Fisheries New Zealand
Tini a Tangaroa

Annual Operational Plan for Deepwater Fisheries 2019/20

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1 Overview

New Zealand's Deepwater and middle-depth fisheries (deepwater fisheries) predominantly occur in waters beyond the 12 nautical mile (NM) limit of the territorial sea. Deepwater fishing activity occurs out to, and beyond, the 200NM limit of New Zealand's exclusive economic zone (EEZ). Deepwater fisheries contributed approximately $NZ704 million in FOB[1] export earnings during the 2018 calendar year.[2] In 2018, five deepwater fish species (hoki, squid, ling, jack mackerel and orange roughy) were amongst the ten largest export-earning seafood species (including those produced via aquaculture). Together, these five species represent 44% of seafood export volume and accounted for approximately NZ$548 million in FOB export earnings.

The management of New Zealand's deepwater fisheries is a collaborative arrangement between Fisheries New Zealand (representing the Crown and its statutory obligations to the public) and the commercial fishing industry, represented by Deepwater Group Ltd (DWG). This arrangement enables the Management Objectives to be achieved by drawing on the combined knowledge, experience, capabilities, and perspectives of both organisations. Tangata whenua and other stakeholders are also engaged in this process.

Within the portfolio of deepwater fisheries, fish stocks have been categorised into three tiers (Table 1). Tier 1 fisheries are high volume and/or high value fisheries and are usually targeted. They are important earners of export revenue, which is reflected in the high quota value associated with these species. Tier 2 fisheries are typically less valuable fisheries that are only target fisheries at certain times of the year, or that are taken as non-target catch of Tier 1 stocks. Tier 3 comprises non-target species that are not managed through the quota management ystem (QMS).

Table 1: Categorisation of deepwater fish stocks

Deepwater Stocks [3]		
Tier 1	Hake: all Hoki : all Jack mackerel: JMA 3, JMA 7 Ling: LIN 3 – LIN 7 Orange roughy: all	Oreos: all Scampi: all Southern blue whiting: all Squid: all
Tier 2	Alfonsino: all Barracouta: BAR 4, BAR 5, BAR 7 Black cardinalfish: all Deepwater crabs (CHC/GSC/KIC); all English mackerel: EMA 3, EMA 7 Frostfish: FRO 3 - FRO 9 Gemfish: SKI 3, SKI 7 Ghost shark, dark: GSH 4 – GSH 6 Ghost shark, pale: all Lookdown dory: all	Patagonian toothfish: all Prawn killer: all Redbait: all Ribaldo: RIB 3-RIB 8 Rubyfish: all Sea perch: SPE 3 – SPE 7 Silver warehou: all Spiny dogfish: SPD 4, SPD 5 White warehou: all
Tier 3	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] Export value based on export statistics available on the Seafood New Zealand website. For some species (e.g. jack mackerel and barracouta), the value includes all stocks, including those managed in an Inshore Fisheries Plan. Export value is not available for some deepwater species as species-specific information is not supplied by Statistics New Zealand to Seafood New Zealand.

[3] For some species, management of some stocks falls under the National Deepwater Plan and the remainder are managed under the National Inshore Finfish Plan.

2 Wider Context and Structure

The Annual Operational Plan (AOP) is driven by the National Fisheries Plan for Deepwater and Middle-depth Fisheries 2019 (Deepwater Plan). The first Deepwater Plan was approved in 2010. Between 2016 and 2018 the plan was reviewed, culminating in an updated Deepwater Plan being approved in 2019.[4] At a conceptual level, the Deepwater Plan sits within a hierarchy of fundamental legislation including the Fisheries Act 1996 (the Act) and Treaty of Waitangi obligations to Māori, which provide strategic direction for a range of policy instruments and standards (Figure1). These legislative requirements and policies help to inform the Deepwater Plan, which in turn sets the direction and objectives for this AOP.

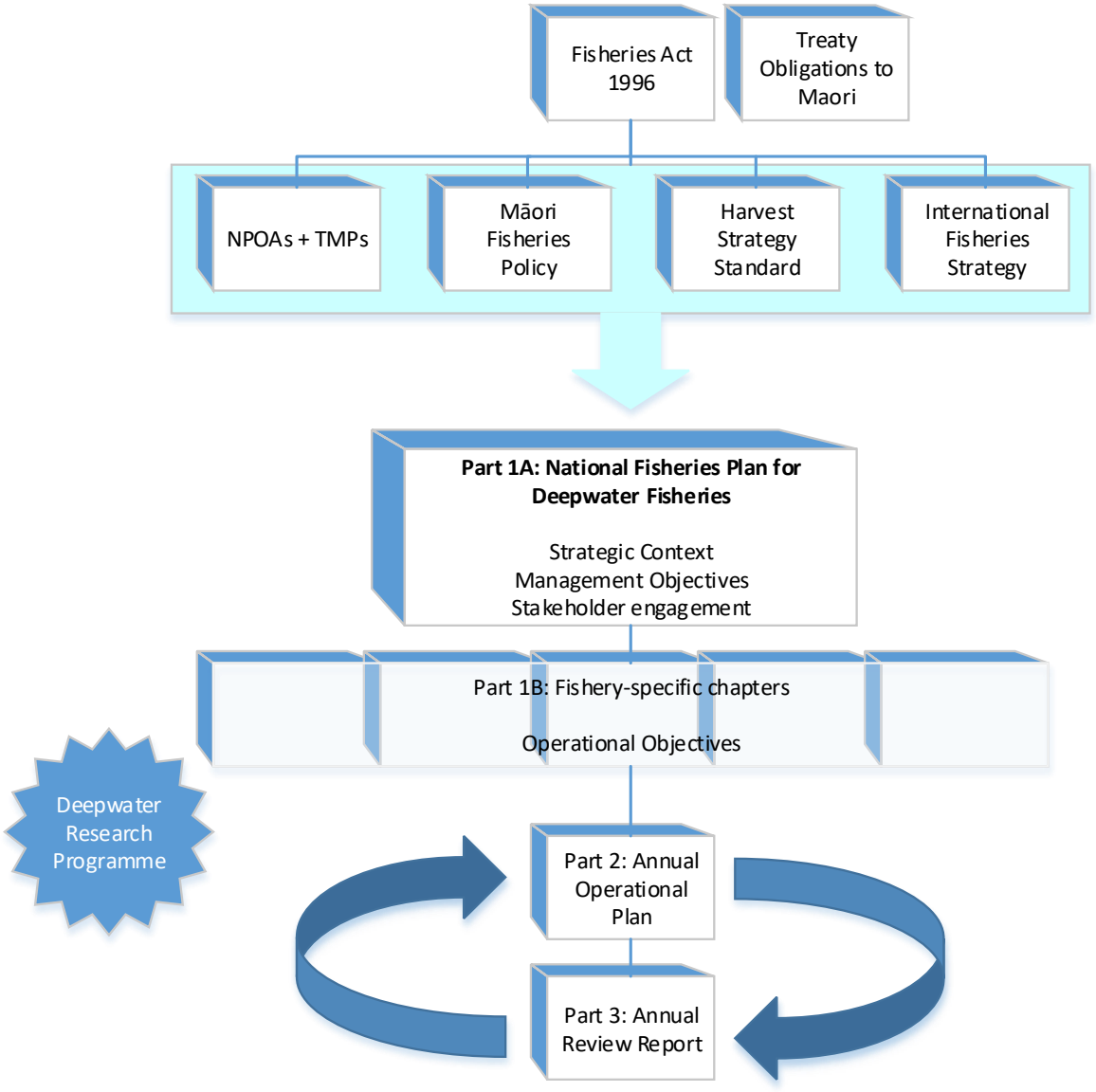

Figure 1. Wider Context and Structure

[4] The updated Deepwater Plan is available here (https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/)

3 Outcomes

The Deepwater Plan establishes the high level outcomes that are shown in Figure 2. The major part of this document describes these outcomes in more detail and the management measures required to achieve these outcomes, as well as describing how the management measures will meet the higher-level legislative and policy objectives.

Use Outcome: Fisheries resources are used in a manner that provides the greatest overall economic, social, and cultural benefit

Environment Outcome: The capacity and integrity of the aquatic environment, habitats and species are sustained at levels that provide for current and future use

Governance Conditions: Sound governance arrangements that are well specified, transparent, and which support cost-effective and accountable decision-making

Management Objectives (Part 1 A)

Use Outcome	**1**	Ensure the deepwater and middle-depth fisheries resources are managed so as to provide for the needs of future generations
	2	Ensure excellence in the management of New Zealand's deepwater and middle-depth fisheries, so they are consistent with, or exceed, international best practice
	3	Ensure effective management of the deepwater and middle-depth fisheries is achieved through the availability of appropriate, accurate and robust information
	4	Ensure deepwater and middle-depth fish stocks and key bycatch fish stocks are managed to an agreed harvest strategy or reference points
Environment Outcome	**5**	Ensure that maintenance of biological diversity of the aquatic environment and protection of habitats of particular significance for fisheries management are explicitly considered in management
	6	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on associated or dependent and incidentally caught fish species
	7	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the benthic habitat
	8	Manage deepwater and middle-depth fisheries to avoid, remedy or mitigate the adverse effects of these fisheries on the long-term viability of endangered, threatened and protected species populations
Governance	**9**	Ensure the management of New Zealand's deepwater and middle-depth fisheries meets the Crown's obligations to Māori
	10	Ensure there is consistency and certainty of management measures and processes in the deepwater and middle-depth fisheries
	11	Ensure New Zealand's deepwater and middle-depth fisheries are transparently managed

Figure 2. Outcomes and Objectives of the Deepwater Plan

The Deepwater Plan, consists collectively of the three parts shown in Figure 3. Part 1 of the Deepwater Plan sets the objectives to guide the management of New Zealand's deepwater fisheries, consistent with the legislative framework provided by the Act. 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;

2. The description and status of the management objectives that will apply across all deepwater fisheries; and

3. How the Deepwater Plan will be implemented and how stakeholders will be engaged during the implementation phase.

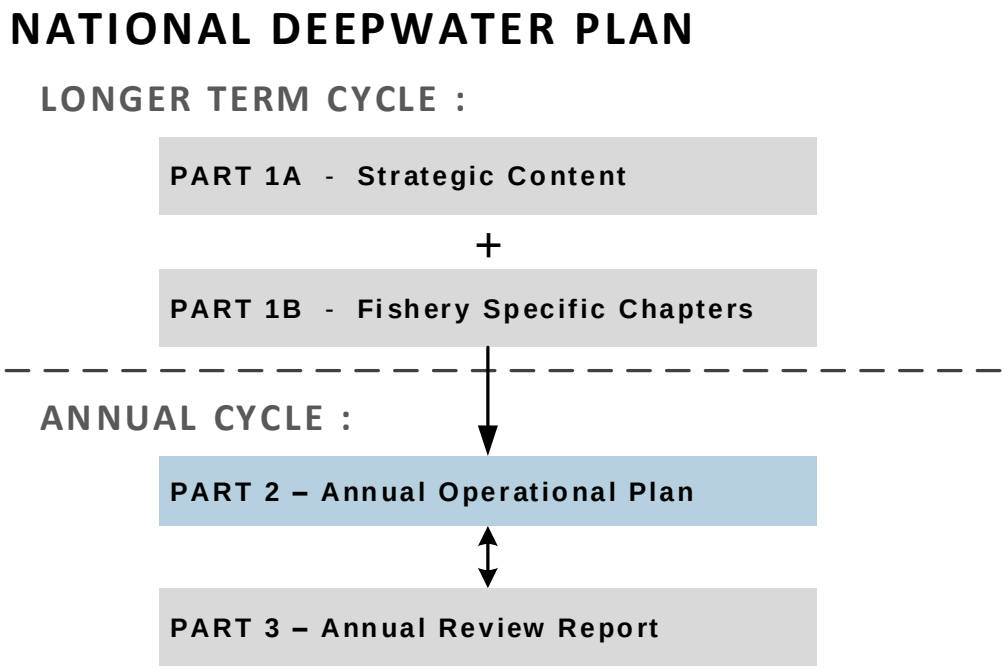

Figure 3: The Deepwater Plan structure highlighting the longer term cycle of Parts 1A and 1B, and the annual cycle of the AOP and Annual Review Report. This document is Part 2 (highlighted in blue).

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

The content of this AOP reflects the management objectives, structure, and content of the 2019 version of the Deepwater Plan.

Part 1B comprises the fishery-specific chapters of the Deepwater Plan, which provide greater detail on how deepwater fisheries will be managed at the fishery level, in line with the management objectives. Prior to the 2019 version of the Deepwater Plan being approved, fishery-specific chapters were completed for the hoki, orange roughy, oreo, hake, ling, jack mackerel, and southern blue whiting fisheries[5]. These chapters were not approved by the Minister of Fisheries under Section 11A of the Fisheries Act 1996. However, the Minister's approval will be sought for any fishery-specific chapters developed or updated under the 2019 Deepwater Plan.

The fishery-specific chapters describe Operational Objectives for each of the Tier 1 target fisheries and the key Tier 2 non-target species. These chapters also describe any harvest strategies that have been agreed for the relevant species at the time the chapters were written. **Part 2** of the Deepwater Plan consists of an AOP, which provides the Management Actions scheduled for delivery during the financial year, and the Management Services needed for delivery of those Management Actions.

The AOP is primarily an internal planning and prioritisation document so is not approved by the Minister of Fisheries under section 11A of the Act. However, advice will be provided to the Minister regarding any statutory interventions required to regulate deepwater fisheries. The contents and structure of this AOP are described in the following section.

Part 3 of the National Deepwater Plan is the Annual Review Report (ARR), which assesses the progress towards meeting the Operational Objectives, Management Objectives and priorities described in Part 1 through reviewing delivery of the AOP. The ARR also reports on annual performance of deepwater fisheries against the management approach specified in the AOP.

[5] All documents referred to on this page and the following page are available here http://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries

4 The 2019/20 Deepwater Annual Operational Plan (AOP)

This AOP details the Deepwater Fisheries Management Actions and Services that will be implemented during the 2019/20 financial year. Completion of these Management Actions will contribute to meeting the Management Objectives and outcomes described in Part 1 of the Deepwater Plan.

4.1 AOP STRUCTURE

The 2019/20 AOP includes the following sections, described in more detail below:

- Part 2A: Management Actions for 2019/20; and
- Part 2B: Management Services required for 2019/20.

4.1.1 Part 2A: Management Actions for 2019/20

Part 2A details the Management Actions that have been scheduled for completion during the 2019/20 financial year. Completion of all these Management Actions will contribute to delivery of the Management Objectives specified in Part 1A, and the fishery-specific Operational Objectives specified in Part 1B, of the Deepwater Plan.

The Management Actions in Part 2A are provided in order of priority, indicated by the number on the left hand side of Table 2.

Table 3 outlines projects and work areas that the Deepwater Fisheries Management Team (Deepwater Team) will contribute towards, but not lead. These projects are led by other teams, either within Fisheries New Zealand or in other Ministry for Primary Industries (MPI) branches. Table 4 outlines the Management Actions delivered by the Deepwater Team that are initiated by the fishing industry.

4.1.2 Part 2B: Management Services Required During the 2019/20 Financial Year

Part 2B details the Fisheries Management Services that will be required to deliver on Management Actions described in Part 2A of this AOP.

This section also outlines projects and work areas for which the Deepwater Team will work with and engage with other teams on, both within Fisheries New Zealand and across MPI.

New Zealand's deepwater fisheries are managed in collaboration with tangata whenua and stakeholders. Some services are proposed for delivery in collaboration with industry, while in other cases Fisheries New Zealand will provide support to enable industry to deliver them. Detail of the Fisheries Management Services and service support in Part 2B is split according to the key parts of Fisheries New Zealand or MPI, or the relevant external organisations that the Deepwater Team will work with, to deliver the specified services.

Delivery of the 2019/20 AOP will be assessed through the ARR that will be completed in 2021 after the end of the 2019/20 fishing year (30 September 2020).

National Deepwater Plan Part 1A	Fishery-specific chapters Part 1B	Annual Operational Plan	
		Part 2A	Part 2B

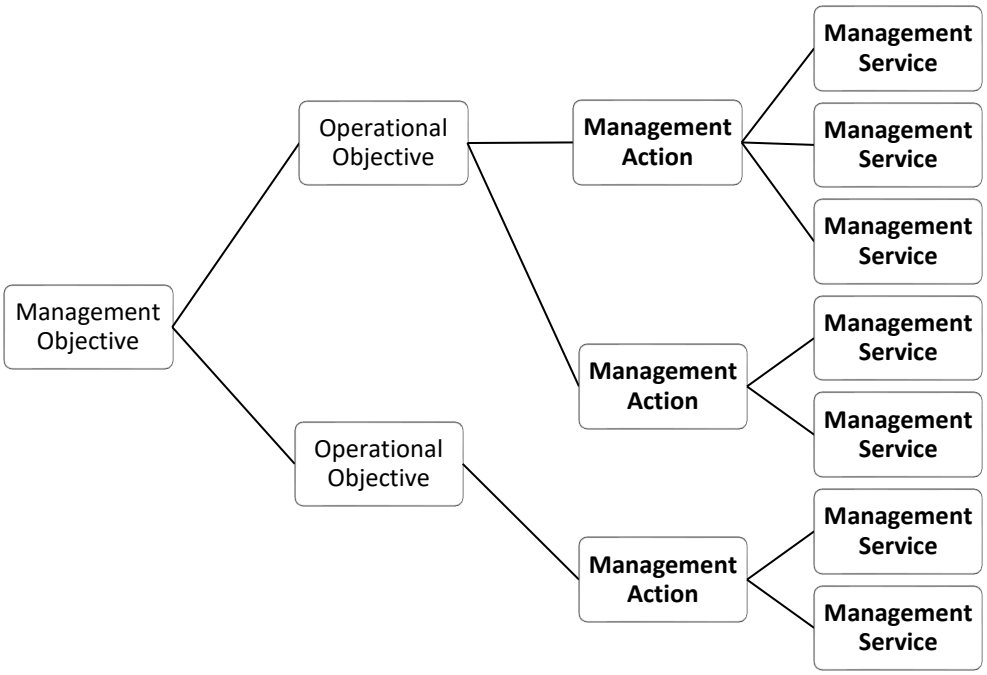

Figure 4: Flowchart of progression from Management Objective to Management Services specified in this Annual Operational Plan

5 Part 2A: Deepwater Fisheries Management Actions for delivery during the 2019/20 financial year

Table 2 – Management actions scheduled for completion during the 2019/20 financial year.

1	**Fisheries Sustainability Controls:** Review catch limits and management settings as required
	Deepwater sustainability decisions consist primarily of reviews to catch limits (TACs and TACCs) and deemed value rates across the fish stocks managed within the Deepwater 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 Fisheries New Zealand decisions and the process does not have to run to the same timeframes as the annual sustainability rounds.
	Key Actions: Stocks undergoing assessment or characterisation to be considered for review: • October 2019: HOK1, HAK7, LIN7, ORH7A, SKI3, SKI7, ORH3B[6]; • April 2020: SBW6B, SBW6I; and • October 2020: HAK4, ORH3B, LIN 7, ORH7B, OEO3A (BOE), SCI3, SWA3, SWA4, JMA7.[7] Core Action • Review deemed value rates for deepwater stocks identified as meeting criteria for review
	Action relates to management objectives 1, 2, 3, 4, 9 and 10

2	**Fisheries Planning:** Implement Updated National Deepwater Plan
	The Deepwater Plan (2010) was reviewed between 2016 and 2018, culminating in a revised Deepwater Plan being published in 2019. Implementation of the updated Deepwater Plan for the 2019/20 financial year will include the core activities listed below.
	Core Actions: • Annual Review Report for 2018/19; • Annual Operational Plan for 2020/21; and • Develop and review species-specific chapters for Deepwater Plan (orange roughy and oreo; scampi; southern blue whiting; squid).
	Action relates to all management objectives

[6] In his decision letter for the October 2018 sustainability round, the Minister noted that he chose to increase the TAC for the ORH3B stock over three years. He also noted his intention to consult with stakeholders and make separate TAC/TACC decisions for the two fishing years starting 1 October 2019 and 1 October 2020.

[7] These stocks are included as results may be presented to the relevant working group during the term of this AOP.

3	**Ministerial Services:** Ensure timely completion of all Ministerial correspondence and communication requests assigned to the Deepwater Team
	The timely completion of all Ministerial correspondence and communication requests is a core government function and will be given priority throughout the year to ensure that all response timeframes are met.
	Core Actions: • Provide quality advice and information to the Minister of Fisheries; and • Maintain an open relationship with stakeholders and the public and respond to all Official Information Act requests and government correspondence regarding deepwater fisheries issues in a timely manner.
	Action linked to all management objectives

4	**Engagement:** Ensure sufficient and appropriate engagement with tangata whenua and stakeholders
	Sufficient and appropriate engagement with tangata whenua and stakeholders is an integral part of fisheries management. Engagement aims to ensure deepwater fisheries management information is available and accessible for all stakeholders and to provide opportunity for input and participation in the Deepwater Fisheries Planning process and the ongoing management of deepwater fisheries for tangata whenua.
	Key Actions for 2019/20: • Develop an Iwi Engagement Plan **Core Actions:** • Ensure input and participation of tangata whenua and address issues as necessary; • Maintain an open and transparent management environment by ensuring that all management information is available and accessible on Fisheries New Zealand's website for tangata whenua and stakeholder consideration; • Engage with tangata whenua and stakeholders on environmental and operational issues relating to management of deepwater fisheries through the biannual Fish Plan Advisory Group; and • Advise Fisheries New Zealand representatives attending Iwi Fisheries Forums of upcoming deepwater consultations.
	Action linked to all management objectives

5	**National Plan Frameworks –** Work collaboratively with the Department of Conservation **and** Ministry of Foreign Affairs & Trade to review and **i**mplement components of the National Plan of Action for the Conservation and Management of Sharks 2013 (NPOA-Sharks) relevant to deepwater fisheries
	The NPOA-Sharks (2013) 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 2014 and repeated in 2017. The risk assessment informs ongoing prioritisation of shark management actions and research. This Management Action is focused on achieving objectives

	of the NPOA-Sharks (2013), and addressing concerns for at-risk species identified in the risk assessments.[8] The review of the NPOA-Sharks (2013) will be led by the Deepwater Fisheries Team in 2019/20. A revised NPOA-Sharks is expected to be approved in early to mid-2020.
	Key Actions for 2019/20: • Lead the review and revision of the NPOA-Sharks (2013), in consultation with stakeholders • Complete a review of the ban on shark finning, and implement any recommended changes **Core Actions:** • Engage with key stakeholders at meetings of the New Zealand Sharks Advisory Group • Update and support delivery on the NPOA-Sharks Implementation Plan across the fisheries management directorate in conjunction with DOC and the Ministry of Foreign Affairs and Trade (MFAT) • Continue to work with stakeholders to avoid captures of protected shark species in deepwater fisheries and maximise survival of captured protected shark species • Engage as required on the Memorandum of Understanding on the Conservation of Migratory Sharks (CMS Sharks MOU)[9] and ensure that New Zealand's shark management is consistent with the CMS Sharks MOU and its conservation plan.
	Action relates to management objectives 6 and 8

6	**Protected Species Frameworks –** NPOA-Seabirds (2013): Work collaboratively with the Department of Conservation to achieve the five year practical, biological, research and development, and international objectives within deepwater fisheries
	The National Plan of Action - Seabirds (2013) to reduce the incidental catch of seabirds in New Zealand Fisheries (NPOA-Seabirds) sets out the long term and five year objectives relating to managing fisheries interactions with seabirds. The Plan is currently under review. The NPOA continues to be underpinned by the Seabird Risk Assessment, which identifies the seabird species considered to be most at risk of being adversely affected by commercial fishing in New Zealand. The Seabird Risk Assessment also identifies which fisheries pose the most risk to seabird species.[10] This Management Action outlines the priority seabird work areas for deepwater fisheries in 2019/20 to implement the NPOA-Seabirds. Further detail on the objectives of the NPOA-Seabirds, and how the Deepwater Team will support the achievement of those objectives, can be found in Section 8.1.
	Key Actions for 2019/20: • Continue to 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.[11] **Core Actions:**

[8] The NPOA-Sharks is available at http://fs.fish.govt.nz/Page.aspx?pk=165&tk=554 and the latest risk assessment is available at https://fs.fish.govt.nz/Page.aspx?pk=113&dk=24619

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

[10] The 2019 update to the Seabird Risk Assessment had not been published prior to publication of this AOP. The most recently published version can be accessed here https://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15

[11] The 2019/20 research project is not the same as the net capture project identified in previous AOPs.

	• Refer to Table 6 in section 8: NPOA-Seabirds services planned for Deepwater Fisheries Management during 2019/20
	Action relates to management objective 8

7	**Protected Species Frameworks –** Work collaboratively with the Department of Conservation on implementation of the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022
	The New Zealand sea lion/rāpoka Threat Management Plan 2017-2022 (TMP) prioritises management actions to enable the recovery of the sea lion population.[12]
	Key Actions for 2019/20: • Consultation on a new way of setting the Fishing Related Mortality Limit (FRML) for the SQU6T fishery will take place in August 2019. It will be based on an update of the demographic population model for sea lions; an improved method of estimating interactions between sea lions and squid fishing; and a new approach to estimating how well SLEDs work by accounting for cryptic mortality. • Revised squid (SQU6T) and southern blue whiting (SBW6I) Operational Plans will be put in place for the 2019/20 fishing year. **Core Actions:** • Work with DOC to implement the actions in the TMP; • Engage with key stakeholders at meetings of the New Zealand sea lion/rāpoka Forum and Advisory Group; • Run Squid 6T Operational Plan Technical Advisory Group meetings (SqOPTAG); • Review new sea lion research (population estimates, disease, fisheries interactions, and SLED efficacy) at the Aquatic Environment and Conservation Services Programme working groups and • Review sea lion management actions in the SCI6A fishery.
	Action relates to management objective 8

8	**Benthic Framework –** Benthic Invertebrates: Work collaboratively with the Department of Conservation to monitor and measure the nature and extent of benthic interactions with deepwater fishing activity
	The current approach to managing 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 is monitored by Fisheries New Zealand observers. The trawl footprint is also monitored each year and the most recent information available is reported in the ARR.[13]
	Key Actions for 2019/20: • Support the development of objectives to guide the management of benthic impacts. • Contribute to research projects focused on characterising benthic impacts and the benthic environment. **Core Actions:**

[12] Information on the sea lion TMP is available at https://www.doc.govt.nz/Documents/conservation/native-animals/marine-mammals/nz-sea-lion-tmp/nz-sea-lion-threat-management-plan.pdf

[13] The most recent trawl footprint report is available here (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)

	• Monitor the trawl footprint of deepwater fisheries and report on any new areas trawled in the ARR and consider management action if required; and • Report in the ARR, the volume and species (where possible) of selected benthic organisms captured; • Consider management action if required.[14]
	Action relates to management objectives 5, 7 and 8

9	**Deepwater Research Planning:** Finalise and agree research commitments for the 2019/20 year and determine future approach to research planning and procurement
	The research required to manage deepwater fisheries is detailed in the Medium Term Research Plan for Deepwater Fisheries.[15] Some research is contracted on an annual basis, while some, such as trawl surveys, is contracted as a package.
	Core Actions: • Finalise and agree the Deepwater Fisheries Research Programme, including any proposals for industry-led research, for delivery during the 2020/21 financial year before December 2019; and • Update Medium-term Research Plan.
	Action linked to all Management Objectives

10	**Deepwater Monitoring:** Deepwater Observer Coverage/sampling requirements
	Observer coverage of deepwater fisheries is planned by financial year. Planning is based on biological sampling requirements, international requirements, percentage-level coverage targets and observer programme capacity. Coverage is monitored throughout the year to ensure information is available to support stock assessments and to understand interactions with protected species. Additional information on observer coverage planning is available in section 9.
	Key Actions for 2019/20: • Work with vessel operators to ensure quarterly fishing plans that accurately reflect likely fishing activity are provided to Fisheries New Zealand in a timely manner. **Core Actions:** • Place observers on deepwater vessels that are using the Modular Harvesting System (MHS) for the first time; • Ensure observer briefing documents are up to date and that appropriate sampling is undertaken in accordance with biological targets; • Monitor biological sampling to ensure sampling targets are met; • Develop the observer coverage plan for the 2020/21 financial year including updating of sampling targets; and • Contribute towards the redesign of any observer forms deemed necessary.
	Action linked to all Management Objectives

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

[15] Available here (https://www.mpi.govt.nz/dmsdocument/21746-medium-term-research-plan-for-deepwater-fisheries/loggedin)

11	**Deepwater Monitoring –** Monitor the deepwater fleet's adherence to the range of measures in place to manage the effects of fishing activity on protected species and sharks
	A range of management measures, including some non-regulatory initiatives by DWG, are employed to reduce the risk of ongoing adverse effects on protected species. Measures are described in the following Operational Procedures or Plans:[16] • Marine Mammal Operational Procedure (DWG initiative); • Vessel Management Plans (trawl) – seabirds (DWG initiative); • Ling Operational Procedures (bottom longline) – seabirds (DWG initiative); • Shark Operational Procedure (DWG initiative); • Scampi Fisheries Operational Procedure – Seabirds and marine mammals (DWG initiative); and • SQU 6T/SBW 6I Operational Plans - sea lions[17].
	Core Actions: • Audit Vessel Management Plans and other protected species risk management plans against the Mitigation Standards developed to support implementation of the NPOA-Seabirds (2019) • Monitor adherence of the deepwater fleet to management measures through Fisheries New Zealand observer coverage; • Report levels of adherence to management measures to stakeholders through the ARR; • Work with DWG to update materials and methods used to educate crew on Operational Procedures and Plans; • Monitor protected species interactions on all observed trips via Fisheries New Zealand Observer debriefs and reporting of agreed protected species trigger points; and • Continue to support the training, outreach and awareness programme run by the DWG Environmental Liaison Officer;
	Action relates to Management Objectives 5, 6, 7, 8 and 11

12	**Deepwater Monitoring –** Monitor adherence to non-regulatory measures in place to manage Tier 1 deepwater fishstocks at a sub-QMA scale.
	In conjunction with DWG, Fisheries New Zealand 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) and hoki seasonal spawn areas (HSSAs) have been developed by industry. The purposes of these areas are to reduce fishing mortality of juvenile hoki in important nursery areas and allow spawning to occur undisturbed at peak times respectively. Measures are described in the following Operational Procedures:[18] • Reporting Operational Procedures; • Orange Roughy & Oreo Operational Procedures; and • Hoki Operational Procedures.
	Core: • Continue auditing fleet adherence to sub-QMA catch limits; • Respond as required where sub-QMA catch limits are exceeded;

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

[17] Fisheries New Zealand Operational Plans can be accessed here (https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/)

[18] Operational Procedures are available on the DWG website here (https://deepwatergroup.org/newsresources/op-manual/)

	• Audit fleet adherence to HMA and HSSA management measures; and • Report level of adherence to all measures to stakeholders through the ARR;
	Action linked to Management Objectives 2, 3 and 4

13	**Deepwater Monitoring:** Digital Monitoring (DM)
	Between October 2017 and May 2019, only trawl vessels >28 m (i.e. most of the deepwater trawl fleet) were required to use two of the three components of digital monitoring (geospatial position reporting and electronic catch reporting). All remaining fishers and vessels are required to start using geospatial position reporting and electronic catch reporting via a staged process that will take place during 2019.
	Key Actions for 2019/20: • Support industry initiatives to deploy cameras on deepwater vessels on a trial basis. **Core Actions:** • Work with the Fisheries New Zealand Digital Monitoring and Data Management teams to monitor the data quality standards and specifications process, scheduled for implementation in July 2019; • Identify opportunities to use the additional data arising from geospatial position reporting and electronic catch reporting, to enhance BAU actions; • Review the information required to be reported by fishers via electronic catch reporting and consider amendments if required; and • Work with deepwater vessel operators to ensure all geospatial position reporting and electronic catch reporting requirements are well understood and implemented consistently.
	Action linked to all Management Objectives

14	**Registry Services:** Implement the Foreign Owned Vessels [19] registration process, High Seas permit applications, and risk-based observer coverage
	The Deepwater Team and Fisheries Compliance provide input to all advice papers relating to Fisheries New Zealand's consent to the registration of foreign-owned vessels (FOVs) operating in deepwater fisheries under section 103 of the Act.[20] Fisheries New Zealand also coordinates the cross agency work programme for the implementation of requirements of the Fisheries (Foreign Charter Vessels and Other Matters) Amendment Act 2014 and will continue to assist the Fisheries New Zealand Registry Analyst and the Fisheries New Zealand Observer Programme with any changes to their respective processes and functions.
	Core: • Provide analysis for each FOV registration application; • Provide input into High Seas permit applications; • Current role of secretariat for the Inter-Agency Fisheries Group and Governance Group: chair meetings, set the agenda and report back on bi-monthly meetings. As part of the secretariat role, circulate papers in advance of meetings, record the discussions and action points in the minutes, allocate responsibilities to follow up decisions made and update the FOV Risk Register; and

[19] The term FCV has been used historically, however, these vessels are more correctly identified as 'foreign-owned' and the acronym FOV has replaced the previous acronym.

[20] At the start of the 2018/19 fishing year there were 10 foreign-owned vessels operating in New Zealand waters

	• Provide policy advice on FOV issues.
	Action linked to all Management Objectives

15	**Fisheries Management Controls –** Regulatory amendments
	Progressing amendments to secondary legislation, such as regulations, requires: analysis of options, drafting the documents required for the different components of the regulatory process such as the Preliminary Impact and Risk Assessment (PIRA), consultation documents, Regulatory Impact Statement (RIS), providing advice and decision documents. The process for creating or amending tertiary legislation, such as circulars, is more straightforward and does not require a PIRA, a RIS or Cabinet/Ministerial approval.
	Core: • Review the Fisheries (Seabird Mitigation Measures – Bottom Longlines) Circular; • Progress legislative amendments potentially resulting from review of the NPOA Sharks (2013); • Progress any other secondary or tertiary legislative amendments as required.
	Action linked to Management Objectives 1, 2, 9, 10 and 11

16	**Fisheries Management/Sustainability Controls:** Support existing approaches to market initiatives for New Zealand's deepwater seafood
	The primary component of this management action is working with DWG to support the requirements of the Marine Stewardship Council (MSC) assessment and certification process. Fisheries New Zealand supports industry to achieve and maintain certification of key deepwater fisheries, and progress performance of all Tier 1 deepwater fisheries towards meeting the MSC Standard.[21]
	Core: • Provide information to support the development and implementation of Fisheries Improvement Plans for fisheries not yet assessed; and • Provide information for annual surveillance audits of SBW, LIN bottom long line, the HOK, HAK and LIN bottom trawl complex, and ORH fisheries in 2019.
	Action linked to Management Objectives 1,2, 10 and 11

17	**Fisheries Sustainability Controls:** Develop and implement specific harvest strategies for Tier 1 species, and management approaches for low information stocks, that 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 that incorporate economic aspects of the fishery.

[21] Information on the status of New Zealand's deepwater fisheries in the MSC programme can be found on DWG's website here: www.deepwatergroup.org/certification

	Key Actions: • Support delivery of management strategy evaluation for scampi
	Action linked to Management Objectives 1,2,3, 4, 10 and 11

6 Management Actions delivered in conjunction with other directorates within Fisheries New Zealand and MPI

Table 3: Management Actions that are led by other teams within Fisheries New Zealand and within MPI

A	**Input to wider strategic MPI projects** Assist relevant branches within MPI with review of policy developments and any necessary fisheries management information **LEAD: project dependent (see below)**
	MPI's Policy and Trade branch is leading the Fisheries Change Programme, which is expected to make significant improvements to how our fisheries are managed.[22] These projects require information, feedback, and review of working documents. The programme is split into three sections: short-term work looking at policy settings needed to support implementation of digital monitoring and innovative trawl technology projects; and medium and long-term sections that includes topics such as ecosystem-based fisheries management.
	Core tasks: • Contribute to policy development as required.
	Action linked to Management Objectives: various

B	**Research Monitoring and Evaluation** Ensure that all information used in management decisions meets the requirements of the Research and Science Information Standard for New Zealand Fisheries (the Research Standard) **LEAD: Fisheries 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.
	Core tasks: • Assist Fisheries New Zealand's Fisheries Science team to deliver outputs of all 2019/20 research projects as listed in Tables 8-10; and • Assist Fisheries Science to ensure that all science research used to support management of deepwater fisheries is assessed against the Research Standard.[23]
	Action linked to all Management Objectives

[22] Information on the Fisheries Change Programme (formerly known as the Future of our Fisheries Programme) is available here (https://www.fisheries.govt.nz/protection-and-response/sustainable-fisheries/strengthening-fisheries-management/fisheries-change-programme/)

[23] The Research Standard can be accessed here (https://www.mpi.govt.nz/dmsdocument/3692/loggedIn)

C	**Observer Coverage Delivery** Fisheries New Zealand's Observer Programme is responsible for delivering on the observer coverage targets set out in the final 2019/20 observer coverage plan and ensuring that the required biological sampling targets are met. **LEAD: Fisheries Monitoring (Observer Programme)**
	Observer coverage plans for all fisheries are prepared annually as are biological sampling targets and other observer tasks. The Deepwater Team will continue to work closely with the Observer Programme to ensure the necessary targets are achieved.
	Core tasks: • Assist the Observer Programme to deliver the 2019/20 observer coverage plan by continuing to engage with industry on provision of quarterly fishing plans to the Observer Programme, which facilitates 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 2019/20 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 2019/20 year; and • Engage with, and provide feedback to, observers through the observer newsletter and observer catch up sessions.
	Action linked to all Management Objectives

D	**Cost Recovery Process** Assist the Business and Financial Advice team with the cost recovery processes for 2019/20 and 2020/21 **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.
	Core tasks: • Ensure the Deepwater Team has input into the port price survey process administered by the MPI Finance Team; and • Ensure the cost recovery levy process recovers costs consistent with deepwater observer coverage and research plans, including providing information to support the unders/overs process.[24]
	Action linked to Management Objectives: various

[24] In setting levies, the Minister is required to have regard to the costs of services incurred by the Crown in a previous financial year that were either not recovered , or were over-recovered. MPI reconciles actual expenditure in each service category against what was levied in the most recent complete financial year. An MOU is in place with industry; over- or under-recoveries are include in the subsequent year's levy. Under the MOU, over-recoveries are applied as credits to the following year's levy. Where the levy for a certain stock is less that the over-recovery credits that need to be applied, this over-recovery is carried forward into the next year.

E	**Compliance monitoring work** **LEAD: Compliance Directorate (Compliance Services Branch)**
	MPI's Compliance Directorate will continue to monitor fishing activity and catch reporting in 2019/20 with consideration of whole fleet reporting changes (electronic catch and position reporting) and the VADE model. New reporting practices and tools in 2019/20 will determine how fisheries will be monitored and profiled by Compliance in subsequent years.
	Core tasks • Ensure the Deepwater Team is involved in any discussions relating to future fisheries monitoring and profiling • Assist the Compliance Directorate with issues relating to interpretation of reporting requirements that arise during implementation of electronic catch and position reporting
	Action linked to Management Objectives: various

7 Management Actions Initiated by Industry

Table 4: Management actions that the Deepwater Team will deliver, or contribute to, that are initiated by the fishing industry.

	Possible Actions for 2019/20:
	• Respond to any quota owner requests for changes to QMA boundaries or definitions; • Respond to applications for vessel specific conversion factors; • Support development of new fisheries within sustainable limits; • Respond, or contribute to the response for, any requests for special permits that relate to deepwater fisheries; and • Respond or contribute to the response for, any requests to use innovative trawl gear.

8 National Plans of Action

8.1 NATIONAL PLAN OF ACTION - SEABIRDS

8.1.1 Implementation of the National Plan of Action - Seabirds

The NPOA-Seabirds (2013) is currently under review.

This AOP sets the prioritised actions and services needed to manage the interactions of deepwater fisheries with seabirds.

The NPOA-Seabirds employs a quantitative risk assessment framework[25] that generates quantitative risk scores for seabird species. It identifies the seabird species most at most risk from commercial fishing, as well as the fisheries that contribute the greatest risk to these seabirds. These may then be prioritised for species-specific research and 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 the Population Sustainability Threshold (PST; which is an index of seabird population productivity).

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. The most recently drafted assessment based on seabird bycatch and fisheries data to the end of the 2016–17 fishing year, identified one seabird species as being at a 'very high' risk from fishing and five seabird species that were at a 'high' risk from fishing. The risk assessment is an ongoing process of iterative improvement, and is updated as the methodology improves and when new data become available, meaning risk scores can change over time.

The seabird species considered to be 'very high risk' and 'high risk' from fishing, together with the deepwater fisheries that contribute more than 10% of the risk according to the most recent iteration of the seabird risk assessment, are listed below. Of these species, fully quantitative level 3 population modelling has been completed for southern Buller's[26]. The outcomes of these assessments or species-specific population

[25] The 2019 update to the Seabird Risk Assessment had not been published prior to publication of this AOP. The most recently published version can be accessed here https://www.mpi.govt.nz/dmsdocument/27531-aebr-191-assessment-of-the-risk-of-commercial-fisheries-to-nz-seabirds-2006-07-to-2014-15

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

modelling (completed since the level 2 risk assessment was published) will be reviewed and considered as part of any management updates as appropriate.

8.1.2 Very High Risk Birds

Black petrel

Deepwater fisheries collectively do not contribute more than 10% of risk for black petrel.

8.1.3 High Risk Birds

Salvin's albatross

Deepwater fisheries are assessed to contribute a total of 51% of the risk score for Salvin's albatross. The primary contributors are the hoki (16%), scampi (12%), small vessel ling bottom longline (12%), and middle depth (11%) fisheries. Deepwater fisheries account for 1,322 of the total 2,250 APFs with the PST for Salvin's albatross estimated to be 3,460.

Westland petrel

Deepwater fisheries are assessed to contribute a total of 27% of the risk score for Westland petrel with biggest deepwater contribution being the hoki trawl fishery (11%). Deepwater fisheries account for 52 of the total 194 APFs with the PST of Westland petrel estimated to be 351.

Flesh-footed shearwater

Deepwater fisheries collectively are assessed to not contribute more than 10% of risk for flesh-footed shearwater.

Southern Buller's albatross

Deepwater fisheries are assessed to contribute a total of 69% of the risk score for southern Buller's albatross; the primary contributors are the hoki (31%), squid (15%), middle-depth (13%) and deepwater (13%) trawl fisheries. Deepwater fisheries account for 333 of the total 486 APFs with the PST for southern Buller's albatross estimated to be 1,360.

Gibson's albatross

Deepwater fisheries collectively are assessed to not contribute more than 10% of risk for Gibson's albatross.

8.1.4 Capture rates

One of the five-year practical objectives in the NPOA-Seabirds (2013) is "capture rates are reducing in all New Zealand fisheries in accordance with reduction targets in the relevant planning documents for those fisheries". Accordingly, baseline capture rates, capture rate reduction targets, and proxy targets were developed for deepwater fisheries.[27]

The information developed for the deepwater fisheries for the NPOA-Seabirds (2013), which is outlined in Table 5, will continue to be used and reported on. The information in Table 5 was developed after a set of principles that could be used when determining capture reduction targets had been developed by a working group of the Seabird Advisory Group in 2015.

[27] The methodology, together with the outputs, is described in the 2016/17 and 2017/18 AOPs, which are available here (https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/).

8.1.5 Deepwater Management Approach - Seabirds

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

- Mandatory use of seabird scaring devices (>28m trawl vessels and >7m bottom longline vessels) and implementation of seabird mitigation measures (all bottom longline vessels);[28]
- Continued implementation of Mitigation Standards[29] on trawl vessels >28m and on all scampi trawlers through vessel-specific Vessel Management Plans (VMPs);[30]
- Auditing of vessel-specific VMPs against the Mitigation Standards developed to support the NPOA-Seabirds review;
- Continued implementation of Mitigation Standards on ling bottom longline vessels via the Ling Bottom Longline Operational Procedures;[31]
- An ongoing vessel outreach programme, which includes annual (where possible) crew training;[32]
- Ongoing exploration of new or improved mitigation methods; and
- Fisheries New Zealand observers monitoring vessel adherence to VMPs and the Ling Bottom Longline Operational Procedures.

VMPs outline a set of operational procedures that are specific to each trawl 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 2019/20, actions in deepwater fisheries to support the NPOA-Seabirds will be focused on:

- Ongoing management of the VMP process as it applies to trawlers>28m and scampi vessels <28m;
- Auditing VMPs against Mitigation Standards;
- Continuing to improve and manage the process that applies to the ling bottom longline operational procedures; and
- Investigating and implementing any additional practicable and effective measures to minimise the risk of net captures, based on the outcomes of the contracted project characterising trawl net captures and potential contributing factors.

Table 6 sets out the objectives and specific services planned for deepwater fisheries management. Many of the services will contribute to the achievement of more than one objective.

[28] Regulations require trawlers over 28 m in overall length to deploy a seabird scaring device and bottom longliners (above 7 m in length) to deploy streamer (tori) lines, restrict offal and fish discharge and either set at night or use an approved line weighting regime Links to these regulations available here (https://www.fisheries.govt.nz/protection-and-response/sustainable-fisheries/managing-our-impact-on-marine-life/seabirds/).

[29] Mitigation Standards have been developed as part of the NPOA-Seabirds (2013) update. They had not been published prior to publication of this AOP.

[30] Information on VMPs for >28m trawlers and scampi trawlers is contained in the Seabird Operational Procedures and Scampi Fisheries Operational Procedures respectively, which are available on the DWG website here (https://deepwatergroup.org/newsresources/op-manual/).

[31] The Ling Bottom Longline Operational Procedures document is also available on the DWG website at the above address.

[32] Fisheries New Zealand contributes to the costs of running this programme, which covers the >28m trawl fleet, all scampi trawlers and the LIN2-7 bottom longline fleet.

Table 5: Deepwater Capture Rate Reduction Targets

Baseline capture rate								
Fishery	**Baseline observer coverage**	**Annual CV of captures**	**Observed captures**	**Estimated captures**	**Capture rate per 100 tows/1000 hooks**	**Meaningful target?**	**'Target' rate/100 tows (reduction)**	**Suggested target/proxy**
SBW trawl	>10%	0.0004-0.27	4-20	6-20	1.1	No		Continue to monitor and report, target is no significant increase (based on three-year rolling averages)
SQU trawl	>10%	0.039-0.134	>100	>300	14.0	Yes	12.0 (14%)	Statistically significant decrease in rate (based on 3-yr rolling average)
JMA trawl	>10%	0.037-0.421	7-33	10-34	1.0	No		Continue to monitor and report, target is no significant increase (based on three-year rolling averages)
SCI trawl	<10%					No		A calculation of the overall observer coverage indicates that 8.4% of tows were observed between 2008/09 and 2012/13. 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.
Deepwater trawl[33]	>10%	0.392-0.407	2	16-24	0.6	No		Continue to monitor and report, target is no significant increase (based on 3-yr rolling averages)
Middle depths trawl (>28 m)[34]	>10%	0.065-0.187	>100	>200	2.7	Yes	2.3 (15%)	Statistically significant decrease in rate (based on 3-yr rolling averages)
Large vessel BLL	>10% 09/10-11/12	0.32-0.451	4-27	>100	0.01[35]	No		Continue to monitor and report, target is no significant increase (based on three-year rolling averages)
Small vessel LIN BLL	<10%					No		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. A target of 15% of effort observed will be set.

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

[34] 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.

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

Table 6: NPOA-Seabirds services planned for Deepwater Fisheries Management during 2019/20

NPOA Objectives	Planned Deepwater Services for 2019/20
Practical objectives	• Work with the Deepwater Group Environmental Liaison Officer to continually improve the VMP and Ling Bottom Longline Operational Procedures (BLL OP) processes, and improve awareness amongst operators of times and areas where the risk of seabird interactions is increased; • Facilitate the Deepwater Group Environmental Liaison Officer to apply VMP-type processes across the hoki coastal trawl fleet (develop protected species risk management plans consistent with Mitigation Standards and observer audit process); • Audit all VMPS and equivalent plans against Mitigation Standards and review education programmes to ensure all measures are as effective as possible; • Monitor / continue to monitor adherence to VMPs and risk management plans. The goal is: a) 100% of observed deepwater trips have audited VMP / BLL OP b) 95% of observers debriefed by Deepwater Team c) Follow up all non-adherence (undertaken by Deepwater Group Environmental Liaison Officer) • Work across the wider Fisheries New Zealand and with key stakeholders to report on performance measures relevant to NPOA objectives ; • Work with the Observer Programme to ensure planned coverage in the ling bottom longline and scampi trawl fisheries is achieved. Additional monitoring of seabird interactions in these fisheries will contribute to reducing uncertainty in the risk assessment; and • Implement actions from the Black petrel and Flesh-footed shearwater Action Plans in the scampi fishery including: a) Ongoing auditing and monitoring of adherence to VMPs b) Monitoring of effectiveness of current mitigation measures detailed in VMPs.
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 high' or 'high risk' from fishing, move to a lower risk category	
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	• Investigate and implement any additional practicable and effective measures to minimise the risk of net captures based on outcomes of

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.	contracted project characterising net captures and potential contributing factors;[36] • Continue to engage in DOC and Fisheries New Zealand research planning and review processes; and • Continue to engage in the Seabird Advisory Group.

[36] The net capture research project contracted for 2019/20 is a different project to that referred to in previous AOPs.

8.2 THE IMPLEMENTATION OF THE NATIONAL PLAN OF ACTION FOR THE CONSERVATION AND MANAGEMENT OF SHARKS (NPOA-SHARKS (2013))

The NPOA-Sharks (2013) sets out six goals and accompanying five year objectives to support the management of sharks and rays. A qualitative risk assessment of all shark and ray species informs prioritisation of management actions and research.[37]

Ongoing actions both within Fisheries New Zealand and MPI, and across other agencies (DOC and MFAT) are focused on:

- Reviewing appropriate management categories and protection status;
- Contracting research to continue filling information gaps about higher risk species based on the outcomes of the risk assessment;
- Continued monitoring of shark fin requirements; and
- Working with fishers to ensure best practice handling and mitigation measures are employed where appropriate.

The NPOA-Sharks (2013) will be reviewed during the 2019/20 financial year. A key component of this is a review of settings of the ban on shark finning, including any recommendations for amendments to relevant regulations or adjustments to shark fin landing ratios set out in tertiary legislation.

[37] Available here (https://fs.fish.govt.nz/Page.aspx?pk=113&dk=24619)

9 Part 2B: Service Requirements to Support Deepwater Fisheries Management during the 2019/20 financial year

The Deepwater Team will work and engage effectively with other teams across Fisheries New Zealand and MPI, and with Māori and key external organisations. All Fisheries New Zealand business groups will work together on strategic matters and key projects that cross over the different portfolios in 2019/20.

Table 7: Fisheries New Zealand teams through which fisheries management services will be delivered

Branch	Directorate	Team
Fisheries New Zealand	Fisheries Management	Offshore Fisheries – Deepwater Fisheries and Highly Migratory Fisheries
		Inshore Fisheries – Inshore Fisheries and Recreational Fisheries
		Customary Fisheries and Spatial Allocations
	Fisheries Science & Information	Fisheries Science - Stock Assessment and Aquatic Environment
		Fisheries Monitoring - Data Management and Observer Services
	Digital Monitoring	Programme Management & Change
		Stakeholder Engagement & Implementation
		Digital Monitoring Transformation
	Aquaculture & Branch Support	Aquaculture
		Planning & Process Improvement

9.1 FISHERIES MANAGEMENT DIRECTORATE

The Fisheries Management Directorate is responsible for the operational management of New Zealand's fisheries under the Act. Fisheries are managed within legislative requirements to provide for utilisation while ensuring sustainability.

9.1.1 Offshore and Inshore Fisheries Management Teams

In addition to the Deepwater Team, Offshore Fisheries also includes the Highly Migratory Species Team. This team is responsible for the management of all highly migratory stocks and the management of the environmental effects of fishing for these species. The Highly Migratory Species Team liaises with MPI's International Fisheries Policy Team and MFAT, to represent New Zealand interests at international meetings and help develop fisheries management capacity in Pacific Island countries.

The Inshore Fisheries Team is responsible for managing inshore fisheries (including shellfish, inshore finfish, freshwater and marine plant resources) and the environmental effects of fishing for these species. As detailed above, the Deepwater Team will lead on all identified Management Actions listed in Table 2 and contribute to

delivery of all actions specified in Table 3. The key 2019/20 projects relevant to deepwater fisheries management that will be undertaken within the Fisheries Management Directorate are:

a) Annual reviews of sustainability controls and management settings (April and October);

b) Implementation of the NPOA-Seabirds (2019);

c) Review/implementation of the NPOA-Sharks (2013);

d) Coordination of regulatory amendments;

e) Engagement with tangata whenua; and

f) Deemed value guideline review

9.1.2 Customary Fisheries, Spatial Planning and Allocations, and Aquaculture and Fisheries Permitting Teams

Three teams report to the Manager Customary Fisheries and Spatial Allocations.

The Customary Fisheries Team provides advice and support to the Deepwater Team to fulfil obligations under section 12 of the Act, particularly during the development and implementation of Iwi Fisheries Plans and Iwi Forum Fisheries Plans, to ensure that Māori interests in fisheries management are provided for. The Deepwater Team will consult with tangata whenua that have an interest in the stock or the effects of fishing on the aquatic environment, and provide for the input and participation of tangata whenua having a non-commercial interest in the stock concerned; or having a particular regard to kaitiakitanga. Key services provided by the Customary Fisheries Team include:

- Facilitating input and participation, primarily through Iwi Fisheries Forums;
- Review of consultation and decision documents produced by the Deepwater Team as part of each sustainability round; and
- Ensuring sufficient and appropriate engagement with tangata whenua by providing the opportunity for Iwi to discuss deepwater consultations.

The Spatial Planning and Allocations Team:

- Provides analysis and advice for regulatory decisions on area-based management tools that allow tangata whenua to exercise kaitiakitanga over areas that are of importance for non-commercial customary fishing including mātaitai reserves, taiāpure-local fisheries, and temporary closures;
- Provides analysis and advice for the establishment of Marine Protected Areas (MPAs), and related allocations of marine space. This includes cross-agency work to plan new MPAs, and supporting marine spatial planning initiatives with analysis and advice.

The Aquaculture and Fisheries Permitting Team:

- Is responsible for analysis and advice on applications made for a range of regulatory tools in the marine and freshwater space. This includes special permits, enabling innovative trawl technologies, land-based and marine farms, aquatic life transfers, high seas fishing permits, and registering foreign-owned vessels.
- Is also Fisheries New Zealand's main point of contact with FishServe to ensure the effective delivery of fisheries registry services.

9.2 FISHERIES SCIENCE AND INFORMATION DIRECTORATE

9.2.1 Fisheries Science

The Science teams (Stock Assessment, and Aquatic Environment and Biodiversity) provide expert advice and are responsible for evaluating and delivering science research that meets the Research Standard. For more information on the Research Standard's ranking system, visit Fisheries New Zealand's website.

The key actions and core services that the Deepwater Team will work on with the Science teams during 2019/20 will be:

a) delivery of deepwater research services and incorporation where necessary into management actions and services – research projects scheduled for delivery during the 2019/20 financial year are provided in Tables 8 – 11 below;
b) maintenance and updating of the Medium Term Deepwater Research Plan;
c) implementation of new research planning and procurement processes including the use of longer term contracting;
d) planning and prioritisation of the 2020/21 deepwater fisheries research programme including industry-led surveys, to be agreed before 31 December 2019;
e) implementation of protected species frameworks, including the draft NPOA-Seabirds (2019), NPOA-Sharks (2013) and the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022;
f) research evaluation via the Science Working Group processes;
g) provision of science advice and review to ensure all science information used in management advice meets or exceeds the requirements of the Research Standard;
h) outlining what observer sampling is required; and
i) outlining the management approaches required for Tier 2 deepwater species.

9.2.2 Fisheries Monitoring

The Deepwater Team works closely with the two Fisheries Monitoring Teams:

1. Fisheries Data Management; and
2. Observer Services.

Interactions include requests for data, observer coverage, biological sampling requests and monitoring of the environmental effects of fishing. Fisheries New Zealand Observers are deployed on commercial fishing vessels to carry out biological sampling, monitor environmental interactions, and observe and record compliance with a range of regulatory and non-regulatory management measures.

The key projects and core services that the Deepwater Team will work on with Observer Services during 2019/20 will be:

- Participating in the training of new observers;
- Briefing (where required) and debriefing observers placed on board deepwater vessels;
- Planning the 2020/21 observer coverage requirements for deepwater fisheries (the 2019/20 deepwater observer coverage plan is set out below);
- Contributing towards the ongoing redesign of observer forms;
- Updating biological sampling targets and observer tasking (the current biological sampling requirements for deepwater fisheries are set out in Table 13);
- Monitoring progress towards sampling targets throughout the year; and

- Engaging with, and providing feedback to, observers through the observer newsletter and observer catch up sessions.

9.2.3 Research services scheduled for 2019/20 financial year

The following proposed fisheries research plan (Tables 8 and 9) is based on the Medium Term Research Plan previously published, and incorporates changes resulting from subsequent discussions.[38]

Table 8: Deepwater Fisheries Research Plan for 2019/20

Project code	Title
HAK2019-01	Stock assessment of hake in HAK4
HOK2019-01	Estimation of spawning hoki biomass in Cook Strait using acoustic surveys
HOK2019-02	Land based catch sampling of hoki
HOK2019-03	Stock assessment of hoki in HOK1
LIN2019-03	Stock assessment of ling in LIN7
MID2019-02	Routine age determination of middle depth and deepwater species from commercial fisheries and resource surveys
ORH2019-02	Estimation of the abundance of orange roughy using acoustic surveys (ORH3B Northwest Rise and East and South Chatham Rise)
SBW2019-01	Biomass estimation of the Campbell Island southern blue whiting stock using acoustic surveys
SBW2019-03	Stock assessment of southern blue whiting in SBW6I
SCI2019-01	Estimation of the abundance of scampi in SCI3 using photographic surveys
SCI2019-02	Stock assessment of scampi in SCI6A

Table 9: Deepwater Fisheries Research Projects – projects contracted before 2019/20 that are ongoing or start in 2019/20

Project code	Title
BAR2017-02	Update of abundance indices for BAR 4 & 7
DAE2018-01	Catch composition in deepwater fisheries (*this is a multi-year project that will look at the JMA trawl fishery in 2019/20*)
DAE2018-04	Taxonomic identification of benthic samples
DEE2017-01	Stock assessment of blue mackerel
JMA2017-01	Stock assessment of jack mackerel in JMA7
MID2018-01	Estimation of hoki and middle depth fish abundance using trawl surveys (*this is a multi-year project, the trawl survey scheduled for 2019/20 is the Chatham Rise trawl survey, which will commence in Jan 2020*)
OEO2018-02	Development of an approach for monitoring oreos in OEO3A
SBW2018-01	Estimation of southern blue whiting biomass using acoustic methods (Bounties Platform)
SCI2017-03	Evaluation of potential management strategies for scampi
SCI2017-04	Characterisation and CPUE of scampi in SCI4
SQU2017-01	Stock assessment of arrow squid

[38] The Medium Term Research Plan is available here (https://www.mpi.govt.nz/dmsdocument/21746-medium-term-research-plan-for-deepwater-fisheries/loggedin)

Tables 10 and 11 outline the Aquatic Environment and Biodiversity research programmes that are managed by the Aquatic Environment Science Team. Research on the aquatic environment is both Crown funded and cost recovered from the fishing industry through levies. Biodiversity research is solely Crown funded and addresses more strategic, national-level marine environmental issues.

Table 10: Aquatic Environment and Biodiversity Research relevant to deepwater fisheries for 2019/20

Project code	Title
BEN2019-01	Monitor the extent and intensity of bottom contact by trawl and dredge fishing in the Territorial Sea and Exclusive Economic Zone
BEN2019-04	A spatially explicit benthic impact assessment for inshore and deepwater fisheries in New Zealand
BEN2019-05	Spatial decision support tool development for managing the impacts of bottom fishing on in-zone, particularly vulnerable or sensitive habitats.
PMM2019-10	Update Campbell Island New Zealand sea lion Population Sustainability Threshold estimation
PRO2019-01	Preparation and documentation of a standardised linked dataset -- including commercial effort reporting, fisheries observer data, and protected species captures
PRO2019-02	Maintenance of PSC (protected species captures) website displaying updated observed commercial fisheries captures, and total estimated captures for selected species
PRO2019-09	Spatial distribution modelling of at-risk seabirds in New Zealand commercial fisheries
PRO2019-10	Refine spatially explicit fisheries risk assessment (SEFRA) model parameterisation for at-risk protected species
PSB2019-01	Estimation of total captures of seabirds using standardised estimation methods
PSB2019-02	Distributional study of Antipodean Albatross using satellite reporting GPS tags
PSB2019-04	Black petrel population monitoring and distribution study
PSB2019-06	Review of footage collected from the 2018/19 Black Petrel Electronic Monitoring Project
PSB2019-07	Continuation of the Black Petrel Electronic Monitoring project for the 2019/20 summer
PSB2019-09	Aerial survey of white-capped albatross on the Auckland Islands
SAM2019-02	Development of imaging analysis technology to determine ages from otoliths
ZBD2019-01	Quantifying benthic biodiversity part 2
ZBD2019-04	Plastics and marine debris across the ocean floor in New Zealand waters
ZBD2019-11	Halting the decline of seabird biodiversity through the development of an innovative approach, EARS, Electronic Automated Reporting System

Table 11: Ongoing Aquatic Environment and Biodiversity research projects that are relevant to deepwater fisheries.

Project code	Title
PMM2018-07	Updated spatially explicit fisheries risk assessment for New Zealand marine mammal populations
PMM2018-08	Update SEFRA risk assessment tool - build observer coverage/digital monitoring optimisation function
PSB2018-10	Deepwater net capture analysis
PMM2018-04A	Estimate spatial distributions for at-risk marine mammals to assess fisheries overlap and risk: fur seals
PMM2018-04B	Estimate spatial distributions for at-risk marine mammals to assess potential fisheries overlap and risk: Mainland and Stewart Island NZ sea lions
PRO2017-01B	Research into the demographic parameters for at-risk seabirds as identified by the RA (Southern Buller's/Snares)

9.2.4 2019/20 Deepwater Observer Coverage Plan

Biological sampling and environmental monitoring is carried out by the Fisheries New Zealand observer programme. Data collected by the observer programme is used:

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

The principles and methods used to compile the deepwater observer coverage plan (Table 12) and sampling requirements, shown in Tables 13 and 14, are included below. The observer coverage plan for 2019/20 has been based solely on the science and management requirements of the respective fisheries.

Table 12: Deepwater fisheries observer plan for 2019/20

Fishery complex	Target stocks covered	Total days planned	FNZ/ DOC cost recovery %
North Island Deepwater	ORH 1, ORH 2A, ORH 2B, ORH 3A BYX 2 CDL 2	100	90/10
Chatham Rise Deepwater	ORH 3B OEO 3A, OEO 4 BYX 3	300	90/10
Sub-Antarctic Deepwater	ORH 3B OEO 1, OEO 6	120	90/10
West Coast Deepwater	ORH 7A	100	90/10
Hoki and Middle Depth trawl fisheries:			
West Coast North Island	JMA 7 EMA 7 BAR 7	250	85/15
West Coast SI (FMA7)	HOK 1 HAK 7 LIN 7 SWA 1	650	85/15
WCSI HOK (Inside the line)	HOK 1	150	85/15
Cook Strait	HOK 1	150	85/15
Chatham Rise Middle depths (FMA3/FMA4)	HOK 1 HAK 1, HAK 4 LIN 3, LIN 4 SWA 3, SWA 4 JMA 3 BAR 1, BAR 4	650	85/15
Sub-Antarctic Middle depths (excl. SQU/SBW) (FMA5/FMA6)	HOK 1 SWA 4 WWA 5B BAR 5 JMA 3 HAK 1 LIN 5, LIN 6	500	85/15
Southern blue whiting	SBW (all)	400	80/20
Squid	SQU 1T SQU6 T	1,250	80/20
Deepwater bottom longline fisheries			
Bottom longline	LIN 3, LIN 4, LIN 5, LIN 6, LIN 7	400	85/15
Shellfish			
Scampi	SCI (all)	450	80/20
Training trips			
Training		1,600	
Total		**7,070**	-

Table 13. Biological sampling requirements for deepwater fisheries for 2019/20

Species		FMA/stock		LF target	Otolith target	Area	Months	Obs plan 'Fishery complex'
Hoki		Sub-Antarctic		400	1600	Sub-Antarctic	Year-round (except July-Aug)	Sub-Ant Mid-depths
		Chatham Rise		400	1600	Chatham Rise	Year-round (except Jul-Aug)	Chatham Rise Mid-depths
		WCSI		400	1000	WCSI	May-September	WCSI
		Cook Strait		200	1600	Cook Strait	Year-round	Cook Strait HOK
		Inside the line		200	600	WCSI	May-September	WCSI 'Inside the line' HOK
Orange roughy		ORH 1		30/area		ORH 1	Year-round	North Island deepwater
		ORH 2A North		30	Survey only	ORH 2A North	Year-round	North Island deepwater
		ORH MEC		30	Survey only	ORH MEC	Year-round	North Island deepwater
		ORH NW Rise		50	300	Northwest Rise	Year-round	Chatham Rise deepwater
		ORH E&S Rise		50	300	East & South Rise	Year-round	Chatham Rise deepwater
		ORH 7A + WB		50	300	ORH 7A	Year-round	West Coast deepwater
		ORH Puysegur		100	300	Sub-Ant ORH	Year-round	Sub-Ant DW
Southern blue whiting		SBW 6I		100	900	Campbell Island	August-September	Southern blue whiting
		SBW 6B		50	600	Bounties	August-September	Sub-Ant Mid-depths/ SBW
Hake		HAK 1		100	1,000	Sub-Ant	October-February	Sub-Ant Mid depths
		HAK 4		100	1,000	Mernoo Bank/CR	September-February	Chatham Rise Mid-depths
		HAK 7		200	1,000	WCSI	June – September	WCSI and inside line
Ling		LIN 3/4		100	1,100	Chatham Rise	October-May	Chatham Rise Mid-depths
		LIN 5/6		100	1,100	Sub-Ant	September-April	Sub-Ant Mid-depths
		LIN 7		200	1,100	WCSI	June-October	WCSI Mid-depths
Oreo	Black	BOE 3A		30	400	ECSI	October-March	Chatham Rise DW
	Smooth	SSO 3A		30	-	ECSI	October-March	Chatham Rise DW
		SSO 4		30	300	Chatham Rise	October-March	Chatham Rise DW
Jack mackerel	*T. declivis*		JMD 7	200	900	WCNI	October-July	WCNI
	T. murphyi		JMM 7	200	900	WCNI	October-July	WCNI
	T. novaezelandiae		JMN 7	200	900	WCNI	October-July	WCNI
Scampi		SCI 1		50	N/A	Auckland/BoP	All year	Scampi
		SCI 2		50		HB/Wairarapa	September-April	Scampi
		SCI 3		50		Mernoo Bank	All year	Scampi
		SCI 4A		50		Chatham Rise	All year	Scampi
		SCI 6A		50		Auckland Islands	February-November	Scampi

9.2.5 Principles and methods used to determine the observer coverage plan for 2019/20

Observer coverage for the 2019/20 year was planned based on percentage coverage targets, biological sampling requirements and international requirements. The different methods used to estimate the number of observer days required to meet sampling and percentage coverage targets are detailed below.

Biological sampling

Biological sampling requirements (numbers of length frequency samples and otoliths) were determined based primarily on the Medium Term Research Plan for Deepwater Fisheries 2018/19 – 2022/23[39] for all Tier 1 and selected Tier 2 middle depth and deepwater species. These species and fish stocks were then grouped by area to determine the 'fishery complexes' to be used for observer coverage planning. The number of observer days necessary to achieve the biological sampling requirements was based on:

- The number of length frequency (LF) samples and otoliths collected by observers for each Tier 1 species during the 2014/15, 2015/16 and 2016/17 fishing years[40];
- The sea day tracking sheets for the 2014/15, 2015/16 and 2016/17 fishing years (used by the observer programme to track and report observer coverage throughout the year); and
- An estimate of the number of biological samples collected by observers per fishing day (specific to each fishery 'complex').

In short, an initial calculation was made by dividing the number of LF samples required for each fisheries 'complex' by an estimate of the number of biological samples collected per fishing day for that 'complex'. To calculate the number of observer days required, this number was adjusted (to account for training trips and days on which no sampling was conducted (i.e. steaming days)) by comparing the number of samples collected during the 2014/15, 2015/16 and 2016/17 years to the sea day tracking sheet for that year.

Percentage coverage targets

Many fisheries have a requirement that a proportion of fishing effort be observed, primarily to enable reliable estimations of protected species interactions and to provide a high level of confidence in fishers' at-sea compliance with regulatory and non-regulatory measures. The level of coverage required differs both between and within fisheries complexes (i.e. 100% requirement for coverage of the Campbell Island southern blue whiting fishery).

Fisheries New Zealand considers that 30% is a suitable target but that in some cases it is appropriate for the percentage coverage target to be higher or lower than 30%. The fisheries 'complexes' that have a coverage target of less than 30% are the Cook Strait and West Coast South Island "inside the line" [41] hoki fisheries, the scampi trawl fishery and the small vessel ling bottom longline fishery. In the case of the two hoki fisheries, both are supported by on-shore factory sampling however some coverage is required to monitor protected species interactions, primarily fur seals. The scampi and ling bottom longline fisheries have had relatively low levels of observer coverage for several years, as a result of other fisheries having a higher priority for the limited number of observer days available. Fisheries New Zealand has proposed that these fisheries have approximately 25% coverage based on an average of 2014/15, 2015/16 and 2016/17 fishing effort.

[39] https://www.mpi.govt.nz/dmsdocument/21746/send

[40] As reported in the 2014/15, 2015/16 and 2016/17 Deepwater Annual Review Reports. Reports back to 2015/16 are available here (https://www.mpi.govt.nz/growing-and-harvesting/fisheries/fisheries-management/deepwater-fisheries/)

[41] This refers to regulations prohibiting vessels >46 m from operating within specific areas

The number of observer days necessary to achieve the relevant percentage coverage targets was based on:

- The number of days fished for Tier 1 and selected Tier 2 species in each fisheries 'complex' during the 2014/15, 2015/16 and 2016/17 fishing years; and
- The sea day tracking sheets for the 2014/15, 2015/16, 2016/17 and 2017/18 fishing years.

In short, for each fisheries 'complex' with a percentage coverage target, a historical average of the number of days on which fishing was conducted was calculated based on effort during the 2014/15, 2015/16 and 2016/17 fishing years. The number of days fishing required to be observed to meet the percent coverage target was then calculated with reference to the historical average number of days fished in that 'complex'. This number was then compared to the sea day tracking sheets and adjusted accordingly to account for sea days on which no fishing was conducted (i.e. steaming days), training trips and recent changes in fleet dynamics.

Training

All training occurs as paired trips between an experienced observer and new recruit. Trainees' days are counted towards the 'Training' allocation with the trainers' days counted towards the appropriate fisheries complex. Training allocations have previously been incorporated into the calculations for each complex. However, to aid understanding of the observer planning process, the training allocation has been split from other calculations for 2019/20. All training occurs on >28 m trawl vessels with time of year, vessel size, and suitability for training purposes determining which vessels are used for training purposes.

For cost recovery purposes, the 'Training' allocation is spread across all deepwater stocks from which the costs of observer coverage are recovered.

Finalisation

The number of days estimated to meet sampling requirements was then compared to the number of days estimated to meet percentage coverage targets with the larger estimate put forward as the proposed number of days. This number is shown in column two of Table 14. The rationale behind the number of observer days proposed for each fisheries 'complex' is shown in Table 14.

After the initial calculations were made, coverage requirements across all fisheries (deepwater, inshore, Highly Migratory Species, and other categories) were assessed against the observer programme's capacity and then prioritised. The number of days allocated to each deepwater fisheries 'complex' following prioritisation is shown in column three of Table 12.[42]

[42] Note that the deepwater numbers are still preliminary and subject to change depending on prioritisation.

Table 14: Summary of information used

Fishery complex & stocks covered	Planned days 2019/20	Main objective(s) of observer coverage planning	Rationale and comment
Training			
All	1,600	Training of new observers	Estimated training requirement of 1,600 days based upon four intakes of ten observers each, with each new observer undertaking a training trip of 40 days in length.
Deepwater trawl			
North Island deepwater ORH 1, ORH 2A, ORH 2B, ORH 3A, BYX 2, CDL 2	100	Biological sampling of ORH	180 ORH length frequency (LF) samples required (across various QMAs and sub-areas). Using an estimate of two LFs per day, 100 days is the estimated number of days required to collect necessary samples. 100 days estimated to provide coverage of approx. 20-25% of effort (all stocks in complex) and approx. 35% of effort (ORH target only).[43]
Chatham Rise deepwater ORH 3B (Northwest and East & South Chatham Rise) OEO 3A, OEO 4, BYX 3	300	Biological sampling of ORH & OEO 30% coverage of effort in MSC certified stocks	300 days estimated to provide coverage of approx. 50% of effort in MSC certified stocks. Coverage will be tracked over the course of the year to ensure that 30% coverage target is obtained for both stocks. Using an estimate of two LFs per day, 300 days estimated to be sufficient to collect required number of biological samples (50 LFs per ORH sub-stock, SSO & BOE in OEO 3A and from SSO in OEO 4).
Sub-Antarctic deepwater ORH 3B (Sub-Antarctic & Puysegur), OEO 1, OEO 6	120	Biological sampling of ORH & OEO	Using an estimate of two LFs per day, 120 days likely an overestimate of the number of days required to collect necessary samples (100 LFs from Puysegur). Extra days required as a consequence of 100% observer target in SQU 6T (vessels that have notified to fish in SQU 6T and are thus carrying an observer may, at times, fish deepwater species in the Sub-Antarctic). 120 days estimated to provide coverage of approx. 80% of effort.
West Coast deepwater ORH 7A	100	Biological sampling of ORH 30% coverage of effort in MSC certified stocks	100 days estimated to provide coverage of approx. 70% of effort. Coverage will be tracked over the course of the year to ensure that 30% coverage target is obtained. Using an estimate of two LFs per day, 100 days estimated to be sufficient to collect required number of biological samples (50 LFs).
Hoki and middle-depth trawl			
West Coast North Island JMA 7, EMA 7, BAR 7	250	Biological sampling of JMA Protected species monitoring	250 days estimated to provide coverage of approx. 35-40% of effort. Using an estimate of 1 LF per JMA species per day, 250 days estimated to be sufficient to collect necessary samples (200 LFs per JMA species).
West Coast South Island HOK 1, HAK 7, LIN 7, SWA 1	650	Biological sampling of HOK, HAK, LIN Protected species monitoring	800 LFs in total (400 HOK, 200 HAK & 200 LIN). Using an estimate of 2 LFs per day, 650 days estimated to be sufficient to collect required number of biological samples. 650 days estimated to provide coverage of approx. 50% of effort (HOK target only).
WCSI (inside the line) HOK 1	150	Biological sampling of HOK	200 LFs required. Using an estimate of 2 LFs per day, 150 days estimated to be sufficient to collect required number of biological samples. 150 days

[43] All percentage coverage estimates are based upon average fishing effort between the 2015/16 and 2017/18 fishing years and take into account estimates of the number of observer seadays when fishing did not occur (i.e. steaming).

		Protected species monitoring	estimated to provide coverage of approx. 25% of effort.
Cook Strait hoki HOK 1	150	Biological sampling of HOK Protected species monitoring	200 LFs required. Using an estimate of 2 LFs per day, 150 days estimated to be sufficient to collect required number of biological samples. 150 days estimated to provide coverage of approx. 20% of effort.
Chatham Rise middle-depth HOK 1, HAK 1, HAK 4, LIN 3, LIN 4, SWA 3, SWA 4, JMA 3, BAR 1, BAR 4	650	Biological sampling of HOK, HAK, LIN Protected species monitoring	600 LFs in total (400 HOK, 100 HAK & 100 LIN). Using an estimate of 2 LFs per day, 650 days estimated to be sufficient to collect required number of biological samples. 650 days estimated to provide coverage of approx. 40-50% of effort (HOK target only).
Sub-Antarctic middle-depth HOK 1, HAK 1, LIN 5, LIN 6, SWA 4, WWA 5B, BAR 5, JMA 3	500	Biological sampling of HOK, HAK, LIN Protected species monitoring	600 LFs in total (400 HOK, 100 HAK & 100 LIN). Using an estimate of 2 LFs per day, 500 days estimated to be sufficient to collect required number of biological samples. 500 days estimated to provide coverage of approx. 50% of effort (HOK, HAK & LIN target only).
Southern blue whiting SBW (all)	400	Biological sampling of SBW Protected species monitoring	Estimated number of days required to obtain 100% coverage (with two observers placed on any vessel producing surimi)
Squid SQU 1T, SQU 6T	1,250	Protected species monitoring	Estimated number of days required to obtain 100% coverage on vessels that have notified of an intention to fish in SQU 6T
Scampi trawl			
Scampi SCI (all)	450	Biological sampling of SCI Protected species monitoring	450 days estimated to provide coverage of approx. 25% of effort (all areas). Approx. 50% of days to be targeted at SCI 6A fishery which would provide coverage of approx. 30-35% in this area. 450 days estimated to be sufficient to collect required number of biological samples (50 LFs from SCI 1, SCI 2, SCI 3, SCI 4A & SCI 6A)
Bottom longline			
Ling bottom longline LIN 3-7	400	Biological sampling of LIN Protected species monitoring	400 days estimated to provide coverage of approx. 25% of effort (all areas). Days to be split by vessel size with 150 days targeted at large (>34 m) vessels and 250 days targeted at small (< 34 m) vessels. 400 days estimated to be sufficient to collect required number of biological samples
Total days	**7,070**		

9.3 DIGITAL MONITORING DIRECTORATE

The Digital Monitoring Directorate is responsible for development and rollout of electronic reporting and geospatial position reporting, across all commercial fishers. Trawl vessels greater than 28m in length i.e. most of the deepwater fleet, have been required to comply with the new electronic reporting requirements since 1 October 2017.[44] A staged introduction process for all remaining fishers will be completed by December 2019.

Decisions on implementation of the third component of digital monitoring (on-board cameras) are expected to be made during the term of this AOP.

Details of how the Deepwater Team will work with Digital Monitoring during 2019/20 are set out in Item 13 of Table 2.

9.4 AQUACULTURE AND BRANCH SUPPORT DIRECTORATE

This Directorate comprises the Aquaculture, and Planning and Process Improvement teams. The Aquaculture team is the government's principal adviser on aquaculture matters. The Planning and Process Improvement team provides branch planning, project and process improvement, and wide-ranging general support to Fisheries New Zealand.

During 2019/20, processes developed by the Planning and Process Improvement team will commence. The Deepwater Team will participate in relevant processes and assist this team on ongoing process review and other functions.

9.5 LINKAGES WITH WIDER MPI

Table 15: Directorates / teams outside Fisheries New Zealand from which some fisheries management services will be required.

Branch	Directorate or Team
Corporate Services	Finance, Property and Procurement
	Business Technology & Information Services
	Cost Recovery
Compliance and Governance[45]	Compliance
	Legal Services
Policy and Trade	International Policy
	Agriculture, Marine & Plant Policy
Public Affairs	Ministerials & Business Support Group
	Communication, Engagement & Channels
New Zealand Food Safety	Science & Risk Assessment
	Performance, Oversight & Approvals
Te Uru Rākau	Spatial, Forestry & Land Management

The teams/directorates of most relevance to the Deepwater Team, together with the fisheries management services required, is outlined below.

9.5.1 Compliance and Governance Business Unit - Compliance Directorate

The Compliance Directorate, within the Compliance and Governance Business Unit, is responsible for monitoring, assessment and deployment of fisheries resources to address compliance risk across the fleet. The Fisheries Compliance Group provides advice to fisheries managers and scientists on

[44] Position reporting requirements already applied to this class of vessel.

[45] An amended organisational structure, which includes this new branch, was implemented on 1 July 2019

compliance risk as well as any required intervention to manage compliance risk in support of achieving the management objectives set out in this plan.

Successfully delivering on the management objectives for deepwater fisheries is dependent upon high levels of compliance with various sustainability and environmental management measures, both regulatory and non-regulatory. In deepwater fisheries, areas of compliance concern, in relation to regulatory measures, include:

- Misreporting in terms of areas fished (known as 'trucking');
- Species fished (falsifying returns and misidentification);
- Quantities taken (unreported discarding or slippage in systems used to record catch); and
- Failure to use seabird mitigation devices.

MPI compliance activities are based on education, monitoring, surveillance, audit, analysis, and enforcement through investigation and prosecution of offences. Since 2009, MPI has revised its compliance model to incorporate a Voluntary, Assisted, Directed, Enforced (VADE) model of compliance. While the enforcement and prosecution tools remain available (and continue to be used where appropriate), effort is also focussed on achieving compliance through a programme of educating and assisting the commercial sector to comply.[46]

A further component of compliance activities involves collaborating with fisheries managers on reporting of compliance activities in publically available documents, such as the deepwater ARR. This will be a priority during the 2019/20 financial year.

The specific compliance services required to support the successful delivery of 2019/20 management objectives are listed below. These service requirements are in addition to the general monitoring and surveillance activities undertaken by the Compliance Directorate, which includes the work set out in Table 3.

- Provide compliance advice to the Fisheries Management Directorate to help inform risk ratings for foreign-owned vessel registration purposes
- Coordinate delivery of at-sea patrols to monitor adherence to regulations, including deployment of seabird mitigation devices, and follow up on non-compliance referrals from observers on recording and deployment of seabird mitigation devices
- Continue to operate VADE compliance model

Specific work that the Deepwater Team will work with this Directorate to progress will be:

- Updating and reviewing the structure of future risk profiling work
- Review the regulatory settings associated with shark processing and reporting (including the finning ban) in order to inform the review of their implementation and effectiveness.

9.5.1.1 International Policy Directorate

The Deepwater Team works with International Fisheries Management on a range of issues, including New Zealand's activities in the South Pacific Regional Fisheries Management Organisation (SPRFMO) and trade issues (e.g. US Marine Mammal Protection Act requirements). The Deepwater Team also provides review and advice on international issues that may impact on New Zealand's domestic fisheries management or where operational experience is required to inform New Zealand's positions on fisheries issues.

[46] An outline of the VADE model is available here: (https://www.planning.org.nz/Attachment?Action=Download&Attachment_id=750)

9.5.1.2 Agriculture, Marine and Plant Policy Directorate

This Directorate is responsible for high level policy, working with stakeholders and other Government agencies to develop and implement policy, including the various legislative and regulatory frameworks that support the development of New Zealand's primary industries. It is responsible for monitoring, reviewing and amending policy that relates to the primary sector, and leads the Fisheries Change Programme. As a consequence of the Your fisheries, Your Say consultation, undertaken in February/March 2019, the Fisheries Change Programme will likely require input from all Fisheries Management teams as advice is prepared for the Minister.

9.6 EXTERNAL ORGANISATIONS

9.6.1 Deepwater Group Ltd. (DWG)

The Deepwater Group Ltd (DWG), is a non-profit company that represents owners of deepwater fishing quota. The DWG works collaboratively with Fisheries New Zealand to help ensure New Zealand gains the optimum economic yield from New Zealand's deepwater fisheries resources while ensuring fish stocks are managed sustainably and environmental effects are managed appropriately.[47]

A primary function of DWG is to represent the interests of quota owners and provide a communication channel between Fisheries New Zealand and the deepwater fishing industry to facilitate full engagement on the management of deepwater fisheries.

In 2006 the then Ministry of Fisheries, signed a Memorandum of Understanding (MOU) with DWG. This MOU was subsequently updated in 2008, and 2010.[48] The MOU establishes a structured collaborative framework that enables Fisheries New Zealand and DWG to work together. Because of this collaborative arrangement, the AOP also specifies how the industry will contribute to the delivery of Management Actions and, in turn, the Management Objectives within the National Deepwater Fisheries Plan.

The key projects that the Deepwater Team will work with industry to progress during 2019/20 will be:

- Prioritising fish stocks for annual sustainability reviews and coordinating industry input;
- Administering sub-QMA catch limit management in conjunction with FishServe and required reporting to Fisheries New Zealand;
- Supporting the deepwater industry to maintain third party certification by contributing to the MSC annual audits for HOK, HAK, LIN, SBW and ORH;
- Assisting with delivery of the observer coverage plan for 2019/20;
- Planning research and observer coverage for delivery in 2020/21 and beyond;
- Management and monitoring of interactions with protected species and sharks; and
- Planning and operation of the DWG/MPI Operators Group.

[47] DWG's website can be accessed here (www.deepwatergroup.org)

[48] The 2010 MOU can be accessed here (https://www.mpi.govt.nz/dmsdocument/19715-memorandum-of-understanding-2010)

9.6.2 Department of Conservation (DOC)

The key projects that the Deepwater Team will work with DOC to progress during 2019/20 will be:

- Implementation of protected species frameworks, including the draft NPOA-Seabirds (2019), NPOA-Sharks (2013) and the New Zealand sea lion/rāpoka Threat Management Plan 2017-2022; and
- Planning research and observer services for delivery in 2020/21.

DOC carries out research each year focused on protected species interactions with fisheries in New Zealand waters. Some of the research DOC plans to carry out in 2019/20 and 2020/21 will be relevant to the deepwater management actions, and should be taken into account for future management decisions and research planning activities.

For more detail on the projects in Table 16, please see the Conservation Services Programme Annual Plan 2019/20, available on the DOC website (https://www.doc.govt.nz/our-work/conservation-services-programme/csp-plans/)

Table 16: 2019/20 DOC research projects that relate to deepwater fisheries

Interaction projects	
INT2019-01	Observing commercial fisheries
INT2017-03*	Identification of marine mammals, turtles and protected fish captured in New Zealand fisheries
INT2018-03^	Improvement in observer photograph protocols and photograph curation
INT2019-02	Identification of seabirds captured in New Zealand fisheries
INT2019-03	Characterisation of marine mammal interactions
INT2019-04	Identification and storage of cold-water coral bycatch specimens
INT2019-05	Coral biodiversity in deepwater fisheries bycatch
INT2019-06	Post-release survival of seabirds
Population projects	
POP2017-03[49]	Salvin's albatross: Bounty Islands population project
POP2017-04*	Seabird population research: Auckland Islands 2017-20
POP2018-01^	Improved habitat suitability modelling for protected corals in New Zealand waters
POP2018-03^	New Zealand sea lion: Auckland Islands pup count
POP2019-03	Antipodes Island seabird research
POP2019-04	Southern Buller's albatross: Snares/Tini Heke population project
POP2019-05	New Zealand fur seal: Bounty Islands population assessment
Mitigation projects	
MIT2017-01*	Protected species liaison project
MIT2019-02	Review of mitigation techniques to reduce benthic impacts of trawling
MIT2019-03	Lighting adjustments to mitigate against deck strikes / vessel impacts
MIT2019-04	Optimum batching interval for discharge management on vessels in the scampi fishery

* indicates multi-year project consulted on in 2017/18
^ indicates multi-year project consulted on in 2018/19

[49] Project initially planned for 2017-2019 but postponed to 2018-20