing advice and appropriate review of information.
4	Protected Species Frameworks – Work collaboratively with the Department of Conservation on implementation of the New Zealand sea lion Threat Management Plan
	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. A range of threats have prevented recovery of the population. The New Zealand sea lion Threat Management Plan prioritises management actions to enable the recovery of the sea lion population.[5]
	Key Results for 16/17: • Work with DOC to finalise the New Zealand sea lion Threat Management Plan • Implement the actions in the New Zealand sea lion Threat Management Plan • Review and update the 5 year SQU6T and SBW6I Operational Plans
	Action relates to Management Objectives 1.6, 2.5, and 2.6
	Actions achieved: • The New Zealand sea lion/rāpoka Threat Management Plan (TMP) provides the over-arching framework for sea lion threat management and research over the next five years. The TMP was published by the Department of Conservation and Ministry for Primary Industries in July 2017 following a collaborative process that included engagement across all key stakeholders on the vision, objectives and management priorities. The TMP includes a specific action for the establishment of a Squid 6T Operational Plan Technical Advisory Group to contribute to the review and development of the 2018-19 Operational Plan. • The New Zealand sea lion/rāpoka Threat Management Plan was published • The SQU6T and SBW6I Operational Plans were reviewed and updated • Field data was collected from the Auckland Islands sites during summer 2017. The pup count was 1,965 which was 14% higher than the 2016 estimate of 1,727 • Sea lion pup counts on the Dunedin coast, the Catlins coast and Stewart Island/Rakiura were all higher at these breeding sites in 2017 when compared to 2016

[5] Information on the New Zealand sea lion TMP is available here (www.doc.govt.nz/nature/native-animals/marine-mammals/seals/new-zealand-sea-lion/docs-work/new-zealand-sea-lion-threat-management-plan)

	• The first meeting of the New Zealand sea lion/rāpoka Forum took place on 16 May 2017 at the Ōtākou Marae in Dunedin • The first meeting of the New Zealand sea lion/rāpoka Advisory Group took place on 18 May 2017 at the DOC Murihiku Office in Invercargill • The first Squid 6T Operational Plan Technical Advisory Group meeting took place at MPI Wellington on 14 and 15 June 2017
5	National Plan Frameworks – NPOA-Sharks: Implement components of the National Plan of Action for Sharks (NPOA-Sharks) relevant to deepwater fisheries
	The NPOA-Sharks sets out six goals and accompanying five year objectives to support the management of sharks. A qualitative risk assessment of all shark species was completed in December 2014, which informs the prioritisation of management actions and research until the completion of a quantitative risk assessment. This Management Action is focused on achieving objectives of the NPOA-Sharks, and addressing at-risk species identified in the risk assessment.[6] Actions to implement National Plans of Action have been incorporated into the AOP for 2017/18.
	Key Actions for 16/17: • Support and contribute to strategies to meet non-commercial objectives of the NPOA • Monitor the regulatory framework that governs shark processing and landing, and review shark fin ratios • 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 MFAT • Support progression and delivery of the quantitative risk assessment and subsequent prioritisation • 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 CMS Sharks MOU (Memorandum of Understanding on the Conservation of Migratory Sharks)[7] and ensure that New Zealand's shark management is consistent with the Sharks MOU and its conservation plan
	Action relates to Management Objectives 1.6, 2.4, 2.5, and 2.6
	Actions achieved: During the 2016/17 financial year, the following actions relating to the NPOA-Sharks were completed: • Ongoing monitoring of regulatory framework to eliminate shark finning in New Zealand • The NPOA-Sharks Implementation Plan was implemented in conjunction with the Department of Conservation and the Ministry of Foreign Affairs and Trade • Work continued with stakeholders to avoid captures of protected shark species in deepwater fisheries and to maximise survival of captured protected sharks Actions underway: • The quantitative risk assessment of shark species is ongoing and is expected to be completed in 2017/18.
6	Protected Species Frameworks – NPOA-Seabirds: Work to achieve the five year practical, biological, research and development, and international objectives within deepwater fisheries
	The NPOA-Seabirds was approved in 2013 and sets out the long term and five year objectives, relating to managing fisheries interactions with seabirds.

[6] The NPOA-Sharks is available at http://fs.fish.govt.nz/Page.aspx?pk=165&tk=554

[7] The CMS Sharks website is available here (www.cms.int/sharks/en)

	The NPOA-Seabirds is underpinned by a Level 2 Risk Assessment which has identified the seabird species considered to be most at risk of being adversely affected by commercial fishing in New Zealand. The risk assessment also identifies which fisheries pose the most risk to seabird species.[8] This Management Action outlines the priority seabird work areas for deepwater fisheries in 2016/17 guided by risk assessment outputs. Further detail on the objectives of the NPOA-Seabirds and how the Deepwater Fisheries Team will support the achievement of those objectives may be found in Part 2B. Actions to implement National Plans of Action have been incorporated into the AOP for 2017/18.
	Key Actions for 16/17: • Work the Fisheries Management Directorate, and with key stakeholders, to monitor seabird performance measures including the capture rate reduction targets across • Report annual performance to inform ongoing progress towards meeting the objectives of the NPOA-Seabirds and species specific action plans • Continue to implement and refine best practice mitigation measures across the deepwater fleet (with a focus on ling bottom longline and trawl net captures), to minimise interactions with seabirds and support achievement of the practical objectives in the NPOA-Seabirds • 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, to work towards achieving the biological risk objective in the NPOA-Seabirds • 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 Deepwater Group Ltd (DWG) to develop information and additional mitigation measures specific to 'very high' and 'high' risk seabird species to support achievement of the objectives in the NPOA-Seabirds
	Action linked to Management Objective 2.5
	Actions achieved: During the 2016/17 financial year, the following actions relating to the NPOA-seabirds were completed: • Action plans were drafted for Salvin's, Buller's, and white-capped albatrosses • Contributed to the development of the DWG operational procedures for ling bottom longline vessels Actions underway: • A research project was initiated examining the factors that contribute to net captures on trawl vessels • A review of progress against the objectives and the content of the NPOA-Seabirds 2013 began • A review and update of the Vessel Management Plan (VMP) form began
7	Deepwater Research Planning: Finalise and agree research commitments for the 2017/18 year and determine future approach to research planning and procurement
	Contracts under the initial five year phase of the 10 Year Research Programme concluded at the end of the 2014/15 financial year. The research required to manage deepwater fisheries is currently being contracted on an annual basis based on the long-term planning done as part of the 10 Year Research Plan.[9]

[8] The NPOA-Seabirds can be accessed here (http://www.mpi.govt.nz/document-vault/3962) while the Level 2 Risk Assessment can be accessed here (www.mpi.govt.nz/document-vault/10523 and here (www.mpi.govt.nz/document-vault/10526)

[9] The 10 Year Research Programme can be accessed here (http://fs.fish.govt.nz/NR/rdonlyres/4B773297-672A-4C52-B0F5-F67EDAD00AAB/0/10YearResearchProgrammeSummary.pdf)

	Key Actions for 16/17: • Monitor 2016/17 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 2017/18 financial year before December 2016. • Support Fisheries Management Directorate project to implement 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
	Actions achieved: During the 2016/17 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 • Deepwater research for 2017/18 was planned Actions underway: • Work is underway to establish a Deepwater Research Panel to enable streamlined contracting of deepwater research and potential longer term contracts.
8	**Engagement:** Ensure sufficient and appropriate engagement with tangata whenua and stakeholders
	Sufficient and appropriate engagement with tangata whenua and stakeholders is an integrated 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: • Ensure input and participation of tangata whenua and address issues as necessary. • Through the Environmental Engagement Forum, engage with stakeholders on environmental issues relating to management of deepwater fisheries. • Maintain an open and transparent management environment by ensuring that all management information is available and accessible on MPIs website for stakeholders and tangata whenua consideration.[10]
	Action linked to Management Objectives 1.6 and 1.7
	Actions achieved: • 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 IFPs and 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 2016/17 year.
9	**Deepwater Monitoring:** Deepwater Observer Coverage/sampling requirements for 2016/17 and 2017/18
	Observer coverage of deepwater fisheries is planned by financial year and is based on biological sampling requirements and coverage targets. These targets are monitored throughout the year to ensure information is available to support stock assessments and to understand interactions

[10] The MPI website can be accessed here (www.mpi.govt.nz)

	with protected species. In addition, the process of requesting quarterly fishing plans from companies will continue. This enables more efficient and effective observer deployments in key fisheries.	
	Core: • Monitor biological sampling throughout 2016/17 to ensure sampling targets are met • Develop the observer coverage plan for 2017/18	**Key Actions for 16/17:** • Ensure observer briefing documents for Tier 1 species are up to date and that appropriate sampling is undertaken in accordance with biological targets • Identify what and how samples for Tier 2 species should be taken by observers. A Tier 2 workshop will be held (Management Action 16) • Develop coverage and sampling targets for each of the next five years to align with the deepwater fisheries research programme.
	Action linked to Management Objectives 1.1, 1.3, 1.4, 1.5, and 2.5	
	Actions achieved: • The 2017/18 observer coverage plan, as well as biological sampling requirements for deepwater fisheries were both completed and are available in the Deepwater Fisheries Management team's AOP, which is available here[11]. • A workshop on 22-23 August 2016 initiated the revision of sampling protocols for Tier 2 species. • Details of delivery against the 2016/17 observer coverage plan may be found in section 3B.	
10	Registry Services: Continue implementation of the Fisheries (Foreign Charter Vessels and Other Matters) Amendment Act 2014, the Foreign Charter Vessels [12] (FOV) registration process and risk based observer coverage	
	The Deepwater Fisheries Management Team provides input to all advice papers relating to MPI'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),[13] amended the registration process for foreign owned vessels as well as expanding the range of observer functions. MPI coordinates the cross agency work programme for the implementation of requirements of the FCV Act and will continue to assist the MPI Registry Analyst and the Observer Programme with any changes to their respective processes and functions.	
	Core: • Input to the foreign-owned vessel registration and risk profiling process in conjunction with MPI Compliance	**Key Actions for 16/17:** • Work with the Ministry of Business, Innovation and Employment, and Maritime NZ, to implement operational changes to observer functions and coordinate information input to risk profiling and registration process • Labour laws and maritime safety will continue to be monitored by an inter-agency risk management group

[11] The Deepwater team's AOP is available at http://fs.fish.govt.nz/Page.aspx?pk=79&tk=498

[12] The term FCV has been used historically, however, these vessels are more correctly identified as 'foreign-owned' and this acronym FOV will be used from now on.

[13] This Amendment Act can be accessed here

		• Assist MPI Observer Services to implement the required operational changes to the observers' training and information collection process in relation to the expanded range of functions
	Action linked to Management Objective 1.6	
	Actions achieved: • The Deepwater FM team coordinated the work programme of the Inter-agency Fisheries Group, which includes MFAT, MBIE, 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, including both foreign and domestic-owned vessels to inform risk assessment of vessels and operators. • In addition, reports were provided by the Deepwater FM team on all applications for FOV registration.	
11	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):[14] i. Marine Mammal Operational Procedure (DWG process) ii. Vessel Management Plans – Seabirds (DWG process) iii. Shark Operational Procedure (DWG process) iv. Squid 6T/SBW6I Operational Plans (MPI process)	
	Core: • Monitor adherence of the deepwater fleet to management measures through representative coverage by MPI Observers in key deepwater fisheries • Monitor protected species interactions across all trips via MPI 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) • Reduce the use of generic shark reporting codes	**Key Actions for 16/17:** • Work with DWG to update materials and methods used to educate crew on Operational Procedures and Plans • Develop new 5 year SQU6T and SBW6I Operational Plans for 2016-2020 (Management Action 4) • Work with DWG to update the MPI audit sheet for vessel performance (Vessel Management Plan) • Work with MPI Science to set 'representative' observer coverage for protected species • Support the expansion of the training and outreach programme for the deepwater bottom longline fleet • Provide resources for the MPI Observer training programme through observer training and circulation of the updated shark ID guide (ENV2015-03)
	Action relates to Management Objectives 2.4, 2.5 and 1.6	
	Actions achieved: • Monitoring adherence of the deepwater fleet to non-regulatory measures relating to environmental interactions or protected species is undertaken by MPI observers.	

[14] DWG operational documents can be accessed here (http://deepwatergroup.org/newsresources/op-manual/)

	Details regarding adherence to the various measures are provided in Part 3C of this Report. • Observers from trawlers and BLL vessels are debriefed by Deepwater FM staff. • Deepwater FM staff gave management talks at three observer training sessions during 2016/17 (in July, October and January). • The SQU6T Operational Plan was consulted on for the 2016/17 year and consultation was undertaken for 2017/18 and 2018/19. The 2017/18 SQU6T Operational Plan was updated for 2017 • The SBW6I Operational Plan was updated for 2017. • 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 and review the DWG standards set out within the Operation Procedure Manual (OPs), Audit Vessel Management Plans (VMPs) and best practice environmental and mitigation practices. • 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. In 2016/17 the DWG ELO visited 74 vessels (85% of deepwater fleet) which was made up of 23 factory trawlers (including all 13 foreign crewed vessels), six large fresh trawlers (>28 m), 11 hoki-season fresh trawlers (<28 m), six scampi freezer vessels, seven of the eight ling auto bottom long liners and 21 of the 24 ling manual bait bottom long liners[15]. Actions underway: • Work has begun to update materials used to educate crew on the operational procedures and plans, and resources for observer training programmes are continually updated and improved. • The process of updating and improving the audit sheets for MPI auditing against Vessel Management Plans has begun with production of a draft audit sheet for the deepwater bottom longline fleet underway.
12	Deepwater Monitoring – Monitor adherence to all non-regulatory measures in place to manage Tier 1 deepwater fishstocks at a sub-QMA scale.
	In conjunction with industry, MPI has implemented a series of non-regulatory sub-area 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.
	Core: • 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
	Actions achieved: • DWG has developed processes for fishers to report catch in relation to sub-area catch limits. MPI monitors adherence to these limits quarterly using information provided by DWG together with MPI Observer and statutory catch and effort reporting information. • Quarterly monitoring reports have been produced detailing performance against the relevant non-regulatory management measures for the 2016/17 fishing year. These are summarised in Part 3C of this ARR Report and in the species management summaries in Appendix I.

[15] Excludes BLL autoline vessels fishing 100% outside EEZ (toothfish) and smaller vessels landing less than 2 tonnes (greenweight) of which there are approximately 15-20 boats

	Actions not applicable: • Because sub-QMA catch limits were adhered to, MPI did not need to respond to any non-compliance issues.
13	Deepwater Monitoring – Benthic invertebrates: Monitor and measure the nature and extent of benthic interactions from deepwater fishing activity
	The approach to mitigating the effects of fishing on deepwater benthic communities is through closure of large areas of the EEZ to bottom trawling. The level of interactions between deepwater vessels and benthic invertebrates in open areas is monitored via MPI Observer coverage. The trawl footprint is also monitored each year and the most recent information available is reported in the ARR[16].
	Core: • Monitor the trawl footprint of Tier 1 species • Report the benthic footprint of deepwater fishing and volume of benthic species captured in the ARR and consider management action if required
	Action linked to Management Objective 2.7
	Actions achieved: • MPI 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 that has been published is up to the end of the 2015/16 fishing year.[17] • Data on catches of benthic species are reported in Part 3.6 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), providing advice and decision document.
	Key Actions 16/17: • Progress regulatory amendments as required
	Action linked to Management Objectives 1.1 and 1.2
	Actions not applicable: No regulatory amendments were required in 2016/17
15	Fisheries Management/Sustainability Controls: Support existing approaches to in 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. MPI 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.[18]

[16] The most recent trawl footprint report is available at http://fs.fish.govt.nz/Page.aspx?pk=113&dk=23483

[17] http://www.mpi.govt.nz/dmsdocument/27546-aebr-193-extent-of-bottom-contact-by-nz-commercial-trawl-fishing-for-deepwater-tier-1-and-tier-2-target-fishstocks-1989-90-to-2015-16

[18] Information on the status of New Zealand's deepwater fisheries in the MSC programme can be found on DWG's website here

	Core: • Provide information and support to assist with audits of certified fisheries (HOK, HAK, LIN, SBW, ORH) • Support the development and implementation of Fisheries Improvement Plans for fisheries not yet assessed (OEO, SQU, JMA)	**Key Actions for 16/17:** • Support re-assessment of certified fisheries in 2016/17. • Provide input and support to DWG as required to address the conditions of certification, including observer coverage, developing mitigation procedures and completing additional analyses in relation to seabird interactions in the ling longline fisheries
	Action linked to Management Objectives 1.1 and 1.5	
	Actions achieved: • Deepwater FM provided data and support for the MSC surveillance audit of certified fisheries HOK, HAK, LIN, and SBW, including providing documents for the site visit and answering a number of follow-up queries. • Deepwater FM worked with DWG to address conditions of certification, including observer coverage, developing mitigation procedures and completing additional analyses in relation to seabird interactions in the ling longline fisheries. • MPI also provided review of DWG Fisheries Improvement Plans for six 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.	
	Actions for 16/17: • Run workshop to update monitoring and management approaches including data collection requirements for Tier 2 species. • Continue to assess the relevance of the default Harvest Strategy for deepwater species[19] • Where necessary, develop and implement alternative harvest strategies and management approaches for deepwater species • Work with 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	
	Actions achieved: • A workshop was held in August 2016 to determine the state of knowledge and future feasible monitoring and data needs for Tier 2 fish stocks. • A draft report has been produced from this work which will be used to further inform ongoing research.	

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

	• The Deepwater Team worked with the science team to update and publish working group reports and stock status information by attending and contributing to stock assessment working groups Actions not applicable: • Because the default Harvest Strategy Standard appeared to be operating appropriately, no alternative harvest strategies or management approaches were developed • The Deepwater Team did not carry out any work with DWG around unwanted fish bycatch

2.1 MANAGEMENT ACTIONS DELIVERED IN CONJUNCTION WITH OTHER TEAMS WITHIN FISHERIES MANAGEMENT AND MPI

Management Actions that the Deepwater Team contributed towards delivery of but that were led by other teams within the FM Directorate and other Directorates within MPI are summarised in Table 3 below.

Table 3: Management Actions that the Deepwater Fisheries Management Team contributed to during the 2016/17 financial year

A	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 Management Science (Stock Assessment and Aquatic Environment)
	The Deepwater team will continue to be closely involved in the monitoring and evaluation of all research projects that relate to deepwater fisheries.
	Key tasks: • Assist Fisheries Science to deliver outputs of all 16/17 research projects as listed in Tables 7-10 • Assist Fisheries Science to ensure that all science research used to support management of deepwater fisheries is assessed against the Research Standard[20]
	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
	Actions achieved: • All science information used to support management was reviewed by Fisheries Assessment Working Groups and determined to have met the Research Standard. • Information on all deepwater research contracted during the 2016/17 financial year (including additional projects), and all Final Research Reports relevant to deepwater fisheries published in the 2016/17 year are listed in Part 3 of this Report.
B	Observer Coverage Delivery The MPI Observer Programme is responsible for delivering on the observer coverage targets set out in the final 2016/17 coverage plan and ensure that the required biological sampling targets are met. LEAD: Fisheries Management (Observer Programme)
	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 the Observer Programme to ensure the necessary targets are achieved.
	Key Tasks:

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

	• Assist the Observer Programme to deliver the 2016/17 Observer coverage plan by continuing to engage with industry to regularly provide quarterly fishing plans to the Observer Programme to facilitate placement of observers and delivery of the required representative levels of coverage • Ensure the Observer Programme is aware of, and that observers are adequately briefed on, the biological sampling targets for 2016/17 and any new requirements for the Observer Programme • 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 2016/17 year
	Action linked to Management Objectives: various
	Actions achieved: • The Deepwater team prepared three quarterly reports to assist the Observer team with allocating their observer coverage. Deepwater FM attended three intakes of new Observer trainees at Nelson Marlborough Institute of Technology (NMIT) and gave presentations covering the QMS, overview of non-regulatory measures used in deepwater fisheries management, and mitigation devices used to reduce seabird and marine mammal interactions. • Deepwater FM and Observer Services met fortnightly to plan observer coverage in advance to meet requirements. • Deepwater FM and Observer Services have been working with MBIE and MNZ to upskill observers in monitoring employment, workplace health and safety and maritime safety functions, which includes the risk profiling of fishing vessels.
C	Cost Recovery Process Assist the Business and Financial Advice team with the cost recovery processes for 2016/17 and 2017/18 LEAD: 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 tasks: • Ensure the Deepwater FM 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 Management Objectives: various
	Actions achieved: • Deepwater FM 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 2016/17 cost recovery levies may be found in Part B.4 of this report. • The Deepwater Team assisted with the cost recovery first principles review by way of secondment into that work stream.
D	Compliance risk profiling and monitoring work LEAD: Compliance Directorate (Operations Branch)
	Risk profiling by the MPI's Compliance Directorate for 2016/17 focused on the ORH fisheries. Profiling has previously been undertaken for HOK and SBW and follow-up work will be undertaken on these fisheries in 2017/18

	Core: • Ensure transparent and appropriate action is taken when compliance levels drop below agreed benchmarks or where compliance risks are identified • Continue to communicate results through Deepwater Compliance Group and to stakeholders through the ARR	**Key Actions for 16/17:** • Engage with the Compliance Directorate throughout the ORH profiling process • Develop more informative benchmarks and indicators for deepwater fisheries • Work with wider MPI and industry to implement any recommendations from previous risk profiling projects • Continue to monitor measures implemented as a result of previous risk profiling • Ensure the Deepwater Compliance Group meets at least once per year and as required • Develop a pilot programme to collect information on adherence to processed state definitions for selected species/states
	Action linked to Management Objective 2.3	

Actions achieved:

- Information collection and analysis for the ORH risk assessment took place in the 2016/17 period. There has been engagement between Fisheries Management and the Observer Programme to get support to place observers on ORH vessels to complete the assessment by September 2017.
- The Deepwater Compliance Group continues to meet at least annually (last meeting was 8 June 2017).

Actions underway:

- Compliance will provide feedback to Fisheries Management on serious risks identified through the assessment process prior to addressing the issues with the Deepwater Group in 2018.

Actions not achieved:

- More informative benchmarks and indicators for deepwater fisheries have not yet been developed.
- A pilot programme to collect information on adherence to processed state definitions for selected species/states has not yet been developed.

E	Input to work within wider MPI branches as required Assist relevant branches within MPI with review of policy developments and any necessary fisheries management information Lead: project dependent (see below)

Key Actions for 16/17:

MPI's Policy and Trade branch as well as other directorates with Regulation and Assurance, may from time to time need information, feedback, and review of working documents that relate to New Zealand fisheries. Contributions based on Directorate priorities may include:

- Fisheries Management System Review (Lead: MPI Fisheries & Aquaculture Policy)
- EEZ Act – requirement to respond to statutory timeframes to inform marine consent decisions for Environmental Protection Authority (EPA) (Lead: MPI Fisheries & Aquaculture Policy)
- Implementing Craft Risk Management Standard (Lead: MPI Biosecurity and Environment)
- Monitor Health, Safety, and Environment Cross MPI Steering Group work programme (Lead: EPA, Ministry for the Environment (MFE))
- New Assurances work (Lead: MPI International Policy)

	• SmartMark project (Lead: MPI Strategy, Systems & Science) • In market initiatives for New Zealand seafood (Lead: MPI Policy and Trade) • Cost Recovery First Principles Review (Lead: MPI Cost Recovery Team)
	Action linked to Management Objectives: various
	Actions achieved during the 2016/17 financial year relating to the projects listed above are listed below: • The review of Fisheries 2030 was superseded by the announcement of the Fisheries Management System Review. • Digital monitoring (DM) • Fisheries change programme The Deepwater FM team responded to requests for advice from the Environmental Protection Authority (EPA) in relation to marine consent applications in the EEZ under section 44 of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 regarding the: • Trans-Tasman Resources Limited (TTRL) application on the impacts on quota holders of taking 66km2 (representing the licenced mining area) out of Fisheries Management Area 8 (EEZ000011) and • Shell Todd Oil Services applied for a marine consent and marine discharge consent (EEZ100014) for restricted activities associated with the placement and removal of two jack-up rigs within the Māui field, Taranaki. Actions not applicable: • No requests for involvement of the Deepwater FM team were received in relation to the SmartMark project or the Internal Advisory Group that contributed to inter-branch information sharing on the roll-out of the Craft Risk Management Standard (which becomes mandatory in 2018). • No requests for involvement of the Deepwater FM team were received in relation to MPA policy development

2.2 MANAGEMENT ACTIONS INITIATED BY INDUSTRY

Management Actions that the Deepwater 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 2016/17 financial year

	When required, work with industry to :
	• 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
	• No stock boundary changes were requested by industry in 2016/17. • All requests for observers on vessel specific conversion factor trips were met (10 trips were undertaken during 2016/17). • Four special permits were issued. • The DWG Environmental Liaison Officer visited 87% of LIN BLL vessels (seven of eight auto longliners and 21 of 24 smaller hand-bait boats) to provide training to crew on Ling Longline Operational procedures, Auto-line & hand-bait longline best practice and MPI mandatory measures and to ensure standards were being met to support the MSC certification of the ling stocks.

2.2.1 Implementation of the National Plan of Action - Seabirds

The NPOA-Seabirds[21] sets out objectives to guide management of interactions with seabirds in New Zealand fisheries. The objectives are implemented through integration into MPI's annual planning cycle, and this ARR reports back on the prioritised actions and services needed to meet these objectives for deepwater fisheries as set out in the 2016/17 Annual Operational Plan for Deepwater Fisheries. The five-year review of the NPOA began in 2017.

The NPOA-Seabirds 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 employs a quantitative risk assessment framework[22] that generates quantitative risk scores for seabird species. It allows for identification of the seabird species most at most 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

21 'The National Plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries'

22 Richard, Y.; Abraham, E.R. (2017). Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006–07 to 2014–15. New Zealand Aquatic Environment and Biodiversity Report 191.

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 recently published risk assessment, based on seabird bycatch and fisheries data to the end of the 2014-15 fishing year, differs from those published previously[23] [24]. 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.

Deepwater fisheries that contribute more than 10% of the risk to 'very high' and 'high risk' seabird species 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[25] and white-capped albatross[26]. 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 as appropriate.

High Risk

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. A DOC research project is reviewing the taxonomy of the Northern Buller's albatross. This project may resolve issues associated with accurate identification of Southern and Northern Buller's albatrosses.

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.

23 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

24 Richard, Y.; Abraham, E.R. (2013). Assessment of the risk of commercial fisheries to New Zealand seabirds. New Zealand Aquatic Environment and Biodiversity Report 109.

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

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

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.

Capture rate reduction targets

Capture rate reduction targets provide a gauge against which the Practical Objective of the NPOA-Seabirds 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 with at least 10% observer coverage and a 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[27].

Table 20 sets out the deepwater capture rate reduction targets and proxy targets along with three year averages (based on the 2012-13 to 2015-16 fishing years[28]) of observer coverage and estimated capture rates[29] for deepwater fisheries groupings. Table 20 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.

[27] https://www.mpi.govt.nz/dmsdocument/13281-annual-operational-plan-for-deepwater-fisheries-for-201617

[28] 2013-14 to 2015-16 fishing years used as estimated capture data for the 2016-17 fishing year is not currently available

[29] Available at https://psc.dragonfly.co.nz/2017v1/released/summary/

Table 20: Deepwater Capture Rate Reduction Targets and three year averages of observer coverage and estimated capture rate

	Targets				Three year average (2013/14 – 2015/16		Progress against target/proxy
Fishery	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	99.6	1.51	Capture rate slightly higher however capture numbers remain low
SQU trawl	Statistically significant decrease in rate (based on 3-yr rolling average)	14.0	12.0 (14%)	Yes	83.8	14.93	Capture rate is slightly higher
JMA trawl	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	1.0	-	No	84.8	0.49	Capture rate is lower and capture numbers remain low
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	5.7	-	VMP's in place for all scampi vessels. During 2016/17, the DWG ELO visited six scampi vessels. Observer coverage of 9.6% of effort in 2016/17.
Deepwater trawl[30]	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.6	-	No	25.1	0.34	Capture rate and number of captures remain low
Middle depths trawl (>28 m)[31]	Statistically significant decrease in rate (based on 3-yr rolling averages)	2.7	2.3 (15%)	Yes	38.7	3.05	Capture rate has increased slightly
Large vessel BLL	Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)	0.01[32]	-	No	9.5	0.03	Capture rate remains low
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	2.9	-	Operational procedures[33] for the ling bottom longline fishery came into effect on 1st October 2016. During 2016/17, the DWG ELO visited 21 of the 24 ling manual bottom longliners. Observer overage of 5.8% of effort in 2016/17

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

[31] Middle depth trawl includes trawl effort for all species other than those with specific categories. This includes hoki, hake and ling and a number of tier 2 species.

[32] Updated from the table set out in 2016/17 AOP which reported baseline capture rates in longline fisheries in terms of 'sets' rather than per 1000 hooks.

[33] http://deepwatergroup.org/wp-content/uploads/2017/09/DWG-Ling-FMA2-7-Bottom-Longline-Operational-Procedures-2016-17-Final.pdf

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[34]
- implementation of best practice seabird mitigation measures through vessel-specific Vessel Management Plans (VMPs)[35]
- an annual crew training and vessel outreach programme
- ongoing exploration of new or improved mitigation methods, and
- MPI 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 2016-17, actions in deepwater fisheries to support the NPOA-Seabirds were focused on continuing to improve and manage the VMP process, and seabird training sessions for crew on bottom longline vessels. Table 21 sets out the objectives and specific services that were planned for deepwater fisheries management and the actions achieved during 2016-17. Many of the services contributed to the achievement of more than one objective. These measures contribute to a reduction over time in the capture rate of seabirds from fishing activity, and contribute to achieving the practical and biological objectives of the NPOA-Seabirds.

Table 21: NPOA-Seabirds Services planned for Deepwater Fisheries Management during 2016/17

Five- Year Objectives :	Planned Deepwater Services for 2016/17
Practical objectives	• Work with the Deepwater Environmental Liaison Officer to continually improve the Vessel Management Plan (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: **I.** 100% of observed trips have audited VMP **II.** 95% of observers debriefed by MPI Deepwater team **III.** Follow up all non-adherence • Work across the FM Directorate 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.
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, and **c)** Capture rates are reducing in all New Zealand fisheries in accordance with reduction targets in the relevant planning documents for those fisheries (3 year rolling average)	
Biological risk objective	
a) The level of mortality of seabirds in New Zealand commercial fisheries is reduced so that species currently categorised as 'very	

[34] 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.

[35] Information on VMPs is available on the DWG website at http://deepwatergroup.org/wp-content/uploads/2017/06/Seabird-Vessel-Management-Plan-2017.pdf

high' or 'high risk' from fishing, move to a lower category of risk	• 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

- Of 172 observed deepwater trips[36], the Deepwater team debriefed observers after 153 of them (89%). This is less than the target of 95% due to operational constraints (e.g. Kaikoura earthquake).
- Of the 151 trips on trawl vessels > 28 m (or trawl vessels < 28 m targeting scampi) observers on 149 trips (99%) audited the VMP. Summaries of vessel adherence to VMP's and MMOP's was provided to the Deepwater Environmental Liaison Officer for all 149 audited VMP's with follow up actions initiated on 21 occasions.
- During 2016/17 the Deepwater Environmental Liaison Officer visited 74 vessels (85% of the deepwater fleet) including 23 factory trawlers (including all 13 foreign crewed vessels), six large fresh trawlers (>28 m), 11 hoki-season fresh trawlers (<28 m), six scampi freezer vessels, seven of the eight ling auto bottom longliners and 21 of the 24 ling manual bait bottom longliners.
- During vessel visits, the Deepwater Environment Liaison Officer trains vessel managers and senior crew to promote best practice mitigation standard practices across the fleet and review the DWG standards set out within the Operation Procedure Manual (OPs), Audit Vessel Management Plans (VMPs) and best practice environmental and mitigation practices.
- The Deepwater team reported on appropriate seabird performance measures including capture rate reduction targets within this ARR.
- Observer coverage during the 2016-17 fishing year was increased in both the small ling bottom longline (195 seadays[37] of observer coverage compared to 90 in 2015/16) and scampi (260 seadays compared to 102 in 2015/16) fleets. This is less than the number of days planned due to high level of observer coverage required elsewhere (e.g. 100% observer coverage on FOV's).
- Species-specific action plans were developed for Salvin's, Buller's, white-capped, Chatham Island, and Campbell black-browed albatrosses and Westland petrel. The actions in the plans are consistent with other reported work (i.e. continuous improvement of VMPs and focus on high risk areas/times for seabird captures) and are not reported separately.

36 Includes all trips on trawl vessels > 28 m, all trips on trawl vessels < 28 m which targeted Tier 1 species and all bottom longlining trips targeting ling

37 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.

• All scampi vessels operating in FMA1 have a VMP in place in accordance with actions specified in the Black petrel and Flesh-footed shearwater Action Plan. Actions Not Achieved • Due to the large amount of observer coverage required in other fisheries, no observers were placed on scampi vessels operating within FMA1 during 2016/17. Therefore ongoing auditing and monitoring of scampi vessel adherence to VMP's in FMA1 (as specified in the Black petrel and Flesh-footed shearwater Action Plan) was not achieved.	
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; and 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	• 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 MPI research planning and review processes • Continue to engage in the Seabird Advisory Group
Actions Achieved • 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 team continued to engage in DOC and MPI research planning and review processes • The Deepwater team continued to engage in the Seabird Advisory Group	

3 Summary of progress against Management Actions in 2016/17

All 'business as usual' Management Actions (1-3, 7-14, and 16-17) were progressed appropriately throughout the 2016/17 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 (4-6, 15) relate to broader work programmes that will be delivered over several years, namely:

- The New Zealand sea lion/rāpoka Threat Management Plan 2017-2022
- Implementation of the NPOA-Sharks
- Implementation of the NPOA-Seabirds
- Market initiatives for New Zealand's deepwater fisheries

The specific management actions listed have, for the most part, been achieved during 2016/17. New actions that relate to each of these projects will be included in subsequent AOPs.

The Management Action relating to the definition of habitat of particular significance for deepwater fisheries management will be taken out of future Annual Operational Plans 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 Annual Review Report provides detail on MPI 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 B.1 OBSERVER COVERAGE

Biological sampling and environmental monitoring is informed by the requirements of the National Deepwater Plan and carried out by the Ministry's Observer Programme. Data collected by the Observer Programme is used by MPI:

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

Observer coverage is planned by both the Ministry and the Department of Conservation (DOC), based on management objectives of both agencies. DOC requires observer coverage to collect information regarding fisheries interactions with protected species.

4.1.1 2016/17 Coverage Performance

In 2016/17, coverage for each fishery was planned based on a combination of biological sampling targets, desired coverage percentages, and expected deployment requirements to comply with the Cabinet directive which requires all foreign owned vessels (FOVs) to have at least one observer on every 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 2016/17 Annual Operational Plan.
In 2016/17, 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. 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.

- In some fisheries, most notably the west coast deepwater fishery in ORH7A, 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 II.

- 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 plans can be difficult to predict.

The observer days delivered in relation to the days planned for each fishery area is shown in Table 5.

Tables 6 and 7 provide information on the numbers of length frequency and otolith samples collected by observers for deepwater species during the 2015/16 and 2016/17 fishing years. Table 6 also provides information regarding how the level of observer sampling conducted during the 2015/16 and 2016/17 fishing years compares to sampling targets as defined in the 2015/16 and 2016/17 Annual Operational Plans[38].

This report provides the opportunity for review of performance against those targets. There are a number of fishstocks where sampling does not appear to have met the targets, however sufficient samples were collected to support stock assessment. These targets have been revised for the 2017/18 Annual Operational Plan to better reflect actual requirements for sampling.

[38] 2015/16 is the first year where sampling targets for deepwater fisheries were published in the Annual Operational Plan

Table 5: Comparison of planned and achieved observer coverage for 2016/17 financial year.

Fishery complex	Target stocks covered	Total days planned	Total days delivered	% delivery
North Island Deepwater	ORH1, ORH2A, ORH 2B, ORH3A BYX2 CDL2	170	97	57%
Chatham Rise Deepwater	ORH3B OEO3A, OEO4 BYX3	270	146	54%
Sub-Antarctic Deepwater	ORH3B OEO1, OEO6	60	42	70%
West Coast Deepwater	ORH7A	70	62	89%
Hoki and middle-depth trawl fisheries:				
West Coast North Island	JMA7 EMA7 BAR7	735	578	77%
West Coast South Island (FMA7)	HOK1 HAK7 LIN7 SWA1	1200	980	82%
WCSI HOK (inside the line)	HOK1	100	102	102%
Cook Strait	HOK1	100	101	101%
Chatham Rise Middle depths (FMA3/FMA4)	HOK1 HAK1, HAK4 LIN3, LIN4 SWA3, SWA4 JMA3 BAR1, BAR4	750	1,053	140%
Sub-Antarctic Middle depths (excl. SQU/SBW) (FMA5/FMA6)	HOK1 SWA4 WWA5B BAR5 JMA3	890	726	82%
Southern blue whiting	SBW (all)	510	430	84%
Squid	SQU1T, SQU6T	1,030	1,242	121%
Deepwater bottom longline fisheries				
Bottom longline	LIN3, LIN4, LIN5, LIN6, LIN7	450	298	66%
Shellfish				
Scampi	SCI (all)	450	259	58%
	Total	**6,785**	**6,116**	**90%**

Table 6: Numbers of length frequency samples and otoliths collected by observers during the 2015/16 and 16/17 fishing years for Tier 1 deepwater species by area. Ticks or crosses indicate whether sampling targets (as set out in the 2015/16 and 2016/17 Annual Operational Plans) were met.

Species	Area	No. of length frequency samples[39]				No. of fish measured		Pairs of otoliths collected			
		2015/16		2016/17		2015/16	2016/17	2015/16		2016/17	
Hoki	Sub-Antarctic	226	×	194	×	14,009	12,079	1,896	×	1,437	×
	Chatham Rise	344	×	370	×	33,331	34,935	3,195	✓	3,418	✓
	WCSI	650	✓	697	✓	63,401	59,667	6,028	✓	6,199	✓
	Cook Strait	40	×	79	×	3,180	8.255	292	×	684	×
	East coast NI	11	-	12	-	329	222	18	-	-	-
Orange roughy	ORH1	A = 51 B = 29 C = 1 D = 1 Total = 82	✓ × × ×	A = - B = - C = - D = 4 Total = 4	× × × ×	A = 2163 B = 2,584 C = 25 D = 5 Total = 4,777	A = - B = - C = - D = 233 Total = 233	A = 523 B = - C = - D = - Total = 523	- - - -	A = - B = - C = - D = 50 Total = 50	- - - -
	ORH2A north	806	✓	13	×	283	646	80	×	80	×
	ORH2A south	-	-	21	-	-	1,309	-	-	140	-
	ORH2B	-	-	2	-	-	145	-	-	-	-
	ORH3B - NW Chatham Rise	20	×	9	×	1,301	467	293	×	125	×
	ORH3B – E&S Chatham Rise	61	×	53	×	4,751	3,892	1,193	✓	977	✓
	ORH3B – Sub-Antarctic + Puysegur	1	×	28	×	80	1,099	20	×	285	-
	ORH – MEC	18	×	-	-	1,203	-	214	-	-	-
	ORH7A + WB	31	×	46	×	1,954	2,700	514	✓	666	✓
Southern blue whiting	SBW1	-	-	3	-	-	41	-	-	10	-
	SBW6I	484	✓	158	✓	76,853	25,146	2,937	✓	2,704	✓
	SBW6B	31	×	21	×	6,523	3,152	663	×	333	×
	SBW6R/6A	2	×	-	×	231	-	27	×	-	×
Hake	HAK1	75	×	108	×	3,103	3,451	437	×	432	×
	HAK4	32	×	10	×	599	122	149	×	41	×
	HAK7	234	✓	411	✓	8,560	16,635	1,154	✓	2,046	✓

[39] Refers to the number of fishing events (stations) where fish were measured. Measurements were taken as part of either a length frequency sample (typically consisting of 100-150 fish) or a middle depth biological data (MDBD) sample (20 fish or less).

Species		Area		No. of length frequency samples[39]				No. of fish measured		Pairs of otoliths collected			
				2015/16		2016/17		2015/16	2016/17	2015/16		2016/17	
Ling		LIN1	Trawl	-	-	9	-	-	194	-	-	25	-
		LIN2	Line	-	-	23	-	-	155	-	-	40	-
			Trawl	-	-	5	-	-	61	-	-	10	-
		LIN3 & 4	Line	152	✓	164	✓	1,846	1,694	405	×	823	×
			Trawl	75	×	117	✓	1,268	2,206	411	×	518	×
		LIN5 & 6	Line	16	×	77	✓	153	1,027	40	×	485	×
			Trawl	202	✓	249	✓	8,632	9,879	1,208	✓	1,224	✓
		LIN7		479	✓	238	✓	8,073	4,043	2,731	✓	1,163	✓
		LIN - Cook Strait		32	×	39	×	354	160	112	×	92	×
Oreo	black	BOE1		-	-	8	-	-	520	-	-	57	-
		BOE3A		-	×	13	×	-	757	-	×	83	×
		BOE4		15	×	8	×	1,039	406	109	-	50	-
		BOE6		18	-	6	-	1,666	280	165	-	28	-
	smooth	SSO1		18	-	11	-	127	929	38	-	100	-
		SSO3A		5	×	10	×	365	553	33	-	66	-
		SSO4		34	×	27	×	2,139	1,529	299	×	211	×
		SSO6		19	×	49	×	1,939	4,451	190	-	421	-
	spiky	SOR1		10	-	2	-	127	24	38	-	-	-
		SOR3A		-	-	-	-	-	-	-	-	-	-
		SOR4		1	-	-	-	20	-	-	-	-	-
Jack mackerel	*declivis*	JMD3		38	×	80	✓	851	1,999	226	×	394	×
		JMD7		430	✓	332	×	31,354	24,848	2,199	✓	2,151	✓
	murphyi	JMM3		57	×	73	×	2,223	2,212	318	×	323	×
		JMM7		249	✓	133	✓	1,954	734	835	✓	375	×
	novaezelandiae	JMN3		2	×	1	×	28	75	9	×	36	-
		JMN7		315	×	238	×	24,044	18,636	1,125	✓	1,185	✓
Squid (all species combined)		SQU1T		590	✓	504	✓	58,130	47,376	N/A		N/A	
		SQU6T		699	✓	495	✓	73,623	49,657				
Scampi		SCI1		-	×	-	×	-	-	N/A		N/A	
		SCI2		-	×	-	×	-	-				
		SCI3		7	×	68	✓	305	4,113				
		SCI4A		-	×	6	×	-	153				
		SCI6A/6B & 7		-	×	265	✓	-	20,637				

Table 7: Numbers of length frequency samples and otoliths collected by observers during the 2015/16 and 2016/17 fishing years for Tier 2 deepwater species and selected inshore species[40] by area

Species	Area	No. of length frequency samples		No. of fish measured		Pairs of otoliths collected	
		2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
Barracouta	BAR1	82	209	5,305	13,254	496	1,133
	BAR4	32	61	2,925	4,713	220	306
	BAR5	419	388	18,682	21,843	2,161	2,174
	BAR7	190	183	5,437	7,904	867	1,012
Alfonsino	BYX2	1	16	20	1,401	-	155
	BYX3	23	5	1,577	83	96	23
	BYX7	6	4	42	158	10	24
Cardinalfish	CDL1	-	1	-	100	-	5
	CDL2	2	-	40	-	11	-
	CDL3	-	1	-	18	-	5
	CDL4	1	1	20	80	5	5
	CDL5	-	2	-	29		5
Blue mackerel	EMA3	7	2	116	14	33	-
	EMA7	172	74	3,777	1,453	831	367
Frostfish	FRO2	-	2		21	-	6
	FRO3-4	6	4	119	45	29	9
	FRO5	-	6	-	125	-	31
	FRO7-9	167	116	3,203	2,866	696	589
Ghost shark, dark	GSH2	-	1	-	2	N/A	N/A
	GSH3	-	36	-	854		
	GSH4	50	31	799	622		
	GSH5	44	3	943	131		
	GSH6	55	42	835	816		
	GSH7	-	2	-	40		
Ghost shark, pale	GSP1	-	70	-	1,200	N/A	N/A
Ghost shark, pale	GSP5	17	21	323	355	N/A	N/A
	GSP7	12	13	179	221		
Giant spider crab	GSC3	3	4	29	192	N/A	N/A
	GSC5	41	45	1,054	1,707		
	GSC6A	200	135	5,305	4,848		
	GSC6B	2	1	42	20		

[40] This refers to species managed under an inshore fisheries plan that are primarily taken by the deepwater fleet

Species		Area	No. of length frequency samples		No. of fish measured		Pairs of otoliths collected	
			2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
Jack mackerel	Unspecified	JMA3/JMA7	6	1	87	20	7	10
Kingfish		KIN3	-	4	-	4	-	4
		KIN7/8	154	9	2,047	53	595	22
Lookdown dory		LDO1	2	4	35	39	6	-
		LDO3	12	15	200	290	8	30
Redbait		RBT3	11	56	326	2,708	52	20
		RBT7	26	4	918	80	118	282
Rubyfish		All areas	4	-	174	-	-	-
Ribaldo		RIB2	-	3	-	41	-	10
		RIB3/4	32	7	507	124	71	30
		RIB5/6	-	-	-	-	-	-
		RIB7	18	55	332	1,018	70	293
Gemfish		SKI1	-	3	-	121	-	-
		SKI2	-	9	-	112	-	2
		SKI3	-	40	-	713	-	198
		SKI7	14	49	97	680	31	174
Sea perch		SPE1	-	2	-	32	-	-
		SPE2	-	1	-	1	-	1
		SPE3	5	25	95	357	10	92
		SPE4	8	53	167	1,094	25	310
		SPE5	6	-	73	-	5	-
		SPE6	-	5	-	53	-	23
		SPE7	4	2	57	6	15	-
Silver warehou		SWA1	88	30	1,488	299	399	79
		SWA3	121	157	5,095	6,041	652	754
		SWA4	273	312	9,148	10,227	1,486	1,509
Spiny dogfish		SPD1	-	11	-	175	N/A	N/A
		SPD3	-	29	-	542		
		SPD4	5	9	84	139		
		SPD5	17	66	388	1,426		
		SPD7	-	14	-	210		
		SPD8	-	1	-	20		
Common warehou		WAR3	98	107	4,762	3,650	475	541
		WAR7	7	10	125	165	18	48

Species	Area	No. of length frequency samples		No. of fish measured		Pairs of otoliths collected	
		2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
White warehou	WWA3/4	20	12	598	435	96	55
	WWA5B	53	43	2,725	1,799	218	217
	WWA7	-	6	-	123	-	30

4.2 B.2 DEEPWATER FISHERIES RESEARCH

Research needs for deepwater fisheries are driven from the Objectives within the National Deepwater Plan and delivered primarily 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 2016/17 financial year, which are detailed in Table 8, included stock assessments, and trawl and acoustic surveys. All research projects are reviewed by the Ministry's Science Working Groups and assessed against the Ministry's 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 8: Deepwater Research planned for the 2016/17 financial year[41] and current status

Project code	Title	Status
DEE2016-01	Sub-Antarctic multi-species trawl survey	Complete
DEE2016-02	SBW Campbell acoustic survey	Complete
DEE2016-03	West Coast South Island multi-species trawl survey	Complete
DEE2016-04	Scampi 3 trawl/photographic survey	Complete
DEE2016-05	SBW Bounties acoustic survey (data analysis)	Complete
DEE2016-06	Smooth oreo 4 (SSO4) acoustic survey	Complete
DEE2016-08	Hoki stock assessment	Complete
DEE2016-09	Hake stock assessments (HAK4, 7)	Complete
DEE2016-10	Ling stock assessment (LIN7)	Complete
DEE2016-11	Southern blue whiting stock assessments (SBW6B, 6I)	Complete
DEE2016-12	Scampi – Auckland Islands (SCI6A)	Complete
DEE2016-13	Low information stock assessment (EMA7)	Deferred
DEE2016-16	Silver warehou characterisation (SWA3, 4)	In progress
DEE2016-19	Hoki shed sampling	Complete
DEE2016-20	Ageing of selected deepwater species	Complete
DEE2016-21	Orange roughy stock assessment (ORH3B NWR, ESCR)	Complete
DAE2016-01	Fish bycatch – SQU & SCI	In progress
DAE2016-05	Trawl footprint – annual update to 2015/16	Complete
DAE2016-06	Taxonomic ID of benthic samples	Cancelled

Table 9: Aquatic Environment Research planned for the 2016/17 financial year[42] and current status

Project code	Title	Status
PRO2016-01A	Demographic parameters of black petrels	In progress
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	In progress

[41] 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.

[42] 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
PRO2016-04	Characterisation and quantification of non-fishing threats on seabirds	Cancelled
PRO2016-06	Spatially explicit risk assessment query and simulation tool	In progress
PRO2016-09	Abundance and distribution of Hector's dolphin on South Coast South Island	In progress
PRO2016-12	Characterisation and quantification of non-fishing threats on Hector's and Maui dolphins	Cancelled
ZBD2016-01	Bryozoan taxonomy (indigenous fauna)	Cancelled
ZBD2016-03	Linking primary and secondary productivity	Cancelled
ZBD2016-04	Organic carbon recycling in deepwater	In progress
ZBD2016-05	Buffering eutrophication and prioritising climate change issues in coastal ecosystems	Cancelled
ZBD2016-07	Multiple stressors on coastal ecosystems-in situ	In progress
ZBD2016-09	Quantifying the role of biodiversity and habitat types in fisheries productivity	Cancelled
ZBD2016-10	Mapping ecosystem services across coastal and offshore habitats	Cancelled
ZBD2016-11	Quantifying benthic biodiversity across natural gradients	Contracted

4.2.1 Research reports

Final research reports from previously contracted work that were published in the 2016/17 year that relate to deepwater fisheries are shown in Table 10 below. Links to these documents are provided where possible, but all published reports can be found on the MPI website (www.mpi.govt.nz/news-and-resources/publications/)

Table 10: Final research reports published during the 2016/17 financial year of relevance to deepwater fisheries

Doc #	Title
Annual Documents	
2017 May Plenary	Ministry for Primary Industries (2017). Fisheries Assessment Plenary, May 2017: stock assessments and stock status. Volume 1 covers Alfonsino to Grouper. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand. 1596 p. https://fs.fish.govt.nz/Page.aspx?pk=61&tk=212
2017 May Plenary	Ministry for Primary Industries (2017). Fisheries Assessment Plenary, May 2017: stock assessments and stock status. Volume 2 covers Hake to Pilchard. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand. 1596 p. https://fs.fish.govt.nz/Page.aspx?pk=61&tk=212
2017 May Plenary	Ministry for Primary Industries (2017). Fisheries Assessment Plenary, May 2017: stock assessments and stock status. Volume 3 covers Pipi to Yellow-eyed Mullet. Compiled by the Fisheries Science Group, Ministry for Primary Industries, Wellington, New Zealand. 1596 p .https://fs.fish.govt.nz/Page.aspx?pk=61&tk=212
2016 AEBAR	Ministry for Primary Industries (2017). Aquatic Environment and Biodiversity Annual Review 2016. Compiled by the Fisheries Management Science Team, Ministry for Primary Industries, Wellington, New Zealand. 790 p. https://www.mpi.govt.nz/news-and-resources/open-data-and-forecasting/fisheries/
Aquatic Environment and Biodiversity Reports (AEBRs)	
174	Jones, E.G.; Morrison, M.A.; Davey, N.; Hartill, B.W.; Sutton, C. (2016). Biogenic habitats on New Zealand's continental shelf. Part I: Local Ecological Knowledge. New Zealand Aquatic Environment and Biodiversity Report No. 174. 113 p. https://www.mpi.govt.nz/document-vault/14563
175	Breen, P.A.; Fu, D.; Gilbert, D.J. (2016). Sea lion population modelling and management procedure evaluations. New Zealand Aquatic Environment and Biodiversity Report No. 175. https://www.mpi.govt.nz/document-vault/15349
176	Black, J.; Tilney, R. (2017). Monitoring New Zealand's trawl footprint for deepwater fisheries: 1989/90 to 2011/12 and 1989/90 to 2012/13. https://www.mpi.govt.nz/document-vault/15880

177	Anderson, O.F.; Edwards, C.T.T.; Roux, M-J. (2017). Fish and invertebrate bycatch and discards in New Zealand jack mackerel trawl fisheries from 2002–03 until 2013–14. New Zealand Aquatic Environment and Biodiversity Report No. 177. 71 p. https://www.mpi.govt.nz/document-vault/16171
178	Tuck, I.D; Hewitt, J.E.; Handley, S.J.; Lundquist, C.J. (2017). Assessing the effects of fishing on soft sediment habitat, fauna and process. New Zealand Aquatic Environment and Biodiversity Report No. 178. 143 p. https://www.mpi.govt.nz/document-vault/16006
180	Edwards, C.T.T.; Roberts, J.O.; Walker, K.; Elliott, G. (2017). Quantitative modelling of Antipodean wandering albatross. New Zealand Aquatic Environment and Biodiversity Report No. 180. 32 p. http://www.mpi.govt.nz/document-vault/16633
181	Anderson, O.F. (2017). Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990–91 until 2013–14. New Zealand Aquatic Environment and Biodiversity Report No. 181 https://www.mpi.govt.nz/document-vault/17437
182	Richard, Y.; Abraham, E. (2017) Sensitivity of the seabird risk assessment to three years without captures. New Zealand Aquatic Environment and Biodiversity Report No. 182. 8 p. https://www.mpi.govt.nz/document-vault/18386
183	Bowden, D.A.; Leduc, D. (2017). Ocean Survey 20/20, Chatham Rise Benthos: effects of seabed trawling on benthic communities. New Zealand Aquatic Environment and Biodiversity Report No. 183. 67 p. http://www.mpi.govt.nz/document-vault/18569
184	Abraham, E.R.; Richard, Y. (2017). Summary of the capture of seabirds in New Zealand commercial fisheries, 2002–03 to 2013–14. New Zealand Aquatic Environment and Biodiversity Report No.184. 88 p. http://www.mpi.govt.nz/document-vault/18698
185	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. New Zealand Aquatic Environment and Biodiversity Report No. 185. https://www.mpi.govt.nz/dmsdocument/21698
187	Mikaloff-Fletcher, S.E.; Bostock, H.C.; Williams, M.; Forcen, A. (2017). Modelling the Effects of Ocean Acidification in New Zealand. New Zealand Aquatic Environment and Biodiversity Report No. 187. 12 p. https://www.mpi.govt.nz/dmsdocument/21719

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2017/08	Stevens, D.W.; O'Driscoll, R.L.; Ballara, S.L.; Ladroit, Y. (2017). Trawl survey of hoki and middle depth species on the Chatham Rise, January 2016 (TAN1601). New Zealand Fisheries Assessment Report 2017/08. 131 p. http://fs.fish.govt.nz/Page.aspx?pk=113&dk=24276
2017/11	McKenzie, A. (2017). Assessment of hoki (*Macruronus novaezelandiae*) in 2016. New Zealand Fisheries Assessment Report 2017/11 80 p. http://fs.fish.govt.nz/Page.aspx?pk=113&dk=24263
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2017/19	O'Driscoll, R.L.; Dunford, A.J. (2017). Acoustic biomass estimates of southern blue whiting on the Bounty Platform in 2015. New Zealand Fisheries Assessment Report 2017/19. 29 p. http://fs.fish.govt.nz/Page.aspx?pk=113&dk=24275
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INT2013-02	Bell, E.A.; Bell, M.D. 2017. INT2013-02 Identification of seabirds caught in New Zealand fisheries: 1 July 2015 to 30 June 2016. Annual Technical Report to the Conservation Services Programme, Department of Conservation. Wellington, New Zealand. 26p. http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2015-16/identification-of-seabirds-captured-in-nz-fisheries-15-16/
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POP2014-02	Thompson, D.; Sagar, P.; Baker, B.; Jensz, K. (2017). Southern Buller's albatross survey at the Solander Islands 2016. NIWA Client Report 2017079WN. Report prepared for the Conservation Services Programme, Department of Conservation, Wellington, New Zealand. 18 p. http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2015-16/population-study-of-southern-bullers-albatrosses-on-solander-islands-2015-2016/
INT2015-04	Friesen, M.R., Ross, J.R., Robinson, R., Kozmian-Ledward, L. & Gaskin, C.P. 2017. Diving & foraging behaviour of petrels & shearwaters. Report prepared by Northern New Zealand Seabird Trust for the New Zealand Department of Conservation, Wellington. 28p. http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2015-16/diving-and-foraging-behaviour-of-petrels-and-shearwaters/
POP2015-03	Parker, G.C., Muller, C.G., Rexer-Huber, K. 2016. Northern giant petrel *Macronectes halli* breeding population survey, Auckland Islands, December 2015 – February 2016. Report prepared by Parker Conservation for the New Zealand Department of Conservation, Wellington. 16p. http://www.doc.govt.nz/our-work/conservation-services-programme/csp-reports/2015-16/northern-giant-petrel-survey-auckland-islands-2015-16/
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4.3 B.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. The Ministry's Compliance Directorate is responsible for providing the intervention services to achieve cost-effective compliance with all regulations.[43]

Adherence to all non-regulatory measures is reported in the relevant section of the next part of this report.

In mid-2015 the systems used by the Compliance Directorate to record and report details of vessel inspections changed. The new system currently has limited ability to extract relevant information regarding details of inspections or breaches. This means it is not possible to replicate the summaries presented in earlier Annual Review Reports.

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. Questions are answered with a rating of A, B, C or N/A. It is considered that ratings of A and B are acceptable performance. The interim trip report template is shown in Appendix V. Overall, 168 interim trip reports relating to observed trips on deepwater vessels were completed in the 2016/17 year. The majority of factors were rated A (69.5%); B (17.5%); and N/A (12%). Of the 168 trip reports over the year, only 13 trips had one of the 15 questions receive a C rating by observers (less than 1%) of the 15 questions in the 168 interim trip reports.

Table 11: Summary of 2016/17 interim trip reports where a 'C' rating was given

Factor	Number of 'C' ratings
QMS species are discarded only after correct estimation and authorisation[44]	2
QMS species identified accurately	1
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[45]	1
Fish is cut in accordance with the Conversion Factors Notice	2

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

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

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

Offal management was adequate (if VMP on board, meets specifications)[46]	4
Appropriate bird mitigation devices were deployed and in working condition for duration of trip	2
Observer Standard met (e.g. living conditions, water etc., were adequate)	1

4.4 B.4 COST RECOVERY LEVIES

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

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

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

Table 12 shows the total levied for the 2016/17 financial year from stocks managed under the National Deepwater Plan as well as the total levied across all New Zealand fisheries.

Table 12: Cost recovery levies for deepwater stocks and all New Zealand fisheries for the 2016/17 financial year

		Total levied ($) for stocks managed in National Deepwater Plan	Total levied ($) for all New Zealand fisheries
Compliance		6,184,224	10,464,000
Registry		2,309,037	3,907,000
Observers	MPI	2,064,954	3,494,000
	DOC	659,556	1,116,000
Research	MPI	4,883,433	8,263,000
	DOC	1,163,088	1,968,000
Unders & Overs	MPI	-1,067,346	-1,806,000
	DOC	-220,443	-373,000
Total		**15,976,000**	**33,282,000**

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

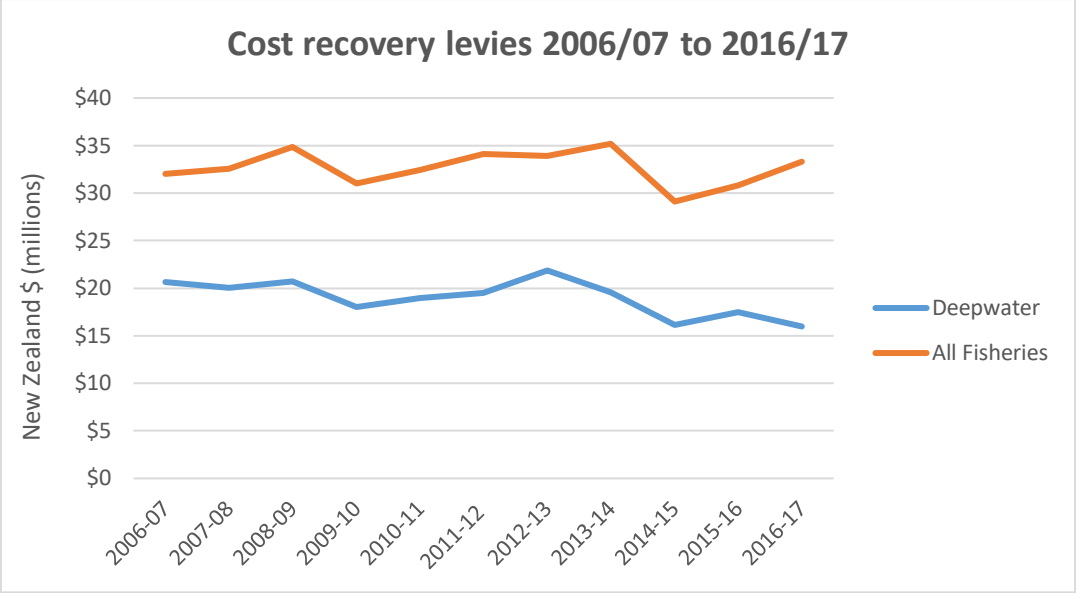


Figure 3: Total amount recovered by cost recovery levies between 2006/07 and 2016/17. Separate totals are shown for deepwater species and all species combined[47].

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 2016/17 fishing year. Species-specific environmental interactions are reported in Appendix III.

5.1 C.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 the Ministry work together to monitor adherence to non-regulatory management measures and environmental interactions.

Non-regulatory measures include vessel-specific management plans for mitigating incidental seabird captures (VMPs), Marine Mammal Operational Procedures (MMOP), and notification requirements for certain numbers of seabird or mammal captures (trigger points).

Vessel operators are required to report all captures of protected species to the Ministry on Non-fish/Protected Species Catch Returns. For reasons of increased reliability however, analyses of protected species interactions and adherence to non-regulatory measures is based on information collected on Ministry observed fishing trips.

Observers from each observed fishing trip are debriefed by MPI 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 provides feedback to operators after every observed trip.

[47] The large decline in deepwater levies cost recovered in 2013/14 is due to reprioritisation of research projects and shifting trawl surveys to alternating years.

The table below summarises the number of observed trips on trawl vessels >28 m (and scampi trawlers <28 m) completed during the 2012/13 to 2016/17 fishing years and the results of the audit of vessel adherence.

Table 13: Summary of MPI Observer audits of adherence to non-regulatory measures

Fishing year	Observed trawl trips	Reviews sent to and reviewed by DWG	Trips with no issues raised	Trips requiring follow up
2012/13	191	152	120	32
2013/14	183	162	128	34
2014/15	162	160	132	28
2015/16	162	160	140	20
2016/17	151	149	128	21

5.2 C.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. 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 14 reports all observed seabird captures by species from tows targeting Tier 1 deepwater species for the 2015/16 and 2016/17 fishing years.[48]

Table 14: Observed seabird captures for the 2015/16 and 2016/17 fishing years from the core deepwater fleet targeting Tier 1 species ('Other' includes decomposed or unknown life status[49])

	2015/16				2016/17			
Seabird species	Alive	Dead	Other	Total	Alive	Dead	Other	Total
Albatrosses (Unidentified)	6	1	3	10	1	5	3	9
Black (Parkinson's) petrel	0	3	0	3	0	0	0	0
Black-browed albatross	0	2	0	2	0	0	0	0
Buller's albatross	10	38	0	48	3	6	0	9
Buller's and Pacific albatross	0	9	1	10	2	4	0	6
Campbell albatross	0	0	0	0	0	1	0	1
Cape petrels	2	2	0	4	1	1	0	2
Chatham Island albatross	0	1	0	1	0	0	0	0
Common diving petrel	3	2	0	5	0	0	0	0
Fairy prion	0	0	0	0	0	0	0	0
Flesh-footed shearwater	5	1	0	6	1	0	0	1
Giant petrels (Unidentified)	0	1	0	1	1	0	0	1
Great albatrosses	4	0	0	4	0	1	0	1
Grey petrel	2	2	0	4	0	3	0	3
Mid-sized petrels & shearwaters	2	0	0	2	0	3	0	3
Mottled petrel	0	0	0	0	0	0	0	0

[48] This table uses raw data from MPI Observers; species identifications have not yet been verified and are subject to change after specimens are necropsied or observer photos are formally identified.

[49] But excludes deck strikes

Petrel (Unidentified)	3	4	0	7	7	1	0	8
Petrels, prions and shearwaters	2	1	1	4	0	1	0	1
Prions (Unidentified)	2	0	0	2	0	0	0	0
Procellaria petrels	9	4	0	13	3	3	1	7
Royal albatrosses	1	1	0	2	3	1	0	4
Salvin's albatross	9	37	1	47	7	16	0	23
Shearwaters	1	17	0	18	4	1	0	5
Smaller albatrosses	4	0	0	4	1	0	0	1
Sooty shearwater	7	31	0	38	9	96	0	105
Southern royal albatross	0	0	0	0	0	1	0	1
Storm petrels	0	0	0	0	0	2	0	2
Wandering albatross (Unidentified)	1	0	0	1	0	0	0	0
Westland petrel	0	0	0	0	2	1	0	3
White-capped albatross	35	55	1	91	20	35	5	60
White-chinned petrel	38	187	1	226	23	128	0	151
White-faced storm petrel	1	0	0	1	0	0	0	0
Total	147	399	8	554	88	310	9	407

Table 15a summarises the proportion of observed seabird captures released alive on the deepwater trawl fleet between the 2012/13 and 2016/17 fishing years. Table 15b summaries the capture method of observed seabird captures on deepwater trawl vessels between the 2013/14 and 2016/17 fishing years.

Table 15a. Proportion of observed seabird captures released alive on the deepwater trawl fleet between the 2012/13 and 2016/17 fishing years.

Fishing year	Percentage released alive
2012/13	43
2013/14	45
2014/15	55
2015/16	31
2016/17	25

Table 15b. 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[50]			Warp captures			Other[51]		
	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

Table 16 shows industry reported seabird captures between the 2012/13 and 2016/17 fishing years. Tables 17 and 18 show the observed and model estimated total captures from all trawl fisheries, and by deepwater vessels targeting species in the National Deepwater Plan (includes some effort from vessels <28 m).

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

[51] Includes unknown capture methods, impacts against the superstructure of the vessel, birds caught in mitigation devices and birds tangled with paravanes.

Table 19 shows the observed captures and capture rate for ling longline fisheries between the 2008/09 to 2016/17 fishing years. This is the only Tier 1 deepwater species fished using bottom longlines. Seabird interactions by fishery are reported in Appendix I.

Table 16: In-zone industry-reported seabird interactions between the 2012/13 and 2016/17 fishing years from the core deepwater fleet and any vessels targeting Tier 1 deepwater species (includes bottom longlining)[52]

Fishing year	Large seabirds			Small seabirds			Total
	Alive	Dead	Total	Alive	Dead	Total	
2012/13	84	252	336	223	352	575	**911**
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**

Table 17: Observed seabird captures and modelled estimates of total captures* in all New Zealand trawl fisheries by vessels >28 m[53] from 2012/13 to 2016/17

Fishing Year	Observed					Estimated[54]	
	Tows	Tows observed	% of tows observed	Observed captures	Capture rate (per 100 tows)	Estimated total captures	95% confidence interval
2012/13	23,970	11,817	49.3	704	5.95	1,051	955 – 1,168
2013/14	25,660	11,217	43.7	463	4.12	808	719 - 919
2014/15	25,623	11,439	44.6	597	5.21	1,019	910 – 1,153
2015/16	25,008	11,524	46.0	435	3.77	729	654 - 826
2016/17	26,325	11,424	43.4	409	3.58	-	-

* Does not include estimates of cryptic mortality

Table 18: Observed seabird captures for New Zealand deepwater and middle-depth fisheries for the 2016/17 fishing year (includes effort by vessels <28 m).

Target species	Tows	Tows observed	% of tows observed	Observed captures
Hoki	12,865	2,936	22.8	62
Hake	535	430	80.4	1
Ling (trawl)	1,223	255	20.9	16
Squid (trawl)	2,586	1,940	75	270
Southern blue whiting	523	523	100	6
Jack mackerel	1,392	1030	74	4
Scampi	4,696	447	9.5	12
Deepwater (ORH/OEO/CDL)	4,812	2,416	50	2
Barracouta	2,734	1,130	41.3	41
Total	**31,366**	**11,107**	**35.4**	**414**

[52] From Non-fish and Protected Species Bycatch forms. These data are not cumulative with Table 14: an observed capture will also have been reported by the vessel (i.e. the sea bird observed captures are the same events as the industry reported seabird captures).

[53] From https://data.dragonfly.co.nz

[54] Estimated captures for the 2016/17 year not available at the time of publication

Table 19: Observed and estimated[55] seabird captures from ling bottom longline fisheries (includes all ling stocks and vessels <28 m), 2012/13 to 2016/17

		Observed				Estimated	
Fishing Year	Hooks	Hooks observed	% of hooks observed	Observed captures	Capture rate (per 1000 hooks)	Estimated total Captures	95% confidence interval
2012/13	12,969,980	226,550	1.7	0	0.000	632	329 – 1,243
2013/14	21,812,848	1,979,516	9.1	30	0.015	1,013	556 – 1,893
2014/15	19,436,286	581,000	3.0	16	0.028	802	424 – 1,571
2015/16	23,568,780	2,096,941	8.9	89	0.042	913	524 – 1,681
2016/17	27,380,500	3,864,197	14.1	35	0.009	-	-

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**.

5.2.1.1 Vessel Management Plans (VMPs)

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 on 21 trips in 2016/17 and were classed as being in one of four general categories (Table 22). Offal management issues were followed up 10 times.

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 22: Breakdown of reviews with VMP-related issues during 2013/14 to 2016/17 fishing years

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

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 could be considered to be relevant to both VMPs and the MMOP. During the 2016/17 fishing year there were 13 trips that required follow up in

[55] Estimated captures for the 2016/17 year not available at the time of publication

relation to offal management related issues (Table 23). 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 23: Breakdown of offal management-related reviews for VMP/MMOP issues during 2013/14 to 2016/17 fishing years

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

5.2.1.2 Seabird bycatch trigger point notifications

All trawl and bottom longline vessels over 28 metres or targeting ling by bottom long lining 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 11 trigger point activations for seabird captures in the 2016/17 fishing year. Trigger point specifics and activations are summarised in Table 24 below. Most seabird trigger point activations are as 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 Environmental Liaison Officer 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 Environmental Liaison Officer will determine what additional mitigation measures the vessel should take (if any).

MPI monitors trigger point alerts closely and is notified by DWG of the subsequent mitigation actions taken by the vessel. MPI Observers on board Deepwater Vessels audit performance of the DWG Operational Procedures.

Table 24: Number of trigger point activations (as reported by DWG) for seabirds in 2012/13 to 2016/17 fishing years from trawl vessels >28 m (overall length), trawl vessels <28 m targeting scampi or bottom long line vessels targeting ling (any size).

Species	Trigger points		2012/13	2013/14	2014/15	2015/16	2016/17
	Captures in any 24 hr period	Captures in any 7 day period					
Seabirds - large	3 or more	10 or more of any species	7	3	0	8	3
Seabirds - small	5 or more		18	5	11	3	8

5.3 C.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 25

reports all observed and industry-reported marine mammal captures in deepwater fisheries from 2014/15 to 2016/17 fishing years.

Table 26 shows the model estimated total captures from trawl fisheries for the 2012/13 to 2016/17 fishing years and Table 27 shows fur seal capture estimates from fishing activity targeting species in the National Deepwater Plan. Marine mammal interactions by fishery are reported in Appendix I.

Table 25: Observed and industry reported captures of marine mammals by the core deepwater fleet or vessels targeting Tier 1 deepwater fisheries 2014/15 to 2016/17 fishing years.[56] Records involving decomposing carcasses have not been included

Species	Observed captures[57]						Industry reported captures					
	Alive			Dead			Alive			Dead		
	2014/2015	2015/2016	2016/2017	2014/2015	2015/2016	2016/2017	2014/2015	2015/2016	2016/2017	2014/2015	2015/2016	2016/2017
Common dolphin	0	0	0	20	4	0	0	0	0	24	3	0
Dusky dolphin	0	0	0	2	0	0	0	0	0	2	0	0
NZ fur seal	13	8	11	111	99	67	30	27	25	237	165	153
Elephant seal	0	0	0	0	0	0	0	0	0	0	0	1
Leopard seal	0	0	0	0	0	0	0	0	1	0	0	1
NZ sea lion	0	0	0	8	4	3	0	0	0	7	4	3
Seals and sea lions[58]	0	0	0	0	0	0	0	3	0	3	1	1
Dolphins and toothed whales[59]	0	0	0	0	0	0	0	0	0	0	1	0

Table 26: Model estimated total captures of marine mammals from all trawl vessels since the 2012/13 fishing year. Records involving decomposing carcasses have not been included.

	Fishing effort			Observed captures		Estimated captures[60]		
	All tows	Observed tows	% tows observed	Number	Rate (per 100 tows)	Mean captures	95% C.I.	% tows included[61]
New Zealand fur seal								
2012/13	83,832	12,401	14.8	121	0.98	438	270 – 760	100
2013/14	85,113	13,203	15.5	159	1.20	416	291 – 630	100
2014/15	78,754	13,869	17.6	127	0.92	536	332 – 969	100
2015/16	78,040	14,181	18.2	109	0.77	-	-	-
2016/17	80,082	15,281	19.1	79	0.52	-	-	-
Common dolphin								
2012/13	83,832	12,401	14.8	17	0.14	116	52 – 218	100
2013/14	85,113	13,203	15.5	30	0.23	118	62 – 208	100
2014/15	78,754	13,869	17.6	21	0.15	104	50 – 189	100
2015/16	78,040	14,181	18.2	8	0.06	-	-	-
2016/17	80,082	15,281	19.1	1	0.01	-	-	-

[56] 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.

[57] Excludes effort outside the EEZ

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

[59] As per 58 above.

[60] Estimated captures of FUR, CDD & HSL for the 15/16 and 16/17 fishing years not available at the time of publication.

[61] Only those tows conducted within the known range of New Zealand sea lion are included when modelling estimated captures for this species

New Zealand sea lion								
2012/13	83,832	12,401	14.8	25	0.2	32	27 – 39	18.2
2013/14	85,113	13,203	15.5	4	0.03	10	6 – 17	17.5
2014/15	78,754	13,869	17.6	8	0.06	12	8 – 17	16.2
2015/16	78,040	14,181	18.2	4	0.03	-	-	-
2016/17	80,082	15,281	19.1	3	0.02	-	-	-

Table 27: 2016/17 Observed NZ fur seal captures from New Zealand deepwater and middle-depth fisheries (this represents the most up to date information available). Records involving decomposing carcasses have not been included.

Target species	Tows	Tows observed	% of tows observed	Observed captures
Hoki	12,865	2,936	22.8	38
Hake	535	430	80.4	1
Ling (trawl)	1,223	255	20.9	3
Squid (trawl)	2,586	1,940	75	17
Southern blue whiting	523	523	100	11
Jack mackerel	1,392	1030	74	0
Scampi	4,696	447	9.5	1
Deepwater (ORH/OEO/CDL)	4,812	2,416	50	0
Barracouta	2,734	1,130	41.3	6
Total	**31,366**	**11, 107**	**35.4**	**77**

5.3.1.1 Marine Mammal Operational Procedure

The Marine Mammal Operational Procedure (MMOP) aims to reduce the risk of incidental captures of marine mammals during deepwater fishing activity. Measures included in the MMOP include minimising the amount of time the trawl gear is on the surface, removing stickers from the net before shooting it, moving away from large congregations of marine mammals before shooting if possible, and always 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.

5.3.1.2 Marine mammal trigger point notifications

All trawl vessels over 28 metres are required to notify DWG any time they capture more than a given number of marine mammals within a defined time period. There were 8 trigger point activations for marine mammal captures in the 2016/17 fishing year. These are summarised in Table 26 below.

Table 28: Marine mammal trigger point activations for the 2013/14 to 2016/17 fishing years

Species	Trigger Points		2013/14	2014/15	2015/16	2016/17
	Captures in any 24 hr period	Captures in any 7 day period				
NZ fur seal	2	5	9	8	6	4
Common dolphin	1	0	7	14	2	0
NZ sea lion	1	0	5	8	3	3
Elephants seal	1	0	0	0	0	1

5.4 C.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 below). It also became possible for fishers to return dead mako, porbeagle and blue sharks to the sea and report catch against ACE (fishers were already able to return these species, as well as rig and school shark, to the sea if they were alive and likely to survive).

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

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

In 2013, a trigger point was added to the Deepwater Fisheries Operational Procedures that requires vessels to report any basking shark captures to Deepwater Group Ltd within 24 hours; 7[62] triggers were reported for basking shark captures during the 2016/17 fishing year.

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 which does 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. All information regarding 'landings' is based on a 'core deepwater fleet' which includes most trawl vessels over 28 metres, scampi fishing vessels, and bottom longline vessels over 28 metres. Information is also obtained from observer records, from fishing effort targeting Tier 1 species.

[62] One BSK was badly decomposed at time of capture

Table 30: Observed and industry reported captures of protected shark species from the core deepwater fishing fleet in the 2016/17 fishing year[63]

	Observed Captures	Industry-reported
Basking shark	5	8
White pointer shark	3	3

Table 31: Reported landings (tonnes, in-zone) of the three categories of elasmobranchs from the core deepwater fishing fleet in 2016/17

	Chimaeras	Rays & Skates	Sharks & Dogfish	Total
Generic reporting code	9	5	268	282
QMS species	789	565	3,301	4,655
Other	14	6	558	578
Total	**812**	**576**	**4,127**	**5,516**

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 the Ministry in future. The use of generic reporting has improved over time (Table 32); for example use of the code OSD has decreased (Table 32).

Table 32: Use of generic reporting codes from both observer data and reported landings 2012/13 to 2016/17 as a percent of total reported elasmobranch landings/catches in the core deepwater fleet.

Year	% industry-reported shark landings with generic codes (DW fleet only)	% of observed shark catches with generic codes (from trips on DW vessels only)
2012/13	9	3
2013/14	4	1
2014/15	4	1
2015/16	6	3
2016/17	5	1

Details of elasmobranch landings by the core deepwater fleet during 2016/17 are summarised in Table 33.

Table 33: Details of elasmobranchs (managed under the QMS system) landed by the core deepwater fleet during the 106/17 fishing year.

Species	Total landings by DW fleet (tonnes greenweight)	% of total landings of that species processed	Amount processed (excluding GRE) (t)	Amount mealed (t)	Amount discarded under observer approval (t)	Amount discarded dead (Schedule 6)	Amount returned alive (Schedule 6)
Blue shark	4	0.0	-	<1	N/A	3	<1
Elephant fish	13	81.4	10	<1	2	N/A	-
Dark ghost shark	662	80.6	534	47	36	N/A	-
Mako shark	12	0.0	-	<1	N/A	9	2
Pale ghost shark	917	74.3	681	212	11	N/A	-
Porbeagle shark	16	0.0	<1	<1	N/A	11	5
Rig	15	54.4	8	<1	5	N/A	2
Rough skate	324	53.0	171	31	16	N/A	22
School shark	219	81.5	179	15	15	N/A	5
Smooth skate	435	73.0	318	73	12	N/A	14

[63] These are not cumulative, an observed capture will also have been reported by the vessel (i.e. the white pointer shark observed captures are the same events as the industry reported white pointer shark captures).

Spiny dogfish	4,306	0.0	1	1,550	N/A	2,604 (destination code M)	
Total	6,923	-	1,902	1,928	97	23[64]	50[65]

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).

5.5 C.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 34, full details of all Tier 3 species caught in deepwater fisheries can be found in Appendix III.

Table 34: Landings (tonnes) of the top 40 Tier 3 species 2012/13 to 2016/17 (core deepwater fleet only)

Species code	Common name	2012/13	2013/14	2014/15	2015/16	2016/17
JAV	Javelinfish	4,071	3,922	4,234	4,300	5,366
RAT	Rattails	4,047	3,378	3,682	3,630	5,069
NCB	Smooth red swimming crab	717	169	186	143	491
SND	Shovelnose dogfish	135	283	251	429	377
ETB	Baxter's lantern dogfish	41	300	290	253	309
OSD	Other sharks and dogfish	546	226	189	291	268
STU	Slender tuna	262	582	235	177	209
SDO	Silver dory	127	225	231	230	192
WSQ	Warty squid	96	93	89	84	173
SSI	Silverside	105	98	123	134	169
SLK	Slickhead	44	65	107	115	166
BSH	Seal shark	198	128	87	81	139
LCH	Long-nosed chimaera	113	123	111	128	138
CSQ	Leafscale gulper shark	30	96	123	178	127
BEL	Bellowsfish	51	45	53	56	106
FHD	Deepsea flathead	102	78	105	99	100
MOD	Morids	28	37	62	63	99
BEN	Scabbardfish	18	49	44	50	90
HCO	Hairy conger	48	45	63	90	80
BCD	Black cod	2	17	10	37	78
DWD	Deepwater dogfish	35	59	68	70	71
SFI	Starfish	47	44	48	73	70
RHY	Common roughy	119	41	116	67	64
HJO	Johnson's cod	21	17	20	34	61
CRB	Crab (unspecified)	72	35	37	80	57
CAR	Carpet shark	32	40	60	46	48
RUD	Rudderfish	53	55	57	47	46
CON	Conger eel	66	91	107	41	42

[64] Excludes spiny dogfish discards

[65] See above

Species code	Common name	2012/13	2013/14	2014/15	2015/16	2016/17
DWE	Deepwater eel (unspecified)	10	15	16	22	40
ETL	Lucifer dogfish	32	21	32	34	36
SRH	Silver roughy	22	48	63	25	33
THR	Thresher shark	17	25	31	23	32
POP	Porcupine fish	33	32	31	26	31
NSD	Northern spiny dogfish	20	25	50	27	29
CDO	Capro dory	35	61	58	34	28
TOA	Toadfish	28	24	28	15	27
SCO	Swollenhead conger	16	16	9	29	26
CYP	Longnose velvet dogfish	8	38	10	20	26
CBE	Crested bellowfish	16	39	36	33	25
BEE	Basketwork eel	14	14	13	22	24

5.6 C.6 BENTHIC INTERACTIONS

5.6.1 Benthic bycatch

Targeting many deepwater fisheries utilises methods which mean fishing gear regularly makes contact with the seabed. This can lead to bycatches 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 2014/15 and 2016/17 are shown in Table 35.

Table 35: Observed[66] and industry reported catch of benthic species from the core deepwater fleet and all vessels targeting Tier 1 species from the 2014/15, 2015/16 and 2016/17 fishing years.

Phylum	Common name	2014/15		2015/16		2016/17	
		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)	1,505	838	12,221	1,022	265	8,885
	Corals (generic codes)	2,851	1,658	1,551	12,713	13,257	13,529
	Soft corals	92	0	3	0	28	0
	Anemones	7,618	3	6,902	375	11,718	285
	Sea pens	50	0	121	0	47	0
	Hydroids	10	0	77	0	42	0
Porifera	Sponges	12,674	64,367	18,998	61,019	56,742	116,555

[66] Excludes effort outside the EEZ

5.6.2 Trawl footprint

The total trawl footprint has been calculated from 1989/90 to 2015/16 for eleven main deepwater species, as well as the cumulative footprint for all deepwater fisheries.[67, 68] The reporting is based on all relevant TCEPR, TCER and CELR reporting forms, 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 fishstock footprint for 1990–2016 was estimated at 335,812 km^2. This represents 8.2% of the seafloor between the coastline and the outer boundary of the EEZ and 24% of the seafloor that is open to fishing down to 1600 m. The Tier 1 target fisheries accounted for 93% of the total 1990–2016 deepwater footprint, with hoki effort contributing approximately 50% to the total (figure 4). Hoki trawls covered about 12% of the seafloor open to fishing. The total footprints for each of the other Tier 1 targets covered about 1% or less of the seafloor out to the outer EEZ boundary (with the remainder taken up by the Tier 2 target footprint). Approximately 76 square kilometres of seafloor contacted in 2016 had not been contacted during the previous 26 years. Most of this was orange roughy fishing across the north-eastern Challenger Plateau in Statistical Area 701.

Changes in the annual trawl footprint are shown below (Figure 4). The distribution of the 1989/90-2015/16 and 2015/16 trawl footprints for Tier 1 and Tier 2 targets combined relative to 'fishable area' is shown in Figure 5. Swept area for each individual Tier 1 species is reported in Appendix I.

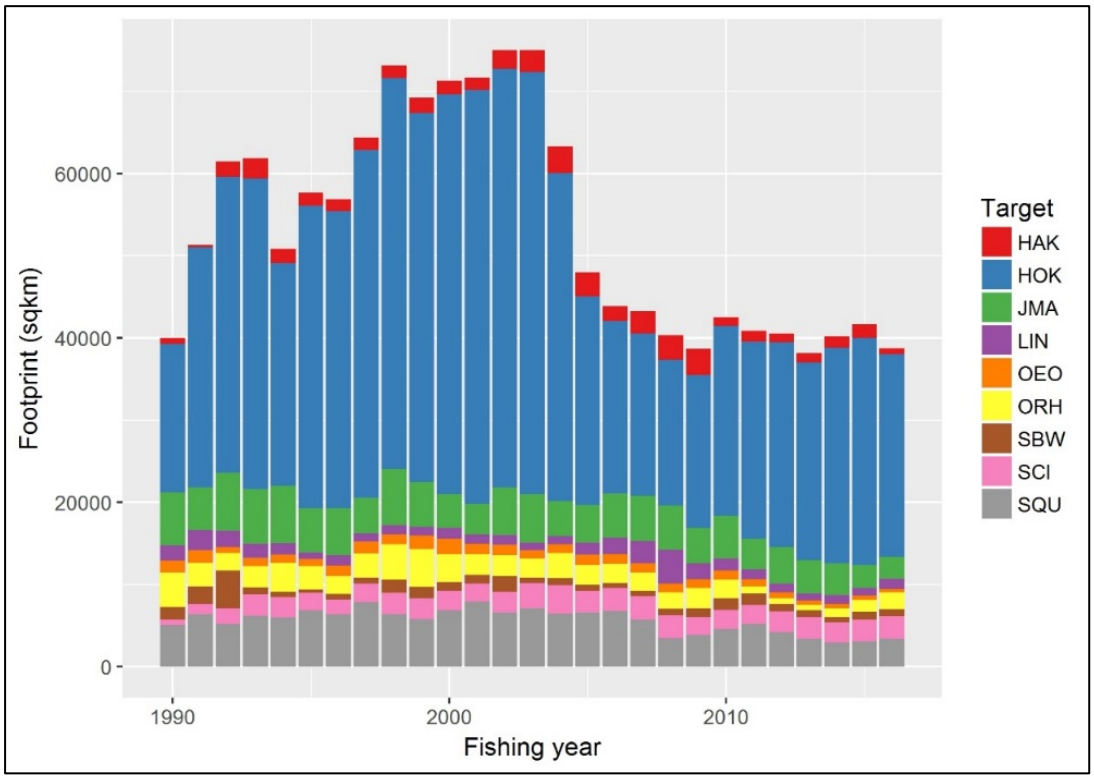


Figure 4: The annual footprint for Tier 1 deepwater fishstocks, based on TCER and TCEPR forms, for fishing years 1989/90–2015/16.[69]

[67] Black, J. and R. Tilney (2017). Monitoring New Zealand's trawl footprint for deepwater fisheries: 1989-1990 to 2011-2012 and 2012-13. *New Zealand Aquatic Environment and Biodiversity Report No. 176*.

[68] 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.

[69] 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

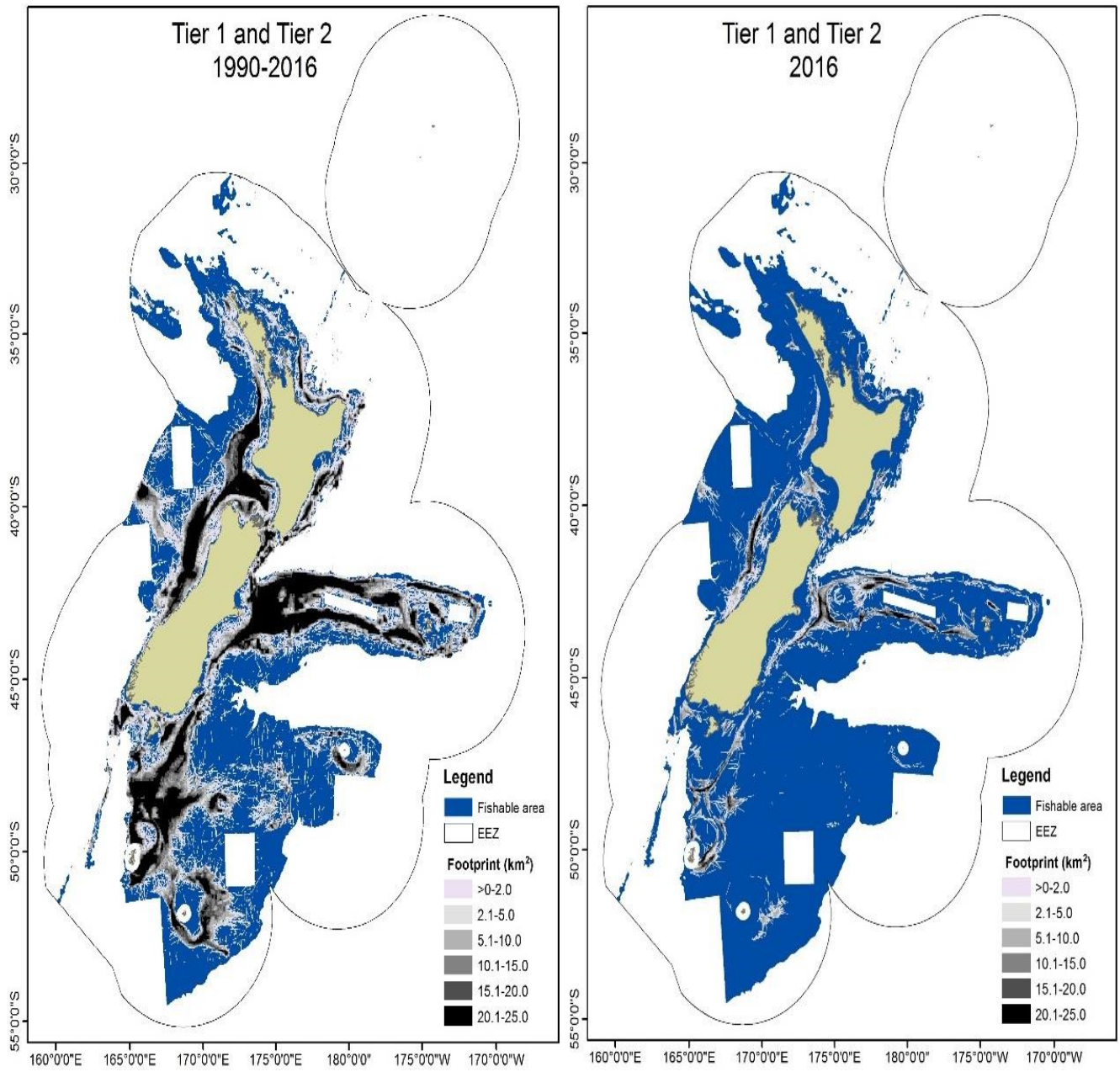
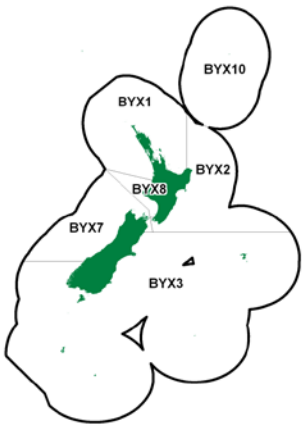


Figure. 5 – Distribution of the cumulative 1989/90-2015/16 trawl footprint and the annual 2015/16 trawl footprint for Tier 1 and Tier 2 targets combined, relative to 'fishable area'[70]

[70] 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 2015-60. *New Zealand Aquatic Environment and Biodiversity Report No. 193*. 102 p

6 Appendix I: Summaries of NZ Deepwater Fisheries 2016/17

6.1 ALFONSINO (TIER 2) BYX



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
BYX1	22	304	300	2	2	31.3
BYX2	1,611	-	1,575	-	-	-
BYX3	991	-	1,010	-	-	-
BYX7	29	-	81	-	-	-
BYX8	0	-	20	-	-	-

Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	B_{MSY} (30-50% B_0)	BYX1 B_{2010}	Likely (>60%) to be at or above B_{MSY}
	40% B_0	All other stocks	Unknown
Soft Limit	20% B_0	BYX1	Very Unlikely (<10%) to be below
		All other stocks	Unknown
Hard Limit	10% B_0	BYX1	Very Unlikely (<10%) to be below
		All other stocks	Unknown

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
BYX1	$1.98	$2.20	$2.64	$3.08	$3.52	$3.96	$4.40	0
BYX3								0
BYX7								0
BYX8								0
Stock		100-110%	110-130%	130-150%	150-170%	170-190%	190%+	
BYX2		$2.20	$2.64	$3.08	$3.52	$3.96	$4.40	$60,353

Economic indicators (calendar year)	
Quota value 2016	$NZ 62.9 m
Export earnings 2017	$NZ 13.9 m FOB (includes catch taken outside the EEZ)

6.2 BARRACOUTA (TIER 2) BAR

2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
BAR4	2,606	N/A	3,019	N/A	N/A	N/A
BAR5	8,916	8,370	8,200	3	2	0
BAR7	7,128	N/A	11,173	N/A	N/A	N/A

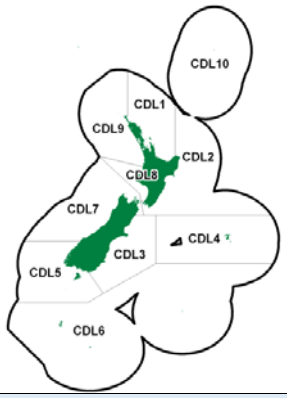
Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	BAR4	Unknown
		BAR5	Unknown
		BAR7	Unknown
Soft Limit	20% B_0	BAR4	Unknown
		BAR5	Unknown
		BAR7	Unknown
Hard Limit	10% B_0	BAR4	Unknown
		BAR5	Unknown
		BAR7	Unknown

Deemed value rates (per kg) and charges								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
BAR7	$0.12	$0.24	$0.29	$0.33	$0.38	$0.43	$0.48	$0.24
Stock	Interim	100-110%		110-120%		120%+		
BAR4 BAR5	$0.12	$0.25		$0.50		$1.00		0 $32,011

Environmental indicators and observer coverage			
Observer coverage	2014/15: 37.7% tows observed	2015/16: 30.5% tows observed	2016/17: 41.3% tows observed
Seabirds	2014/15: 25 observed captures; 125 estimated	2015/16: 38 observed captures; 119 estimated	2016/17: 41 observed captures;
Fur seals	2014/15: 5 observed captures; 33 estimated	2015/16: 3 observed captures	2016/17: 6 observed captures

Economic indicators (calendar years)	
Quota value 2016	$NZ 70.5 m (includes BAR1 holdings)
Export earnings 2017	$NZ 40.1 m FOB

6.3 BLACK CARDINALFISH (TIER 2) CDL



2016/17 Landings, Catch limits, and Allowances (in tonnes)						
Stock	2016/17 Catch	TAC	TACC	Recreational	Customary	Other fishing related mortality
CDL1	12	1,320	1,200	0	0	120
CDL2	369	460	440	0	0	20
CDL3	101	196	196	0	0	N/A
CDL4	22	66	66	0	0	N/A
CDL5	87	22	22	0	0	N/A
CDL6	2	1	1	0	0	N/A
CDL7	5	39	39	0	0	N/A
CDL8	0.0	0	0	0	0	N/A
CDL9	1	4	4	0	0	N/A

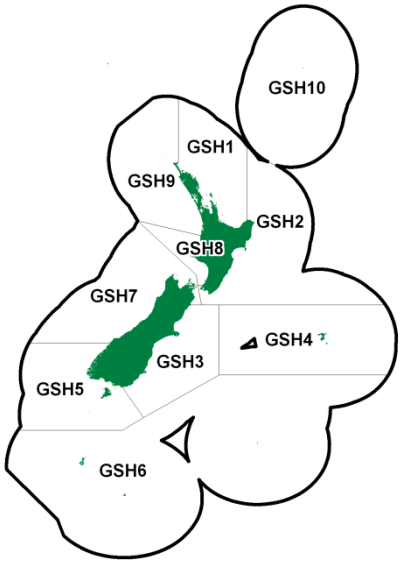
Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	CDL2, 3 & 4	2009: Very Unlikely to be at or above target (<10%)
Soft Limit	20% B_0	CDL2, 3 & 4	2009: Likely to be below the soft limit (>60%)
Hard Limit	10% B_0	CDL2, 3 & 4	2009: About as Likely as Not to be below the hard limit (40-60%)

Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
CDL1 CDL6 CDL7 CDL8 CDL9	$0.15 per kg	$0.30 per kg	na	0 $161 0 0 0
CDL2	$0.30 per kg	$0.60 per kg	$0.69 @> 120%	0
CDL5	$0.26 per kg	$0.52 per kg	na	$33,942
CDL3 CDL4	$0.26 per kg	$0.52 per kg	$0.60 @ > 120%	0 0

Environmental indicators and observer coverage			
Observer coverage	2014/15: 10.2% tows observed	2015/16: 11.5% tows observed	2016/17: 17.3% tows observed
Seabirds	2014/15: 0 observed; 0 estimated	2015/16: 0 observed captures; 0 estimated	2016/17: 0 observed captures
NZ fur seal	2014/15 0 observed, 0 estimated	2015/16: 0 observed captures	

Economic indicators (calendar year)	
Quota value 2016	$NZ 3.1 m
Export earnings 2017	$NZ 0.9 m FOB

6.4 DARK GHOST SHARK (TIER 2) GSH



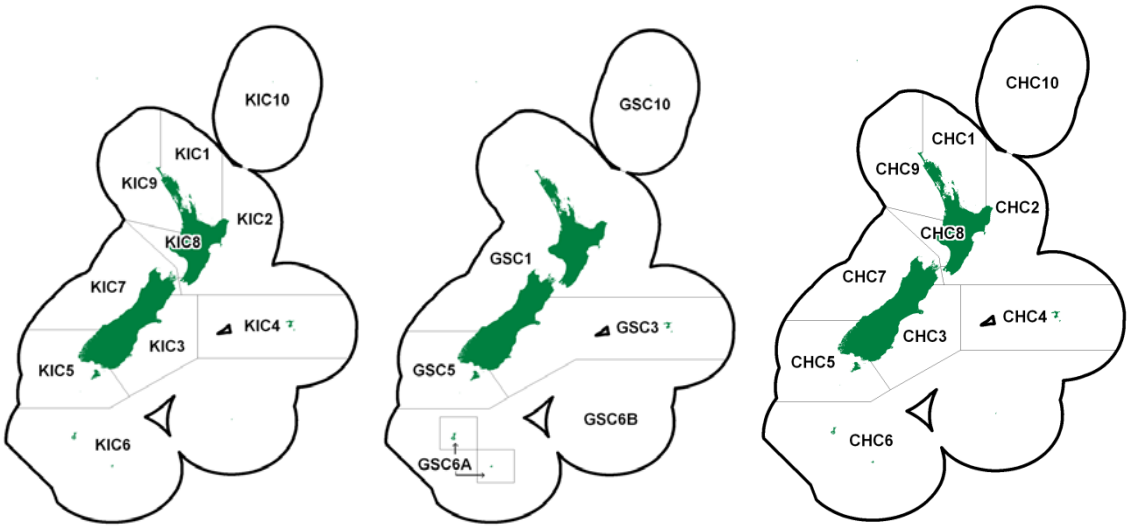
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
GSH4	223	370	370	0	0	-
GSH5	83	109	109	0	0	-
GSH6	58	95	95	0	0	-

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

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
GSH4 GSH5 GSH6	$0.36	$0.40	$0.48	$0.56	$0.64	$0.72	$0.80	$2 0 0

Economic indicators (calendar year)	
Quota value 2016	$NZ 5.8 m (includes GSH1, GSH2, GSH3, GSH7, GSH8 & GSH9 holdings)
Export earnings 2017	$NZ 1.4 m FOB (includes both pale and dark ghost shark, export statistics are not provided for individual ghost shark species)

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



2016/17 Landings, Catch limits and Allowances [71] (tonnes) (only shown for stocks where catches > 0.1 t were taken)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
KIC2(incl. 2E)[72]	<1	10	10	0	0	0
KIC3	<1	10	10	0	0	0
KIC6	<1	10	10	0	0	0
GSC3	6	15	14	0	0	1
GSC5	49	20	19	0	0	1
GSC6A	132	165	148	0	0	17
GSC6B	<1	250	237	0	0	13
CHC2	<1	10	10	0	0	0

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

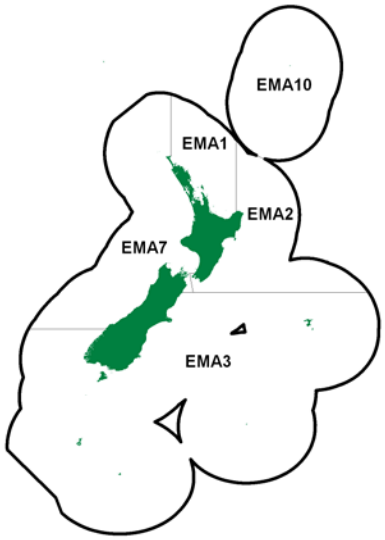
Deemed value rates and charges (per kg) (only shown where deemed values were accrued)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
GSC5 GSC6A CHC2	$1.62	$1.80	$2.16	$2.52	$2.88	$3.24	$3.60	$4,850 $0.10 $49

Economic indicators (calendar year)	
Quota value 2016	Not available
Export earnings 2017	$NZ 0.3 m FOB (reported as 'crabs')

[71] All catch information is based on the April fishing year (1 April 2016 – 31 March 2017)

[72] A special permit relating to research on this stock provides for some catch to be taken above the TACC

6.6 ENGLISH MACKEREL (TIER 2) EMA



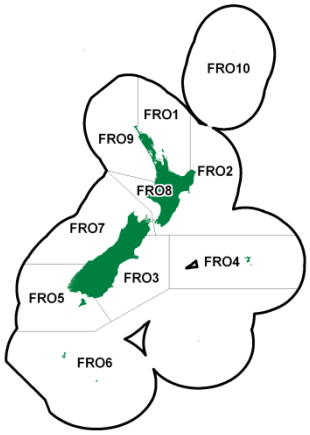
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
EMA3	126	392	390	1	1	0
EMA7	625	3,352	3,350	1	1	0

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

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2015/16 Actual
EMA3 EMA7	$0.13	$0.26	$0.312	$0.364	$0.416	$0.468	$0.52	0 0

Economic indicators (calendar year)	
Quota value 2016	$NZ 26.1 m (includes EMA1 & EMA2 holdings)
Export earnings 2017	$NZ 11.1 m FOB (includes all stocks)

6.7 FROSTFISH (TIER 2) FRO



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
FRO3	9	176	176	0	0	N/A
FRO4	9	28	28	0	0	N/A
FRO5	27	135	135	0	0	N/A
FRO6	0.0	11	11	0	0	N/A
FRO7	1164	2,625	2,623	1	1	N/A
FRO8	553	649	649	0	0	N/A
FRO9	96	140	138	1	1	N/A

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

Deemed value rates and charges			
Stock	Interim	Annual	2016/17 Actual
FRO3	$0.17 per kg	$0.34 per kg	0
FRO4	$0.22 per kg	$0.24 per kg	0
FRO5 FRO6 FRO7	$0.08 per kg	$0.15 per kg	0 0 0
FRO8 FRO9	$0.14 per kg	$0.15 per kg	0

Economic indicators (calendar year)	
Quota value 2016	$NZ 3.9 m (includes FRO1 & FRO2 holdings)
Export earnings 2017	No export information specific to frostfish is currently available

6.8 HAKE (TIER 1) HAK

2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
HAK1	1,175	N/A	3,701	N/A	N/A	N/A
HAK4	268	1,818	1,800	0	0	18
HAK7	4,703	7,777	7,700	0	0	77

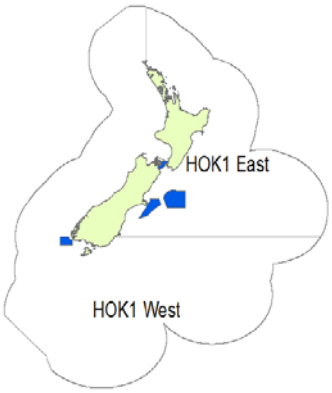
Reference points and Current status (as per Harvest Strategy Standard defaults)				
Target	40% B_0	HAK Sub-Ant	B_{2014}: 60%B_0	Very Likely (>90%) to be at or above
		HAK CR	B_{2016}: 48%B_0	Likely (>60%) to be at or above
		HAK7	B_{2016}: either 26% (survey model) or 50% B_0 (CPUE model)	Either Very Unlikely (<10%) to be at or above the target (survey model) or Very Likely (>90%) to be at or above the target (CPUE model)
Soft limit	20% B_0	HAK Sub-Antarctic		Exceptionally Unlikely (<1%) to be below
		HAK Chatham Rise		Exceptionally Unlikely (<1%) to be below
		HAK7		About as Likely as Not (<40%-60%) to be below (survey model) and Very Unlikely (<10%) to be below (CPUE model)
Hard limit	10% B_0	HAK1		Exceptionally Unlikely (<1%) to be below
		HAK4		Exceptionally Unlikely (<1%) to be below
		HAK7		Very Unlikely to be below (<10%) (survey model) and Exceptionally Unlikely (<1%) to be below (CPUE model)

Deemed value rates and charges								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
HAK1 HAK4 HAK7	$0.80	$1.60	$1.92	$2.24	2.56	2.88	3.20	0 0 0

Environmental indicators and observer coverage				
Observer coverage		2014/15: 76.5% tows observed	2015/16: 71.3% tows observed	2016/17: 80.4% tows observed
Seabirds		2014/15: 3 observed captures; 6 estimated	2015/16: 9 observed captures; 11 estimated	2016/17: 1 observed capture
Marine mammals	NZ fur seal	2014/15: 8 observed captures; 13 estimated	2015/16: 0 observed captures; 2 estimated	2016/17: 2 observed captures
Benthic interactions (fishable area trawled)		2015/16: 722 km^2 (1%)		1989/90 – 2015/6: 19,551 km^2 (6%)

Economic indicators (calendar year)	
Quota value 2016	$NZ 99.2 m
Export earnings 2017	$NZ 16.6 m FOB

6.9 HOKI (TIER 1) HOK



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
HOK1	141,566	151,540	150,000	20	20	1,500

Reference points and current status			
Metric			Status
Target range		35-50% B_0	
B_{MSY}	*Eastern stock*	24% B_0	B_{2017}: 60 % B_0
	Western stock	25% B_0	B_{2015}: 59 %B_0
Soft limit		20%B_0	Both stocks 'Exceptionally Unlikely' to be below limit
Hard limit		10%B_0	Both stocks 'Exceptionally Unlikely' to be below limit
Exploitation rate (F)		10-25% of target biomass	

Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
HOK1	$0.45 per kg	$0.90 per kg	$1.30 @ >102%	$134.26

Environmental indicators and observer coverage[73]				
Observer coverage		2014/15: 26.6% of tows observed	2015/16: 27.5% of tows observed	2016/17: 22.8% tows observed
Seabirds		2014/15: 81 observed captures; 396 estimated[74]	2015/16: 48 observed captures; 238 estimated	2016/17: 62 observed captures
Marine mammals	NZ fur seal	2014/15: 42 observed captures; 313 estimated	2015/16: 42 observed captures; 194 estimated	2016/17: 38 observed captures
	NZ Sea lion	2014/15: 0 observed captures; 1 estimated	2015/16: 0 observed captures	2016/17: 0 observed captures
Benthic interactions (fishable area trawled)		2015/16 24,757 km^2 (60%)	1989/90 to 2015/16: 167,101 km^2 (53%)*	

Economic indicators (calendar year)	
Quota value 2016	$NZ 1,024.8 m
Export earnings 2017	$NZ 228.8 m FOB

Eastern and Western Catch Limit Reporting

The hoki fishery is considered to consist of two biological stocks; an eastern stock and western stock. Agreements between the Minister and the fishing industry have seen catch limits apply to each stock since 2001/02. For the 2016/17 fishing year, owners of the majority of the hoki quota had formally

[73] https://www.dragonfly.co.nz/data/

[74] The number of observed captures includes both dead seabirds and those released alive (injured or uninjured), estimated uses a statistical model to produce the mean number of estimated total captures.

entered into the catch limit agreement requested by the Minister. The east/west catch limit regime is administered by FishServe and monitored by DWG. Table 35 below provides details on the catch limits and catch amounts for the 2016/17 fishing year.

Table 35: Catch limits and actual catch estimates for 2016/17 fishing year (tonnes).

Catch limits	2016/17 Planned	Catch within agreement (from FishServe)	Catch estimates for all fishers
Eastern stock	60,000	55,616	59,903
Western stock	90,000	64,077	78,623

6.9.1 Hoki Operational Procedure

The purpose of the Hoki Operational Procedure (HOP) 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 <55cm in total length) and no target fishing for hoki is allowed.

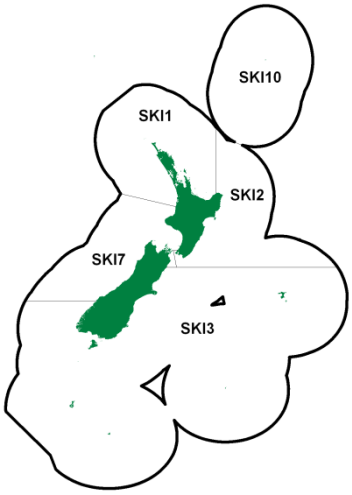
Table 36: Summary of HMA fishing activity by trawl vessels >28m for the 2011/12 – 2016/17 fishing years

HMA	# of vessels that fished in HMA	# of HOK target tows undertaken[75]	# 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	8,402
2014/15	21	18	336	576	4,014
2015/16	21	35	322	1,904	4,937
2016/17	20	33	454	1,028	7,380
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	7	210	1,098	3,267
2016/17	18	3	157	853	2,405
Puysegur					
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	177	212	1,551
2016/17	10	0	98	150	1033
Cook Strait					
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	2	2	0	14	14
2016/17	1	1	0	12	12

* These tows in the Cook Strait HMA were undertaken as part of a research project to estimate hoki spawning abundance.

[75] Almost all tows that reported targeting hoki in an HMA were undertaken very close to HMA boundaries. It is likely the lack of precision in reporting start and end positions resulted in tows being classed as being in an HMA when in fact they were just outside.

6.10 GEMFISH (TIER 2) SKI



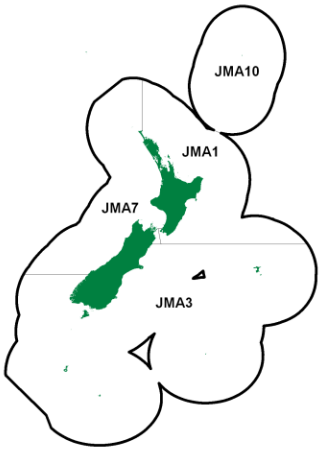
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SKI3	248	300	300.4	-	-	-
SKI7	431	300	300	-	-	-

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

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
SKI3 SKI7	$0.65	$1.29	$1.548	$1.806	$2.064	$2.322	$2.58	0 $183,300

Economic indicators (calendar year)	
Quota value 2016	$NZ 12.3 m (includes SKI1 & SKI2 holdings)
Export earnings 2017	$NZ 1.6 m FOB (includes all stocks)

6.11 JACK MACKEREL (TIER 1) JMA



2016/17 Landings, Catch limits and Allowances (tonnes)					
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary
JMA3	4,665	9,000	8,780	NA	NA
JMA7	33,802	NA	32,537	NA	NA

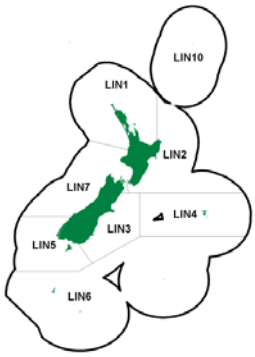
Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	JMA3	Unknown
		JMA7	Unknown
Soft Limit	20% B_0	JMA3	Unknown
		JMA7	Unknown
Hard Limit	10% B_0	JMA3	Unknown
		JMA7	Unknown

Deemed value rates and charges								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
JMA3	$0.08	$0.09	$0.108	$0.126	$0.144	$0.162	$0.18	$2
JMA7	$0.14	$0.15	$0.18	$0.21	$0.24	$0.27	$0.30	$776

Environmental indicators and observer coverage				
Observer coverage		2014/15: 86.2% tows observed	2015/16: 89.5% tows observed	2016/17: 74.0% tows observed
Seabirds		2014/15: 12 observed captures; 14 estimated	2015/16: 6 observed captures; 7 estimated	2016/17: 4 observed captures
Marine mammals	NZ fur seal	2014/15: 5 observed captures; 6 estimated	2015/16: 2 observed captures; 3 estimated	2016/17: 0 observed captures
	Common dolphin	2014/15: 19 observed captures; 21 estimated	2015/16: 2 observed captures; 3 estimated	2016/17: 0 observed captures
Benthic interactions (fishable area trawled)		2015/16: 2,708 km^2 (6%)	1989/90 – 2015/16: 44,429 km^2 (14%)	

Economic indicators (calendar year)	
Quota value 2016	$NZ 123.4 m (includes JMA1 holdings)
Export earnings 2017	$NZ 61.3 m FOB (for all stocks)

6.12 LING (TIER 1) LIN



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
LIN2	1,022	N/A	982	N/A	N/A	N/A
LIN3	1,808	2,060	2,060	0	0	0
LIN4	2,568	4,200	4,200	0	0	0
LIN5	4,050	4,036	3,955	1	1	36
LIN6	3,322	8,590	8,505	0	0	85
LIN7	3,428	3,144	3,080	1	1	25

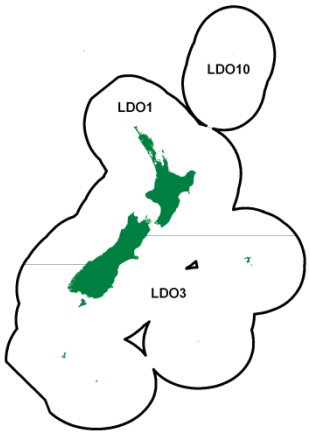
Reference points and Current status				
Target	40% B_0	LIN2	Unknown	
		LIN3 & 4	B_{2014}: 57% B_0	Very Likely (>90%) to be at or above
		LIN5 & 6	B_{2014}: 70-101% B_0	Virtually Certain (>99%) to be at or above
		LIN6B	B_{2006}: 61% B_0	Very Likely (>90%) to be at or above
		LIN7 WC	B_{2012}: 71% B_0	Very Likely (>90%) to be at or above
		LIN CS	B_{2010}: 54% B_0	Likely (>60%) to be at or above
Soft limit	20%B_0	LIN2		Unlikely (<40%) to be below
		LIN3&4		Exceptionally Unlikely (<1%) to be below
		LIN5&6		Exceptionally Unlikely (<1%) to be below
		LIN6B		Very Unlikely (<10%) to be below
		LIN7 WC		Exceptionally Unlikely (<1%) to be below
		LIN CS		Exceptionally Unlikely (<1%) to be below
Hard limit	10%B_0	LIN2		Very Unlikely (<10%) to be below
		LIN3&4		Exceptionally Unlikely (<1%) to be below
		LIN5&6		Exceptionally Unlikely (<1%) to be below
		LIN6B		Exceptionally Unlikely (<1%) to be below
		LIN7 WC		Exceptionally Unlikely (<1%) to be below
		LIN CS		Exceptionally Unlikely (<1%) to be below

Deemed value rates and charges (per kg)					
Stock	Interim	100-102%	102-120%	Annual 120%+	2016/17 Actual
LIN2	$1.20	$2.38	$3.40	$6.00	$4,483
LIN3	$1.20	$2.38			$311
LIN4	$1.20	$2.38			0
LIN4[76]	$0.56	$1.12			0
LIN5	$1.20	$2.38			$14
LIN6	$1.20	$2.38			0
LIN7	$2.14	$2.38			$1,069,925

[76] Chatham Island resident fishers landing to Chatham Island LFR

Environmental indicators and observer coverage				
Observer coverage		Trawl – 2014/15: 16.9 % tows observed	Trawl – 2015/16: 15.1% tows observed	Trawl - 2016/17: 20.9% tows observed
		Longline – 2014/15: 3% hooks observed	Longline – 2015/16: 8.9% hooks observed	Longline – 2016/17 14.1% hooks observed
Seabirds	Trawl	2014/15: 2 observed captures, 52 estimated	2015/16: 7 observed captures; 48 estimated	2016/17: 16 observed captures
	Longline	2014/15: 16 observed captures, 802 estimated	2015/16: 89 observed captures; 913 estimated	2016/17: 34 observed captures
NZ fur seals	Trawl	2014/15: 1 observed captures; 15 estimated	2015/16: 1 observed capture; 9 estimated	2016/17: 3 observed captures
	Longline	2014/15: 0 observed captures	2015/16: 0 observed captures	2016/17: 1 observed captures
Benthic interactions (fishable area trawled)		2015/16: 1,241 km^2 (3%)	1989/90 – 2015/16: 24,294 km^2 (7%)	
Economic indicators (calendar year)				
Quota value 2016		$NZ 284.3 m (includes LIN1 & LIN2 holdings)		
Export earnings 2017		$NZ 67 m FOB		

6.13 LOOKDOWN DORY (TIER 2) LDO



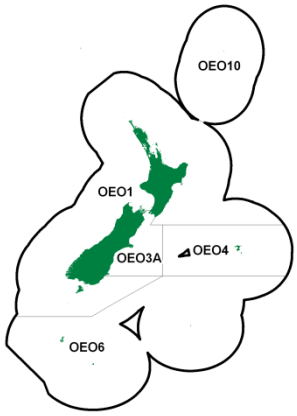
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
LDO1	160	168	168	0	0	0
LDO3	333	614	614	0	0	0

Reference points and current status (as per Harvest Strategy Standard defaults)		
Target	40% B_0	Unknown
Soft Limit	20% B_0	Unknown
Hard Limit	10% B_0	LDO1: Unlikely to be below the hard limit (<40%)
		LDO3: Unlikely to be below the hard limit (<40%)

Deemed value rates and charges			
Stock	Interim	Annual	2016/17 Actual
LDO1	$0.38 per kg	$0.42 per kg	$4
LDO3	$0.21 per kg	$0.42 per kg	$2

Economic indicators (calendar year)	
Quota value 2016	$NZ 1.5 m
Export earnings 2017	This species is not listed individually in export statistics

6.14 OREOS (TIER 1) OEO



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
OEO1	603	2,500	2,500	0	0	0
OEO3A	3,206	3,518	3,350	0	0	168
OEO4	3,011	3,000	3,000	0	0	0
OEO6	1,200	N/A	6,000	N/A	N/A	N/A

Reference points and Current status (as per Harvest Strategy Standard defaults)				
Target	40% B_0	OEO1	B_{2007}: 27% B_0	Smooth oreo – Southland. Unlikely (<40%) to be above
		OEO3A		Black oreo: Unknown
			B_{2009}: 36% B_0	Smooth oreo: About As Likely As Not (40-60%)to be at or above
		OEO4		Black oreo: Unknown
			B_{2013}: 27% B_0	Smooth oreo: Very Unlikely (<10%) to be above
		OEO6		Smooth oreo – Pukaki Rise. Unknown
			B_{2008}: 33% B_0	Smooth oreo – Bounty Plateau. Unlikely (<40%) to be at or above
				Black oreo – Pukaki Rise. Unknown
Soft Limit	20% B_0	OEO1	Smooth oreo – Southland. Unlikely (<40%) to be below	
		OEO3A	Black oreo: Unknown	
			Smooth oreo: Unlikely (<40%) to be below	
		OEO4	Black oreo: Unknown	
			Smooth oreo: Unlikely (<40%) to be below	
		OEO6	Smooth oreo – Pukaki Rise. Unknown	
			Smooth oreo – Bounty Plateau. Unlikely (<40%) to be below	
			Black oreo – Pukaki Rise. Unknown	
Hard Limit	10% B_0	OEO1	Smooth oreo – Southland. Very Unlikely (<10%) to be below	
		OEO3A	Black oreo: Unknown	
			Smooth oreo: Very Unlikely (<10%) to be below	
		OEO4	Black oreo: Unknown	
			Smooth oreo: Very Unlikely (<10%) to be below	
		OEO6	Smooth oreo – Pukaki Rise. Unknown	
			Smooth oreo – Bounty Plateau. Very Unlikely (<10%) to be below	
			Black oreo – Pukaki Rise. Unknown	

Deemed value rates and charges								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
OEO1 OEO4 OEO6	\$0.39 \$0.81 \$0.39	\$0.78 \$0.90 \$0.78	\$0.936	\$1.092	\$1.248	\$1.404	\$1.56	0 0 0
OEO3A	\$0.38	\$0.76	\$0.912	\$1.064	\$1.216	\$1.368	\$1.52	0

Environmental indicators and observer coverage				
Observer coverage		2014/15: 17.8% tows observed	2015/16: 29.2% tows observed	2016/17: 53.3% tows observed
Seabirds		2014/15: 0 observed captures; 5 estimated	2015/16: 1 observed captures; 4 estimated	2016/17: 0 observed captures
Marine mammals	NZ fur seal	2014/15: 0 observed captures	2015/16: 0 observed captures	2016/17: 0 observed captures
Benthic interactions (fishable area trawled)		2015/16: 378 km^2 (0.9%)	1989/90 – 2015/16: 15,961 km^2 (5%)	
Economic indicators (calendar year)				
Quota value 2009	$NZ 69.9 m (includes all species)			
Export earnings 2017	Black oreo - $NZ 3.9 m FOB Smooth oreo - $NZ 1.9 m FOB Oreo, other - $NZ 7.5 m FOB (this category includes black and/or smooth oreo that has not been reported by individual species)			

6.14.1 Catch split

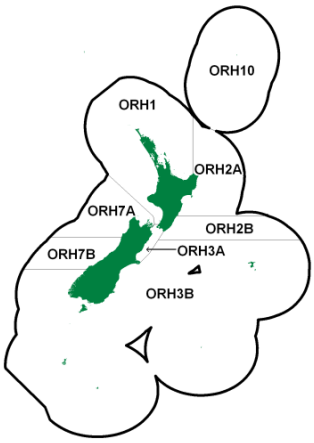
6.14.2 OEO1

Area	Catch limit for 2016/17 (t)	Sum of catch reported on TCEPRs/MHRs	Industry reported catch
Southland (*smooth oreo only*)	400	404	104
Southland (*black oreo only*)	N/A	139	95
OEO1 excluding Southland (*all species*)	N/A	24	Not reported
OEO1 (*all species*)	2,500	567	603 (MHR)

6.14.3 OEO3A

Species	Catch limit (t)	Sum of catch reported on CLRs (t)
Black oreo (includes spiky oreo)	1,700	1,455
Smooth oreo	1,650	1,449
Totals	*3,350*	*2,904*

6.15 ORANGE ROUGHY (TIER 1) ORH



2016/17 Landings, Catch limits, and Allowances (tonnes)						
Stock	2016/17 Catch	TAC	TACC	Recreational	Customary	Other fishing related mortality
ORH1	775	1,470	1,400	0	0	70
ORH2A	505	512	488	0	0	24
ORH2B	57	63	60	0	0	3
ORH3A	174	186	177	0	0	9
ORH3B	4486	5,250	5,000	0	0	250
ORH7A	1623	1,680	1,600	0	0	80
ORH7B	0.6	1	1	0	0	0

Reference points and current status			
Target	30-50%B_0	ORH3B NW Chatham Rise	B_{2014}: 37% B_0
		ORH3B E & S Chatham Rise	B_{2014}: 30%B_0
		ORH7A	B_{2014}: 42%B_0
	30-40%B_0	ORH1	
		ORH2A North	B_{2003}: 24% B_0
		ORH2A South, 2B, 3A (MEC)	B_{2014}: 14% B_0
		ORH3B Puysegur	B_{2017}: 49% B_0
		ORH3B Sub-Antarctic	
		ORH7B	B_{2004}: 17% B_0
Deterministic B_{MSY}		22-25% B_0	
Soft limit	20%B_0	ORH1	
		ORH2A North	Unlikely (<40%) below
		ORH2A, 2B, 3A (MEC)	Likely (>60%) below
		ORH3B NW Chatham Rise	Very Unlikely (<10%) below
		ORH3B E & S Chatham Rise	Unlikely (<40%) below
		ORH3B Puysegur	Exceptionally Unlikely (<1%) below
		ORH3B Sub-Antarctic	
		ORH7A	Very Unlikely (<10%) below
		ORH7B	Likely (>60%) below
Hard limit	10%B_0	ORH1	
		ORH2A North	Very Unlikely (<10%) below
		ORH2A, 2B, 3A (MEC)	Unlikely (<40%) below
		ORH3B NW Chatham Rise	Exceptionally Unlikely (<1%) below
		ORH3B E & S Chatham Rise	Very Unlikely (<10%) below
		ORH3B Puysegur	Exceptionally Unlikely (<1%) below
		ORH3B Sub-Antarctic	
		ORH7A	Exceptionally Unlikely (<1%) below
		ORH7B	Unlikely (<40%) below
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

Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
ORH1	\$1.70 per kg	\$3.40 per kg	\$5.00 @ > 110%	0
ORH2A ORH2B ORH3A	\$2.50 per kg	\$5.00 per kg	\$6.00 @ 120-140% \$7.00 @ 140-160% \$8.00 @ 160-180% \$9.00 @ 180-200% \$10.00 @ > 200%	0 0 0 0 0
ORH3B ORH7A	\$2.50 per kg	\$5.00 per kg	\$6.25 @ > 110%	0 \$5
ORH7B	\$1.60 per kg	\$3.20 per kg	\$5.00 @ > 110%	0

Environmental indicators and observer coverage				
Observer coverage*		2014/15: 32.4% tows observed	2015/16: 44.1% tows observed	2016/17: 50.6% tows observed
Seabirds		2014/15: 0 observed captures 7 estimated	2015/16: 3 observed captures 9 estimated	2016/17: 2 observed captures
Marine mammals	NZ fur seal	2014/15: 1 observed captures, 1 estimated	2015/16: 0 observed captures	2016/17: 0 observed captures
Benthic impacts (fishable area trawled)		2015/16: 2,208 km^2 (5%)	1989/90 – 2015/16: 34,725 km^2 (11%)	

Economic indicators (calendar year)	
Quota value 2016	\$NZ 361 m
Export earnings 2017	\$NZ 53.9 m FOB (includes catch from outside the EEZ)

Table 37: Sub-area catch limits and actual 2016/17 catch for orange roughy stocks.

Sub-area catch limits (in tonnes)			
Stock	Sub-area	Agreed catch limit (t)	2016/17 Catch (t) [77]
ORH1[78]	Area A	530	191
	Area B	530	529
	Area C	470	0.6
	Area D	470 (incl. 30 t bycatch limit in the MC Box)	51 (0.2 in the MC box)
ORH2A	ORH 2A North	200	213
ORH2A South, 2B and 3A	MEC	2A South: 288, 2A South plus 2B and 3A: 525	2A South: 292 544
ORH3B	NW Chatham Rise	1,250[79]	646
	E & S Chatham Rise	3,100[80]	3,300
	Puysegur	150	157
	Sub-Antarctic	500	381

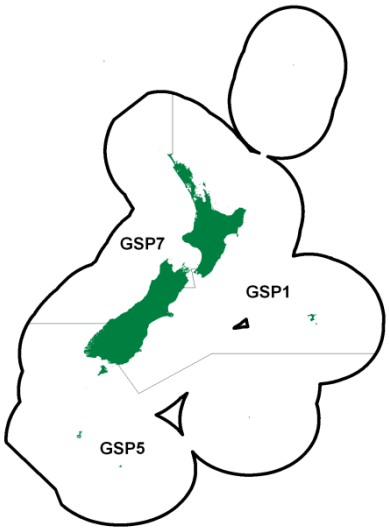
[77] From industry-reported catch records, monitored by MPI.

[78] 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.

[79] Quota owners continued to agree to shelve 207 tonnes of NW Chatham Rise ACE during 2015/16 leaving 1,043 tonnes available to be caught

[80] For ORH 3B E & S Chatham Rise and Puysegur subareas uncaught ACE from the previous year was carried forward as provided for under s67A of the Act, therefore although reported catch for the 2016/17 fishing year exceeds the agreed catch limit, the stock was not overcaught.

6.16 PALE GHOST SHARK (TIER 2) GSP



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
GSP1	577	1,208	1,150	0	0	58
GSP5	324	477	454	0	0	23
GSP7	25	176	176	0	0	-

Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	Unknown	
Soft Limit	20% B_0	GSP1, GSP5	Unlikely (<40%) to be below
		GSP7	Unknown
Hard Limit	10% B_0	GSP1, GSP5	Very Unlikely (<10%) to be below
		GSP7	Unknown

Deemed value rates and charges (per kg)			
Stock	Interim	100%+	2016/17 Actual
GSP1 GSP5	$0.08	$0.15	0 0
GSP7	$0.17	$0.34	$3

Economic indicators (calendar year)	
Quota value 2016	$NZ 1.3 m
Export earnings 2017	$NZ 1.4 m FOB (includes both pale and dark ghost shark, Export statistics are not provided for individual ghost shark species)

6.17 PATAGONIAN TOOTHFISH (TIER 2) PTO

2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
PTO1	119	50	49.5	0	0	0.5

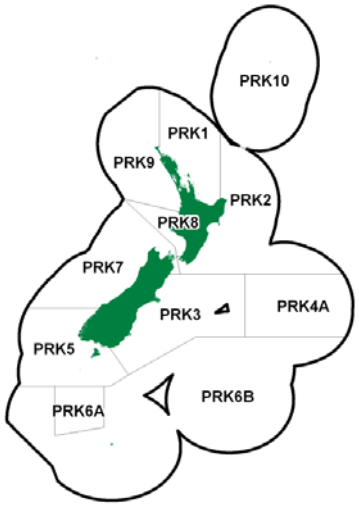
Reference points and Current status (as per Harvest Strategy Standard defaults)		
Target	40% B_0	Unknown
Soft Limit	20% B_0	Unknown
Hard Limit	10% B_0	Unknown

Deemed value rates and charges				
Stock	Interim	Annual 100-110%	Annual 110% +	2016/17 Actual
PTO1	$13.50 per kg	$15.00 per kg	$25.00 per kg	0

Economic indicators (calendar year)	
Quota value 2016	Not available
Export earnings 2017	$NZ 9.5 m FOB[81]

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

6.18 PRAWN KILLER (TIER 2) PRK



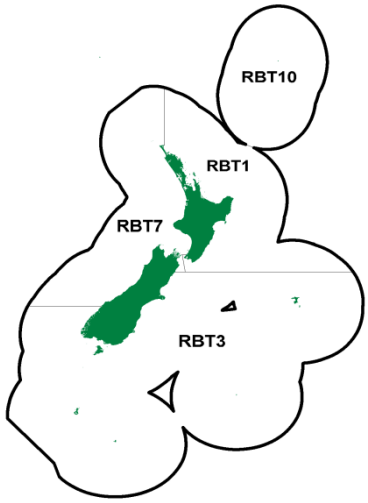
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
PRK1	<1	25.7	24.5	0	0	1.2
PRK2	<1	3.7	3.5	0	0	0.2
PRK3	0	1	1	0	0	0
PRK4A	<1	1	1	0	0	0
PRK5	0	1	1	0	0	0
PRK6A	0	1	1	0	0	0
PRK6B	0	1	1	0	0	0
PRK7	1	1	1	0	0	0
PRK8	0	1	1	0	0	0
PRK9	1	1	1	0	0	0

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

Deemed value rates and charges (per kg)			
Stock	Interim	100%+	2016/17 Actual
PRK1	$0.10	$0.20	0
PRK2			0
PRK3			0
PRK4A			0
PRK5			0
PRK6A			0
PRK6B			0
PRK7			$81
PRK8			0
PRK9			$244

Economic indicators (calendar year)	
Quota value 2016	Not available
Export earnings 2017	Prawn killer does not feature as an individual species in export statistics

6.19 REDBAIT (TIER 2) RBT



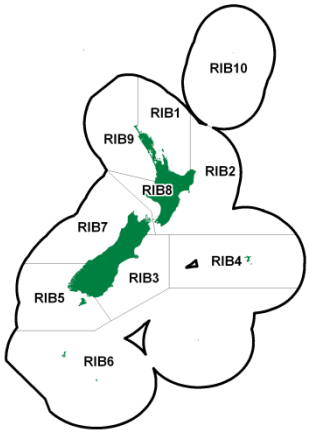
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RBT1	5	20	19	0	0	1
RBT3	2,435	2,305	2,190	0	0	115
RBT7	160	2,991	2,841	0	0	150

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

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
RBT1 RBT7	$0.25	$0.50	$0.60	$0.70	$0.80	$0.90	$1.00	0 0
RBT3	$0.45	$0.50	$0.60	$0.70	$0.80	$0.90	$1.00	$5,745

Economic indicators (calendar year)	
Quota value 2016	NZ$ 0.1 m
Export earnings 2017	Redbait does not feature as an individual species in export statistics

6.20 RIBALDO (TIER 2) RIB



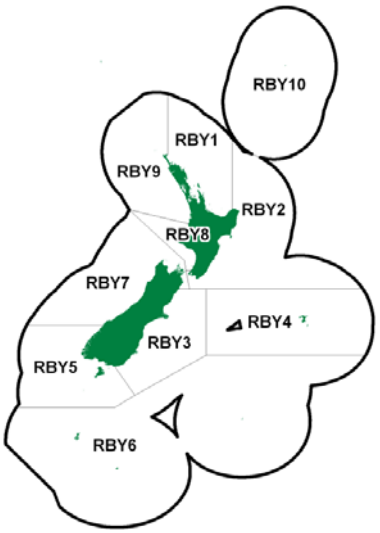
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RIB3	139	394	394	0	0	0
RIB4	213	357	357	0	0	0
RIB5	46	52	52	0	0	0
RIB6	92	231	231	0	0	0
RIB7	245	330	330	0	0	0
RIB8	1	1	1	0	0	0

Reference points and Current status (as per Harvest Strategy Standard defaults)			
Target	40% B_0	RIB7 & 8	Unknown
		RIB3 & 4	Unknown
		RIB5 & 6	Unknown
Soft Limit	20% B_0	RIB1, 2, 7, 8, 9	Unknown
		RIB3 & 4	Unlikely to be below soft limit (<40%)
		RIB5 & 6	Unlikely to be below soft limit (<40%)
Hard Limit	10% B_0	RIB1, 2, 7, 8, 9	Unknown
		RIB3 & 4	Unlikely to be below hard limit (<40%)
		RIB5 & 6	Unlikely to be below hard limit (<40%)

Deemed value rates and charges								
Stock	Interim	Annual -120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
RIB3 RIB5	$0.15	$0.30	$0.36	$0.42	$0.48	$0.54	$0.60	$0.60 0
RIB4 RIB8	$0.27	$0.30	$0.36	$0.42	$0.48	$0.54	$0.60	0 0
RIB6	$0.40	$0.80	$0.96	$1.12	$1.28	$1.44	$1.60	0
	Interim	100-110%	110-120%	120%+				
RIB7	$0.72	$0.80	$1.20	$2.50	$2.50	$2.50	$2.50	$2.20

Economic indicators (calendar year)	
Quota value 2016	$NZ 5 m (includes RIB1, RIB2 & RIB9 holdings)
Export earnings 2017	No export information specific to ribaldo is currently available

6.21 RUBYFISH (TIER 2) RBY



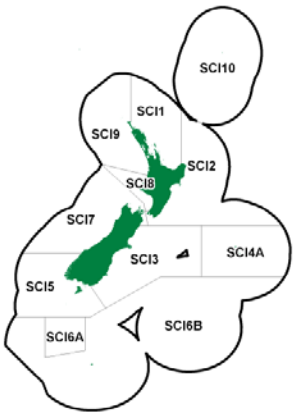
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
RBY1	180	318	300	1	2	15
RBY2	213	435	433	1	1	0
RBY3	<1	32	30	0	0	0
RBY4	13	19	18	0	0	1
RBY5	0	0	0	0	0	0
RBY6	0	0	0	0	0	-
RBY7	9	33	33	0	0	-
RBY8	0.0	6	6	0	0	0
RBY9	<1	19	19	0	0	-

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

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
RBY1	$0.25	$0.28	$0.336	$0.392	$0.448	$0.504	$0.56	0
RBY4	$0.25	$0.28	$0.504	$0.588	$0.672	$0.756	$0.84	0
RBY2 RBY5 RBY6 RBY9	$0.25	>100% $0.28						0
RBY3	$0.25	>100% $0.28						$1
RBY7	$0.38	>100% $0.42						0
RBY8	$0.25	>100% $0.28						0

Economic indicators (calendar year)	
Quota value 2016	$NZ 2 m
Export earnings 2017	Rubyfish is not listed as an individual species in export statistics

6.22 SCAMPI (TIER 1) SCI



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other Mortality
SCI1	129	126	120	0	0	6
SCI2	150	140	133	0	0	7
SCI3	344	357	340	0	0	17
SCI4A	128	126	120	0	0	6
SCI5	<1	42	40	0	0	2
SCI6A	289	321	306	0	0	15
SCI6B	<1	53	50	0	0	3
SCI7	3	79	75	0	0	4
SCI8	0	5	5	0	0	0
SCI9	<1	37	35	0	0	2

Reference Points and Current status (as per Harvest Strategy Standard defaults)			
Metric			Status
Target	40% B_0	SCI 1	B_{2011}: Likely (> 60%) to be at or above
		SCI 2	B_{2012}: Very likely (> 90%) to be at or above
		SCI 3	B_{2014}: 54% or 60% B_0. Very Likely (>90%) to be at or above
		SCI 6A[82]	Unknown
Soft Limit	20% B_0	SCI 1	Very Unlikely (<10%) to be below
		SCI 2	
		SCI 3	
		SCI 6A	Unknown
Hard Limit	10% B_0	SCI 1	Very Unlikely (< 10%) to be below
		SCI 2	Exceptionally Unlikely (<1%) to be below
		SCI 3	Very Unlikely (< 10%) to be below
		SCI 6A	Unknown

Deemed value rates and charges								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
SCI1	$25.65	$51.30	$61.56	$71.82	$82.08	$92.34	$102.60	$792
SCI2								$554
SCI3								0
SCI4A								$3,899
SCI5								0
SCI6A								$103
SCI6B								0
SCI7								0

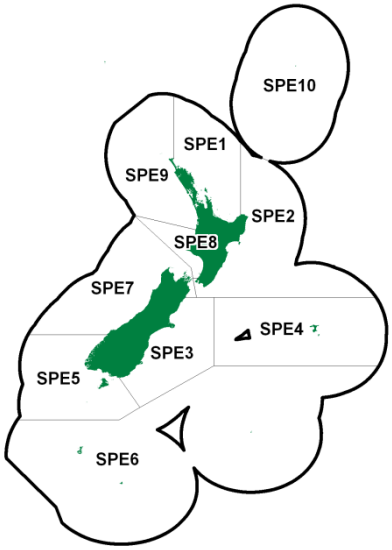
[82] The other major scampi stock (SCI 4A) has never been assessed

SCI8 SCI9								0 0

Environmental indicators and observer coverage				
Observer coverage		2014/15: 7.7% tows observed	2015/16: 2.8% tows observed	2016/17: 9.5% tows observed
Seabirds		2014/15: 7 observed captures; 157 estimated	2015/16: 3 observed captures 195 estimated	2016/17: 12 observed captures
Marine mammals	NZ fur seal	2014/15: 1 observed capture; 7 estimated	2015/16: 0 observed captures; 4 estimated	2016/17: 1 observed captures
	NZ sea lion	2014/15: 0 observed captures; 3 estimated	2015/16: 0 observed captures	2017/18: 0 observed captures
Benthic interactions (fishable area trawled)		2015/16: 5,317 km^2 (0.38%)	1989/90 – 2015/16: 22,537 km^2 (1.61%)	

Economic Indicators (calendar year)	
Quota value 2016	$NZ 463 m
Export earnings 2017	$NZ 18.0 m FOB (based on the "shrimps and prawns cold-water" and 'Norway lobster' categories)

6.23 SEA PERCH (TIER 2) SPE



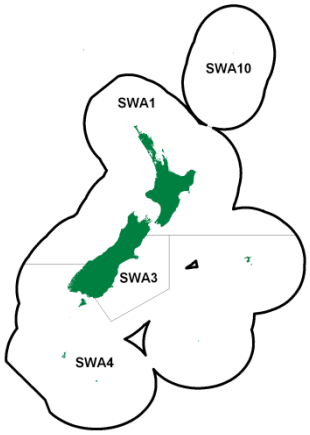
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SPE3	589	1,022	1,000	11	11	-
SPE4	424	956	910	0	0	46
SPE5	15	38	36	1	1	-
SPE6	9	9	9	0	0	-
SPE7	90	98	82	8	8	-

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

Deemed value rates and charges (per kg)								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
SPE3 SPE7	$0.50	$0.55	$0.66	$0.77	$0.88	$0.99	$1.10	0 $7,590
SPE4 SPE5 SPE6	$0.36	$0.40	$0.48	$0.56	$0.64	$0.72	$0.80	0 0 $79

Economic indicators (calendar year)	
Quota value 2016	$NZ 6 m (includes SPE1 & SPE2 holdings)
Export earnings 2017	$NZ 1.7 m FOB (includes all stocks)

6.24 SILVER WAREHOU (TIER 2) SWA



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SWA1	697	3,003	3,000	2	1	0
SWA3	3,667	N/A	3,280	N/A	N/A	N/A
SWA4	4,307	N/A	4,090	N/A	N/A	N/A

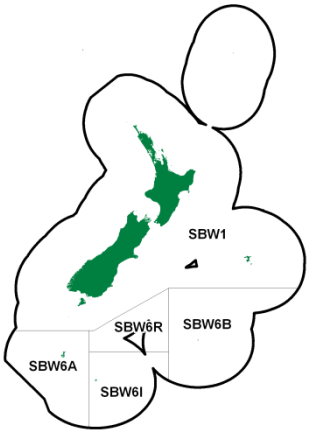
Reference points and current status (as per Harvest Strategy Standard defaults)		
Target	40% B_0	Unknown
Soft Limit	20% B_0	Unknown
Hard Limit	10% B_0	Unknown

Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
SWA1 SWA3 SWA4	\$0.50 per kg \$1.57 per kg \$0.50 per kg	\$1.22 per kg \$1.74 per kg \$1.22 per kg	\$3.00 @ >130%	\$0 \$264,916 \$159,591

Environmental indicators and observer coverage			
Observer coverage	2014/15: 65% tows observed	2015/16: 37.9% of tows observed	2016/17: 47.5% of tows observed
Seabirds	2014/15: 76 observed	2015/16: 9 observed captures	2016/17: 7 observed captures
NZ fur seal	2014/15: 1 observed	2015/16: 0 observed capture	2016/17: 0 observed captures

Economic indicators (calendar year)	
Quota value 2016	\$NZ 124 m
Export earnings 2017	\$NZ 18.9 m FOB

6.25 SOUTHERN BLUE WHITING (TIER 1) SBW



Landings, Catch limits and Allowances as of 1 April 2017 (tonnes)						
Stock	2016/17 Landings[83]	TAC	TACC	Recreational	Customary	Other fishing related mortality
SBW1	86	100	98	0	0	2
SBW6A	46	1,640	1,640	N/A	N/A	N/A
SBW6B	2,569	2,426	2,377	0	0	53
SBW6I	19,875	40,000	39,200	0	0	800
SBW6R	11	5,500	5,500	N/A	N/A	N/A

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*
		SBW 6I	B_{2014}: at or above 50% B_0
		SBW 6R	Unknown
Soft limit	20%B_0	SBW 1	Unknown
		SBW 6A	Unknown
		SBW 6B	Unknown
		SBW 6I	Exceptionally Unlikely to be below (<1%)
		SBW 6R	Unknown
Hard limit	10%B_0	SBW 1	Unknown
		SBW 6A	Unknown
		SBW 6B	Unknown
		SBW 6I	Exceptionally Unlikely to be below (<1%)
		SBW 6R	Unknown

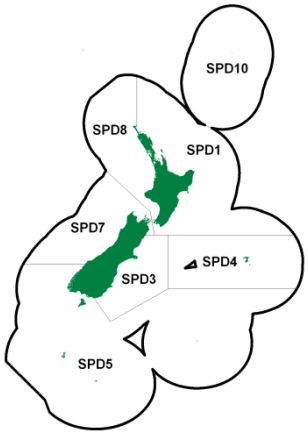
Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
SBW1	$0.41 per kg	$0.46 per kg	$0.552 @ 120-140% $0.644 @ 140-160% $0.736 @ 160-180% $0.828 @ 180-200% $0.92 @ > 200%	$70,333
SBW6A SBW6B SBW6I SBWR	$0.41 per kg	$0.46 per kg	$0.60 @ 102-150% $0.92 @ >150%	$8 0 0 0

[83] 2016/17 landings from the 1 April 2016 – 30 March 2017 fishing year.

Environmental indicators and observer coverage[84]				
Observer coverage		2014/15: 99.4% tows observed	2015/16: 100% tows observed	2016/17: 100% tows observed
Seabirds		2014/15: 7 observed captures, 7 estimated	2015/16: 6 observed captures; 6 estimated	2016/17: 6 observed captures; 6 estimated
Marine mammals	NZ fur seals	2014/15: 41 observed captures; 41 estimated	2015/16: 51 observed captures; 51 estimated	2016/17: 11 observed captures; 11 estimated
	NZ sea lion	2014/15: 6 observed captures; 6 estimated	2015/16: 3 observed captures, 3 estimated	2017/18: 0 observed captures; 0 estimated
Benthic interactions (fishable area trawled)		2015/16: 871 km^2 (0.06%)	1989/90 – 2015/16: 21,014 km^2 (1.51%)	
Economic indicators (calendar year)				
Quota value 2016		$NZ 177 m		
Export earnings 2017		$NZ 21.6 m FOB		

[84] Information on environmental actions is provided by October fishing year e.g. 2016-17 covers 1 October 2016 – 30 September 2017. This effectively includes all captures in the 2016-17 April fishing year.

6.26 SPINY DOGFISH (TIER 2) SPD



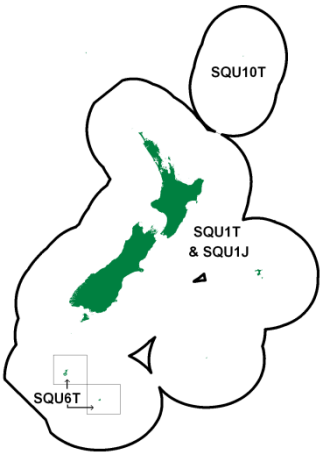
2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SPD4	1,375	1,662	1,626	10	10	20
SPD5	1,603	3,753	3,700	8	8	37

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

Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
SPD4 SPD5	$0.05 per kg	$0.10 per kg	N/A	$12 0

Economic indicators (calendar year)	
Quota value 2016	$NZ 8.0 m (includes SPD1, SPD3, SPD7 & SPD8 holdings)
Export earnings 2017	$NZ 0.3 m FOB (includes all SPD stocks)

6.27 SQUID (TIER 1) SQU



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
SQU1J	1	5,030	5,000	N/A	N/A	N/A
SQU1T	7,735	44,741	44,741	0	0	0
SQU6T	10,725	N/A	32,369	N/A	N/A	N/A

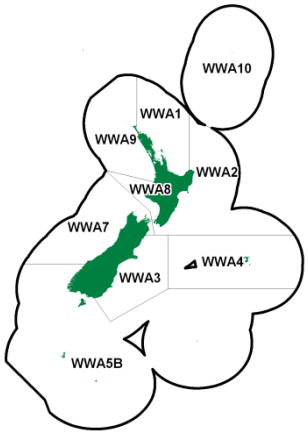
Reference points and Current status
Arrow squid live for one year, spawn once then die. To date, there has been no method to estimate biomass of arrow squid.

Deemed value rates (per kg) and charges								
Stock	Interim	100-120%	120-140%	140-160%	160-180%	180-200%	200%+	2016/17 Actual
SQU1J SQU1T SQU6T	$0.44	$0.88	$1.056	$1.232	$1.408	$1.584	$1.76	$62 $40 0

Environmental indicators and observer coverage				
Observer coverage		2014/15: 86.9% tows observed	2015/16: 81.6% tows observed	2016/17: 75% tows observed
Seabirds		2014/15: 384 observed captures (trawl); 423 estimated. 30 observed captures (jig)	2015/16: 302 observed captures (trawl) 361 estimated. 3 observed captures (jig)	2016/17: 270 captures (trawl)
Marine mammals	NZ fur seals	2014/15: 19 observed captures; 22 estimated	2015/16: 10 observed captures; 18 estimated	2016/17: 17 observed captures
	NZ sea lion	2014/15: 2 observed captures; 1 estimated	2015/16: 0 observed captures	2016/17: 3 observed captures
Benthic interactions (fishable area trawled)		2015/16: 3,415 km^2 (0.24%)		1989/90 – 2015/16: 40,132 km^2 (2.89%)

Economic indicators (calendar years)	
Quota value 2016	$NZ 99.5 m
Export earnings 2017	$NZ 80.5 m FOB

6.28 WHITE WAREHOU (TIER 2) WWA



2016/17 Landings, Catch limits and Allowances (tonnes)						
Stock	2016/17 Landings	TAC	TACC	Recreational	Customary	Other fishing related mortality
WWA3	288	585	583	1	1	0
WWA4	48	332	330	1	1	0
WWA5B	637	2,621	2,617	2	2	0
WWA7	88	129	127	1	1	0
WWA8	0	1	1	0	0	0
WWA9	0	0	0	0	0	0

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

Deemed value rates and charges				
Stock	Interim	Annual	Differential	2016/17 Actual
WWA3 WWA4 WWA5B WWA7	$0.52 per kg	$1.03 per kg	$2.00 @ >110%	0 0 0 0
WWA8 WWA9	$0.27 per kg	$0.54 per kg	N/A	0 0

Economic indicators (calendar year)	
Quota value 2016	$NZ 16 m
Export earnings 2017	$NZ 4.7 m FOB [85]

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

7 Appendix II: Results of 2016/17 Sustainability rounds

7.1 TAC REVIEWS[86]

Species	Stock	Pre-1 Oct 2016 TAC	Pre-1 Oct 2016 TACC	1 Oct 2016 TAC	1 Oct 2016 TACC
Barracouta	BAR5	7,475	7,470	8,370	8,200
Jack mackerel	JMA3	18,000	17,610	9,000	8,780
Rubyfish	RBY3	3	3	32	30
Scampi	SCI2	140	133	161	153
Squid	SQU1J	50,242	50,212	5,030	5,000

Species	Stock	Pre-1 April 2017 TAC	Pre-1 April 2017 TACC	1 April 2017 TAC	1 April 2017 TACC
Southern blue whiting	SBW1	8	8	100	98
Southern blue whiting	SBW6B	3,000	2,940	2,426	2,377

7.2 DEEMED VALUE RATE CHANGES[87]

Species	Stock	Pre-1 Oct 2016			From-1 Oct 2016		
		Interim ($/kg)	Annual ($/kg)	Differential ($/kg, > 200% of ACE holding)	Interim ($/kg)	Annual ($/kg)	Differential ($/kg, > 200% of ACE holding)
Frostfish	FRO4	0.12	0.24	Do not apply	0.22	0.24	Do not apply
Jack mackerel	JMA7	0.08	0.15	0.30	0.22	0.24	0.24
Ling	LIN7	1.20	2.38	6.00	2.14	2.38	6.00
Oreo	OEO4	0.39	0.78	1.56	0.81	0.90	1.80
Rubyfish	RBY1	0.14	0.28	0.56	0.25	0.28	0.56
	RBY2, 5, 6 & 9	0.11	0.21	0.21	0.25	0.28	0.56
	RBY3	0.10	0.19	0.19	0.25	0.28	0.56
	RBY4 & 8	0.21	0.42	0.84	0.25	0.28	0.56
Ribaldo	RIB7	0.40	0.80	2.50	0.72	0.80	2.50
Silver warehou	SWA3	0.50	1.22	3.00	1.57	1.74	3.00

[86] All in tonnes.

[87] All in tonnes.

8 Appendix III: Estimated catch of Tier 3 species 2012/13 to 2016/17 (in kg) by the core deepwater fleet.

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
JAV	Javelinfish	*Lepidorhynchus denticulatus*	4,070,825	3,922,453	4,233,558	4,299,703	5,366,017
RAT	Rattails	*Macrouridae* spp.	4,046,886	3,378,020	3,681,747	3,630,495	5,068,584
NCB	Smooth red swimming crab	*Nectocarcinus bennetti*	717,355	168,810	185,908	141,902	491,231
SND	Shovelnose dogfish	*Deania calcea*	134,641	283,168	250,659	428,894	376,752
ETB	Baxter's lantern dogfish	*Etmopterus baxteri*	40,531	299,975	289,706	252,780	309,202
OSD	Other sharks and dogfish	Order Selachii	545,641	225,817	189,100	290,874	268,354
STU	Slender tuna	*Allothunnus fallai*	262,048	582,089	234,630	177,288	208,589
SDO	Silver dory	*Cyttus novaezealandiae*	127,275	224,542	230,741	230,383	192,410
WSQ	Warty squid	*Onykia* spp.	95,682	93,082	88,731	83,629	173,382
SSI	Silverside	*Argentina elongate*	104,586	97,536	123,038	133,923	168,808
SLK	Slickhead	*Alepocephalidae* spp.	43,717	65,231	106,980	114,798	165,740
BSH	Seal shark	*Dalatias licha*	197,890	128,003	86,591	80,944	138,535
LCH	Long-nosed chimaera	*Harriotta raleighana*	113,008	123,384	110,550	128,018	137,950
CSQ	Leafscale gulper shark	*Centrophorus squamosus*	29,928	95,793	122,870	177,808	126,796
BEL	Bellowsfish	*Centriscops* spp.	51,324	45,255	53,040	55,510	105,659
FHD	Deepsea flathead	*Hoplichthys haswelli*	101,772	77,543	105,271	99,009	99,737
MOD	Morids	*Moridae* spp.	27,868	37,066	62,179	63,278	98,793
BEN	Scabbardfish	*Benthodesmus* spp.	18,316	49,013	44,419	50,394	89,818
HCO	Hairy conger	*Bassanago hirsutus*	47,739	44,559	62,825	90,138	79,682
BCD	Black cod	*Paranotothenia magellanica*	1,781	16,966	9,782	37,037	77,722
DWD	Deepwater dogfish	N/A	34,666	59,177	68,246	70,470	70,599
SFI	Starfish	N/A	46,988	44,432	47,871	72,546	69,777
RHY	Common roughy	*Paratrachichthys trailli*	118,775	41,449	115,953	66,943	63,535
HJO	Johnson's cod	*Halargyreus johnsonii*	21,014	16,637	20,140	34,461	60,923
CRB	Crab (unspecified)	N/A	72,392	35,050	36,770	79,893	56,969
CAR	Carpet shark	*Cephaloscyllium isabellum*	31,879	40,396	59,859	26,390	47,759
RUD	Rudderfish	*Centrolophus niger*	53,448	54,624	56,702	56,890	46,272
CON	Conger eel	Family Congridae	66,009	91,297	106,921	41,306	42,406
DWE	Deepwater eel (unspecified)	N/A	9,926	14,778	16,496	21,980	39,523
ETL	Lucifer dogfish	*Etmopterus lucifer*	32,202	20,535	31,899	23,591	36,108

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
SRH	Silver roughy	*Hoplostethus mediterraneus*	22,203	48,077	62,776	24,537	32,653
THR	Thresher shark	*Alopias vulpinus*	16,937	25,080	30,725	23,158	31,524
POP	Porcupine fish	*Tragulichthys jaculiferus*	33,259	32,241	30,885	25,819	31,053
NSD	Northern spiny dogfish	*Squalus griffin*	19,759	24,561	49,714	26,851	29,405
CDO	Capro dory	*Capromimus abbreviatus*	35,445	60,965	58,345	34,028	28,096
TOA	Toadfish	*Neophrynichthys* spp.	27,894	24,045	28,421	14,283	26,795
SCO	Swollenhead conger	*Bassanago bulbiceps*	15,607	16,043	8,761	28,655	26,188
CYP	Longnose velvet dogfish	*Centroscymnus crepidater*	8,198	37,728	10,282	20,410	25,632
CBE	Crested bellowsfish	*Notopogon lilliei*	16,424	39,301	36,060	32,724	25,243
BEE	Basketwork eel	*Diastobranchus capensis*	13,939	14,341	12,531	22,296	24,158
SBO	Southern boarfish	*Pseudopentaceros richardsoni*	897	2,300	11,035	7,045	23,922
BBE	Banded bellowsfish	*Centriscops humerosus*	31,890	17,157	38,848	30,762	19,397
HAG	Hagfish	*Eptatretus cirrhatus*	5,154	39,932	6,709	9,547	19,187
OCT	Octopus	*Pinnoctopus cordiformis*	7,747	12,272	8,796	4,580	19,068
WHX	Unicorn rattail	*Trachyrincus* sp.	3,905	4,356	25,646	8,651	18,045
WIT	Witch	*Arnoglossus scapha*	16,618	14,962	15,353	17,667	17,432
PIG	Pigfish	*Congiopodus leucopaecilus*	23,132	7,453	7,443	12,915	16,721
PLS	Plunket's shark	*Centroscymnus plunketi*	3,199	7,075	8,746	9,964	15,562
NCA	Hairy red swimming crab	*Netocarcinus antarcticus*	1	1	-	2	15,184
OPA	Opalfish	*Hemerocoetes* spp.	4,819	1,084	11,736	7,607	15,001
OPE	Orange perch	*Lepidoperca aurantia*	39,072	18,273	10,489	23,606	15,001
JFI	Jellyfish (unspecified)	N/A	25,113	19,373	4,084	270	14,899
SSH	Slender smooth-hound	*Gollum attenuates*	27,499	8,036	20,194	27,998	12,722
SUN	Sunfish	*Mola mola*	12,913	51,112	19,599	12,753	12,326
CHG	Purple chimaera	*Chimaera lignaria*	13,289	3,246	1,847	5,287	12,082
ERA	Electric ray	*Torpedo fairchildi*	13,935	11,988	14,589	7,724	9,722
SAL	Salps	N/A	16,337	12,820	13,553	23,057	9,173
ANT	Anemones	N/A	11,300	5,268	7,499	7,382	8,567
SCG	Scaly gurnard	*Lepidotrigla brachyoptera*	14,060	7,805	13,797	7,196	8,479
YBO	Yellow boarfish	*Pentaceros decacanthus*	3,631	6,307	8,133	6,340	7,730
TSQ	*Todarodes filippovae*	*Todarodes filippovae*	1,329	1,866	5,645	6,802	7,709

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
HEX	Sixgill shark	*Hexanchus griseus*	4,043	2,525	4,595	8,842	7,592
VSQ	Violet squid	*Histioteuthis* spp.	2,403	3,943	3,993	4,810	7,297
PAH	Opah	*Lampris immaculatus*	19,262	16,509	9,986	2,067	7,004
MDO	Mirror dory	*Zenopsis nebulosa*	47,178	6,799	8,947	5,397	6,918
EPL	Cardinal fish, bigeye	*Epigonus lenimen*	6,795	4,784	5,143	3,964	6,789
CHI	Chimaera spp.	*Chimaeras pp.*	2,171	1,856	1,255	8,044	6,565
OPI	Umbrella octopus	*Opisthoteuthis* spp.	4,370	5,030	8,199	7,273	6,540
DEA	Dealfish	*Trachipterus trachypterus*	5,163	2,997	3,285	2,510	5,956
LAN	Lanternfish	*Myctophidae* spp.	1,322	2,239	3,359	6,505	5,865
SBK	Spineback	*Notacanthus sexpinis*	6,491	8,176	19,313	8,665	5,792
GON	Sandfish	*Gonorynchus* spp.	17,853	9,945	13,406	4,398	5,653
JGU	Japanese gurnard	*Pterygotrigla picta*	4,130	2,022	4,220	6,667	4,415
CYO	Smooth skin dogfish	*Centroscymnus owstoni*	1,475	1,016	3,373	7,773	4,299
TOP	Pale toadfish	*Neophrynichthys angustus*	400	1,825	4,053	4,545	4,267
SQX	Squid (unspecified)	N/A	4,132	3,137	1,111	1,666	4,231
OSK	Skate, other	Family Rajidae	10,337	6,497	13,195	7,590	3,815
BSL	Black slickhead	*Xenodermichthys* spp.	649	3,201	2,575	1,920	3,552
DSK	Deepwater spiny skate	*Amblyraja hyperborean*	8,047	933	1,793	592	3,445
GSQ	Giant squid	*Architeuthis* sp.	1,566	1,652	1,479	1,475	3,118
WRA	Whiptail ray	*Dasyatis thetidis*	1,423	1,274	1,025	974	2,831
FMA	*Fusitriton magellanicus*	*Fusitriton magellanicus*	247	308	618	499	2,803
PDG	Prickly dogfish	*Oxynotus bruniensis*	4,196	3,725	5,456	2,103	2,744
ALB	Albacore tuna	*Thunnus alalunga*	10,922	34,611	22,283	3,890	2,689
EGR	Eagle ray	*Myliobatis tenuicaudatus*	1,080	1,087	625	992	2,619
SEV	Broadnose sevengill shark	*Notorynchus cepedianus*	1,749	2,044	2,225	2,025	2,255
SSC	Giant masking crab	*Leptomithrax australis*	-	-	10	-	2,077
MAN	Finless flounder	*Neoachiropsetta milfordi*	2,515	2,184	1,134	575	1,925
TRS	Cape scorpionfish	*Trachyscorpia capensis*	45	6	303	197	1,779
UNI	Unidentified fish	N/A	6,841	18,982	2,048	4,872	1,658
EUC	Eucla cod	*Euclicthys polynemus*	639	344	546	3,602	1,567
PHO	Lighthouse fish	*Photichthys argenteus*	926	408	318	1,102	1,493
MRL	Moray cods	*Muraenolepididae* sp.	-	-	-	707	1,406
TAM	Tam O'Shanter urchins	N/A	2,174	1,985	1,479	1,214	1,348

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
URO	Sea urchin other (except SUR-Kina)	N/A	3,570	4,104	1,802	401	1,231
SBR	Southern bastard cod	*Pseudophycis barbata*	1,042	1,657	2,577	918	1,177
VCO	Violet cod	*Antimora rostrata*	4,240	497	40	2,387	1,114
BRZ	Brown stargazer	*Xenocephalus armatus*	1,464	634	159	319	992
YCO	Yellow cod	*Parapercis gilliesi*	2,541	2,032	1,001	521	969
HTH	Sea cucumber (other than *Stichopus mollis*)	Holothuroidea (Class)	117	273	336	747	860
BWH	Bronze whaler shark	*Carcharhinus brachyurus*	76	142	200	268	844
LFB	Long-finned boarfish	*Zanclistius elevatus*	5	118	10	14	824
CHP	Chimaera, purple	*Chimaera* sp.	627	175	325	559	815
CSH	Cat shark	Other than *Apristurus* spp.	290	99	2,461	33	811
DWO	Deepwater octopus	*Graneledone* spp.	5,271	4,283	5,473	868	784
RDO	Rosy dory	*Cyttopsis rosea*	4,526	964	64	94	728
BSP	Big-scale pomfret	*Taractichthys longipinnis*	1,551	960	1,528	1,388	718
RCH	Widenosed chimaera	*Rhinochimaera pacifica*	17	107	135	12	691
PRA	Prawn (unspecified)	N/A	132	203	1,822	406	662
GAS	Gastropods	N/A	-	-	-	237	636
CYL	Portuguese dogfish	*Centroscymnus coelolepis*	59	1,010	3,959	293	634
RSQ	*Ommastrephes bartrami*	*Ommastrephes bartrami*	120	500	80	39	565
DCS	Dawson's cat shark	*Halaelurus dawsoni*	161	168	211	165	493
HEP	Sharpnose sevengill shark	*Heptranchias perlo*	966	501	902	218	478
OFH	Oilfish	*Ruvettus pretiosus*	907	699	554	202	449
DSP	Deepsea pigfish	*Congiopodus coriaceus*	55	18	79	30	448
CUC	Cucumber fish	*Chlorophthalmus nigripinnis*	65	561	2,194	1,685	429
STR	Stingray (unspecified)	N/A	227	65	156	281	415
BER	Electric ray	*Typhlonarke* spp.	13,935	906	14,589	1,498	412
BOA	Sowfish	*Paristiopterus labiosus*	41	23	12	9	390
CUB	Cubeheads	*Cubiceps* spp.	97	124	38	523	388
BRA	Short-tailed black ray	*Dasyatis brevicaudata*	201	168	308	87	347
LEG	Giant lepidion	*Lepidion schmidti, L. inosimae*	20	455	222	487	347
SMC	Small-headed cod	*Lepidion microcephalus*	376	367	1,488	567	344

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
UNX	All and any unidentified species	N/A	1,524	362	1,020	148	318
SCD	Smallscaled cod	*Paranotothenia microlepidota*	1,756	1,021	141	327	311
RAY	Rays	N/A	12,095	410	441	25	299
BSQ	Broad squid	*Sepioteuthis australis*	1	26	2	3	286
EPR	Cardinal fish, robust	*Epigonus robustus*	1,356	255	438	4	267
TOD	Dark toadfish	*Neophrynichthys latus*	5	15	82	324	182
WHE	Whelks	N/A	302	247	480	361	176
APR	Cat shark	*Apristurus* spp.	1,165	257	2,461	62	153
BCA	Barracudina	*Magnisudis prionosa*	55	458	150	139	148
SSM	Smallscaled brown slickhead	*Alepocephalus antipodianus*	252	240	241	206	144
SYN	Cutthroat eels (except Basketwork eels)	N/A	-	142	108	2	133
AGR	Ribbonfish	*Agrostichthys parkeri*	242	101	332	390	122
BPE	Butterfly perch	*Caesioperca Lepidoptera*	35	131	57	68	117
HYP	Pointynose blue ghost shark	*Hydrolagus trolli*	74	-	151	75	97
SKJ	Skipjack tuna	*Katsuwonus pelamis*	165	1,798	1,933	30	92
SNI	Snipefish	*Macroramphosus scolopax*	151	1,558	89	247	84
PLZ	Scaly stargazer	*Pleuroscopus pseudodorsalis*	28	46	717	125	78
PAG	Pagurid	N/A	45	34	1	6	76
BRC	Northern bastard cod	*Pseudophycis breviuscula*	-	-	5	65	70
CHX	Pink frogmouth	*Chaunax pictus*	62	34	243	18	65
API	Alert pigfish	*Alertichthys blacki*	185	67	162	129	63
EEL	Eels, Marine (unspecified)	N/A	574	1,922	247	1,160	52
SPZ	Spotted stargazer	*Genyagnus monopterygius*	20	137	189	5	50
GPF	Girdled wrasse	*Notolabrus cinctus*	153	124	84	80	46
COD	Cod (unspecified)	N/A	55	167	199	611	44
LSK	Long-tailed skate	*Arhynchobatis asperrimus*	654	650	196	657	41
CAM	Sabre prawn	*Campylonotus rathbunae*	-	-	4	-	40
MIQ	Warty squid	*Onykia ingens*	95,682	7	363	32	39
VOL	Volute	Family Volutidae	635	81	175	26	38
PMA	Pink maomao	*Caprodon longimanus*	-	27	-	-	34
SPI	Spider crabs (unspecified)	N/A	58	133	101	72	34

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
PGR	Plunderfish	*Pogonophryne permitini*	-	-	-	30	33
SPF	Scarlet wrasse	*Pseudolabrus miles*	31	116	55	26	29
RAG	Ragfish	*Icichthys australis*	16	97	147	28	20
SDF	Spotted flounder	*Azygopus pinnifasciatus*	192	65	126	5	20
ABR	Shortsnouted lancetfish	*Alepisaurus brevirostris*	-	-	7		19
WSE	Wrasses	N/A	47	2	1	14	18
TRA	Roughies	Family Trachichthyidae	18	-	-	-	17
MST	Scaleless black dragonfishes	N/A	-	-	2	-	12
GVO	Golden volute	*Provocator mirabilis*	2	14	12	-	8
MNI	Krill, squat lobsters	*Munida* spp.	17	-	-	-	8
ROC	Rock cod	*Lotella rhacina*	-	-	3,200	151	8
PAL	Barracudinas	N/A	19	2	9	34	7
SEE	Silver conger	*Gnathophis habenatus*	5	-	-	9	7
BAC	Codheaded rattail	*Bathygadus cottoides*	-	-	-	6	6
SPP	Splendid perch	*Callanthias allporti*	-	4	-	7	4
DIS	Discfish	*Diretmus argenteus*	4	10	8	7	3
SDE	Seadevil	*Cryptopsaras couesi*	2	4	5	3	3
CHA	Viper fish	*Chauliodus sloani*	-	129	70	1	2
DHO	Deepsea urchin	*Dermechinus horridus*	-	-	-	-	2
FLO	Flounder (unspecified)	N/A	-	-	-	-	2
GRC	Grenadier cod	*Tripterophycis gilchristi*	31	339	136	2,542	2
OAR	Oarfish	*Regalecus glesne*	46	126	68	20	2
PSP	Scissortail	*Psenes pellucidus*	148	10	3	7	2
SAM	Quinnat salmon	*Omcorhynchus tshawytscha*	4	-	4	67	2
COL	Olivers rattail	*Coelorinchus oliverianus*	-	-	-	-	1
FRS	Frill shark	*Chlamydoselachus anguineus*	-	-	16	-	1
LEP	Escolar	*Lepidocybium flavobrunneum*	5	-	-	-	1
SNE	Snubnosed eel	*Simenchelys parasitica*	2	-	1	-	1
BCR	Blue cusk eel	*Brotulotaenia crassa*	-	13	3	1	-
BOT	Lefteye flounders	*Bothidae* spp.	16	116	-	-	-
BPF	Banded wrasse	*Notolabrus fucicola*	-	-	-	29	-
CFA	Banded rattail	*Coelorinchus rasciatus*	8	-	-	-	-

Species code	Common name	Scientific name	2012/13	2013/14	2014/15	2015/16	2016 /17
EPD	Cardinal fish, white	*Epigonus denticulatus*	6	-	6	1	-
FTU	Frigate tuna	*Auxis thazard*	2	-	-	-	-
GSE	Snake mackerel	*Gempylus serpens*	138	-	700	-	-
GUL	Gulper eel	*Eurypharynx pelecanoides*	16	-	-	-	-
HSI	Jack-knife prawn	*Haliporoides sibogae*	1,968	1,540	376	255	-
HYD	Hydrolagus spp.	*Hydrolagus* spp.	-	5	-	3,275	-
INV	Invertebrate (unknown)	N/A	-	-	-	2	-
LHO	Omega prawn	*Lipkius holthuisi*	127	2	4	-	-
MCA	Ridge scaled rattail	*Macrourus carinatus*	-	-	2,328	-	-
MOB	Blunthead lightfish	*Margrethia obtusirostra*	645	2	-	4,590	-
MOR	Moray eel	*Muraenidae* spp.	18	-	11	6	-
MUR	Moray cod	*Muraenolepis marmoratus*	-	-	6	50	-
NOT	Antarctic rock cods	*Paranotothenia* spp.	6	1	-	-	-
NTU	Northern bluefin tuna	*Thunnus thynnus*	150	49	-	265	-
PSK	Longnosed deepsea skate	*Bathyraja shuntovi*	762	768	495	-	-
RPE	Red perch	Unspecified	62	-	-	-	-
RRC	Red scorpion fish	*Scorpaena cardinalis, S. papillosus*	-	6	-	-	-
SCM	Roughskin dogfish	*Scymnodon macracanthus*	31	-	-	-	-
SFN	Spinyfin	*Diretmichthys parini*	4	8	9	-	-
SLL	Slipper lobsters	*Scyllaridae* spp.	59	1	5	1	-
SOP	Pacific sleeper shark	*Somniosus pacificus*	-	-	1	-	-
SPT	Purple-heart urchin	*Spatangus multispinus*	-	8	1	-	-
STG	Stargazer (unspecified)	N/A	27	-	-	-	-
TAS	Rough pomfret	*Taractes asper*	-	-	-	1	-
TIN	Tinselfish	*Xenolepidichthys dalgleishi*	-	-	41	4	-
WHR	White rattail	*Trachyrincus longirostris*	16	250	621	10	-
WLP	Wavy line perch	*Lepidoperca tasmanica*	150	8	1	33	-
AER	Aeneator recens	*Aeneator recens*	-	1	-	2	-

9 Appendix IV: Cost recovery levy analysis

Table 38: Cost recovery levies ($) for deepwater stocks 2016/17

	Compliance	Registry	Observers		Research		Under/Over Recovery		2016/17
Fish-stock	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	Total
BAR10	41	15	0	-	-	-	4	-	60
BAR4	9,504	3,494	1,993	393	1,137	177	967	-12	17,653
BAR5	23,580	8,670	6,852	1,426	2,821	543	2,492	-36	46,349
BAR7	66,247	24,358	139,224	9,455	7,927	1,731	6,144	-5,204	249,882
BYX1	6,561	2,412	40	-	347	-	776	-	10,136
BYX10	205	75	1	-	-	-	19	-	300
BYX2	37,983	13,966	24,751	3,151	2,012	-	-10,044	-2,431	69,389
BYX3	17,247	6,342	10,378	1,307	913	-	-34,880	-1,307	0
BYX7	1,279	470	8	-	68	-	161	-	1,987
BYX8	420	154	3	-	22	-	50	-	649
CDL1	12,593	4,630	77	-	667	-	1,503	-	19,469
CDL10	-	-	-	-	-	-	-	-	-
CDL2	4,425	1,627	2,885	367	234	-	-9,172	-367	0
CDL3	1,473	542	9	-	78	-	192	-	2,294
CDL4	693	255	4	-	37	-	83	-	1,071
CDL5	231	85	1	-	11	-	28	-	356
CDL6	10	4	0	-	1	0	1	-	16
CDL7	409	150	3	-	22	-	49	-	633
CDL8	-	-	-	-	-	-	-	-	-
CDL9	42	15	0	-	2	-	5	-	65
CHC1	21	8	0	-	-	-	2	-	31
CHC10	-	-	-	-	-	-	-	-	-
CHC2	21	8	0	-	-	-	2	-	31
CHC3	8	3	0	-	-	-	1	-	12
CHC4	8	3	0	-	-	-	1	-	12
CHC5	8	3	0	-	-	-	1	-	12
CHC6	8	3	0	-	-	-	1	-	12
CHC7	8	3	0	-	-	-	1	-	12
CHC8	8	3	0	-	-	-	1	-	12
CHC9	8	3	0	-	-	-	1	-	12
EMA3	1,719	632	11	-	64	39	159	1	2,625
EMA7	14,168	5,209	26,790	28,055	74,077	318	1,292	5	149,913
FRO10	-	-	-	-	-	-	-	-	-
FRO3	3,029	1,114	18	-	113	-	361	-	4,636
FRO4	89	33	1	-	3	-	20	-	146

	Compliance	Registry	Observers		Research		Under/Over Recovery		2016/17
Fish-stock	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	Total
FRO5	1,870	688	11	-	70	-	223	-	2,862
FRO6	57	21	0	-	2	-	7	-	87
FRO7	24,773	9,109	151	-	924	-	2,956	-	37,914
FRO8	1,126	414	7	-	42	-	237	-	1,826
FRO9	297	109	2	-	11	-	56	-	476
GSC1	2	1	0	-	-	-	0	-	3
GSC10	-	-	-	-	-	-	-	-	-
GSC3	29	11	0	-	-	-	3	-	43
GSC5	40	15	0	-	-	-	4	-	58
GSC6A	311	114	2	-	-	-	28	-	454
GSC6B	497	183	3	-	-	-	44	-	728
GSH4	1,141	420	7	-	60	26	133	1	1,787
GSH5	454	167	3	-	24	-	56	-	703
GSH6	275	101	2	-	15	-	36	-	428
GSP1	4,702	1,729	29	-	249	105	577	3	7,395
GSP5	2,239	823	14	-	119	-	267	-	3,462
GSP7	539	198	3	-	29	12	70	0	852
HAK1	54,709	20,116	27,031	2,258	236,123	1,583	5,238	-141	346,917
HAK10	124	46	1	-	-	-	11	-	182
HAK4	26,161	9,619	5,482	1,080	105,120	660	2,432	-66	150,488
HAK7	92,345	33,955	35,512	7,083	746,834	2,873	8,642	-246	926,998
HOK1	1,004,882	369,487	951,076	197,365	2,039,987	79,919	-54,659	-4,036	4,584,021
HOK10	84	31	1	-	-	-	8	-	123
JMA10	46	17	0	-	-	-	4	-	68
JMA3	42,881	15,767	21,187	4,360	4,460	1,655	3,003	-147	93,167
JMA7	68,755	25,281	130,002	28,904	50,972	1,989	4,816	-179	310,539
KIC1	21	8	0	-	-	-	2	-	31
KIC10	-	-	-	-	-	-	-	-	-
KIC2	21	8	0	-	-	-	2	-	31
KIC3	21	8	0	-	-	-	2	-	31
KIC4	21	8	0	-	-	-	2	-	31
KIC5	21	8	0	-	-	-	2	-	31
KIC6	21	8	0	-	-	-	2	-	31
KIC7	21	8	0	-	-	-	2	-	31
KIC8	21	8	0	-	-	-	2	-	31
KIC9	21	8	0	-	-	-	2	-	31
LDO1	3,558	1,308	22	-	133	-	-48	-	4,972
LDO10	16	6	0	-	-	-	1	-	23

	Compliance	Registry	Observers		Research		Under/Over Recovery		2016/17
Fish-stock	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	Total
LDO3	8,960	3,295	55	-	334	-	-10,088	-	2,555
LIN10	267	98	2	-	-	-	25	-	391
LIN3	61,107	22,469	29,490	6,117	14,466	2,226	4,987	-948	139,914
LIN4	119,420	43,910	57,636	11,950	21,443	4,906	9,805	-277	268,793
LIN5	108,248	39,802	30,213	6,360	118,207	8,091	9,053	-39	319,935
LIN6	216,145	79,475	60,330	12,699	132,210	7,763	18,262	-639	526,244
LIN7	88,649	32,595	58,292	12,006	774,449	2,936	7,336	-1,142	975,122
OEO1	17,933	6,594	2,507	305	2,146	715	-29,180	-1,020	0
OEO10	72	26	0	-	3	-	7	-	109
OEO3A	24,031	8,836	14,461	1,819	30,552	1,037	-173	-156	80,407
OEO4	21,520	7,913	12,951	1,627	1,334,952	1,260	-408,122	-325	971,775
OEO6	43,040	15,825	6,016	734	5,150	1,836	5,510	376	78,486
ORH1	40,607	14,931	26,460	3,374	4,859	1,733	-12,609	1,240	80,595
ORH10	260	96	2	-	-	-	24	-	382
ORH2A	16,743	6,156	10,912	1,390	5,135	714	-6,441	-1,347	33,264
ORH2B	2,040	750	1,331	170	626	87	-1,104	-221	3,679
ORH3A	3,994	1,469	2,603	331	1,225	159	-3,511	-490	5,780
ORH3B	121,389	44,634	89,290	11,257	117,806	11,892	1,950	127	398,345
ORH7A	39,120	14,384	28,686	3,616	4,681	-	-8,187	-1,260	81,041
ORH7B	26	10	0	-	3	-	-39	-	-
PRK1	879	323	5	-	33	-	105	-	1,346
PRK10	-	-	-	-	-	-	-	-	-
PRK2	126	46	1	-	5	-	15	-	192
PRK3	36	13	0	-	1	-	4	-	55
PRK4A	36	13	0	-	1	-	4	-	55
PRK5	36	13	0	-	1	-	4	-	55
PRK6A	36	13	0	-	1	-	4	-	55
PRK6B	36	13	0	-	1	-	4	-	55
PRK7	36	13	0	-	1	-	4	-	55
PRK8	36	13	0	-	1	-	4	-	55
PRK9	36	13	0	-	1	-	4	-	55
PTO1	5,194	1,910	32	-	-	-	463	-	7,599
RBT1	78	29	0	-	3	-	9	-	119
RBT10	-	-	-	-	-	-	-	-	-
RBT3	2,254	829	473	-	84	-	384	-	4,024
RBT7	11,627	4,275	71	-	434	-	1,388	-	17,795
RBY1	7,184	2,641	44	-	268	-	843	-	10,980
RBY10	-	-	-	-	-	-	-	-	-

	Compliance	Registry	Observers		Research		Under/Over Recovery		2016/17
Fish-stock	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	Total
RBY2	1,226	451	7	-	46	-	-1,730	-	-
RBY3	8	3	0	-	0	-	1	-	13
RBY4	56	21	0	-	2	-	-79	-	0
RBY5	-	-	-	-	-	-	-	-	-
RBY6	-	-	-	-	-	-	-	-	-
RBY7	124	46	1	-	5	-	-175	-	0
RBY8	72	26	0	-	3	-	9	-	110
RBY9	147	54	1	-	5	-	18	-	224
RIB10	-	-	-	-	-	-	-	-	-
RIB3	3,086	1,135	19	-	321	-	-3,206	-	1,354
RIB4	2,044	752	12	-	213	-	-3,021	-	-
RIB5	344	126	2	-	36	-	-508	-	-
RIB6	1,091	401	7	-	113	-	-1,612	-	-
RIB7	2,578	948	16	-	268	-	-45	-	3,764
RIB8	7	3	0	-	1	-	1	-	11
SBW1	47	17	0	10	5	-	6	0	85
SBW6A	7,228	2,658	44	1,204	752	315	699	-25	12,874
SBW6B	17,277	6,353	10,377	2,883	93,999	746	2,063	-7	133,690
SBW6I	259,156	95,290	155,657	43,210	2,667,783	11,295	25,049	-203	3,257,237
SBW6R	32,321	11,884	19,413	5,388	3,362	1,409	3,124	-25	76,875
SCI1	18,578	6,831	20,314	4,836	3,185	434	617	-436	54,360
SCI10	-	-	-	-	-	-	-	-	-
SCI2	18,880	6,942	20,644	4,913	3,237	493	611	-443	55,278
SCI3	53,822	19,790	58,848	14,000	916,978	377	1,696	-1,152	1,064,360
SCI4A	17,416	6,404	19,043	4,531	2,985	570	574	-400	51,122
SCI5	5,805	2,135	35	1,509	995	-	191	-137	10,533
SCI6A	40,274	14,808	44,035	10,477	96,642	11,165	1,401	1,104	219,906
SCI6B	7,257	2,668	44	1,886	1,244	234	239	-167	13,404
SCI7	10,885	4,002	66	2,831	1,866	-	359	-258	19,752
SCI8	726	267	4	191	124	-	24	-17	1,319
SCI9	5,080	1,868	31	1,323	871	-	168	-120	9,219
SKI10	170	63	1	-	-	-	16	-	249
SKI3	3,748	1,378	23	-	199	84	483	4	5,919
SKI7	3,762	1,383	23	-	199	84	466	3	5,921
SPD10	-	-	-	-	-	-	-	-	-
SPD4	4,436	1,631	27	-	121	99	529	3	6,848
SPD5	6,601	2,427	9,167	10,370	1,730	166	-8,757	-10,070	11,634
SPE10	-	-	-	-	-	-	-	-	-

	Compliance	Registry	Observers		Research		Under/Over Recovery		2016/17
Fish-stock	MPI	MPI	MPI	DOC	MPI	DOC	MPI	DOC	Total
SPE3	7,100	2,611	43	-	4,546	159	21,703	4	36,168
SPE4	5,411	1,990	33	-	287	121	643	3	8,488
SPE5	162	60	1	-	9	-	19	-	251
SPE6	61	23	0	-	3	-	7	-	95
SPE7	502	185	3	-	27	11	62	0	790
SQU10T	120	44	1	-	-	-	11	-	175
SQU1J	600,687	220,868	3,668	-	16,976	10,535	-178,655	-	674,078
SQU1T	570,491	209,765	224,310	63,395	97,795	31,368	55,483	1,212	1,253,819
SQU6T	387,235	142,383	152,259	43,029	66,381	117,655	37,429	19,387	965,758
SWA1	26,715	9,823	10,272	2,051	3,197	1,677	2,617	-88	56,265
SWA10	87	32	1	-	-	-	8	-	128
SWA3	21,785	8,010	4,565	899	46,780	902	2,068	-94	84,915
SWA4	28,765	10,577	14,613	2,924	47,616	1,482	2,785	-30	108,732
WWA1	59	22	0	-	6	-	7	-	94
WWA10	-	-	-	-	-	-	-	-	-
WWA2	1,480	544	9	-	154	33	141	-4	2,357
WWA3	11,725	4,311	72	-	1,220	263	1,110	-28	18,673
WWA4	6,479	2,382	40	-	674	145	612	-19	10,313
WWA5B	41,468	15,248	12,050	2,506	4,313	1,489	4,008	-42	81,040
WWA7	2,295	844	14	-	239	51	207	-8	3,643
WWA8	16	6	0	-	2	-	2	-	25
WWA9	-	-	-	-	-	-	-	-	-
Grand Total	4,732,243	1,740,009	2,595,281	583,323	9,932,325	330,351	-515,393	-12,331	19,385,807

Table 39: Levies by stock as a percent of landed value[88]

Fishstock	Total levies 2016/17 ($)	2016/17 Landings (tonnes)	2016/17 Port price ($/kg)	2016/17 Landed value ($)	Levies as % landed value (16/17)
BAR10	60	-	0.39	-	N/A
BAR4	17,095	2273	0.30	681,717	3%
BAR5	44,416	8555	0.30	2,573,276	2%
BAR7	243,899	6731	0.57	3,803,290	6%
BYX1	10,136	21	2.08	44,753	23%
BYX10	300	-	1.95	-	0%
BYX2	68,668	1602	2.30	3,681,187	2%
BYX3	-	957	1.63	1,556,538	-
BYX7	1,986	26	1.51	38,687	5%
BYX8	648	1	2.00	48	-
CDL1	19,469	12	1.00	11,916	163%
CDL10	-	-	1.00	-	N/A
CDL2	-	396	0.96	379,361	-
CDL3	2,293	128	0.72	91,444	3%
CDL4	1,070	27	1.00	26,628	4%
CDL5	356	85	1.00	84,989	0%
CDL6	15.56	1	0.96	1,106	-
CDL7	633	4	1.00	3,657	17%
CDL8	-	-	1.00	-	N/A
CDL9	65	1	1.00	558	-
CHC1	31	1	0.20	<1	-
CHC10	-	-	0.20	-	N/A
CHC2	31	<1	0.20	5	-
CHC3	12	-	0.20	-	N/A
CHC4	12	-	0.20	-	N/A
CHC5	12	-	0.20	-	N/A
CHC6	12	-	0.20	-	N/A
CHC7	12	-	0.20	-	N/A
CHC8	12	-	0.20	-	N/A
CHC9	12	-	0.20	-	N/A
EMA3	2,585	118	0.42	49,447	5%
EMA7	121,535	621	0.40	250,298	49%
FRO10	-	-	1.05	-	N/A
FRO3	4,636	8	1.64	13,370	35%
FRO4	145	8	0.30	2,438	6%
FRO5	2,862	24	1.32	31,690	9%
FRO6	87	<1	0.49	12	-
FRO7	37,914	1142	0.90	1,028,090	4%

[88] Levys as percentage of landed value not expressed if either total levies collected or landed value was less than $100

Fishstock	Total levies 2016/17 ($)	2016/17 Landings (tonnes)	2016/17 Port price ($/kg)	2016/17 Landed value ($)	Levies as % landed value (16/17)
FRO8	1,826	553	0.17	91,337	2%
FRO9	476	95	0.21	19,468	2%
GSC1	3	-	0.20	-	N/A
GSC10	-	-	0.20	-	N/A
GSC3	43	1	0.20	290	-
GSC5	58	14	0.20	2,777	-
GSC6A	454	45	0.20	9,093	5%
GSC6B	728	-	0.20	-	N/A
GSH4	1,761	152	0.29	44,570	4%
GSH5	703	67	0.40	26,759	3%
GSH6	428	54	0.28	14,872	3%
GSP1	7,287	555	0.39	216,088	3%
GSP5	3,462	300	0.47	140,946	2%
GSP7	840	21	0.29	6,171	14%
HAK1	343,218	1138	1.41	1,602,605	21%
HAK10	182	-	1.18	-	-
HAK4	148,814	271	1.38	375,090	40%
HAK7	917,288	4542	1.14	5,191,256	18%
HOK1	4,310,773	132494	0.64	84,583,239	5%
HOK10	123	-	0.80	-	N/A
JMA10	68	-	0.44	-	N/A
JMA3	87,298	4488	0.23	1,018,904	9%
JMA7	279,825	33685	0.20	6,783,194	4%
KIC1	31	<1	0.20	<1	-
KIC10	-	-	0.20	-	N/A
KIC2	31	<1	0.20	5	-
KIC3	31	<1	0.20	12	-
KIC4	31	<1	0.20	45	-
KIC5	31	<1	0.20	5	-
KIC6	31	<1	0.20	55	-
KIC7	31	<1	0.20	1	-
KIC8	31	-	0.20	-	N/A
KIC9	31	-	0.20	-	N/A
LDO1	4,972	153	2.02	309,299	2%
LDO10	23	-	1.50	-	N/A
LDO3	2,555	330	1.39	459,328	1%
LIN10	391	-	2.54	-	0%
LIN3	132,519	1802	2.83	5,093,366	3%
LIN4	252,214	2380	2.71	6,448,639	4%
LIN5	305,524	3904	2.61	10,181,921	3%

Fishstock	Total levies 2016/17 ($)	2016/17 Landings (tonnes)	2016/17 Port price ($/kg)	2016/17 Landed value ($)	Levies as % landed value (16/17)
LIN6	506,420	2605	2.42	6,307,832	8%
LIN7	961,321	3370	2.74	9,243,524	10%
OEO1	-	578	0.68	393,351	-
OEO10	109	-	0.68	-	N/A
OEO3A	77,706	3,023	0.68	2,055,856	4%
OEO4	969,213	3,287	0.68	2,235,404	43%
OEO6	75,541	1,217	0.68	827,404	9%
ORH1	74,248	774	2.76	2,139,559	3%
ORH10	382	-	2.48	-	N/A
ORH2A	32,507	501	3.27	1,638,312	2%
ORH2B	3,642	57	3.24	183,615	2%
ORH3A	5,780	195	2.15	420,082	1%
ORH3B	375,068	4490	2.31	10,386,728	4%
ORH7A	78,684	1626	2.33	3,789,046	2%
ORH7B	-	<1	2.48	378	-
PRK1	1,346	<1	3.42	248	542%
PRK10	-	-	3.42	-	N/A
PRK2	192	<1	3.42	7	-
PRK3	55	-	3.42	-	N/A
PRK4A	55	-	3.42	-	N/A
PRK5	55	-	3.42	-	N/A
PRK6A	55	-	3.42	-	N/A
PRK6B	55	<1	3.42	<1	N/A
PRK7	55	<1	3.42	1,676	-
PRK8	55	-	3.42	-	N/A
PRK9	55	<1	3.42	3,818	-
PTO1	7,599	17	10.00	169,317	4%
RBT1	119	5	0.39	1,926	6%
RBT10	-	-	0.39	-	-
RBT3	4,024	2388	0.10	234,237	2%
RBT7	17,795	144	0.39	56,046	32%
RBY1	10,980	178	2.28	405,597	3%
RBY10	-	-	1.14	-	N/A
RBY2	-	212	0.27	57,321	-
RBY3	13	1	0.26	294	-
RBY4	-	13	0.30	3,810	-
RBY5	-	<1	1.14	2	-
RBY6	-	-	1.54	-	N/A
RBY7	-	9	0.36	3,055	-
RBY8	110	<1	1.14	31	-

Fishstock	Total levies 2016/17 ($)	2016/17 Landings (tonnes)	2016/17 Port price ($/kg)	2016/17 Landed value ($)	Levies as % landed value (16/17)
RBY9	224	<1	0.73	229	98%
RIB10	-	-	0.77	-	N/A
RIB3	1,354	135	0.75	101,014	1%
RIB4	-	209	0.55	114,091	-
RIB5	-	42	0.63	26,332	-
RIB6	-	89	0.45	40,035	-
RIB7	3,764	236	0.74	175,486	2%
RIB8	11	1	0.68	387	-
SBW1	75	34	0.56	19,170	-
SBW6A	11,380	69	0.42	29,042	39%
SBW6B	130,069	2386	0.56	1,336,289	10%
SBW6I	3,202,935	20458	0.63	12,888,272	25%
SBW6R	70,104	15	0.56	8,443	830%
SCI1	49,526	119	14.75	1,754,195	3%
SCI10	-	-	13.83	-	N/A
SCI2	50,314	156	13.53	2,113,519	2%
SCI3	1,051,134	358	15.09	5,403,075	19%
SCI4A	46,422	134	13.83	1,859,538	2%
SCI5	9,162	<1	13.83	168	5452%
SCI6A	197,160	291	12.54	3,646,851	5%
SCI6B	11,455	-	13.83	-	N/A
SCI7	17,178	<1	13.83	5,683	302%
SCI8	1,145	-	13.83	-	0%
SCI9	8,016	<1	13.83	1,194	671%
SKI10	249	-	1.62	-	N/A
SKI3	5,832	196	1.19	232,878	3%
SKI7	5,833	384	1.20	458,408	1%
SPD10	-	-	0.32	-	N/A
SPD4	6,745	445	0.26	115,736	6%
SPD5	11,167.46	488	0.17	83,036	13%
SPE10	-	-	0.65	-	N/A
SPE3	36,004	585	0.68	395,667	9%
SPE4	8,363	390	0.57	220,922	4%
SPE5	251	13	0.43	5,530	5%
SPE6	95	8	0.65	5,333	-
SPE7	778	75	0.58	43,570	2%
SQU10T	175	-	1.14	-	N/A
SQU1J	663,543	1	1.14	1,038	63921%
SQU1T	1,157,845	7502	1.22	9,115,858	13%
SQU6T	785,687	10589	1.14	12,071,606	7%

Fishstock	Total levies 2016/17 ($)	2016/17 Landings (tonnes)	2016/17 Port price ($/kg)	2016/17 Landed value ($)	Levies as % landed value (16/17)
SWA1	52,625	656	0.85	556,621	9%
SWA10	128	-	0.83	-	N/A
SWA3	83,208	3844	0.63	2,432,687	3%
SWA4	104,355	4141	0.67	2,775,087	4%
WWA1	94	<1	1.41	199	47%
WWA10	-	-	1.51	-	N/A
WWA2	2,328	3	1.93	6,609	35%
WWA3	18,436	285	1.92	545,892	3%
WWA4	10,187	42	1.87	78,689	13%
WWA5B	77,087	618	1.51	932,751	8%
WWA7	3,599	83	1.72	143,122	3%
WWA8	25	-	1.51	-	N/A
WWA9	-	-	1.50	-	N/A

Appendix V: Interim Observer 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