Annual Review Report for Deepwater Fisheries - Abstract

2018/19

Introduction

National Deepwater Plan

Since 2010, the management of New Zealand's deepwater fisheries has been implemented through the National Fisheries Plan for Deepwater and Middle-depth Fisheries (National Deepwater Plan). Fish stocks managed under the National Deepwater Plan are shown in Figure 1;[1] Tier 1 stocks are typically high volume or high value stocks which are usually targeted whereas Tier 2 stocks are typically taken as bycatch or as target stocks at certain times of the year. Tier 3 stocks are non-quota management system species taken as bycatch.

Under the National Deepwater Plan, the management actions that will be implemented for deepwater fisheries each year are detailed within an Annual Operational Plan (AOP). The Annual Review Report (ARR) is published at the end of each year and reviews delivery of the relevant AOP, as well as reporting on the performance of deepwater fisheries during the previous year in relation to environmental interactions and impacts.

2018/19 ARR abstract

The ARR is a detailed and data rich document typically exceeding 100 pages. To increase the accessibility of information to stakeholders, this ARR abstract has been produced to compliment the complete 2018/19 ARR available online. This document should not be considered as a substitute for the complete 18/19 ARR and readers are referred to that document for more comprehensive information. Additionally, please note that both commercially reported and observer data for the 18/19 fishing year (1 Oct 2018 – 30 Sep 2019) are ungroomed and may be subject to change.

This document can be split into three parts

- **Part 1** provides a brief summary of the major management actions delivered during the 2018/19 financial year (*page 2*);

- **Part 2** provides a more comprehensive summary of fishing activity, observer coverage and protected species interactions for the 18/19 fishing year 1 Oct 2018 – 30 Sep 2019 (*pages 3 – 9*); and

- **Part 3** which provides links to research reports, and other documents, relevant to the management of deepwater fisheries (*page 10*).

Figure 1 – Deepwater stocks by Tier

Tier 1	Hake (all)	OEO (all)
	Hoki (all)	SBW (all)
	JMA 3 & 7	SCI (all)
	LIN 3 – 7	SQU (all)
	ORH (all)	
Tier 2	BYX (all)	GSP (all)
	CDL (all)	PTO (all)
	BAR 4, 5 & 7	RBT (all)
	EMA 3 & 7	RIB 3 – 8
	GSH 4 -6	RBY (all)
	KIC/GSC/CHC (all)	SPE 3 – 7
		SWA (all)
	FRO 3- 9	SPD 4 & 5
	SKI 3 & 7	WWA (all)
	LDO (all)	
Tier 3	Non-QMS species	

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[1] HAK = Hake, HOK = Hoki, JMA = Jack Mackerel, LIN = Ling, ORH = Orange roughy, OEO = Oreo, SBW = Southern blue whiting, SCI = Scampi, SQU = Squid, BYX = Alfonsino, CDL = Black cardinalfish, BAR = Barracouta, EMA = English mackerel, GSH = Dark ghost shark, KIC/GSC/CHC = 'deepwater crabs' FRO = Frostfish, SKI = Gemfish, LDO = Lookdown dory, GSP = Pale ghost shark, PTO = Patagonian toothfish, RBT = Redbait, RIB = Ribaldo, SBY = Rubyfish, SPE = Sea perch, SWA = Silver warehou, SPD = Spiny dogfish and WWA = White warehou.

Part 1 - Management Actions delivered during 2018/19

A sub-set of the Management Actions delivered during 2018/19 are shown below. A full list of the Management Actions can be found in the complete 2018/19 ARR.

Total allowable catch (TAC) and deemed value rate reviews

- For 1 October 2018, TACs were increased for four deepwater stocks (**LIN 5, OEO 4, ORH 3B & SCI 3**) and deemed value rates decreased for two deepwater stocks (**SKI 3 & 7**); and
- For 1 October 2019; TACs were increased for five deepwater stocks (**LIN 7, ORH 3B , ORH 7A, SKI 3 & 7**) and decreased for two deepwater stocks (**HAK 7 & HOK 1**) deemed value rates reviewed for six deepwater stocks (**CDL 5, RBY 5 & 6, JMA 7, SWA 3 & 4**).

Implementation of the National Deepwater Plan

- The National Deepwater Plan 2019 was approved by the Minister of Fisheries in May 2019;
- The 2017/18 ARR was made available in Feb 2018 and the 2019/20 AOP in August 2019;
- The development of species specific chapters commenced for orange roughy, scampi, southern blue whiting and squid; and
- Fish Plan Advisory Group (FPAG) meetings were held in November 2018 and April 2019.

National Plan of Action (NPOA) Seabirds

- Drafts of the amended NPOA-Seabirds 2020 and a review of the NPOA-Seabirds 2013 were provided to the Seabird Advisory Group for comment;
- Mitigation Standards setting out what is expected of effective mitigation practices were developed for deepwater fisheries; and
- The Deepwater Fisheries Management team participated in a Southern Seabird Solutions workshop to develop mitigation strategies to reduce the number of seabirds caught in trawl nets.

New Zealand sea lion/rapoka threat management plan

- The southern blue whiting (SBW) 6I Operational Plan 2019 was reviewed, updated and finalised;
- Research including the spatial assessment of fisheries risk for New Zealand sea lions at the Auckland Islands and the population effects of New Zealand sea lion mortality scenarios relating to the squid (SQU) 6T fishery was published;
- The third annual meetings of the New Zealand sea lion/rapoka Forum, and the Advisory Group took place in Dunedin in June 2019;

Monitoring

- Seven vessels were approved under Regulation 71A to use the Modular Harvesting System gear;
- The observer protected species interaction form was redesigned to collect additional information on the nature of such interactions;

Part 2 - Deepwater catch and effort

The total catch of stocks managed under the National Deepwater Plan during the 2018/19 fishing year was approximately **316,078** tonnes, of which hoki comprised approximately 40% (Figure 2).

During 2018/19, approximatey **12,826 tonnes of non-Quota Management System (QMS) species** were caught by the core deepwater fleet (Figure 3).[2]

Deepwater trawl vessels conducted a total of **29,491 tows** during the 2018/19 fishing year, of which 41% targeted hoki (Table 1).[3] Approximately 21 million hooks were deployed targeting deepwater ling stocks in 2018/19, 80% of which were deployed from vessels >34 m in length.

Table 1 – Deepwater trawl effort during the 2018/19 fishing year

Target species	QMA/fishing area	Number of tows
Hoki	Chatham Rise	4,454
	WCSI	4,084
	Sub-Antarctic	995
	Cook Strait	1,562
	Other	912
Squid	SQU 1T	3,468
	SQU 6T	810
Jack Mackerel	JMA 3	220
	JMA 7	1,348
Scampi	SCI 6A	1,636
	All other SCI stocks	2,736
Orange roughy	All stocks	2,832
Southern blue whiting	SBW 6I	747
Ling	LIN 3 – 7	774
OEO	All OEO stocks	788
Other species	Various	2,125

Figure 2 – Proportion each species contributed to the total deepwater catch during the 2018/19 fishing year
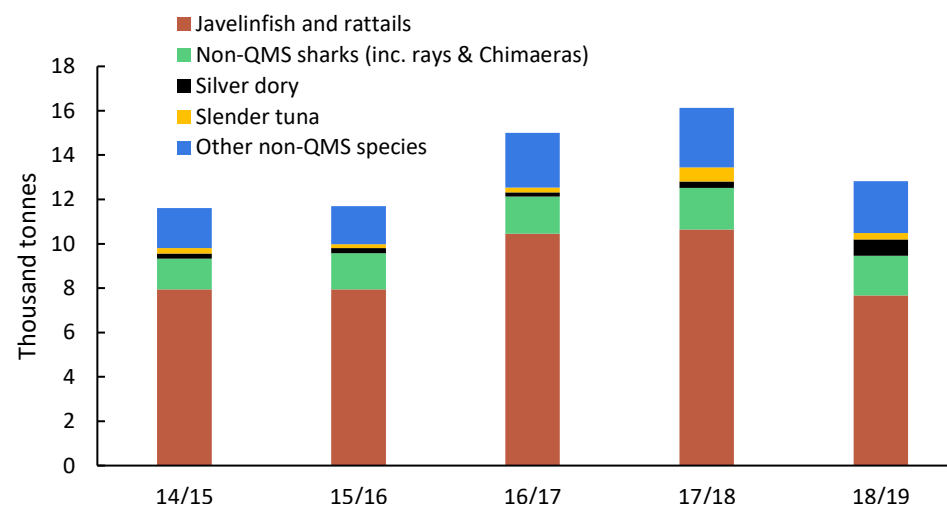
Figure 3 – Catch of non-QMS species by the core deepwater feet between the 2014/15 and 2018/19 fishing years

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[2] Defined as all trawl vessels >28 m which regularly target deepwater species, all scampi trawl vessels and all bottom longline vessels >34 m in overall length.

[3] Includes all effort by trawl vessels >46 m in length regardless of target stock, all effort by trawl vessels >28 m in length targeting tier 1 or tier 2 stocks and all effort by trawl vessels <28 m targeting hoki, orange roughy or scampi. Figures exclude fishing effort outside the EEZ.
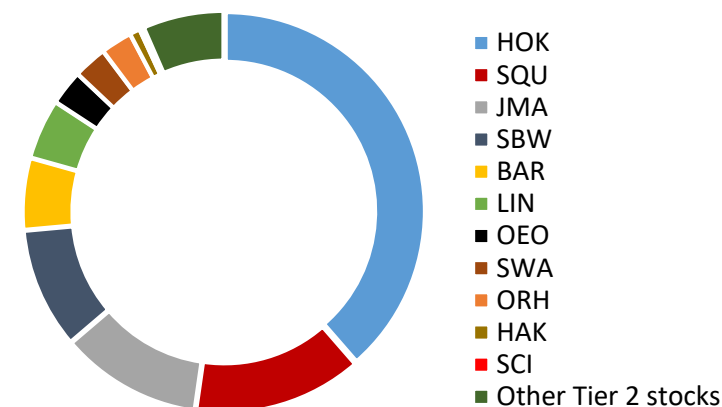
Observer coverage

A total of **7,161** seadays[4] of deepwater observer coverage were delivered during the 2018/19 financial year; 2,964 of which were delivered on vessels targeting middle-depth species (principally HOK, HAK, LIN, JMA, SWA & BAR) and 2,463 of which were delivered on vessels targeting squid (Figure 4). Approximately 58% of all deepwater observer seadays during the 2018/19 financial year were delivered on foreign-owned vessels (FOVs).

Percent observer coverage estimates (% of commercial effort observed) for selected deepwater fisheries during 2018/19 are shown in Table 2.
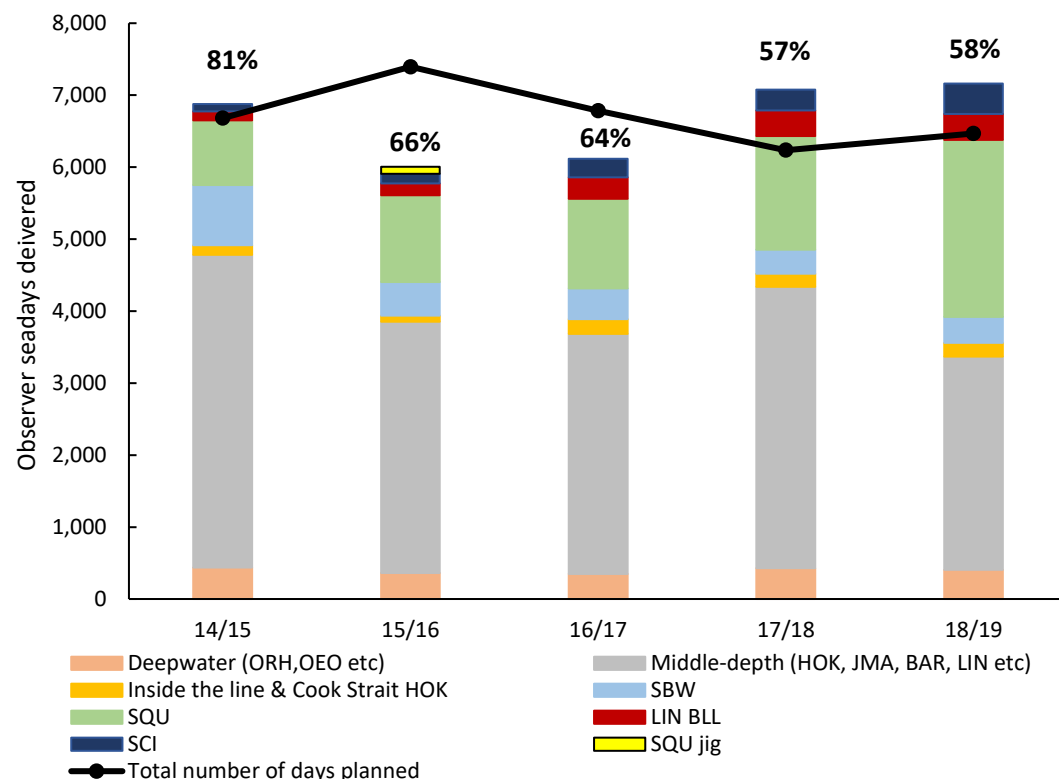

Figure 4 – Number of deepwater observer seadays delivered by fisheries complex and the total number of deepwater seadays planned between the 2014/15 and 2018/19 financial years. Data labels indicate the proportion of deepwater seadays delivered on Foreign Owned Vessels (FOVs)

Table 2 – Percentage observer coverage figures for selected deepwater fisheries between the 2014/15 and 2018/19 fishing years.

Target stocks	2014/15	2015/16	2016/17	2017/18	2018/19
Trawl					
BAR (> 28 m)	92%	81%	88%	88%	**82%**
HAK (> 28 m)	93%	98%	95%	99%	**91%**
HOK 1 (>28 m)	29%	30%	24%	38%	**34%**
HOK 1 (<28 m)	3%	12%	9%	13%	**11%**
JMA 7	87%	90%	72%	86%	**79%**
LIN 3–7 (>28 m)	22%	26%	36%	51%	**38%**
OEO (all stocks)	18%	29%	51%	41%	**54%**
ORH (all stocks)	31%	38%	27%	20%	**25%**
SBW (all stocks)	99%	100%	100%	100%	**100%**
SCI (all stocks)	8%	3%	10%	13%	**16%**
SCI 6A	0%	5%	21%	17%	**21%**
SQU 1T (>28 m)	94%	86%	83%	97%	**85%**
SQU 6T	88%	92%	70%	89%	**95%**
SWA (> 28 m)	92%	52%	70%	60%	**66%**
Bottom longline					
LIN 3-7 (>34 m)	4%	14%	19%	33%	**12%**
LIN 3-7 (<34 m)	4%	1%	6%	7%	**8%**

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[4] A seaday is defined as one day on which an observer is placed on board a vessel which has left port for the purposes of fishing

Adherence to Vessel Management Plans/Operational Procedures

Vessel Management Plans (VMPs) document the actions trawl vessels >28 m, and those <28 m targeting scampi, will take to reduce the risk they pose to protected species. During each observed trip, Fisheries New Zealand observers audit at-sea vessel adherence to VMPs. The outcome of each audit is reviewed by the Deepwater Fisheries Management team with feedback on vessel performance provided to Deepwater Group (DWG) after each trip. Any issues identified by the observer are followed up by DWG.

During 2018/19, observers conducted **174 VMP audits**. All trawl vessels >28 m that regularly target deepwater species (32 vessels) and 10 of the 11 trawl vessels used to target scampi had their VMP audited at least once during 2018/19. Follow up actions were required after **9%** of audits (15 trips) with the majority of issues requiring follow up actions relating to offal management issues (Figure 5).

Observers placed on bottom longline vessels used to target ling also audit vessel adherence to the Ling Bottom Longline Operational Procedures. During 2018/19, observers audited the at-sea adherence of **ten vessels** against the BLL Operational Procedures. Follow up actions were required after five trips in relation to both fish waste management and seabird scaring devices.
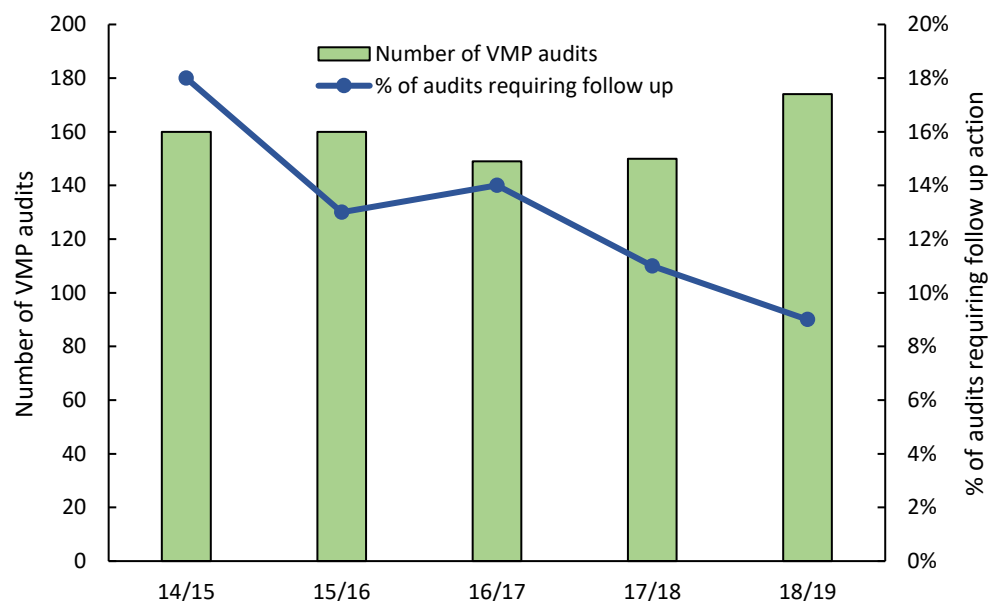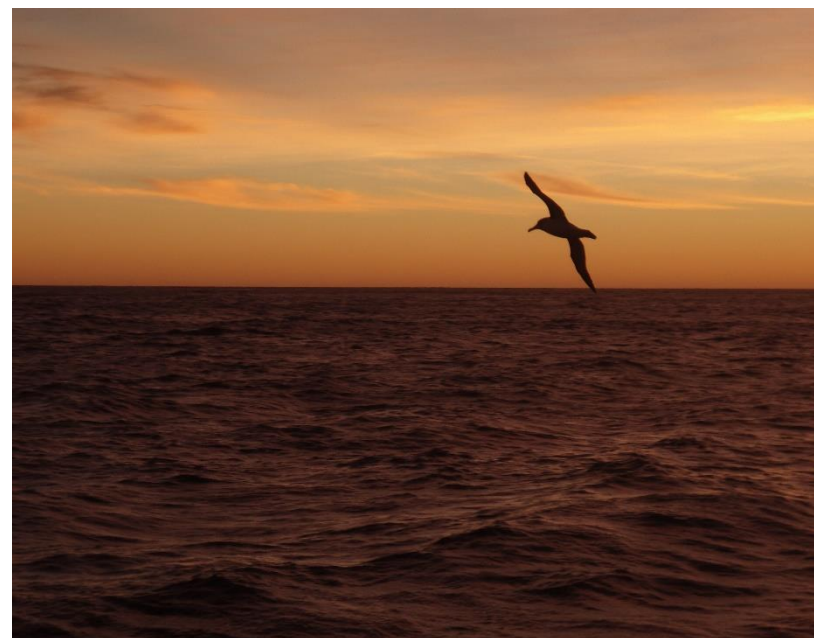

Figure 5 – Number of VMP audits conduced (green bars) and proportion of audits requiring follow up action (blue line) between the 2014/15 and 2018/19 fishing years.

Seabird captures

During 2018/19 there were **512 observed seabird captures** in deepwater fisheries, approximately two thirds of which occurred in the squid trawl fishery (Table 3). Observed seabird capture rates from the squid and hoki trawl fisheries are shown in Figure 6.

Of these 512 observed captures;

− 422 (82%) were caught within trawl nets, 30% of which were released alive;
− 60 (12%) were caught on trawl warps (the highest recorded number in five years), all of which died;
− 165 (32%) were identified by the observer as white-chinned petrel (the most commonly caught seabird species);
− 199 (39%) were identified by the observer as albatross (of which almost half were identified as white-capped albatross).
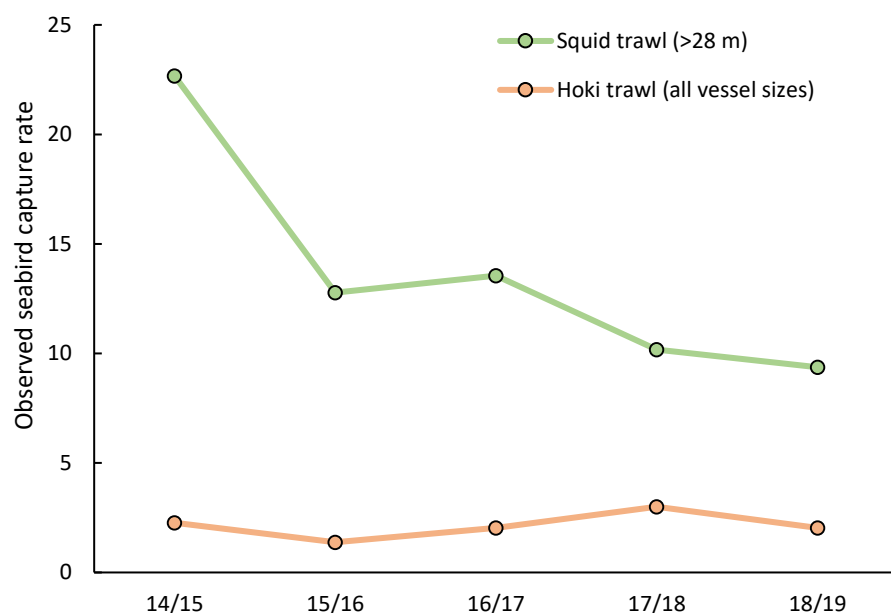

Figure 6 – Observed seabird capture rates (per 100 tows) from the squid and hoki trawl fisheries between the 2014/15 and 2018/19 fishing years.

Table 3 – Observed seabird captures by deepwater fishery for the 2018/19 fishing year

Fishery	Observed captures	Observed capture rate (per 100 tows or 1,000 hooks
Trawl		
BAR	24	3.87
Deepwater (ORH/OEO/BYX)	6	0.49
HAK	-	-
HOK	71	2.04
JMA	3	0.28
LIN (LIN 3 – LIN 7)	5	1.70
SBW	3	0.40
SCI	17	2.50
SQU	347	9.37
Warehou species	18	6.87
Bottom longline		
LIN (LIN 3 – LIN 7)	18	0.008

Marine mammal captures

During 2018/19, there were **nine observed captures of New Zealand sea lions** in deepwater fisheries. Of these nine captures; seven occurred in the SQU 6T fishery, one occurred in the SCI 6A fishery and one occurred in the Sub-Antarctic hoki fishery (Figure 7).

Sixty three New Zealand fur seals were caught in deepwater fisheries during the 2018/19 fishing year, of which seven (11%) were released alive (Table 4).

Zero captures of common dolphin were observed in the JMA 7 fishery during the 2018/19 fishing year (Figure 8). However, unobserved vessels, reported the capture of two dusky dolphins during a single tow (both dead) and one unidentified cetacean subsequently identified as a neonate Risso's dolphin (vessels were targeting barracouta and hoki respectively).

Table 4 – Observed NZ fur seal captures by deepwater trawl fishery during the 2018/19 fishing year.

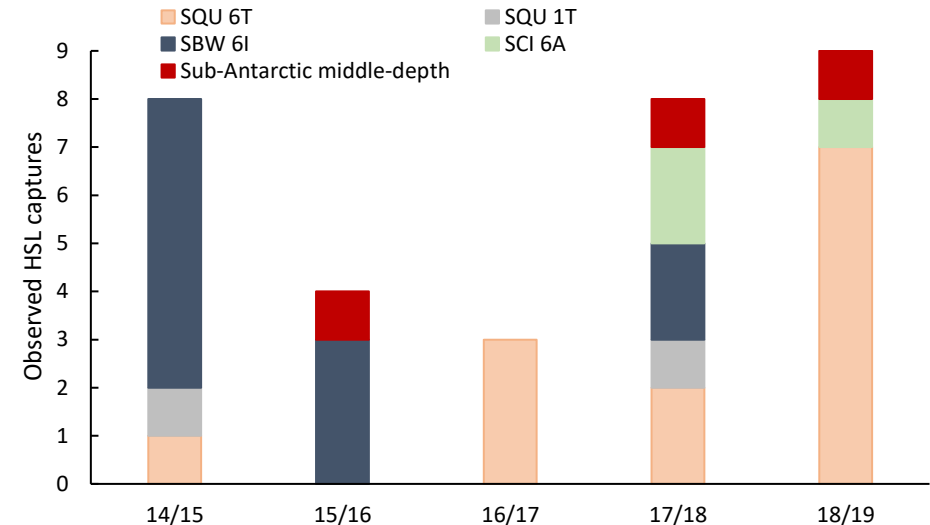| Target Species	QMA/area	Observed captures	Observed capture rate (per 100 tows)
HOK Cook Strait	Cook Strait	12	4.86
HOK WCSI	WCSI	7	0.42
Southern blue whiting	SBW 6B	5	41.67
Southern blue whiting	6I & 6R	6	0.82
Squid	All	25	0.94
Other		8	-

Figure 7 – Observed New Zealand sea lion captures by fishery between the 2014/15 and 2018/19 fishing years. Figures exclude decomposing carcasses. Sub-Antarctic middle-depth incudes vessels targeting hoki, ling and barracouta.
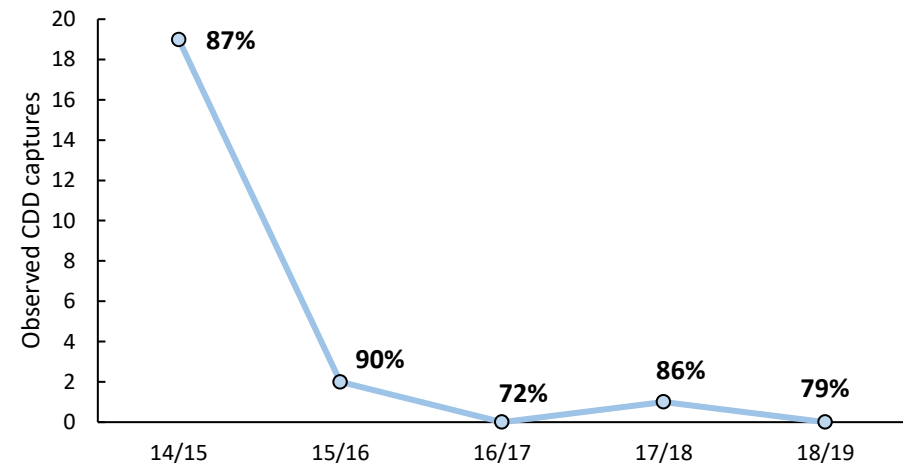

Figure 8 – Observed common dolphin captures in the JMA 7 fishery between the 2014/15 and 2018/19 fishing years. Data labels show the proportion of effort observed.

Sharks

The core deepwater fleet landed a total of **8,194 tonnes** of sharks[5] during the 2018/19 fishing year, over 75% of which were species managed under the Quota Management System (QMS) (Figure 9). The most commonly caught non-QMS shark species during 2018/19 were shovelnose dogfish (484 tonnes), Baxter's lantern dogfish (297 tonnes) and leafscale gulper shark (161 tonnes).

Generic reporting codes make it impossible to accurately quantify the capture of specific shark species; approximately 308 tonnes of sharks were reported using generic codes by the core deepwater fleet during 2018/19 (less than 4% of total shark landings).

During 2018/19, no deepwater vessel reported landing shark fins from a species subject to a finweight/greenweight ratio or any sharks under the processed state code SFA (shark fins attached),

Ten protected shark captures were observed during the 2018/19 fishing year (Figure 10). All white pointer shark (WPS) captures, and six of the seven basking shark captures occurred along the Stewart/Snares shelf or around the Auckland Islands (SQU 6T).
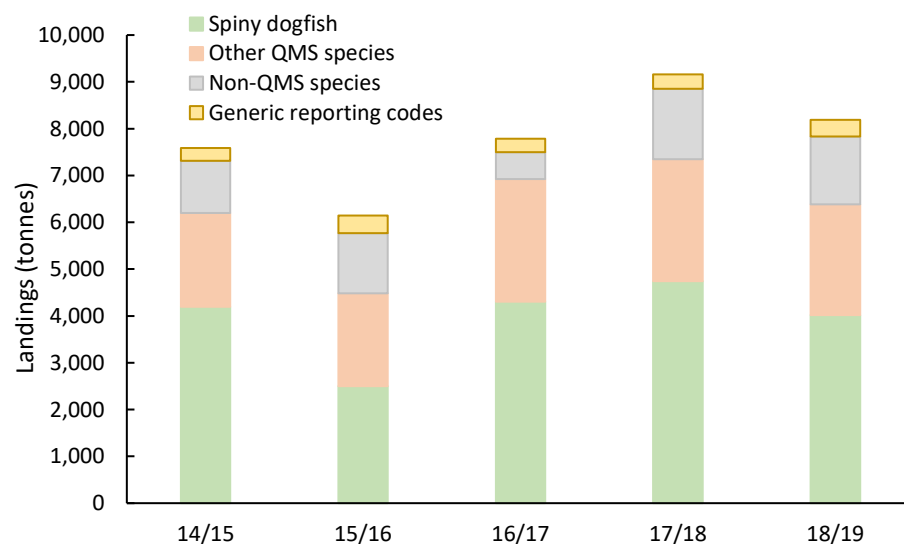
Figure 9 – Shark landings by the core deepwater fleet between the 2014/15 and 2018/19 fishing years.
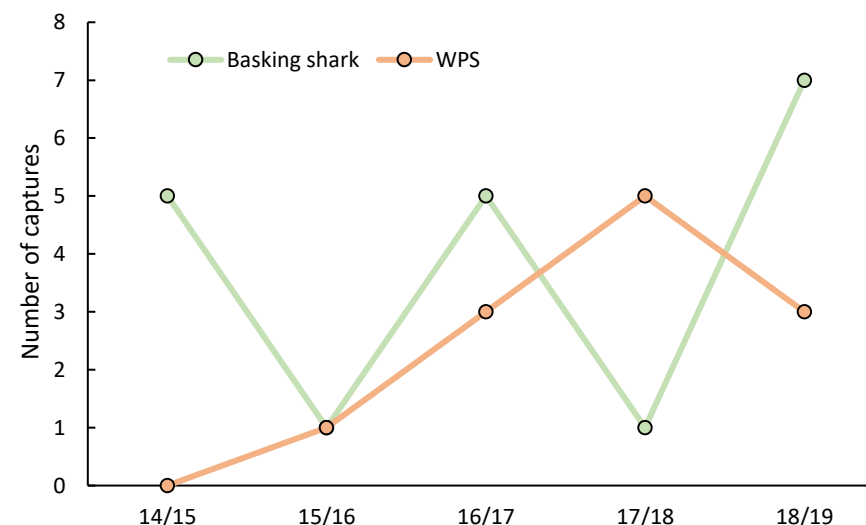
Figure 10 – Protected shark captures in deepwater fisheries between the 2014/15 and 2018/19 fishing years.

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[5] The term sharks refers to all species in the class Chondrichthyes, which includes all cartilaginous fish such as sharks, skates, rays and chimaeras.

Benthic interactions

Whilst hoki effort decreased, and squid effort increased, total deepwater trawl effort during 2018/19 was broadly similar to that conducted during previous years (Figure 11).

The observed and industry-reported catch of benthic species from deepwater trawl vessels during 2018/19 is shown in Table 5.

The most recent (2020) iteration of the deepwater trawl footprint estimated the extent of bottom contact by deepwater trawl vessels between the 2007/08 and 2017/18 fishing years.[6] The 2017/18 trawl footprint of vessels targeting Tier 1 and Tier 2 species was estimated to be **47,093 km^2 (approximately 1% of the exclusive economic zone (EEZ) and 3.4% of the fishable area)**.[7] During 2017/18, 46 tows contacted 5 km cells that were not contacted by the 1989/90 – 2016/17 footprint (24% of which were observed). There was no observed, or industry reported catch of corals or sponges from tows in previously 'uncontacted cells' during 2017/18.

Figure 11 – Total deepwater trawl effort, and HOK, ORH and SQU trawl effort between the 2014/15 and 2018/19 fishing years.
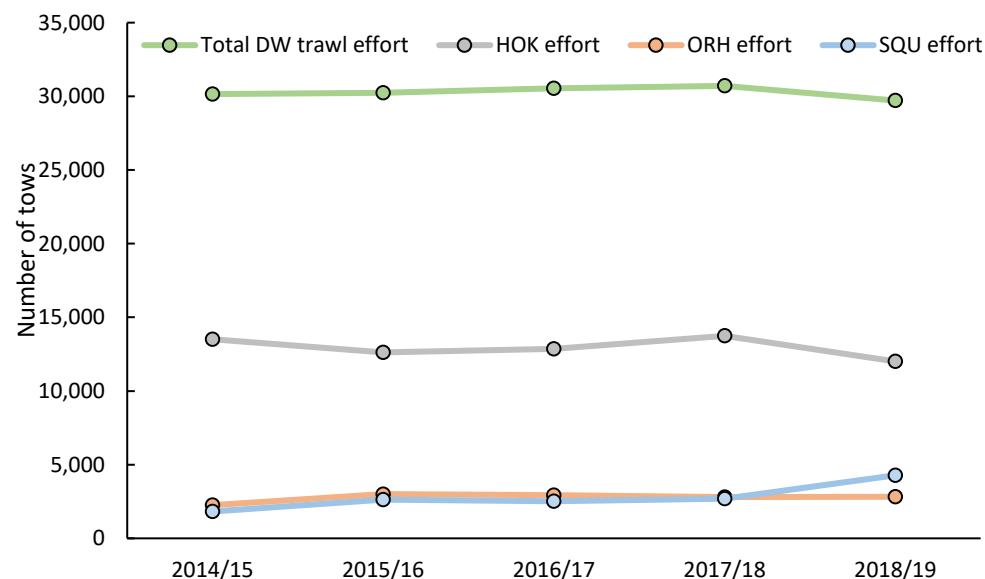
Table 5 – Observed and industry-reported catch of benthic species during the 2018/19 fishing year (kg). Figures exclude catches from outside the EEZ.

Common name	Observed catch	Industry-reported (core DW fleet only)
Anemones	7,773	4,275
Corals	631	163
Corals (generic codes)	8,141	27,922
Hydroids	18	-
Sea pens	104	-
Sponges	18,752	78,622

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[6] The 2020 deepwater trawl footprint has yet to be finalised, therefore all figures presented in this report are preliminary.

[7] The fishable area is defined as all areas open to fishing down to 1,600 m.

Part 3 – Research Reports, and other documents, relevant to the management of deepwater fisheries

A complete list of research reports published during the 2018/19 fishing year can be found in the complete ARR.

Fisheries New Zealand reports

Medium Term Research Plan for Deepwater Fisheries 2018/19 – 2022/23

Fisheries Assessment Plenary, May 2019

Aquatic Environment and Biodiversity Annual Review 2018

Fisheries Assessment Reports

A 2018 stock assessment of smooth oreo in OEO 4 (2019); Cordue, P.

Assessment of the Chatham Rise orange roughy stocks for 2017 (2018); Dunn, M & Doonan, I.

Assessment of hoki (*Macruronus novaezelandiae*) in 2019 (2019). Mckenzie, A.

Estimating the abundance of scampi in SCI 3 (Mernoo Bank) in 2016 (2018); Tuck, I; Parkinson, D; Armiger, H; Smith, M; Rush, N & Spong, K.

Fishery description and stock assessment for ling off the West Coast South Island (LIN 7) to the 2015-16 fishing year (2019); Dunn, M & Ballara, S.

Stock assessment of hake (*Meruccius australis*) on the west coast of South Island (HAK 7) for the 2018-19 fishing year (2019); Kienzle, M; McGregor, V & Dunn, M.

Stock assessment of ling (*Genypterus blacodes*) in the Sub-Antarctic for the 2017-18 fishing year (2019); Masi, M.

Managing the environmental effects of fishing

Assessment of the risk of commercial fisheries to New Zealand seabirds, 2006-07 to 2016-17 (2020); Richard, T; Abraham, E & Berkenbusch, K.

Extent of bottom contact by New Zealand commercial trawl fishing for deepwater Tier 1 and Tier 2 target species determined using CatchMapper software, fishing years 2008-17 (2019); Baird, S & Mules, R.

Fish and invertebrate bycatch in New Zealand deepwater fisheries from 1990-91 until 2016-17 (2019); Finucci, B; Edwards, C; Anderson, O & Ballara, S.

Spatial assessment of fisheries risk for New Zealand sea lions at the Auckland Islands (2019); Large, K; Roberts, J; Francis, M & Webber, D.